

Retain Installation and Administration

4.8.1

September 2019

Legal Notice

For information about legal notices, trademarks, disclaimers, warranties, export and other use restrictions, U.S. Government rights, patent policy, and FIPS compliance, see <https://www.microfocus.com/about/legal/>.

Copyright © 2017–2019 Micro Focus or one of its affiliates.

Contents

Preface	17
About Retain	17
About This Guide	17
For Documentation Feedback.	17
To Join the Retain Idea Exchange	17
For Additional Documentation	17
To Contact Technical Support	17
For Sales	17
For Professional Services.	17
1 Retain Unified Archiving	19
Are You Creating a New Retain System?	19
Are You New to an Existing Retain System?	19
Key Concepts	20
What Retain Does	20
How Retain works	21
Retain Components and Their Roles	21
How Retain Stores the Archives	22
About Retain Users and the System Address Book	23
User Removal Not Allowed	23
Retain Handles Users with the Same Name	23
Retain Functional Overview	23
Importing and Archiving Data	24
Metadata Vs. Message Data	24
Exporting Data from Retain.	25
Removing Data from Retain	25
How Archive Jobs Work	25
An Archive Job Example	26
Retain’s Archive Data Organization	27
How Retention Services and Item Store Flags Work	27
How Retain Works with GroupWise Retention Services.	27
How Retain Works with Exchange and Office 365	28
How Retain Works with Gmail	29
Retain’s Target Systems and Data Streams	29
Smart Phone Targets	29
Social Platform Targets	29
Email System Targets	30
Search Engine Targets	30
About Retain Version Numbering	30
2 Planning	31
Retain Planning and Design Best Practices	31
Retain Architecture	31
Retain is Modular and Flexible	33
Worker Locations	34
Planning for Retain Hardware	36

Network Bandwidth	36
CPU Requirements.....	37
Planning for Disk Storage	37
RAM	43
VM Configuration.....	45
System Requirements	45
VMware Support	46
Retain Component Location Dictate Resource Needs	46
The Number of Users Affects Resource Needs	46
Minimum Retain System Requirements	46
Single-Server Requirements	47
Separate Database Server Requirements	47
Separate Index servers, Database server, and Retain Server	47
High Availability Indexer Requirements	48
Software installed by Retain	48
Supported Linux Versions	48
Supported Windows Versions.....	48
Supported Microsoft Exchange Versions	48
Supported Micro Focus GroupWise Versions	49
Android Versions (RetainService app)	49
CellTrust Secureline Versions	49
Blackberry Versions	49
Supported Social platforms.....	49
Supported Search Engines	49
Supported SQL Database Platforms	50
Supported Browsers	50
Port Usage by Retain Components	50
Retain Server	50
Retain Worker	51
Retain Message Router	51
Retain Reporting & Monitoring Server	51
Retain Stubbing Server	51
From RSM WAN IP to Untrusted, all TCP/UDP ports	52
Database Management Systems	52
Blackberry.....	52
Exchange.....	52
Google Apps Module.....	53
GroupWise	53
Mobile.....	53
Office 365	53
CellTrust Secureline	53
Planning Retain Storage Requirements.....	54
Introduction to Storage Requirements	54
Considerations for Storage Requirements.....	55
Storage Minimums	56
Index Size During Migration	56
Changing the Log File Location.....	57
About Storage Paths	58
Setting Custom Storage Path Rights on Linux	59
Planning the SQL Database	60
Supported SQL Database Platforms	60
Configuration and Message Store Databases	60
Tomcat Memory Requirements	61
General Recommendations	61

Tomcat Configuration Parameters	61
Checking memory	64
System File Locations	66
3 Installing Retain 4.8.1	67
Retain Deployment Checklist	67
Installing a Web Server	68
Linux Web Server	68
Windows Web Server	68
(Optional) Apache Install on Windows	69
Installing a Database Server and Creating a Retain Database and Database User/Role	69
MySQL	70
MS SQL Server 2008 R2, 2012, 2014, 2016, 2017	72
ORACLE 10/11g/12c	72
Postgres 10	74
MariaDB	75
Further Database Tuning	75
Installing a Retain Server on Linux	79
Retain Prerequisites for Linux Servers	79
Downloading and Preparing the Retain Installation Files on Linux	80
Installing the Retain Server	80
Installing a Retain Server on Windows	82
Downloading and Preparing the Retain Windows Installation Source Files	82
Prerequisites	82
Retain Install	82
Running the Retain Server Configuration Wizard	91
Logging In to Retain	94
Logging In	94
Status and Updates	95
Saving Changes	98
Notifications	98
Licensing	99
Download Your License	99
Backing Up Retain	103
Where Data Is Stored In Retain	103
Backing Up Retain	105
General Maintenance	107
Un-installing Retain	108
Linux	108
Windows	108
Installing Other Retain Components on Linux	109
Deploying Production-Use Worker Agents on Linux	109
Installing a Retain Message Router on Linux	110
Installing Other Retain Components on Windows	111
Installing Additional Retain Workers on Windows	111
Installing a Retain Message Router on Windows	112
Starting and Stopping the Retain Server	113
Windows	113
Linux	114

4 Upgrade and Migration	115
Upgrading Retain 4.8.0.1 to 4.8.1	115
Prerequisites	115
Upgrading to Retain 4.8.1	115
Upgrading Retain 4.7.0.1 to 4.8.1	116
Prerequisites	116
If you Need to Optimize Your 4.7.0.1 Index	116
Upgrading to Retain 4.8.1	117
Upgrading Retain 4.6 or Earlier to Retain 4.7	117
Upgrading to 4.7	117
Post-Install Tasks	119
Upgrading Retain 3.5.1.1 to 4.7	122
Upgrade changes	122
Requirements	122
If Your System Began at Version 3.0 or Earlier	123
Upgrade Process	126
Post-Install Tasks	128
Removing old indexes after Retain 4.7 has completed re-indexing	133
Tool Compatibility with Retain 3.x (Lucene) Indexes	133
Upgrading from Versions Prior to Retain 3.5.1.1	134
Moving Retain to a New Server	134
Moving Retain from Windows to Linux	134
Moving Retain from Linux to Windows	139
Moving Retain To a Different Windows Server	142
Moving Retain To a Different Linux Server	145
Moving a MySQL Database to Another Server	150
Linux or Windows to Windows	150
Linux to Linux	152
Upgrading MySQL to a New Version	152
Upgrading MySQL on Linux	153
Upgrading MySQL on Windows	154
5 Archiving	155
Jobs—An Overview	155
6 Modules	157
Modules Overview	157
Key Concepts	157
Modules	158
GroupWise Module	160
Prerequisites of the GroupWise Module	161
Core Settings Tab	162
SOAP Tab	163
LDAP Tab	164
GroupWise Proxy Accounts	165
Next Step	166
Exchange Module: Office365 or Hosted Exchange without LDAP	166
Prerequisites of the Exchange Module	166
Configure the Exchange Module for Office365	180
Core Settings Tab	181
Impersonation Tab	183

Hosted Services Tab	184
Refresh Address Book	187
Next Step	187
Exchange Module: Exchange On-premise	187
Supported Exchange Forest Configurations	188
Exchange Prerequisites required for Retain	188
Create the Retain Global Catalog User	188
Grant Impersonation Permissions to the Retain user	189
Room and Equipment Resources	189
Basic Authentication	190
Configure Exchange Module for On-Premise Exchange	193
Core Settings	194
Impersonation	196
Hosted Services	196
Exchange Forest	196
Finishing On-Premise Exchange	200
Refresh Address Book	200
Exchange Distributions Lists	201
Shared Mailboxes, Rooms and Equipment	201
Next Step	201
Exchange Message Dredging Process Overview	201
Exchange Journaling Mailbox	206
Large Attachments and/or Messages Cannot Be Archived From Exchange	207
Moving Users to a New Exchange Domain	212
Exchange Concurrent Connection Limits	213
Blackberry	213
Blackberry Module	214
Blackberry Auditing and Archiving Service for BBM	218
Google Apps Module	226
Google Apps Authentication Setup	227
Google Apps Module Setup	237
Core Settings Tab—Google Apps	237
Settings Tab—Google Apps	238
OpenID Tab—Google Apps	239
Next Step	240
Bloomberg Module	240
Prerequisites—Bloomberg	240
Module Configuration—Bloomberg	240
Core Settings tab—Bloomberg	241
Bloomberg Servers Tab	241
Next Step	242
Mobile Module (Android)	243
Requirements—Mobile Module	243
Configuration—Mobile Module	244
Core Settings Tab—Mobile Module	244
Create Users—Mobile Module	245
Worker—Mobile Module	245
Mobile Router Page	247
Customizing the Mobile Registration Email Template	248
Next Step	249
CellTrust Module	249
Core Settings—CellTrust Generation 1	249
Adding SecureLine Servers	250
Archiving/Data Collection – Archiving Policy	251

About Retain Job Components	251
Configuring the CellTrust Secureline Server	252
CellTrust Generation REST Collector	253
Prerequisites	253
Configure Retain Server Connection	253
Create a REST Collector	253
Configure the CellTrust Module	253
GBS Notes Module	255
Prerequisites—GBS Notes.	255
Configure Retain Server Connection—GBS Notes.	255
Create REST Collector—GBS Notes.	255
Configure the GBS Notes Module.	255
Social Media Governance Module.	257
Configuring the SMG Module.	257
For Channels That Do Not Have a Native Address Book.	258
Wireless Carriers: AT&T Module	258
Prerequisites	259
AT&T Module Setup.	259
TeleMessage Module	261
Prerequisites—TeleMessage Module.	261
Configure Retain Server Connection—TeleMessage Module	261
Creating a REST Collector—TeleMessage Module	262
Configuring the TeleMessage Module	262
UM Labs Module	263
Prerequisites	263
Configure Retain Server Connection—UM Labs Module	263
Creating a REST Collector—UM Labs Module	264
Configure the UM Labs Module	264
GroupWise Messenger Module.	265
Prerequisites	265
Create REST Collector	265
Configure the Module	265
Ionlake Module	266
Configuring the Ionlake Module in Retain.	266
Configuring Ionlake MyRepChat.	267
7 Schedules	269
Schedule Overview	269
Single Schedules	269
Recurring Schedules	270
8 Profiles	271
Profiles Overview	271
GroupWise Profile.	271
Core Settings Tab	272
Message Settings Tab	274
Scope Tab	275
Miscellaneous Tab	278
Advanced Tab.	280
Exchange/O365 Profile	281
Skype for Business	281

Core Settings Tab	282
Message Settings Tab	283
Scope Tab	284
Miscellaneous Tab	286
Advanced Tab	287
Blackberry Profile	288
Core Settings Tab	288
Message Settings tab	289
Scope Tab	289
Advanced Tab	291
Google Apps Profile	291
Core Settings Tab	292
Message Settings Tab	292
Scope Tab	292
Miscellaneous Tab	294
Advanced Tab	294
Folder Scope	295
Bloomberg Profile	296
Core Settings Tab	297
Message Settings tab	297
Scope Tab	298
Advanced Tab	300
Mobile Profile	301
Social Media Governance Profile	302

9 Workers 305

Workers Overview	305
Worker Configuration	306
Uploading a Worker Bootstrap to the Worker Console	311
Removing a Worker Bootstrap and Re-uploading	314

10 Jobs 317

GroupWise Job	317
Core Settings Tab	317
Mailboxes Tab	318
GroupWise Job Option - GroupWise Disaster Recovery Tab	319
Notification Tab	320
Status Tab	320
Next Step	321
Exchange/O365 Job	321
Core Settings Tab	321
Mailboxes Tab	322
Exchange Job Option - Journaling	323
Notification Tab	324
Status Tab	325
Next Step	326
Blackberry Jobs	326
Core Settings Tab	326
Mailboxes Tab	327
Notification Tab	328
Status Tab	329
Next Step	329

Google Apps Jobs	329
Core Settings Tab	330
Mailboxes Tab	332
Notification Tab	332
Status Tab	333
Next Step	334
Bloomberg Jobs	334
Core Settings Tab	335
Mailboxes Tab	336
Notification Tab	337
Status Tab	338
Next Step	338
Mobile Jobs	338
Core Settings Tab	339
Notification Tab	339
Status Tab	340
Next Step	341
Social Media Governance Jobs	341
Core Settings Tab	341
Mailboxes Tab	342
Notification Tab	342
Status Tab	342
Next Step	342
Starting a Job Manually	343
Stopping a Job	344
Killing a Job	346

11 Configuration 347

Server Configuration	347
Communications tab	348
Database Connectivity	349
Notification	349
Retain Server Connection	349
Cloud Mobile Service (CMS) Proxy Connection	350
Index tab	350
Storage tab	353
Accounts tab	359
Maintenance Tab	362
Ignore Domains	364
Logging tab	364
Auditing Records	365
Miscellaneous tab	366
Export XML	366
Module Forwarding	366
REST API	369
Rules Configuration	371
Core Settings tab	372
Conditions tab	372
Actions tab	374
Retain Message Router Configuration	375
Router Overview	376
Communications tab	377
Storage tab	378

Logging tab	379
Storage Manager	379
Standard Engine	380
Legacy Engine	380
Centera Storage Device	380
NetApp SnapLock	381
Partitions	381
Stubbing Server	382
Stubbing Server Overview	383
Prerequisites	384
Stubbing Install	384
Stubbing Configuration	385
Retain	388
Configure Stubbing Server	391
Stubbing Server	391
Performing Retain Searches Within The GroupWise Client	393
Configure Stubbing To Remove Messages from GroupWise and Leave Only Stubs	396
Mailbox Mapping Options	399
Mailbox Mapping Enabled	400
Never	400
Once, Address Book Cache only	401
Always, all processes	401
XML File	401
Mailbox Mapping View From The User Mailbox	402
GroupWise Disaster Recovery Integration	403
A Brief Review on How GroupWise Disaster Recovery Works	404
How Retain Takes Advantage of the Features of GroupWise Disaster Recovery	405
Multiple Workers on One Server	406
Timing	406
Retain Settings	406
How to Setup GroupWise Disaster Recovery to work with Retain	408
IMPORTANT Notes for the Integration	414

12 Management 417

Users	417
Creating Users	417
Offline Password	418
Creating a new user	418
Core Settings	419
User Rights	420
Administrator-level Rights	421
User-level Rights	422
Address Book Selector	424
Miscellaneous Tab	426
GroupWise Proxy Support	428
Groups	428
Creating a New Group	429
TIPS	431
Groups – Miscellaneous	433
Account Linking	433
Link Accounts	434
Split Accounts	436
Reporting and Monitoring	438

Setup	439
Reporting and Monitoring Home Page	443
Reports	445
Report and Schedule Report	445
Reports	446
Audit User Activity	447
Export Audit Table	448
Job Run Averages	450
Job Run Summary	451
Job Summary	452
Archive Summary by User	454
Archive Summary by Module	456
Server Utilization	457
Job Run Mailbox Summary	458
Job Mailbox Summary	459
Device Management	460
Schedule Report	461
System Monitor	464
Mailbox Error Monitoring	465
Maintenance	467
Mailbox Error Monitoring	467
Audit and System Logs	469
Audit Log	469
System Log	470
Location of log files	470
Deleting Data	471
Deleting Mailboxes	471
Item Deletion	474
Data Deletion Profiles	475
Job—Data Deletion	477
Deleting Individual Messages	481
Deletion Report and Logging	481
Device Management Overview	481
Searching for Devices	482
Deleting Devices	482
Generating Reports	482
Mobile Device Management	482
Mobile Device Management Overview	482
Deleting Mobile Devices	520
Blackberry Device Management	520
Blackberry Device Management Overview	520
Blackberry Device Management	521
Deleting Blackberry Devices	521
Generating Reports	522
Litigation Hold	522
Add User	523
13 Searching Retain's Archives	525
Search Interfaces	525
Retain Web Interface	525
View Message Interface	526
The Browse Tab	528
Exchange	530

GroupWise	530
Social Media Governance	530
Google Apps	530
Blackberry	531
CellTrust	531
Mobile	531
GBS Notes	531
Toolbar	532
How Retain Searching Works	542
Wildcard Search	543
Search In	544
Item Type	546
Item Source	546
Date Range	546
Mailboxes	547
Tag	549
Misc	549
The Advanced Search Tab	549
RegEx and Wildcards	554
The Legacy Search Tab	554
The Exported Items Tab	555
The Tag Definitions Tab	556
Options	556
The User Rights Tab	557
The Mailboxes Tab	557
Managing Confidential-Mark Exceptions	558
The Miscellaneous Tab	558
Retain Mobile Apps	560
Android App	560
Retain App: iOS: iPhone	564
Retain App: iOS: iPad	568

14 Tools 573

Tools Overview	573
Tool Compatibility with Retain 3.x (Lucene) Indexes	573
Retain Publisher and Viewer	574
System Requirements	574
Installation	575
Retain Publisher	580
Retain Server Information Page	582
Retain Indexer	594
Retain Viewer	595
Forward	600
Settings	601
Redaction	602
Strikeout/Unstrikeout and Blackout	604
Searching the Archive	604
PDF and PST Export	606
Enabling Debug Logging	609
M+ and Netmail to Retain Migrator	610
System Requirements	610
Directories and Logs	610
Installation	610

Prerequisites	615
Download Your License	615
Install the REST license	615
Create a REST Collector	616
Quick Start Guide	617
Interface	617
Configure Migrator	617
Migration Process	620
Users File Generation	620
Select Users to Migrate	621
Outlook Plugin Administrators Guide	624
Overview	624
System Requirements	624
Installation	625
Features and Use	629
Retain Archive	630
Download Settings	631
Account Settings	632
Clear Local Archive	632
Launch Retain	632
Retain Download	633
Retain Search	633
Easy Search	633
Advanced Search	634
Quick Search	636
Retain Outlook Plugin Settings	636
Data File	637
Log File Location	638
Outlook Plugin Silent Install	638
Command Line Install	638
Group Policy Install	639
Retain Outlook Plugin Single Sign-On	641
Outlook Plugin	645
Outlook Account Setup	645
Retain Archive	647
Retain Download	647
Retain Search	648
Outlook Search	651
Other buttons under the Retain tab	653
Uninstall Retain Outlook client Plugin	656
Outlook Web App Plugin	656
System Requirements	656
Installation	656
Enable Plugin for the Organization	663
The Plugin in the Outlook Web App	664
Change Features, Repair or Remove the Plugin	665
Retain PST Importer	666
System Requirements	666
Installation	667
Use	673
Logs	675
GroupWise WebAccess Plugin	675
Overview	675
System Requirements	676

Installation	676
Post Install Tasks	681
Confirmation	681
Uninstalling the GroupWise WebAccess Plugin	682
GroupWise Client Plugin.	682
System Requirements	682
Installation	683
Appearance	690
GroupWise Archive Migration Tool	691
GroupWise Personal Archive Migration Tool.	691
System Requirements	691
Overview; Modes of Operation	691
How it Works	692
Prerequisites	692
Setting It All Up	692
Archiving Behavior.	693
User Interface.	694
Distribution Lists	696
User List	696
Errors	697
Logging	699
Connections	700
Running the Migration	702
Limit of 5 Concurrent Migrations	702
Other Notes	703
Mobile Tools	703
RetainService Android App	704
System Requirements	704
Installation	704
Use	704
Main Page.	706
Options menu	707
Retain App	711
Swagger UI.	712
Prerequisites	712
Using Swagger	712
Enabling Swagger.	717
Managing Retain Language Support	717

15 About Retain

719

About and Diagnostics Page.	719
Diagnostic Buttons.	721
Core info, JAR List, Jobs, Schedules, Profiles, Workers	721
Quartz.	721
Retention Date Utility	721
Indexer Status	721
Exchange Test.	722
Mailbox Merger / Splitter	722
Indexer Test	724
System Properties	724
Retain Component Licensing	724
Apache 2.0 License	724
LGPL – GNU Lesser General Public License.	727

BSD License – Individual Component Licenses	730
ANTLR 3 License	730
ASM	730
DOM4J	731
JDOM	731
XStream	732
PAL Artistic License	733
Bouncy Castle APIs	735
PDF Box	735
WSDL4J	736
BSD License	740
Open Software License v. 3.0	741
Mozilla Public License Version 1.1	743
GNU GENERAL PUBLIC LICENSE	750
Bitstream Vera Fonts Copyright	756
Arev Fonts Copyright	756
Java Util Concurrent Public Domain	757
SLF4J MIT License, below	759

Preface

About Retain

Retain Unified Archiving

- ◆ Archives email, text messages, and social media posts.
- ◆ Catalogs them for search and retrieval.

Retain is not a backup/restore system.

About This Guide

This is the administrative documentation for Retain Unified Archiving version 4.8.1.

For Documentation Feedback

Scroll to the bottom of the online page and enter a User Comment.

To Join the Retain Idea Exchange

Got an idea for a new Retain feature or enhancement? [Log in to Microfocus.com](#) and join the conversations happening inside the [Retain Idea Exchange](#).

For Additional Documentation

See the [Micro Focus Knowledge Base](#) website.

To Contact Technical Support

Browse to [the Micro Focus Support Page \(https://www.microfocus.com/support-and-services/\)](https://www.microfocus.com/support-and-services/) and begin typing *Retain Unified Archiving* in the **Search for a Product** field.

For Sales

Go to the [Micro Focus Contact page \(https://www.microfocus.com/en-us/contact\)](https://www.microfocus.com/en-us/contact).

For Professional Services

Contact Micro Focus Professional Services by sending an email to sales@microfocus.com or calling (877) 772-4450.

1 Retain Unified Archiving

- ◆ “Are You Creating a New Retain System?” on page 19
- ◆ “Are You New to an Existing Retain System?” on page 19
- ◆ “Key Concepts” on page 20
- ◆ “About Retain Users and the System Address Book” on page 23
- ◆ “Retain Functional Overview” on page 23
- ◆ “How Archive Jobs Work” on page 25
- ◆ “Retain’s Archive Data Organization” on page 27
- ◆ “How Retention Services and Item Store Flags Work” on page 27
- ◆ “Retain’s Target Systems and Data Streams” on page 29
- ◆ “About Retain Version Numbering” on page 30

Are You Creating a New Retain System?

If you are creating a new Retain system, you should:

- ◆ Read this section.
- ◆ Get a copy of your company’s retention policy, so that you can design your Retain system to fulfill that policy.
- ◆ Review the Best Practices section “Retain Planning and Design Best Practices” on page 31.
- ◆ Read about the modules required for your messaging systems “Modules Overview” on page 157, and note their requirements.
- ◆ Complete the install checklist “Retain Deployment Checklist” on page 67.
- ◆ Create a plan for backing up Retain “Backing Up Retain” on page 103.
- ◆ Confirm that you are an authorized user for your company on the [Micro Focus Customer Portal website \(https://www.microfocus.com/support-and-services\)](https://www.microfocus.com/support-and-services). This lets you create service requests, get license keys, and perform other support functions.

Are You New to an Existing Retain System?

If you are a new Retain administrator, you should:

- ◆ Read this Overview section.
- ◆ Review the Best Practices section. See “Retain Planning and Design Best Practices” on page 31.
- ◆ Know how to log in to Retain. See “Logging In to Retain” on page 94.
- ◆ Read [Chapter 13, “Searching Retain’s Archives,”](#) on page 525, so that you can find data.
- ◆ Read about the modules that are installed on your system in “Modules Overview” on page 157.

- ◆ Check your license status. See “[Licensing](#)” on page 99.
- ◆ Make sure that your organization is backing up Retain. See “[Backing Up Retain](#)” on page 103.
- ◆ Read about ongoing maintenance requirements in “[General Maintenance](#)” on page 107 .
- ◆ Learn about jobs work as described in “[Jobs—An Overview](#)” on page 155.
- ◆ Get and study a copy of your company’s retention policy so you can confirm Retain is doing what it is supposed to.
- ◆ Review the Best Practices section “[Retain Planning and Design Best Practices](#)” on page 31 and make sure that your system is in order.
- ◆ Confirm that you are an authorized user for your company on the [Micro Focus Customer Portal website \(https://www.microfocus.com/support-and-services\)](https://www.microfocus.com/support-and-services). This lets you create service requests, get license keys, and perform other support functions.

Key Concepts

- ◆ “[What Retain Does](#)” on page 20
- ◆ “[How Retain works](#)” on page 21
- ◆ “[Retain Components and Their Roles](#)” on page 21
- ◆ “[How Retain Stores the Archives](#)” on page 22

What Retain Does

Retain

- ◆ Provides organizations with legal compliance and litigation protection.
- ◆ Frees up disk space on messaging systems.
- ◆ Enhances message-data management.
- ◆ Archives and stores messages and data from
 - ◆ Messaging systems
 - ◆ Phones
 - ◆ Social websites
 - ◆ Search Engines
- ◆ Lets administrators
 - ◆ Perform advanced searches on archived messages
 - ◆ Review archive status and activity
 - ◆ Retrieve archived messages and data
 - ◆ Generate reports on archived messages and data
- ◆ Optionally, users can access and search their archived personal data.

IMPORTANT: Retain is NOT a backup or emergency-restoration system.

You must ensure that your messaging systems are backed up by other software and systems designed for that purpose, as required by organizational and governmental regulations.

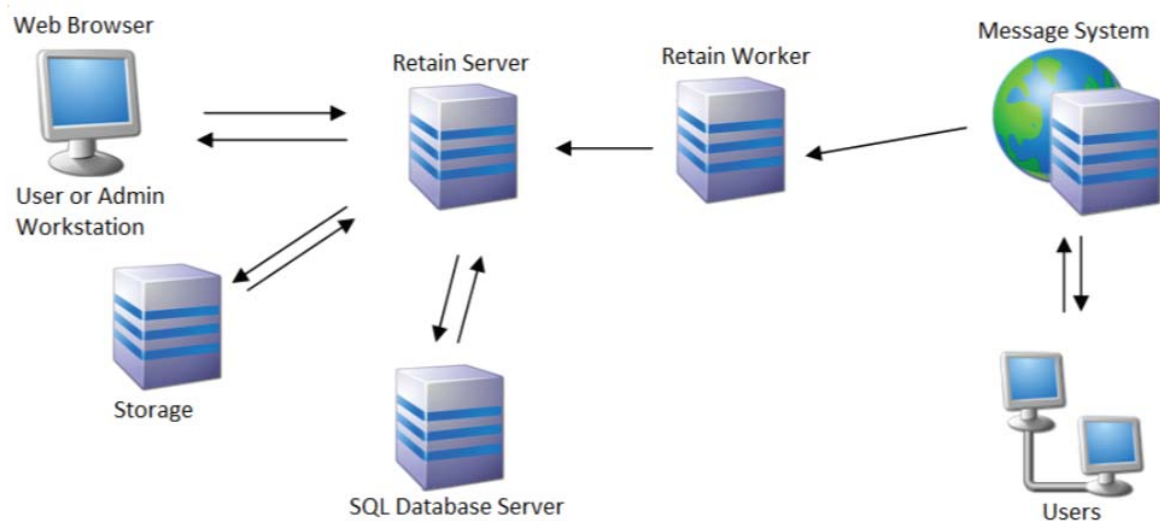
How Retain works

Briefly, Retain

1. Connects to targeted message systems.
2. Collects data by using each message system's defined APIs (for example, SOAP for GroupWise and Exchange).
3. Archives the collected data.
4. Indexes the archives in an SQL database.
5. Provides search-access to users with sufficient access rights, as managed by Retain administrators.

Retain Components and Their Roles

Retain consists of several main parts which can be installed on the same server or on different servers, depending on the size and complexity of your messaging infrastructure.



- ◆ **Retain Server:** One per system.
 - ◆ Controls all Retain functions.
 - ◆ Houses the archive.
 - ◆ Manages Retain Workers
 - ◆ Stores index-targeted data in the database.
- ◆ **Retain Workers:** One or more per system; often one per messaging server.
 - ◆ Can be installed with Retain, on the targeted mail server, or on a standalone server.
 - ◆ Collects data and transfers it to the Retain server.
- ◆ **SQL Database:** One database per system.
 - ◆ Can be installed with Retain, as a single-server, or clustered.
 - ◆ Stores message header data, user data, and links to archived messages.

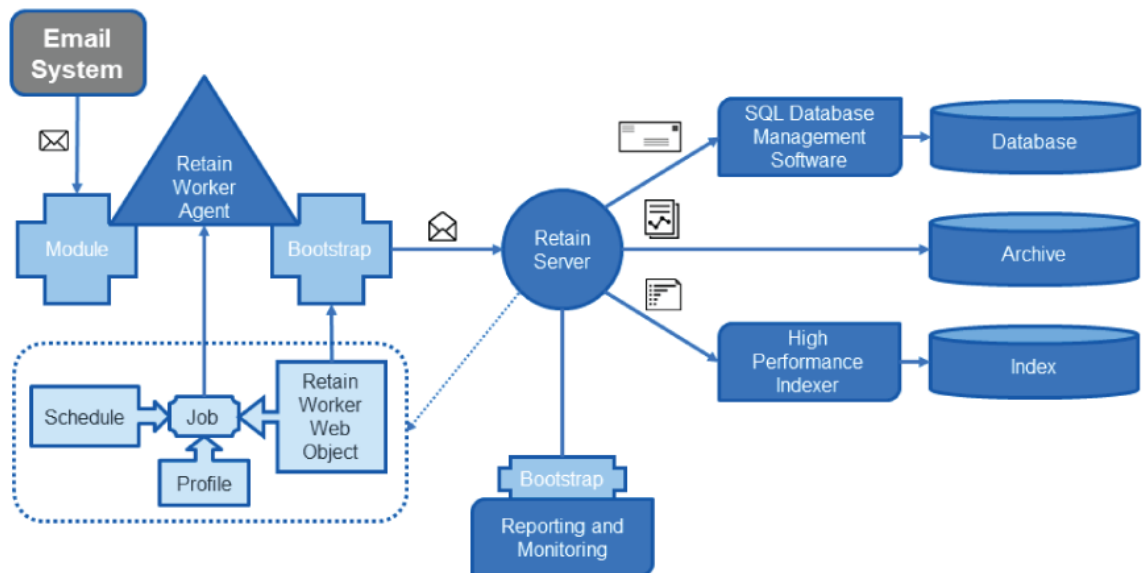
IMPORTANT: The Retain software doesn't include a database. You must install and maintain one of the supported SQL databases.

- ◆ **Reporting and Monitoring Server:** One per system.
 - ◆ Can be installed with Retain or on a standalone server.
 - ◆ Keeps job and server statistics.
 - ◆ Monitors mailbox errors.
- ◆ **Indexing Engine:** Installed on the Retain server (standard indexer), or separately in a High-Availability Indexer cluster.
 - ◆ Indexes all the data.
- ◆ **Stubbing Server:** Installed on the Retain server.

Only for GroupWise 8.0.1 and later

 1. Removes large messages from GroupWise storage.
 2. Archives the messages.
 3. Creates a database `stub` (link to the message in the archive).

Message-access experience is unchanged for GroupWise users.
- ◆ **Retain Router:** Installed in the network DMZ.
 - ◆ Gathers phone message data using REST, from registered Android or Blackberry devices.
 - ◆ Stores the data until it can forward it to the Retain Server for archiving as with other systems.



How Retain Stores the Archives

Retain uses a hybrid data-storage approach.

- ◆ **SQL Database:** Stores meta data, folder structures, attachment information, and links to messages in the archive file.

- ◆ **Archive File System:** Stores message text and attachments in a single-instance storage scheme that is designed to protect against tampering.

About Retain Users and the System Address Book

As Retain gathers mail from users of the targeted message system, it stores the users in the System Address Book, which is cached locally on the Retain server.

As new users have messages archived, they are added to the address book.

User Removal Not Allowed

The address book contains all users (current and past) who have archived data.

As long as users have archived messages, they cannot be removed from the address book.

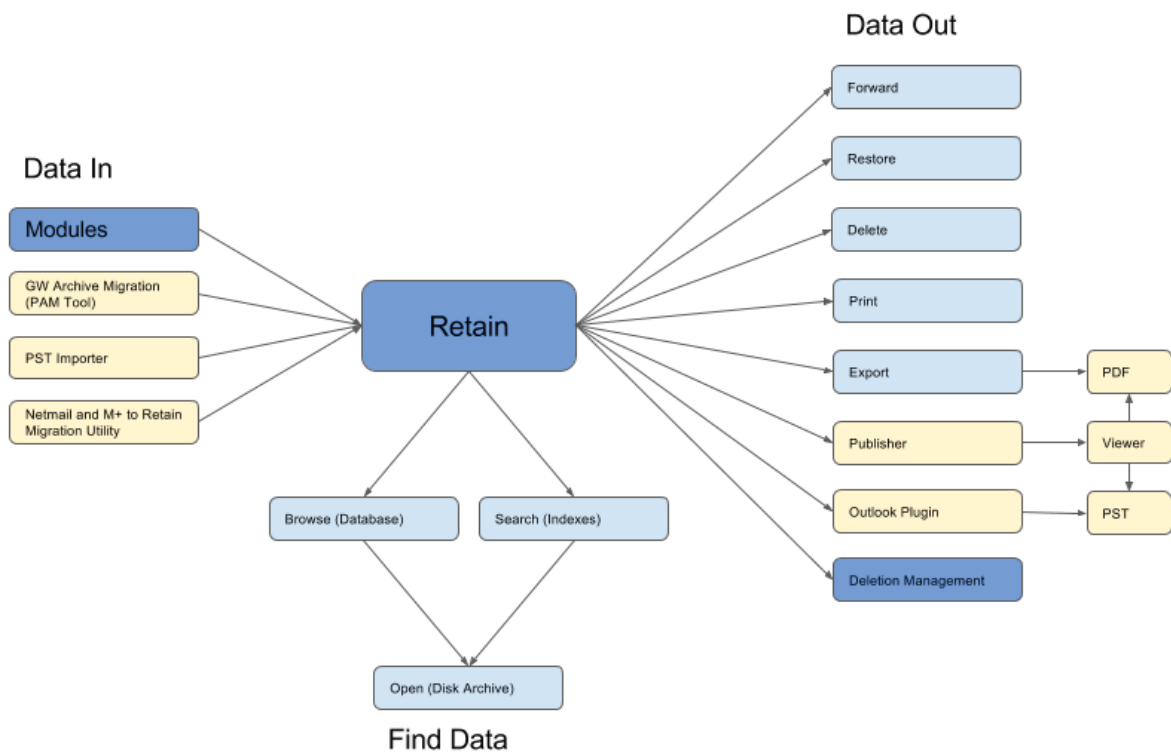
Retain Handles Users with the Same Name

Retain distinguishes between multiple users with the same name. For example, “John Smith” added today, is a different user from “John Smith” who began working at the company six months ago, and from “John Smith” who left the company last year.

Retain Functional Overview

Retain provides three functions:

- ◆ Importing and archiving data
- ◆ Finding specific data in the archives
- ◆ Exporting data from the archives



Importing and Archiving Data

- ◆ [“Live Data” on page 24](#)
- ◆ [“Offline Data” on page 24](#)

Live Data

Modules dredge data from live messaging systems.

Offline Data

Workstation tools migrate off-line data into Retain. In the top-right corner of the Retain web console, click the Tools drop-down.

Offline data migration tools include

- ◆ The GroupWise Archive Migration Tool
- ◆ The PST Importer
- ◆ The Netmail and M+ to Retain Migration Utility.

Metadata Vs. Message Data

Metadata is used for listing the content of mailboxes and delivering search results.

When you search in Retain, you are leveraging the indexes and metadata that Retain uses to find things quickly.

When you open a specific message, you are viewing the message data from the archive.

Exporting Data from Retain

Using the Web Interface

Using the web interface, click the checkbox for each message you want to export, then in the list of actions, click the action you want to take.

By default, users can view and save attachments, as well as forward and print messages.

Using the Outlook Plugin to Export Messages

The Outlook plugin lets users search and download messages from Outlook.

Dealing with Large Quantities of Data

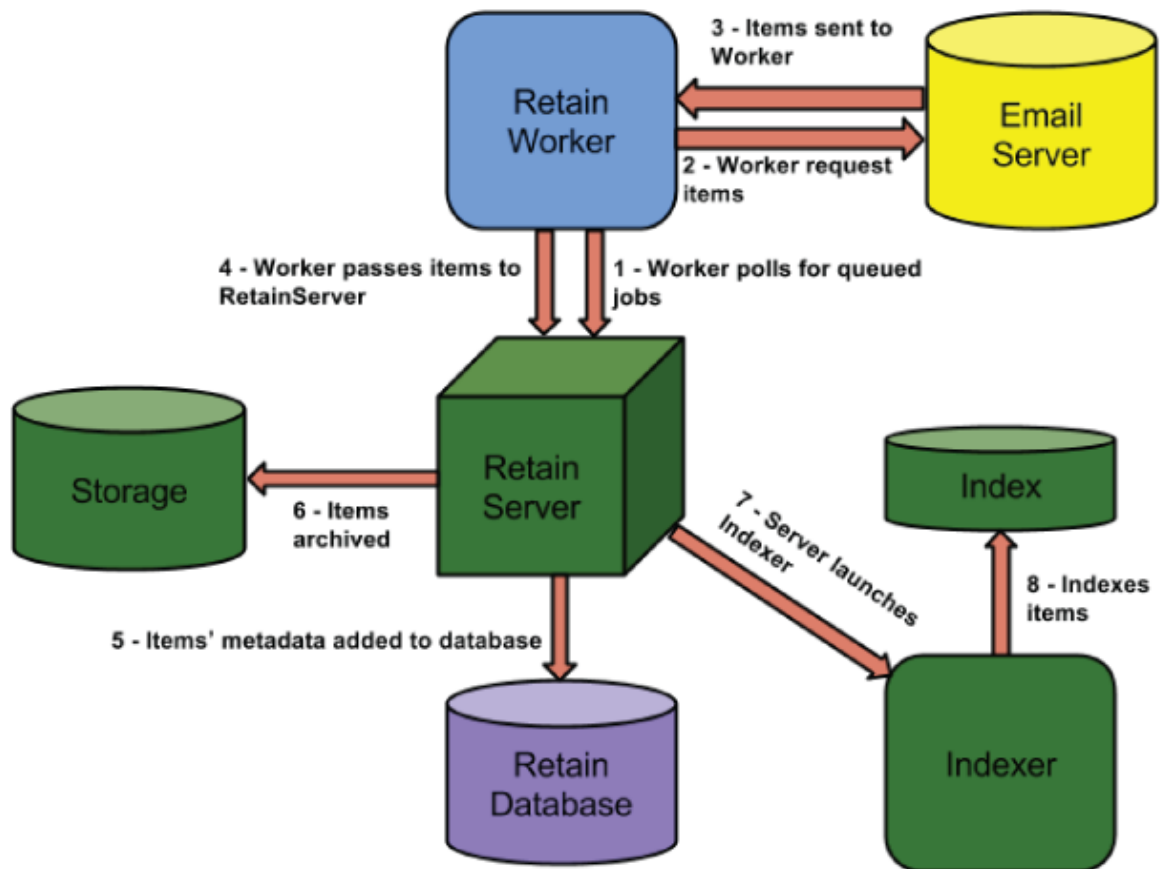
For large quantities of data, use the [“Retain Publisher and Viewer” on page 574](#), a workstation tool found under the Tools menu.

Removing Data from Retain

When older messages have reached the end of the data retention policy, use Data Removal as described in [“Deleting Data” on page 471](#) to permanently remove messages from the archive.

How Archive Jobs Work

When an archive dredge job is running, the work flow follows this pattern.



1. The Worker polls the Server every 10 minutes (default) for new queued jobs it may need to run. It launches the job.
2. The Worker connects to the mail system and logs in to each mailbox. For every mailbox, it requests the items in that mailbox based on the settings in the profile.
3. The mail server responds by sending the items to the Worker.
4. The Worker sends smaller items to the Server. For large items, it sends the item's metadata and awaits instructions from the Server as to whether the item already exists.
 - ◆ If it already exists, the Retain Server notifies the Worker that it does not need to send the item over.
 - ◆ If it does not exist, the Retain Server notifies the Worker to send the item.
5. The Retain Server updates the Retain database with a record of the item's metadata if a record does not already exist.
6. The Server adds the item to the storage area on disk.
7. The Server launches the indexing process (if it is not already running) to begin the indexing process.
8. The Indexer indexes any items that need to be indexed.

An Archive Job Example

1. User A sends message 1 to User B.

2. When a Worker processes User A's mailbox, Retain archives Message 1 in the Retain archive and creates a record in the database that points to the archived message and associates it with User A's mailbox.
3. When a Worker processes User B's mailbox, Retain notes that message 1 is already archived and that a database record already exists.
4. Therefore, Retain only needs to update the database record so that the message is also associated with User B's mailbox.

Retain's Archive Data Organization

Retain organizes data streams in the archive by

- ◆ The user who created or used them
- ◆ The time they were created.
- ◆ The data source.

Retain then indexes items for searching, exporting, and publishing from the archive.

How Retention Services and Item Store Flags Work

Retain keeps an "item store flag" to ensure that no item gets left behind.

With Exchange and O365 Holds and the Recoverable Items folder can be used for retention compliance. With On-Premise Exchange a journaling mailbox can be used but it is not recommended.

Gmail, by default, does not have a retention service.

GroupWise, on the other hand, has its own built-in feature called "Retention Services" that prevents items from being emptied from the mailbox until they have been successfully archived.

The following sections explain Retain's support of the GroupWise Retention Services, followed by a discussion of how Retain ensures that all items get archived in all other email systems.

How Retain Works with GroupWise Retention Services

GroupWise has a feature that can be enabled in its GroupWise Administration option called Retention Services.

When enabled, GroupWise prevents a user from emptying an item from Trash that has not yet been confirmed to have been archived. The way it does this is through a date/time field in each user database called the "digest retention time". It relies on third party archiving solutions like Retain to set that date/time, but GroupWise is the one that enforces it when set. What this does is it prevents any item newer than the date/time set in the "digest retention time" field from being emptied from Trash. This "digest retention time" is known in Retain as the "retention flag".

When Retain runs an archive job on a mailbox, it sets the digest retention time to the date/time of the newest/latest message it archived. However, if an error occurs on any item during that job which prevents Retain from archiving it or its attachment, Retain sets the digest retention time in the GroupWise user database for that mailbox to the date/time of the item that could not be archived due to an error.

And, even though Retain encounters an error on an item and cannot archive it, it moves beyond that item and continues to archive all other mailbox items; however, again, it doesn't advance the retention flag past the date/time of the FIRST error it encountered. Thus, when the next archive job gets run on that mailbox, Retain checks the item store time set in its database of the user and uses that date/time as its starting time for the new job, minus one hour.

Example: If today is September 17, 2014 but an item in the previous job produced an error, could not be archived because of that error, and had a delivered date/time of September 15, 2014 09:15, then when today's job runs, it asks GroupWise for all items beginning with September 15, 2014 08:15 and on.

Now let's say that a month has passed and the problematic mail message has not been properly dealt with and we run a job. Even though Retain may have archived all items in the user's mailbox up to - let's say October 15th - it still starts the query with the item store time of September 15, 2014 08:15 because it could not advance the retention flag. If it were to do so, then the problem message would never get archived because Retain starts the query for items beginning with the digest retention time. Thus, if Retain were to advance the flag to the date/time of the newest/latest item it archived, then the problematic message would fail to fit within the query range and GroupWise would never send it to Retain.

How Retain Works with Exchange and Office 365

These email systems do not have a built-in retention service similar to GroupWise, there is no "digest retention time" field in any of their mail system databases that Retain can use; thus, Retain uses its own field in the "retain" database to keep track of its job starting point. This "item store flag" works just like the "retention flag" with GroupWise jobs. That date/time gets set to the date/time of the newest/latest item archived for a given mailbox; or, if an error(s) occurred during a job, the item store flag gets set to the date/time of the first item that had an error. That way, when the next archive job runs, it starts with the date/time of the item store flag, ensuring that Retain tracks the item until it is properly archived. However, it is important to note that not advancing the item store flag does not prevent the user from emptying the item from their Trash in these email systems because they do not have a retention feature similar to GroupWise.

Placing a Hold Prevents Loss of Unarchived Messages

To prevent items from being deleted from Exchange/O365 a hold must be placed on the mailboxes. This can be an In-Place or Litigation hold. When a user deletes a message from Outlook the message is moved to the Trash, the user can then empty the trash. Exchange/O365 then moves the message to a Recoverable Items folder for 14 days before removing it from disk. However, a user can right-click on the trash and attempt to recover a deleted item, and at this point can purge an item immediately to remove it completely. This may be against your data retention policy, so to prevent the deletion, a hold then moves the item to the hidden Purged folder, where the user cannot remove it but Retain can still archive it.

Journaling Mailbox, an Alternative to the Item Store Flag but Not Recommended

Alternatively, a journaling mailbox may be used on On-Premise Exchange. When a journaling mailbox is set up in Exchange, it can be configured in a way that redirects a copy of each message that is either sent or received throughout the entire mail system into the journaling mailbox. Retain can be configured to include the journaling mailbox in its archive job. Thus, even if a user empties an item from Trash, a copy of that item already exists in the journaling mailbox and remains in that mailbox until it is archived by Retain. If configured properly, Retain removes that item from the journaling mailbox upon successfully archiving it. Items emptied from a user's Exchange mailbox but archived from the journaling mailbox do not appear in the user's Retain mailbox; however, they are searchable using the Retain search feature.

Because of the fact that duplicates of all email messages system wide get placed in the journaling mailbox, it can fill up fast. For this reason, we recommend that you not use the journaling mailbox feature and go with the Recoverable Items feature instead. If the journaling mailbox gets too big, Exchange is no longer able to serve the mailbox. Thus, when Retain tries to run an archive job against it, it fails because Exchange never responds back. This is why it is no longer recommended.

How Retain Works with Gmail

Gmail does not have retention services, by default. That requires the purchase of their Vault service.

Retain's Target Systems and Data Streams

The systems and data streams which Retain can archive are listed below:

- ◆ ["Smart Phone Targets" on page 29](#)
- ◆ ["Social Platform Targets" on page 29](#)
- ◆ ["Email System Targets" on page 30](#)
- ◆ ["Search Engine Targets" on page 30](#)

Smart Phone Targets

Retain can archive PIN, SMS, and phone call data, as configured.

- ◆ Blackberry (BES Server)
- ◆ BBM Enterprise (on all platforms)
- ◆ Android
- ◆ IOS and Android (via CellTrust Secureline)

Social Platform Targets

Retain leverages Micro Focus Social Media Governance to archive all postings and comments made to monitored pages and all chats, as configured for the following:

- ◆ Facebook

- ◆ Flickr
- ◆ LinkedIn
- ◆ Instagram
- ◆ Pinterest
- ◆ Twitter
- ◆ Vimeo
- ◆ YouTube
- ◆ Skype for Business with O365

Email System Targets

Retain archives all specified data, which can include: email, notes, appointments, meetings, reminders, and tasks, from the following email systems.

- ◆ Exchange
- ◆ Office 365
- ◆ GroupWise
- ◆ Gmail
- ◆ Bloomberg
- ◆ GBS Notes

Search Engine Targets

For Search Engines, Retain can archive the search criteria specified by search-engine users.

About Retain Version Numbering

Retain software versions are incremented as follows:

major-version.minor-version.service-pack.patch-release

Each number in the version string is 1 or 2 digits (0-99).

Examples include (in chronological order):

- ◆ **4.0** The initial release of Retain 4
- ◆ **4.8** The eighth minor- version release of Retain 4
- ◆ **4.8.0.1** The first patch release for Retain 4.8
- ◆ **4.8.1** The first service pack release for Retain 4.8

Patches and service packs are generally developed for the current version only.

2 Planning

- ◆ “Retain Planning and Design Best Practices” on page 31
- ◆ “Planning for Retain Hardware” on page 36
- ◆ “System Requirements” on page 45
- ◆ “Port Usage by Retain Components” on page 50
- ◆ “Planning Retain Storage Requirements” on page 54
- ◆ “Planning the SQL Database” on page 60
- ◆ “Tomcat Memory Requirements” on page 61
- ◆ “System File Locations” on page 66

Retain Planning and Design Best Practices

Use and apply the concepts and principles in the following sections as they apply to your needs.

- ◆ “Retain Architecture” on page 31
- ◆ “Retain is Modular and Flexible” on page 33
- ◆ “Worker Locations” on page 34

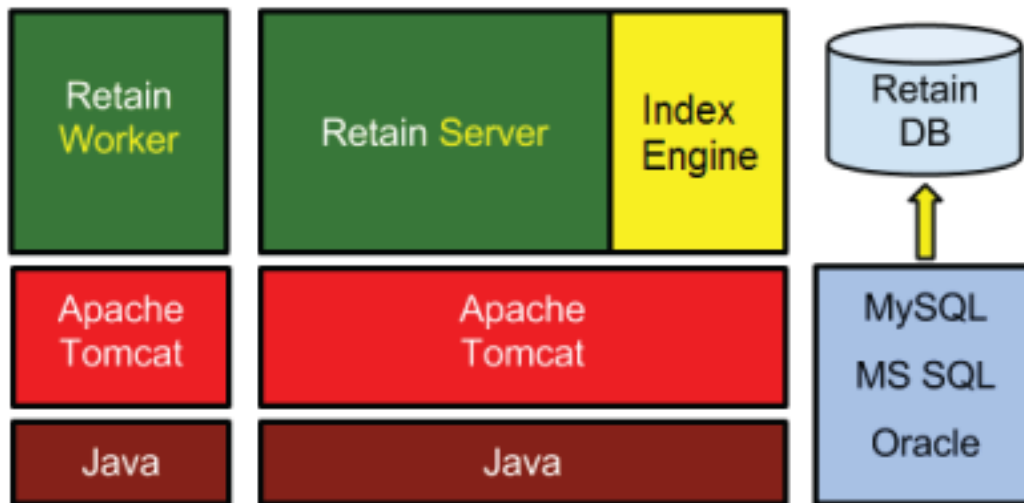
Retain Architecture

Retain can run on

- ◆ Stand-alone server hardware
- Or
- ◆ A Virtual Machine hosted on a Windows or SuSE Linux supported hypervisor.
This is the best-practice recommendation for backup purposes and flexibility.

Retain must have these four components:

- ◆ Server
- ◆ Worker
- ◆ Indexer
- ◆ Database



Server

This is where the archive system is configured and maintained. It coordinates and directs the storing, indexing, searching, and reading of archived items.

Worker

Workers interface with the messaging host/mail servers that contain the messages you are archiving. Workers retrieve the messages and hand them to the Retain Server.

IMPORTANT: A worker can handle only one job at a time. You can queue up more than one job for a worker, but make sure the worker can complete all of its jobs in less than 24 hours.

Indexer

This indexes each word (and some phrases) in all archived messages and attachments.

When someone searches in Retain, the indexer returns the list of hits by retrieving metadata from the database. (Some have incorrectly assumed that the database returns the list of hits.)

Retain's most memory-intensive process is indexing, not running the database.

Keep this in mind when dividing memory between Tomcat/the indexer and the database.

Database

This stores most of the Retain configuration and all the message metadata (subject, sender, recipients, links to attachments, indexed state of messages, folder-context of the message, and so on).

Everything displayed in a Retain mailbox is metadata that is retrieved through the index from the database, not from the message archive.

Retain is Modular and Flexible

Because Retain is modular, component software can be installed on different servers, as the needs of your system dictate.

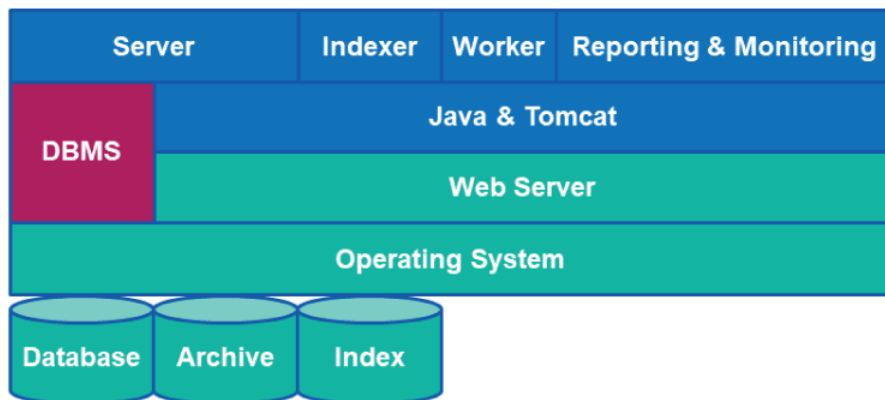
- ◆ “All-in-One Systems” on page 33
- ◆ “Medium to Large Systems” on page 33
- ◆ “Very Large Systems” on page 34

All-in-One Systems

This is recommended for:

- ◆ Proof-of-concept systems.
- ◆ Small systems that aren’t expected to grow beyond a few hundred users.

Retain Single Server



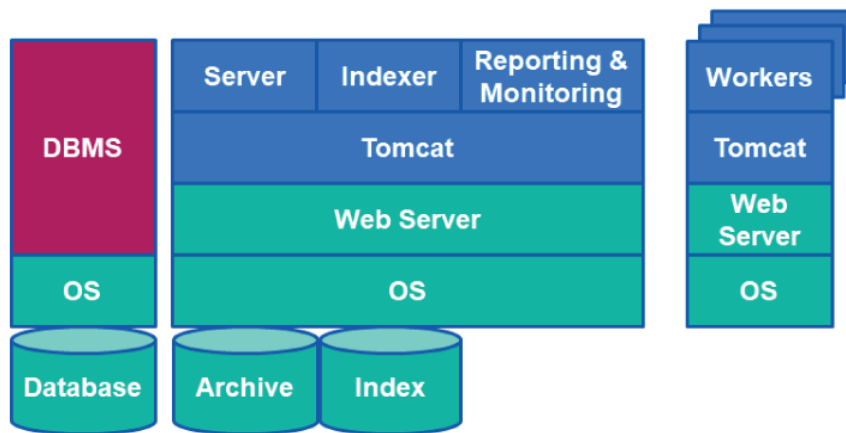
Medium to Large Systems

This is recommended if

- ◆ Your organization already has a dedicated database server.
- ◆ Your users are assigned to several different post offices and/or messaging systems.

For medium to large systems, Micro Focus recommends assigning one worker agent per post office/messaging system (as applicable).

Separate Database and Workers, Integrated Indexer

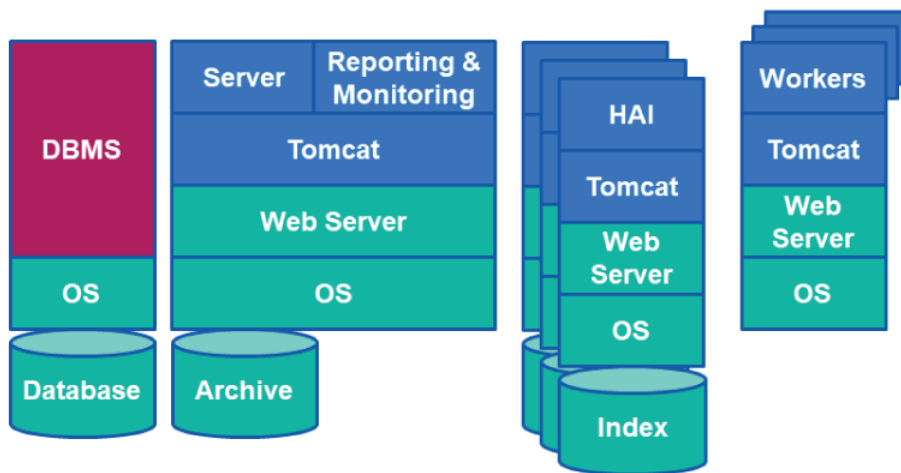


Very Large Systems

This is recommended if you have a very large system that requires high availability for searching the Retain archive.

The high-availability indexer requires a separate license and at least a 3-server cluster.

Separate Database, Indexer, and Workers



Worker Locations

Dredging large email systems can take a long time, especially when it involves multiple mail servers.

Because Worker Agents do the heavy lifting when it comes to dredging, their placement is critical to overall system efficiency.

You can install Worker Agents in three locations as your deployment needs dictate.

By order of recommendation, these locations are:

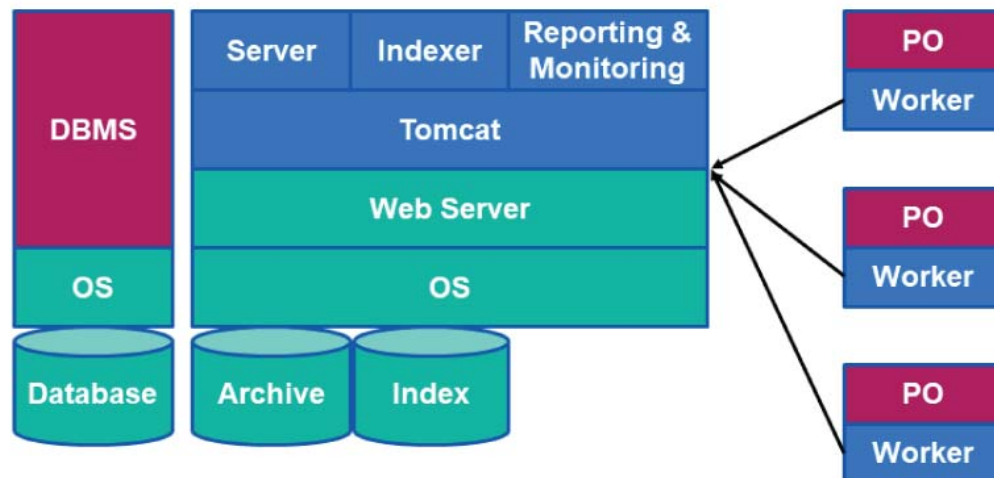
- ♦ “Post Office Servers” on page 35
- ♦ “A Separate Worker Server” on page 35
- ♦ “With the Retain Server” on page 36

Post Office Servers

Micro Focus recommends installing one worker on each mail server wherever possible because

- ♦ Item retrieval happens quickly and efficiently within the server itself.
- ♦ Processing happens locally.
- ♦ Only new messages are transmitted over the network to the datastore, conserving considerable bandwidth. See “How Archive Jobs Work” on page 25

Worker Placement - Post Office

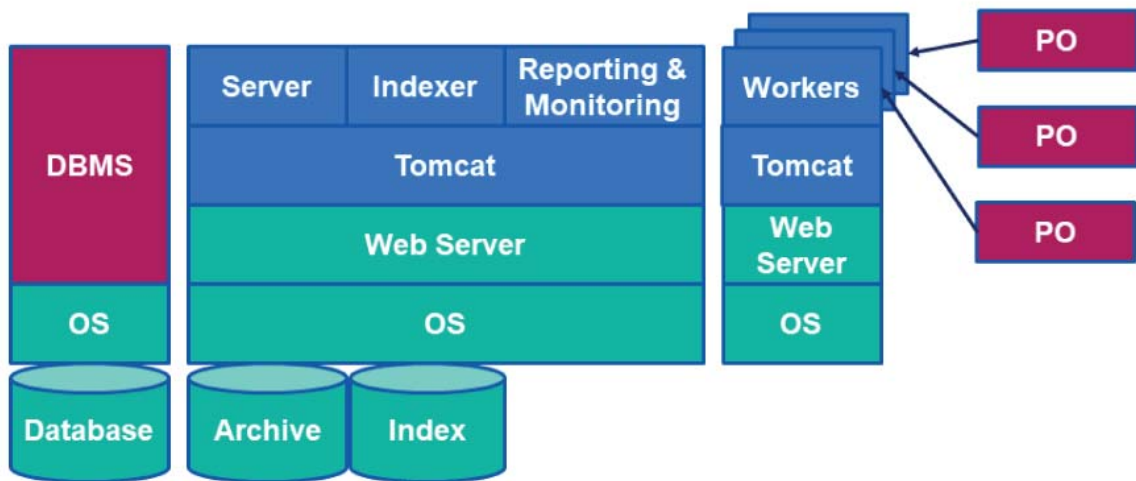


A Separate Worker Server

If installing on post office servers is not an option for whatever reason, you can install up to 10 Worker Agents on a dedicated Worker Server.

Keep in mind that the network must have sufficient bandwidth to handle the load of all items that require processing, traveling from the post office servers to their respective workers. See “How Archive Jobs Work” on page 25

Worker Placement - Worker Server



With the Retain Server

For troubleshooting purposes, Micro Focus recommends always installing one worker on the Retain server.

However, having this Worker Agent function as the system worker is only recommended for small, proof-of-concept, all-in-one deployments. This configuration would rarely, if ever, be an effective solution for actual production workloads.

Planning for Retain Hardware

There are four major considerations you need to take into account when designing the hardware for a Retain system:

- ◆ [“Network Bandwidth” on page 36](#)
- ◆ [“CPU Requirements” on page 37](#)
- ◆ [“Planning for Disk Storage” on page 37](#)
- ◆ [“RAM” on page 43](#)
- ◆ [“VM Configuration” on page 45](#)

Network Bandwidth

The Worker queries your messaging system for messages and receives all of them. However, not all items are subsequently sent to the Retain Server.

If the link between the Worker and the messaging system is slow, consider placing the Worker on the messaging system's server or on a server that has a fast link to the messaging system.

The downside to this strategy is software updates.

When upgrading Retain software, you must update each Worker. Workers running on the Retain Server or on a separate server are upgraded together.

CPU Requirements

Retain is multi-threaded and able to make use of multiple CPU cores. The base server uses 4 threads, and the Indexer starts with 3 threads. If more than 7 CPU cores are available, additional Indexer threads are spawned. The basic formula is $[\text{cores} - 4 \text{ (minimum 3)}]$.

Cores	Retain Server Threads	Indexer Threads
2	1	3
3	2	3
4	3	3
5	4	3
6	4	3
7	4	3
8	4	4
9	4	5
10	4	6

Micro Focus Testing has determined that 8 CPU cores is optimal for performance gains, allowing Retain 4 threads and the Indexer 4 threads.

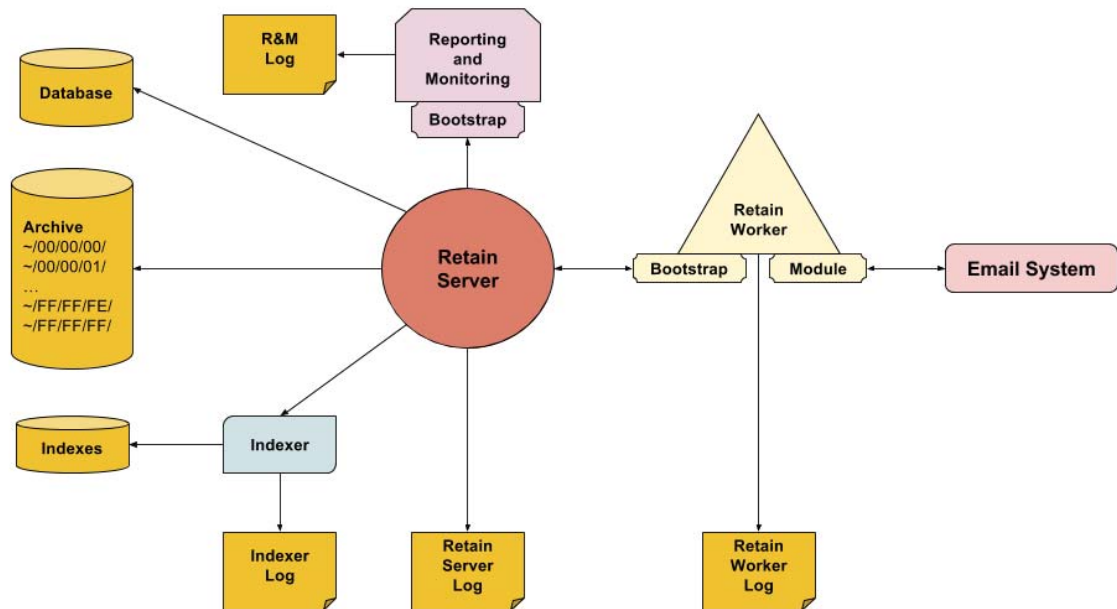
Planning for Disk Storage

If not monitored, Retain can completely fill its allocated archive storage.

Although Retain warns of disk-full conditions, you are responsible to keep the storage from filling up completely.

Once storage is full, recovery is difficult because server performance is heavily impacted.

It is critical that you design your system so that you can easily add storage as the system grows.



- ◆ “Planning Your Archive Size - Archive Files (BLOBs)” on page 38
- ◆ “Database Size” on page 39
- ◆ “Choose XFS as the File System on Linux” on page 39
- ◆ “Disk Options” on page 39
- ◆ “Data Partitioning” on page 41
- ◆ “Disk Performance” on page 41
- ◆ “RAID Considerations” on page 42
- ◆ “SAN / NAS Considerations” on page 42
- ◆ “Measuring Disk Performance” on page 42

Retain’s success depends on a robust storage design.

Install the OS on its own partition so that it’s easier to recover from a disk-full condition.

Make sure you have a comprehensive backup strategy for Retain “[Backing Up Retain](#)” on page 103.

Planning Your Archive Size - Archive Files (BLOBs)

As you begin planning your Retain archive, we recommend that you start with the current size of your post offices and other systems, then multiply that by your system’s yearly growth rate and add that amount to cover at least one year, it not two.

It isn’t possible to predict how much archive space requirements will increase over time, but at least this sets a good starting point for your initial archive and growth in the near term.

If you have a virtualized environment, you can allocate more space than you think you will be used and thin provision the disks.

Retain archiving is designed so that only one copy of a message or attachment is archived no matter how many users receive it, or which post office they belong to.

Retain lets you expire and delete messages from the archive after a specified time period.

Database Size

For cloud deployments, we typically set the db partition to 500 GB and go from there.

If a partition runs low on disk space at any point, support can direct you on the proper steps to move the data to another partition if necessary.

The numbers provided in the following table are representations of three different systems. Two customers with the same number of messages in their system may have vastly different database sizes due to the difference in the message metadata.

For example, Customer A may have short distribution lists while Customer B has a lot of emails with hundreds if not thousands of recipients associated with the messages. The purpose of providing sample data is to illustrate differences.

Example Systems	Deployment A	Deployment B	Deployment C
Message Count	104,976,966	18,261,383	2,699,654
Archive Size	5.3 TB	1 TB	115 GB
File Size per Message in the archive	4.54 KB	4.71 KB	6.21 KB
Database Size	455 GB	82 GB	16 GB
File Size per Message in the database	56.27 KB	64.02 KB	45.06 KB

Choose XFS as the File System on Linux

Micro Focus recommends choosing XFS for Linux servers because it creates iNodes dynamically and performs well.

Micro Focus does not recommend ReiserFS (poor performance with Retain), or Ext3 (iNode inflexibility).

Disk Options

- ◆ [“Physical \(“bare metal”\) Server” on page 40](#)
- ◆ [“VM Guest on Host With Local Disks” on page 40](#)
- ◆ [“NAS or SAN” on page 40](#)
- ◆ [“Recommendations” on page 40](#)

Retain archive jobs are disk-I/O intensive and includes:

- ◆ Storing message content in the archive
- ◆ Indexing each message

- ◆ Updating the database with each message's metadata
- ◆ Updating various logs continually

In light of this, here are a few recommendations.

Physical ("bare metal") Server

Physical servers have their own locally attached disks. If there is just one disk, then disk I/O contention negatively impacts performance, especially while jobs are running.

VM Guest on Host With Local Disks

If your VM host has only local disks (NAS or SAN), make sure that you create multiple disks and that each one is on a different datastore if possible.

NAS or SAN

This could be physical server where the storage is mounted/mapped to a NAS or SAN; or, this could be a VM guest where:

- ◆ The VM guest itself is stored on a NAS/SAN; thus, the VM guest's "local disks" are also sitting on a NAS/SAN; or,
- ◆ The VM guest itself is stored on the hosts local disks but the "local disks" of the VM guest are on datastores residing on a NAS/SAN; or,
- ◆ The VM guest is mounting volumes stored on a NAS/SAN.

If the Retain storage is on a NAS/SAN and if the volumes are expandable on the fly, there are so many configurations that recommendations aren't possible, except to understand what Retain is trying to do and then see what can be done on the hardware end to facilitate best performance.

If it is a NAS/SAN, consider the pipe speed to the storage: 1 gigabit/sec is very slow. On top of that, consider how many disks are in the array, their RAID configuration, and the speed of the disks themselves.

Recommendations

If all the Retain storage is located on the same volume and you run out of space, Retain provides the ability to create additional storage volumes for the archive files. After an additional logical storage volume is created within Retain, all archive files go to the new location.

However, the indexes continue to grow and Retain doesn't have the ability to partition indexes. Some customers have run out of disk space, created new logical storage partitions that point to another volume, but then run into problems with their archive jobs because they are still out of disk space for the indexes. Thus, for logical reasons, you want to have your archive files on a separate volume to begin with, unless the volume containing the archive is expandable on demand.

If it makes sense to do so (based on all the concepts previously discussed), you'll want to separate your archive files from your indexes and from your database, which means two to three other partitions on your Retain Server in addition to your OS partition. If your database is on a separate server from Retain, then only two other partitions are needed; otherwise, you'll want three additional partitions.

Data Partitioning

We recommend dividing up your storage directories onto separate disks, so beyond the OS disk there should be:

- ◆ Disk 1: Archive
- ◆ Disk 2: Index (250G start). For best search performance, consider making this a solid state drive.
- ◆ Disk 3: Logs, xml, ebdb, export, backup, and license (150 - 200G)
- ◆ Disk 4: Database (if on-board)

Disk 2 should be expandable and you'll want to give it room for the indexes to grow; but, if you cannot do that, then when it runs out of space, you'll simply need to move your index files to another volume with more disk space in the future. For disk 2 - as mentioned previously - you may want to consider an SSD, as that would increase the search performance.

If disk 1 and disk 2 can literally be on different physical disks, then you get some performance gains from that because an archive job writes simultaneously to the archive directory, the index directory, and to the database. If each of those are on different physical disks, then this eliminates disk contention bottlenecks. Smaller systems may not need to be concerned with performance while larger systems that have archive jobs running for hours may want the performance gains.

Using disk 3 for logs is especially helpful for larger systems. If you have 6 Workers averaging 5 - 10 messages per second, expect a RetainServer log of around 60G unzipped. Plan for 150 - 200G for your logs directory. For the initial archive job, the rule of thumb is 10G per day per Worker. If you do not use a third disk, then the logs are written on the OS partition and that could spell trouble. Also, if users access their archives often and perform PDF exports, that can grow as well. The xml, ebdb, and license directories are pretty much static with minimal to no growth. The backup directory is a backup of the index directory and other important items. However, if the disk begins to run out of room, you can copy this data over to a larger disk at some future time and point retain to that new disk.

Finally, if your database is on the Retain Server, you'll want a third or fourth disk for it (depending on whether you decide to dedicate a disk for your Retain logs).

If performance is an issue, you should place all three partitions on different physical disks (or at least a NAS/SAN with many disks that it can swipe across). You should also put the indexes and the database on high speed drives. Your archive directory does not need the performance and can be on less expensive disk media.

Make sure to set the permissions of the new disks correctly in Linux, or the installation fails.

Disk Performance

Knowing that disk I/O is the top issue with archive job performance, it is best to plan out your disk storage accordingly.

Storage design and disk I/O has everything to do with Retain performance as archive jobs are I/O intensive. You have the following processes writing to disk simultaneously:

- ◆ The indexer to the [storage path]/index
- ◆ The database (if on the Retain server)
- ◆ The Retain Server to [storage path]/archive

- ◆ The Retain Server to the logs directory:
 - ◆ Linux: /var/logs/retain-tomcat8
 - ◆ Windows: [drive]:\Program Files\Beginfinite\Retain\Tomcat8\logs

With all of that disk activity, if a single drive is having to handle all of it, then you can see that the performance bottleneck would be disk I/O. However, many modern disk systems involve multiple disks using (i.e., RAID 5 or RAID 10) that write the data across multiple disks. The more disks involved, the more you spread the load and the faster the overall performance. You also have a difference in drives (SATA/SAS/SSD). In those cases, you now are looking at whether the disks are local to the server or in a SAN/NAS.

RAID Considerations

Let's say your server employs RAID 5, which provides better redundancy than, say, RAID 10. If there were 4 disks. As you know, RAID 5 uses an extra parity bit that consumes an entire disk, which leaves it with 3 drives on which to stripe across. If one of those drives becomes unavailable, that leaves you with 2. Striping across 2 or 3 drives doesn't lend for great speed, especially if the disks are lower-end SATA drives.

SAN / NAS Considerations

If on a SAN/NAS, now you are looking at the network link speed as well. You could have very fast drives, but if your link speed is 1 Gb/s, your bottleneck is going to be your link.

The 1 GB/s network link is slower than a SATA 2 or 3 connection (AKA SATA 3 Gb/s and SATA 6 Gb/s.) Your SATA 2 connection (which is now getting to be a pretty old standard) is 3x faster than a 1000 Mb/s network link (or 1 Gb/s network connection). A fast single HDD can saturate a 1 Gb/s connection but not quite a 3 Gb/s connection (SATA 2.0, or SATA 3 Gb/s) with a sequential read/write. 7,200 RPM platter drives usually top out around 160-170 MB/s (or 1.28-1.36 Gb/s).

Measuring Disk Performance

It really comes down to IOPS. Here is a very simple IOPS calculator: <http://www.thecloudcalculator.com/calculators/disk-raid-and-iops.html> (<http://www.thecloudcalculator.com/calculators/disk-raid-and-iops.html>) or you can find one of your own.

So, it really comes down to you understanding your underlying disk storage. This article just gives food for thought. If you are running Retain on a VM guest server like most customers do, then you need to also understand your VM host and VM infrastructure. Is the Retain storage viewed by the server OS running on the VM guest as "local" storage? If so, what type of disk system is holding your VM's datastore? If it is not local storage but the server is connecting to external storage, then you need to take a look at the external system's configuration.

Bottom line: Disk I/O performance is key to Retain's performance and there are several areas to investigate where the bottlenecks could be.

In addition to partition considerations, make sure that your storage is reliable. NFS mounts can be problematic, so you may want to shy away from those. NSS volumes are not supported, so do not use them.

RAM

The amount of memory depends on the number of active mailboxes you are archiving, the mail volume, your underlying hardware, and how your Retain system is used.

Let's discuss the concepts and general guidelines. In most instances, you should experiment with various memory configurations until you find what works best in your environment.

- ◆ [“Concepts” on page 43](#)
- ◆ [“General Guidelines” on page 44](#)
- ◆ [“Tomcat Memory Configuration” on page 44](#)
- ◆ [“Database Memory Configuration” on page 45](#)
- ◆ [“Virtual Memory” on page 45](#)

Concepts

Retain runs under Tomcat as shown at the beginning of this article and Tomcat runs on Java. The Retain Server uses the Java "heap" for its memory and the indexer uses the OS memory as well as virtual memory (see the Virtual Memory subsection below). For this reason, you should configure Tomcat/Java with the bare minimum to have it run in an acceptable fashion for you. If logins or Retain in general seems sluggish when in the mailbox or using the web admin tool, you may need more heap. The sweet spot for most systems with a single Worker installed on the local Retain server is 8 GB minimum (xms) and maximum (mxm). You want to leave as much RAM as possible for the Indexer, which uses non-heap RAM.

The amount of Java heap you set depends on the total RAM on your system and the number of Workers you install in addition to the default single Worker. As we grow in customer experience with Retain 4, we adjust this article's memory recommendations accordingly.

Right now, development has suggested 1 - 2GB per additional Worker beyond the 8 GB you normally would give to the Java heap for a system with a single Worker local to the Retain server; however, we've had a customer with 110 million messages with 7 Workers local to the Retain server get away with 8 - 10 GB of RAM, but that is really pushing it. They didn't run under that configuration for more than 24 hours, so we cannot tell whether it would have been successful in the long run.

The installer for Retain 4.0.1 and later tunes Tomcat/Java memory based on total RAM and which Retain components are installed. See the online manual's topic, "Tomcat Memory tuning" (note: that link goes to the 4.0.1 documentation, so if the link doesn't exist in the future, go to the online manual and find that topic). Again, as we learn more from customer experience, the installer's default RAM configuration is subject to change.

If you really want the fastest search performance, load it up with RAM, like 64GB or more. Systems with large numbers of messages (100 million or more) seem to be needing 64 GB of RAM or more. If you have a database system running on your Retain Server along with multiple local Workers, then those decrease the available RAM for the indexer, so you need to take that into account. The indexer wants to cache indexing data into RAM and memory access is much quicker than disk.

General Guidelines

All of this really depends on the priority you place on Retain performance. If a customer is only interested in getting data into Retain and it doesn't matter how long the archive jobs take (as long as they finish within a 24-hour timeframe) nor does the customer care how long it takes to search for messages (because they do not do it that often), then none of this matters.

The key test is how quickly tomcat shuts down and how much memory the OS is sending to swap. If tomcat is shutting down slowly, that's probably an indication that it has code in swap memory that it is having to call off of disk in order to close out. Reserving more memory for the OS should alleviate that problem; thus, reserve a minimum of 4G for the server OS right up front. On some systems, we have had to allocate more, on others, less. So, the key is to try different configurations on your system to see what makes the difference.

Once you have subtracted the OS memory from your total memory, give 2 - 4G of RAM to the database (if the database is on the same server; otherwise, the remainder can go to Tomcat). Note that Tomcat needs a minimum of 2G.

For small systems (1 - 250 mailboxes), 8G of RAM might deliver acceptable performance if that's all you can afford to allocate. Small Retain system can theoretically run on 4G, but performance is unacceptably low in most cases. You really should not go lower than 8G unless you are a very small business and have 0 - 50 mailboxes. You might even want to consider trying 12 to 16G and weigh the performance improvement against the cost. For some, it can make a big difference. For others, it might make no difference because the performance bottleneck is elsewhere.

For medium sized systems (250 - 750 mailboxes), 12 - 16G of RAM should be considered.

For larger systems, 16G should be considered a minimum. Many large systems range from 24 - 48G of RAM. The more mailboxes and mail volume, the more RAM you might consider giving your Retain server. But, again, we have to emphasize that every system is unique and RAM may not be the biggest performance factor for them.

Case in point: We have a customer with 700 users that found allocating 24G of RAM made a big difference. In another case, a customer that had 1,500 users needed only 12G. We have systems with thousands of mailboxes and those systems do benefit from increased memory allocation, but their needs vary.

Tomcat Memory Configuration

Tomcat memory is manually configured. The latest version of Retain sets it to 8G by default. It is an industry best practice to set the minimum and maximum memory values to the same value.

In Linux

You set the Tomcat memory parameters in a file called `j2ee` found at `/etc/opt/beginfinite/retain/tomcat8`. See [“Tomcat Memory Requirements” on page 61](#) for more detail. Tomcat must be restarted after configuring it.

In Windows

You can set Tomcat parameters by running `Programs | Tomcat 8.0 | Configure Tomcat`. Go to the "Java" tab to set them. Note, we also recommend setting the stack size to 256k (it defaults to 160k in Windows).

Database Memory Configuration

Since most organizations employing Oracle or MS SQL have someone designated as a database administrator (DBA), they typically understand memory configuration. What they need to know is that archiving speed and user mailbox browsing performance is affected by the amount of memory given to the Retain database.

Virtual Memory

If you have the available disk space, we recommend increasing the virtual memory to at least 50GB. In Linux, this is known as swap. In Windows, this is called the page file. Ideally, this swap or page file should be placed on a fast storage for performance reasons.

VM Configuration

VM (Virtual Machine) NIC Settings

We have found that using VMXNET3 for the network adapter in VMs helps performance.

Virtual Machine SnapShots

We have found that VM snapshots can reduce performance of the Retain Server. Keeping the number of snapshots to a minimum is highly recommended.

System Requirements

First decide where everything should be installed. Once the support and core components are installed, using Retain is the same no matter what platform it is installed on.

- ◆ [“VMware Support” on page 46](#)
- ◆ [“Retain Component Location Dictate Resource Needs” on page 46](#)
- ◆ [“The Number of Users Affects Resource Needs” on page 46](#)
- ◆ [“Minimum Retain System Requirements” on page 46](#)
- ◆ [“Single-Server Requirements” on page 47](#)
- ◆ [“Separate Database Server Requirements” on page 47](#)
- ◆ [“Separate Index servers, Database server, and Retain Server” on page 47](#)
- ◆ [“High Availability Indexer Requirements” on page 48](#)
- ◆ [“Software installed by Retain” on page 48](#)
- ◆ [“Supported Linux Versions” on page 48](#)
- ◆ [“Supported Windows Versions” on page 48](#)
- ◆ [“Supported Microsoft Exchange Versions” on page 48](#)
- ◆ [“Supported Micro Focus GroupWise Versions” on page 49](#)
- ◆ [“Android Versions \(RetainService app\)” on page 49](#)
- ◆ [“CellTrust Secureline Versions” on page 49](#)
- ◆ [“Blackberry Versions” on page 49](#)

- ◆ [“Supported Social platforms” on page 49](#)
- ◆ [“Supported Search Engines” on page 49](#)
- ◆ [“Supported SQL Database Platforms” on page 50](#)
- ◆ [“Supported Browsers” on page 50](#)

VMware Support

VMWare ESX and ESXi are supported. All components disk space, RAM, and other requirements apply as for physical hardware deployments.

Retain Component Location Dictate Resource Needs

Retain components can be deployed in various configurations, which can impact the requirements of the Retain server, indexing engine, database server, and so on.

The Number of Users Affects Resource Needs

Ultimately the number of active users in the system determine the resource needs of the system. See [“Retain Planning and Design Best Practices” on page 31](#) for details.

Minimum Retain System Requirements

- ◆ Dual-Core 3 GHz or better Processor

NOTE: 8 cores provides the best performance during initial archiving and re-indexing processes

- ◆ Apache 2.2.x or IIS, installed by system administrator
- ◆ Supported SQL Database, installed by system or database administrator
- ◆ Retain Server requires 8 GB RAM, unless a worker is installed then 12 GB RAM, installation aborts if less is detected, 16 GB is recommended
- ◆ Storage Space: As much storage space as messaging system requires. See [“Planning Retain Storage Requirements” on page 54](#)
- ◆ Swap Space: If using SLES/Linux the swap partition should be at least 10 GB.
- ◆ Standalone Worker server requires 4 GB RAM, plus 2 GB RAM for each additional worker
- ◆ Standalone Reporting and Monitoring server requires 8 GB RAM
- ◆ Standalone Router server requires 8 GB RAM

RAM Requirements

Memory needs vary, depending on the load and use of the Retain system. However, Java automatically tunes for the memory that is available on the server. Tuning depends on what is selected for installation.

The Retain Install Automatically Allocates RAM

The installation detects the amount of RAM and automatically assign memory values as shown

Less than 16 GB system memory:

- ◆ 8 GB: Server and Worker
- ◆ 6 GB: Server only

Less than 20 GB system memory:

- ◆ 12 GB: Server and Worker
- ◆ 10 GB: Server only

More than 20 GB system memory:

- ◆ 16 GB: Server and Worker
- ◆ 14 GB: Server only

In all cases where only the Worker is installed, the memory is tuned to 3 GB.

Single-Server Requirements

Assuming that the Retain Server, Retain Worker, Database, and Index engine are housed on the same machine and archiving less than 500 active mailboxes.

The Retain Message Router should be installed on a dedicated server in the DMZ.

- ◆ 16-24 GB RAM

Separate Database Server Requirements

Assuming that the Retain Server, Retain Worker, and Indexing engine are on one server, and the Database is on its own server.

500-5,000 active mailboxes:

- ◆ 12-16 GB RAM

5,000-30,000 active mailboxes:

- ◆ 16-32 GB RAM

Separate Index servers, Database server, and Retain Server

50,000 Active mailboxes

- ◆ 16+ GB RAM for Retain Server (depending on environment)
- ◆ RAM as required for Database on separate server
- ◆ Retain Workers installed remotely on each post office in the message system
- ◆ Disk Space is dependent on the amount of email being archived and length of retention time. It is recommended to estimate two years of storage and adding additional space as needed. Storage speed is the determining factor for performance.

- ◆ SAN and local storage preferred.
- ◆ NAS is not supported.

High Availability Indexer Requirements

The High Performance Indexer can be installed on multiple external servers as the High Availability Indexer. This requires at least three (3) dedicated indexing servers and a separate license. Contact Support for more information.

Software installed by Retain

Retain downloads and installs

- ◆ Java Development Kit (JDK) 11 64-bit
- ◆ Tomcat 8, the Java webserver that sits on top of Apache or IIS.

Installation on an existing Retain system running a standard Tomcat installation removes the current Tomcat connection and install the embedded Tomcat that comes with Retain.

Supported Linux Versions

- ◆ SUSE Linux Enterprise Server 15 (64-bit)
- ◆ SUSE Linux Enterprise Server 12 SP3 (64-bit)
- ◆ SUSE Linux Enterprise Server 12 SP2 (64-bit)
- ◆ SUSE Linux Enterprise Server 12 SP1 (64-bit)
- ◆ SUSE Linux Enterprise Server 12 (64-bit)
- ◆ Open Enterprise Server 2015 and 2018 (64-bit)

Supported Windows Versions

- ◆ MS Windows 2016
- ◆ MS Windows 2012 R2 64-bit
- ◆ MS Windows 2012 64-bit
- ◆ MS Windows 2008 (R2) 64-bit
- ◆ PowerShell 3.0 or higher

Supported Microsoft Exchange Versions

- ◆ Exchange Server 2013
- ◆ Exchange Server 2016
- ◆ Basic Authentication for EWS and Autodiscover must be enabled

Supported Micro Focus GroupWise Versions

- ◆ GroupWise 2012
- ◆ GroupWise 2014
- ◆ GroupWise 2014 R2
- ◆ GroupWise 18
- ◆ SOAP port must be enabled on all POAs to be scanned for messages.
- ◆ SSL is supported, but significantly impacts performance.

Android Versions (RetainService app)

- ◆ Lollipop (5.0) or higher

CellTrust Secureline Versions

- ◆ CellTrust Gateway 4.2.0 +

Blackberry Versions

- ◆ BES 5.04, 10, 10.2, 12, 12.2
- ◆ BBM Enterprise

Supported Social platforms

- ◆ Facebook
- ◆ Twitter
- ◆ Yammer
- ◆ LinkedIn
- ◆ Yahoo Messenger
- ◆ Google Talk
- ◆ GMail
- ◆ Lync & Skype for Business
- ◆ AOL Instant Messenger

Supported Search Engines

- ◆ Google
- ◆ YouTube
- ◆ Yahoo
- ◆ Bing
- ◆ Wikipedia

Supported SQL Database Platforms

Retain must have database owner rights to the SQL database it is connected to.

- ◆ MySQL 5.6x, 5.7x, or 8 (Legacy MySQL Authentication Method only)
- ◆ Oracle 10/11g/12c
- ◆ MS SQL Server 2008 R2, 2012, 2014, 2016, 2017
- ◆ PostgreSQL 9
- ◆ MariaDB 10.x

Supported Browsers

- ◆ Microsoft Edge
- ◆ Firefox 34 or later
- ◆ Chrome 39 or later

Port Usage by Retain Components

Retain utilizes many ports to facilitate communication between Retain components themselves and with the different systems being archives.

By default, Retain uses the following ports for the following services:

Retain Server

The Retain Server is the key component in the Retain system. Other Retain processes communicate with the Server through port 48080 by default. The Server is always listening on that port regardless of how other components might be configured to communicate with it (i.e., SSL port 443).

- ◆ 48080 (TCP) Requires incoming access if any Retain processes are running on a server external to the server hosting the Retain Server.
- ◆ The Server Requires outgoing access if the Reporting & Monitoring Server component has been installed on a server external the server hosting the Retain Server. See also the Reporting & Monitoring component in this article.
- ◆ 48009 (TCP) The AJP (Apache JServ Protocol) port is used by for communication between the web server and Tomcat. Since both should reside on the same server, there are no external port access requirements.
- ◆ 80 / 443 (TCP - HTTP / HTTPS) Requires incoming access to reach the Server web interface.
- ◆ 25 (TCP) Requires outgoing access so that the Retain Server can send email notifications on server errors, job statuses, and job errors. Outgoing access to Database Management System (DBMS) port. This depends on the database system you are using. See the “Database Management Systems” section of this page.

Other ports must be opened on the server hosting the Retain Server, depending on the modules being used.

Retain Worker

The Retain Worker is the component that pulls the data from the messaging source, whether that be an email system, social media application, or mobile device.

- ◆ 48080 (TCP) Requires outgoing access if on a server external to the Retain Server.
- ◆ 80 or 443 (TCP HTTP or HTTPS) Requires incoming access to reach the Worker web interface

Other ports must be opened on the server hosting the Retain Worker, depending on the modules being used; and, in some cases, on servers hosting the messaging system Retain is archiving.

Retain Message Router

The Message Router is for customers of the Retain for Mobile module. The Message Router connects with mobile devices to handle SMS message log forwarding, BBMP device configuration. It typically would sit inside a DMZ.

- ◆ 443 (TCP) Requires both incoming from and outgoing access to the Internet as well as incoming from and outgoing access to the Retain Server.
- ◆ 111/2049 (UDP / TCP) for NFS Client services. (Only required if not using REST) Requires outgoing access if the Worker is not on the Message Router server so that it can place the logs on the Worker's server. Samba can be used, but NFS seems to be more reliable.

Other ports may need to be considered for NFS to work properly (<http://serverfault.com/questions/377170/which-ports-do-i-need-to-open-in-the-firewall-to-use-nfs>).

It is up to the customer to do this research to get NFS services to work properly.

Retain Reporting & Monitoring Server

New to Retain v3.4, this process provides archive job and server reporting and monitoring services. It is not installed by default unless specifically selected during the installation process. With Retain 4.2 it is a required install to allow Mailbox Error Monitoring to occur.

- ◆ 48080 (TCP) Requires both incoming and outgoing access if on a server external to the Retain Server.
- ◆ 80 / 443 (TCP) Requires Incoming access to reach the R&M Server's web interface.
- ◆ 25 (TCP) If running on a server external to the Retain Server, then it requires outgoing access.

Retain Stubbing Server

The Retain Stubbing Server is the component that provides stubbing services to the Retain Server. It is rarely used or installed by customers. See the Administration and Users Guide for a listing of its advantages and disadvantages.

- ◆ 48080 (TCP) Requires outgoing access if on a server external to the Retain Server.
- ◆ 80 / 443 (TCP) Requires incoming access to reach the Stubbing Server web interface.

From RSM WAN IP to Untrusted, all TCP/UDP ports.

If the RSM WAN IP is a private IP, it needs to be NATed to an appropriate routable IP address. The LAN IP address does not need a corresponding inbound NAT rule.

Database Management Systems

The following are the default ports these database management systems use, but they are configurable within those systems. Requires incoming access for the database server and outgoing access on the Retain Server.

- ◆ MySQL: 3306
- ◆ MS SQL: 1433
- ◆ Oracle: 1521
- ◆ Postgres: 5432

Blackberry

BES Web Services (SOAP) only supports the secure ports via TLS. Retain initiates contact with BES Web Services if you are syncing the Address Book with the BES. Outgoing access is required for the Retain Server and incoming access for the BES server for the following ports:

- ◆ BES 12: 18084 (TCP)
- ◆ BES 10: 38443 (TCP)
- ◆ BES 5: 443 (TCP)
- ◆ 111/2049 (UDP / TCP) on the Blackberry Enterprise Server (BES) for NFS Server services.

The Blackberry module requires incoming access if the Worker is not on the BES server so that it can retrieve the BES logs. Samba can be used, but NFS seems to be more reliable.

Other ports may need to be considered for NFS to work properly (<http://serverfault.com/questions/377170/which-ports-do-i-need-to-open-in-the-firewall-to-use-nfs>).

It is up to the customer to do this research to get NFS services to work properly.

Exchange

- ◆ 80 / 443 (TCP HTTP / HTTPS) on the Worker server. Requires outgoing access. The autodiscover process attempts https to the CAS servers for connecting to Exchange mailboxes. If that fails, it uses port 80 as a last resort. If Exchange / autodiscover / EWS are set up properly, only port 443 should be necessary.
- ◆ 3268 or 3269 (TCP). Requires outgoing access. It uses one of these ports for LDAP lookups to the global catalog host, which is the primary database server for Active Directory.
- ◆ Port 3268 for plaintext and 3269 for SSL (recommended).
- ◆ 53 (UDP). Requires outgoing access. It's the port used by DNS. Retain utilizes DNS lookups during its autodiscover process.

Google Apps Module

- ◆ 443 (TCP) Requires outgoing access for the Server (address book sync) and the Worker (it attempts to use the Gmail API for archiving; if that fails, it reverts to IMAP, thus the need for port 993 as described below).
- ◆ 993 (TCP). Requires outgoing access for the Workers only. Under certain circumstances, the Worker may switch to using IMAP over SSL when requesting email from Gmail.

GroupWise

- ◆ 7191 (TCP) Requires outgoing access so that the Retain Server can download the Address Book. This is the default SOAP port the GroupWise POAs use, but this is configurable and is dependent upon the POA agent setting in GroupWise.

Mobile

- ◆ 80 / 443 (TCP) Requires both incoming and outgoing access so that the Retain Server and the Message Router can communicate device configuration information with each other. See also the Retain Message Router component in this article as well as the Mobile subsection under Retain Worker. See also the Retain Message Router component in this article.
- ◆ 111/2049 (UDP / TCP) for NFS Server services Requires incoming access if the Worker is not on the Message Router server so that the Message Router can place the logs on the Worker's server. Samba can be used, but NFS seems to be more reliable.

Other ports may need to be considered for NFS to work properly (<http://serverfault.com/questions/377170/which-ports-do-i-need-to-open-in-the-firewall-to-use-nfs>).

It is up to the customer to do this research to get NFS services to work properly.

Office 365

- ◆ 443 (TCP) Requires outgoing access. Retain uses SSL to connect with Office 365 to authenticate users logging in to Retain.
- ◆ 80/443 (TCP) Requires outgoing access to the Retain for Social Media proxy server appliance. Retain creates an http connection and request the "bundles". See also the Retain for Social Media (RSM) Proxy Server component in this article

CellTrust Secureline

- ◆ 111/2049 (UDP / TCP) on the CellTrust Secureline server for NFS Server services.

Requires incoming access if the Worker is not on the CellTrust Secureline server so that it can retrieve the CSV logs. Samba can be used, but NFS seems to be more reliable.

Other ports may need to be considered for NFS to work properly (<http://serverfault.com/questions/377170/which-ports-do-i-need-to-open-in-the-firewall-to-use-nfs>).

It is up to the customer to do this research to get NFS services to work properly.

Planning Retain Storage Requirements

- ◆ [“Introduction to Storage Requirements” on page 54](#)
- ◆ [“Considerations for Storage Requirements” on page 55](#)
- ◆ [“Storage Minimums” on page 56](#)
- ◆ [“Index Size During Migration” on page 56](#)
- ◆ [“Changing the Log File Location” on page 57](#)
- ◆ [“About Storage Paths” on page 58](#)
- ◆ [“Setting Custom Storage Path Rights on Linux” on page 59](#)

Introduction to Storage Requirements

It must be understood that no system storage requirement estimation can be expected to maintain or have any kind of reliable accuracy. Future mail use, litigation requirements, and compliance standards all may change and are unpredictable at best. Micro Focus bears no responsibility to accurately define or recommend storage needs for various messaging systems. Different messaging systems have different storage characteristics, and individual implementation renders general calculations invalid.

Keep in mind, however, that storage-system performance dictates mail view, indexing, and data performance. If the storage system is housed on slow hardware employing a file system designed for any other consideration than speed, (e.g. compact data storage), performance may be impacted. Consider what types of files are to be archived and access frequency when choosing the file system. For example, a Retain system dealing with mainly or only archived mobile data (SMS, pin, MMS, &etc.) performs best with different file system settings than a Retain system archiving a message system with large attachments.

For best results; pair current mail storage needs against projected future needs with the ability to easily add extra storage to the Retain system as needed. The ability to freely add additional storage space grants control and freedom over the messaging system and should be of paramount consideration. This practice is the only course which can be relied on with any confidence. Due to the challenges and circumstances involved with each different system, (and even certain versions of different systems), only individual consideration provides a reliable baseline for storage needs.

The simplest way to check current disk usage and storage requirement size, is to monitor disk space usage on the mail servers and create a projection for the near future for needs. As a rule of thumb, we have noticed that message systems increase by about 11% per day.

However, the different options and variables between messaging systems make disk storage estimations so unpredictable that anything other than specific system monitoring cannot determine real disk usage. It is best to create a storage system where additional space may be added as required when existing space is consumed.

In addition, Exchange 2010 has abandoned single instance storage in favor of highly available performance, possibly causing multiple Exchange servers in the system to all have copies of the same data. Retain utilizes single instance storage and may vastly decrease the storage size of a system that heavily utilizes this feature. Due to the differences between the storage and main messaging system, it is nearly impossible to establish a baseline for Retain storage needs. Retain may tremendously decrease the needed size to archive an Exchange 2010 system, or, depending on

system size and implementation, it may not significantly decrease the needs of the current system. Though Retain requires additional space to continue archiving mail, the initial archive job will not exceed the size of the current messaging system.

Consulting with the Retain Sales representative offers the best tailored information for each system and each implementation of the different platforms available.

Considerations for Storage Requirements

- ◆ [“Operating System” on page 55](#)
- ◆ [“Retain Program” on page 55](#)
- ◆ [“Archive Storage Area” on page 55](#)
- ◆ [“Indexes” on page 55](#)
- ◆ [“Database” on page 56](#)
- ◆ [“Logs” on page 56](#)

Operating System

The OS receives a number of updates over the life of a Retain server, so that should be provisioned for.

Retain Program

The Retain program is updated often as well. This is often placed on the same volume as the OS.

Archive Storage Area

The Archive contains the item bodies and attachments. This is generally the largest percentage of the storage requirements on a Retain server. The bodies and attachments are stored as BLOB (Binary Large Object) files in a folder structure that starts with /00/00/00 and grows to /FF/FF/FF for 16.7 million directories. BLOB files are stored only once, Retain implements a single-instance storage system, only a single copy of identical items is stored. BLOB files never change, they are only created or removed.

The files are accessed when a message is opened in the Retain Search Message interface or downloaded by Retain Publisher.

Indexes

The indexes allow for fast search of the data in Retain. When searching for items in Retain the indexes are used to return the results.

For best search performance, the indexes should be placed on a fast disk and optimized regularly.

The Index requires periodic optimization. This is set under *Server Configuration | Maintenance*. The Indexer requires as much free disk space as currently used index space for optimization. It requires three times as much if optimizing during an archive job.

During index migration from Retain 3.x to Retain 4.x, storage requirements for the indexes are the most complex and are described below.

Database

The database contains the header information for each item. For example: Sender, recipient, date received, and so on as well as pointers to the message body and attached files stored in the archive. Each item may be quite small but may be replicated many times in the database if there are many recipients.

When browsing messages, the items in the database is being viewed. On larger systems, the database is often placed on a dedicated database server.

Logs

The logs track the actions that Retain takes. They can become quite large but are compressed at the end of each day and removed after 10 days, by default. This can be changed under *Server Configuration | Logging*. Logs can be moved to another volume as described below.

Storage Minimums

Retain is very disk intensive. Running out of disk space can be very challenging to recover from and can potentially result in data loss. To minimize the chances of this happening certain safeguards have been implemented.

- ◆ Retain issues warnings when there is less than 10 GB free space for the storage, index, and system volumes.
- ◆ If the Retain system reaches 5GB of free disk space, it enters maintenance mode.

These minimums are configurable, but it is not recommended to permanently change these settings:

1. Change to the configuration file directory, by default in:

Linux: `/opt/beginfinite/retain/RetainServer/WEB-INF/classes/config/`

Windows: `C:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\classes\config`

2. Edit the `misc.properties` file
3. Change the following settings (in gigabytes) as desired, defaults being:

`discspace.warn.gb=10`

`diskspace.error.gb=5`

Index Size During Migration

When a migration begins, Retain creates a copy of the current index, thus temporarily doubling the space consumed by the index. After the migration completes, the old index can be removed and space reclaimed.

Also, the new index may be larger than the current index, due to the increased power and abilities of the new indexer. How much change there is, depends on the composition of the current archive, any limits set in indexing attachments, and how many attachments there are in the archive. If there are a

lot of attachments, or very large attachments, then the increase in size is significantly larger than if there are small or a limited number of attachments in the archive. With no limits on indexing attachments and a lot of large attachments in the system, an increase of up to 4 times the current index size is possible. With limits included, the new index may be smaller after upgrading. For the upgrade and a worst-case scenario, ensure that up to 5 times the current index size is available before starting the index migration. (With a current index size of 5 GB, ensure that the volume has a minimum of 20 GB free before starting the migration.) The average increase is expected to be around 20%.

If there is insufficient space to perform the migration, Retain moves into maintenance mode until more space is provided. Retain checks for free disk space on the storage, index, and system locations. If there is less than 20 GB free space, Retain sends a warning message every 6 hours. At 10 GB of free space left, Retain enters maintenance mode and all jobs are disabled. To exit maintenance mode, you must provide more free space on the volume.

NOTE: It is important to recognize that migration time and performance depend mostly on the performance of the storage system. External storage systems, such as appliances, may 'prioritize' seldom-used data to low performing storage and have a negative effect on migration performance. In addition, file systems of existing storage largely dictate how fast indexing, migration, and message view can be performed. To ensure high performance, house the storage on performance hardware with a performance file system.

Changing the Log File Location

- ◆ [“Linux” on page 57](#)
- ◆ [“Windows” on page 58](#)

Linux

To change the location of the log files, create a symbolic link (somewhat synonymous with Windows shortcuts). Retain, by default, gives you the option during installation to store the logs at `/var/log/retain-tomcat8` or at `/opt/beginfinite/retain/tomcat8`. If stored at `/var/log/retain-tomcat8`, then Retain creates a symbolic link at `/opt/beginfinite/retain/tomcat8` directory called "logs" that points to the `/var/...` location.

1. Create the directory in the location you wish to use.
2. Stop tomcat. [“Starting and Stopping the Retain Server” on page 113](#)
3. Move the current logs to the new location: `mv /var/log/retain-tomcat8/* [/i>path to new directory]`
4. Make tomcat the owner of the new directory path: `chown -R tomcat:tomcat [/i>path to new directory]`
5. Set the appropriate file *permissions for the tomcat user and group: `chmod -R 664 [/i>path to new directory]`
 - * If you are moving them to a separate volume, the file permissions must be 774.
6. Create a symbolic link in the parent directory of the default logs directory and point it to the new location:
 - a. Change to the `/var/log` directory

- b. Remove the current log directory: `rm -r retain-tomcat8`
 - c. Create a new symbolic link called `retain-tomcat8` that points to your new log location: `ln -s [path to new directory] ./retain-tomcat8`
7. Start tomcat.

Windows

1. Ensure no archive jobs are running and stop Tomcat.
2. Configure Tomcat's default log location.
 - a. Click on Start.
 - b. In the "Search programs and files" box, type: `configure tomcat`
 - c. Click on Configure Tomcat
 - d. Click on the Logging tab.
 - e. Type in the new log path using the standard Windows path utilizing backslashes "\" (i.e., `d:\retain\logs`) or browse to it by clicking on the button with "..." on it.
 - f. Click OK.
3. Make a backup copy of the existing `log4j.properties` file.
4. Edit the `log4j.properties` located at `[drive]:\Program Files\Beginfinite\Retain\[RetainServer, RetainWorker, RetainWorker1, &etc]\WEB-INF\classes`.
5. Do a search on `/${catalina.base}/logs/` and replace it with `[desired path using forward slashes "/"]/logs/` (i.e., `D:/retain/logs/`). An easy way to do this is to use the text editor's (i.e., Notepad) "Replace" function.
6. Repeat steps 2 - 4 for every `log4j.properties` file (server, worker, stub server, stats server). The only log that is created at the default log location is the `localhost.[date].log`, but it is a very small log.

About Storage Paths

Retain was designed to be very flexible in allowing you to choose where the data is stored. Choosing the right hardware and software storage combination is crucial. Storage itself is a function of the operating system and hardware you choose.

As storage needs approach enterprise levels, the need to specify your data storage locations becomes more critical. Some hardware and operating systems have a hard limit of 2 Terabytes, for instance. In situations like these, a SAN might be a good choice for consideration. Either way, it's imperative that you take the time to investigate your storage needs BEFORE you begin. Retain monitors the storage space available, and issues email warnings at 20 GB, and locks down Retain to a maintenance mode when the storage space drops to 10 GB. This is to avoid possible corruption to the storage and index which may occur when space runs out.

When choosing your storage system, bear in mind the following considerations:

- ◆ Storage size limits. Do you expect storage needs to ever exceed this?
- ◆ Ability to add additional storage capacity
- ◆ OS Version and kernel to support the storage system of your choice
- ◆ File system and partitioning

- ♦ Is a SAN right for you?
- ♦ Speed and reliability
- ♦ Backup/restore is your responsibility

Setting Custom Storage Path Rights on Linux

During the initial Retain Server configuration process, you must specify where archived data will be stored.

If you plan to specify a path other than `/var/opt/beginfinite/retain` (the default), then, before running the configuration wizard, you must grant the Retain Server read and write access permissions and ownership for the storage paths that you specify.

Do the following before running the Retain Server Configuration Wizard.

- 1 After installing the Retain server, determine the user and group that Retain uses to access the file system by opening a terminal prompt on the Retain server and entering the following command, which is a lower-case L:

```
l /opt/beginfinite/retain
```

In the following screenshot, Retain is running as `tomcat:www`.

```
retain-481-220:~ # l /opt/beginfinite/retain
total 0
drwxr-xr-x 1 tomcat www 154 Aug 20 15:23 ./
drwxr-xr-x 1 root root 12 Aug 20 15:23 ../
drwxrwxr-- 1 tomcat www 312 Aug 20 15:23 RetainServer/
```

- 2 If your customized storage locations don't already exist, you can create them using the `mkdir` command:

```
mkdir /mount-point/directory-structure
```

For example, we have previously created a mount-point for our data storage device on the Retain Server and named it

```
/datastore
```

We now create directories on the device for storing message attachments and index files. We also create a subdirectory under the `/attachments` directory for storing PDF files, as follows:

```
mkdir /datastore/attachments
mkdir /datastore/attachments/PDF
mkdir /datastore/index
```

- 3 After you create your customized storage locations, make sure to grant ownership and access permissions at the top level of each directory structure you create, using the `chown` and `chmod` commands.

```
chown -R user:group /mount-point/directory-structure
chmod -R 744 /mount-point/directory-structure
```

Continuing the example from [Step 2 on page 59](#), we grant ownership and access permissions to the top-level directories as follows:

```
chown -R tomcat:www /datastore/attachments
chown -R tomcat:www /datastore/index
chmod -R 744 /datastore/attachments
chmod -R 744 /datastore/index
```

- 4 Finally, you should verify the changes you made to your new storage directories using:

```
l /mount-point
```

Continuing with our example:

```
retain-481-220:/ # l /datastore
total 0
drwxr-xr-x 5 root  root  54 Aug 21 13:04 ./
drwxr-xr-x 1 root  root 188 Aug 21 12:30 ../
drwxr--r-- 3 tomcat www 17 Aug 21 13:04 attachments/
drwxr--r-- 2 tomcat www  6 Aug 21 13:04 index/
retain-481-220:/ #
```

- 5 You can now specify your customized storage locations when you run the [Retain Server Configuration Wizard](#).

Planning the SQL Database

The SQL start guides are included here as a courtesy. It is your responsibility to find the proper installation procedures and documentation from your chosen database vendor. The entire responsibility for installation, care, and maintenance of the database server lies with you. Micro Focus does not provide any kind of support for the database server for legal and other reasons.

Retain must have database owner rights to the SQL database it is connected to.

Supported SQL Database Platforms

See [“Supported SQL Database Platforms” on page 50](#).

Configuration and Message Store Databases

- ◆ Retain prompts you for access information to your SQL Database Server
 - ◆ You must create this database beforehand. (See system requirements for documentation for the supported SQL servers.)
 - ◆ Retain creates the tables, indexes, and prepares the database for use

You are prompted to provide SQL connection information for both the configuration and message store databases. For convenience and simplicity most installations store this information in the same database. The databases are used to store Retain configuration, cached address books, and all saved message data.

Tomcat Memory Requirements

- ◆ [“General Recommendations” on page 61](#)
- ◆ [“Tomcat Configuration Parameters” on page 61](#)
- ◆ [“Checking memory” on page 64](#)

General Recommendations

Retain automatically tunes on installation, depending on available system memory. Further tuning should not be necessary except in extreme conditions.

By default, Retain detects installed system memory and tunes the maximum memory value according to the following levels:

In general, a minimal install requires 4GB for the OS, the tomcat heap XMS setting (default 4GB), 2GB for Retain and any memory the database requires if installed.

Less than 16 GB system memory:

8 GB: Server and Worker

6 GB: Server only

Less than 20 GB system memory:

12 GB: Server and Worker

10 GB: Server only

More than 20 GB system memory:

16 GB: Server and Worker

14 GB: Server only

In all cases, when only the worker is installed the memory is automatically tuned to 3GB.

To manually tune the memory, carefully consider the following information.

Tomcat Configuration Parameters

There are three significant parameters:

1. Memory allocated upon Tomcat startup
 - ◆ Indicates how much memory is immediately allocated and reserved to Tomcat upon startup. This memory is used by Tomcat and is never available to the other server processes.
 - ◆ Typically, this is set to 50%-100% of the maximum memory parameter discusses below. It can be lower, but pre-allocating a sizable percentage of memory enhances performance and reduces memory fragmentation.

2. Maximum Memory available to Tomcat

- ◆ If the memory usage grows beyond the startup allocation, Tomcat requisitions additional blocks of memory in chunks as needed up to this limit. It never returns this memory to the general server memory pool. (Although memory internally is freed and reused for Tomcat applications).
- ◆ Tomcat guarantees to never exceed this memory allocation parameter. If Tomcat runs out of memory, it tries to reclaim unused memory via garbage collection. If this is insufficient, the web application doesn't receive the memory allocation. Unpredictable (but invariably unpleasant) results then occur.
- ◆ This is the most critical parameter to tune, and is the value which is automatically tuned by the installer.

3. Stack Size

- ◆ For each thread (which includes each and every concurrent user request), Tomcat allocates stack space.
- ◆ This value is typically measured in KB, and defaults to 512KB.
- ◆ It is allocated per concurrent users, and is in fact far too generous a number in general. 1000 users for example would take 500 MB of RAM just for stack space, before the program even allocates memory to run!
- ◆ Generally, we recommend reducing this number to 160k. Increase conservatively, in 64 KB chunks, if you see out-of-stack-space errors in the logs.

The parameters are abbreviated in the Catalina Opts line as follows:

```
Stack Size="-Xss<value>k"
```

```
Memory Heap="-Xms<value>g"
```

```
Maximum Memory=" -Xmx<value>g"
```

On Linux: edit the following configuration file:

Retain 4.0-4.1.0.1

```
/etc/opt/beginfinite/retain/tomcat7/j2ee
```

Retain 4.2 or higher

```
/etc/opt/beginfinite/retain/tomcat8/j2ee
```

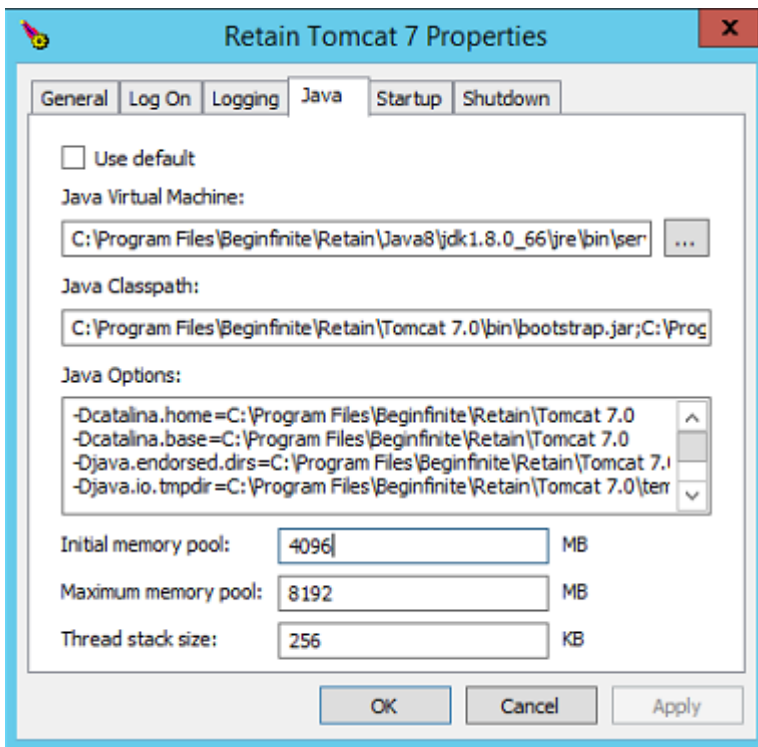
Retain-Tomcat is automatically tuned depending on system memory. To tune the system manually, edit the following lines with the appropriate parameters for your system. For example:

```
CATALINA_OPTS="-Xms4g -Xmx12g -Xss-256k"
```

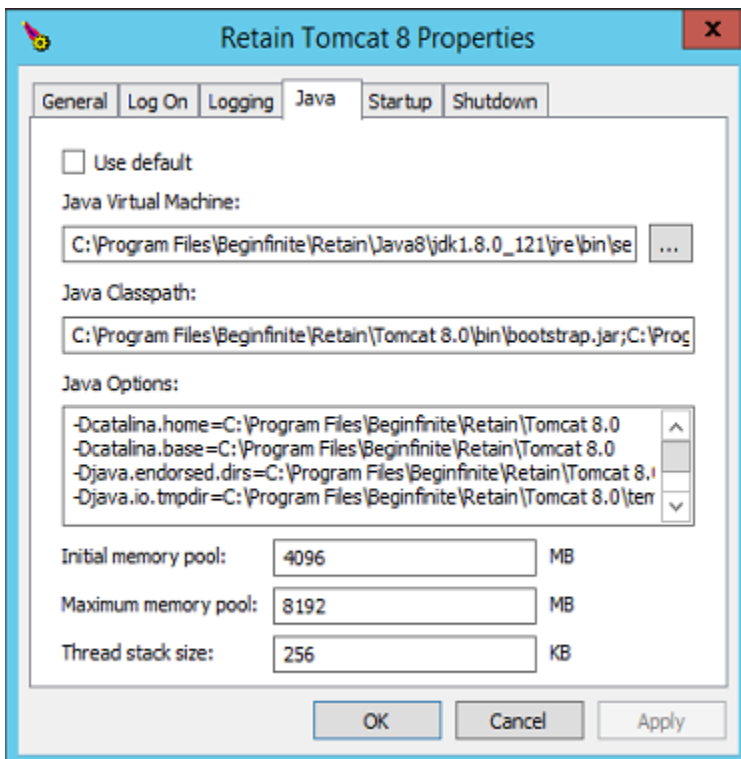
```
JAVA_OPTS="$JAVA_OPTS -XX:MaxmetaspaceSize=1024m"
```

On Windows: run the utility to configure Tomcat and modify the appropriate settings.

Retain 4.0-4.1.0.1



Retain 4.2 or higher



Checking memory

After logging into Retain Server, click about link in the upper right of the interface. Among other stats, you'll see the tomcat Memory statistics.

* About

Micro Focus Retain 4.2.0.0

uptime	0d : 1h : 35m
currentTime	Tue Mar 21 11:41:41 MDT 2017
timezone	Mountain Standard Time
retainName	Retain10
jvmVersion	25.121-b13
jreVersion	1.8.0_121-b13
javaHome	C:\Program Files\Beginfinite\Retain\Java8\jdk1.8.0_121\jre
tomcatHome	C:\Program Files\Beginfinite\Retain\Tomcat 8.0
indexDoc	0
logHome	C:\Program Files\Beginfinite\Retain\Tomcat 8.0\logs
osArchitecture	amd64
osName	Windows Server 2012 R2
userName	RETAIN10\$
tmpDir	C:\Program Files\Beginfinite\Retain\Tomcat 8.0\work\Catalina\localhost\RetainServer
tomcatVersion	Apache Tomcat/8.0.41
tomcatFreeMemory	2718704
tomcatMaxMemory	8354560
tomcatTotalMemory	4160256
indexEngine	High Performance Index
indexHost	
indexPort	10000
indexProtocol	http
retainHome	C:\Program Files\Beginfinite\Retain\RetainServer\
retainEdition	Standard
retainBuild	172
retainAvailability	dev
configSchema	34
messageStoreSchema	5
indexingSchema	1
derbyVersion	10.5.3.0
indexingType	High Performance Index
hibernateVersion	4.3.11.Final

Core Info

JAR List

Jobs

Schedules

Profiles

Workers

Quartz

Retention Date Utility

Indexer Status

Exchange Test

GW to Exchange Migrator

GW to Exchange Scope

Mailbox Merger/Splitter

Indexer Test

System Properties

Generate License Report

Page File

NOTE: The page file guide is included here as a courtesy. It is your responsibility to find the proper procedures and documentation from your chosen operating system vendor. The entire responsibility for installation, care, and maintenance of the operating system lies with the customer. We do not provide any kind of support for the operating system.

In some environments, tomcat runs out of resources and crashes. Increasing the page file might solve this issue. In some cases doubling the page file is sufficient, in other cases increasing it to 64GB is sufficient.

System File Locations

Retain Server components reside:

- ◆ Linux: /opt/beginfinite/retain/
- ◆ Windows: [Drive]:/Program Files/Beginfinite/Retain

In this directory you find subdirectories named for the Retain components and support systems:

- ◆ java
- ◆ tomcat
- ◆ RetainServer
- ◆ RetainWebUI
- ◆ RetainStubServer, if installed
- ◆ RetainStatServer, if installed (on this server), this component may be installed on a separate server.
- ◆ RetainWorker if installed (on this server), this component may be installed on a separate server. *N* being the worker number if more than one worker is installed.
- ◆ Logs are found in the /logs folder within the Tomcat folder.

To find your Retain system's storage path, log in to the Retain Server administration web interface ([http://\[ipaddress/DNS hostname\]/RetainServer](http://[ipaddress/DNS hostname]/RetainServer)). Starting at the navigation pane on the left side under "Configuration", click on Server Configuration | Storage. Most customers leave it at the default setting under "Advanced Settings" of "Derive all file locations from the above base path", but you must click that checkbox to have it expand to show all the paths.

Other file locations can be found in the ASConfig file. ASConfig.cfg is stored in a directory off of your Retain installation:

- ◆ Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/cfg
- ◆ Windows default: [Drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg

3 Installing Retain 4.8.1

- ◆ [“Retain Deployment Checklist” on page 67](#)
- ◆ [“Installing a Web Server” on page 68](#)
- ◆ [“Installing a Database Server and Creating a Retain Database and Database User/Role” on page 69](#)
- ◆ [“Installing a Retain Server on Linux” on page 79](#)
- ◆ [“Installing a Retain Server on Windows” on page 82](#)
- ◆ [“Running the Retain Server Configuration Wizard” on page 91](#)
- ◆ [“Logging In to Retain” on page 94](#)
- ◆ [“Licensing” on page 99](#)
- ◆ [“Backing Up Retain” on page 103](#)
- ◆ [“General Maintenance” on page 107](#)
- ◆ [“Un-installing Retain” on page 108](#)
- ◆ [“Installing Other Retain Components on Linux” on page 109](#)
- ◆ [“Installing Other Retain Components on Windows” on page 111](#)
- ◆ [“Starting and Stopping the Retain Server” on page 113](#)

Retain Deployment Checklist

For a successful Retain deployment, complete the following tasks in the order listed, choosing those that apply to your deployment.

1. Get a copy of your company’s retention policy and follow it as you work through the [“Retain Planning and Design Best Practices” on page 31](#).
2. Identify Retain admin credentials you plan to use.
3. Gather and document the SMTP host connection information.
4. Install a web server. See [“Installing a Web Server” on page 68](#)
5. Gather the database connection information, DNS name or IP address, Retain database name, retain database user name and password.
6. Create a database for Retain to use. See [“Installing a Database Server and Creating a Retain Database and Database User/Role” on page 69](#)
7. Download and install Retain on your chosen platform:
 - ◆ **Linux:** [“Installing a Retain Server on Linux” on page 79](#)
 - ◆ **Windows:** [“Installing a Retain Server on Windows” on page 82](#)
8. If desired, set custom storage paths. [“Setting Custom Storage Path Rights on Linux” on page 59](#)
9. Configure the Retain server. [“Running the Retain Server Configuration Wizard” on page 91](#)

10. Install the production Retain Worker Agents.
 - ◆ **Linux:** [“Deploying Production-Use Worker Agents on Linux” on page 109](#)
 - ◆ **Windows:** [“Installing Additional Retain Workers on Windows” on page 111](#)
11. If archiving mobile devices, install the Retain Router. [“Installing a Retain Message Router on Linux” on page 110](#) or [“Installing a Retain Message Router on Windows” on page 112](#)
12. Log into Retain. [“Logging In to Retain” on page 94](#)
13. Configure Reporting and Monitoring. [“Reporting and Monitoring” on page 438](#)
14. Configure the needed Modules. [Chapter 6, “Modules,” on page 157](#)
15. Configure the required Schedules. [“Schedule Overview” on page 269](#)
16. Configure the required Profiles. [“Profiles Overview” on page 271](#)
17. Configure the required Workers. [“Workers Overview” on page 305](#)
18. Configure your archive Jobs. [“Jobs” on page 317](#)
19. Configure the Reports you need. [“Reports” on page 445](#)
20. Confirm that data is being archived. [“Search Interfaces” on page 525](#)
21. Upload the required licenses. [“Licensing” on page 99](#)
22. Set up the Tools your deployment needs. [“Tools Overview” on page 573](#)

Installing a Web Server

Retain requires a web server on each server running a Retain component (Server, Worker, etc.).

Linux Web Server

- 1 Install the Apache Web Server distributed with your SLES server.
- 2 Make sure you also select and install the following Apache components:
 - ◆ *apache2-mod_jk* - Connectors between Apache and Tomcat Servlet Container
 - ◆ *apache2-prefork* - Apache 2 "prefork" MPM (Multi-Processing Module)
 - ◆ *apache2-worker* - Apache 2 worker MPM (Multi-Processing Module)

Windows Web Server

NOTE: Micro Focus recommends using IIS on Windows, but Apache can be used if necessary. See the Apache web site for installation instructions.

If you must use Apache instead of IIS, skip to [“\(Optional\) Apache Install on Windows” on page 69](#). Otherwise, continue with this section.

- 1 If you are using IIS and it is not already installed, install it now along with the ISAPI Extensions and Filters.

The ISAPI Extensions and Filters allow Retain to gather and manipulate information about Internet traffic on the system.

- 2 If your system has IIS installed and running without the ISAPI components, do the following:
 - 2a Open the Server Manager.
 - 2b In Server Manager, click the **Manage** menu, then click **Add Roles and Features**.
 - 2c In the Add Roles and Features wizard, click **Next**.
 - 2d Select the installation type and click **Next**.
 - 2e Select the destination server and click **Next**.
 - 2f On the Server Roles page, expand **Web Server (IIS)**, expand **Web Server**, expand **Application Development**, and then select **ISAPI Filters** and **ISAPI Extensions**.
 - 2g Click **Next**.
 - 2h On the Select Features page, click **Next**.
 - 2i On the Confirm Installation Selections page, click **Install**.
 - 2j On the Results page, click **Close**.

(Optional) Apache Install on Windows

If you need to use Apache instead of IIS, do the following:

1. Download the 2.2.x binary for Windows from apache.org.

IMPORTANT: Retain only supports version 2.2.x.

2. Install normally, accepting all of the defaults.

Installing a Database Server and Creating a Retain Database and Database User/Role

Retain stores header data and pointers to the Retain datastore in an SQL database.

Retain administrators are responsible to ensure that Retain databases are properly installed, configured, tuned, and maintained.

Setting up the Retain database involves the following general steps:

1. Download one of the [“Supported SQL Database Platforms”](#) on page 50.
2. Install it on the server of your choice—a dedicated database server (recommended) or the Retain server itself for a small, all-in-one deployment.
3. Log in and create a database for Retain to use.
4. Create a user/role with ownership rights to the Retain database that you just created.

IMPORTANT: You will need the database name, user/role name, and user/role password when [“Running the Retain Server Configuration Wizard”](#) on page 91.

The following sections present general guidelines and basic instructions for major database types. To ensure success, you must consult the product documentation for your database platform and enlist the help of a qualified database administrator.

- ◆ [“MySQL” on page 70](#)
- ◆ [“MS SQL Server 2008 R2, 2012, 2014, 2016, 2017” on page 72](#)
- ◆ [“ORACLE 10/11g/12c” on page 72](#)
- ◆ [“Postgres 10” on page 74](#)
- ◆ [“MariaDB” on page 75](#)
- ◆ [“Further Database Tuning” on page 75](#)

MySQL

Retain Only Supports Legacy Authentication with MySQL 8

MySQL 8’s default authentication method is SHA-256, which is not supported in Retain 4.8.1.

Legacy authentication is available, but you must manually specify it, as follows:

- ◆ **New MySQL 8 Deployment:** When you configure a new MySQL server for use with Retain, on the Authentication Method panel, select the **Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)** option.
- ◆ **Existing MySQL 8 Deployment with SHA-256 Authentication:** When you create the Retain database user, do the following:
 - ◆ Select **Standard** as the user’s authentication type.
 - ◆ Under **Administrative Roles**, assign the DBA role to the database user.
This enables the database user to perform both its own tasks and `root` user tasks, using the Legacy authentication method.

Installation Example

1. Download and install the latest MySQL server and client and configure it according to local system needs.
 - a. Install the server: `rpm -ivh MySQL-server-version.sles11.x86_64.rpm`
 - b. install the client: `rpm -ivh MySQL-client-version.sles11.x86_64.rpm`
 - c. Modify `/usr/my.cnf`, to move the database to a data volume, by adding the line `datadir=/path/to/where/you/want/the/MySQL/data`
 - d. Find the root password in `/root/.mysql_secret`
`cat /root/.mysql_secret`
 - e. Start MySQL:
`rcmysql start`
 - f. Change the root password:
`/usr/bin/mysql_secure_installation`
2. Log in to MySQL using the client:

```
mysql -u root -p
```

3. Create the database in UTF-8 format.

WARNING: Not storing the database in UTF-8 format guarantees irreparable corruption for non-US-ASCII characters. *

```
CREATE DATABASE retain DEFAULT CHARACTER SET 'utf8' DEFAULT COLLATE 'utf8_bin';
```

- a. If you make a mistake, enter this command:

```
DROP DATABASE retain;
```

- b. Then repeat step 3 to create the database.

4. This step depends on which version of MySQL you are using.

- ◆ **For MySQL 5.x:** Retain needs to be configured with a user account that you grant full rights to the Retain database.

IMPORTANT: Micro Focus strongly recommends against using the 'root' account.

While logged in to MySQL, enter the following commands, replacing *UserName* and *Password* with the desired user name and password.

- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*UserName*'@'%' IDENTIFIED BY '*Password*';

To restrict the connection to a specific IP address, replace the percentage sign (%) with the address.

- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*UserName*'@'localhost' IDENTIFIED BY '*Password*';

For example, if the database user's name is *retainuser*, the password is *P@ssword1*, and you want database access restricted to 192.168.1.142:

- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*retainuser*'@'192.168.1.142' IDENTIFIED BY '*P@ssword1*';
- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*retainuser*'@'localhost' IDENTIFIED BY '*P@ssword1*';

- ◆ **For MySQL 8.x:** You need to create the user account and then grant it full rights to the Retain database.

While logged in to MySQL, enter the following commands, replacing *UserName* and *Password* with the desired user name and password

- ◆ CREATE USER '*UserName*' IDENTIFIED BY '*Password*';
- ◆ CREATE USER '*UserName*'@'localhost' IDENTIFIED BY '*Password*';
- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*UserName*'@'localhost';
- ◆ GRANT ALL PRIVILEGES ON retain.* TO '*UserName*'@'%' ;

To restrict the connection to a specific IP address, replace the percentage sign (%) with the address.

For example, if the database user's name is *retainuser*, the password is *P@ssword1*, and you want database access restricted to 192.168.1.142:

- ◆ CREATE USER '*retainuser*' IDENTIFIED BY '*P@ssword1*';

- ◆ CREATE USER 'retainuser'@'localhost' IDENTIFIED BY 'P@ssword1';
- ◆ GRANT ALL PRIVILEGES ON retain.* TO 'retainuser'@'localhost';
- ◆ GRANT ALL PRIVILEGES ON retain.* TO 'retainuser'@'192.168.1.142';

MS SQL Server 2008 R2, 2012, 2014, 2016, 2017

1. Install as a default instance, with *Latin 1_General_CI_AS* as the encoding standard.
2. Enable **SQL Server Authentication** in addition to **Windows Authentication**.
3. Once installed, verify the server is listening on port 1433. At the command prompt, run:
telnet <IP address> 1433
4. Ensure TCP/IP is enabled - Run SQL Server Configuration Manager
5. Expand **SQL Server Network Configuration**
6. Protocols for MSSQLSERVER
7. Enable TCP/IP
8. Run SQL Server Management Studio, connect to the Server.
9. Under Security/Logins, right-click and select **create Login, (for example Retainuser) that uses SQL Server authentication**.
10. Assign a password.
11. Right click **Databases**, create a new database named Retain and assign Retainuser as the owner.

ORACLE 10/11g/12c

Retain supports the usage of Oracle 10, 11g, and 12c on all platforms. However, it is the customer's responsibility to employ an experienced Oracle DBA to install, maintain, and tune Oracle.

The instructions below serve as a guideline, but may result in poorly performing, insecure environments.

Oracle Installation instructions vary widely depending on the version, OS, storage configuration, clustering, and so on. There is no one-size-fits-all.

This is also true of other SQL Server products, but especially for Oracle, which is why relying on a DBA is so critical.

Using Oracle with Retain requires the following tasks:

- ◆ [“Installing the Oracle Server” on page 73](#)
- ◆ [“Setting Up a TCPIP Listener” on page 73](#)
- ◆ [“Creating a Database Named Retain” on page 73](#)
- ◆ [“Creating a User Account to Access the Retain Database” on page 74](#)
- ◆ [“Tuning Oracle” on page 74](#)

Installing the Oracle Server

Install your Oracle Server normally, according to your standards and practices. One option is to use the Universal Installer, specifying a custom installation, choose the type of Oracle Server to install, and to Install Files Only

Setting Up a TCPIP Listener

Next use the Net Configuration Assistant (or manually edit the Oracle Listener configuration) to create a TCP based listener on port 1521. This allows TCPIP clients to connect to Oracle and is required for Retain.

Creating a Database Named Retain

Next, either use the Database Configuration Assistant or manually create the database with your favorite tool. Regardless, you want to create a database and sid, named Retain, and create your SYSTEM account

An example of a create statement (do not use as is):

```
connect "SYS"/"&&sysPassword" as SYSDBA
set echo on
spool C:\oracle\product\10.2.0\admin\Retain\scripts\CreateDB.log
startup nomount
pfile="C:\oracle\product\10.2.0\admin\Retain\scripts\init.ora";
CREATE DATABASE "Retain"
MAXINSTANCES 8
MAXLOGHISTORY 1
MAXLOGFILES 16
MAXLOGMEMBERS 3
MAXDATAFILES 100
DATAFILE 'C:\oracle\product\10.2.0\oradata\Retain\system01.dbf' SIZE 300M
REUSE AUTOEXTEND ON NEXT 10240K MAXSIZE UNLIMITED
EXTENT MANAGEMENT LOCAL
SYSAUX DATAFILE 'C:\oracle\product\10.2.0\oradata\Retain\sysaux01.dbf'
SIZE 120M REUSE AUTOEXTEND ON NEXT 10240K MAXSIZE UNLIMITED
SMALLFILE DEFAULT TEMPORARY TABLESPACE TEMP TEMPFILE
'C:\oracle\product\10.2.0\oradata\Retain\temp01.dbf' SIZE 20M REUSE
AUTOEXTEND ON NEXT 640K MAXSIZE UNLIMITED
SMALLFILE UNDO TABLESPACE "UNDOTBS1" DATAFILE
'C:\oracle\product\10.2.0\oradata\Retain\undotbs01.dbf' SIZE 200M REUSE
AUTOEXTEND ON NEXT 5120K MAXSIZE UNLIMITED
CHARACTER SET AL32UTF8
NATIONAL CHARACTER SET AL16UTF16
LOGFILE GROUP 1 ('C:\oracle\product\10.2.0\oradata\Retain\redo01.log')
SIZE 51200K,
GROUP 2 ('C:\oracle\product\10.2.0\oradata\Retain\redo02.log') SIZE
51200K,
GROUP 3 ('C:\oracle\product\10.2.0\oradata\Retain\redo03.log') SIZE 51200K
USER SYS IDENTIFIED BY "&&sysPassword" USER SYSTEM IDENTIFIED BY
"&&systemPassword";
spool off
```

The most critical items to note are the CHARACTER SET (AL32UTF8 aka UTF8), and the NATIONAL CHARACTER SET (AL16UTF16). If using a GUI based installed, make sure that you set these because they are easily missed. (They are located on the Encoding tab of the 10th step or so in the wizard).

Creating a User Account to Access the Retain Database

Finally, using the SYSTEM account, connect to the database, create a user, and grant full system privileges to the account. An example is shown below:

```
CREATE USER user-name IDENTIFIED BY password;  
  
grant dba to user-name;
```

Restart everything, and verify you can telnet on the TCP LISTENER's PORT (1521 if as above).

If a restricted user is desired, Retain requires a user with the following role:

- ◆ RESOURCE CONNECT

And the following database privileges to the Retain database:

- ◆ CREATE PROCEDURE
- ◆ CREATE SESSION
- ◆ CREATE SYNONYM
- ◆ CREATE TABLE
- ◆ CREATE TYPE
- ◆ CREATE VIEW

Tuning Oracle

Tuning Oracle is well beyond the scope of this manual and requires Oracle's online guides, as well as an experienced DBA or extensive training.

Postgres 10

When creating a PostgreSQL database for use by Retain, specify **UTF8 encoding**.

If the Retain Server is on a different machine, you must configure PostgreSQL to accept connections from that machine's IP address.

1. Connect to PostgreSQL using its psql utility.
2. Create a new database and user for use by Retain. The example below creates a user named "retainuser":

```
CREATE DATABASE retain WITH OWNER = retainuser ENCODING = 'UTF8' TABLESPACE = pg_default  
CONNECTION LIMIT = -1;
```

MariaDB

MariaDB is the default SQL database in SLES 12, and is a drop-in replacement for MySQL.

You install MariaDB using YaST.

Log into MariaDB, and set up the Retain database and user.

1. Create the database: * This is critical. Not storing the database in UTF-8 format guarantees irreparable corruption for non-US-ASCII characters. *

```
CREATE DATABASE retain DEFAULT CHARACTER SET 'utf8' DEFAULT COLLATE 'utf8_bin';
```

- a. If you make a mistake, enter this command:

```
DROP DATABASE retain;
```

- b. The repeat this step to create the database.

2. Retain needs a user account created that has full rights to the Retain database.

IMPORTANT: Micro Focus strongly recommends again using the 'root' account.

While logged in to MySQL, enter the following commands, replacing *UserName* and *Password* with the desired user name and password

Both commands are needed. The '%' is a wildcard. If you want to restrict the connection to a specific IP address, specify the address instead of the '%' sign.):

```
GRANT ALL PRIVILEGES ON retain.* TO 'UserName'@'%' IDENTIFIED BY  
'Password' ;
```

```
GRANT ALL PRIVILEGES ON retain.* TO 'UserName'@'localhost' IDENTIFIED  
BY 'Password' ;
```

For example, if the database user's name is "retainuser" and the password is "P@ssword1":

```
GRANT ALL PRIVILEGES ON retain.* TO 'retainuser'@'%' IDENTIFIED BY  
'P@ssword1' ;
```

```
GRANT ALL PRIVILEGES ON retain.* TO 'retainuser'@'localhost' IDENTIFIED  
BY 'P@ssword1' ;
```

Further Database Tuning

You are responsible to tune the SQL Database Server. Tuning database servers for performance often requires an experienced DBA.

You are also responsible for backing up, managing storage, and ensure that the database is fault tolerant.

MySQL

You should periodically optimize the Retain tables in order to achieve optimum query and update performance. This can have a big impact on the performance of archive jobs, deletion jobs, etc. It is also a good idea to optimize the memory settings for MySQL.

Backing Up the Database

Be sure to [back up \(dump\) the database \(https://support.microfocus.com/kb/doc.php?id=7019083\)](https://support.microfocus.com/kb/doc.php?id=7019083) before performing any maintenance. If on a VM, you can alternatively back up the VM or take a snapshot.

Optimizing Tables

WARNING: This should be done during a maintenance window because it locks the tables and can take hours to complete (or days for larger databases).

The time required is a function of the number of records in the tables, the power of the underlying hardware, and the RAM available. The more `innodb_buffer_pool_size` you can give to MySQL, the more tablespace it can load into RAM [as explained here \(https://dev.mysql.com/doc/refman/5.5/en/glossary.html#glos_buffer_pool\)](https://dev.mysql.com/doc/refman/5.5/en/glossary.html#glos_buffer_pool).

Like hard disks, database tables' indexes can become fragmented resulting in poor performance. Optimizing tables can dramatically improve archive job and deletion job performance.

At the command prompt, type: `mysqlcheck -o -u root -p retain`

- ♦ "-o" instructs it to optimize all tables in the database.
- ♦ "-u root" specifies the user "root".
- ♦ "-p" causes it to prompt for the retain database password.
- ♦ "retain" instructs it to run against the "retain" database (or whatever you named it during installation - "retain" is the default).

The command above optimizes all Retain tables at once. However, many are static and would not necessarily be subject to fragmentation issues.

Paste the following query into the MySQL prompt after logging into MySQL. This optimizes the tables one at a time.

These are the Retain 3.x tables you might consider optimizing:

```
OPTIMIZE TABLE retain.Audit;  
OPTIMIZE TABLE retain.s_AddressBookCache;  
OPTIMIZE TABLE retain.t_abook;  
OPTIMIZE TABLE retain.t_document;  
OPTIMIZE TABLE retain.t_dsref;  
OPTIMIZE TABLE retain.t_message;  
OPTIMIZE TABLE retain.t_message_attachments;  
OPTIMIZE TABLE retain.t_message_properties;  
OPTIMIZE TABLE retain.t_message_recipients;  
OPTIMIZE TABLE retain.t_recipient;
```

These are the Retain 2.x tables you might consider optimizing if you are planning on migrating to Retain 3.x in the next few days or weeks:

```
OPTIMIZE TABLE retain.Audit;  
OPTIMIZE TABLE retain.Document;  
OPTIMIZE TABLE retain.Email;  
OPTIMIZE TABLE retain.t_Node;  
OPTIMIZE TABLE retain.t_attachment;  
OPTIMIZE TABLE retain.t_msg_properties;  
OPTIMIZE TABLE retain.t_recp_properties;  
OPTIMIZE TABLE retain.t_recipients;
```

You can check on the progress of the queries by opening a separate terminal window and launching the following command:

```
watch -n 1 "mysqladmin -u root -p[password] processlist"
```

(note: no space between "-p" and your mysql root user password!)

NOTE: Retain uses the InnoDB engine in MySQL, which does not support the optimize option; however, running this option automatically performs a re-create action on the tables, which eliminates the fragmentation. There might be better ways to accomplish this, so this information is supplied to point you in the right direction.

For more detailed information and other mysqlcheck options, you may want to research this on the Internet. For your convenience, here are a couple of helpful articles:

4.5.3. [mysqlcheck - A Table Maintenance Program](http://dev.mysql.com/doc/refman/5.0/en/mysqlcheck.html#option_mysqlcheck_analyze) (http://dev.mysql.com/doc/refman/5.0/en/mysqlcheck.html#option_mysqlcheck_analyze)

[MySQL Back to Basics: Analyze, Check, Optimize, and Repair](http://www.pythian.com/blog/mysql-back-to-basics-analyze-check-optimize-and-repair/) (<http://www.pythian.com/blog/mysql-back-to-basics-analyze-check-optimize-and-repair/>) (written in 2008)

[MySQL Reference Manual on getting a dump of a corrupted database](http://dev.mysql.com/doc/refman/5.5/en/forcing-innodb-recovery.html) (<http://dev.mysql.com/doc/refman/5.5/en/forcing-innodb-recovery.html>) This is sometimes the only option for recovering data from a corrupted INNODB database.

Memory Optimization

Memory for your InnoDB can be configured in `/etc/my.cnf` (Linux) or on Windows, in the `[drive]:\Program Files\MySQL\MySQL Server 5.x\my.ini` file (where "x" is the MySQL version).

You'll find the following section in your `my.cnf` and there are identical lines in the `my.ini` on Windows although they may not be in this same order. The settings you may want to consider modifying are in red. This is followed by indented explanations in blue and are additional comments made for this article - those additional comments are not found in the `my.cnf` or `my.ini`.

Be sure to stop tomcat "[Starting and Stopping the Retain Server](#)" on page 113 before working with MySQL.

```
# Uncomment the following if you are using InnoDB tables. If it does not exist, create it.  
innodb_file_per_table
```

The "innodb_file_per_table" is not included in the default `my.cnf` or `my.ini` and has to be typed in manually. It causes MySQL to create an `.idx` file for every table in the database. The benefits of this is up for debate. Some swear by it because they feel it eliminates contention for a single file containing

all the tables (ibdata1); however, others have written that it is fast at first and then bogs down. We have found that, for Retain databases, it seems to positively impact performance. Do your own research and determine what is best for your system.

```
#innodb_data_home_dir = /var/lib/mysql
#innodb_data_file_path = ibdata1:10M:autoextend
#innodb_log_group_home_dir = /var/lib/mysql
# You can set .._buffer_pool_size up to 50 - 80 %
# of RAM but beware of setting memory usage too high
innodb_buffer_pool_size = 4G
```

This allocates [buffer memory for MySQL \(https://dev.mysql.com/doc/refman/5.5/en/glossary.html#glos_buffer_pool\)](https://dev.mysql.com/doc/refman/5.5/en/glossary.html#glos_buffer_pool) into which it can load table and index data. Obviously, accessing RAM is faster than disk, so the more memory you can give for the buffer pool, the more MySQL can load into the buffer. MySQL uses memory for other things, so if you have 6G to play with, you probably do not want the buffer pool to be larger than 4G. You'll have to experiment on your own system.

A helpful tool that is free is called `mysq tuner.pl`. It is a perl script that runs against your database to help you tune it's memory, security, etc. To get it, create a directory on your Linux server and change to that directory. Then type: `wget mysq tuner.pl`. Once it is down downloading (takes 1 second), type: `chmod +x *.pl` so that it can be executed; then, execute it by typing: `./mysq tuner.pl`.

```
innodb_additional_mem_pool_size = 204M
```

From what we've seen, this should be set to 5% of the buffer pool size. But, again, do your research.

```
# Set .._log_file_size to 25 % of buffer pool size
innodb_log_file_size = 1024M
```

This affects the `ib_logfile0` and `ib_logfile1` files in your MySQL data directory. These files hold statements/transactions. The maximum size these can be set to (regardless of your buffer pool size) is 1024M (or 1G, totaling 2 GB for all log files together) for MySQL 5.5 and 255 G (total for all log files together can be up to 512 GB) for 5.6. For more information check out the MySQL website [here \(http://dev.mysql.com/doc/refman/5.6/en/innodb-parameters.html#sysvar_innodb_log_file_size\)](http://dev.mysql.com/doc/refman/5.6/en/innodb-parameters.html#sysvar_innodb_log_file_size). There is also some discussion on what values you should set the log files to (see <https://www.percona.com/blog/2008/11/21/how-to-calculate-a-good-innodb-log-file-size/> (<https://www.percona.com/blog/2008/11/21/how-to-calculate-a-good-innodb-log-file-size/>)). The maximum size these can be set to is 1024M.

IMPORTANT: If you change this setting, it would be a good idea to flush the existing logs (`ib_logfile0` and `ib_logfile1`). To do this, take the following steps:

- a) Log into MySQL: `mysql -u root -p`
- b) From the MySQL prompt, type: `SET GLOBAL innodb_fast_shutdown=0;`

Then type "quit" to log out of MySQL.

- c) Shut down MySQL: `rcmysql stop`
- d) Rename the `ib_logfile0` and `ib_logfile1` files.
- g) Start up MySQL: `rcmysql start`
- h) If MySQL starts up successfully, you can delete the `ib_logfile*` files.

If you do not delete or move the existing `ib_logfile0` and `ib_logfile1` files from the MySQL data directory when changing the logfile size, MySQL does not load.

```
innodb_log_buffer_size = 8M
```

The log buffer allows transactions to run without having to write the log to disk before the transactions commit. If the transactions are large, then making the log buffer larger saves disk I/O. There is a status called "innodb_log_waits" in MySQL. This shows the number of times a wait was required for it to be flushed before continuing. If you have any waits, then the buffer size is too small. Here is the query you can run on that status: `SHOW GLOBAL STATUS LIKE 'innodb_log_waits'`;

```
mysql> show global status like 'innodb_log_waits';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| Innodb_log_waits | 0     |
+-----+-----+
1 row in set (0.01 sec)
```

```
#innodb_flush_log_at_trx_commit = 1
#innodb_lock_wait_timeout = 50
```

To enable any one of those settings, remove the hash mark ("#") preceding it. The following is an example for a typical system that has 16G of total RAM, where 2G is allocated for the Linux OS and 8G to Tomcat. The amount allocated to Tomcat versus the database varies per customer. A system where a lot of queries/searches are made in Retain for items, or that runs multiple workers on the Retain Server itself, allocates more memory to Tomcat, like in this example; otherwise, a customer might want to favor MySQL a bit and give Tomcat a little less.

Changes to the `my.cnf` do not take affect until after MySQL is restarted. Again, if you changed the log file size setting, you must follow the steps listed above or MySQL fails to load.

Once MySQL loads successfully, you can start tomcat [“Starting and Stopping the Retain Server” on page 113](#).

Installing a Retain Server on Linux

- ◆ [“Retain Prerequisites for Linux Servers” on page 79](#)
- ◆ [“Downloading and Preparing the Retain Installation Files on Linux” on page 80](#)
- ◆ [“Installing the Retain Server” on page 80](#)

Retain Prerequisites for Linux Servers

IMPORTANT: Make sure you have planned your deployment before installing the software. For example, if the Linux server doesn't have the minimum [RAM](#) for the components you specify, the installation aborts.

Successfully installing Retain and/or its components on Linux servers, requires the following:

- ◆ **An Apache Web Server:** Installed and running on each Linux server as outlined in [“Linux Web Server” on page 68](#).

- ♦ **Access to the appropriate JDK running on the system:** By default, the installer expects the appropriate JDK to be running on the Linux system. (For Retain 4.8.1, this is JDK 11)

If the appropriate JDK is not found and the server is connected to the Internet, the install automatically downloads and installs the JDK.

If the appropriate JDK is not found and an Internet connection is not available, you must type the path to the appropriate JDK installation source files on the Linux server before the installation will continue.

- ♦ **Synchronized server clock:** Before you start the Retain install, the Linux server must be synchronized with the time on your network. For example, if your organization uses NTP, configure the server with your organization's NTP settings.

Downloading and Preparing the Retain Installation Files on Linux

Do the following:

- 1 Using your [Micro Focus Customer Center](#) account, download the latest version of Retain to the Linux server where you are installing Retain or one of its components.

- 2 Extract the archive into a new folder.

- ♦ **Graphical Interface:** Right-click the download and select **Extract Here**.

- ♦ **Terminal Prompt:** Enter the following command

```
unzip Retainversion.zip
```

where *version* is the release version number in the .zip filename.

- 3 Make the script executable.

- ♦ **Graphical Interface:** Right-click the download and select **Properties > Permissions tab > Allow executing file as program**.

- ♦ **Terminal Prompt:** Change to the Retain install folder that you just extracted, then enter the following command:

```
chmod +x *.sh
```

Installing the Retain Server

The Retain Server is the main component of a Retain deployment and is installed on only one Linux server. Other Retain components can be installed with Retain or separately (as explained in [Step 5](#) below).

IMPORTANT: Make sure that you have planned your deployment before installing Retain software. If the Linux server doesn't have the minimum RAM for the components you select, the installation aborts.

Retain installs an embedded Tomcat. Consider removing any existing Tomcat installation prior to installing Retain components.

- 1 If you have not already done so, download and prepare the target server with the Retain installation files, as instructed in ["Downloading and Preparing the Retain Installation Files on Linux" on page 80](#).
- 2 Access the server's terminal prompt and enter the following command:


```
./RetainInstall.sh
```

- 3 Read and accept the license agreement.

TIP: To go immediately to the acceptance prompt, type `q`.

- 4 Read the software requirements and press Enter.
- 5 The install prompts for which of the following Retain components you want to install on the server:

Component	Placement Detail
Retain Server	Install one instance of this on the main server in your deployment
Stubbing Server	This only applies to GroupWise. See “Stubbing Server Overview” on page 383 .
Reporting and Monitoring Server	Generally, you should install this on the Retain server.
Retain Worker	Generally, you should install a Worker on the Retain server. for troubleshooting purposes. Instructions for installing production-use Workers follow this section in “Deploying Production-Use Worker Agents on Linux” on page 109 .
Retain Message Router	Install this in the DMZ. For instructions, see “Installing a Retain Message Router on Linux” on page 110 .

Type `y` to install a component; `n` to not install it.

- 6 The install checks the server for Java (currently JDK 11).
If the required version is not found on the server, the installation [downloads the correct version \(http://download.gwava.com/download.php?product=jvm8&version=alin64server_latest\)](http://download.gwava.com/download.php?product=jvm8&version=alin64server_latest) and then upgrades or installs Java as needed.
If the download connection fails, the installer asks whether you want to retry, abort the installation, or specify a local path to the Java installation package.
- 7 The install restarts Tomcat and alters the runlevel so that Retain starts automatically when the system does.
- 8 When the installation completes, it displays the URL for accessing the Retain Server’s web console in a browser and returns to the terminal prompt.
- 9 Open a terminal prompt and verify that the Retain Server installed by checking that both Apache 2 and Retain Tomcat are running by entering the following commands:

```
service apache2 status  
service retain-tomcat status
```
- 10 Continue with [“Running the Retain Server Configuration Wizard” on page 91](#).

Installing a Retain Server on Windows

- ◆ [“Downloading and Preparing the Retain Windows Installation Source Files” on page 82](#)
- ◆ [“Prerequisites” on page 82](#)
- ◆ [“Retain Install” on page 82](#)

Downloading and Preparing the Retain Windows Installation Source Files

Do the following:

- 1 Using your [Micro Focus Customer Center](#) account, download the latest version of Retain to the Linux server where you are installing Retain or one of its components.
- 2 Using Windows Explorer, extract the archive into a new folder.

Prerequisites

Before running the Retain installer, you must first ensure that the following are installed and working:

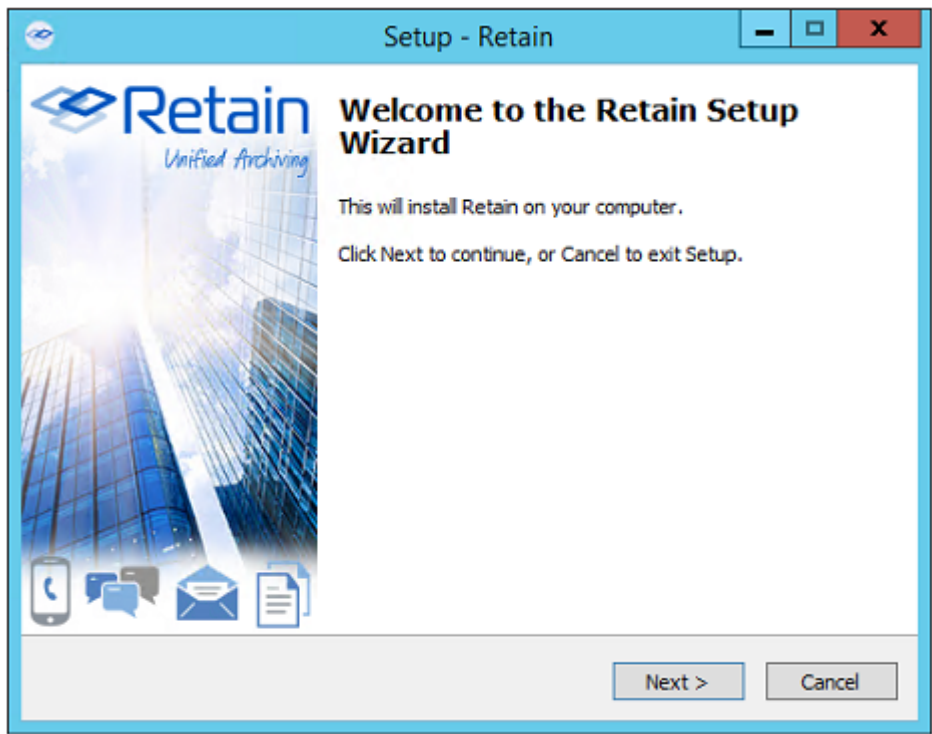
- ◆ **A Web Server:** Installed and running on each Windows server as outlined in [“Windows Web Server” on page 68](#).

NOTE: IIS has a size limit restriction which limits uploads of message and attachment archiving to 30MB, by default.

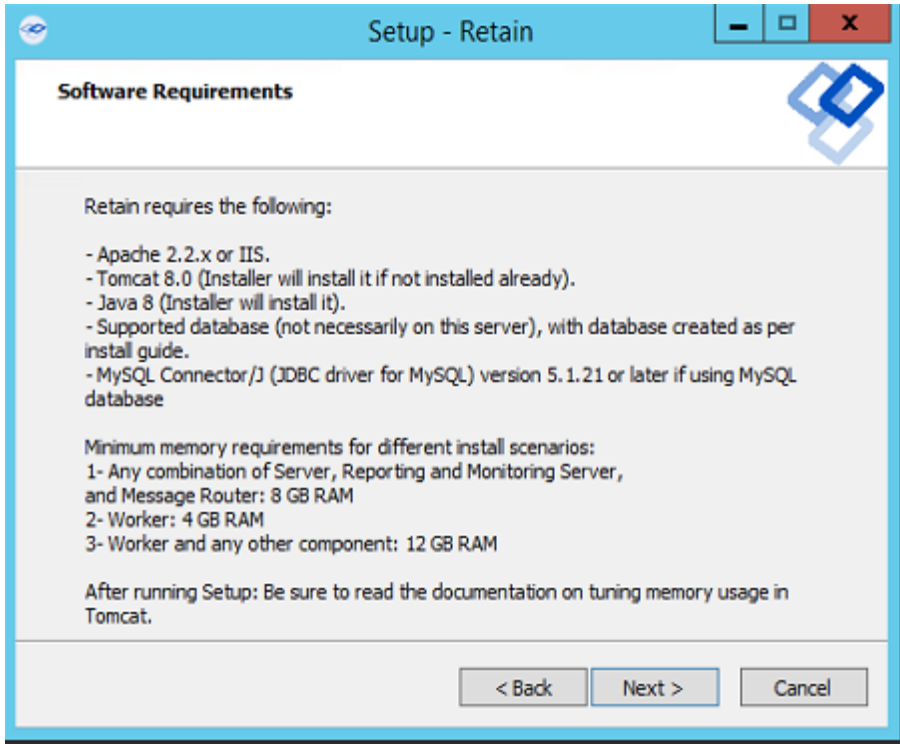
- ◆ **PowerShell 3.0 or higher:** If PowerShell's execution policy is set too restrictively, the install fails. See [Set-ExecutionPolicy \(https://docs.microsoft.com/en-us/powershell/module/Microsoft.PowerShell.Security/Set-ExecutionPolicy?view=powershell-5.1\)](https://docs.microsoft.com/en-us/powershell/module/Microsoft.PowerShell.Security/Set-ExecutionPolicy?view=powershell-5.1).
- ◆ **Access to the appropriate JDK running on the system:** For Retain 4.8.1, this is JDK 11.
If the appropriate JDK is not found and the server is connected to the Internet, the install automatically downloads and installs the JDK.
If the appropriate JDK is not found and an Internet connection is not available, you must browse to the appropriate JDK installation source files on the Windows server before the installation will continue.
- ◆ **Synchronized server clock:** Before you start the Retain install, the Windows server must be synchronized with the time on your network.

Retain Install

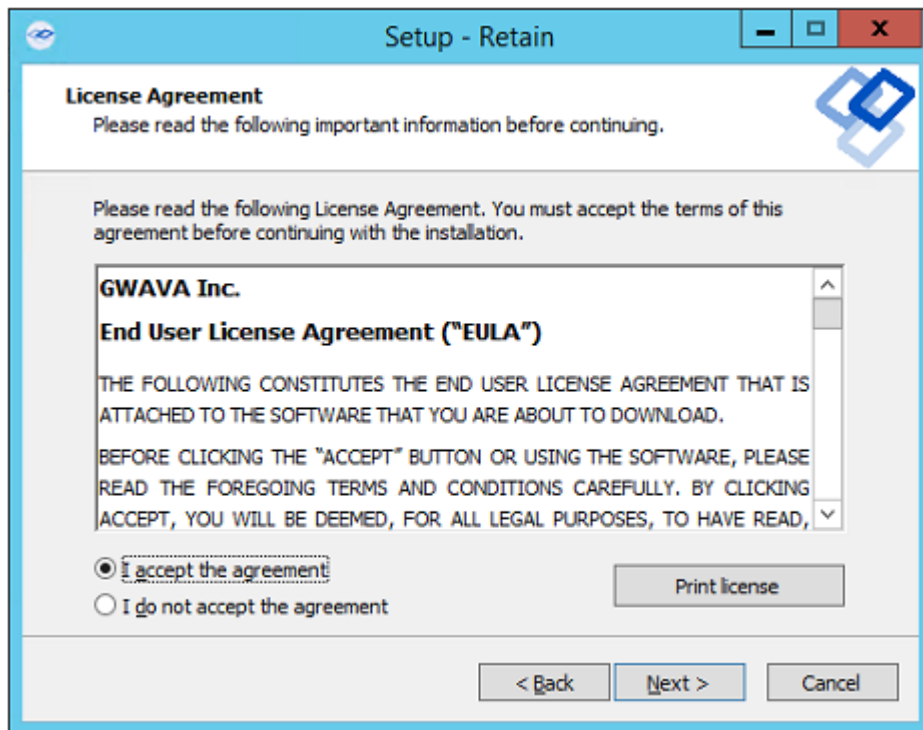
- 1 Prepare the Retain installation software on the server as instructed in [“Downloading and Preparing the Retain Windows Installation Source Files” on page 82](#).
- 2 Run “RetainInstall.exe”. NOTE: If it already exists, the installer automatically shuts down Tomcat.
- 3 The Retain Setup Wizard welcomes you to the installer.



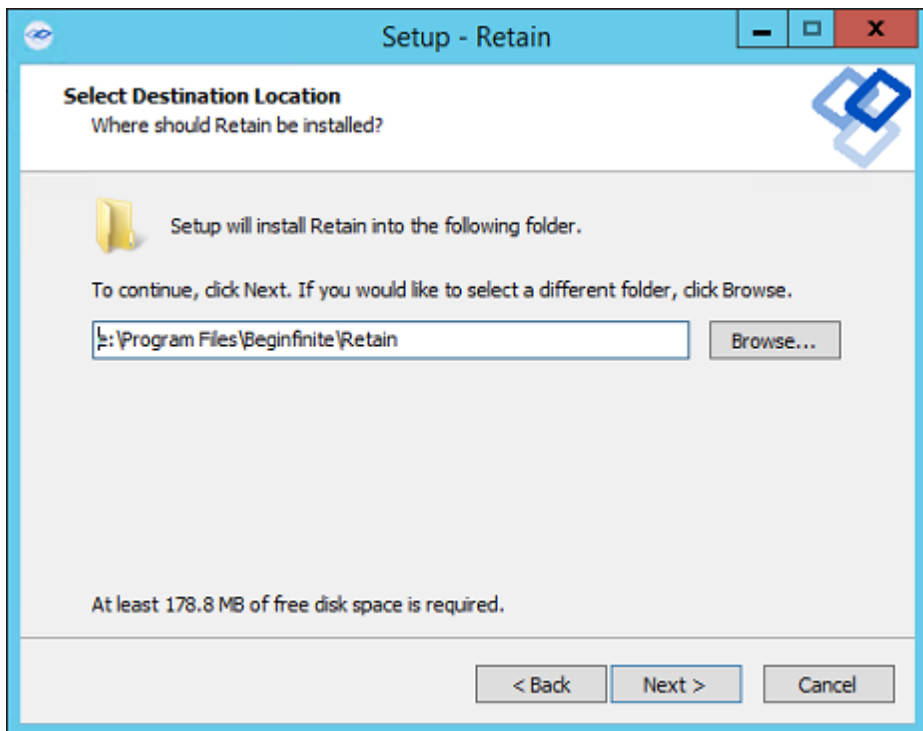
4 The Wizard reminds you of the Software Requirements. Click 'Next' to continue.



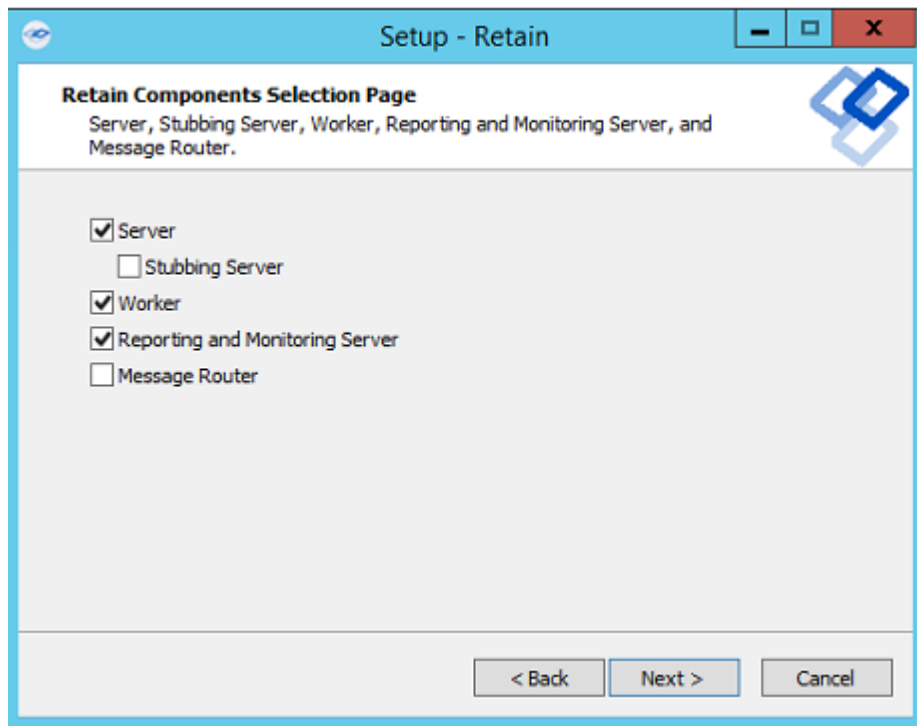
5 Agree to the license agreement.



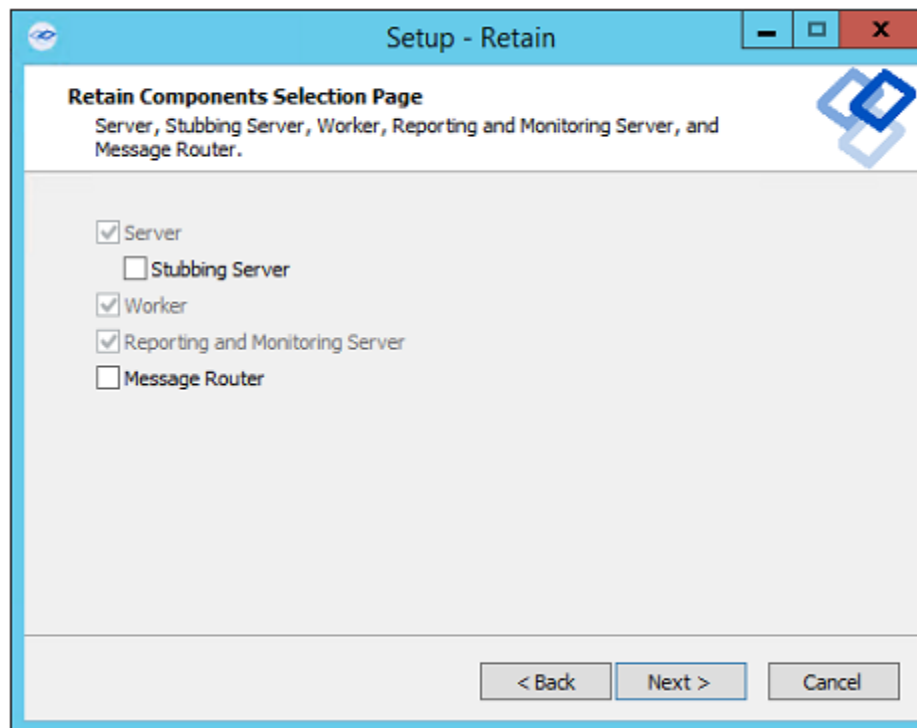
6 Select the install location.



7 Select the program features to install. (Retain Server, Stubbing Server, Retain Worker, Reporting and Monitoring Server, and the Message Router.)



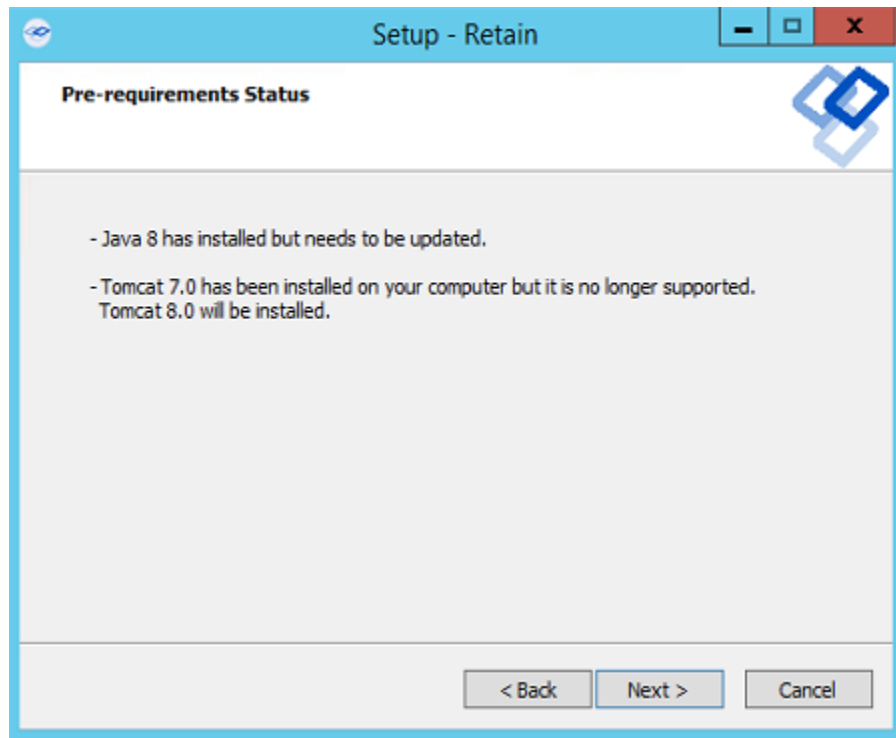
9a. If you are upgrading, previously installed components are preselected and you can select additional modules to install.



- 8 Pre-requirements status is displayed. Installer attempts to detect previous Tomcat installations. If none are found, it asks whether Tomcat has been installed. Indicate 'yes' or 'no'. If upgrading, Tomcat 7.0 is upgraded to Tomcat 8.0.

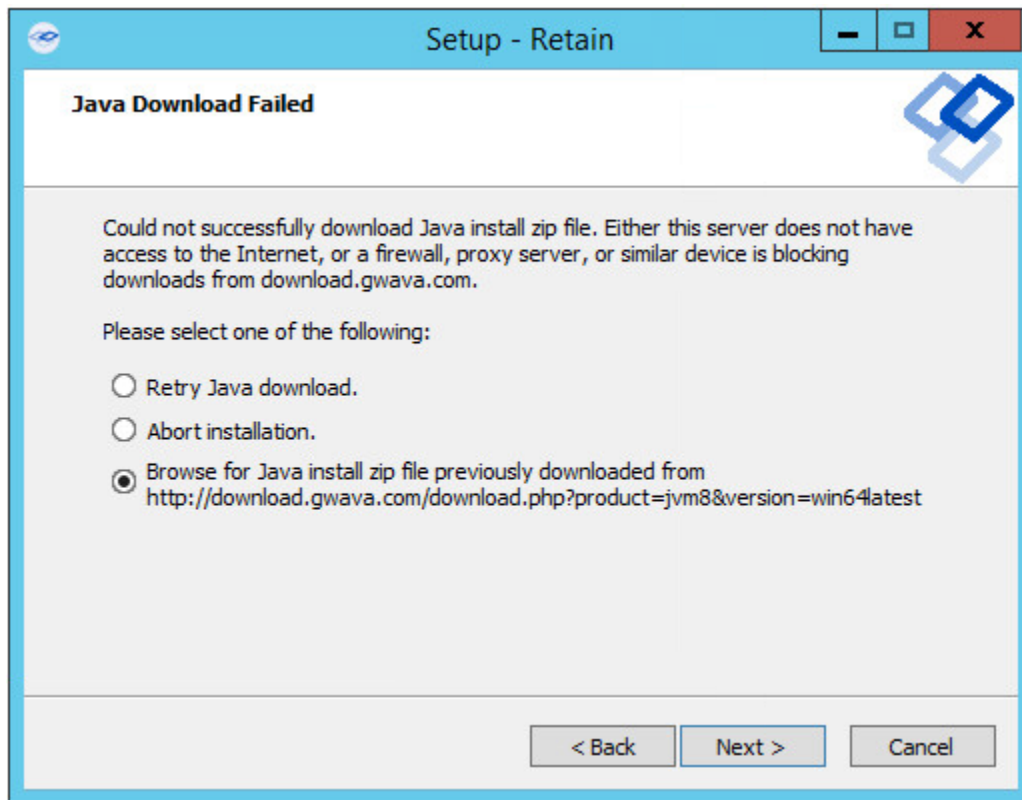
Please note that the environment variable 'RETAIN_CATALINA_HOME' is set after Tomcat installation.

Click 'Next' to continue.

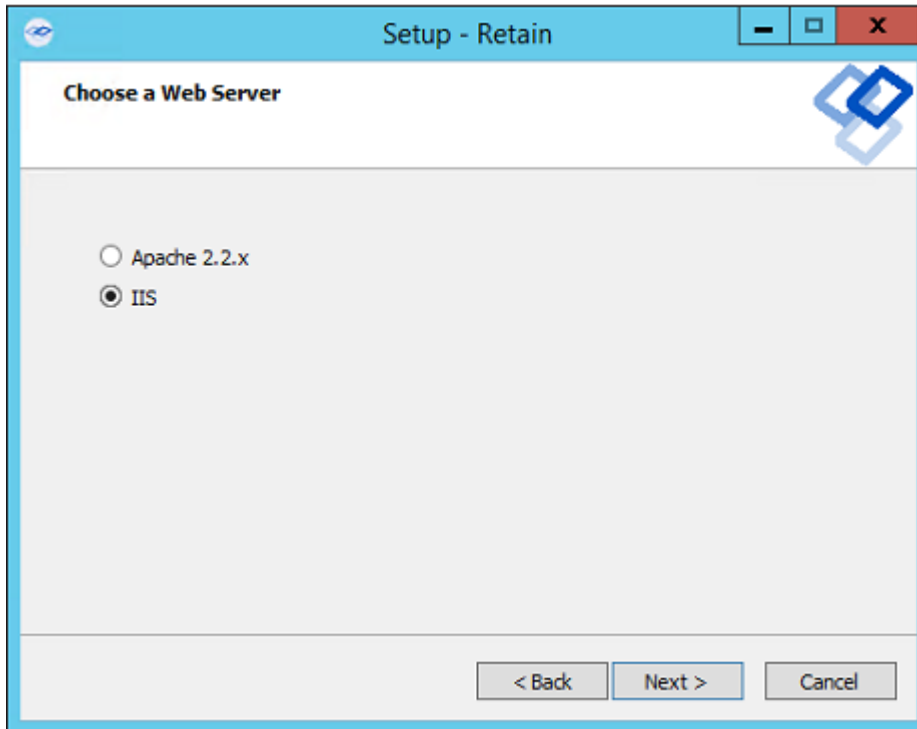


Java and Tomcat are installed or upgraded. (Note: If there are issues with Apache and Tomcat starting correctly, set the Java initial memory pool and the maximum memory pool to the same value, appropriate to the system and expected load.) Tomcat is run as a System Service and shows up in the system services list as "Retain Tomcat 8". (Start | Run | services.msc)

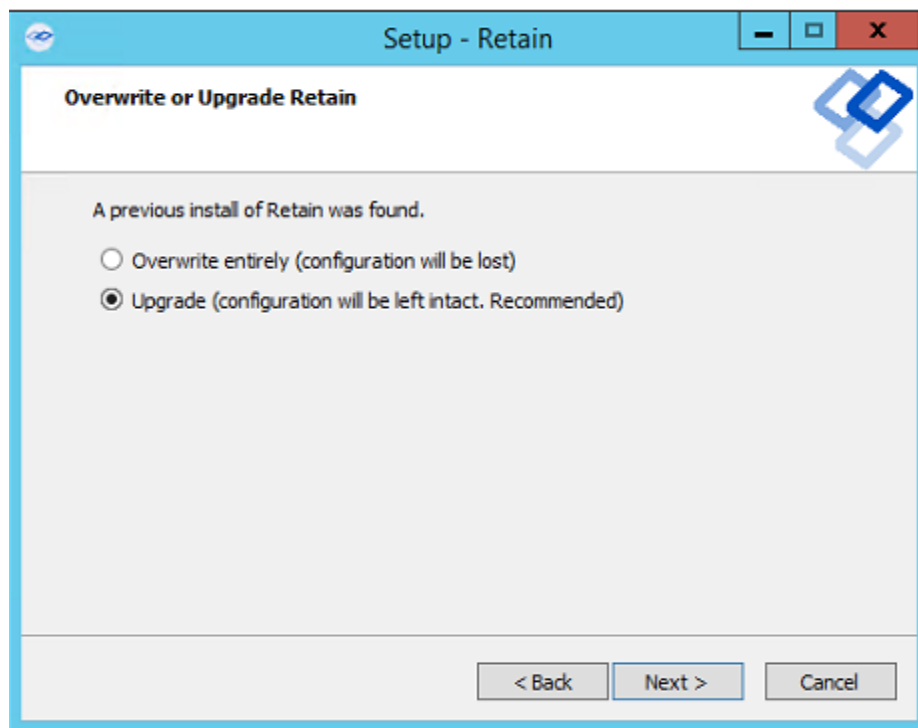
10a. If an Internet connection cannot be made, the installer asks whether to retry, to abort, or use a local path to the Java installation package. The Java installer can be downloaded from: <http://download.gwava.com/download.php?product=jvm8&version=win64latest>



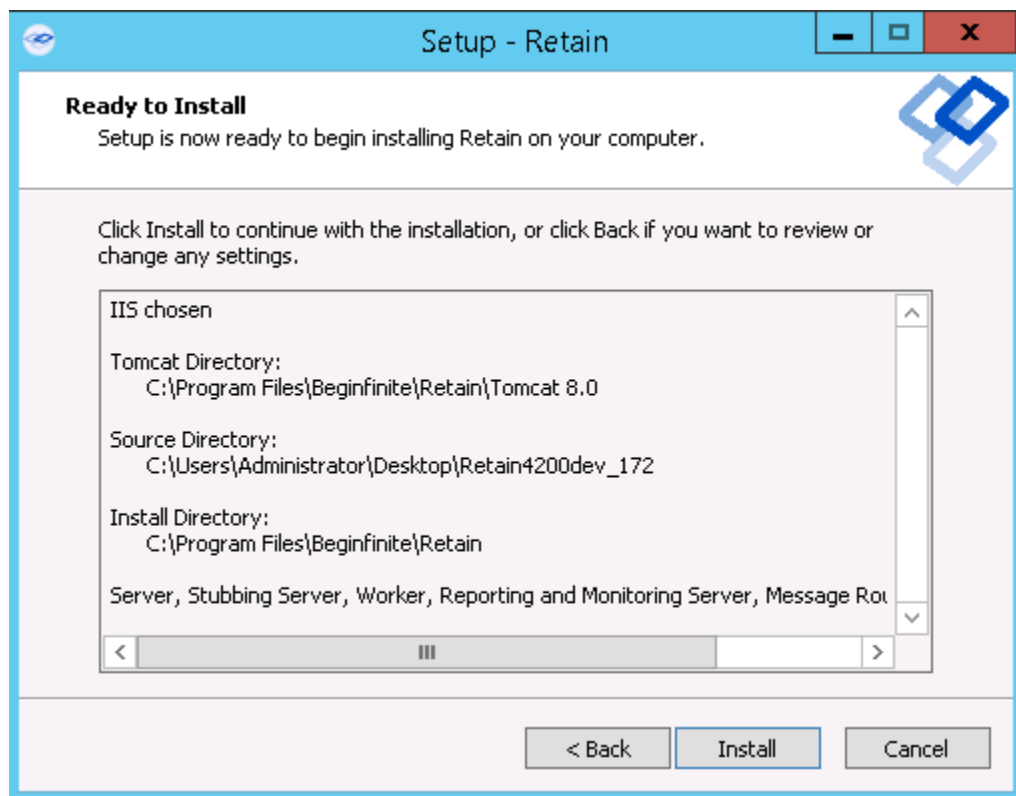
- 9 Select either Apache or IIS. (If apache, provide the installation directory.)



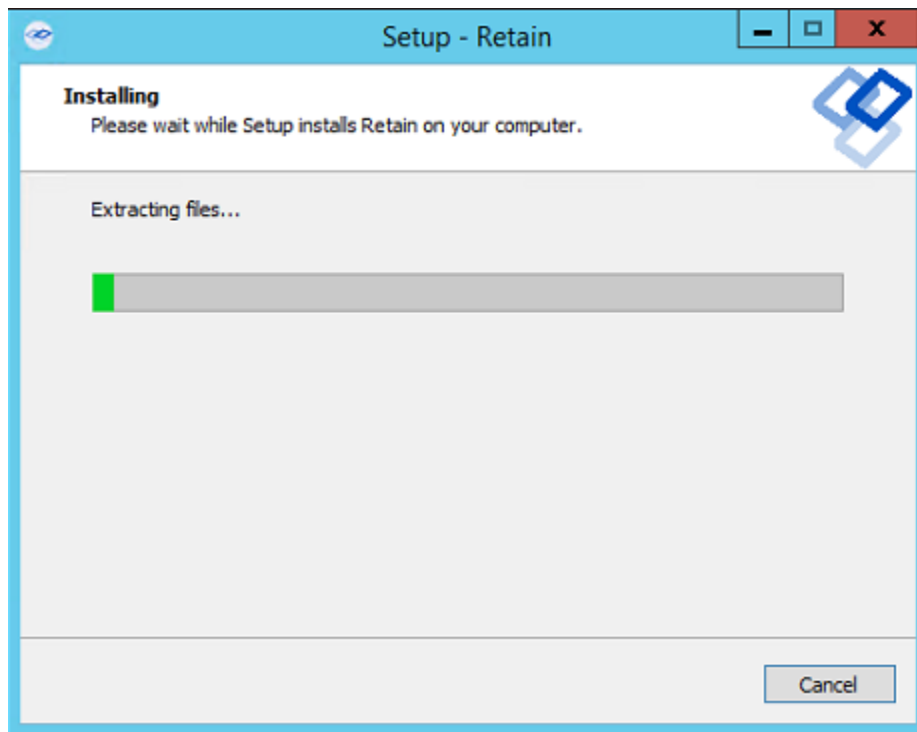
- 10 If a previous version of Retain is detected, upgrade options are displayed; Overwrite or Upgrade. Generally, you should choose Upgrade. Click Next.



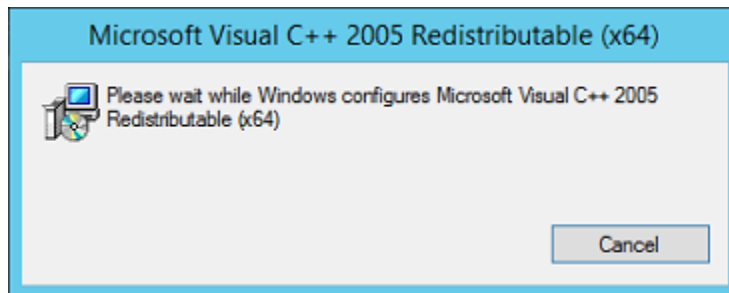
11 Confirm settings and select 'Install'.



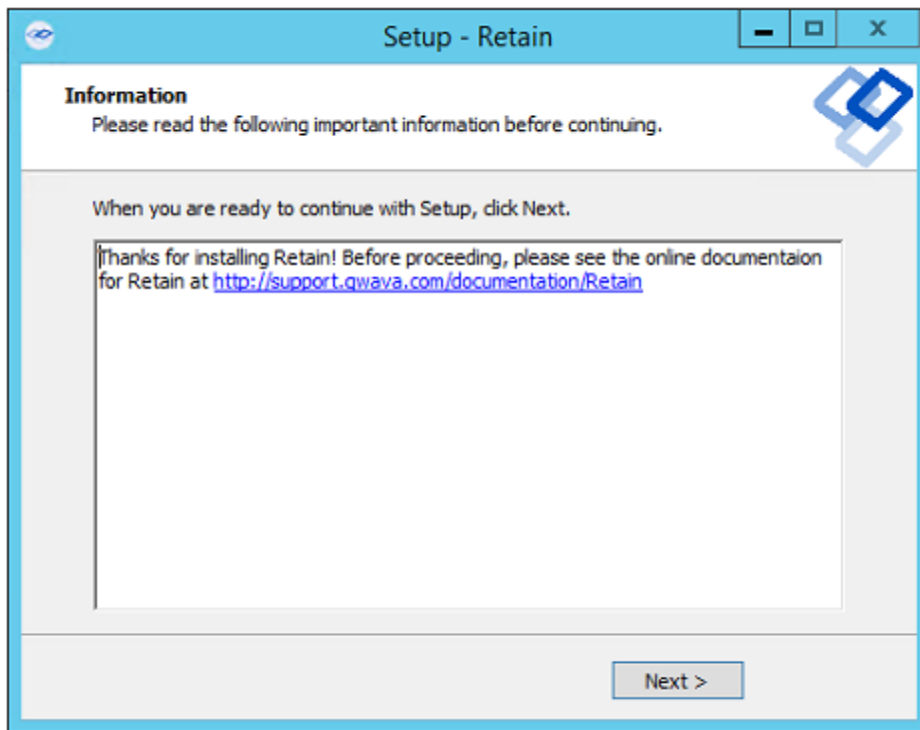
12 The product installs.



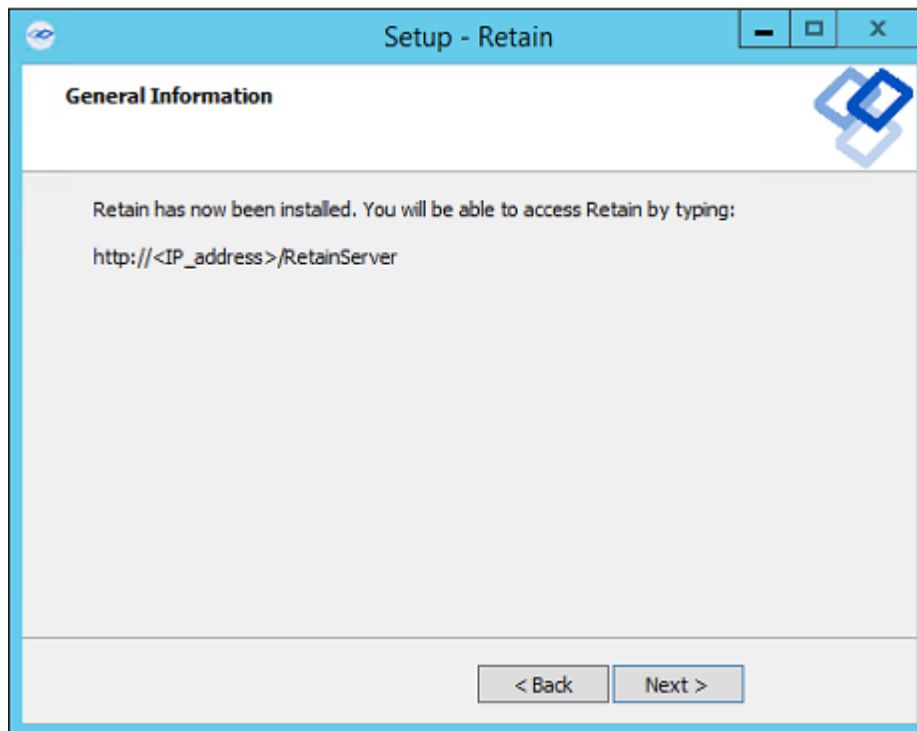
- 13 If Microsoft C++ 2005 Runtime distribution is not installed, the appropriate version is automatically installed.



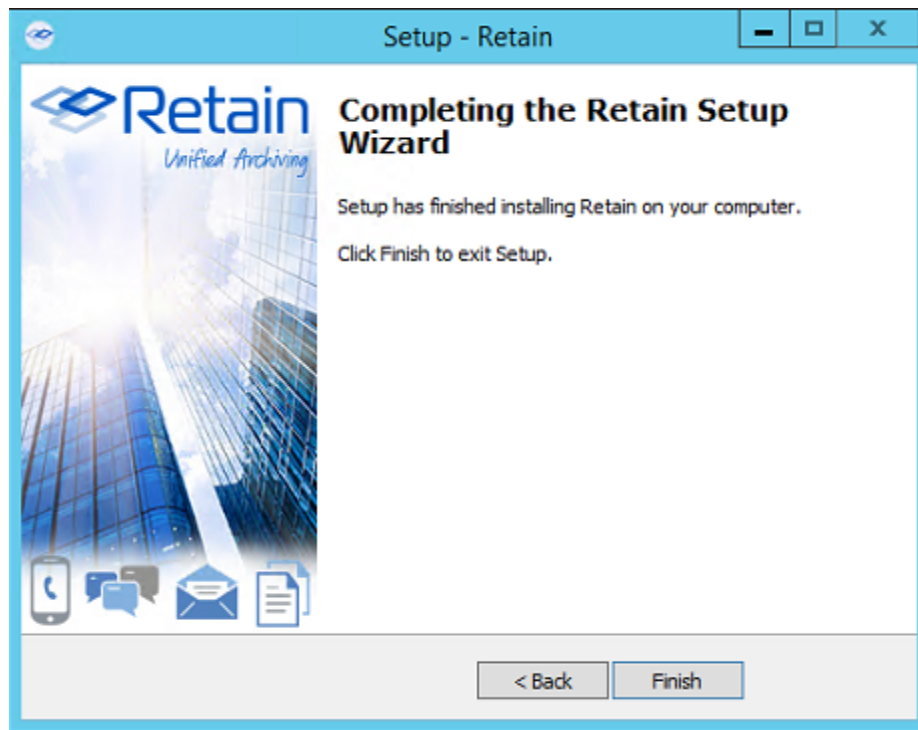
- 14 The Setup Wizard thanks you for installing Retain.



15 The Setup Wizard shows you the URL to the Retain admin console.



16 The Retain installation process is complete. Click Finish.



17 Continue with “Running the Retain Server Configuration Wizard” on page 91

Running the Retain Server Configuration Wizard

After installing the Retain Server, you must run the initial configuration wizard to prepare the server for working with all the components that will constitute your Retain deployment.

Do the following:

- 1 On an administrative workstation, open a [supported administrative web browser](#).
- 2 Go to `http://RetainServer-IP-or-DNS/RetainServer`.
- 3 Run the wizard to configure the Retain Server as outlined in the following table.

Table 3-1 Running the Retain Server Configuration Wizard

Panel or Prompt	Action	Information
Welcome > File Path	<ol style="list-style-type: none"> 1. Set the paths for Retain as planned in “Planning Retain Storage Requirements” on page 54. 2. By default, all data is stored under <code>/var/opt/beginfinite/retain</code>. To specify alternate storage paths on a Linux system, make sure you have granted sufficient rights to Retain as outlined in “Setting Custom Storage Path Rights on Linux” on page 59 before completing this wizard. 3. You can alter the base path by selecting Custom in the drop-down list and specifying an alternate path where you have granted rights. Retain derives all file paths from this base path. 4. To specify fully customized alternate storage locations, click Advanced Settings and disable Derive all file locations from above specified path?. 5. Click Continue. 	<p>However, storing data on separate volumes can yield significant performance increases. Therefore, Retain lets you specify where you want to store archived data, indexes, and so on.</p>
Message Store Database	<ol style="list-style-type: none"> 1. Enter the database connection information for the database you created in “Installing a Database Server and Creating a Retain Database and Database User/Role” on page 69. 2. Click Continue. 	<p>This is the database that stores meta data for messages and other data stored in the datastore.</p>
Configuration Database	<ol style="list-style-type: none"> 1. Enter the database connection information for the database you created in “Installing a Database Server and Creating a Retain Database and Database User/Role” on page 69. 2. Click Continue. 	<p>This is usually the same as the Message Store Database, so all connection information is carried forward to this dialog except the password.</p> <p>Retain lets you create and specify a separate database if desired.</p>
Administrator Account	<ol style="list-style-type: none"> 1. Specify and confirm a password for the main administrator account. 2. Click Continue. 	<p>This account</p> <ul style="list-style-type: none"> ◆ Has all admin rights. ◆ Never expires. ◆ Can authenticate when the system is offline. <p>NOTE: Retain lets you create as many user accounts with administrative roles as you need. If this account is deleted, you will need to contact Micro Focus support.</p>

Panel or Prompt	Action	Information
SMTP Notifications	<ol style="list-style-type: none"> Enter the following information: <ul style="list-style-type: none"> ◆ SMTP Server: DNS hostname (preferred) or IP address of the server Retain should use. ◆ From address: The From address shown on the messages Retain sends. ◆ To address: The address to which Retain should send notifications. ◆ Username: The username for authenticating with the SMTP server. ◆ Password: The password for the username. ◆ Click Continue. 	<p>Retain uses an SMTP relay host for sending notifications.</p> <p>The wizard attempts to send a test message.</p> <p>You shouldn't proceed with setting up Retain until the SMTP test message is successfully delivered. If you see an error, check firewall settings, including local application firewalls running on affected desktops and/or servers.</p> <p>If no SMTP is present, you can skip this step by typing <code>skip</code> in the SMTP Mail Server field. Obviously, this disables Retain's notification services and is therefore not recommended for production deployments.</p>
Indexing Engine	<ol style="list-style-type: none"> Enter the admin password you set earlier. Click Continue. <p>The system initializes and connects to the indexing engine.</p>	
Retain Server Connections	<ol style="list-style-type: none"> Set up the Retain Server connection. This sets the connection for the Router "Retain Message Router Configuration" on page 375 and REST applications, such as Retain Publisher "Retain Publisher and Viewer" on page 574. <p>When possible, use the Retain Server's DNS hostname so that external devices can resolve to it.</p>	
(Optional) Cloud Mobile Service Proxy Connection	<ol style="list-style-type: none"> (Optional) Configure the Cloud Mobile Service (CMS) Proxy Connection. If you would like to provision and register devices using CMS and have a Proxy server for your Retain server, you can specify the Proxy server information here. Click Continue > Complete. <p>The Retain login prompt displays.</p>	

Logging In to Retain

Logging In

From your web browser, type: `http://<YourServerIP>/RetainServer` or `https://<YourServerIP>/RetainServer`. The capital R and S are important, as it is case-sensitive.

You'll be brought to the login screen:



The screenshot shows the Retain login interface. At the top, the Retain logo is displayed. Below the logo, there are three input fields: a text field containing the username 'admin', a password field with seven dots, and a dropdown menu set to 'English'. A blue 'Login' button is positioned at the bottom of the form.

After you log in, the main administration page displays: (Non-administrators see only the Search interface [Chapter 13, “Searching Retain’s Archives,”](#) on page 525.)

NOTE: Only users possessing at least one administrative role see the administrator’s screen login. Other users are forwarded to the Search Interface.

Language: English | Welcome, admin | About | Tools | Status & Updates | Logout

Status

Jobs Workers Server Updates Archiving Stats

Server

SQL Server	OK
Server	RetainServer (QHXCUTWVBZCJONWLTBGEXD)
Stored Documents	0
Storage Engine	datastore_process
Server started at:	23-Jul-2015 11:20:17
Archived since server started (total/dupes/new):	0 / 0 / 0
Server errors	0

Installation time	29-May-2015 00:07:09
Enable Index Optimization	Yes
Last Index Optimization	10-Jun-2015 01:02:06

Total documents ever indexed	0
Total messages in memory queue awaiting indexing	0
Total documents indexed so far since uptime	0
Total messages indexed so far since uptime	0
Total messages with indexing errors since uptime	0
Total messages with items skipped (*) since uptime	0
Last item indexed at	Never
Time to process last batch (ms)	0
Indexing thread alive	True

(*) Items may be skipped in indexing for perfectly benign reasons, such as there being no handler for that specific type of file or the file being too large according to your settings in Server Configuration. Also, the ratio of documents to emails is indeterminate, but usually ranges from 1-2

An informational screen is displayed, showing among other things the latest job activity, server health information, and software updates that are available.

At this point you need to continue configuring Retain “[Retain Deployment Checklist](#)” on page 67. Reporting & Monitoring, a module and a job still need to be configured before data can be archived.

Status and Updates

The status page has four different tabs which show the status of your system. The status page is set to default to the tab that is deemed to require the most attention, or is deemed to hold the most important information at a given time. For instance, if an error has occurred, that tab is shown, likewise the update tab is shown by default if there is an update available. The tabs are discussed below.

Jobs Tab

The Jobs tab, shown above, shows the jobs that are assigned to the server and their status. You also can select the “show only active jobs” check box, and only jobs that are currently running are displayed.

Status

Jobs
 Workers
 Server
 Updates
 Archiving Stats

Jobs (all jobs) Show only this job

Show only active jobs

GroupWise

Job	Disabled and Expired Accts.
Job running	No
Job began	Never
Job ended	Never
Time elapsed	0d : 0h : 0m
Next job time	<input type="button" value="Find"/>
Last PO / Mailbox scanned	-- / --
Total errors	0
Total mailboxes (job)	0
Total messages (job)	0
Total messages (lifetime)	0
Total messages deleted (job)	0

GroupWise

Job	GW on Wednesdays at 12:00
Job running	No
Job began	09-Sep-2015 12:00:11
Job ended	09-Sep-2015 12:06:28
Time elapsed	0d : 0h : 6m
Next job time	<input type="button" value="Find"/>
Last PO / Mailbox scanned	gw_po / mkures
Total errors	0
Total mailboxes (job)	236
Total messages (job)	32
Total messages (lifetime)	3604
Total messages deleted (job)	0
Total messages deleted (lifetime)	0

GroupWise

Job	GW on Wednesdays at 12:00
Job running	No
Job began	11-Sep-2015 04:00:00
Job ended	11-Sep-2015 04:00:00
Time elapsed	0d : 0h : 0m
Next job time	<input type="button" value="Find"/>
Last PO / Mailbox scanned	Test
Total errors	0
Total mailboxes (job)	0
Total messages (job)	181
Total messages (lifetime)	7962

Worker Tab

The workers tab displays the workers and their last active jobs, connections, and totals.

Jobs
 Workers
 Server
 Updates
 Archiving Stats

Workers

Worker	BES5 Worker
Last contact	21-Oct-2014 20:10:38
Last Job :	BES05 at 17:00
Last job start :	21-Oct-2014 17:00:00
Last job end time:	21-Oct-2014 17:00:04
Registered:	17-Jun-2014 12:00:34
Total messages stored:	27
Total messages deleted:	0
Total mailboxes scanned:	949

Worker	Local Worker
Last contact	14-Sep-2015 22:01:09
Last Job :	Social 17:00
Last job start :	14-Sep-2015 17:00:29
Last job end time:	14-Sep-2015 17:00:32
Registered:	04-Jun-2014 19:04:10
Total messages stored:	699758
Total messages deleted:	0
Total mailboxes scanned:	182377

Worker	Mobile Worker
Last contact	10-Feb-2014 22:04:13
Last Job :	null
Last job start :	10-Feb-2014 22:04:12
Last job end time:	10-Feb-2014 22:04:20
Registered:	10-Feb-2014 22:04:13
Total messages stored:	0
Total messages deleted:	0
Total mailboxes scanned:	0

Server Tab

The Server tab shows the basic status of the Server with the messages archived and maintenance information.

Server	
SQL Server	OK
Server	RetainServer (VXOTVGDNRDNNFKYDQA)
Stored Documents	41
Storage Engine	datastore_process
Server started at:	14-Sep-2015 10:09:58
Archived since server started (total/dupes/new):	4366 / 4325 / 41
Server errors	0

Installation time	14-Jul-2015 22:00:00
Enable Index Optimization	Yes
Last Index Optimization	14-Sep-2015 01:19:13

Total documents ever indexed	41
Total messages in memory queue awaiting indexing	0
Total documents indexed so far since uptime	41
Total messages indexed so far since uptime	41
Total messages with indexing errors since uptime	0
Total messages with items skipped (*) since uptime	0
Last item indexed at	14-Sep-2015 13:58:54
Time to process last batch (ms)	0
Indexing thread alive	True

(*) Items may be skipped in indexing for perfectly benign reasons, such as there being no handler for that specific type of file or the file being too large according to your settings in Server Configuration. Also, the ratio of documents to emails is indeterminate, but usually ranges from 1-2

Updates Tab

The updates tab displays whether there is a later version of Retain available. This tab is displayed, by default, only if there is a new update available.

Archive Stats Tab

The archive stats tab is a small statistics portal which allows rapid searching of the archive statistics in the server. The search allows for a time frame, and the categories shown below: Critical Errors, Warnings and Critical Errors, and Summary. Once the 'Search' button has been pressed, a new window or tab is opened to display the search results. This function had been deprecated as it has been replaced by Reporting and Monitoring.

Search Archiving Stats

Search [] Last 30 days []

Critical Errors
Critical Errors
Warnings and Critical Errors
Summary

Saving Changes

Retain uses a web interface for all administration, and is unaware of changes made on the web page until the information is returned to the Server. To make sure you keep all changes you have made in the interface, select the “Save Changes” button to commit the change to the Server. When you make a change, the website is aware and you see the ‘Save Changes’ button become colored at the top right of the screen:



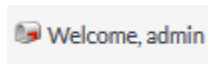
When the “Save Changes” lights up, click on the disk icon to save any changes you have made on this screen otherwise your changes are lost.

The top right bar also contains a button to reload the current page and a help button which opens a window displaying critical information.

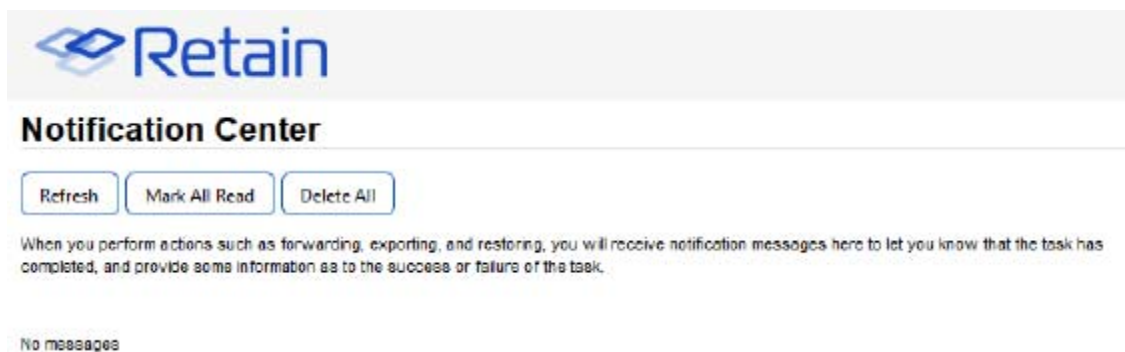
Notifications

Notifications are automatically sent to the administrator whenever data in Retain is moved. Moving data consists of system migration, exporting, forwarding, restoring, and publishing. By default, the address used is the address supplied during servers activation.

To spawn the notifications page, click on the ‘Welcome’ link at the top of the page. When notifications are pending, the red flag on the mailbox is lifted.



Selecting the mailbox or welcome link opens a new notifications window.



The highlighted notifications are new, unread notifications and events. Selecting the event notification provides all the pertinent information regarding the event.

If there are any errors, a truncated error log is provided which details the error and the reason for the error.

Licensing

The Licensing page displays, manages, and reports on the licenses active in the Retain System. The status displays active users, inactive users, merged mailboxes, and individual counts for active and inactive users on each licensed module.

Retain comes with a 30-day trial license. This is a fully operational trial to see if Retain works with your system.

When the licenses expire, you are brought to only the license page to upload a valid license.

There are two kinds of licenses: PEM and REST. PEM licenses are used for most functions. Some functions require using the REST API, which requires a REST license as well.

Download Your License

You should receive an email with your validation keys, including one for base server access and another for the module used for archiving from your email system. You can also find the keys in the [Micro Focus Customer Center](#).

1. Log in to the Micro Focus Customer Center <https://licenses.gwava.com/> (<https://licenses.gwava.com/>)
2. Select the proper Product from the drop down menu.
3. Enter the Validation Key and click **Next**.
4. Fill out the contact information and click **Next**.
5. Download the PEM file.

General Summary

- ◆ Date contains today's date.
- ◆ Product is what version of Retain is currently installed.
- ◆ License Count is the number of users archived by Retain. Only mailboxes that have been archived are counted as active or inactive, not every entry in the mail system's address book. Mailboxes are marked as inactive if no new data from that mailbox had been archived in the last 90 days.
- ◆ Merged Mailboxes is the number of mailboxes merged with Mailbox Mapping Options and/or the Mailbox Merger/Splitter.

Generate Licensing Report creates a PDF file which displays the same information as seen in the 'License Summary' section and lists the licenses.

Licenses

Individual licenses which have been already added to the system are displayed under the individual license breakdown.

Licensing

Licensing Summary

General Summary

Date Fri Aug 02 14:18:16 EDT 2019
Product Micro Focus Retain 4.8.1.0
Total Active Server/Unified Accounts 8
Total Inactive Server/Unified Accounts 0
Total Number of Resources 37

Individual License Breakdown

System	Active Count	Inactive Count	Total Deployed
gw	4	0	4
exchange	3	0	3
googleapps	1	0	1

Total Mailboxes stored in Retain: 8

Linked Unified Accounts - *Pertains to environments with one or more modules installed*

Pre-linked Unified Accounts: 613
Post-linked Unified Accounts: 0

*Resources do not count as used licenses

**Definition of Inactive licenses: Mailboxes or Accounts that have not had any data archived with the last 90 days are considered Inactive.

***Definition of Pre-Merged: Total number of User Modules deployed prior to merging.

****Definition of Post-Merged: Users with multiple Modules merged to one singular Server/Unified Account.

For more detailed information on this report please see the Retain documentation.

Licenses

✘ Licensed to CN=pg-2351, EMAILADDRESS=info@gwava.com, O=GWAVA, L=Montreal, ST=N/A, C=CA
License ID 2e13c8f4-4618-4d9c-92b7-432c7a55c337
License State **Valid License file installed.**
License Type base
Install Date Thu Jul 18 09:32:35 EDT 2019
License expires **Wed Aug 15 11:35:01 EDT 2035**
Support expires Sat Jan 27 00:00:00 EST 2024
Your license file is currently stored at: \Retain\license\rtn14914662800656106627.pem
Make sure you keep a backup of this file.

- No module license installed!

Submit License

Choose File No file chosen
Submit License

Generate Licensing Report Generate Account Reports

After the initial installation, Retain functions for 30 days for evaluation purposes.

When this period elapses, the following occurs:

- ◆ Users without the "Manage Servers" right are not allowed to log in at all.

- ◆ Users with the "Manage Servers" right are allowed access, but only to the Licensing Page.
- ◆ All jobs continue to be processed normally

Submitting a PEM License

To upload a new PEM license:

1. Browse to the RetainServer console.
2. Select *Licensing* from the left navbar.
3. Scroll to the bottom of the page.
4. Click the **Choose File** button from the **Submit License** section.
5. Browse to and select the desired license file.
6. Click the **Submit License** button.
7. The new license is added to the system.
8. Log out and in again to the server to see the license in effect.

✖ Licensed to CN=pg-2356, EMAILADDRESS=info@gwava.com, O=GWAVA, L=Montreal, ST=N/A, C=CA
 License ID a30908bd-26b7-408e-83fa-b9082f4446c8
 License State **Valid License file installed.**
 License Type exchange
 Install Date Tue Sep 29 12:14:29 MDT 2015
 License expires **Thu Aug 16 01:21:58 MDT 2035**
 Support expires Wed Feb 28 23:59:59 MST 2024
 Your license file is currently stored at: /var/opt/beginfinite/retain/license/rtn1438382398339291790.pem
 Make sure you keep a backup of this file.

[Last Sign In Results](#)

[License Credentials](#)

Username

Password

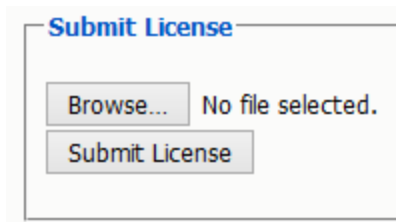
[Submit License](#)

No file selected.

Install a REST License

For some functions, beyond installing the module license PEM file to the Retain Server under the License page, you must install the REST license files. These are downloaded as a ZIP file, there is no need to unzip this file.

1. Go to *Server Configuration/REST API*.
2. Scroll down to Submit License, Browse to the ZIP file and press Submit License.



- The license is uploaded to the Retain server and appears in the list under Application Settings. The Application reflects what system Retain can connect to via REST.

Server Configuration

Communications | Index | Storage | Accounts | Maintenance | Logging | Miscellaneous | Module Forwarding | **REST API**

REST API

The Retain REST API allows external applications to interact with the archive. In order to enable the API, a base API license is required. Additionally, an application license is required for each application that requires access to the API.

License Summary

Global Settings

✘ API Enabled	True
License begins	Mon Dec 28 12:02:10 MST 2015
License expires	Mon Feb 21 10:59:59 MST 2033
Maximum read requests per minute	100000
Maximum write requests per minute	60000
Maximum read requests per application per minute	10000
Maximum write requests per application per minute	6000
Maximum read requests per user per minute	10000

Application Settings

Application	GBS Development License
Application Key	BA5F9F21-DB49-4EA3-9AAB-C717F54380C7
Enabled	True
License begins	Tue Oct 25 11:35:02 MDT 2016
License expires	Wed Nov 18 10:59:59 MST 2020
Maximum read requests per minute	10000
Maximum write requests per minute	6000
Capabilities	Read, Manage, Insert, Search

Finding Your Tenant ID

Your Tenant ID is found under **Router Configuration | Communications** tab.

Message Router Configuration

Communications Storage Logging

The Message Router needs to be able to communicate with the Retain Server, REST based applications and Mobile devices.

Tenant ID

A Tenant ID was generated for your Retain system when this page was loaded. It is used by Retain, the Message Router and the devices to verify the connections made to the Retain system.

Tenant ID 7f828252-8f6f-44f1-8089-d46cb22994d4

Active vs Inactive Users

An active user is a user that has had new data stored in Retain in the last 90 days.

An inactive user is a user that has had no new data archived in the last 90 days.

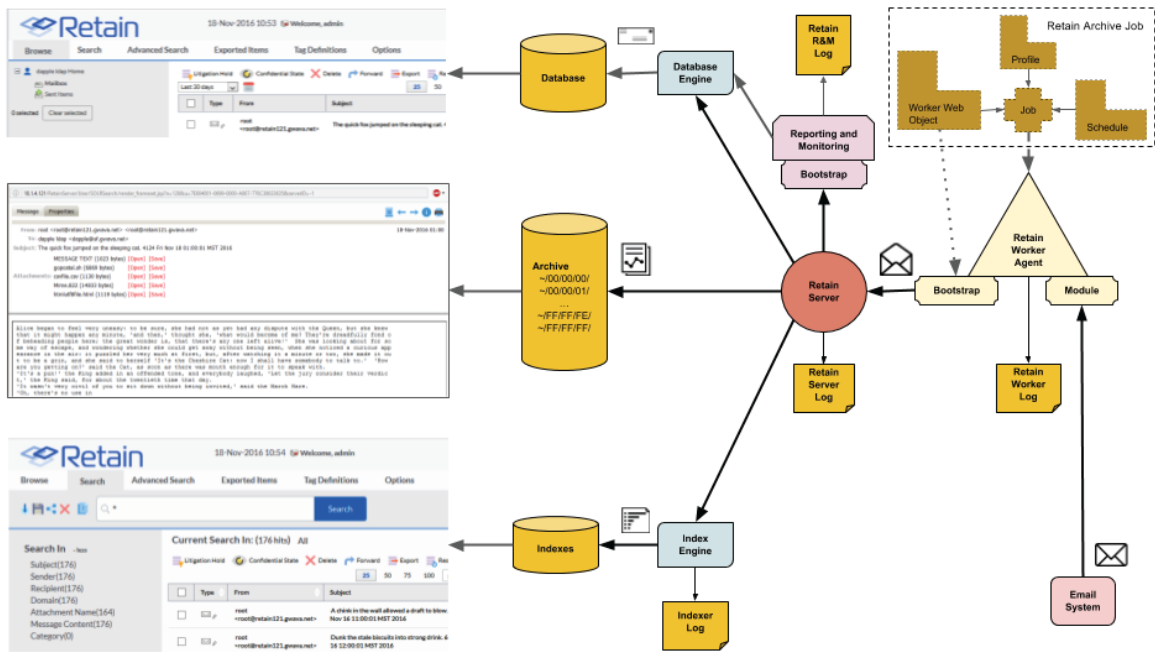
Backing Up Retain

When you first setup Retain and dredge the email system you have two identical data sets. Over time however, items are deleted from the email system. That means Retain is the only repository of the data. When it comes to backups: "Two is one, one is none." That means if one fails, a backup remains or not. Depending on the type of your organization the legal ramifications of lost data can be significant.

Where Data Is Stored In Retain

There are only a few major places where data is stored in Retain ["System File Locations" on page 66](#)

1. Program directory
2. Archive directory
3. Index directory (this may be on an external cluster)
4. Database directory (this may be on an external server)
5. Office365 CSV files



The Reporting and Monitoring Server data is stored in the database.

The Archive Job configuration is stored in the database.

Each major part of Retain keeps logs of what is happening the primary ones being the RetainServer, RetainWorker, Indexer and the Reporting and Monitoring log as RetainStatServer.

When you are interacting with Retain, depending on what you are doing you are viewing different parts of Retain the data.

- ◆ When you browse messages, you are viewing the metadata of the message that is stored in the database.
- ◆ When you search messages, you are viewing the indexes of the messages.
- ◆ When you open a message, you are viewing the message as saved on disk.

All message content and attachments to messages are stored on disk in the Retain storage area in a directory off of the "archive" directory (Server Configuration | Storage | Advanced). Every message and attachment gets assigned a "hash". Because the byte count of every message and file is unique, its hash value is unique. This is how Retain Server determines whether a message and/or attachment has already been processed and stored on disk when an archive job runs. That file's hash value is stored in the Retain database in the t_document and t_attachment tables.

The archive directory uses a load balancing strategy on disk. Thus, off the archive directory you'll find 256 two-digit subdirectories: 00 through FF. Each of those directories have their own set of 256 directories utilizing the same naming sequence (00 through FF). Additionally, those directories also have their own set of 256 subdirectories. Thus, if the filename were B4F05EECB7B21D9014A86C32291C913D190C33394365AC79ED3E1F6849532, you would find it under .../archive/B4/F0/5E.

When a user clicks on a message link in the Retain mailbox - whether from the Browse tab or the Search tab's search result list - Retain finds the file on disk and places the contents in the message window. If the original message was known to have text and the message window comes up blank,

the file is missing from the location that Retain thinks it is in. This is extremely rare and usually only happens as a result of moving the archive directory to a new location. In such cases, we find that either the files did not all copy over properly from the old location or the administrator forgot to tell Retain where the new location is at.

Backing Up Retain

The archive directory consists of up to approximately 16.7+ million directories and the archives are stored evenly across them. This makes it hard (if not impossible) for the traditional file-based backup systems to back it up; thus, you either need a disk image (block level) backup or you need to use a backup/restore solution of your choice.

The three most critical pieces that must be backed up are the archive data (specifically, the "archive" directory), the Retain database and the configuration files. Losing even one of those pieces would mean that your archive data is completely lost. They are interdependent. Indexes can be recreated, which takes time.

Virtual Machines

If you are running Retain on a VM and if you are using a purchased version of VMWare at any level, the purchased version provides a disk backup utility. This can be used to back up Retain if the VM's local disks are part of the VM guest itself. However, those backups can also take a lot of time as the data grows, so even in those circumstances, you still may want to consider using a backup/restore solution of your choice.




If the disks are external to the VM guest, then those disks need to be backed up. This article assumes that the reader understands how disks work with VMs. If you do not fully understand virtual machine concepts, we recommend that you consult with the person that set up and maintains your VM environment.

Storage Path

The storage paths is where you'll find your archive files, the indexes, license file, and Retain's backup of the indexes and the ASConfig.cfg.

To find your Retain system's storage path, login to the Retain Server administration web interface ([http://\[ipaddress/DNS hostname\]/RetainServer](http://[ipaddress/DNS hostname]/RetainServer)). Starting at the navigation pane on the left side under "Configuration", click on Server Configuration | Storage. Most customers leave it at the default setting under "Advanced Settings" of "Derive all file locations from the above base path."

Click the checkbox to expand it and reveal all the paths.

Server Configuration Save Changes   

Communications Index **Storage** Accounts Maintenance Logging Miscellaneous Module Forwarding REST API

Storage

The configuration database, indices, XML files, and the archive files are stored under the storage path which should be on a highly reliable storage device with plenty of disk space.

The standard storage engine places archive files under the storage path. You may change the storage path on this screen; the storage engine can be changed from the Storage Manager menu.

Storage Engine `datastore_process`

Base Storage path `/var/opt/beginfinite/retain`

Advanced Settings

For more advanced scenarios, some paths may be assigned to one device and some to another.

Derive all file locations from above base path?

Store attachments under this path `/var/opt/beginfinite/retain/archive`

Store xml mappings under this path `/var/opt/beginfinite/retain/xml`

Store Indexes under this path `/var/opt/beginfinite/retain/index`

Store Embedded DB under this path `/var/opt/beginfinite/retain/ebdb`

Store PDF exports under this path `/var/opt/beginfinite/retain/export`

Store backups under this path `/var/opt/beginfinite/retain/backup`

Store license under this path `/var/opt/beginfinite/retain/license`

Encryption `(none)`

Compression `(always on)`

The information shown in the Storage tab in the Server Configuration screen is also stored in the ASConfig.cfg.

What to Back Up

Other than backing up the archive directory structure, there are a few areas of Retain that are important to backup that would not require a disk image (block level) backup:

1. Configurations files
 - ◆ ASConfig.cfg
 - ◆ Indexer configuration files
2. Database (critical)
3. License
4. Index files (these can be rebuilt but that process can take days, weeks or months during which time your searches cannot produce full results)
5. Office365 address book CSV files.

File Locations

1. Configuration files.
 - ◆ ASConfig.cfg is stored in a directory off of your Retain installation:
Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/cfg
Windows default: [Drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg
 - ◆ Indexer configuration files (the entire directory's contents):
Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/solrweb/WEB-INF/cfg
Windows default: [Drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\solrweb\WEB-INF\cfg
2. Database.
 - ◆ The location is too varied to mention here. Each customer should know where their Retain database resides.
3. License.
 - ◆ The license directory is located under your storage path.
4. Indexes.
 - ◆ Because the Index directory can be in a constant state of change, it is recommended that you back up the index subdirectory located beneath the backup directory (also found under the storage path).
 - ◆ When the Retain maintenance routine runs, it makes a backup copy of the index directory and places it here. The frequency of this backup is configured in the RetainServer interface under Server Configuration | Maintenance.
5. Office 365 address book CSV files. These files can be found under the CSV path designated in Module Configuration | Exchange Module | Hosted Services.

If performing an upgrade of the Retain software you are strongly advised to manually back up all the files mentioned in this article before performing the upgrade.

Note on backing up during the nightly maintenance cycle:

In Retain 4.0.3 and higher the indexes are optimized during maintenance every night. This may take a hours after an upgrade. During optimization the index directory may grow by 2-3 times as temporary files are created and removed. Backing up during this time is not recommended.

General Maintenance

There are a few items of manual maintenance you need to do occasionally. Annually is usually sufficient.

- ◆ Remove **old logs** from the logs directory (Linux)/opt/beginfinite/retain/Tomcat[version]/logs or (Windows) Program Files/beginfinite/retain/Tomcat[version]/logs

- ◆ Remove **old deletion reports** from the archive directory. The file location can be found under Retain Web console | Server Configuration | Storage tab. If it is not under the base storage path, you may need to select Advanced settings and temporarily disable “Derive all file locations from above base path?”
- ◆ Remove **old exports** from the exports directory. The file location can be found under Retain Web console | Server Configuration | Storage tab. If it is not under the base storage path, you may need to select Advanced settings and temporarily disable “Derive all file locations from above base path?”

Un-installing Retain

To uninstall Retain, use the following general procedure. Actual locations may vary according to your specific setup, storage location, and host operating system.

Linux

1. Shut Down Tomcat: “service retain-tomcat8 stop”
2. Shut Down Apache: “service apache2 stop”
3. (Optional) Remove the data storage files
Can be: /var/opt/beginfinite/retain. See the Retain Administration Guide section on storage to see where your data actually is placed.
4. Remove the program files
Can be: /opt/beginfinite/retain
5. Remove the RetainWorker.xml, RetainServer.xml, RetainRouter.xml, and RetainStatsServer.xml from Tomcat
Can be: /opt/beginfinite/retain/tomcat8/conf/Catalina/localhost
6. Remove the directories under tomcat/work (but NOT work itself)
“rm -r /var/cache/retain-tomcat8/work/*”
7. Remove references to Retain in httpd.conf
Can be: /etc/apache2/conf.d/retain-apache.conf
8. Remove tomcat service file: “rm /etc/init.d/retain-tomcat8”
9. If Apache and Tomcat were not removed, restart them both to verify that they load without problems.

Windows

1. Shut down Tomcat service
2. Remove Retain Tomcat 8 service
Open a terminal as admin and type: “sc delete tomcat8”
3. Remove the program files
Can be: C:\Program Files\Beginfinite\Retain

4. Remove the environment variables from the registry: RETAIN_CATALINA_HOME, RETAIN_HOME, RETAIN_JAVA_HOME, RETAIN_JAVA_VERSION, and RETAIN_JRE_HOME
5. (Optional) Remove the data storage files
Can be: C:\Retain
6. (Optional) Remove SQL Database, SQL Server, Apache or IIS

Installing Other Retain Components on Linux

- ◆ [“Deploying Production-Use Worker Agents on Linux” on page 109](#)
- ◆ [“Installing a Retain Message Router on Linux” on page 110](#)

Deploying Production-Use Worker Agents on Linux

For all but small, all-in-one installations, best practice dictates having a Worker installed on each email, messaging, or other targeted system as applicable. For more information, see [“Worker Locations” on page 34](#).

Installing Worker Agents

The Linux installer lets you install additional workers, one at a time.

- 1 Make sure the email or other server meets the [“Retain Prerequisites for Linux Servers” on page 79](#).
- 2 Prepare the Retain installation software on the server as instructed in [“Downloading and Preparing the Retain Installation Files on Linux” on page 80](#).
- 3 At the terminal prompt, enter the appropriate command for the worker instance you are installing on the server:

3a First worker on server:

```
./RetainInstall.sh
```

3b Each additional worker:

```
./RetainInstall.sh addworker
```

- 4 Accept the license agreement.
Type `q` to go directly to the acceptance options.
- 5 Acknowledge the system requirements by pressing Enter.
- 6 (First Worker only) By typing `n` or `y` as appropriate, choose to install only a Worker.
- 7 (Additional Workers only) Enter the number (1-9) of the Worker agent you wish to install. You can install workers in any order.

If you mistakenly enter a number that you have previously entered, before the install finishes, it asks whether you want to keep the same configuration, overwrite the configuration, or quit the installation.

- 8 For the Worker installation location, you can either confirm the standard install location (`/opt/beginfinite/retain`), change the installation path, or quit the installation.

- 9 For the Worker log file location, you can choose to keep the default log location at `/var/logs` or to store the log files in `/opt/beginfinite/retain/tomcat/logs`.
There is a separate log file for each worker, found in `/var/log/retain-tomcat8/RetainWorkerN.yyyy-mm-dd.log` unless otherwise specified for this worker.
- 10 (First Worker only) The install checks for JDK 11 as described in [“Access to the appropriate JDK running on the system:” on page 80](#).
- 11 Choose to run the `retain-tomcat` process on start-up or not.

NOTE: This choice affects Tomcat start-up for the server and any workers that you installed previously, not just the worker you are currently installing.

The installer completes the Worker configuration, displays information about accessing the worker in a browser, and provides some brief troubleshooting tips.

Creating Worker Web Objects and Downloading Worker Bootstrap Files

After installing the Worker Agents for your Retain deployment, you need to connect them to the Retain Server by creating a Worker Web Object for each of them and downloading their respective bootstrap files.

- 1 After installing and acknowledging the location of the documentation, the installer shows you how to access the Workers that were just installed.
- 2 Using the password you set during the installation, log into the Retain web console as `admin`.
- 3 Create a new Worker and download the Bootstrap for each new Worker you installed. You may save it with a different name to organize it.
- 4 Browse to the new Worker at `http://[ServerAddress]/RetainWorkerN`, where `N` is the number of the worker you just installed.
- 5 Upload the bootstrap.
- 6 Click Continue and log in to the worker.
- 7 Check the friendly name that it is the one you expect.

Installing a Retain Message Router on Linux

Install the Router on a separate Linux server in the DMZ to allow devices outside your network to archive to the Retain Server without exposing the server directly to the Internet.

- 1 Make sure the server meets the [“Retain Prerequisites for Linux Servers” on page 79](#).
- 2 Prepare the Retain installation software on the server as instructed in [“Downloading and Preparing the Retain Installation Files on Linux” on page 80](#).
- 3 If a previous version of Java was installed via YaST, tomcat may fail to start. Uninstall the existing Java with YaST and unset the `JRE_HOME` path (`unset JRE_HOME`).
- 4 Run the installer. Enter the following command: `./RetainInstall.sh`
- 5 When selecting the components to install. Select yes to "Install Retain Message Router" only.
- 6 Finish the install as normal.
- 7 Create a data directory for the Router to use to temporarily use to store messages until they can be transferred to the Retain Server.

- 8 Configure the Router in the Retain Server console under Configuration | Router Configuration [“Retain Message Router Configuration” on page 375](#).
- 9 The Router can be accessed by browsing to (case-sensitive): `http://[IPAddress or HostName]/RetainRouter`.

Installing Other Retain Components on Windows

- ♦ [“Installing Additional Retain Workers on Windows” on page 111](#)
- ♦ [“Installing a Retain Message Router on Windows” on page 112](#)

Installing Additional Retain Workers on Windows

Typically, one Worker Agent is installed on the Retain Server, but it may make sense for your system to use multiple workers.

One design option is to place a Worker Agent on each post office server, that would save network bandwidth as only new messages would be transmitted. Another option is to place multiple worker agents on a dedicated worker server.

Installing a worker agent is much simpler than installing the entire Retain server system. It only requires installing the web server and the worker agent software. It uses the same installer as above.

Prerequisite

Install the web server (IIS with ISAPI filter, as above). [“Installing a Web Server” on page 68](#)

Overview

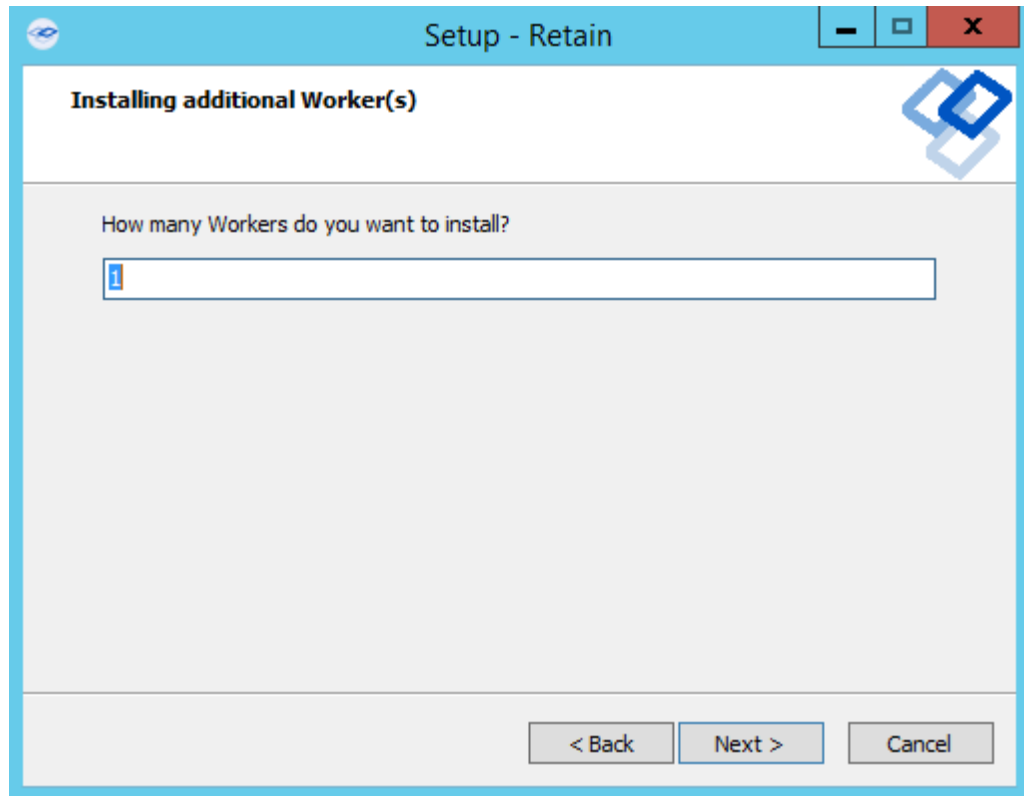
In larger email systems, it can take a long time to dredge all the users especially if the users are on multiple mail servers. You can install multiple workers that can run in parallel to speed up the archiving process. We generally recommend one worker per mail server. The Retain installer can install up to 10 workers on a single server. We recommend an additional 1GB for RAM per worker. Workers are accessed by browsing to `http://[IPAddress or HostName]/RetainWorkerN`

The Retain installer allows you to install up to nine workers at once.

Procedure

- 1 Download and prepare the software on the Windows server as outlined in [“Downloading and Preparing the Retain Windows Installation Source Files” on page 82](#).
- 2 Run the RetainInstall.exe and install at least one Worker or upgrade the existing installation, if you haven't already done so.
- 3 From the command line (run as Administrator), type `RetainInstall.exe /AddWorker` to start the installer in Add Worker Mode.
- 4 Acknowledge requirements.
- 5 Accept the license agreement.
- 6 Confirm the install location of Retain.

- 7 Enter the number (1-9) of Worker agents to install. They are installed in numerical order (e.g. RetainWorker, RetainWorker1, RetainWorker2..., RetainWorker9).



- 8 Confirm which webserver is installed.
- 9 Install the Worker agent software. After installing and acknowledging the location of the documentation the installer shows you how to access the Workers that were just installed.
- 10 Log into the Retain web console as admin
- 11 Create a new Worker and download the Bootstrap for each new Worker you installed. You may save it with a different name to organize it.
- 12 Browse to the new Worker at *http://[ServerAddress]/RetainWorkerN* where N is the number of the worker you just installed.
- 13 Upload the bootstrap.
- 14 Click Continue and login to the worker.
- 15 Check the friendly name that it is the one you expect.

There is a separate log file for each worker, found in *C:\Program Files\Beginfinite\Retain\Tomcat 8.0\logs\RetainWorkerN.yyyy-mm-dd.log* unless otherwise specified in Configure Tomcat.

Installing a Retain Message Router on Windows

The Retain Message Router allows devices outside your network to archive to the Retain Server without exposing the server directly to the Internet. The Router sits in your network's DMZ and routes items to the Retain Server.

The Router should be installed on a server other than the Retain server itself.

This is much simpler than installing the entire Retain server system. It only requires installing the webserver and the Router agent software. It uses the same installer as above.

Prerequisites:

- ◆ Install the web server (IIS with ISAPI filter, as above).
- ◆ Make sure that the Router server can connect to the Retain Server.

Install:

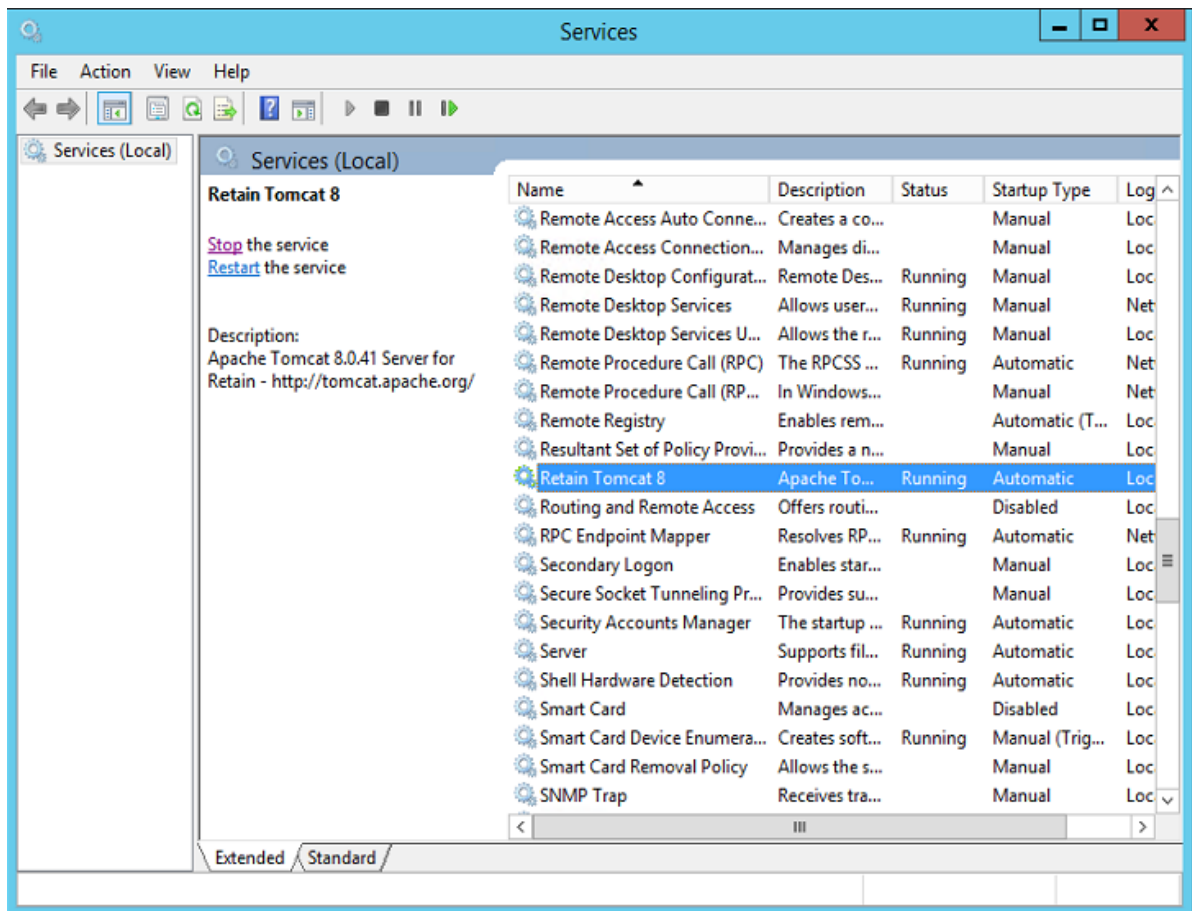
- 1 Download and prepare the software on the Windows server as outlined in [“Downloading and Preparing the Retain Windows Installation Source Files”](#) on page 82.
- 2 Extract the archive.
- 3 Run the installer, RetainInstall.exe, as above.
- 4 When selecting the components to install. Select "Message Router" only.
- 5 Finish the install as normal.
- 6 Create a data directory for the Router to use to temporarily use to store messages until they can be transferred to the Retain Server.
- 7 Configure the Router in the Retain Server console under Configuration | Router Configuration. [“Retain Message Router Configuration”](#) on page 375
- 8 The Router can be accessed by browsing to `http://[IPAddress or HostName]/RetainRouter`.

Starting and Stopping the Retain Server

To start, stop, or restart Retain, you must start, stop, or restart Tomcat.

Windows

In Windows, Retain runs as a service. Open Services, select the Retain service then start, stop, or restart that service.



Linux

Use the following commands at the terminal prompt to start and stop Tomcat:

```
systemctl start retain-tomcat.service
systemctl stop retain-tomcat.service
systemctl restart retain-tomcat.service
systemctl status retain-tomcat.service
```

4 Upgrade and Migration

- ◆ “Upgrading Retain 4.8.0.1 to 4.8.1” on page 115
- ◆ “Upgrading Retain 4.7.0.1 to 4.8.1” on page 116
- ◆ “Upgrading Retain 4.6 or Earlier to Retain 4.7” on page 117
- ◆ “Upgrading Retain 3.5.1.1 to 4.7” on page 122
- ◆ “Upgrading from Versions Prior to Retain 3.5.1.1” on page 134
- ◆ “Moving Retain to a New Server” on page 134
- ◆ “Moving a MySQL Database to Another Server” on page 150
- ◆ “Upgrading MySQL to a New Version” on page 152

Upgrading Retain 4.8.0.1 to 4.8.1

IMPORTANT: Upgrading from 4.8.0 to 4.8.1 is not supported.

If your server is running Retain 4.8.0, you must first apply the 4.8.0.1 update patch before upgrading to Retain 4.8.1. For more information, see the 4.8.0.1 Release Notes (https://www.novell.com/documentation/retain-48/retain_release_notes-4801/data/retain_release_notes-4801.html).

Use the instructions in the following sections to upgrade from Retain 4.8.0.1 to 4.8.1.

Prerequisites

Performing a successful upgrade requires that you

- ◆ **Provide Owner Rights to the SQL Database:** Retain must have database owner rights to the SQL database it is connected to in order to update the schema and so on.
- ◆ **Allow Adequate Time:** When updating very large (~ 1 TB) databases, the upgrade might take up to two hours to complete.
- ◆ **Back Up the System:** Just prior to starting the upgrade, back up the Retain System. See ““Backing Up Retain” on page 103.”
- ◆ **Ensure Adequate Disk Space:** Temporary files for updating the index can consume up to double the index’s current disk space during the upgrade.
- ◆ **Download Retain 4.8.1:** Download the latest version of Retain (<http://download.gwava.com/download.php?product=Retain&version=current>).

Upgrading to Retain 4.8.1

1. Run the installer for your platform.

2. When the previous installation is found, choose to upgrade and keep the current configuration.
3. Follow the prompts.

Upgrading Retain 4.7.0.1 to 4.8.1

IMPORTANT: Upgrading from Retain 4.7 to Retain 4.8.1 is not supported.

If your server is running Retain 4.7, you must first apply the 4.7.0.1 update patch to your 4.7 server and then [optimize the index](#).

For more information, see the [4.7.0.1 Release Notes \(https://www.novell.com/documentation/retain-47/retain_release_notes-4701/data/retain_release_notes-4701.html\)](https://www.novell.com/documentation/retain-47/retain_release_notes-4701/data/retain_release_notes-4701.html).

Use the instructions in the following sections to upgrade from Retain 4.7.0.1 to 4.8.1.

- ◆ [“Prerequisites” on page 116](#)
- ◆ [“If you Need to Optimize Your 4.7.0.1 Index” on page 116](#)
- ◆ [“Upgrading to Retain 4.8.1” on page 117](#)

Prerequisites

Performing a successful upgrade requires that you

- ◆ **Are Running Retain 4.7.0.1 with an Optimized Index:** To upgrade your system to Retain 4.8.1, it must be running Retain 4.7.0.1 with an index that has been optimized at least once.

By default, Retain optimizes its index at 1 a.m. every Sunday morning.

To check whether your system’s index has been optimized since upgrading to version 4.7.0.1, see the [Maintenance tab](#), [Last Index Optimization](#) date/time stamp, and use the [Optimize Index Now](#) button if index optimization is needed.

- ◆ **Provide Owner Rights to the SQL Database:** Retain must have database owner rights to the SQL database it is connected to in order to update the schema and so on.
- ◆ **Allow Adequate Time:** When updating very large (~ 1 TB) databases, the upgrade might take up to two hours to complete.
- ◆ **Back Up the System:** Just prior to starting the upgrade, back up the Retain System. See [“Backing Up Retain” on page 103.](#)
- ◆ **Ensure Adequate Disk Space:** Temporary files for updating the index can consume up to double the index’s current disk space during the upgrade.
- ◆ **Download Retain 4.8.1:** [Download the latest version of Retain \(https://www.microfocus.com/products/retain-unified-archiving/trial/\)](https://www.microfocus.com/products/retain-unified-archiving/trial/).

If you Need to Optimize Your 4.7.0.1 Index

If your 4.7.0.1 index hasn’t been optimized, you can force an optimization by doing the following:

1. Open the [Server Configuration > Maintenance](#) Tab.
2. Click the [Optimize Index Now](#) button.

Upgrading to Retain 4.8.1

1. After your server is running Retain 4.7.0.1 and the index is optimized, run the installer for your platform.
2. When the previous installation is found, choose to upgrade and keep the current configuration.
3. Follow the prompts.

Upgrading Retain 4.6 or Earlier to Retain 4.7

Upgrading a server directly to Retain 4.8.1 that is running Retain 4 at version 4.6 or earlier is not supported

You must do the following:

1. Upgrade the 4.x server to Retain 4.7 using the instructions in this section.
2. Complete the instructions in [“Upgrading Retain 4.7.0.1 to 4.8.1” on page 116](#), which includes downloading and applying the Retain 4.7.0.1 patch.
 - ◆ [“Upgrading to 4.7” on page 117](#)
 - ◆ [“Post-Install Tasks” on page 119](#)

Upgrading to 4.7

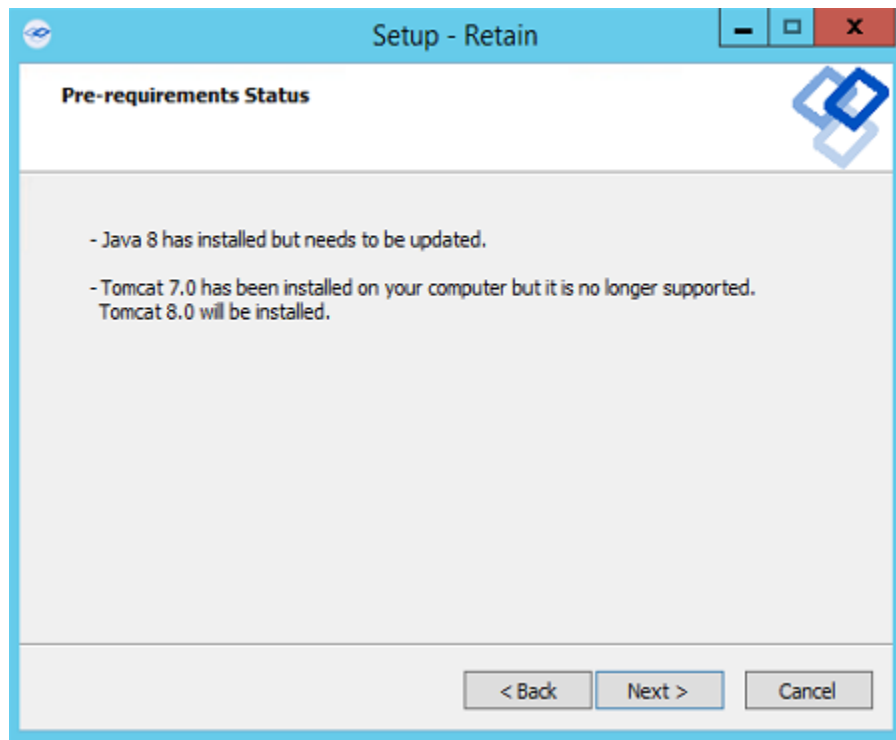
Upgrading to Retain 4.7 from 4.0 and later should take between 15 and 30 minutes, depending on the size of the system. However, very large systems may take longer.

1. Log in to the Micro Focus Customer center and download Retain 4.7.
2. Extract the archive into a new folder.

On Linux, on the desktop right click the downloaded file and select **Extract Here**, or at a terminal prompt, type `unzip downloaded-file-name.zip`

On Windows, right click the downloaded file and select **Extract All...**

3. If on Linux, open a terminal window in the Retain install folder and make the bash script file executable by running the command: `chmod +x *.sh`.
4. Run the installer:
 - On Linux: `./RetainInstall.sh`.
 - On Windows: `RetainInstall.exe`.
5. The installer checks for the correct Tomcat version and upgrades to Tomcat 8.0 if needed.
Click **Next**.



6. The installer detects the server's Retain components and reports what it found. Then it asks whether you wish to upgrade the current installation, upgrade and add new components, or exit the installer.

Retain Installer 4.1.0.0

Retain has already been installed on this system with the following components:

Retain Server
Retain Reporting & Monitoring Server
Retain Worker

Choose one of these options:

- 1) Upgrade current installation of Retain
- 2) Upgrade current installation of Retain and add new components
- 3) Exit this installer

Choose (1-3): █

7. If you chose to add components, you are prompted to do that next.
8. The installer then asks whether you want to keep or discard the existing configuration during the upgrade. Neither option erases any archived data.

Discarding the configuration can be useful in certain troubleshooting circumstances. Otherwise, we recommend keeping the existing configuration (Option 1).

Apache/Tomcat Configuration

```
Apache 2 appears to be installed
Apache Base is /etc/apache2
Apache Service is /usr/lib/systemd/system/apache2.service
Apache Conf is /etc/apache2/httpd.conf
Apache Version is 2.4
Apache Group is www
Will assume that mod_proxy, mod_rewrite, and mod_proxy_ajp
are installed and enabled. These are standard in Apache 2.2+.
You may check in the Http Server control Panel in Yast

/opt/beginfinite/retain exists. Choose one:
1) Upgrade Retain, preserving configuration (recommended)
2) Overwrite Retain, losing configuration
3) Quit

Choose (1-3): █
```

9. Retain installation begins. Wait until it finishes, then continue with the next section.

Post-Install Tasks

1. Browse to Retain Web Console.
2. If you are upgrading from a version prior to Retain 4.2, a Retain Database Migration popup displays. Click the **Enter Credentials** button and enter the administrator account username and password. Click the <??> button to start the migration.



- a. Do not interrupt the database migration process.



The database schema update is in progress and should not be interrupted. This message will be updated upon completion.

- b. Then the migration finishes, the system prompts you to restart tomcat.



Database schema update complete. Please check your logs for error messages. If none are present, please restart Tomcat

- c. Once the update has completed, restart tomcat to initiate the new database.
- d. Because the database must be initialized, restarting tomcat takes a little longer than usual.
- e. After Tomcat restarts, open the Retain Management interface.

The image shows the Retain Management interface login screen. It features the Retain logo at the top. Below the logo, there are three input fields: a text field containing 'admin', a password field with masked characters '.....', and a dropdown menu set to 'English'. A blue 'Login' button is positioned below the input fields.

- 3. If you have the GroupWise module configured, be aware that GroupWise timestamp usage has changed.
 - a. A warning page describes what happens next.



GW_FLAGS_SWITCH

How GroupWise timestamps are used have changed in this version of Retain: The GroupWise Retention and Purge flags will be moved to the GroupWise Module. Each user's Item Store Flag will be updated to match the appropriate GroupWise Flag as chosen on an upcoming screen. Please login as the administrator to continue.

Enter credentials

- b. Enter the admin credentials.



GW_FLAGS_SWITCH

Username
Password
Login

- c. Choose which timestamp flag Retain uses in the Module.



This version of Retain will be using the Item Store Flag as the primary timestamp for processing items. This update will set each user's Item Store Flag to the GroupWise flag you choose below and set the flag option in the GroupWise module.

- Retention Flag
- Purge Flag
- Leave Item store flag as is

Switch

- d. In versions earlier than Retain 4.2, the update takes some time and the Retain interface is not be available until the process completes.
In Retain 4.2, the update process happens in the background and the interface is available immediately.
In both cases, jobs are disabled until the process completes.



The GroupWise flag switch is in progress and should not be interrupted. This message will be updated upon completion.

- e. In versions earlier than Retain 4.2, you must restart Tomcat when the process completes.
In Retain 4.2 and later, restarting Tomcat is not needed.
The jobs schedule resumes when the process is complete.
4. Log in to the Retain Management interface.
5. The upgrade is complete.

Upgrading Retain 3.5.1.1 to 4.7

- ◆ “Upgrade changes” on page 122
- ◆ “Requirements” on page 122
- ◆ “If Your System Began at Version 3.0 or Earlier” on page 123
- ◆ “Upgrade Process” on page 126
- ◆ “Post-Install Tasks” on page 128
- ◆ “Removing old indexes after Retain 4.7 has completed re-indexing” on page 133
- ◆ “Tool Compatibility with Retain 3.x (Lucene) Indexes” on page 133

IMPORTANT: If you need information and instructions for upgrading from a Retain version earlier than 3.5.1.1, see the [Retain 4.7 Online Documentation \(https://www.microfocus.com/documentation/retain-unified-archiving/47/\)](https://www.microfocus.com/documentation/retain-unified-archiving/47/).

Once Retain is updated to 3.5.1.1, you can start the Retain 4.7 upgrade process .

Upgrade changes

Retain 4 contains significant improvements over previous versions. The User Interface in Retain 4 is changed and a completely new search has been implemented. The new search contains a new, high-powered indexer and back end that allows searching in multiple new ways on each item to maximize relevant and intuitive results. Due to the increased ability, some system requirements have been increased.

Requirements

- ◆ **Storage Space:** Best practice is to have available free space at least equal to 4 times the size of the current 3.5.1.1 index.

IMPORTANT: The updater checks for this minimum amount and displays a warning if the free space is lower. However, it doesn't prevent you from proceeding at your own risk.

You can remove the old index after the update is complete. See [“Removing old indexes after Retain 4.7 has completed re-indexing” on page 133](#).

For more information about estimating storage requirements, see [“Planning Retain Storage Requirements” on page 54](#).

- ◆ **Time Required:** This depends on how large the Retain archive is. The upgrade includes two things:

Updating the configuration database at first start-up and should finish in less than ten minutes.

Migration to a new index, which can take significant time. However, the existing index and system are available and accessible during the entire process.

- ◆ **System Requirements Changes:** The are increased to 12 GB RAM minimum. For more information, see [“System Requirements” on page 45](#).
- ◆ **Licenses:** Retain 4 requires new licenses. The upgraded system doesn't function until the new licenses are applied.

Make sure to run the install on every component in the installed Retain system so that all components are upgraded together. Any Workers and Servers not hosted on the same machine must have the installer run to be upgraded.

If Your System Began at Version 3.0 or Earlier

If your initial Retain system was version 3.0 or earlier, consider the following:

Item	Path	Action to Consider
Server Logging Level	Configuration > Server Configuration > Logging	1. Set to Diagnostic , unless your root partition disk space is limited.
Worker Logging Level	Data Collection > Workers > Worker object > Logging	1. Set to Diagnostic , unless your root partition disk space is limited.
Indexing		1. Be aware that the default is now to index all content. You can adjust this if desired.
Worker Performance	Data Collection > Workers > Worker object > Connection tab	1. Make sure the port is set to 48080. Older systems defaulted to 80, which routes through the web server and slows the system down. 2. Avoid SSL, which cuts performance in half, unless your security policies require it.

Item	Path	Action to Consider
Archiving from GroupWise Disaster Recovery		<ol style="list-style-type: none"> 1. You should always archive directly from the live post office and not from GroupWise Disaster Recovery. <p>The only exception is as a temporary solution for cases of instability in the production post office.</p>
GroupWise Module		<ol style="list-style-type: none"> 1. If you are archiving with the GroupWise Module, determine which storage flag Retain is currently using. 2. During the upgrade, choose that same flag so that Retain can update the <code>Item Store Flag</code> in the Retain database for each user. <p>If you choose incorrectly, you can change the flag in the module later. The next job performs a full dredge.</p> <p>NOTE: In 4.2 and later, the default for Scope in Profiles is <code>New items</code> if Date Range to Scan was set to <code>All Messages</code> and Duplicate Check was not set to <code>Try to publish all messages</code>.</p> <p>Also, the controls for the GroupWise Storage Flags have been moved from the Profile to the Module Configuration page.</p>
Reporting & Monitoring Server		<ol style="list-style-type: none"> 1. If you use this tool, select the Core Settings > Disable the disk usage statistic option. This feature drains system resources. 2. Make sure that the port under the Connection tab is set to 48080.

Consider the information in the following sections as they apply to your Retain deployment.

- ◆ [“Profiles” on page 124](#)
- ◆ [“Exchange/O365” on page 125](#)
- ◆ [“Reporting & Monitoring Server” on page 126](#)

Profiles

- ◆ [“GroupWise” on page 124](#)

GroupWise

Scope

One of the main points of having Retain is to have a complete archive of messages in your system because of data retention policies under which your organization must operate. If your email system's retention functionality is not understood or properly configured, users could purge items

from their trash folder before Retain gets a chance to archive it. See the KnowledgeBase article: "[How Retention Services and Item Store Flags Work \(https://www.novell.com/support/kb/doc.php?id=7018888\)](https://www.novell.com/support/kb/doc.php?id=7018888)".

Message Placement

Also, users make take a few days to organize their mail into folders. When the Retain archive job runs, it takes a "snapshot" of the user's mailbox as it exists at the time of archiving that mailbox.

If an Item A is in the main mailbox folder at the time of the job, it gets placed into the main mailbox folder in the Retain mailbox. If the user subsequently moves the item to another folder, Retain doesn't remove the item from the main Retain mailbox folder; instead, it creates an additional pointer to the item in the folder to which the user moved the message. This means that future searches find the item in the main mailbox folder and in the folder where it was moved.

To avoid this, some customers set the Date Range to Scan to Number of days from job start (older) and set the number of days to a value between 7 - 21. This gives the users that extra time to organize their new email before Retain archives it.

Miscellaneous

To save disk space, enable the option Don't store MIME.822 attachments and then activating the settings:

- ◆ Store/index Internet Headers
- ◆ Include Routing Properties

These settings cause the data that is in the MIME.822 attachments and to be stored and indexed.

We also recommend only including shared folders that are owned by the mailbox. The other setting can cause errors in the job due to circular folder references.

Under Disabled/Expired Users, set "When Retain encounters a disabled or expired mailbox" setting to "Ignore".

Exchange/O365

- ◆ "[Scope](#)" on page 125
- ◆ "[Message Placement](#)" on page 126
- ◆ "[Miscellaneous](#)" on page 126

Scope

One of the main points of having Retain is to have a complete archive of messages in your system because of data retention policies under which your organization must operate. If your email system's retention functionality is not understood or properly configured, users could purge items from their trash folder before Retain gets a chance to archive it. See the KnowledgeBase article: "[How Retention Services and Item Store Flags Work \(https://www.novell.com/support/kb/doc.php?id=7018888\)](https://www.novell.com/support/kb/doc.php?id=7018888)".

Message Placement

Also, users make take a few days to organize their mail into folders. When the Retain archive job runs, it takes a "snapshot" of the user's mailbox as it exists at the time of archiving that mailbox.

If an Item A is in the main mailbox folder at the time of the job, it gets placed into the main mailbox folder in the Retain mailbox. If the user subsequently moves the item to another folder, Retain doesn't remove the item from the main Retain mailbox folder; instead, it creates an additional pointer to the item in the folder to which the user moved the message. This means that future searches find the item in the main mailbox folder and in the folder where it was moved.

To avoid this, some customers set the Date Range to Scan to Number of days from job start (older) and set the number of days to a value between 7 - 21. This gives the users that extra time to organize their new email before Retain archives it.

Miscellaneous

Enable these settings:

- ◆ Store/index Internet Headers
- ◆ Include user's recoverable items.

We strongly recommend abandoning the practice of using journal mailboxes to meet retention requirements (ensuring nothing gets deleted before being archived). Journaling doubles the traffic on your Exchange server and can adversely impact performance. Instead, have Retain archive the Recoverable Items folder in each mailbox and configure Rolling In-Place Holds. See the Knowledge Base article: "[How to Transition from Journaling to Rolling In-Place Hold for Exchange Archiving \(https://support.microfocus.com/kb/doc.php?id=7019131\)](https://support.microfocus.com/kb/doc.php?id=7019131)" on how to configure this. It also provides links to articles on other recommended settings in Exchange.

Reporting & Monitoring Server

This tool provides archive stats as well as archive job stats. In Retain 4, it becomes a very critical tool for identifying errors in your jobs because it not only shows the error counts, but through drill downs on the error numbers, an administrator can see the exact message on which the error occurred, the folder in which it is stored, its delivered date, and the error description.

If you use this tool, make sure that when configuring it, you check the box under Core Settings that reads, Disable the disk usage statistic. This utility drains the system and is scheduled for a redesign in the future. In the meantime, disable it. In Retain 4, this utility is disabled by default.

And, like the Worker, the port settings under the Connection tab should all be set to 48080 if possible so that the Server and the R&M Server are talking directly to one another's tomcat port.

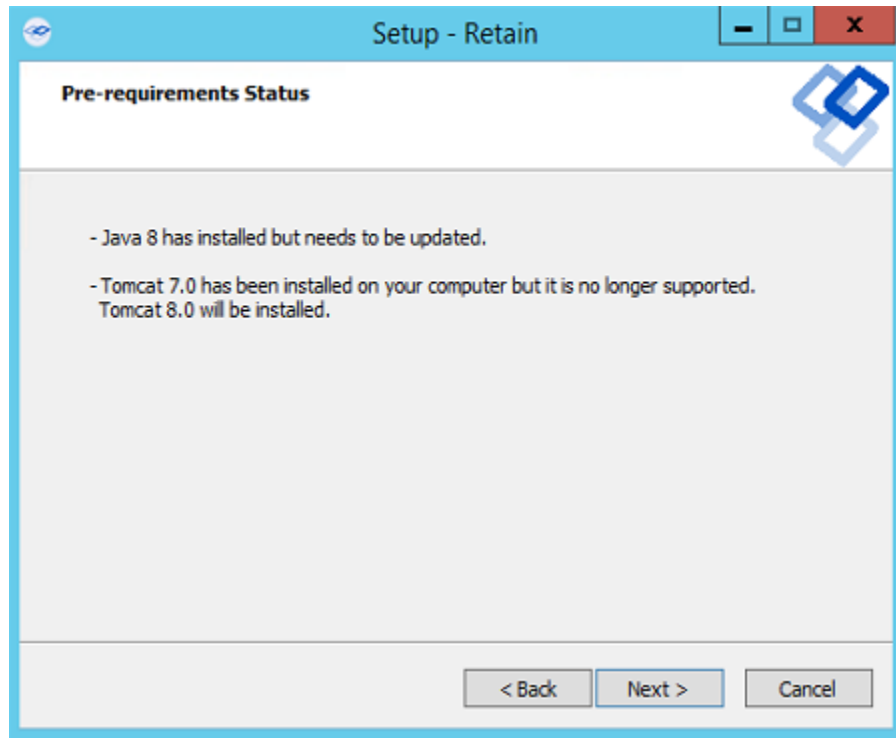
Upgrade Process

1. Log in to the Micro Focus Customer center and download Retain 4.7.
2. Extract the archive into a new folder.

On Linux, in the GUI right-click and select "Extract Here" or at a terminal prompt, "unzip Retain<version>.zip"

On Windows, right-click and select "Extract All..."

3. If on Linux, open a terminal window in the Retain install folder and make the bash script file executable by running the command: "chmod +x *.sh"
4. Run the installer:
On Linux: "./RetainInstall.sh"
On Windows: "RetainInstall.exe"
5. The installer checks the tomcat version that is installed and upgrades it to Tomcat 8.0



6. Retain detects whether a previous version of Retain exists on the server. It reports what components have been installed and asks whether you want to only upgrade the current installation or add new components as well.

```
Retain Installer 4.1.0.0
```

```
Retain has already been installed on this system with the following components:
```

```
Retain Server
Retain Reporting & Monitoring Server
Retain Worker
```

```
Choose one of these options:
```

- ```
1) Upgrade current installation of Retain
2) Upgrade current installation of Retain and add new components
3) Exit this installer
```

```
Choose (1-3): █
```

7. If you choose to install additional components, you are prompted to select them.

- Then the installer asks whether you want to Upgrade Retain, preserving the existing configuration or Overwrite Retain and replace the configuration file but not erase data. This is useful in certain troubleshooting circumstances.

```
=====
 Apache/Tomcat Configuration
=====

Apache 2 appears to be installed
Apache Base is /etc/apache2
Apache Service is /usr/lib/systemd/system/apache2.service
Apache Conf is /etc/apache2/httpd.conf
Apache Version is 2.4
Apache Group is www
Will assume that mod_proxy, mod_rewrite, and mod_proxy_ajp
are installed and enabled. These are standard in Apache 2.2+.
You may check in the Http Server control Panel in Yast

/opt/beginfinite/retain exists. Choose one:
1) Upgrade Retain, preserving configuration (recommended)
2) Overwrite Retain, losing configuration
3) Quit

Choose (1-3): █
```

- After choosing to upgrade or overwrite Retain, the installation begins. Wait until the installation is finished.

## Post-Install Tasks

- Browse to Retain Web Console.
- The upgrade may require a configuration database update, depending on the version of Retain you upgraded from. Select the 'Enter Credentials' button and enter the administrator account username and password. Select the button to start the migration.



- During the database Migration, do not interrupt the process. Wait until the process completes.





The database schema update is in progress and should not be interrupted. This message will be updated upon completion.

- b. Once the migration is complete, the system instructs you to restart tomcat.



Database schema update complete. Please check your logs for error messages. If none are present, please restart Tomcat

- c. Once the update has completed, restart tomcat to initiate the new database.
- d. The initial tomcat restart takes a little bit longer due to database initialization and interface setup.
- e. After a few minutes, browse again to the Retain Management interface.

The screenshot shows the Retain Management interface login page. At the top, the Retain logo is displayed. Below the logo, there are three input fields: a text field containing 'admin', a password field with masked characters '.....', and a dropdown menu set to 'English'. A blue 'Login' button is positioned below the input fields.

- 3. If you use the GroupWise module, GroupWise timestamp usage by Retain has changed.
  - a. You receive a warning page describing the change what you need to do.



GW\_FLAGS\_SWITCH

How GroupWise timestamps are used have changed in this version of Retain: The GroupWise Retention and Purge flags will be moved to the GroupWise Module. Each user's Item Store Flag will be updated to match the appropriate GroupWise Flag as chosen on an upcoming screen. Please login as the administrator to continue.

Enter credentials

- b. Enter the admin credentials.



GW\_FLAGS\_SWITCH

Username  
Password  
Login

- c. Choose which timestamp flag Retain should use in the Module.



This version of Retain will be using the Item Store Flag as the primary timestamp for processing items. This update will set each user's Item Store Flag to the GroupWise flag you choose below and set the flag option in the GroupWise module.

- Retention Flag
- Purge Flag
- Leave Item store flag as is

Switch

- d. The Retain updates begins, and the interface is not available until the process completes. In Retain 4.2 and later, this process is done in the background, so the interface is available immediately, however jobs are disabled until the process is complete.



The GroupWise flag switch is in progress and should not be interrupted. This message will be updated upon completion.

- e. When the migration is complete, restart tomcat. In Retain 4.2 and later, no restart of tomcat is needed, jobs begin again on schedule when the process completes.
4. Login to the Retain Management interface. New licenses for Retain 4 must be immediately applied. These licenses should be provided by the sales representative. (Removing old licenses is not required, but may help to keep interface looking clean.)

### Licensing

#### Licensing Summary

**General Summary**

|                              |                              |
|------------------------------|------------------------------|
| Date                         | Fri Nov 13 22:55:01 MST 2015 |
| Product                      | GWAVA Retain 4.0.0.0         |
| Total Active License Count   | 0                            |
| Total Inactive License Count | 2424                         |
| Merged Mailboxes             | 10 -> 5                      |

**Individual License Breakdown**

| System   | Active License Count | Inactive License Count |
|----------|----------------------|------------------------|
| gw       | 0                    | 2406                   |
| exchange | 0                    | 18                     |

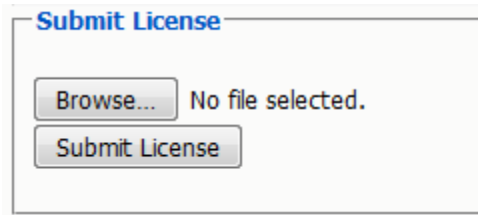
#### Licenses

**✘** Licensed to CN=pg-2358, EMAILADDRESS=info@gwava.com, O=GWAVA, L=Montreal, ST=N/A, C=CA  
License ID 87d1b648-47c0-4c31-ac1e-18381d059b6c  
License State **Valid License file installed.**  
License Type gw  
Install Date Tue Sep 29 12:16:59 MDT 2015  
License expires **Thu Aug 16 01:22:23 MDT 2035**  
Support expires Wed Feb 28 23:59:59 MST 2024  
Your license file is currently stored at: /var/opt/beginfinite/retain/license/rtn7036907066489667840.pem  
Make sure you keep a backup of this file.

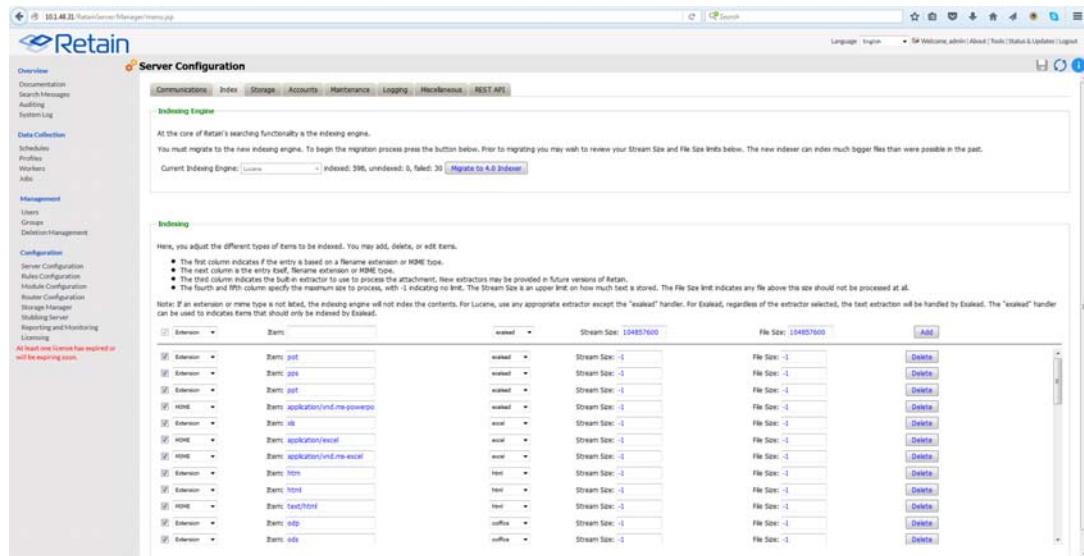
---

**✘** Licensed to CN=pg-2350, EMAILADDRESS=info@gwava.com, O=GWAVA, L=Montreal, ST=N/A, C=CA  
License ID f2567fe9-86e2-44d3-9788-ac77a0e73e78  
License State **Valid License file installed.**  
License Type base exchange gw socialmessaging mobile blackberry  
Install Date Tue Sep 29 12:16:18 MDT 2015  
License expires **Wed Aug 15 09:34:43 MDT 2035**  
Support expires Sat Jan 27 23:59:59 MST 2024  
Your license file is currently stored at: /var/opt/beginfinite/retain/license/rtn1143912542230642963.pem  
Make sure you keep a backup of this file.

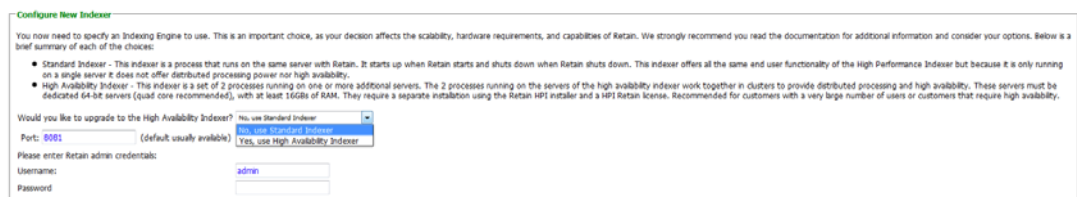
- a. To install the new licenses, select the 'Browse' button from the 'Submit License' section at the bottom of the screen. Select the desired license and when back in the Retain interface, select 'Submit License' to upload the new license to the system. Repeat the process for each license required for the active and desired modules in the system.



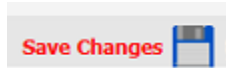
- b. It is a good practice to remove expired licenses from the Retain system to keep the interface clean and to easily see any licensing issue. However, removing expired licenses is not required.
5. Do the following:
  - a. Immediately go to the Server Configuration page and select the Index tab.



- b. Select the Migrate to 4.0 indexer button.
- c. There are two index options: High Availability Indexer and the standard index. Both options utilize the same high performance index engine and provide new searching functionality; however, the 'standard' engine is embedded while the 'High Availability Indexer' is a scalable, external, cluster system for large systems. The default is set to the standard index. The standard index engine is very powerful and sufficient for everything up to extremely large or busy systems.  
If you wish to use the High Availability Index engine, a separate license is required. Please contact support for guidance, system planning, and installation.
- d. Once the migrate button has been pressed, the new indexer section is displayed.



- e. The Standard engine only requires the Retain admin credentials. Enter the administrator credentials then save the changes by selecting the save-changes button to continue.



- f. The index migration begins automatically. During the migration of the index, the active index is displayed at the top of the page. The active index displayed at the top of the page is still be available and fully functional. New search options and features are not available until the new index becomes active.
  - g. The index page is updated every 10 seconds to display the progress. With no archive jobs, migrations of the index average 60 messages per second on a Linux server, and about 45 messages per second on Windows Server. Migration speed is limited by disk IO, (and network speed with external indexes). Large messages with large attachments take longer. If archival jobs are running, the speed of the migration depends on the size and activity of the archival job.
  - h. When the index page updates showing the new index is running, the new index has automatically become active.
  - i. Once the index migration is complete, the indexer must optimize the index files. This is done during the nightly maintenance. The larger or more segmented the indexes, the longer this requires. This may temporarily triple the disk space the indexes use as the files are consolidated. It is a recommended to go to the *Server Configuration | Maintenance* tab and set the *Enable Index Optimization* to Saturday weekly. The first optimization is the longest and may take many hours, after that it usually only takes minutes and can be done nightly.
6. The upgrade is complete.

## Removing old indexes after Retain 4.7 has completed re-indexing

All items are re-indexed by the new indexing engine. During the index migration the Retain 3 indexes are available as legacy search, which is automatically disabled once the migration process completes.

You can find the location of your indexes in your ASConfig file. In that file there be a line that reads your path: *indexPath*

- ♦ *Windows:* C:\Program Files\Beginfinite\retain\RetainServer\WEB-INF\cfg\ASConfig.cfg
- ♦ *Linux:* /opt/beginfinite/retain/RetainServer/WEB-INF/cfg/ASConfig.cfg

Be very careful with your index directory! You can delete all of the files *except* the `solrhome` directory, the `zoo_data` directory (do not delete this non-essential file while Retain is running.), and the `log.l` file.

## Tool Compatibility with Retain 3.x (Lucene) Indexes

Not all tools are compatible with the Retain 3.x (Lucene) indexes.

| <b>Tool</b>                                          | <b>Compatibility</b> |
|------------------------------------------------------|----------------------|
| Retain web console                                   | Compatible           |
| Publisher                                            | Not compatible       |
| Outlook Plugin                                       | Not compatible       |
| Retain App for Android Phones                        | Not compatible       |
| Retain App for iOS Phones                            | Not compatible       |
| Retain Single Sign-on plugin for GroupWise Client    | Does not use indexes |
| Retain Single Sign-on plugin for GroupWise WebAccess | Does not use indexes |
| GroupWise Archive Migrator/PAM Tool                  | Does not use indexes |
| PST Importer                                         | Does not use indexes |
| Netmail and M+ to Retain Migration Utility           | Does not use indexes |
| PowerShell Sync Script                               | Does not use indexes |

## Upgrading from Versions Prior to Retain 3.5.1.1

This guide only contains upgrade information for upgrading from Retain 3.5.1.1 and later. If you need information and instructions for upgrading from earlier versions of Retain, see the [Retain 4.7 Online Documentation \(https://www.microfocus.com/documentation/retain-unified-archiving/47/\)](https://www.microfocus.com/documentation/retain-unified-archiving/47/).

## Moving Retain to a New Server

- ◆ [“Moving Retain from Windows to Linux” on page 134](#)
- ◆ [“Moving Retain from Linux to Windows” on page 139](#)
- ◆ [“Moving Retain To a Different Windows Server” on page 142](#)
- ◆ [“Moving Retain To a Different Linux Server” on page 145](#)

## Moving Retain from Windows to Linux

The easiest method is to re-install everything to the new server and then copy over the archive and configuration files.

These instructions are for moving Retain and maintaining its current version.

- ◆ [“Overview” on page 135](#)
- ◆ [“Preparation” on page 135](#)
- ◆ [“Moving Retain” on page 136](#)

## Overview

To move Retain, you must move 3 things:

- ◆ **Configuration files.** Move the ASConfig.cfg, which is stored in a directory off of your Retain installation:

Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/cfg

Windows default: [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg

Indexer configuration files (the entire directory's contents):

Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/solrweb/WEB-INF/cfg

Windows default: [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\solrweb\WEB-INF\cfg

- ◆ **Database.** Unless it's on a separate server from the Retain server and you are not wanting to move it.
- ◆ **Storage.** In summary, the storage directories to be copied are:
  - ◆ archive (required)
  - ◆ backup (optional, although we recommend you skip this since having it on the old server is backup enough until the next Retain maintenance performs a backup on the new server)
  - ◆ ebdb (optional)
  - ◆ export (optional)
  - ◆ index (required in Retain 4, recommended for Retain 3)
  - ◆ license (optional)
  - ◆ xml (optional)

---

**NOTE:** If you've added storage partitions in the Retain admin web interface, you must make sure all of those are copied correctly, too.

---

## Preparation

1. Note where your Retain storage directory is located.

To determine what that directory is, log into the RetainServer web interface and click on Server Configuration | Storage. The "Base Storage path" is your [Retain storage directory \(https://support.microfocus.com/kb/doc.php?id=7019531\)](https://support.microfocus.com/kb/doc.php?id=7019531).

2. Download Retain to the new server and prepare it for the installation.
  - a. Create the download directory.
    - i. Make the directory for holding the software: `md /software`
    - ii. Change to that directory: `cd /software`
  - b. Download the latest version of Retain on the new server. For Retain 2.x customers, you'll first want to migrate your data to Retain 3.x format first; then proceed with moving Retain

---

**NOTE:** You can use the `wget` command to download the software to the Linux server by changing into the software directory you created in step 2.a and running this command:  
`wget '[url]'`

---

- i. Get the URL of the most current version of Retain from <http://download.gwava.com/download.php?product=Retain&version=versions> (<http://download.gwava.com/download.php?product=Retain&version=versions>)
  - ii. Now use that URL with the `wget` command on the Linux server inside the software directory you created.  
EXAMPLE: `wget 'http://download.gwava.com/retain/Retain4200ga_386.zip'`
  - c. Unzip the file and make the script files (.sh) executable.
    - i. `unzip [retain zip file] -d [retain zip filename, excluding the ".zip" at the end]`  
Example: `unzip Retain4200ga_286.zip -d retain4200ga-386`  
The "-d" option causes it to create Note how we kept the "r" in lowercase following the "-d" option since Linux is case sensitive when changing directories.
    - ii. `chmod +x *.sh`
3. Install Apache2 to the new server.
    - a. Launch YaST | Software Management.
    - b. In the search window, type: Apache2.
    - c. Click on Apache2 (only), click on the Accept button, and accept the defaults.
  4. (Optional) If you have edited the default properties files under the `.../RetainWorker/WEB-INF/classes/config`, you may want to back up those files to restore them after the final step of the move. However, you could always access them from the original Retain server if needed.

## Moving Retain

1. Disable archive jobs and, if applicable, deletion jobs on the old server.
2. For good measure, [shut down Tomcat \(https://support.microfocus.com/kb/doc.php?id=7019531\)](https://support.microfocus.com/kb/doc.php?id=7019531) on the old server.
3. Move the MySQL database if it resides on the Retain server; otherwise, proceed to step #4.  
See: "[Moving MySQL Database to Another Server \(https://support.microfocus.com/kb/doc.php?id=7019952\)](https://support.microfocus.com/kb/doc.php?id=7019952)".
4. Install Retain on the new server.

- a. Change to your Retain software installation directory (i.e., `/software/retain3510ga_262`)
- b. Execute the installation script: `./RetainInstall.sh`

\*\*\*\*\*IMPORTANT\*\*\*\*\*

At a certain point of the installation, you are presented the following prompt:

Will MySQL be running on the same server as Retain?

1) Yes

2) No <---- Select this option even if MySQL is running on the same server



Even if MySQL is running on the same server as Retain, type "2" for "No"; otherwise, it attempts to install and configure MySQL. At this point, you have already installed MySQL and moved your MySQL database to this new server, so selecting option 1 causes problems.

\*DO NOT log into the WEB UI at this point, you could damage the database data that you've just moved.

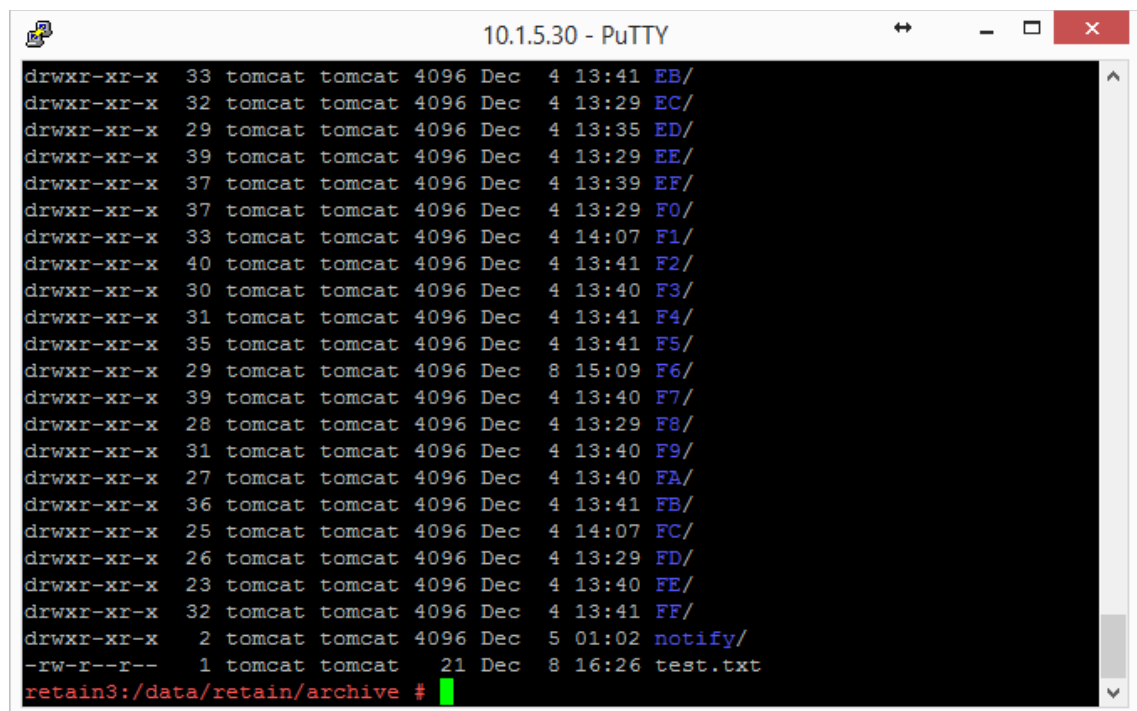
- c. [Shut down Tomcat](https://support.microfocus.com/kb/doc.php?id=7019531) (https://support.microfocus.com/kb/doc.php?id=7019531) on the new server.
5. Copy the Retain storage directories from the old server to the new server (see step #1 under the "Preparation" section for the location of this directory). WARNING: This step can take days or weeks depending on volume.

Because the Windows server is using NTFS as the disk format and Linux something different (ext3, xfs, etc), you'll need to employ an approach where the data on these two distinct disk formats can be read from and written to by the same process.

One approach is to create a CIFS mount from the Linux box to the Windows server. This requires that you first share the parent directory of the "archive" directory on your Windows server housing Retain. Another approach would be to install NFS services on the new Windows server, share the new storage directories, and mount from the old Linux server to the new shared storage directories.

Once that is done, you can now [use rsync to copy the files](https://support.microfocus.com/kb/doc.php?id=7019348) (https://support.microfocus.com/kb/doc.php?id=7019348) from Retain storage directory on Windows to the new Linux server. To help with this process, you may download and install [Support's utility](https://support.microfocus.com/kb/doc.php?id=7019279) (https://support.microfocus.com/kb/doc.php?id=7019279) for copying the files/directories.

Change to the new archive directory. It should have 256 subdirectories (00 - FF). All those subdirectories must have the ownership of tomcat tomcat.



```
10.1.5.30 - PuTTY
drwxr-xr-x 33 tomcat tomcat 4096 Dec 4 13:41 EB/
drwxr-xr-x 32 tomcat tomcat 4096 Dec 4 13:29 EC/
drwxr-xr-x 29 tomcat tomcat 4096 Dec 4 13:35 ED/
drwxr-xr-x 39 tomcat tomcat 4096 Dec 4 13:29 EE/
drwxr-xr-x 37 tomcat tomcat 4096 Dec 4 13:39 EF/
drwxr-xr-x 37 tomcat tomcat 4096 Dec 4 13:29 F0/
drwxr-xr-x 33 tomcat tomcat 4096 Dec 4 14:07 F1/
drwxr-xr-x 40 tomcat tomcat 4096 Dec 4 13:41 F2/
drwxr-xr-x 30 tomcat tomcat 4096 Dec 4 13:40 F3/
drwxr-xr-x 31 tomcat tomcat 4096 Dec 4 13:41 F4/
drwxr-xr-x 35 tomcat tomcat 4096 Dec 4 13:41 F5/
drwxr-xr-x 29 tomcat tomcat 4096 Dec 8 15:09 F6/
drwxr-xr-x 39 tomcat tomcat 4096 Dec 4 13:40 F7/
drwxr-xr-x 28 tomcat tomcat 4096 Dec 4 13:29 F8/
drwxr-xr-x 31 tomcat tomcat 4096 Dec 4 13:40 F9/
drwxr-xr-x 27 tomcat tomcat 4096 Dec 4 13:40 FA/
drwxr-xr-x 36 tomcat tomcat 4096 Dec 4 13:41 FB/
drwxr-xr-x 25 tomcat tomcat 4096 Dec 4 14:07 FC/
drwxr-xr-x 26 tomcat tomcat 4096 Dec 4 13:29 FD/
drwxr-xr-x 23 tomcat tomcat 4096 Dec 4 13:40 FE/
drwxr-xr-x 32 tomcat tomcat 4096 Dec 4 13:41 FF/
drwxr-xr-x 2 tomcat tomcat 4096 Dec 5 01:02 notify/
-rw-r--r-- 1 tomcat tomcat 21 Dec 8 16:26 test.txt
retain3:/data/retain/archive #
```

Windows does not have a file ownership scheme similar to Linux, so once you've copied the storage directories over, you'll need to set the directory/file ownership and permissions. That process can take almost as much time as copying the directories did but it must be done in order for Retain to be able to read from and write to them. To do this, type: `chown -R tomcat:tomcat [directory]`.

EXAMPLE: `chown -R tomcat:tomcat archive` (performed from the base storage path containing the archive, index, and other Retain storage directories)

6. Copy the configuration files from the old server to the new server and edit the paths referenced in those files to reflect their new locations:
  - a. ASConfig.cfg, located in [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg.
  - b. Edit the ASConfig.cfg and change several parameters to reflect the storage paths on the new server. Or, you can start tomcat, logon to the Retain Server web admin console, and change the paths under Server Configuration | Storage. If editing the ASConfig.cfg directly, look for these parameters for the storage paths:
    - ◆ <basepath>
    - ◆ <archivePath>
    - ◆ <xmlPath>
    - ◆ <indexPath>
    - ◆ <backupPath>
    - ◆ <licensePath>
    - ◆ <EBDBPath>
    - ◆ <exportPath>
  - c. RETAIN 4 ONLY:
    - i. Edit the path the index directory to reflect its new location by opening the zoo.cfg file in ... \index\solrhome\
    - ii. Copy everything from [drive]:\RetainServer\WEB-INF\solrweb\WEBINF\cfg.
7. Start Tomcat on the new server.
8. Login to the Retain Server web admin console.
9. Replace the existing Worker object. This is for systems where the Worker is on the Retain server or for situations where jobs won't start after moving Retain:
  - a. Create a new worker web object using the instructions in [“Workers Overview” on page 305](#).
  - b. Download the bootstrap file.
  - c. Edit all jobs assigned to the old worker and re-assign them to the new one.
  - d. Delete the old worker object.
  - e. Restart tomcat.
  - f. From a web browser, go to the RetainWorker and upload the new bootstrap.  
`http://[Retain server IP]/RetainWorker`
10. If you backed up any of the Retain Worker properties files (see step #5 under the Preparation section), restore those to their respective directories. This does not apply to most customers - this is very rarely done.

# Moving Retain from Linux to Windows

The easiest method is to re-install everything to the new server and then copy over the archive and configuration files.

These instructions are for moving Retain and maintaining its current version. If your current version of Retain is 2.x and you wish to upgrade afterwards (highly recommended), follow the instructions in the KB article, "Upgrade: Retain 2.x to Retain 3.5.1.1 (Windows)".

- ◆ [“Overview” on page 139](#)
- ◆ [“Preparation” on page 140](#)
- ◆ [“Moving Retain” on page 140](#)

## Overview

To move Retain, you must move 3 things:

- ◆ **Configuration files.** Move the ASConfig.cfg, which is stored in a directory off of your Retain installation:

Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/cfg

Windows default: [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg

Indexer configuration files (the entire directory's contents):

Linux default: /opt/beginfinite/retain/RetainServer/WEB-INF/solrweb/WEB-INF/cfg

Windows default: [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\solrweb\WEB-INF\cfg

- ◆ **Database.** Unless it's on a separate server from the Retain server and you are not wanting to move it.
- ◆ **Storage.** In summary, the storage directories to be copied are:
  - ◆ archive (required)
  - ◆ backup (optional, although we recommend you skip this since having it on the old server is backup enough until the next Retain maintenance performs a backup on the new server)
  - ◆ ebdb (optional)
  - ◆ export (optional)
  - ◆ index (required in Retain 4, recommended for Retain 3)
  - ◆ license (optional)
  - ◆ xml (optional)

---

**NOTE:** If you've added storage partitions in the Retain admin web interface, you must make sure all of those are copied correctly, too.

---

## Preparation

1. Note where your Retain storage directory is located. To determine what that directory is, log into the RetainServer web interface and click on Server Configuration | Storage. The "Base Storage path" is your [Retain storage directory \(https://support.microfocus.com/kb/doc.php?id=7020655\)](https://support.microfocus.com/kb/doc.php?id=7020655).
2. Download Retain to the new server and prepare it for the installation.
  - a. Prepare the download directory.

We recommend creating a directory called Software on the root of the drive. It is not required and you may store the installation files wherever you desire, but if you do not have a strong preference, storing it at [drive]:\Software makes it easier to find later, especially for technical support.
  - b. Download the latest version of Retain on the new server. For Retain 2.x customers, you'll first want to migrate your data to Retain 3.x format first; then proceed with moving Retain.
  - c. Unzip the file, allowing Windows to create a new subdirectory off of "Software" with the same name as the zip file.

For example, if the zip file were named, "Retain4031ga\_48.zip", Windows - by default - creates a subdirectory called "Retain4031ga\_48", so that the full path to the installation files becomes [drive]:\Software\Retain4031ga\_48.
3. (Optional) [Configure NFS Services \(https://support.microfocus.com/kb/doc.php?id=7020834\)](https://support.microfocus.com/kb/doc.php?id=7020834) on the new Windows server if you want to use Support's Retain Auxilliary Tool Set utility to copy your Retain storage to your new server.
4. [Install/Configure IIS \(https://support.microfocus.com/kb/doc.php?id=7020584\)](https://support.microfocus.com/kb/doc.php?id=7020584) on the new server.
5. (Optional) If you have edited the default properties files under the Retain Worker directory(ies) (.../RetainWorker/classes/config) such as attachment.properties or errors.properties, you may want to back up those files to restore them after the final step of the move.

## Moving Retain

1. Disable archive all archive jobs, and if applicable, deletion jobs on the old server.
2. For good measure, [shut down Tomcat \(https://support.microfocus.com/kb/doc.php?id=7019531\)](https://support.microfocus.com/kb/doc.php?id=7019531) on the old server.
3. Move the database if it resides on the Retain server; otherwise, proceed to step #4. For customers using MySQL, reference "[Moving MySQL Database to Another Server \(https://support.microfocus.com/kb/doc.php?id=7019952\)](https://support.microfocus.com/kb/doc.php?id=7019952)".
4. Copy the Retain storage directory from the old server to the new server (see step #1 under the "Preparation" section for the location of this directory).

---

**WARNING:** This step can take days or weeks depending on volume.

---

Because the Windows server is using NTFS as the disk format and Linux something different (ext3, xfs, etc), you'll need to employ an approach where the data on these two distinct disk formats can be read from and written to by the same process.

We recommend that you [install NFS services on the new Windows server \(https://support.microfocus.com/kb/doc.php?id=7020834\)](https://support.microfocus.com/kb/doc.php?id=7020834), share the new storage directories, and mount from the old Linux server to the new shared storage directories.

Once that is done, you can now use rsync to copy the files from Retain storage directory on Linux to the new Windows server. To help with this process, you may download and install Support's utility for copying the archive directory.

5. Install Retain on the new server.
  - \*DO NOT log into the WEB UI at this point, you could damage the database data that you've just moved.
6. Shut down Tomcat on the new server.
7. Copy the configuration files from the old server to the new server and edit the paths referenced in those files to reflect their new locations:
  - a. ASConfig.cfg, located in [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg.
  - b. Edit the ASConfig.cfg and change several parameters to reflect the storage paths on the new server. Or, you can start tomcat, logon to the Retain Server web admin console, and change the paths under Server Configuration | Storage. If editing the ASConfig.cfg directly, look for these parameters for the storage paths:
    - ◆ <basepath>
    - ◆ <archivePath>
    - ◆ <xmlPath>
    - ◆ <indexPath>
    - ◆ <backupPath>
    - ◆ <licensePath>
    - ◆ <EBDBPath>
    - ◆ <exportPath>
  - c. RETAIN 4 ONLY:
    - i. Edit the path the index directory to reflect its new location by opening the zoo.cfg file in ...\\index\solrhome\
    - ii. Copy everything from [drive]:\RetainServer\WEB-INF\solrweb\WEBINF\cfg.
8. Start Tomcat on the new server.
9. Login to the Retain Server web admin console.
10. Replace the existing Worker object. This is for systems where the Worker is on the Retain server or for situations where jobs won't start after moving Retain:
  - a. [Create a new worker object \(https://support.microfocus.com/kb/doc.php?id=7020431\)](https://support.microfocus.com/kb/doc.php?id=7020431).
  - b. Download the bootstrap file.
  - c. Edit all jobs assigned to the old worker and re-assign them to the new one.
  - d. Delete the old worker object.

- e. Restart tomcat.
  - f. From a web browser, go to the RetainWorker ([http://\[Retain server IP\]/RetainWorker](http://[Retain server IP]/RetainWorker)) and upload the new bootstrap.
11. If you backed up any of the Retain Worker properties files (see step #5 under the Preparation section), restore those to their respective directories. This does not apply to most customers - this is very rarely done.

## Moving Retain To a Different Windows Server

The easiest method is to re-install everything to the new server and then copy over the archive and configuration files.

These instructions are for moving Retain and maintaining its current version. If your current version of Retain is 2.x and you wish to upgrade afterwards (highly recommended), follow the instructions in the KB article, "Upgrade: Retain 2.x to Retain 3.5.1.1 (Windows)".

- ◆ ["Overview" on page 142](#)
- ◆ ["Preparation" on page 143](#)
- ◆ ["Moving Retain" on page 143](#)

## Overview

To move Retain, you must move 3 things:

- ◆ **Configuration files.** Move the ASConfig.cfg, which is stored in a directory off of your Retain installation:

Linux default: `/opt/beginfinite/retain/RetainServer/WEB-INF/cfg`

Windows default: `[drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg`

Indexer configuration files (the entire directory's contents):

Linux default: `/opt/beginfinite/retain/RetainServer/WEB-INF/solrweb/WEB-INF/cfg`

Windows default: `[drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\solrweb\WEB-INF\cfg`

- ◆ **Database.** Unless it's on a separate server from the Retain server and you are not wanting to move it.
- ◆ **Storage.** In summary, the storage directories to be copied are:
  - ◆ archive (required)
  - ◆ backup (optional, although we recommend you skip this since having it on the old server is backup enough until the next Retain maintenance performs a backup on the new server)
  - ◆ ebdb (optional)
  - ◆ export (optional)
  - ◆ index (required in Retain 4, recommended for Retain 3)
  - ◆ license (optional)
  - ◆ xml (optional)

---

**NOTE:** If you've added storage partitions in the Retain admin web interface, you must make sure all of those are copied correctly, too.

---

## Preparation

1. Make a note of where your Retain storage directory is located. To determine what that directory is, log into the RetainServer web interface and click on Server Configuration | Storage. The "Base Storage path" is your [Retain storage directory \(https://support.microfocus.com/kb/doc.php?id=7020655\)](https://support.microfocus.com/kb/doc.php?id=7020655).
2. Download Retain to the new server and prepare it for the installation.
  - a. Prepare the download directory.

We recommend creating a directory called Software on the root of the drive. It is not required and you may store the installation files wherever you desire, but if you do not have a strong preference, storing it at [drive]:\Software makes it easier to find later, especially for technical support.
  - b. Download the latest version of Retain on the new server. For Retain 2.x customers, you'll first want to migrate your data to Retain 3.x format first; then proceed with moving Retain.
  - c. Unzip the file, allowing Windows to create a new subdirectory off of "Software" with the same name as the zip file.

For example, if the zip file were named, "Retain4031ga\_48.zip", Windows - by default - creates a subdirectory called "Retain4031ga\_48", so that the full path to the installation files becomes [drive]:\Software\Retain4031ga\_48.
3. (Optional) [Configure NFS Services \(https://support.microfocus.com/kb/doc.php?id=7020834\)](https://support.microfocus.com/kb/doc.php?id=7020834) on the new Windows server if you want to use Support's Retain Auxilliary Tool Set utility to copy your Retain storage to your new server.
4. [Install/Configure IIS \(https://support.microfocus.com/kb/doc.php?id=7020584\)](https://support.microfocus.com/kb/doc.php?id=7020584) on the new server.
5. (Optional) If you have edited the default properties files under the Retain Worker directory(ies) (.../RetainWorker/classes/config) such as attachment.properties or errors.properties, you may want to back up those files to restore them after the final step of the move.

## Moving Retain

1. Disable archive all archive jobs, and if applicable, deletion jobs on the old server.
2. For good measure, [shut down Tomcat \(https://support.microfocus.com/kb/doc.php?id=7019531\)](https://support.microfocus.com/kb/doc.php?id=7019531) on the old server.
3. Move the database if it resides on the Retain server; otherwise, proceed to step #4. For customers using MySQL, reference "[Moving MySQL Database to Another Server \(https://support.microfocus.com/kb/doc.php?id=7019952\)](https://support.microfocus.com/kb/doc.php?id=7019952)".
4. Install Retain on the new server. \*DO NOT log into the WEB UI at this point, you could damage the database data that you've just moved.
5. Shut down Tomcat on the new server.

6. Copy the Retain storage directory from the old server to the new server (see step #1 under the "Preparation" section). [Robocopy \(http://social.technet.microsoft.com/wiki/contents/articles/1073.robocopy-and-a-few-examples.aspx\)](http://social.technet.microsoft.com/wiki/contents/articles/1073.robocopy-and-a-few-examples.aspx) is Microsoft's tool for this kind of job. Make sure to include empty directories. Verbose logging is recommended.

---

**WARNING:** This step can take days or weeks depending on volume.

---

7. Copy the configuration files from the old server to the new server and edit the paths referenced in those files to reflect their new locations:
  - a. ASConfig.cfg, located in [drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg.
  - b. Edit the ASConfig.cfg and change several parameters to reflect the storage paths on the new server. Or, you can start tomcat, logon to the Retain Server web admin console, and change the paths under Server Configuration | Storage. If editing the ASConfig.cfg directly, look for these parameters for the storage paths:
    - ◆ <basepath>
    - ◆ <archivePath>
    - ◆ <xmlPath>
    - ◆ <indexPath>
    - ◆ <backupPath>
    - ◆ <licensePath>
    - ◆ <EBDBPath>
    - ◆ <exportPath>
  - c. RETAIN 4 ONLY:
    - a. Edit the path the index directory to reflect its new location by opening the zoo.cfg file in ...\\index\\solrhome\
    - b. Copy everything from [drive]:\RetainServer\WEB-INF\solrweb\WEBINF\cfg.
8. Start Tomcat on the new server.
9. Login to the Retain Server web admin console.
10. Replace the existing Worker object. This is for systems where the Worker is on the Retain server or for situations where jobs won't start after moving Retain:
  - a. Create a new worker web object. See [“Workers Overview” on page 305](#).
  - b. Download the bootstrap file.
  - c. Edit all jobs assigned to the old worker and re-assign them to the new one.
  - d. Delete the old worker object.
  - e. Restart tomcat.
  - f. From a web browser, go to the RetainWorker ([http://\[Retain server IP\]/RetainWorker](http://[Retain server IP]/RetainWorker)) and upload the new bootstrap.
11. If you backed up any of the Retain Worker properties files (see step #5 under the Preparation section), restore those to their respective directories. This does not apply to most customers - this is very rarely done.



# Moving Retain To a Different Linux Server

The easiest method is to re-install everything to the new server and then copy over the archive and configuration files.

These instructions are for moving Retain and maintaining its current version. If your current version of Retain is 2.x and you wish to upgrade afterwards (highly recommended), follow the instructions in the KB article, "Upgrade: Retain 2.x to Retain 3.x (Windows)".

- ◆ [“Overview” on page 145](#)
- ◆ [“Preparation” on page 145](#)
- ◆ [“Making the Move” on page 146](#)

## Overview

In order to move Retain there are 3 things that are not optional that MUST be moved.

1. The ASConfig.cfg
2. The Database (unless it's on a separate server in which case it can stay there. That part is up to you.)
3. The archive files. It is recommended that you also copy the indexes. It would be more work not to and would be disruptive to searching.

Everything else can be re-created but can also be copied if you wish. In summary, here are the storage directories to be copied:

- ◆ archive (required)
  - ◆ index (recommended)
  - ◆ backup (optional)
  - ◆ ebdb (optional)
  - ◆ export (optional)
  - ◆ license (optional)
  - ◆ xml (optional)
4. For Retain 4 only:
    - ◆ .../index/solrhome/zoo.cfg
    - ◆ .../RetainServer/WEB-INF/solrweb/WEB-INF/cfg

---

**NOTE:** If you've added storage partitions in the Retain admin web interface, you must make sure all of those are copied correctly, too.

---

## Preparation

1. Make a note of where your Retain storage directory is located.

To determine what that directory is, log into the RetainServer web interface and click on Server Configuration | Storage. The "Base Storage path" is your [Retain storage directory \(http://support.microfocus.com/kb/doc.php?id=7020655\)](http://support.microfocus.com/kb/doc.php?id=7020655).

2. Download Retain to the new server and prepare it for the installation.
  - a. Create the download directory.
    - ◆ Make the directory for holding the software: `md /software`
    - ◆ Change to that directory: `cd /software`
  - b. Download the major Retain version you are currently using into the software directory you created on the new server.
 

If Retain 2.x, download that version. It could be a newer build of that same major version. What you want to avoid is downloading Retain 2.x when your old system is Retain 1.x or downloading Retain 3.x when your old system is Retain 2.x.

Download the same major version of Retain that your are currently using, going with the latest build of that major version (where "major version" is 2.x, 3.x, 4.x, etc):

<http://download.gwava.com/download.php?product=Retain&version=versions> (<http://download.gwava.com/download.php?product=Retain&version=versions>)

NOTE: You can use the `wget` command to download the software to the Linux server by changing into the software directory you created in step 2.a and running this command: `wget '[url]'`

EXAMPLE: `wget 'http://download.gwava.com/retain/Retain3511ga_53.zip'`
  - c. Unzip the file and make the script files (.sh) executable.
    - i. `unzip [retain zip file] -d [retain zip filename, excluding the ".zip" at the end]`  
 Example: `unzip Retain3511ga_53.zip -d retain3511ga_53`  
 The "-d" option causes it to create Note how we kept the "r" in lowercase following the "-d" option since Linux is case sensitive when changing directories.
    - ii. `chmod +x *.sh`
3. Install Apache2 to the new server.
  - a. Launch YaST | Software Management.
  - b. In the search window, type: Apache2.
  - c. Click on Apache2 (only), click on the Accept button, and accept the defaults.
4. (Optional) If you have edited the default properties files under the `.../RetainWorker/WEB-INF/classes/config`, you may want to back up those files to restore them after the final step of the move. However, you could always access them from the original Retain server if needed.

## "Making the Move"

1. Disable all archive and deletion jobs on the old server.
2. For good measure, [stop Tomcat \(http://https://support.microfocus.com/kb/doc.php?id=7019531\)](http://https://support.microfocus.com/kb/doc.php?id=7019531) on the old server.
3. Move the MySQL database if it resides on the Retain server. See: "[Moving MySQL Database to Another Server \(http://https://support.microfocus.com/kb/doc.php?id=7019952\)](http://https://support.microfocus.com/kb/doc.php?id=7019952)".
4. Install Retain on the new server.
  - a. Change to your Retain software installation directory (i.e., `/software/retain3510ga_262`)
  - b. Execute the installation script: `./RetainInstall.sh`

\*\*\*\*\*IMPORTANT\*\*\*\*\*

At a certain point of the installation, you are presented the following prompt:

Will MySQL be running on the same server as Retain?

1) Yes

2) No <---- Select this option even if MySQL is running on the same server

Even if MySQL is running on the same server as Retain, type "2" for "No"; otherwise, it attempts to install and configure MySQL. At this point, you have already installed MySQL and moved your MySQL database to this new server, so selecting option 1 causes problems.

\*DO NOT log into the WEB UI at this point, you could damage the database data that you've just moved. Now is probably the best time to Stop Retain.

5. Copy your storage directory contents from the existing server to the new server.

---

**NOTE:** This step is made easy by a Linux utility created by GWAVA Support for this very purpose called [Retain Auxiliary Tool Set \(http://support.microfocus.com/kb/doc.php?id=7019279\)](http://support.microfocus.com/kb/doc.php?id=7019279) (affectionately referred to as "RATS").

---

If you wish to manually do this (ok, so you like to do it the hard way), here are the steps:

- a. Connect the existing server's storage directory to the new server; or, rsync supports addressing the DNS hostname or IP address of the destination server if you wish to do it that way.

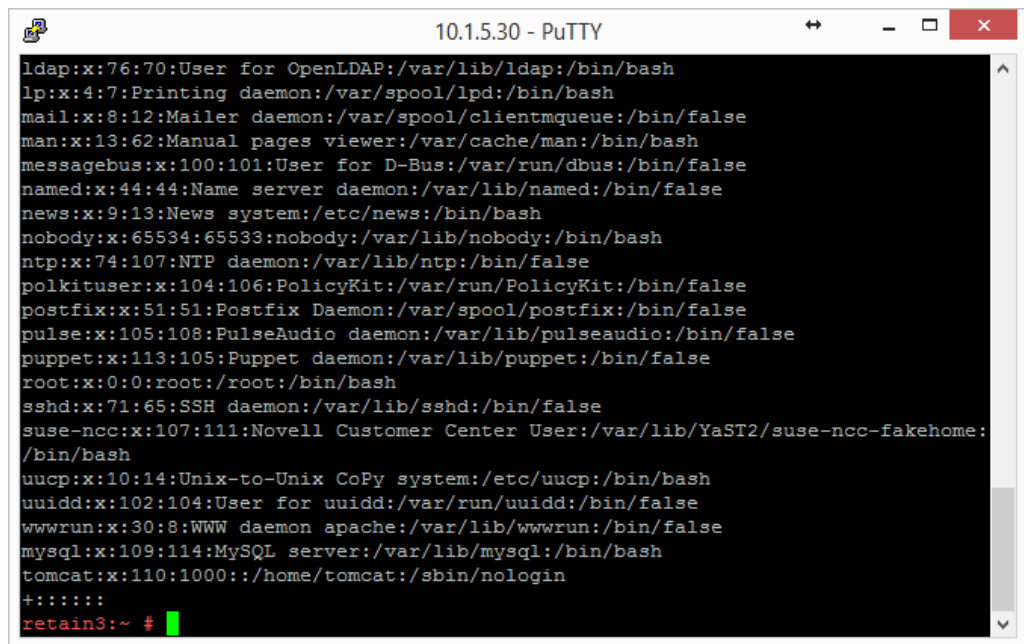
If you decide to mount the new server's storage directory, one way to do this is to create an "export" of the existing server's storage directory and create an NFS mount to a drive from the new server over to the exported drive on the existing server. For sample instructions on how to create an export and how to mount to it, see "[How to 'Map' \(Mount\) Another Server's Linux Directory to Your Server \(https://support.microfocus.com/kb/doc.php?id=7020700\)](https://support.microfocus.com/kb/doc.php?id=7020700)".

- b. Change the tomcat userid on the new server to match the tomcat userid on the old server (if necessary).

File ownership and permissions are tied to a userid, not a user name; thus, if tomcat on server A has a userid assignment of 110 and tomcat on new server B has 107, then the files that get copied over come over as being owned by userid 110, not "tomcat". As the files get stored on server B, it looks up userid 110 on its system. If that ID is assigned to another process, say "Puppet", then the files are owned by that program, not tomcat. So, you must check what the tomcat userid is on source server A and on destination server B and make them match by changing the userid, if necessary, on destination server B.

- i. On the old server, type: `cat /etc/passwd`

This lists all the user accounts on the server, showing their userids and group IDs. In the list in the screenshot, tomcat is listed last and its userid is 110 and its group ID is 1000.



```
10.15.30 - PuTTY
ldap:x:76:70:User for OpenLDAP:/var/lib/ldap:/bin/bash
lp:x:4:7:Printing daemon:/var/spool/lpd:/bin/bash
mail:x:8:12:Mailer daemon:/var/spool/clientmqueue:/bin/false
man:x:13:62:Manual pages viewer:/var/cache/man:/bin/bash
messagebus:x:100:101:User for D-Bus:/var/run/dbus:/bin/false
named:x:44:44:Name server daemon:/var/lib/named:/bin/false
news:x:9:13:News system:/etc/news:/bin/bash
nobody:x:65534:65533:nobody:/var/lib/nobody:/bin/bash
ntp:x:74:107:NTP daemon:/var/lib/ntp:/bin/false
polkituser:x:104:106:PolicyKit:/var/run/PolicyKit:/bin/false
postfix:x:51:51:Postfix Daemon:/var/spool/postfix:/bin/false
pulse:x:105:108:PulseAudio daemon:/var/lib/pulseaudio:/bin/false
puppet:x:113:105:Puppet daemon:/var/lib/puppet:/bin/false
root:x:0:0:root:/root:/bin/bash
sshd:x:71:65:SSH daemon:/var/lib/ssh:/bin/false
suse-ncc:x:107:111:Novell Customer Center User:/var/lib/YaST2/suse-ncc-fakehome:
/bin/bash
uucp:x:10:14:Unix-to-Unix CoPy system:/etc/uucp:/bin/bash
uuid:x:102:104:User for uuid:/var/run/uuid:/bin/false
wwwrun:x:30:8:WWW daemon apache:/var/lib/wwwrun:/bin/false
mysql:x:109:114:MySQL server:/var/lib/mysql:/bin/bash
tomcat:x:110:1000:~/home/tomcat:/sbin/nologin
+:::~ #
```

- ii. Do this same procedure on the new server.

If the userids match for tomcat on both servers, consider yourself fortunate and you are ready for the next step "c"; otherwise, proceed to sub-step "3)".

- iii. Look at the new server's userid list you obtained.

Determine whether another process on the new server is using the same userid assigned to Tomcat on the old server.

If so, you'll need to change that processes' userid to an unused userid by following the same steps outlined in the following sub-step "4)" for Tomcat's userid change. Then, follow sub-step "4)" to change Tomcat's userid.

- iv. Change a userid by typing this command: `usermod -u [new userid assignment] [username getting the new userid]`

```
10.15.30 - PuTTY
ldap:x:76:70:User for OpenLDAP:/var/lib/ldap:/bin/bash
lp:x:4:7:Printing daemon:/var/spool/lpd:/bin/bash
mail:x:8:12:Mailer daemon:/var/spool/clientmqueue:/bin/false
man:x:13:62:Manual pages viewer:/var/cache/man:/bin/bash
messagebus:x:100:101:User for D-Bus:/var/run/dbus:/bin/false
named:x:44:44:Name server daemon:/var/lib/named:/bin/false
news:x:9:13:News system:/etc/news:/bin/bash
nobody:x:65534:65533:nobody:/var/lib/nobody:/bin/bash
ntp:x:74:107:NTP daemon:/var/lib/ntp:/bin/false
polkituser:x:104:106:PolicyKit:/var/run/PolicyKit:/bin/false
postfix:x:51:51:Postfix Daemon:/var/spool/postfix:/bin/false
pulse:x:105:108:PulseAudio daemon:/var/lib/pulseaudio:/bin/false
puppet:x:113:105:Puppet daemon:/var/lib/puppet:/bin/false
root:x:0:0:root:/root:/bin/bash
sshd:x:71:65:SSH daemon:/var/lib/ssh:/bin/false
suse-ncc:x:107:111:Novell Customer Center User:/var/lib/YaST2/suse-ncc-fakehome:/bin/bash
uucp:x:10:14:Unix-to-Unix CoPy system:/etc/uucp:/bin/bash
uuid:x:102:104:User for uuid:/var/run/uuid:/bin/false
wwwrun:x:30:8:WWW daemon apache:/var/lib/wwwrun:/bin/false
mysql:x:109:114:MySQL server:/var/lib/mysql:/bin/bash
tomcat:x:110:1000:~/home/tomcat:/sbin/nologin
+:::
retain3:~ # usermod -u 103 tomcat
```

You can also use vi to edit /etc/passwd and manually change the userids; whichever is easier for you.

- c. Change to the main Retain storage directory and copy it from the old server to the new server.

We recommend using rsync. Regardless, when copying files on Linux, be sure that whatever method you use copies over the permissions and ownerships.

---

**NOTE:** This should carry over the tomcat ownership and proper file permissions; however, if they are not preserved during the copy process for some reason, you need to set them:

---

```
chown -R tomcat:tomcat [full path to new storage directory]
```

```
chmod -R 744 [full path to new storage directory]
```

This could take days or weeks to complete since the storage's archive directory contains over 16M subdirectories; thus, it is much better if the permissions/ownership are preserved during the copy process.

- 6. Shut down Tomcat on the new server if you haven't already.

- 7. Copy Retain configuration file(s):

Again, copy in such a way that you maintain its file permissions and ownership (tomcat:tomcat); otherwise, remember to set the file ownership and permissions afterwards..

- a. Copy the /opt/beginfinite/retain/RetainServer/WEB-INF/cfg/ASConfig.cfg

---

**NOTE:** If the storage directory on the new server is different from the old server, you must open ASConfig.cfg and change several parameters to reflect the storage paths on the new server:

---

- ◆ <basepath>
- ◆ <archivePath>
- ◆ <xmlPath>

- ♦ <indexPath>
  - ♦ <backupPath>
  - ♦ <licensePath>
  - ♦ <EBDBPath>
  - ♦ <exportPath>
- b. If this is a Retain 4 system:
    - i. Copy the .../index/solrhome/zoo.cfg and edit the path the index directory if it has changed.
    - ii. Copy everything from .../RetainServer/WEB-INF/solrweb/WEBINF/cfg.
  8. Start Tomcat on the new server.
  9. Login to the RetainServer web interface.
  10. For systems where the Worker is on the Retain server, create a new worker object in the RetainServer web interface to replace the old one:
    - a. [Create a new worker \(https://support.microfocus.com/kb/doc.php?id=7020431\)](https://support.microfocus.com/kb/doc.php?id=7020431).
    - b. Download the bootstrap file.
    - c. Edit all jobs assigned to the old worker and re-assign them to the new one.
    - d. Delete the old worker.
    - e. Restart tomcat.
    - f. From a web browser, go to the RetainWorker ([http://\[Retain server IP\]/RetainWorker](http://[Retain server IP]/RetainWorker)) and upload the new bootstrap
  11. If you backed up any of the RetainWorker properties files (see step #4 under the Preparation section), restore those to their respective directories. This does not apply to most customers - this is very rarely done.

## Moving a MySQL Database to Another Server

The steps for moving a MySQL database are provided as a courtesy and are not officially supported by Tech Support; however, we do provide consulting services that can perform this for you. Contact your local sales representative if interested.

- ♦ [“Linux or Windows to Windows” on page 150](#)
- ♦ [“Linux to Linux” on page 152](#)

### Linux or Windows to Windows

1. Disable all archive and deletion jobs and - for good measure, stop Tomcat on the Retain server.
2. Perform a [dump of the database \(https://dev.mysql.com/doc/refman/5.5/en/mysqldump.html\)](https://dev.mysql.com/doc/refman/5.5/en/mysqldump.html).
3. Download MySQL onto the new server.
4. Install MySQL and configure the retain database on the new server.

Refer to the appendix of the Windows Install Guide for instructions. At this point, you may want to configure MySQL memory allocation in the [drive]:\Program Files\MySQL\MySQL Server 5.x\my.ini file. Your retain database uses the InnoDB storage engine. The following should be researched and considered (reference our KB, "MySQL Database maintenance for Best Performance"):

```
innodb_buffer_pool_size
innodb_innodb_additional_mem_pool_size
innodb_log_file_size
innodb_log_buffer_size
```

This can enhance the performance of MySQL and Retain. The MySQL for Windows installer configures settings for you based on your system's available memory and the answers to the questions you provide its configuration wizard, so there may not be anything you need to do; however, you might want to research this and play with those settings to find what works best for your system. GWAVA support cannot answer questions about or help customer's with their databases. That is the customer's responsibility.

If you decide to change the `innodb_log_file_size` setting, you must take the following preparatory steps before doing so:

- a. Open the MySQL Command Line Client (Start | Programs | MySQL)
- b. Log into MySQL: `mysql -u root -p`
- c. From the MySQL prompt, type: `SET GLOBAL innodb_fast_shutdown=0`; Then type "quit" to log out of MySQL.
- d. Stop the MySQL service.
- e. Rename the `ib_logfile0` and `ib_logfile1` files.
- f. Edit the `C:\Program Files\MySQL\MySQL Server 5.x\my.ini` and change the `innodb_log_file_size` setting and save the file.
- g. Start the MySQL service.

If you do not take these steps when changing the logfile size, MySQL doesn't load. You can re-enable the `innodb_fast_shutdown (...=1)` afterwards if there is a need, but average size systems do not seem to experience any significant delay in MySQL shutdowns by leaving it disabled.

5. Import the dump into the new retain database.

- a. Open the MySQL Command Line Client (Start | Programs | MySQL)b) Type: `mysql -u root -p retain < [path to dump file]\[dump filename]`  
EX: `mysql -u root -p retain < d:\dump\2013-12-11.sql` NOTE: This assumes that the `..\MySQL\bin` directory is in the path.

6. (Optional) Reboot the server to clear memory.8. Start Tomcat and re-enable archive jobs; and, if used, re-enable deletion jobs. 9. If only moving MySQL and not Retain; and, if using IP addresses and not DNS names (or using a new DNS address), change Retain's URL to the MySQL server in the `ASConfig.cfg`:

- a. Edit the `ASConfig.cfg (/opt/beginfinite/retain/RetainServer/WEB-INF/cfg)` 2) Change the `<DBURL>` and `<confDBURL>` settings to reflect the the new IP/DNS address 3) Save the changes 4) Restart Tomcat on the Retain server.

## Linux to Linux

1. Disable all archive and deletion jobs and stop Tomcat on the Retain server.
2. Perform a dump of the database.
3. Download MySQL onto the new server and un-tar it. Retain only needs the client and the server RPM's, but it is simpler to download one bundle file then two separate files.

3. Install MySQL and configure the retain database on the new server.

At this point, you may want to configure MySQL memory allocation in the `/etc/my.cnf` file. Your retain database uses the InnoDB storage engine. The following should be researched and considered:

```
innodb_buffer_pool_size
innodb_innodb_additional_mem_pool_size
innodb_log_file_size
innodb_log_buffer_size
```

If done correctly, this can enhance the performance of MySQL and Retain. You might want to research this and experiment with those settings to find what works best for your system. GWAVA support cannot answer questions about or help customer's with their databases. That is the customer's responsibility.

If you decide to change the `innodb_log_file_size` setting, you must take the following steps first:

- a. Log into MySQL: `mysql -u root -p`
- b. From the MySQL prompt, type: `SET GLOBAL innodb_fast_shutdown=0;`  
Then type "quit" to log out of MySQL.
- c. Shut down MySQL: `rcmysql stop`
- d. Rename the `ib_logfile0` and `ib_logfile1` files.
- e. Edit the `/etc/my.cnf` and change the logfile size.
- f. Start up MySQL: `rcmysql start`

If you do not take these steps when changing the logfile size, MySQL doesn't load. You can re-enable the `innodb_fast_shutdown (...=1)` afterwards if there is a need, but average size systems do not seem to experience any significant delay in MySQL shutdowns by leaving fast shutdowns disabled.

4. Import the dump into the new retain database.

`mysql -u root -p retain < /[path to dump file]/[dump filename]` To watch the progress of the import, use this command: `watch "mysqladmin -u root -p[mysql root user pw] processlist"`

5. (Optional) Reboot the server to clear the memory.
7. Start up Tomcat and re-enable archive jobs; and if used, re-enable deletion jobs.

## Upgrading MySQL to a New Version

- ◆ [“Upgrading MySQL on Linux” on page 153](#)
- ◆ [“Upgrading MySQL on Windows” on page 154](#)



# Upgrading MySQL on Linux

Upgrading and existing MySQL on a Retain server.

1. Stop Tomcat on the Retain server. See [“Starting and Stopping the Retain Server” on page 113](#)
2. Perform a `dump` (<https://dev.mysql.com/doc/refman/5.5/en/mysqldump.html>) of the database.
3. Download MySQL onto the server on which you wish to install MySQL and un-tar it. Retain only needs the client and the server RPM's, but it is simpler to download one bundle file then two separate files.
4. Stop MySQL: `rcmysql stop`
5. Uninstall MySQL if upgrading to the same server; otherwise, skip to step #8.

a. Check YaST | Software Management first for MySQL. Uninstall it from there if applicable. If it has a "lock" icon, it cannot be uninstalled from Software Management. Proceed to step "b".

b. Check for any other MySQL RPMs.

```
rpm -qa | grep -i mysql
```

Sample screen output:

```
gwlinux:/ # rpm -qa | grep -i mysql
libmysqlclient_r15-5.0.96-0.6.1
MySQL-server-community-5.1.72-1.sles11
MySQL-client-community-5.1.72-1.sles11
libmysqlclient15-5.0.96-0.6.1
libqt4-sql-mysql-4.6.3-5.25.4
```

c. Uninstall all instances of MySQL found in step b (if any) - but only the entries beginning with "MySQL..."

```
rpm -e [current mysql rpm]
```

Based on the screenshot shown above in in sub-step "b", I would type:

```
rpm -e MySQL-server-community-5.1.72-1.sles11
```

This has to be done for each RPM discovered.

6. Delete or rename the entire "datadir" directory.

This is the mysql directory containing the ibdata1 database and the "retain" subdirectory. It is no longer needed since you have already dumped the database. All of the files and subdirectories are recreated without any loss of data as long as you have a good/current dump.

The "datdir" directory is specified in the `/etc/my.cnf`. Look for the "[mysqld]" section. The first line reads, "datdir=[path]"

If not specified in the `my.cnf`, the datadir could be at `/var/lib/mysql`. This is the default datadir directory if MySQL is installed manually.

7. Rename `/etc/my.cnf` to `my.cnf.old`.
8. Install MySQL and configure the retain database.
9. Import the dump into the new retain database.

```
mysql -u root -p retain < /[path to dump file]/[dump filename]
```

To watch the progress of the import, use this command: `watch "mysqladmin -u root -p[mysql root user pw] processlist"`

10. Reboot the server to clear the memory; otherwise, start up Tomcat and you are done.

## Upgrading MySQL on Windows

### Upgrading MySQL

1. Stop Tomcat on the Retain server. See “Starting and Stopping the Retain Server” on page 113.
2. Perform a `dump` (<https://dev.mysql.com/doc/refman/5.5/en/mysqldump.html>) of the database.
3. Download MySQL onto the server on which you want to install it.
4. Install MySQL and configure the retain database. Refer to the appendix of the Windows Install Guide for instructions.
5. Import the dump into the new retain database.
  - a. Open a command window (`cmd`).
  - b. Change directories to: `C:\Program Files\MySQL\MySQL Server 5.0\bin` (the beginning of the path depends upon where MySQL was installed).
  - c. Type: `mysql -u root -p retain < [path to dump file]\[dump filename]`  
EX: `mysql -u root -p retain < d:\dump\2013-12-11.sql`

---

**NOTE:** This assumes that the `.. \MySQL\bin` directory is in the path.

---

6. (Optional) Reboot the server to clear memory; otherwise, just start Tomcat.

# 5 Archiving

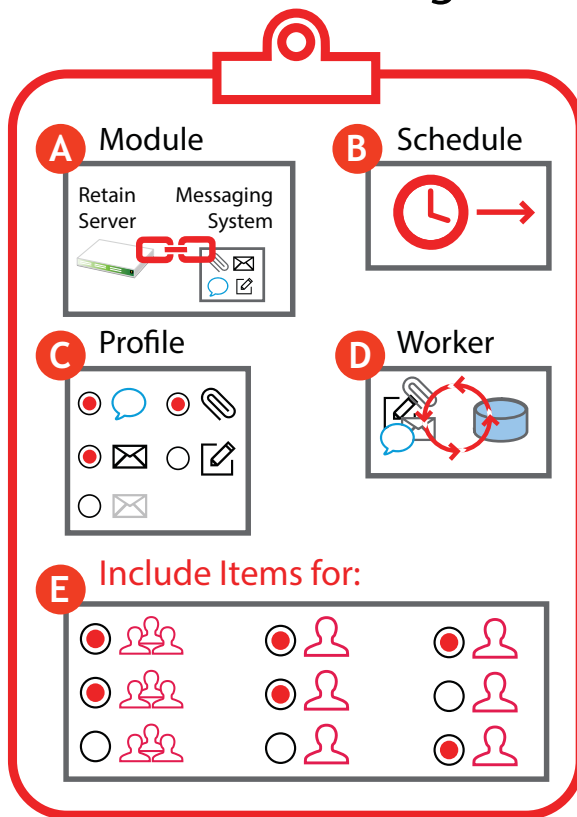
## Jobs—An Overview

Most Retain archiving is accomplished by Jobs that you create and maintain.

Jobs consist of modules, schedules, profiles, and workers, as illustrated in [Figure 5-1](#) and explained in [Table 5-1](#) on page 156.

*Figure 5-1 The Components That Make Up a Job*

### A Retain Archiving Job



**Table 5-1** Job Component Information and Links

---

| <b>Letter</b> | <b>Brief Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A             | <p>To set up a Job, you must first create a Module for the targeted messaging system, so that the Retain Server can connect to it.</p> <p>You cannot create Profiles or Jobs until after you create specific Modules for them.</p> <p>For more information and instructions, see the sections for your messaging systems in <a href="#">Chapter 6, “Modules,” on page 157</a></p>                                                                                                                  |
| B             | <p>The next Job component shown in the overview illustration is a Schedule.</p> <p>Schedules define when a Job’s data collection processes start.</p> <p>Schedules can be one-time or repeating.</p> <p>For instructions on creating schedules, see <a href="#">Chapter 7, “Schedules,” on page 269</a></p>                                                                                                                                                                                        |
| C             | <p>Profiles specify which types of messages and data a job is to archive.</p> <p>As stated above, you cannot see the dialogs for creating Profiles until after you create specific Modules for them.</p> <p>For Profile instructions, see <a href="#">Chapter 8, “Profiles,” on page 271</a>.</p>                                                                                                                                                                                                  |
| D             | <p>The Worker has two parts:</p> <ul style="list-style-type: none"><li>◆ The Worker Agent that does the work of retrieving and initially processing message data.</li><li>◆ The Worker Web Object that tells the Worker Agent how to connect (or bootstrap) to the Retain Server.</li></ul> <p>Workers only start archiving after an associated job is created successfully.</p> <p>Instructions for creating and setting up Workers are in <a href="#">Chapter 9, “Workers,” on page 305</a>.</p> |
| E             | <p>You can create jobs only after you have all of the required components in place.</p> <p>During Job creation, you specify which mailboxes (users and groups) on the targeted systems Retain will archive.</p> <p>Jobs are tied directly to modules. If you want a Job to include multiple modules, you must select them by name before creating the Job.</p>                                                                                                                                     |

---

Continue with [Chapter 6, “Modules,” on page 157](#).

# 6 Modules

- ◆ “Modules Overview” on page 157
- ◆ “GroupWise Module” on page 160
- ◆ “Exchange Module: Office365 or Hosted Exchange without LDAP” on page 166
- ◆ “Exchange Module: Exchange On-premise” on page 187
- ◆ “Blackberry” on page 213
- ◆ “Google Apps Module” on page 226
- ◆ “Bloomberg Module” on page 240
- ◆ “Mobile Module (Android)” on page 243
- ◆ “CellTrust Module” on page 249
- ◆ “CellTrust Generation REST Collector” on page 253
- ◆ “GBS Notes Module” on page 255
- ◆ “Social Media Governance Module” on page 257
- ◆ “Wireless Carriers: AT&T Module” on page 258
- ◆ “TeleMessage Module” on page 261
- ◆ “UM Labs Module” on page 263
- ◆ “GroupWise Messenger Module” on page 265
- ◆ “Ionlake Module” on page 266

## Modules Overview

The Module is how Retain connects to your messaging system.

Select the module that corresponds with your messaging system and configure the module.

### Key Concepts

You must install a Module to connect to your messaging system, this reveals the Data Collection section in the console for setting up a job.

Archiving involves connecting Retain to your messaging system with a Module, setting up a schedule for when you want archives to happen, a profile that defines what should be archived, a worker agent needs to be installed, configured and connected to Retain, and finally a Job needs to be configured with all the previous components as well as who to archive.

To set up archiving, you need to configure:

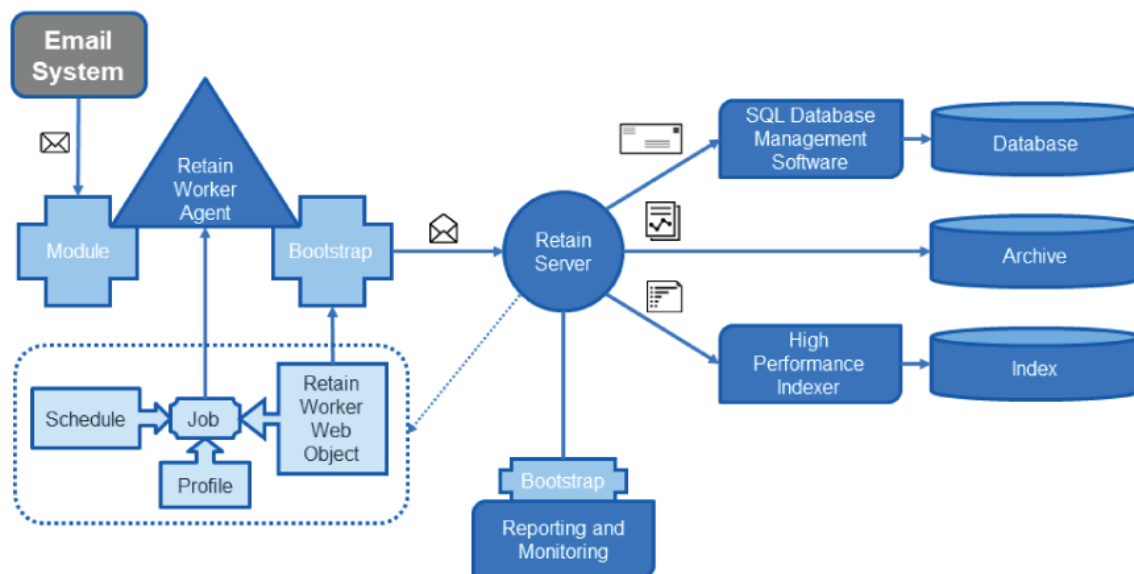
**Module:** How to connect your messaging system.

**Schedule:** When the job runs.

**Profile:** What types of messages the job is to archive.

**Worker:** The Worker is a combination of the Retain Worker Agent that can sit on the Retain server, the messaging server or another server, and the Retain Worker Web Object in the Retain Server console where you create the worker bootstrap which tells the Worker Agent how to connect to Retain Server.

**Job:** Who to archive, what expiration date to create, what schedule, profile, and worker to use.



## Modules

Modules are how Retain connects to a messaging system and jobs specify what Retain archives.

Modules are where you provide the data needed for Retain to connect to the messaging system. This includes the address of the messaging system server and credentials to enter the system, such that Retain can access all the mailboxes.

This is used by the Retain Worker to connect to the messaging system. It is the Retain Worker that does all the work of bringing the data into Retain.

Since the Worker Agent software can be installed on a server separate from the Retain server itself we need to provide it with a bootstrap so it knows how to connect to the Retain server.

## Multiple Modules

In Retain 4.2 and above, multiple modules of the same type can be enabled. This allows Retain to connect to multiple messaging systems of the same type at the same time that do not share common access. The modules can be given different names to make it easy to distinguish.

Multiple modules is enabled for GroupWise, Exchange, Google Apps (G Suite) and Mobile modules. It does not apply to the other modules.

**Module Configuration**





After configuring a module, it is recommended you manually refresh the Address Book.

Refresh Address Book Sync job is not running at this time.

Mailbox Mapping Options

---

**Configured Modules**

| GroupWise4.214                                                                    | GroupWise4.160                                                                    | Exchange4.213                                                                      | GBS Notes                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| <a href="#">Configure</a>                                                         | <a href="#">Configure</a>                                                         | <a href="#">Configure</a>                                                          | <a href="#">Configure</a>                                                           |
| Install Date 16-Nov-2016 10:09:26                                                 | Install Date 22-Mar-2017 15:19:47                                                 | Install Date 16-Nov-2016 10:09:25                                                  | Install Date 08-Dec-2016 10:22:24                                                   |
| Last Address Book Cache 23-Mar-2017 01:02:10                                      | Last Address Book Cache 23-Mar-2017 01:02:13                                      | Last Address Book Cache 23-Mar-2017 01:02:14                                       | Status Configured.                                                                  |
| Status Configured.                                                                | Status Configured.                                                                | Status Configured.                                                                 |                                                                                     |

You enter the Module name in the Module.

For example, the GroupWise4.214 module has a different domain and trusted application key compared to the GroupWise4.160 module.

GroupWise Module

GroupWise specific information is configured here. At a minimum, the CORE SETTINGS and SOAP tabs must filled out completely.

Core Settings
SOAP
LDAP
Proxy

**Core Settings**

Normally all of these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- Enable Authentication indicates if users logging into Retain should be able to use the module's authentication system.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                             |                                     |
|-----------------------------|-------------------------------------|
| Module name                 | GroupWise4.214                      |
| Enable Address Book Caching | <input checked="" type="checkbox"/> |
| Enable Authentication       | <input checked="" type="checkbox"/> |
| Enable Jobs                 | <input checked="" type="checkbox"/> |

**Set Storage Flags**

If you are using either the Purge or Retention features in GroupWise, you probably want these to be advanced automatically as items are stored so users may delete messages in their mailbox that have been stored by Retain.

Retention Flag   
  Purge Flag

Normally this entry should be disabled.

- Send GroupWise items to an external system.

Select Send Method
disabled

## GroupWise Module

- ◆ [“Prerequisites of the GroupWise Module” on page 161](#)
- ◆ [“Core Settings Tab” on page 162](#)
- ◆ [“SOAP Tab” on page 163](#)
- ◆ [“LDAP Tab” on page 164](#)
- ◆ [“GroupWise Proxy Accounts” on page 165](#)
- ◆ [“Next Step” on page 166](#)

The GroupWise module allows Retain to archive messages from GroupWise. The GroupWise module must be fully configured before Retain can archive or communicate with the GroupWise mail system.

Other tools that work with the GroupWise Module:

- ◆ [“GroupWise Client Plugin” on page 682.](#)
- ◆ [“GroupWise WebAccess Plugin” on page 675.](#)
- ◆ A [“Stubbing Server” on page 382](#) can be installed which allows users to search ([“Performing Retain Searches Within The GroupWise Client” on page 393](#)) the Retain archive from their GroupWise client.
- ◆ [“GroupWise Archive Migration Tool” on page 691.](#)

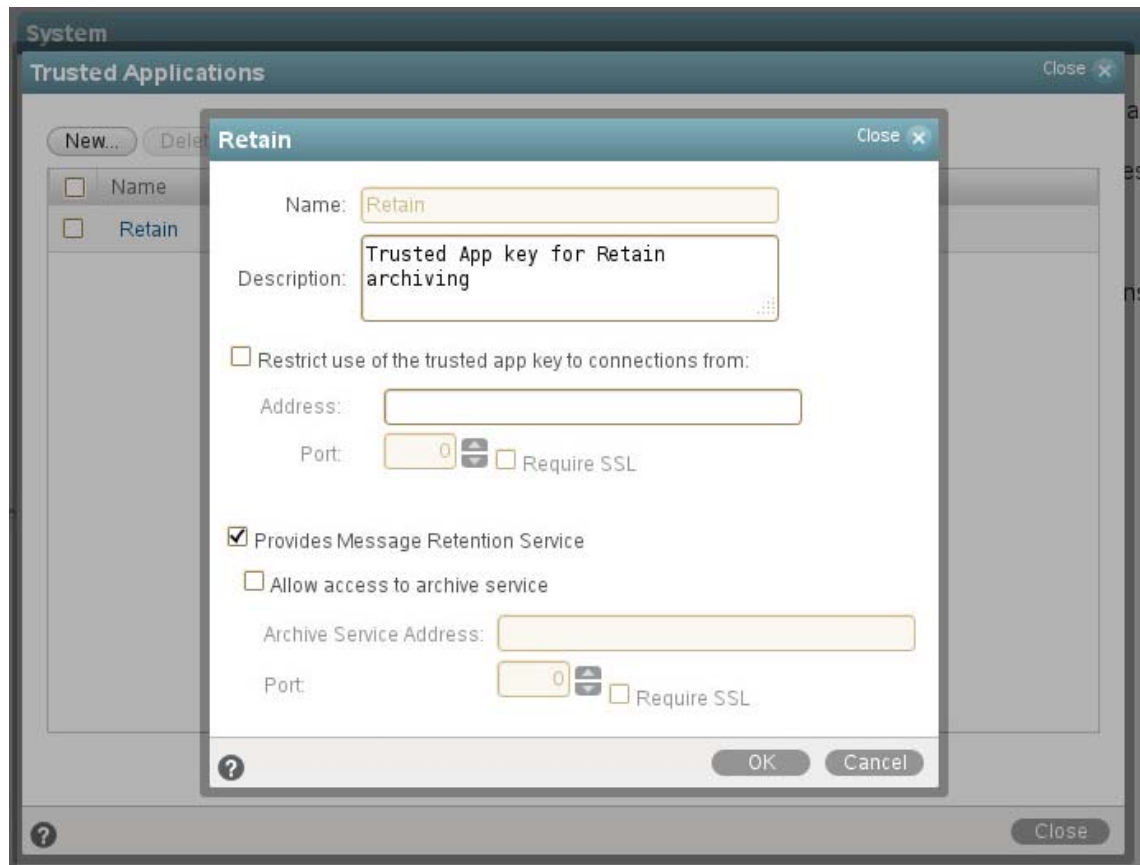


## Prerequisites of the GroupWise Module

Before beginning you should gather the following information:

- ♦ IP Address and SOAP port of a POA
- ♦ A Trusted Key Name and Trusted Application Key

Browse to the GroupWise Administration page. Under *System | Trusted Applications*, create a key called Retain and export the key. You need this for the SOAP section below.






- ♦ Enable Message Retention Services in GroupWise, so that users cannot delete messages before they are stored by Retain.

## Setting up the GroupWise Module

The GroupWise module page opens first with the Core Settings.

## Core Settings Tab

 **GroupWise Module**  

GroupWise specific information is configured here. At a minimum, the CORE SETTINGS and SOAP tabs must filled out completely.

Core Settings SOAP LDAP Proxy

---

**Core Settings**

Normally all of these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- Enable Authentication indicates if users logging into Retain should be able to use the module's authentication system.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                             |                                             |
|-----------------------------|---------------------------------------------|
| Module name                 | <input type="text" value="GroupWise4.214"/> |
| Enable Address Book Caching | <input checked="" type="checkbox"/>         |
| Enable Authentication       | <input checked="" type="checkbox"/>         |
| Enable Jobs                 | <input checked="" type="checkbox"/>         |

**Set Storage Flags**

If you are using either the Purge or Retention features in GroupWise, you probably want these to be advanced automatically as items are stored so users may delete messages in their mailbox that have been stored by Retain.

Retention Flag  Purge Flag

Normally this entry should be disabled.

- Send GroupWise items to an external system.

Select Send Method

Normally all the checkbox options on this tab are enabled. It is rare that you would ever deselect any of them. Two cases where you might, would be: troubleshooting (as instructed by Technical Support), and retiring an old email system.

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

The Enable Address Book Caching function allows Retain to regularly cache the online email systems address book and synchronize it with Retain. This is critical for administration, authentication, and archiving purposes. It is recommended to cache the Address Book once every 24 hours to keep the Retain storage system up to date. By default, maintenance is set to cache the Address Book once every 24 hours.

The Enable Authentication checkbox determines if end-user authentication is performed when the user logs into Retain. If it is deselected, the Retain system cannot authenticate the user against the email system and the user cannot log in unless another authentication method is enabled.

The Enable Jobs checkbox determines whether data can be retrieved and passed to the Worker. Even if the individual job is fully configured and enabled, if this option is disabled, no jobs configured for this module are run.

## Set Storage Flags Section

If you have Retention Services enabled, which we highly recommend, you should update the Retention and/or Purge flags updated, depending on what you are using. Generally, you would use Retention flag for Retain and the Purge flag for your backup software, such as GroupWise Disaster Recovery.

You would enable Retention Services in GroupWise Administration under Domain or Post Office. Then in Client Options, Integrations, Retention, and Enable Message Retention Service.

This would be used in conjunction with a Trusted App Key which the GroupWise module needs for the SOAP tab.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

## SOAP Tab

**GroupWise Module**

GroupWise specific information is configured here. At a minimum, the CORE SETTINGS and SOAP tabs must filled out completely.

Core Settings SOAP LDAP Proxy

### Trusted Application Key Generation

Retain uses the Trusted Application feature of GroupWise to access the user mailboxes. You must generate a trusted application key to continue.

Enter the name and key of a Trusted Application you wish to use as defined in GroupWise administration.

Trusted Key Name: Retain

Trusted Application Key: ●●●●●●●● (Password is set)

### GroupWise SOAP Access

Retain accesses the GroupWise message store via the SOAP protocol which needs to be enabled at all Post Offices in ConsoleOne. Retain needs a initial default POA to gather the information from.

POA Host Name: 10.1.12.19

SOAP Port: 7191

Enable SSL:

Test Connection

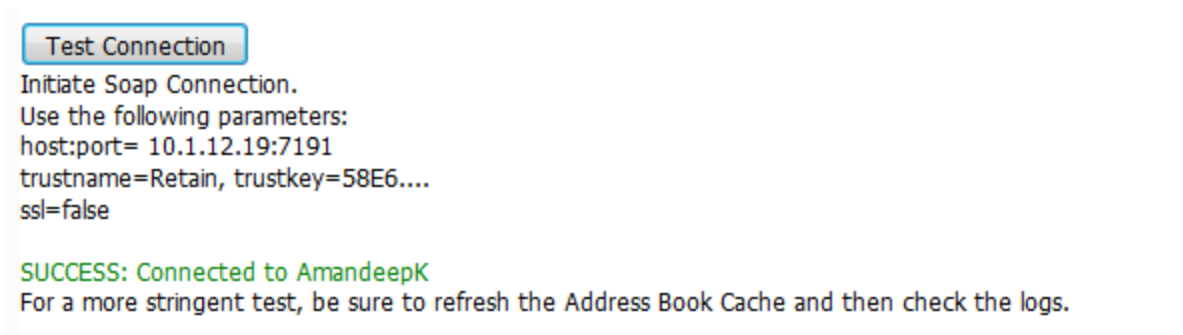
### Post Office Redirection Tables

You may view the cached Post Offices below, and edit the redirection tables used internally by Retain. This may be necessary for complex systems spanning WANs.

[Mail Servers](#)

Provide the POA Host Name and SOAP port. IP addresses are acceptable, but host names are preferred as IP addresses may change. SSL is supported, but it slows down the archiving process. Create a Trusted Application key for Retain, either manually from GroupWise Administration, System, Trusted Applications in GroupWise 2014 or above or Console One for GroupWise 2012 or earlier.

The SOAP access information must be provided, and the connection tested and verified before the system can connect. After providing the required information, click the 'Test Connection' button. The results are displayed. A successful result must be reached before Retain can archive messages from GroupWise.



**Test Connection**  
Initiate Soap Connection.  
Use the following parameters:  
host:port= 10.1.12.19:7191  
trustname=Retain, trustkey=58E6...  
ssl=false

**SUCCESS: Connected to AmandeepK**  
For a more stringent test, be sure to refresh the Address Book Cache and then check the logs.

If mail server Redirection is required for mail servers which are not contained on the local WAN and must have the connection addresses manually specified, the appropriate information may be modified in the redirection table. Most installations do not require any modifications.

## LDAP Tab

LDAP can be used to authenticate users against other directory services such as eDirectory or Active Directory.



GroupWise Module

GroupWise specific information is configured here. At a minimum, the CORE SETTINGS and SOAP tabs must filled out completely.

Core Settings SOAP **LDAP** Proxy

**E-Mail Address Based Login**

If enabled, Retain can use the email address of the user as an alternative to the mailbox login name. An LDAP query will be performed, and the password will be matched against the LDAP directory password. Most administrators do not need this functionality - the LDAP Authentication option in GroupWise at the Post Office level largely duplicates this functionality. However, if you want to allow users to login using their e-mail addresses, it is required.

- The email address attribute in eDirectory is not indexed by default. For large trees, you may want to index this field. Consult the user manual for details on how to do this.
- The Admin DN, and Search DN need to be in LDAP form, not eDirectory form. The Admin DN should specify a user with rights to all properties in the LDAP Server.

Enable E-Mail Address lookup

LDAP Server (DNS/IP) non-geava.com

LDAP Port (usually 389 or 636) 3208

Use SSL No

LDAP Admin User (e.g. cn=admin,ou=beginfile) CN=Colin Bretagne,CN=Users,DC=non-DC=geava,DC=com

Password for LDAP Admin User (password is set)

Top Search Context (e.g. ou=beginfile) dc=non-DC=geava, dc=com

LDAP may be used for individual users wishing to access their respective archives. If LDAP is set up and desired to be used for Retain user authentication, it must be fully configured in the GroupWise module.

Utilizing LDAP allows users to log into their respective archives using the user's full email address. This authentication requires that the email attribute be marked indexed in GroupWise.

## Using Active Directory Authentication

Before you use Active Directory Authentication, you must have LDAP Authentication configured in GroupWise and configure Retain to use Active Directory Authentication:

### GroupWise Configuration for AD LDAP Authentication

- Make sure you have Active Directory configured as an LDAP directory and an LDAP server in the GroupWise Admin Console. Also, make sure the following are set in the GroupWise Admin Console:
  - ◆ On the LDAP Directory, **Enable Synchronization** must be selected.
  - ◆ On the LDAP server > **Post Offices** tab, select the Post Office that you are using for LDAP.
  - ◆ Go to **Post Offices** > *Select the Post Office that you are using for LDAP* > **Security**. Select **LDAP Authentication** and make sure the LDAP server is listed in the **Selected LDAP Servers** column in the **Preferred LDAP Servers**.

Follow the steps in [LDAP Directories and Servers in Your GroupWise System](#) in the *GroupWise 18 Administration Guide* if you need help setting up the LDAP directory or LDAP server.

- Make sure that your GroupWise mailboxes are associated with their LDAP users by following the steps in [Associating GroupWise Users with an LDAP Directory](#) in the *GroupWise 18 Administration Guide*.

### Retain Configuration for AD LDAP Authentication

- In the GroupWise Module > LDAP tab, enter in the information for your LDAP server. Make sure Enable EMail Address Lookup is selected.

---

**NOTE:** The LDAP Admin User must be entered using the following form:

CN=Administrator,CN=Users,DC=company,DC=com

The Top Search Context is usually the distinguished name of the domain and must be entered using the following form:

DC=company,DC=com

---

- Edit the `~Beginfinite\Retain\RetainServer\WEB-INF\classes\config\misc.properties` file on the server changing the following lines:

```
custom.ldap.enabled=1
custom.ldap.class=com.gwava.authenticate.gw.AlternativeGWLLDAPAuthentication
```
- Restart tomcat on the Retain server.

## GroupWise Proxy Accounts

Users who have been given proxy to another account in GroupWise may be granted access to proxy accounts in the Retain archive as well.

The screenshot shows the 'GroupWise Module' configuration page. At the top, there's a header with the module name and a refresh icon. Below the header, a note states: 'GroupWise specific information is configured here. At a minimum, the CORE SETTINGS and SOAP tabs must filled out completely.' There are four tabs: 'Core Settings', 'SOAP', 'LDAP', and 'Proxy'. The 'Proxy' tab is selected. The content of the 'Proxy' tab includes a paragraph explaining proxy support: 'You may also enable or disable Proxy Support, which allows users to access mailboxes which they have proxy access to. For performance reasons, proxy access is verified when the user accesses the account, and the verification status is cached, for a period of days that you specify. This does mean that if the proxy access was revoked in GroupWise, several days may pass before access is revoked in Retain. A value of zero disables caching, but is not recommended.' Below this text are two controls: a checkbox labeled 'Enable support for GroupWise Proxy' which is checked, and a text input field labeled 'Cache Proxy verifications (days)' with the value '7'.

For performance reasons, Retain caches proxy verifications for a period of days (default is 7 days). Revocation of proxy access might not be reflected immediately in Retain. The caching period may be reduced or even disabled, (a value of '0' disables caching), but this is not recommended.

## Next Step

Configure a [“GroupWise Job”](#) on page 317.

## Exchange Module: Office365 or Hosted Exchange without LDAP

Use this section to configure your Exchange module if you use

- ◆ Office 365
- or
- ◆ Hosted Exchange without LDAP

If your Exchange system is On-premise, see [“Exchange Module: Exchange On-premise”](#) on page 187.

This section contains the following:

- ◆ [“Prerequisites of the Exchange Module”](#) on page 166
- ◆ [“Configure the Exchange Module for Office365”](#) on page 180
- ◆ [“Core Settings Tab”](#) on page 181
- ◆ [“Impersonation Tab”](#) on page 183
- ◆ [“Hosted Services Tab”](#) on page 184
- ◆ [“Refresh Address Book”](#) on page 187
- ◆ [“Next Step”](#) on page 187

## Prerequisites of the Exchange Module

There are several prerequisites that need to be completed for setting up a job.

## Make Sure That Autodiscover Is Working

If Autodiscover fails for users, serious errors occur when Retain attempts to archive the users' messages. This option allows skipping users or immediately aborting the jobs.

The first thing to do is to test that autodiscover is enabled for the domain.

1. Go to the Microsoft Remote Connectivity Analyzer (<https://testconnectivity.microsoft.com/> (<https://testconnectivity.microsoft.com/>))
2. On the Office365 tab, select "Outlook Autodiscover" from the Microsoft Office Outlook Connectivity Tests
3. Enter your credentials and run the test. If the test fails, contact Microsoft and have them turn autodiscover on.

## Get the SMTP URL

Retain needs to know what SMTP server to use for sending notifications.

Query the DNS for the MX record or

1. Go to the Microsoft Remote Connectivity Analyzer (<https://testconnectivity.microsoft.com/> (<https://testconnectivity.microsoft.com/>))
2. On the Office365 tab, select "Inbound SMTP Email" from the Microsoft Office Outlook Connectivity Tests
3. Enter your credentials and run the test.
4. Record the SMTP server URL for Retain.

## Set up DNS SRV Record

Microsoft has an article describing how to set up a DNS SRV record titled "[A new feature is available that enables Outlook 2007 to use DNS Service Location \(SRV\) records to locate the Exchange Autodiscover service](https://support.microsoft.com/en-us/kb/940881) (<https://support.microsoft.com/en-us/kb/940881>)".

In short, the process is:

1. Go to the DNS Manager
2. Expand Forward Lookup Zones
3. Locate and right-click the external DNS zone, then choose Other New Records
4. Click Service Location (SRV) and enter:

```
Service: _autodiscover._tcp
Protocol: _tcp
Port Number: 443
Host: [your SMTP host URL]
```

5. Click OK
6. Check that this works by opening a command prompt and try to ping `autodiscover.yourdomain`. This would be one of the successful ones from the Test Autodiscover step above. This should return a Microsoft IP address. If ping cannot connect, there is something mis-configured in DNS or a firewall is blocking the connection.

## Set Up a Rolling In-Place Hold

---

**IMPORTANT:** Not all O365 licenses allow the setting of a hold, in such cases there is no way to prevent data loss.

---

To prevent data loss, we strongly recommend setting a rolling in-place hold so that users cannot remove items from disk before Retain has a chance to archive them.

### How Message Deletion Works in Exchange

In Exchange by default, when a user deletes a message from Outlook, it is moved to the trash. When the user empties the trash, the item is moved to the mostly hidden Recoverable Items folder, where it is kept for 14 day before being removed from the disk. In the interim, the user can right-click the Trash to recover items but they can also purge the item, which immediately deletes it. With a hold in place, that item is moved to a Purged folder that is not user-accessible, and it is kept there until the hold is lifted.

### Set Retain Profile/Miscellaneous to Include Recoverable Items

In Retain, set Profile/Miscellaneous to Include user's recoverable items.

### Set Up a Distribution List

In the Exchange Admin Console, set up a distribution list. For example, create a list named `All_Mailboxes` that contains all mailboxes. Make sure to also create a policy that adds new users to this distribution list by default.

### Placing the Distribution List under a 90-day Hold.

In the Exchange Management Shell:

An In-Place Hold can be set up for all mailboxes for 90 days:

```
New-MailboxSearch "Retain90DayHold" -ItemHoldPeriod 90 -InPlaceHoldEnabled $true -
SourceMailboxes All_Mailboxes
```

It takes time for the hold to take effect.

### Finding How Many Mailboxes Were Placed Under Hold

You can determine how many mailboxes were placed under hold with the script:

```
((Get-Mailbox).InPlaceHolds).Count
```

## Set Up Users

---

**NOTE:** Retain uses PowerShell to connect to O365. PowerShell does not allow the following special characters in names or passwords: # \$ ( ) \* + . [ ] ? \ / ^ { } |

---



## Create a Retain Impersonation User

In the O365 Exchange Admin Center, create a Retain Impersonation user with a mailbox, making sure to give it a license.

Give the Impersonation user the proper rights. Under Permissions, create a new Admin Role (e.g. Retain Impersonation Management), add the ApplicationImpersonation right and the Retain Impersonation user as a member.

## Create a Retain Administrator User

Retain needs a user with Administrator rights to download the address book from Office 365 every day with the Office365 Address Book Synchronization Script. This can be an existing administrator account or you can create a separate one. It needs to have sufficient rights to see all the users in the address book.

## Setting Up Access to Shared Mailboxes for the Impersonation User

Impersonation rights allow the Retain user to enter other mailboxes but those rights do not extend to shared mailboxes. To access a shared mailbox the Retain user needs rights to each shared mailbox that is to be archived. These rights can be granted through the Exchange Management Shell.

If the shared mailbox is owned by "John Doe" and your Retain impersonation account is "Retain", you would issue the following command in an Exchange Management Shell (EMC):

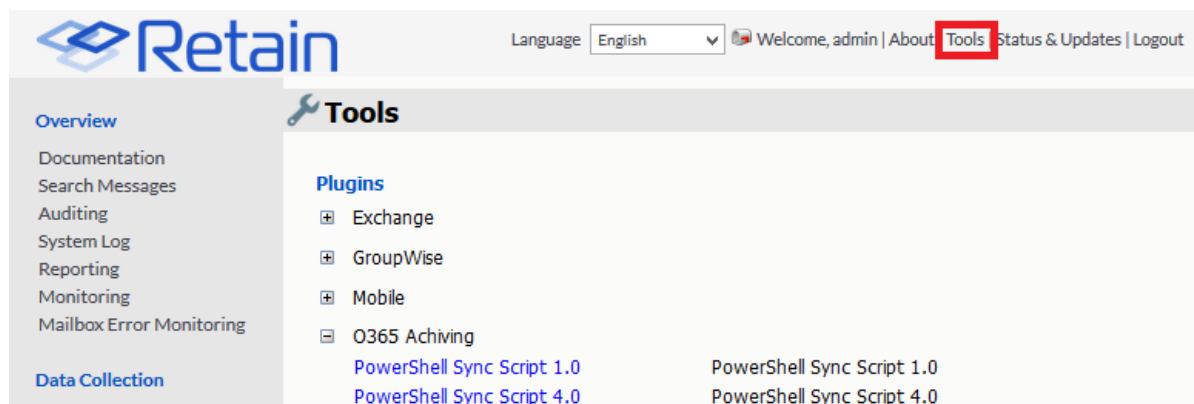
```
Add-MailboxPermission -Identity "John Doe" -User Retain -AccessRights FullAccess -InheritanceType All -AutoMapping $false
```

## Address Book Synchronization

For Retain to authenticate users and access mailboxes for archiving, it needs to know what mailboxes are in Office365. There are two ways to do this, using PowerShell Scripts to download the domain address book, or populating the address book directly from Office 365 by using the Microsoft Graph API:

## Synchronizing Using PowerShell Scripts

There are two scripts to do that both found under the Tools menu at the upper right of the Retain admin console.



The two scripts do the same thing: download the address book from Office365.

PowerShell Sync Script 1.0 saves the username and password in plaintext in the script.

PowerShell Sync Script 4.2 encrypts the password to a separate file.

Retain cannot archive members of the distribution lists if the field: `HiddenFromAddressListsEnabled` is True.

If using multiple modules, you must create separate folders for the script and the resulting CSV files. The folder location that Retain should pull the CSV file data from is set in the module as detailed below. You must also create a scheduled task for each script.

- ◆ “PowerShell Sync Script 1.0” on page 170
- ◆ “Setup Process Overview” on page 170
- ◆ “Setup” on page 170
- ◆ “PowerShell Sync Script 4.2” on page 172
- ◆ “Using a Linux-based Retain Server with Office365” on page 174

### **PowerShell Sync Script 1.0**

If the hosted system in use is an Office 365 system, further configuration on the Office 365 system is required. Because Office 365 Exchange Servers do not directly expose LDAP information, a PowerShell script must run periodically to cache user and group information.

The script requires PowerShell 2.0. Without this script, you cannot run jobs on Office365, or authenticate users. This script connects to O365 and downloads the address book and distribution group lists into two address book CSV files, `exchangeuser.csv` and `exchangegroup.csv`.

### **Setup Process Overview**

1. Install PowerShell 2.0 or higher (not needed for Windows 7 or Windows Server 2008 R2)
2. Install the Office 365 PowerShell cmdlets
3. Allow PowerShell script execution policy
4. Adapt and execute the “`sync365.ps1`” script provided by Micro Focus
5. Automate the script to run regularly.
6. Place the two resulting csv files in Retain

### **Setup**

1. Install PowerShell 2.0 or higher. (Windows 7 and Server 2008 R2 already come with PowerShell 2.0)
2. Enable Microsoft .NET Framework 3.5.1.
3. Install the Office 365 PowerShell cmdlets. Two packages are needed which can be downloaded from the Microsoft Azure Active Directory PowerShell Module Version Release History (which is currently found at: [http://social.technet.microsoft.com/wiki/contents/articles/28552.microsoft-azure-active-directory-powershell-module-version-release-history.aspx#Where\\_can\\_I\\_find\\_the\\_latest\\_version\\_of\\_AAD\\_PowerShell](http://social.technet.microsoft.com/wiki/contents/articles/28552.microsoft-azure-active-directory-powershell-module-version-release-history.aspx#Where_can_I_find_the_latest_version_of_AAD_PowerShell) ([http://social.technet.microsoft.com/wiki/contents/articles/28552.microsoft-azure-active-directory-powershell-module-version-release-history.aspx#Where\\_can\\_I\\_find\\_the\\_latest\\_version\\_of\\_AAD\\_PowerShell](http://social.technet.microsoft.com/wiki/contents/articles/28552.microsoft-azure-active-directory-powershell-module-version-release-history.aspx#Where_can_I_find_the_latest_version_of_AAD_PowerShell))) page:

Microsoft Online Services Sign-In Assistant for IT Professional RTW (this is the prerequisite to the Azure AD Module)

Azure Active Directory Module for Windows PowerShell (64-bit version)

4. You may need to change the execution policy to allow these scripts to function:
  - ◆ Allow PowerShell script execution  
The Default Execution Policy is set to restricted, it can be viewed by entering this command in PowerShell:  
Get-ExecutionPolicy
  - ◆ The script provided by Micro Focus must be run in PowerShell while running under Administrator rights:  
Set-ExecutionPolicy RemoteSigned
5. Download the O365 Archiving Powershell Sync Script, found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.
6. If using the script on the Retain server itself: Move the "sync365.ps1" script to the "~\Program Files\Beginifinite\Retain\RetainServer\WEB-INF\cfg" folder. Otherwise, make sure that the exchangeuser.csv and excahngegrou.csv end up in that directory on the Retain server.
7. Edit the "sync365.ps1" script with Microsoft Integrated Scripting Environment (ISE) editor.
  - a. At the top are 3 settings: \$User, \$PlainPassword, \$ExportBasePath:
    - ◆ Set \$User to the UPN of an administrator account in Office 365.
    - ◆ Set \$PlainPassword to the plain text password of the administrator account.
    - ◆ Set \$ExportBasePath to a directory where the two resulting csv files are saved. If the path does not yet exist, you must create it manually. Keep in mind that your backslashes must be quoted, and a final backslash is not needed. Example:  
\$ExportBasePath="C:\\Program Files\\Beginifinite\\Retain\\RetainServer\\WEB-INF\\cfg"

---

**NOTE:** If it is unacceptable to set a password in clear text, please view the following solution or use the secure script below:

---

<http://bsonposh.com/archives/338> (<http://bsonposh.com/archives/338>) -presents an alternative, which loads and saves encrypted credentials from file.

  - b. Execute the script by clicking the play button. This process can take a while if there are many users. Once the script has completed, a message indicating that the script is done should be displayed along the bottom status bar. The resulting files, exchangeuser.csv and exchangegroup.csv, must be placed in the "~\Program Files\Beginifinite\Retain\RetainServer\WEB-INF\cfg" folder for Retain to access the address book.
8. Set Task Scheduler to run the script automatically once per day. If you create it at the Task Scheduler (Local) level, you can find it after it is created in Task Scheduler Library folder, center pane.
  - a. Create a New Task
  - b. On the General tab, give it a name; and, for the description, you may want it read something like "Retain address book synchronization script for Office365".
  - c. Under "Security options" section, choose: "Run whether user is logged in or not".

- d. Under the Triggers tab, click on "New..."
- e. Under "Settings", set it to "Daily" and set the "Start" time: [set it to run an hour before the archive job is set to begin, but it doesn't take that long, Exchange does maintenance between 1-5 AM]
- f. Do not expire
- g. Check Enabled
- h. Under the Actions tab: Create a New action.
  - i. Set the Action to "Start a program"
  - ii. Program/script: powershell
  - iii. Add arguments: -NoProfile -ExecutionPolicy Bypass -file "[drive]:\Program Files\Beginfinite\Retain\RetainServer\WEB\_INF\cfg\sync365.ps1" -Verb RunAs
  - iv. Start In: (leave blank)

### **PowerShell Sync Script 4.2**

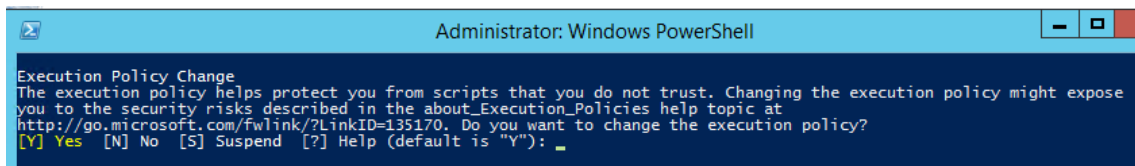
The standard sync365.ps1 script requires entering a plaintext administrator password. If that is not acceptable by your security policy, there is the O365 Archiving PowerShell Sync Secure Storage Script: Save-CredentialsEncrypted.ps1 which allows you to securely save the password used by the admin user.

### **Requirements**

- ◆ The script can be found under O365 archiving under the Tools menu at the top-right of the Retain admin console.
- ◆ This must be run on the same machine as it was created on as the encryption is dependent on the machine it was run on.
- ◆ This script requires PowerShell 4.0 or higher or it aborts.
- ◆ If using Windows Server 2008R2 or earlier, the script generates errors because the Task Scheduler cmdlets are not supported and the Scheduled Task must be created manually.

### **Running the Script**

1. After downloading and extracting the script, open PowerShell and change to the directory the script is in and type `.\Save-CredentialsEncrypted.ps1`
  - 1a. If you haven't run a PowerShell script before, you may have to change the Execution Policy to get a script to run. Set the execution policy to `Set-ExecutionPolicy -ExecutionPolicy Bypass -Scope Process`. If PowerShell 4.0 or higher is not installed the script aborts.



2. A dialog box displays, requesting the credentials for an administrator user and the destination folder of the address book files.

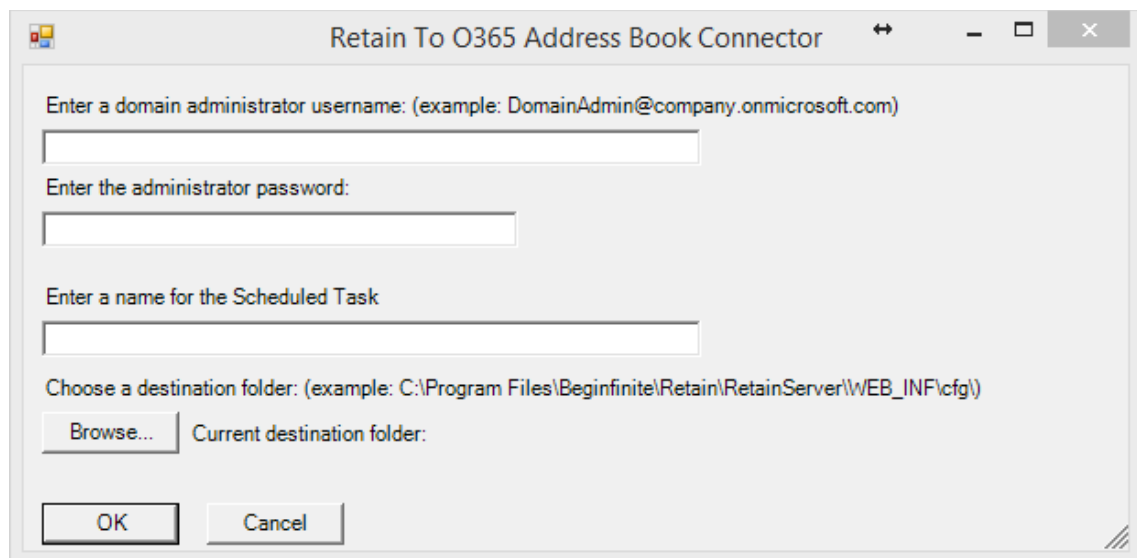
The administrator user must have sufficient rights to download the address book from O365. This would be the logon name and password of an administrator user (e.g. DomainAdmin@company.onmicrosoft.com).

Provide it with a name for the Scheduled task.

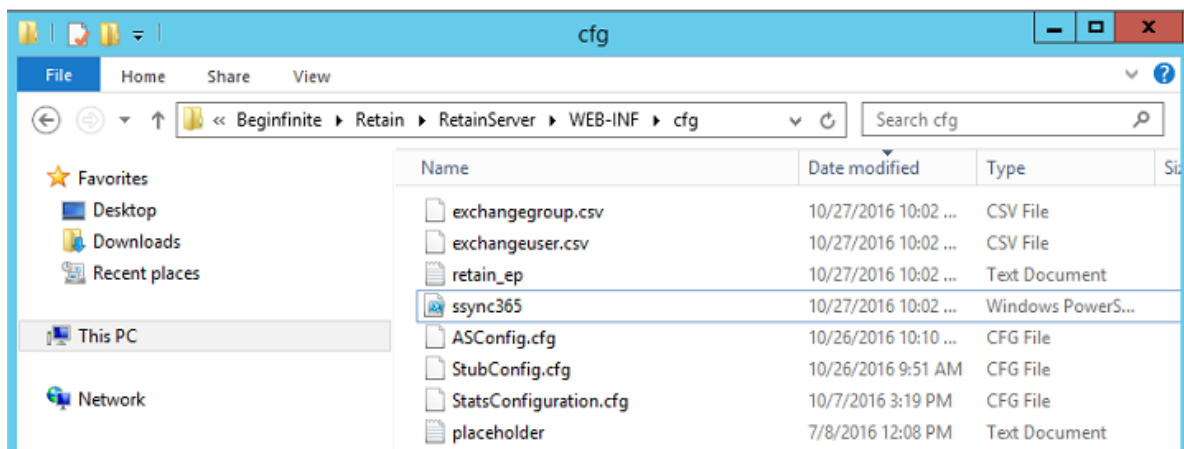
You can set the destination folder to anywhere you wish. However, the address book files *exchangeuser.csv* and *exchangeuser.csv* must end up in the `~\Program Files\Beginfinite\Retain\RetainServer\WEB_INF\cfg\` folder of the Retain Server. Retain looks for the address book files there when refreshing the address book.

If you are using a Linux-based Retain Server, you must set up a process to move the address book files to the Linux-based Retain Server's `opt/beginfinite/retain/RetainServer/WEB-INF/cfg` folder.

If you are running Retain with multiple modules, each module needs a separate task and destination folder.



3. The script then sets up a recurring task (SyncO365) in Task Scheduler to download the address book every day at 12:30am.  
The script requests your logon credentials as it sets up the task. The script starts the task before exiting. If you are using Windows Server 2008, multiple errors appear because the Task Scheduler cmdlets do not exist, this is expected and the task can be created manually in Task Scheduler.
4. It takes a moment to download the address book files: *exchangeuser.csv* and *exchangeuser.csv*. For a small system (<100 users) it might take a few minutes, for a large system (>10k users) it can take more than half an hour. After the script completes, make sure that the address book files are filled with items. If this does not generate the files it may be an execution policy issue, see notes below.



## Notes

- ◆ We have found that Task Scheduler sometimes stop working, so we recommend monitoring the .CSV files so that they are updated every day.
- ◆ **Blank .CSV files:** Office365 requires regular password changes. If the wrong credentials are entered or the password has expired two blank .CSV files are created. You must run this script again entering the Administrator logon name, the new password, and the destination folder. The script starts the task to update the address book files.

### ◆ Common Errors:

- ◆ If you see red text and the window closes immediately that means, there was an error of some kind. Open a PowerShell window, change to the script folder, and run the script manually:

```
.\Save-CredentialsEncrypted.ps1
```

- ◆ It may be that the proper version of PowerShell is not installed. This script requires at least version 4.0. You can determine the installed PowerShell version by running the cmdlet:

```
$PSVersionTable.PSVersion
```

To change the execution policy manually, the following command in a PowerShell window allows execution for the current process:

```
Set-ExecutionPolicy -ExecutionPolicy Bypass -Scope Process
```

Then run the script from the same process window.

### **Using a Linux-based Retain Server with Office365**

While there isn't a way to run Powershell scripts on a Linux server, you can run the sync365.ps1 script on any Windows computer with Powershell 2.0 or higher installed and copy the resulting CSV files to the Retain server.

### **Create a batch file to transfer the files**

You can create a small Windows 7 VM that only runs the Powershell script and then you can copy the exchangeuser.csv and exchangegroup.csv to the Retain server.

You can use the free program [WinSCP \(http://winscp.net/eng/index.php\)](http://winscp.net/eng/index.php) to copy from a Windows computer to a Linux server.

You can use `winscp.com` as the basis of a batch file to copy the resulting csv files to the Retain server.

Here is an example that we used:

```
retain.bat
"C:\Program Files (x86)\WinSCP\winscp.com" /command ^
"option batch abort" ^
"option confirm off" ^
"open scp://[user]:[password]@[retain server address]" ^
"cd /opt/beginfinite/retain/RetainServer/WEB-INF/cfg" ^
"option transfer binary" ^
"put [file location on windows]*.csv" ^
"close" ^
"exit"
```

Explanation of what each line does:

```
#Specify that all commands are run on the command line, while using ^ to
split long lines for readability.
"C:\Program Files (x86)\WinSCP\winscp.com" /command ^
Automatically abort script on errors
"option batch abort" ^
Disable overwrite confirmations that conflict with the previous
"option confirm off" ^
Connect replacing your own username, password and retain server address
"open scp://[user]:[password]@[retain server address]" ^
Change remote directory
"cd /opt/beginfinite/retain/RetainServer/WEB-INF/cfg" ^
Force binary mode transfer
"option transfer binary" ^
Upload the file to current working directory
"put [file location on windows]*.csv" ^
Disconnect
"close" ^
Exit WinSCP
"exit"
```

## Automate the Script

You can now automate the running of this batch file in [Task Scheduler \(https://technet.microsoft.com/en-us/library/cc721871.aspx\)](https://technet.microsoft.com/en-us/library/cc721871.aspx) as a simple task to run before the Retain archive job. Set the run time of the task so that it completes before the Retain job begins.

## Synchronizing Using Office 365 (Microsoft Graph API)

To enable Retain for access to the Office 365 Address Book through the GraphAPI, it must first be registered on the Microsoft Azure Portal and then the information must be added to the Retain module:

- 1 Browse to the Microsoft Azure Portal:

[https://portal.azure.com/#blade/Microsoft\\_AAD\\_RegisteredApps/applicationsListBlade](https://portal.azure.com/#blade/Microsoft_AAD_RegisteredApps/applicationsListBlade)

- 2 Create a new app registration pointing it to your Retain Server url. For example:

<https://retain.gwava.com/RetainServer>

- 3 After creating the app registration, click **API permissions for the app** > **Add a permission** > **Microsoft Graph** > **Application permissions**.

---

**NOTE:** Adding the following permissions requires Admin credentials, for which you are prompted the next time you log in.

---

- 4 Select the following permissions:

- ◆ User.Read.All
- ◆ Directory.Read.All

- 5 Click **API permissions for the app** > **Add a permission** > **Exchange** > **Application permissions**.

- 6 Select the following permission:

- ◆ full\_access\_as\_app (Only needed for archiving data, not address book synchronization)

- 7 Go to **Certificates & secrets** and select **New client secret** to create a secret for Retain.

---

**IMPORTANT:** Take note of the Client secret value as it is only visible now.

---

- 8 Take note of the following information (along with the Client secret):

- ◆ Application (client) id (found on the **Overview** page)
- ◆ Directory (tenant) id (found on the **Overview** page)

- 9 Configure the Exchange module in the **Hosted Services** tab to populate the address book using Office 365.

## Configure SharePoint Online/OneDrive for Archiving

In Office365 you can attach documents stored in SharePoint Online/OneDrive. However it doesn't send the actual document but only a link to that document.

---

**NOTE:** As a cloud service these screens may change at anytime.

---

When Retain attempts to archive an attached document it often runs into trouble because the retain user, while it does have ApplicationImpersonation right, doesn't have rights to anything outside of Exchange. So Retain generates an error because it knows there is supposed to be something there.



11:04:16, 704[Thread-4920] [ERROR] ExchangeAttachment: error while creating attachment.  
java.io.IOException: SharePointError - Impersonation has no access to: https://gwava-my.sharepoint.com/personal/user08\_gwava\_onmicrosoft\_com1/Documents/Email attachments/office 365 users(1) (1).txt

What needs to be done is the retain user needs be added as a “site collection administrator” in SharePoint/OneDrive. Start by going to the Office365 admin page and selecting SharePoint.

Office 365 Admin

Office 365 admin center <<

Search users, admin tasks ar 🔍

- DASHBOARD
- SETUP
- ▶ USERS
- COMPANY PROFILE
- IMPORT
- CONTACTS
- SHARED MAILBOXES
- MEETING ROOMS
- GROUPS
- DOMAINS
- PUBLIC WEBSITE
- ▶ BILLING
- ▶ EXTERNAL SHARING
- MOBILE MANAGEMENT
- ▶ SERVICE SETTINGS
- REPORTS
- ▶ SERVICE HEALTH
- SUPPORT
- MESSAGE CENTER
- TOOLS
- ▲ ADMIN
  - Exchange
  - Skype for Business
  - SharePoint**
  - Yammer

▶ Watch the video to get started quickly

## Service overview

### Service health

2 issues

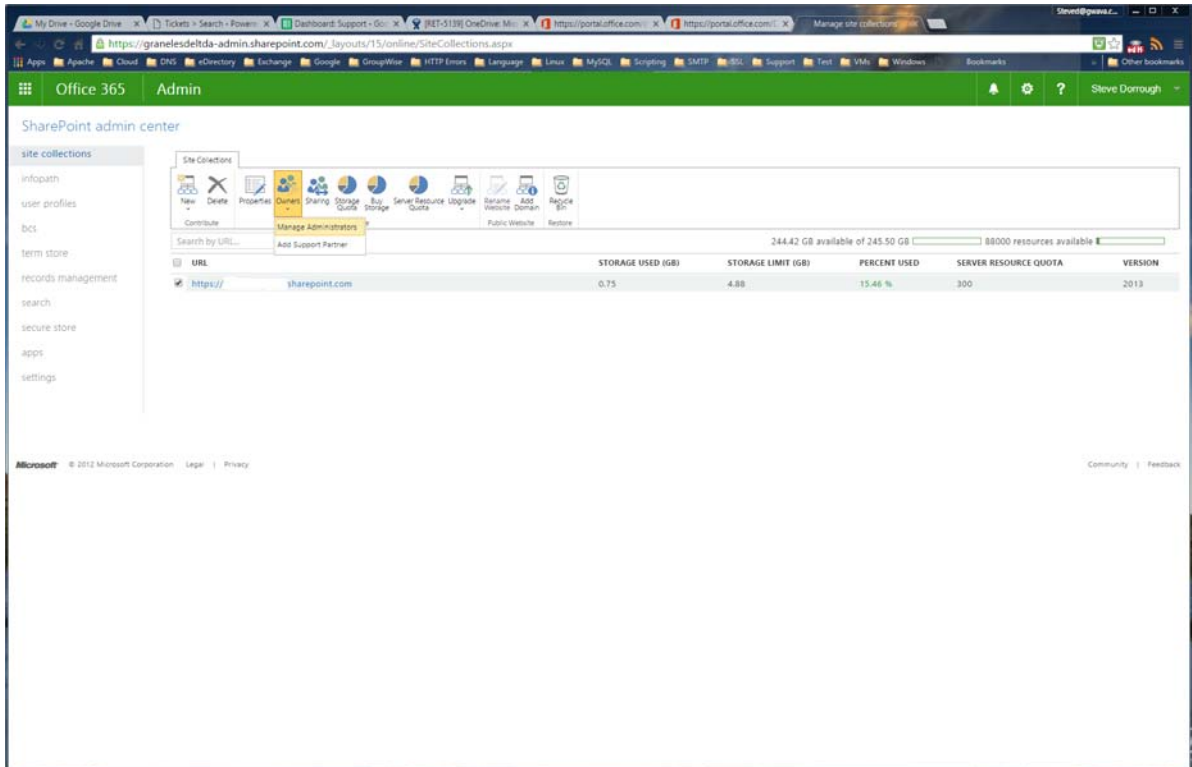
### Mail protection

12359 messages received, 3178 processed by filtering.

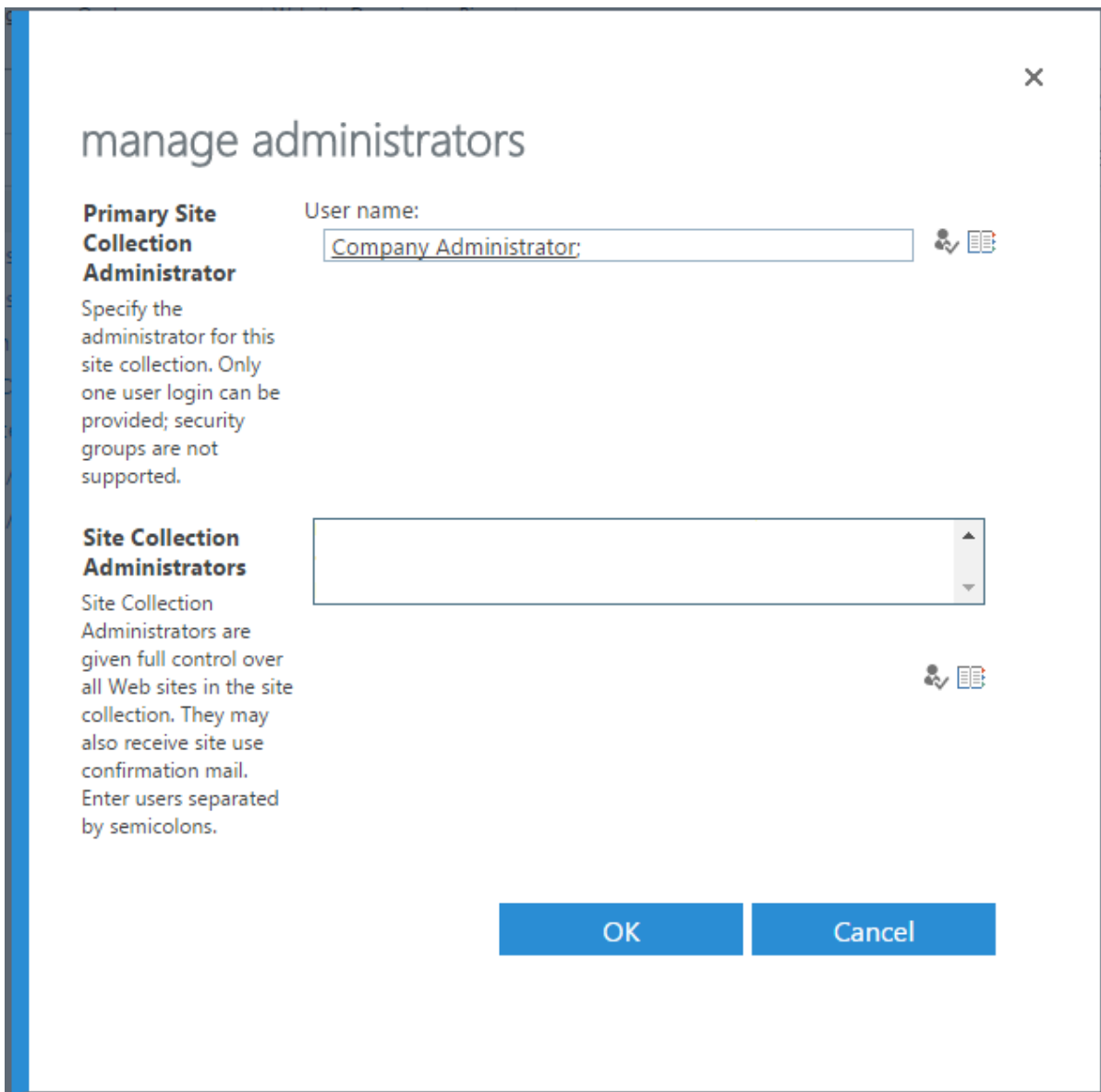
### Message center

4 new messages in the past 7 days

Go to the Site Collections, select the collection to add the retain user too, click the “Owners” tab.



You can now add the retain user as a “Site collection administrator”. This way the retain user has rights to access the data.



This works for individual site collections, but it would be difficult to do that individually if you have many site collections. There is no way in SharePoint to change more than one collection at a time.

Changing Across The Domain However, there is a [SharePoint Online Management Shell script \(http://sharepointjack.com/2015/add-a-person-as-a-site-collection-administrator-to-every-office-365-site-sharepoint-online-site-collection/\)](http://sharepointjack.com/2015/add-a-person-as-a-site-collection-administrator-to-every-office-365-site-sharepoint-online-site-collection/) that you could modify for your use to do all site collections at once.

## Configure the Exchange Module for Office365

The Exchange module must be configured in the Retain Server before any communication between Retain and an existing Exchange message system can occur. Open the Retain management page on the Retain Server, and select Module Configuration.

Language: English | Welcome, admin | About | Tools | Status & Updates | Logout








**Module Configuration**

After configuring a module, it is recommended you manually refresh the Address Book.

[Refresh Address Book](#) Sync job is not running at this time.

[Mailbox Mapping Options](#)

**Configured Modules**

| GroupWise                                                                                                                                                                                                                    | Exchange                                                                                                                                                                                                                     | Social Messaging                                                                                                                                                              | Mobile                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:19<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:21<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured. |
| Google Apps                                                                                                                                                                                                                  | BlackBerry                                                                                                                                                                                                                   | CellTrust                                                                                                                                                                     |                                                                                                                                                                               |
| <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:44<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured.                                                  | <br><a href="#">Configure</a><br>Install Date: 17-Oct-2014 21:21:07<br>Status: Configured. |                                                                                                                                                                               |

Select the 'Configure' option in the Exchange module. A new window or tab opens with the module configuration.

**NOTE:** Ensure that your Retain Server and your Exchange server use the same DNS server.

The Exchange module uses DNS settings to auto discover critical information about Exchange that is stored in Active Directory. It cannot work correctly unless both systems use the same DNS server.

## Core Settings Tab

The Core Setting Tab allows you to disable all jobs and disable users logging into Retain.

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

**Exchange Module**

## EXCHANGE

Exchange specific information is configured here. At a minimum, the CORE SETTINGS and IMPERSONATION tabs must be filled out completely. Then, examine each of the other tabs to determine if they apply to your system.

Core Settings Impersonation Hosted Services Exchange Forest User Forests Delegates

**Core Settings**

Normally all of these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- Enable Authentication indicates if users logging into Retain should be able to use the module's authentication system.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                                                     |                                                                       |
|-----------------------------------------------------|-----------------------------------------------------------------------|
| Module name                                         | Exchange4.213                                                         |
| Enable Address Book Caching                         | <input checked="" type="checkbox"/>                                   |
| Enable Authentication                               | <input checked="" type="checkbox"/>                                   |
| Enable Jobs                                         | <input checked="" type="checkbox"/>                                   |
| Message body                                        | Store default as provided from Exchange (either HTML or plain text) ▼ |
| If autodiscover fails for a user, take this action: | skip user ▼                                                           |

Normally this entry should be disabled.

- Send Exchange items to an external system.

Select Send Method disabled ▼

Normally all the checkbox options on this tab are enabled. It is rare that you would ever deselect any of them. Two cases where you might, would be: troubleshooting (as instructed by Technical Support), and retiring an old email system.

The Enable Address Book Caching function allows Retain to regularly cache the online email systems address book and synchronize it with Retain. This is critical for administration, authentication, and archiving purposes. It is recommended to cache the Address Book once every 24 hours to keep the Retain storage system up to date. By default, maintenance is set to cache the Address Book once every 24 hours.

The Enable Authentication checkbox determines if end-user authentication is performed when the user logs into Retain. If it is deselected, the Retain system cannot authenticate the user against the email system and the user cannot log in unless another authentication method is enabled.

The Enable Jobs checkbox determines if configured data retrieval jobs are ever passed to the Worker. Even if the individual job is fully configured and enabled, if this checkbox is switched off, no jobs configured for this module can be processed.

The Message body allows the administrator to decide whether to store either the HTML or plain text message body, or both.

### Send Method

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

## Impersonation Tab

If the Impersonation and Core Settings tabs are not completely configured with the correct information, the hosted system cannot be archived correctly.

Enter the Impersonation user credentials.

|               |               |                 |                 |              |           |
|---------------|---------------|-----------------|-----------------|--------------|-----------|
| Core Settings | Impersonation | Hosted Services | Exchange Forest | User Forests | Delegates |
|---------------|---------------|-----------------|-----------------|--------------|-----------|

---

**Impersonation**



You will need to provide this information regardless of whether you are archiving a hosted or on premise Exchange system.

The impersonation user MUST fulfill the following requirements:

- Is mail enabled.
- Has impersonation rights granted to all Exchange servers.
- Is not an Exchange Administrator (recommended)
- Delegation rights must be granted to any Room or Equipment accounts that you wish to archive.

|                         |                                  |
|-------------------------|----------------------------------|
| Global Catalog User     | retain@exchange2013.qa.gwava.com |
| Global Catalog Password | ●●●●●●●● (Password is set)       |

# Hosted Services Tab

**Exchange Module** Save Changes  

## EXCHANGE

Exchange specific information is configured here. At a minimum, the CORE SETTINGS and IMPERSONATION tabs must be filled out completely. Then, examine each of the other tabs to determine if they apply to your system.

Core Settings Impersonation **Hosted Services** Exchange Forest User Forests Delegates

### Hosted Services

**Important:**  
Use this tab only if you are using either Office 365 or a Hosted Exchange System without LDAP. Otherwise, use the three tabs to the right instead of this tab.

I am using a Hosted Exchange system

Office 365  
 Hosted Exchange without LDAP

#### Address Book Discovery

Import from CSV file Path:   
 Populate from Office 365

#### Mailbox Archiving Authentication

Use Basic Auth  
 Use OAuth

#### Credentials

Tenant ID   
Client ID   
Client Secret

**Path:** Retain Server Manager > Configuration > Module Configuration > Exchange > Hosted Services Tab



**Table 6-1** Using the Hosted Services Tab

| Panels and Sub-panels          | Information and/or Action                                                       |
|--------------------------------|---------------------------------------------------------------------------------|
| Hosted Services                | See “ <a href="#">Hosted Services Panel</a> ” on page 185.                      |
| Address Book Discovery         | See “ <a href="#">Address Book Discovery Sub-panel</a> ” on page 185.           |
| Mailbox Archive Authentication | See “ <a href="#">Mailbox Archiving Authentication Sub-panel</a> ” on page 186. |
| Credentials                    | See “ <a href="#">Credentials Sub-panel</a> ” on page 186.                      |

## Hosted Services Panel

**Path:** Retain Server Manager > Configuration > Module Configuration > Exchange > Hosted Services Tab > Hosted Services Panel

**Table 6-2** Using the Hosted Services Panel

| Option, Field, or Sub-panel                       | Information and/or Action                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>I am using a Hosted Exchange system</b> option | Enable this option if you use hosted Exchange services.<br><br>If you select this option, Retain ignores the Exchange Forest, User Forests, and Delegates tabs.<br><br><b>IMPORTANT:</b> Once you select this option and save the module, you cannot switch to the Office 365 option (below). You must create a new module instead.                                                                                                                         |
| <b>Office 365</b> option                          | Select this if you use Office 365.<br><br>When you select this option, the Hosted Services tab panel expands to let you specify settings for address-book discovery, mailbox archiving authentication methods, and the credentials required for connecting with Office 365.<br><br><b>IMPORTANT:</b> Once you select this option and save the module, you cannot switch to the Hosted Exchange system option (above). You must create a new module instead. |
| <b>Hosted Exchange without LDAP</b> option        | Select this if you use a hosted Exchange service that doesn’t utilize LDAP directory services.<br><br>Selecting this requires that you import your address book from a PowerShell-generated CSV file. See “ <a href="#">Synchronizing Using PowerShell Scripts</a> ” on page 169.                                                                                                                                                                           |

## Address Book Discovery Sub-panel

**Path:** Retain Server Manager > Configuration > Module Configuration > Exchange > Hosted Services Tab > Hosted Services Panel > Address Book Discovery Sub-panel

**Table 6-3** Using the Address Book Discovery Sub-panel

| Option, Field, or Sub-panel                        | Information and/or Action                                                                                                                                                                                                                                                                  |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Import from CSV file option</b><br><b>Path:</b> | Specify the path to where the PowerShell Sync script saves the CSV user lists.<br>For example:<br><br>C:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\cfg.<br><br>This requires the procedures described in <a href="#">“Synchronizing Using PowerShell Scripts”</a> on page 169. |
| <b>Populate from Office 365 option</b>             | Select this option to populate your archived address book directly from Office 365. This requires the procedures described in <a href="#">“Synchronizing Using Office 365 (Microsoft Graph API)”</a> on page 176.                                                                          |

## Mailbox Archiving Authentication Sub-panel

**Path:** Retain Server Manager > Configuration > Module Configuration > Exchange > Hosted Services Tab > Hosted Services Panel > Mailbox Archiving Authentication Sub-panel

**Table 6-4** Using the Mailbox Archiving Authentication Sub-panel

| Option, Field, or Sub-panel  | Information and/or Action                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Use Basic Auth option</b> | Select this option to use Basic Authentication for retrieving data from your Office 365 system. |
| <b>Use OAuth option</b>      | Use this option if you want a more secure option for your mailbox archiving.                    |

## Credentials Sub-panel

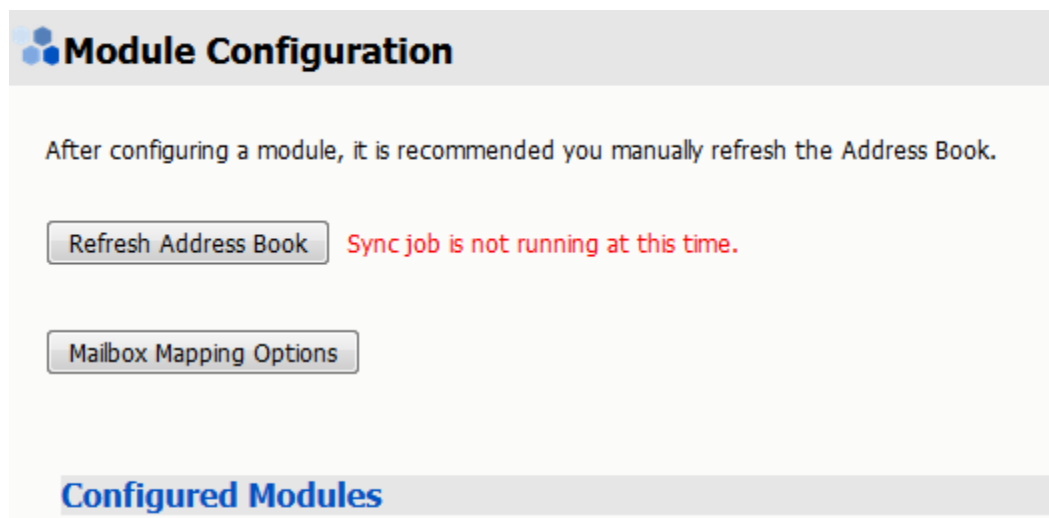
**Path:** Retain Server Manager > Configuration > Module Configuration > Exchange > Hosted Services Tab > Hosted Services Panel > Credentials Sub-panel

**Table 6-5** Using the Credentials Sub-panel

| Option, Field, or Sub-panel   | Information and/or Action                                                                                                                                     |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tenant ID field</b>        | This information is exposed when you complete the procedures described in <a href="#">“Synchronizing Using Office 365 (Microsoft Graph API)”</a> on page 176. |
| <b>Client ID field</b>        | This information is exposed when you complete the procedures described in <a href="#">“Synchronizing Using Office 365 (Microsoft Graph API)”</a> on page 176. |
| <b>Client Secret field</b>    | This information is exposed when you complete the procedures described in <a href="#">“Synchronizing Using Office 365 (Microsoft Graph API)”</a> on page 176. |
| <b>Test Connection button</b> | Click this to verify that the credentials you have entered are valid with your Office 365 system.                                                             |

## Refresh Address Book

After saving changes, return to the Retain Server's Module Configuration page, and trigger a refresh of the Address Book.



Depending on the size of the address book, it may take several minutes to return with information, but a successful configuration returns a correct address book cache date and no errors. The date should reflect the date when the address book refresh was triggered.

The Status may show "Address Book Cache Never Run" or may list commonly mis-configured or missed items if the Refresh job fails.

Once the status is configured and the Address Book has been cached, Retain can connect to and archive messages from the Exchange server. The system is ready to have workers, schedules, profiles, and jobs configured, and those options now appear on the main administrative interface.

The Address Book is refreshed whenever the button is pressed, during the nightly maintenance cycle, and before each job.

## Next Step

Configure an ["Exchange/O365 Job"](#) on page 321.

## Exchange Module: Exchange On-premise

The Exchange module connects to On-Premise Exchange servers.

Other tools that work with the Exchange Module:

- ◆ Outlook Plugin ["Outlook Plugin Administrators Guide"](#) on page 624.
- ◆ Outlook Web App Plugin ["Outlook Web App Plugin"](#) on page 656.

## Supported Exchange Forest Configurations

Retain supports:

- ◆ A single forest Active Directory system, (Exchange and standard users)
- ◆ An Exchange Resource Forest, (One Exchange Forest linked to one or multiple User Forests)

Retain does NOT support multiple linked Exchange Forests. Ensure that the Exchange Settings have been configured correctly before continuing the Exchange module setup.

## Exchange Prerequisites required for Retain

There are several prerequisites that need to be done in Exchange for Retain to successfully archive the mailbox databases:

- ◆ A mailbox user with ApplicationImpersonation rights
- ◆ Basic Authentication enabled for Autodiscover and EWS on all Client Access Servers
- ◆ A DNS SRV record
- ◆ Set the DNS used by the Retain server to be the same as used by Exchange.
- ◆ Set a Rolling In-Place Hold to retain data until Retain can archive it.
- ◆ If "Configure email forwarding for a mailbox" is in use, enable "Deliver messages to both forwarding address and mailbox", otherwise no messages can be stored in Exchange and Retain cannot archive any messages.

## Create the Retain Global Catalog User

To connect with Exchange, Retain needs a user with appropriate rights. This can be accomplished by using an existing user, or by creating a new one. It is recommended to create a new user for Retain archiving. If creating a new user, ensure that the user is an active user account and that the password does not change to ensure Retain can access mail without changing settings. This user is sometimes called a 'service account'. Retain calls this user the 'global catalog user'.

The user created or used for Retain must be a "mailbox-enabled user" with read access to see all other users, groups, resources, and Exchange Servers in the Exchange Forest. The user is utilized by both the Retain Server and the Worker for LDAP lookups in Active Directory. The Retain user also must have Exchange impersonation rights to every mailbox user on every server in the organization to be archived. The Retain user MUST NOT be a member of any Exchange Administrator group, as Exchange denies impersonation rights for all administrator accounts.

Additional permissions need to be added to the user created for Retain. The quickest way to add these rights is through the Exchange Management Shell.

After creating the new user in Active Directory, open the Exchange Management Shell.

## Grant Impersonation Permissions to the Retain user.

In Exchange 2013 and 2016 Impersonation permissions can be granted in the Exchange Admin Center under Permissions.

Under Admin Roles create a new role (e.g. Retain Impersonation Management). Add the role "ApplicationImpersonation" and add the Retain User as a member.

You can also accomplish this via PowerShell commands using the Exchange Management Shell.

The commands required are different depending on the version of the Exchange Server. Exchange 2010, and 2013 require only one command per Exchange system to be issued, whereas Exchange 2007 requires the commands to be run on every Exchange server in the Exchange system to grant required permissions. If the Exchange system contains mixed 2007, 2010, and 2013 servers, the different commands must be completed on one server of each type.

### Exchange 2010, 2013, and 2016 commands

For Exchange 2010, 2013, and 2016 the only command necessary for impersonation permissions is:

```
New-ManagementRoleAssignment -name ImpersonationAssignmentName -Role ApplicationImpersonation -User ServiceAccount
```

Where the 'Name' is a name chosen by the administrator and the 'ServiceAccount' is the name of the Retain user.

For Example:

```
New-ManagementRoleAssignment -Name impersonation-retain -Role ApplicationImpersonation -UserRetain
```

If additional Exchange servers are added to the system after running this command to grant rights to the 'retain' user, the command must be run again to grant rights to the new server.

## Room and Equipment Resources

To archive Room and Equipment Resources, or to restore them, the Retain user, or Service Account, must also have delegation rights. These commands must be issued manually for each Room and Equipment or resource mailbox on every relevant server. This is required for 2013 and 2016.

These commands must be issued:

('Retain' is used here as the name of the Service Account, or Retain user, and the 'Mailbox Database' should be changed to the appropriate name.)

(NOTE: every time a new Room and Equipment or resource mailbox is added, the first command must be re-run.)

### Exchange 2013 and 2016 Powershell commands

```
Get-Mailbox -ResultSize Unlimited -Database "Mailbox Database" | Add-MailboxPermission -User "Retain" -AccessRights FullAccess
```

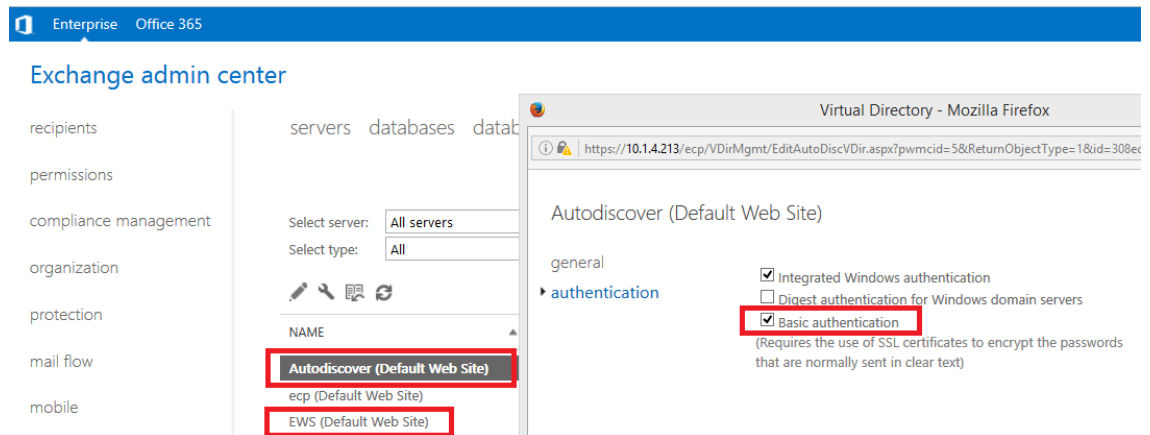
```
Add-ADPermission -Identity "Mailbox Database" -User "Retain" -ExtendedRights Receive-As
```

## Basic Authentication

Retain requires Basic Authentication to be enabled on *each* CAS Exchange server in the system for Autodiscover and EWS.

In Exchange Admin Center, go to Servers, then go to the Virtual Directories tab.

1. Edit Autodiscover and under Authentication enable Basic authentication if it is not enabled.
2. Edit EWS and under Authentication enable Basic authentication if it is not enabled.
3. Do this for each server in the list.



To check if this worked, run the following PowerShell cmdlets:

For EWS:

```
Get-WebServicesVirtualDirectory | ft server,basicauthentication
```

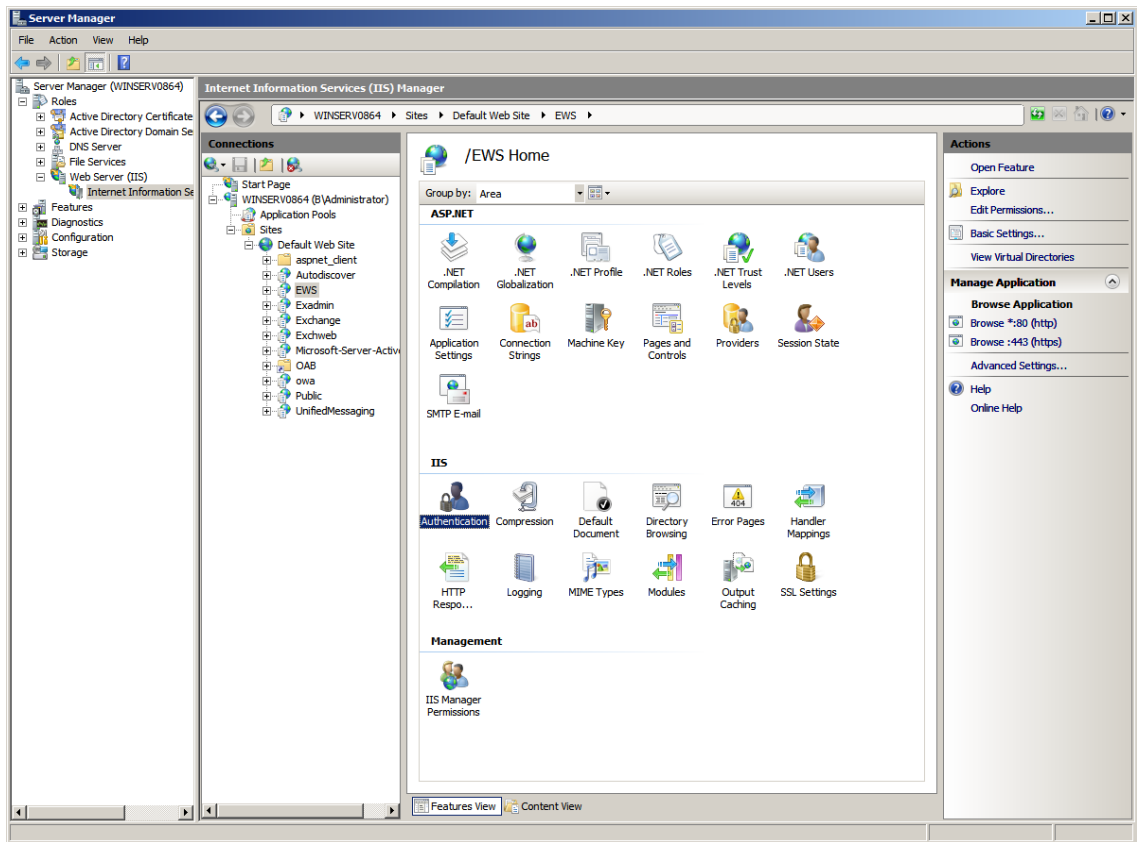
For Autodiscover:

```
Get-AutoDiscoverVirtualDirectory | ft server,basicauthentication
```

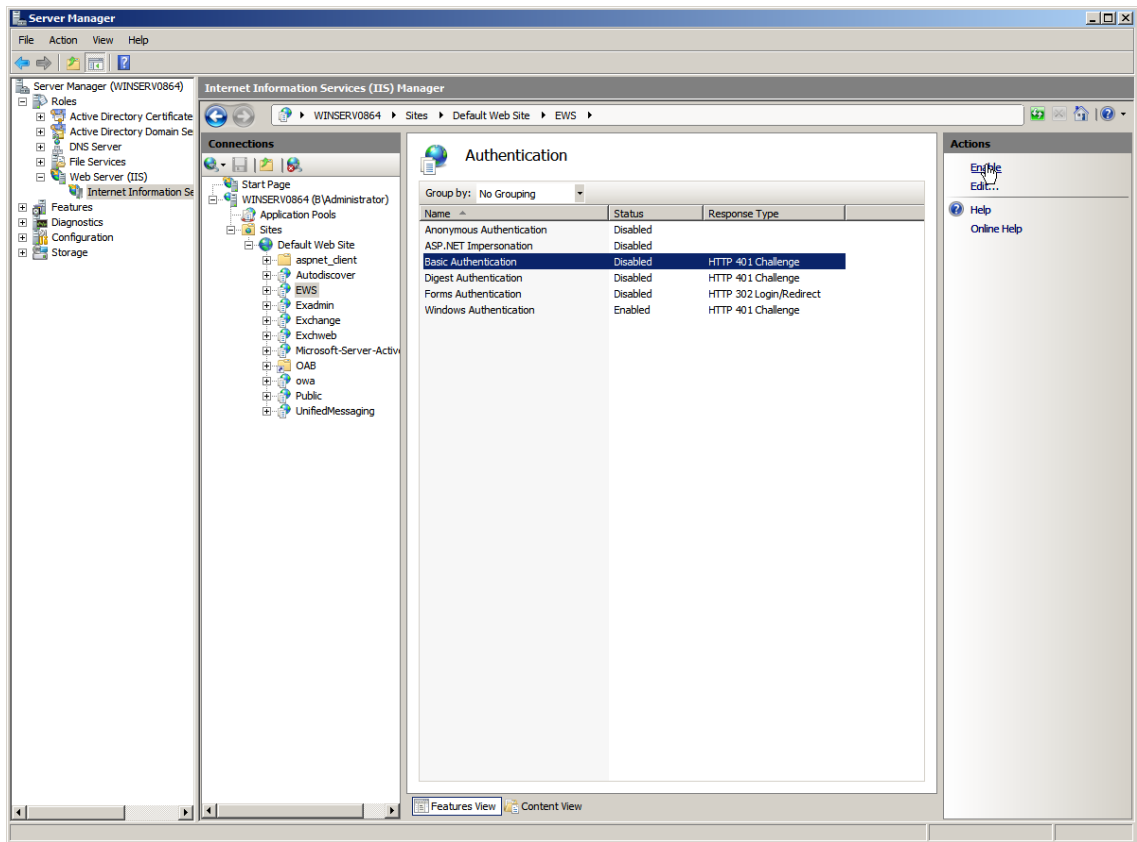
On Exchange systems prior to 2013 you may need to set basic authentication manually.

Open “Server Manager” on Exchange server.

1. In left pane, expand “Roles”, expand “Web Server (IIS)”, select “Internet Information Services (IIS) Manager”.
2. A new “Connections” pane opens, expand your Exchange server object, expand “Sites”, expand “Default Web Site (Multiple Protocols)”, select “EWS”.



3. Under heading “IIS”, open “Authentication” icon



4. Select "Basic Authentication", click "Enable" in right pane.  
You can now close "Server Manager".

## DNS SRV Record

Microsoft has an article describing how to set up a DNS SRV record titled "[A new feature is available that enables Outlook 2007 to use DNS Service Location \(SRV\) records to locate the Exchange Autodiscover service \(https://support.microsoft.com/en-us/kb/940881\)](https://support.microsoft.com/en-us/kb/940881)".

In general, you must:

1. Open the DNS Manager.
2. Expand Forward Lookup Zones.
3. Locate and right-click on the external DNS zone and choose Other New Records.
4. Click Service Location (SRV) and enter:

```
Service: _autodiscover
Protocol: _tcp
Port Number: 443
Host: [your mail host, e.g. mail.gwava.net, usually the AD domain
forest found in AD Domains and Trusts on the MS AD server]
```

5. Click OK



The Microsoft autodiscover library in Retain expects a URL along the lines of `https://autodiscover.[your domain]/Autodiscover/Autodiscover.xml` (e.g., `https://autodiscover.xyzcompany.com/Autodiscover/Autodiscover.xml`), which can be found in the worker log as it attempts to login by searching for "Discovered endpoint:" or "AutoDiscover".

## Server DNS Setting

Retain has best performance when the server's network setting is using the same DNS as the Exchange servers.

If Retain and Exchange must use different DNS, on the DNS that Retain uses, create a Conditional Forwarder that resolves to the Exchange server.

## Set Rolling In-Place Hold

To prevent data loss, it is highly recommended that a rolling In-Place or Litigation Hold be set so users are unable to remove items from disk before Retain has a chance to archive them.

In Exchange by default, when a user deletes a message out of Outlook, it is moved to the trash. When they empty the trash, the item is moved to the mostly hidden Recoverable Items folder, where it is kept for 14 day before being removed from disk. The user can then right-click the Trash to recover items, and in that dialog box they can purge the item which deletes it immediately. With a hold in place that item is moved to a Purged folder that is not user accessible, where it is kept until the hold is lifted.

In Retain, set Profile/Miscellaneous to Include the user's recoverable items.

In Exchange Admin Console, set up a distribution list, for example All\_Mailboxes, that contains all mailboxes. It is best to create a policy to add new users to this distribution list by default.

Place the distribution list under a 90-day hold.

In the Exchange Management Shell:

An In-Place Hold can be set up for all mailboxes for 90 days:

```
New-MailboxSearch "Retain90DayHold" -ItemHoldPeriod 90 -InPlaceHoldEnabled $true -SourceMailboxes All_Mailboxes
```

It takes time for the hold to take effect. You can determine how many mailboxes were placed under hold with the script:

```
((Get-Mailbox).InPlaceHolds).Count
```

## Configure Exchange Module for On-Premise Exchange

The Exchange module must be configured in the Retain Server before any communication between Retain and an existing Exchange message system can occur. Open the Retain management page on the Retain Server, and select Module Configuration.

Retain Language: English | Welcome, admin | About | Tools | Status & Updates | Logout








**Module Configuration**

After configuring a module, it is recommended you manually refresh the Address Book.

[Refresh Address Book](#) Sync job is not running at this time.

[Mailbox Mapping Options](#)

**Configured Modules**

| GroupWise                                                                                                                                                                                                                    | Exchange                                                                                                                                                                                                                     | Social Messaging                                                                                                                                                              | Mobile                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:19<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:21<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured. |
| Google Apps                                                                                                                                                                                                                  | BlackBerry                                                                                                                                                                                                                   | CellTrust                                                                                                                                                                     |                                                                                                                                                                               |
| <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Last Address Book Cache: 15-Sep-2015 01:19:44<br>Status: Configured. | <br><a href="#">Configure</a><br>Install Date: 10-Feb-2014 17:06:20<br>Status: Configured.                                                  | <br><a href="#">Configure</a><br>Install Date: 17-Oct-2014 21:21:07<br>Status: Configured. |                                                                                                                                                                               |

Select the 'Configure' option in the Exchange module. A new window or tab open with the module configuration.

**NOTE:** Ensure that your Retain Server and your Exchange server use the same DNS service. The Exchange module uses these DNS settings to auto discover critical information about Exchange that is stored in Active Directory and cannot function correctly unless both systems use the same DNS server.

## Core Settings

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

Normally all the checkbox options on this tab are enabled. It is rare that you would ever deselect any of them. Two cases where you might, would be: troubleshooting (as instructed by Technical Support), or retrieving an old email system.

**Exchange Module**

## EXCHANGE

Exchange specific information is configured here. At a minimum, the CORE SETTINGS and IMPERSONATION tabs must be filled out completely. Then, examine each of the other tabs to determine if they apply to your system.

Core Settings Impersonation Hosted Services Exchange Forest User Forests Delegates

**Core Settings**

Normally all of these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- Enable Authentication indicates if users logging into Retain should be able to use the module's authentication system.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                                                     |                                                                     |
|-----------------------------------------------------|---------------------------------------------------------------------|
| Module name                                         | Exchange4.213                                                       |
| Enable Address Book Caching                         | <input checked="" type="checkbox"/>                                 |
| Enable Authentication                               | <input checked="" type="checkbox"/>                                 |
| Enable Jobs                                         | <input checked="" type="checkbox"/>                                 |
| Message body                                        | Store default as provided from Exchange (either HTML or plain text) |
| If autodiscover fails for a user, take this action: | skip user                                                           |

Normally this entry should be disabled.

- Send Exchange items to an external system.

Select Send Method disabled

The Enable Address Book Caching function allows Retain to regularly cache the online email systems address book and synchronize it with Retain. This is critical for administration, authentication, and archiving purposes. It is recommended to cache the Address Book once every 24 hours to keep the Retain storage system up to date. By default, maintenance is set to cache the Address Book once every 24 hours.

The Enable Authentication checkbox determines if end-user authentication is performed when the user logs into Retain. If it is deselected, the Retain system cannot authenticate the user against the email system and the user cannot log in unless another authentication method is enabled.

The Enable Jobs option determines whether job retrieve data and pass it to the Worker. Even if the individual job is fully configured and enabled, if this option is disabled, no jobs configured for this module can be processed.

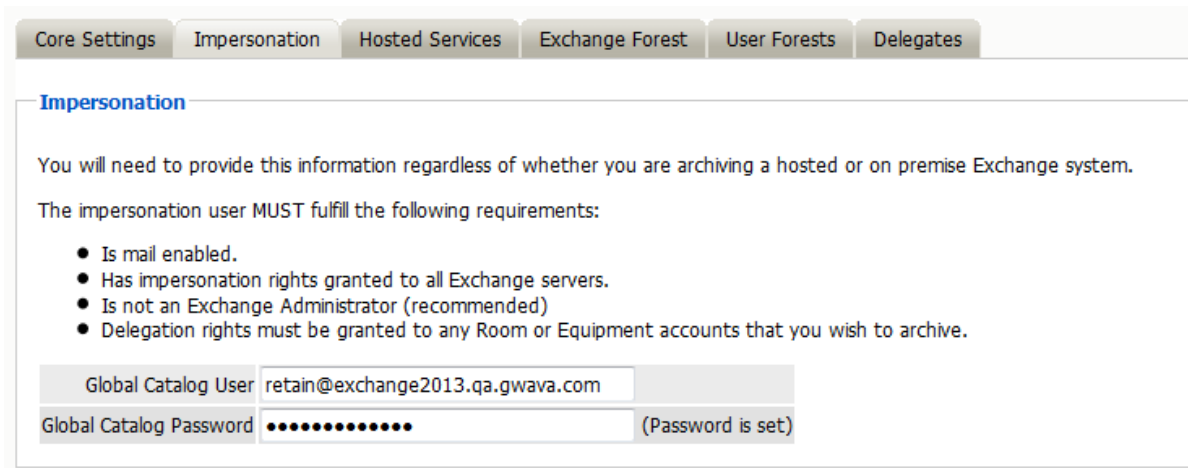
The Message body allows the administrator to decide whether to store either the HTML or plain text message body, or both.

### Send Method

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

## Impersonation

If the Impersonation and Core Settings tabs are not completely configured with the correct information, the hosted system cannot be archived correctly.



The screenshot shows a management console interface with several tabs: Core Settings, Impersonation, Hosted Services, Exchange Forest, User Forests, and Delegates. The 'Impersonation' tab is selected and active. Below the tabs, the heading 'Impersonation' is displayed. The main content area contains the following text:

You will need to provide this information regardless of whether you are archiving a hosted or on premise Exchange system.

The impersonation user MUST fulfill the following requirements:

- Is mail enabled.
- Has impersonation rights granted to all Exchange servers.
- Is not an Exchange Administrator (recommended)
- Delegation rights must be granted to any Room or Equipment accounts that you wish to archive.

Below the requirements, there are two input fields:

|                         |                                  |
|-------------------------|----------------------------------|
| Global Catalog User     | retain@exchange2013.qa.gwava.com |
| Global Catalog Password | ●●●●●●●● (Password is set)       |

## Hosted Services

This tab is not used with an On-premise Exchange system.

## Exchange Forest

Retain needs to know where to access the Global Catalog Host and existing domains before any archiving can be accomplished.

Core Settings Impersonation Hosted Services Exchange Forest User Forests Delegates

---

**Exchange Forest**

**Ignore this tab if you are running a hosted system.**

You MUST fill out all of the entries on this tab if you are running an on-premise Exchange system. Hosted services do not normally use this information.


Typically, you provide the connectivity information for a global catalog, and a user that has full access to Active Directory.


Here are the specific requirements for this user:

- The user account must fulfill all the requirements specified on the Impersonation tab. In fact you enter the username and password on that tab, not here.
- Has read-only access to all parts of Active Directory involving the Exchange System and users.

You also provide a list of Active Directory DNs to search for users and groups.

|                         |            |
|-------------------------|------------|
| Global Catalog Host     | 10.1.3.226 |
| Global Catalog Port     | 3268       |
| Global Catalog Security | Plain Text |

 Add Search Base (e.g. dc=users,dc=company,dc=com)



---

**Resource Forest**

Select this checkbox if Exchange is running in a dedicated resource forest. You must then fill out information on the User Forests tab. If this checkbox is not selected, information on the User Forests tab is ignored.

Enable Resource Forest

Open the “Exchange Forest” tab and enter the IP address or hostname of the Global Catalog Host.

Click on the Green Plus sign to add a search base. This should be set to the highest level of the LDAP domain so the entire address book can be found. For example:  
DC=exchange2013,DC=qa,DC=gwava,DC=com

Retain uses Active Directory extensively when integrating with Exchange. Its uses include: populating the address book, authentication, and access to the Exchange System.

There are settings required for Exchange, see the Exchange Permissions required for Retain section.

On the Exchange Forest tab, you configure all the Active Directory information you need for an Exchange forest. There is no need to fill out any information on the User Forest tab unless the users exist in a separate forest from the Exchange Forest.

On the Exchange Forest tab, specify whether to use SSL or not for the Global Catalog Security and the search base, (use of SSL with the Global Catalog Security and search base is highly recommended). The search base is the LDAP path to where Retain starts searching for valid Exchange users.

The Global Catalog Port defaults depend on whether SSL is used for security or not. (SSL is strongly recommended. Default ports are 3268 for plain text, and 3269 for SSL.) Adjust as appropriate for your system.

You also must provide the credentials of an Active Directory user. This user is special It must have full read rights to Active Directory, be a mailbox-enabled, user, and be granted various Impersonation and Delegation rights. More on this is discussed in the Exchange Permissions required for Retain section. The username must be in UPN format, (user principal name).

This search base, in LDAP form, must be high enough in the tree to include ALL users, groups, and servers. Multiple search bases can be specified, though it often results in a less efficient interface. These are LDAP search bases which allow Retain to resolve all users, groups, and servers of interest in the forest.

After the Search Base has been added, test the connection to ensure information and connection works. The test performs a simple login to confirm that the user exists, the Exchange Server is reachable, and that the credentials are accepted. The test does not confirm impersonation or delegation rights necessary for the Service Account.

```
Test Connection
Test begins...
LDAPServer connection parameters:
host=10.1.3.226,port=3268,security=none,user=retain@exchange2013.qa.gwava.com;pageSize=900;environment=key=java.naming.factory.initial;value=com.sun.jndi.ldap.LdapCtxFactory
key=java.naming.referral;value=follow
key=java.naming.security.principal;value=retain@exchange2013.qa.gwava.com
key=com.sun.jndi.ldap.connect.timeout;value=10000
key=java.naming.ldap.attributes.binary;value=msExchMailboxGuid objectguid objectsid msExchMasterAccountSID
key=com.sun.jndi.ldap.read.timeout;value=60000
key=java.naming.provider.url;value=ldap://10.1.3.226:3268
key=java.naming.security.authentication;value=simple
key=java.naming.security.credentials;value=****

Connect to and search for user:
For a more stringent test, be sure to refresh the Address Book Cache and then check the logs.
SUCCESS: Connected to CN=retain,CN=Users,DC=exchange2013,DC=qa,DC=gwava,DC=com NOTE: This only tests basic LDAP authentication. If you want a more stringent test, including autodiscover, impersonation, login, etc, try this link AFTER SAVING Exchange configuration: testExchange.jsp in the Util directory of RetainServer
```

If the test results in an error stating: “FAILURE: User doesn't exist or is not mail enabled,” It indicates that the user’s mailbox is unavailable. A mailbox is not required for Retain to utilize the specified user. If the user Retain utilizes does not have a mailbox, this error may be ignored. However, if the user specified does have a mailbox, this may indicate connection issues.

If the test results in an error with an LDAP error code 49 it is an authentication error. The important bit of information is what comes after the data field. That is the LDAP connection error code that applies to this case.

- ◆ 525 user not found
- ◆ 52e invalid credentials
- ◆ 530 not permitted to logon at this time
- ◆ 531 not permitted to logon at this workstation
- ◆ 532 password expired
- ◆ 533 account disabled
- ◆ 701 account expired
- ◆ 773 user must reset password
- ◆ 775 user account locked

The Exchange Forest tab is the only tab required by the Server and the Worker to archive mail from the Exchange system. The User Forest tab, however, is required for Exchange systems utilizing a resource forest, to allow the end user to log into Retain.

### Resource Forest

Select this checkbox if Exchange is running in a dedicated resource forest. You must then fill out information on the User Forests tab. If this checkbox is not selected, information on the User Forests tab is ignored.

Enable Resource Forest

If the system contains a Resource Forest, enable the checkbox on the Exchange Forest tab and save changes. If the Resource Forest checkbox is not enabled, the User Forests tab is non-functional and all settings contained on that tab are ignored. The checkbox must be unchecked in a single forest Active Directory deployment, and it must be checked in a multiple forest Active Directory deployment.

Check all information to ensure that it is correct and save changes, and then configure the User Forest if required.


## User Forest


The User Forest must have an entry for each user forest attached to the system.

### User Forests

**Ignore this tab if you are running a hosted system.**

You need to list every User Forest (dns name) that you will archive in Retain, along with a Global Catalog of that forest, and search base(s) capable of resolving all users. Information on this tab is used only for end-user authentication.


 Add User Forest

 User Forest

Global Catalog Host

Global Catalog Port

Global Catalog Security

 Add Search Base (e.g. dc=users,dc=company,dc=com)

Select the green '+' button and input the LDAP information required by the Forests' Global Catalog server: IP address or hostname, port, security, (SSL is strongly recommended), and all search bases to include all the users. No administrative credentials are required. Each end user's provided credentials are used on login.

## Delegates

You can set Retain to use delegate rights with On-Premise Exchange.

## Delegates

**Ignore this tab if you are running a hosted system.**

Retain can partially support the Delegates feature in Exchange. If a user uses Outlook to grant delegation rights to their mailbox to another user, the second user can have access to the Retain mailbox of the first user. Please note the rights are not granular in this case - the second user either has full rights or no rights to the Retain mailbox.

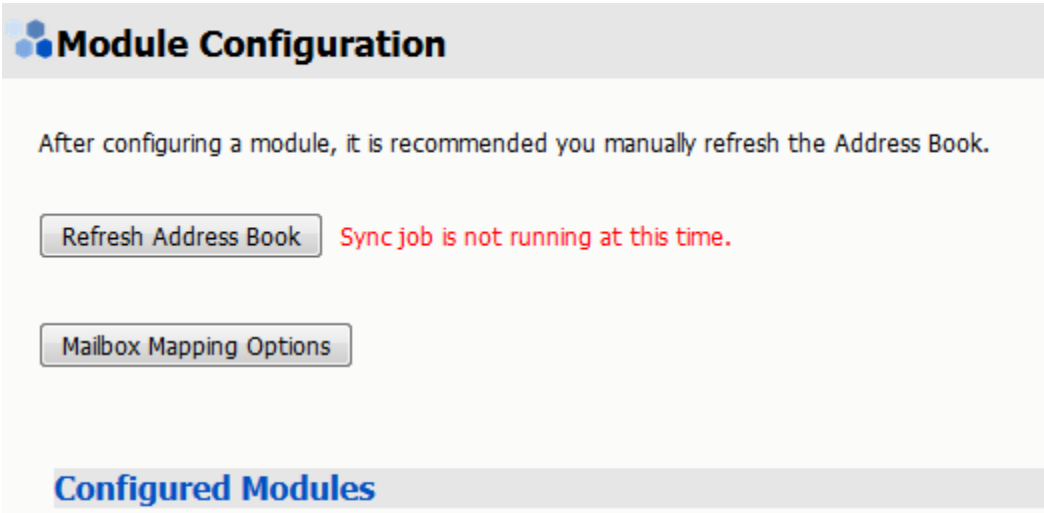
Enable delegates support

## Finishing On-Premise Exchange

Save all changes before closing the Exchange Module page.

## Refresh Address Book

After saving changes, return to the Retain Server's Module Configuration page, and trigger a refresh of the Address Book.



**Module Configuration**

After configuring a module, it is recommended you manually refresh the Address Book.

[Refresh Address Book](#) Sync job is not running at this time.

[Mailbox Mapping Options](#)

**Configured Modules**

Depending on the size of the address book, it may take several minutes to return with information, but a successful configuration returns a correct address book cache date and no errors. The date should reflect the date when the address book refresh was triggered.

The Status may show “Address Book Cache Never Run” or may list commonly misconfigured or missed items if the Refresh job fails.

Once the status is configured and the Address Book has been cached, Retain can connect to and archive messages from the Exchange server. The system is ready to have workers, schedules, profiles, and jobs configured, and those options now appear on the main administrative interface.

The Address Book is refreshed whenever the button is pressed, during the nightly maintenance cycle, and before each job.



## Exchange Distributions Lists

You can create distribution list in Exchange Admin Center to manage information dissemination. Retain queries Exchange for a list of users in each distribution list. While you can create a distribution list in Active Directory Users and Computers these changes are not reflected in Exchange and therefore Retain is unaware of them. If you want to rename a distribution group it must be done in Exchange or Retain will not see it.

Distribution lists can be hidden in Exchange. If a distribution list is hidden, Retain cannot see the users associated with the distribution list and cannot archive the distribution list. The distribution list will be marked as (hidden) in Job | Mailboxes | Distribution Lists.

Dynamic Distribution Lists cannot be seen by Retain because they only create a user list when a message is sent. Remember to refresh the address book if you want to see the latest list changes.

## Shared Mailboxes, Rooms and Equipment

Impersonation rights allow the Retain user to enter other mailboxes but those rights do not extend to shared mailboxes. To access a shared mailbox the Retain user would need delegate rights to each shared mailbox that is to be archived. These rights can be granted through the Exchange Management Shell.

If the shared mailbox is owned by "John Doe" and your Retain impersonation account is "Retain", you would issue the following command in an Exchange Management Shell (EMC):

```
Add-MailboxPermission -Identity "John Doe" -User Retain -AccessRights FullAccess -InheritanceType All -AutoMapping $false
```

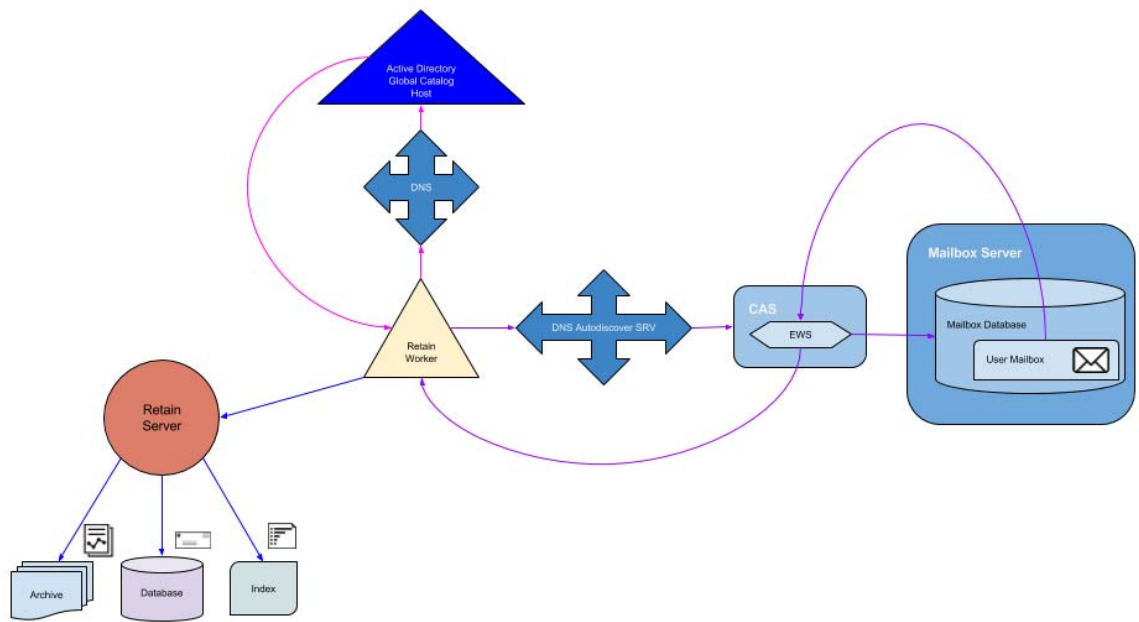
## Next Step

Configure the following:

1. Schedule ["Schedule Overview"](#) on page 269
2. Profile ["Exchange/O365 Profile"](#) on page 281
3. Worker ["Workers Overview"](#) on page 305
4. Job ["Exchange/O365 Job"](#) on page 321

## Exchange Message Dredging Process Overview

How does Retain get messages from Exchange?



1. When a job starts, the Retain Worker queries the DNS for the SCP record to the URL of the Active Directory Global Catalog Host.
2. Then the worker queries Active Directory for the Autodiscover SCP Records and Active Directory returns the Autodiscover URLs. The URLs tell Retain where to connect to autodiscover. There are also some default autodiscover URLs that Retain uses to connect to autodiscover.
3. Retain then uses autodiscover to connect to the Client Access Server. It is helpful to have an autodiscover SRV record on the DNS to speed up this process.
4. Once Retain has connected to the Client Access Server (CAS), the CAS uses EWS to connect Retain to the correct Mailbox Server.
5. Retain uses the impersonation user credentials to enter the mailbox of the user we are attempting to dredge messages from. Retain queries Exchange for messages that meet the criteria set in the job.
6. Exchange then serves the oldest message that meets the criteria back to the Retain Worker through EWS on the CAS.
7. The Retain Worker receives the message and opens it to query the Retain Server if the message body or attachments already exists.
  - a. If the Retain Server determines that the message is new, then the body and attachments are stored in the archive, the header information and hash is saved in the database with links to the archive and the contents of the message are indexed.
  - b. If the message already exists, the database is updated with the header data and linked to the existing data, and the existing message body or attachment is dropped by the worker and the next message is retrieved from the email system.

## Troubleshooting Exchange Performance

In general, we have found that acceptable throughput is in the 3-5 messages per second range. In well designed systems with sufficient hardware resources we have seen throughput above 10 m/s. There is definitely an issue if the throughput is less than 3, and we have seen instances of less than 0.1. The first place to look is the worker log.

### Mailbox Delays

We are looking for how long it takes Retain to log into each mailbox and when it finds the endpoint which tells us it entered the mailbox.

Search the log for lines containing:

```
enterMailbox
Discovered endpoint
```

Now you want to compare the difference in times between these two lines. It should be less than 2 seconds. If it is significantly longer than 2 seconds it is most likely an issue with the DNS not properly serving autodiscover.

```
2015-09-25 12:00:07,256 TRACE [RTWQuartzScheduler_Archive_Worker-1]
com.gwava.caapi.MailboxArchivingStats: enterMailbox: JDoe@RETAIN.GWAVAUTAH
2015-09-25 12:02:14,177 DEBUG [RTWQuartzScheduler_Archive_Worker-1]
com.gwava.ews.archiveimpl.process.ExchangeUser: Discovered endpoint:
https://ad.test.sys/ews/exchange.asmxscreen
```

This indicates that there is an issue with how autodiscover is configured in the DNS. It may need an SCP or SRV record.

### Message Delays

Another thing to search for are connection failures and retries, which increase each time it fails which can add up to 4 minutes:

```
search for items
```

```
Software caused connection abort: recv failed
```

```
EWS request failed: null. Will retry after
```

```

2015-07-22 00:25:25,056 TRACE [Thread-1341102]
com.gwava.ews.RetainExchangeWebserviceFactory: retry, exception :
javax.xml.ws.WebServiceException: java.net.SocketException: Software
caused connection abort: recv failed
at
com.sun.xml.ws.transport.http.client.HttpClientTransport.readResponseCodeA
ndMessage(Unknown Source)
...
at
com.gwava.ews.archiveimpl.process.CursorFetchThread.run(CursorFetchThread.
java:1334)
Caused by: java.net.SocketException: Software caused connection abort: recv
failed
at java.net.SocketInputStream.socketRead0(Native Method)
...
at
sun.net.www.protocol.https.HttpURLConnectionImpl.getResponseCode(HttpsURL
ConnectionImpl.java:318)
... 27 more
2015-07-22 00:25:25,056 DEBUG [Thread-1341102]
com.gwava.ews.RetainExchangeWebserviceFactory: EWS request failed: null.
Will retry after 2 seconds

```

This retries a few times with longer delays until it aborts. Here we are losing connection to the Exchange server while already in a mailbox. This can indicate that there are issues with either a message attachment or the webserver on the Exchange or CAS servers is unable to serve the item at this time. Go to the message in Outlook or OWA and see if it can be accessed.

If the message can be accessed successfully export it as a .pst and use the PST Importer to bring it into Retain.

If the message cannot be accessed successfully then it must be deleted.

## Exchange Health

You may also want to check the health of the Exchange server itself.

### Performance Monitor

The first thing to check is the performance of the server by going into Performance Monitor to see it is above 80% utilization of CPU, Memory, Disk and/or Network. If they are consistently high you should use the various Server health, monitoring, and performance cmdlets to pinpoint the issue

### Queues

Another thing to check are the Queues. The mail queues are how Exchange handles mail. You can see they by going into Exchange Toolbox/Queue Viewer. The number of messages in the queues should be low, if there is a queue with hundred or thousands of messages and they are not being cleared then that queue may have a stuck message, which would need to be cleared.

You can also use the Exchange Management Shell (EMS) to check the status of the queues.

### Get-Queues

### Mailboxes

Another thing to check are the mailboxes. Performance can degrade if a mailbox has too many messages (~100k). The number of messages is more important than the size of the messages. For large systems you should pipe to a file since this command can exceed the EMS buffer.

```
Get-Mailbox | Get-MailboxStatistics > c:\mailboxstat.txt
```

If there is a specific mailbox with issues you may need to repair the mailbox.

Server Health

You can get a quick overview of an Exchange server's health by running this EMS cmdlet:

```
Get-ServerHealth -Identity server1 | Sort-Object AlertValue | ft Name, AlertValue
```

## **Exchange Throttling Policy and Bandwidth/Performance (2013)**

Microsoft Exchange 2013 uses client throttling policies by default to track bandwidth for each Microsoft Exchange user and enforce bandwidth limits as necessary. Throttling policies should be turned off for the Retain Service Account, because they can affect the performance of Retain for Exchange when accessing mailboxes with a large number of folders and mail items.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell.
2. Type these commands:
  - a. `New-ThrottlingPolicy` [give it a policy name of your choosing]
  - b. `Set-ThrottlingPolicy` [policy name from step "a"] `-RCAMaxConcurrency Unlimited -EWSMaxConcurrency Unlimited -EWSMaxSubscriptions Unlimited -CPAMaxConcurrency Unlimited -EwsCutoffBalance Unlimited -EwsMaxBurst Unlimited -EwsRechargeRate Unlimited`
  - c. `Set-Mailbox` [Retain impersonation user account] `-ThrottlingPolicy` [policy name from step "a"]
3. To check the policy run the command: `Get-ThrottlingPolicy -Identity` [policy name from step "a"] `| Format-List`

## **Exchange Throttling Policy and Bandwidth/Performance (2010)**

The error indicates that either you have a throttling policy applied or the Exchange server is busy. Microsoft Exchange 2010 uses client throttling policies by default to track bandwidth for each Microsoft Exchange user and enforce bandwidth limits as necessary. Throttling policies should be turned off for the Retain Service Account, because they can affect the performance of Retain for Exchange when accessing mailboxes with a large number of folders and mail items.

1. On a computer that hosts the Microsoft Exchange Management Shell, open the Microsoft Exchange Management Shell. Find out the default Throttling Policy: `Get-ThrottlingPolicy`

2. Type these commands:
  - a. `New-ThrottlingPolicy [give it a policy name of your choosing] -RCAMaxConcurrency $null -RCAPercentTimeInAD $null -RCAPercentTimeInCAS $null -RCAPercentTimeInMailboxRPC $null -EWSMaxConcurrency $null -EWSPercentTimeInAD $null -EWSPercentTimeInCAS $null -EWSPercentTimeInMailboxRPC $null -EWSMaxSubscriptions $null -EWSFastSearchTimeoutInSeconds $null -EWSFindCountLimit $null`
  - b. `Set-Mailbox [Retain impersonation user account] -ThrottlingPolicy [policy name from step "a"]`
3. Check the Throttling Policy for the "retain" impersonation user: `Get-ThrottlingPolicy -Identity [policy name from step "a"] | Format-List`

## Exchange Journaling Mailbox

Using Exchange Journaling Mailbox is not recommended, but there are some situations where it is an option.

According to a Microsoft technician, they recommend at least 1 journaling mailbox per mail server. Exchange can only effectively support mailboxes under 5 - 10G. Exchange experiences performance issues when the Inbox exceeds 2500-5000 messages. <http://blogs.technet.com/b/exchange/archive/2005/03/14/395229.aspx>

This means that, once you enable a journaling mailbox, you should begin archiving its contents and using the Retain option to delete the items from the mailbox once archived. However, if there are delays in getting those journaling mailboxes archived, you should watch the size. If it gets to 5G, turn it off and re-route email to another journaling mailbox until you get all of them archived and emptied out.

1. Set up a journal mailbox for each mailbox database.
2. Journaling jobs should have their own Profile with the Scope set to "All messages (ignore date)" and Duplicate Check set to "Try to publish all message (SLOW)" to gather all messages from the beginning of the mailbox. This profile can be used for all journaling mailbox jobs.
3. Under Job, "Enable Journaling" and "Delete archived items from journal" must be enabled (checked) so that the journaling mailbox is cleared during the job, and choose the journaling mailbox you want archived. Create a separate job for each journaling mailbox.

Important note: As Retain archives the journal mailbox it creates a list of messages to be deleted but only sends the delete request when it exits the mailbox. If the job fails before it exits then the messages won't be deleted. Limiting the scope of the job to allow Retain to finish the job successfully ensures that the messages are deleted.

## Transitioning from Journaling to Rolling In-Place Hold for Exchange Archiving

There are changes you must make in Exchange and Retain for this transition to go as smoothly as possible.

Mandatory Exchange Tasks:

1. Enable Rolling In-Place Hold. You can test that the hold is properly enabled by going into Outlook or OWA and deleting an item, going into the recoverable items dialog and attempting to purge the item. It should end up in the Purges folder which the user cannot see but Retain can. So you should run an archive job against it to see it within Search Messages in Retain. In Exchange 2010 you should enable Single Item Recovery, which allows you to set a rolling duration for holding deleted items.

```
Get-Mailbox | Set-Mailbox -SingleItemRecoveryEnabled $true -RetainDeletedItemsFor 90
```

2. Disable Journal Rule in Exchange. Once the rolling in-place hold is enabled, you can disable the journal rule in Exchange. <https://technet.microsoft.com/en-us/library/bb124264%28v=exchg.141%29.aspx>

Mandatory Retain Tasks:

1. Keep the existing Retain journaling job and allow that to run until the journal mailbox is empty. If you are currently unable to archive your existing journal mailbox(es) because they have become too large for Exchange to manage, there are powershell scripts for transferring mail to another mailbox.
2. Create New Profile. The primary option to enable is Profile/Miscellaneous/"Include user's recoverable items". With this option enabled Retain will dredge each users recoverable items folder and all items and folders inside it, except the logs found in the Audits subfolder.
3. Create a New Job(s) If you have multiple Exchange databases we recommend one job per mailbox database and one worker per job so they can run in parallel. (Retain Technical Support has a PowerShell 4.0 script to make this easier)

## Large Attachments and/or Messages Cannot Be Archived From Exchange

Symptoms you may notice when experiencing problems with default IIS limitations:

- ◆ Retention is turned on in GroupWise and messages up to a certain date can't be deleted.
- ◆ Errors on retrieving attachments show in the Worker log.
- ◆ Can see messages that don't have all the attachments in Retain.
- ◆ You may also have difficulty getting larger exports through the web interface (exports larger than 28.6 MB).
- ◆ When logging is set to diagnostic for the Worker you can see errors like this:

```
15:15:15,668 RetainServerCommunication - Attempt to connect, but Server returned HTTP status (404): Not found (this line is typically repeated several times over the course of 5 minutes)
```

```
15:15:15,668 RetainServerCommunication - Giving up...too many retries! 15:15:15,668
```

```
ArchiveAttachment - Send a nice healthy blob:Archive: ERROR: Fatal Error Result=AddedEMails: 0, emailID=null, parentID=null 15:15:15,691 JobUtilities - HandleArchivingException
```

\*Note: IIS is not supported by GWAVA. These are suggested methods for allowing Retain to archive large emails through IIS. For further information visit the MicroSoft support pages: <http://www.iis.net/configreference/system.webserver/security/requestfiltering/requestlimits> (<http://www.iis.net/configreference/system.webserver/security/requestfiltering/requestlimits>) Some other useful information can also be found on the IIS forums: <http://forums.iis.net/t/1066272.aspx> (<http://forums.iis.net/t/1066272.aspx>)

This may not be as much of an issue in Retain installations that were created with 3.x and newer. The RetainWorker will now communicate, by default, directly to the RetainServer on port 48080 thereby bypassing IIS. If you'd like to change this for an older installation, change the connection address of the worker. See the manual (look up "Worker Configuration") for your particular installation for more information. You may still have this be an issue on your Exchange server when Retain tries to collect from it if there are message attachments or messages that are larger than whatever ISS is set to allow through. This would be a setting on the Exchange side that would need to be changed. Default is 30000000 bytes.

For getting exports out of Retain you can also choose to bypass IIS and use [http://\(RetainIP\):48080/RetainServer](http://(RetainIP):48080/RetainServer). IIS integration is more of a convenience to point users at Retain so that you don't have to deal with port information in a URL and other advantages that this can provide.

IIS, by default, limits the amount of data that can be imported by Retain. You can remove, or at least mitigate, this limitation by changing 4 settings. This example will be assuming you'd like to archive files up to 931 MB.

1. 1. You'll need to increase the limit on how much data the RetainWorker and RetainServer can push/pull through IIS. You can do that using the following command\*:

- a. `** %windir%\system32\inetsrv\appcmd set config "Default Web Site/RetainWorker" -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000`
- b. `%windir%\system32\inetsrv\appcmd set config "Default Web Site/RetainServer" -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000`
- c. Current testing indicates that you'll also have to do a blanket statement:  
`%windir%\system32\inetsrv\appcmd set config -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000`

\*Note: the number at the end of the command is the size you'd like to have as the max in bites.

\*\*Note: the "Default Web Site/RetainWorker" piece may vary depending on your server setup. See the picture in the next section.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

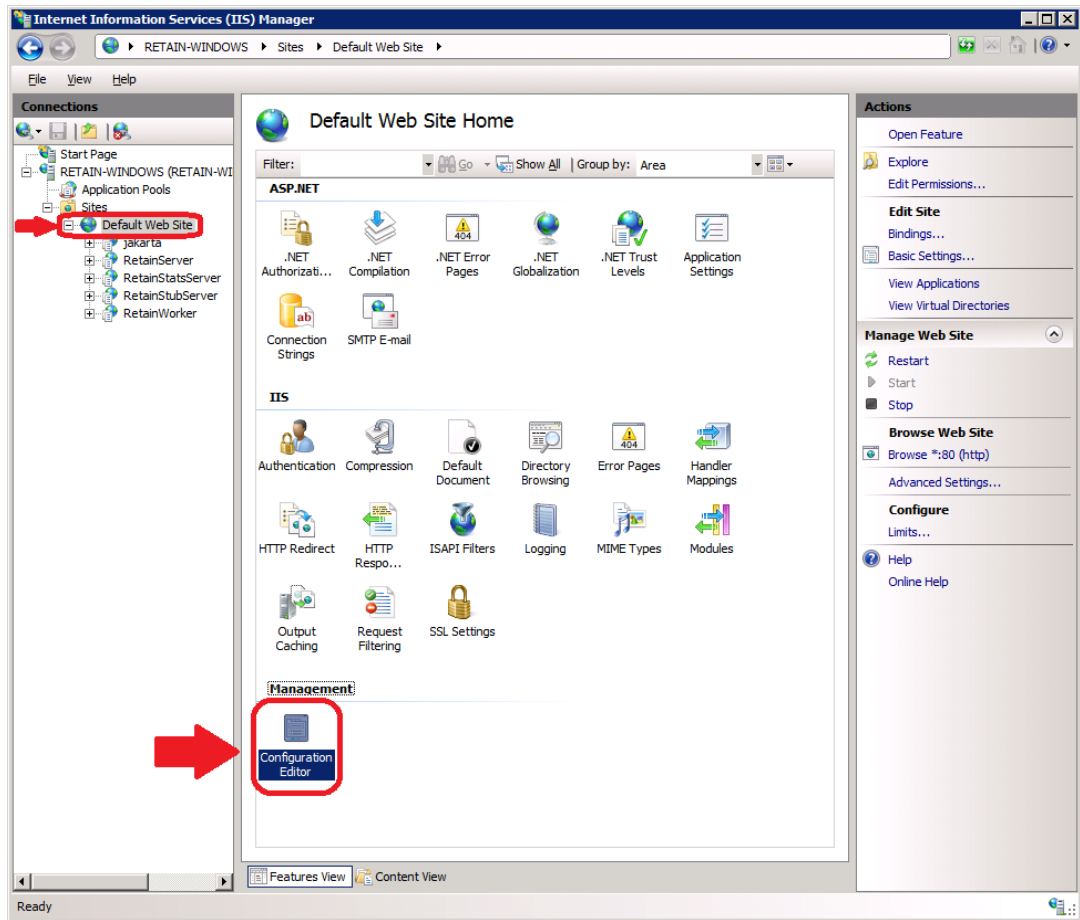
C:\Users\Administrator>%windir%\system32\inetsrv\appcmd set config "Default Web Site/RetainWorker" -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000
Applied configuration changes to section "system.webServer/security/requestFiltering" for "MACHINE/WEBROOT/APPHOST/Default Web Site/RetainWorker" at configuration commit path "MACHINE/WEBROOT/APPHOST/Default Web Site/RetainWorker"

C:\Users\Administrator>%windir%\system32\inetsrv\appcmd set config "Default Web Site/RetainServer" -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000
Applied configuration changes to section "system.webServer/security/requestFiltering" for "MACHINE/WEBROOT/APPHOST/Default Web Site/RetainServer" at configuration commit path "MACHINE/WEBROOT/APPHOST/Default Web Site/RetainServer"

C:\Users\Administrator>%windir%\system32\inetsrv\appcmd set config -section:requestFiltering -requestLimits.maxAllowedContentLength:1000000000
Applied configuration changes to section "system.webServer/security/requestFiltering" for "MACHINE/WEBROOT/APPHOST" at configuration commit path "MACHINE/WEBROOT/APPHOST"

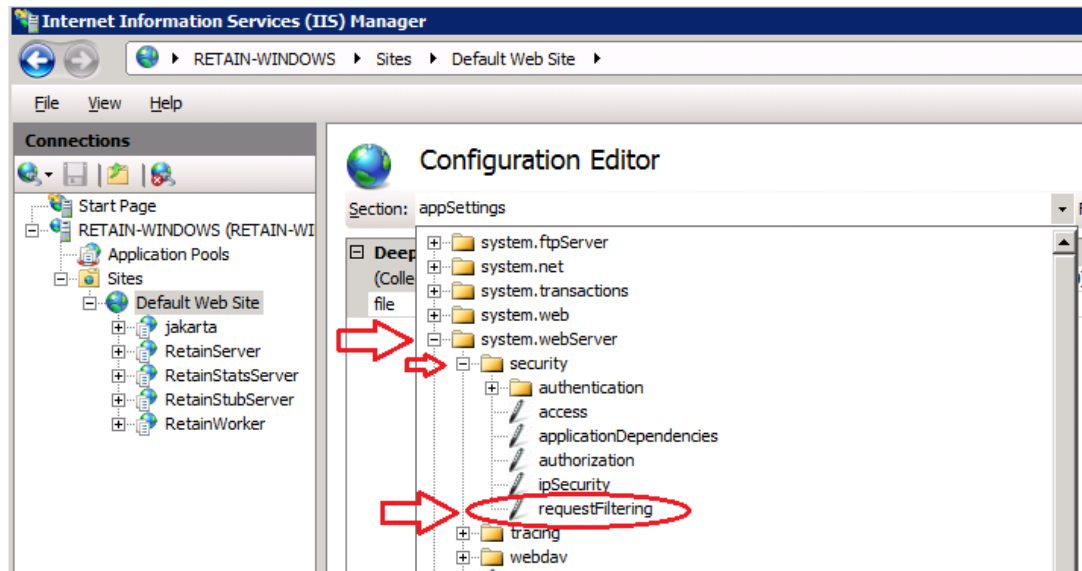
C:\Users\Administrator>_
```

- 2. 2. If you don't like command line you can also change it through the IIS manager.
  - a. Bring up the IIS manager and highlight "Default Web Site"

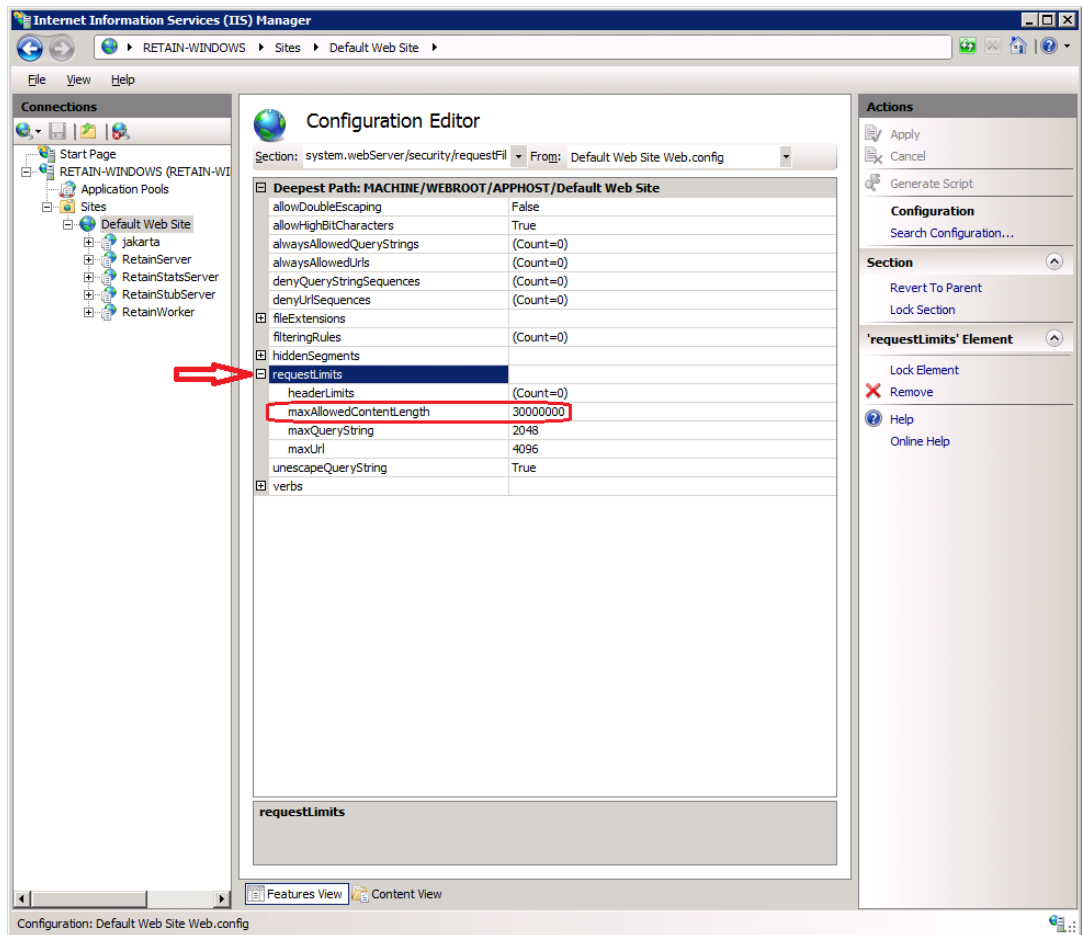


- b. Double click on "Configuration Editor" as shown in the figure above.

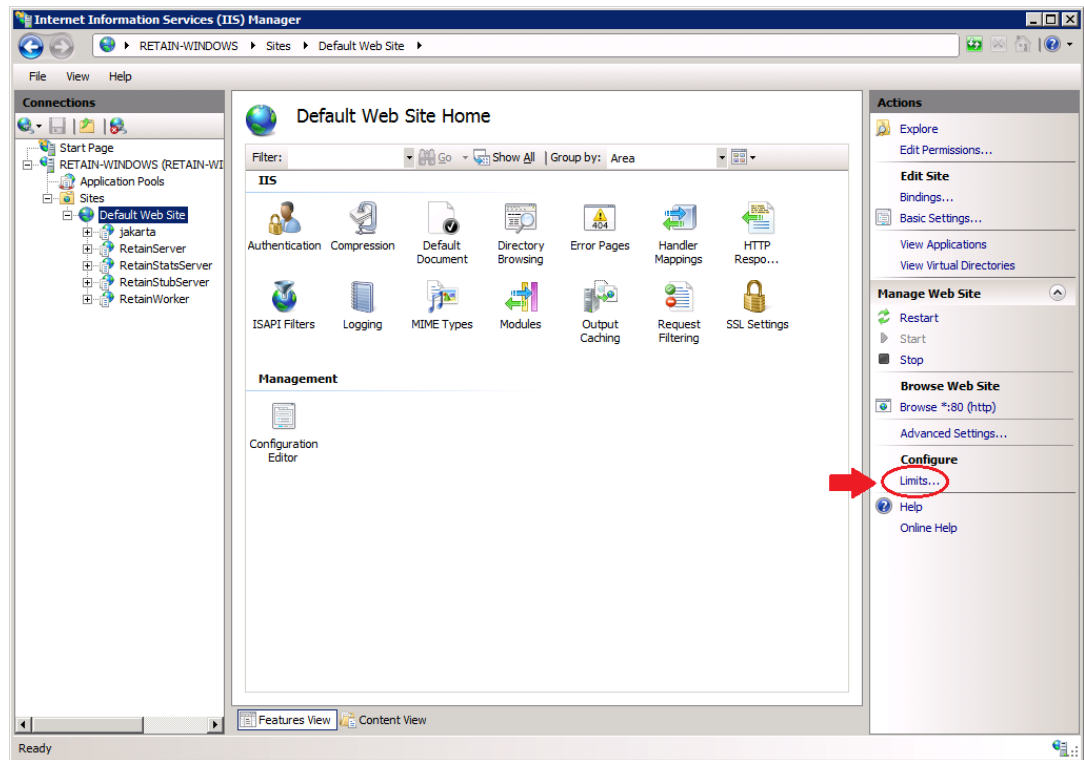
- c. Use the "Section" area drop down box to go to "requestFilterg" as shown in the following figure.



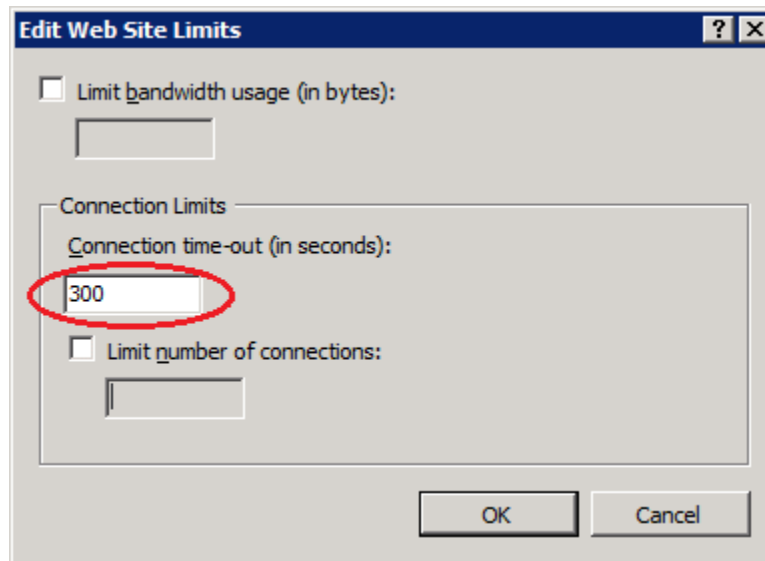
- d. Expand the "requestLimits" section. Change the "maxAllowedContentLength" shown in the next figure to the size (in bytes) you would like to be able to pass though.



- e. Repeat for both RetainServer and RetainWorker.
3. You may also need to change the timeouts in IIS. To do this:
    - a. Open the IIS manager.
    - b. Highlight "Default Web Site".
    - c. Click on "Limits"



- d. Change "Connection time-out (in seconds):" to the desired time.



## Moving Users to a New Exchange Domain

If you need to move your users to a new Exchange domain without changing their email addresses (for example from user@organization.local to user@organization.org) you will need to use the moveMailboxes tool to keep the users associated with their existing archive, otherwise a new archive will be created for all users.

## Prerequisites

- ◆ The new on-premise Exchange system can not have been archived by Retain before.
- ◆ The users continue to use the same email address, though the UPN may be different.

## Procedure

1. In the Retain Web Console, go to the Exchange module and select configure.
2. Under the Impersonation tab, enter the new impersonation user credentials.
3. Under the Exchange Forest tab, reconfigure the settings to the new Exchange system.
4. Click the Test Connection button to confirm the connection can be made.
5. Save your changes.
6. Return to the Module Configuration page and Refresh the Address Book by clicking the Refresh Address Book button. Wait for the refresh to complete.
7. Open the RetainServer log and tail the log to watch progress of the tool. On Windows a utility program like baretail is useful for this.
8. Open a new tab and enter the URL: `http://<your Retain Server Address>/RetainServer/Util/moveMailboxes.jsp`. The page will be blank.
9. In the RetainServer log when the migration is complete, you will see the message "MoveMailboxes: mailboxes moved: [amount of mailboxes]. Process Complete."
10. Re-index all messages. In the Retain Web Console, go to Server Configuration | Index and press the Re-index All Messages button. This may take significant time in larger systems and search will be limited as the re-index is going on.
11. Once re-indexing is complete, archiving can resume normally.

When the users log into Retain they will see two folders one with the mails from the original Exchange system and the other with mail from the new system. They have different system IDs so cannot be combined seamlessly

## Exchange Concurrent Connection Limits

If jobs fail with the error: 421 4.3.2 The maximum number of concurrent connections has exceeded a limit, closing transmission channel.

It may be because we are hitting the maximum inbound connections per source limit connecting to Exchange. You will need to increase the MaxInboundConnectionPerSource parameter. See "Understanding message rate limits and throttling" ([https://technet.microsoft.com/en-us/library/bb232205\(v=exchg.160\).aspx](https://technet.microsoft.com/en-us/library/bb232205(v=exchg.160).aspx)) for details.

## Blackberry

- ◆ "Blackberry Module" on page 214
- ◆ "Blackberry Auditing and Archiving Service for BBM" on page 218

## Blackberry Module

The Blackberry module allows the collection of Blackberry phone data from the Enterprise server into the Retain system. BES 5.x, 10.x, and 12.x are supported. Blackberry Dynamics is also supported on Android and iOS devices, that will be using the RetainService and Retain mobile apps “[Mobile Tools](#)” on page 703.

To archive the Blackberry information, the Blackberry Enterprise Server must be configured to log phone calls, PIN, BBM and SMS data.

Archiving BBM Enterprise data is also supported through the REST API. (Archiving BBM Enterprise will require two additional licenses: REST API license and the BBM Enterprise License. See the rest API section.)

### Prerequisites

The server log files are what Retain uses to collect the information about phone activity, and as such no software or modification needs to be made to any system phones. If the Blackberry server has not been configured to log the data, Retain will be unable to archive the information.

For BES 5.x, instructions to modify the logging in the Blackberry Enterprise Server can be found in the Blackberry Enterprise Server help file. (Found under Start | Programs | Blackberry Enterprise Server | Help | Blackberry Manager Help)

For BES 10.x and 12.x, users must be set on EMM – Regulated mode and have the logging set to ‘yes’ for all types desired. Balanced mode users will not have logs created for them in the BES system and as a result will not be archived.

For BBM Enterprise (BBMe), TLS 1.0 or 1.2 must be configured on the web server on the Retain Server or Retain Router, depending on the endpoint you will be using for your BBMe devices. NOTE: TLS 1.0 or 1.2 is required. 1.3 will not be sufficient. See the appropriate link for configuration instructions:

IIS: [https://msdn.microsoft.com/en-us/library/windows/desktop/aa374757\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/aa374757(v=vs.85).aspx)

Apache: [https://httpd.apache.org/docs/2.4/ssl/ssl\\_howto.html](https://httpd.apache.org/docs/2.4/ssl/ssl_howto.html)

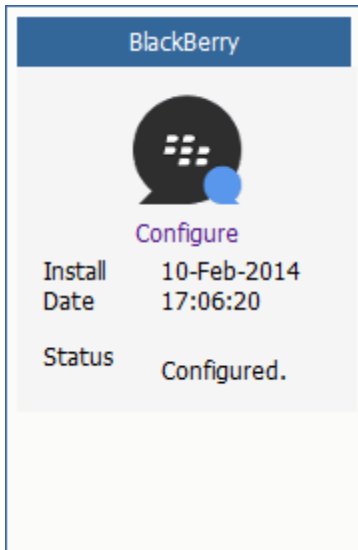
BBMe Supported Ciphers: "ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-RSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:ECDHE-RSA-AES128-GCM-SHA256:DHE-RSA-AES256-GCM-SHA384:DHE-DSS-AES256-GCM-SHA384:DHE-RSA-AES128-GCM-SHA256:DHE-DSS-AES128-GCM-SHA256:ECDHE-ECDSA-AES128-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA"

### Blackberry Module Setup

The module needs to be enabled and configured with the BES log file location. Afterwards, the data is treated the same as any other data entering the Retain archive. Data is archived in the database under the user/phone it originated from and can be searched and viewed through the Search Messages interface.

## Configuring the Blackberry Module

To enable the Blackberry Module, select the 'Blackberry Module' from the module page and click 'configure'.



### Core Settings Tab—Blackberry Settings

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

The Blackberry module needs to be enabled on this page to make it active in the Retain system.

**BlackBerry**

BlackBerry specific information is configured here.

Core Settings | **BES Servers**

---

**BES Integration**

Normally these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                             |                                     |
|-----------------------------|-------------------------------------|
| Module name                 | BlackBerry-1                        |
| Enable Address Book Caching | <input checked="" type="checkbox"/> |
| Enable Jobs                 | <input checked="" type="checkbox"/> |

Normally this entry should be disabled.

- Send BlackBerry items to an external system.

Select Send Method:

---

**BBM Integration**

There are three parts to setting up the BBM Integration: a Tenant ID, an optional Message Router and exporting the configuration. The BBM configuration will need to be updated when the Message Router connection settings, the device transmission frequency, the protected messages only flag, or the username and password change.

- A Tenant ID was generated for your Retain system when this page was loaded. It is used to identify your system during the registration and data collection processes.
- The Message Router can receive the registration and data collection requests from the devices and forward them on to your Retain Server.
- The Retain BBM configuration needs to be exported from Retain and then imported into the BlackBerry console.

|                                 |                                      |                  |
|---------------------------------|--------------------------------------|------------------|
| Tenant ID                       | c148f879-6ca3-4063-9cda-6b0f4bc6dc6a |                  |
| Use Message Router              | <input type="checkbox"/>             |                  |
| Device Transmission Frequency   | <input type="text" value="60"/>      | minutes (5-1440) |
| Only Archive Protected Messages | <input type="checkbox"/>             |                  |

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

For address book caching to occur, it must be enabled on the Core Settings screen. For more information on caching, see below.

Before data can be archived, the BES Servers must be configured and a BES log file path must be provided.

If BBM Enterprise integration is to be used, no BES servers will be listed and no other configuration in the BlackBerry Module is required. However, the BBM Configuration file needs to be exported and uploaded to the BBM server. Please see the BBM setup and install checklist for specific information on how to configure the BBM server.



## BBM Integration

There are three parts to setting up the BBM Integration: a Tenant ID, an optional Message Router and exporting the configuration. The BBM configuration will need to be updated when the Message Router connection settings, the device transmission frequency, or the username and password change.

- A Tenant ID was generated for your Retain system when this page was loaded. It is used to identify your system during the registration and data collection processes.
- The Message Router can receive the registration and data collection requests from the devices and forward them on to your Retain Server.
- The Retain BBM configuration needs to be exported from Retain and then imported into the BlackBerry console.

|                                                         |                                      |
|---------------------------------------------------------|--------------------------------------|
| Tenant ID                                               | 7f828252-8f6f-44f1-8089-d46cb22994d4 |
| Use Message Router                                      | <input type="checkbox"/>             |
| Device Transmission Frequency                           | 5 minutes (5-1440)                   |
| <input type="button" value="Export BBM Configuration"/> |                                      |

## BES Servers Tab—Blackberry Configuration


The module needs the location of each BES server. Click the green plus sign to add a BES server.


### BlackBerry

BlackBerry specific information is configured here.

#### BlackBerry Enterprise Servers

The Retain Worker needs to know where the BES log files are located.  
Retain accesses the BlackBerry Enterprise Servers via the SOAP protocol which needs to be enabled.

 Add BlackBerry Enterprise Server

|                                                                                     |               |                                                    |
|-------------------------------------------------------------------------------------|---------------|----------------------------------------------------|
|  | Server Name   | BES5TravisLogs                                     |
|                                                                                     | Logfile Path  | /mnt/software/GWAVAIInc/Retain/BESlogs/Travis_BES5 |
|                                                                                     | SOAP Host     |                                                    |
|                                                                                     | SOAP Port     |                                                    |
|                                                                                     | SOAP User     |                                                    |
|                                                                                     | SOAP Password |                                                    |

The log file location must be the address to the Blackberry Server log files, from the perspective of the Retain Worker. Regardless of where the worker is installed, local or remote to the Blackberry Server, it must have direct file access to the logs. This access can be accomplished through a shared folder or location, but it must be available to the Retain worker. The path must be an open and active path from the Worker to the log file location. Appropriate access through firewalls or network security must be made available if the worker is not installed on the BES system.

It is important to keep in mind that the log path needs to be the path relative to where the Retain Worker is installed. If the Retain Worker is installed on a system that is local to the log directory than a local path can be used here. If the Retain Worker is on a remote system than a UNC path must be used. If using a UNC path to a Windows share it is necessary to ensure that the Retain windows service (tomcat) be running under a user with the proper rights and permissions to read the log data being shared.

The SOAP data must also be filled-out to connect to the address book. The SOAP connection is how the Retain Server connects to the BAS service's SOAP interface in order to cache the address list. SOAP must be enabled on every BES listed. List every BES server which the Retain system will be archiving data from. The SOAP address or host name and port which is configured must be specified for each Server. The SOAP user name and password are the credentials to the BES admin web console.

If you have multiple BES servers, it is a best practice to have one BES server with the master address book. This allows Retain to cache the address book quickly, eliminate the chance of data being overwritten from one BES server address book to another and increases the ease of troubleshooting.

## **Retain Address Book Caching—Blackberry**

Retain will attempt to cache the address book from each server listed if address book caching is selected. Because the Blackberry Server logs, and especially the BBM Enterprise data does not always contain user names attached to the device ID's, Retain works to cache the address book to fill out data for messages; user name, email address, etc. Without Address Book caching, stored message data may only be identified by a device ID or phone number. Each server's configuration has a test button to help ensure that Retain can successfully connect to the server. Selecting the 'Test Connection' button will initiate a connection attempt by Retain for the server. The results will be displayed after the test has been completed.

When caching the address book: Retain will receive the Display name and number, if 10, or UID, if 12, for each user, then Retain will query for the user's email address, and then Retain will query for the PIN or phone number of the user's associated device(s).

## **Blackberry Device Management**

Devices are managed in Retain through the Device Management interface "[Device Management Overview](#)" on page 481.

## **Next Step**

Configure "[Blackberry Jobs](#)" on page 326.

## **Blackberry Auditing and Archiving Service for BBM**

The setup for Retain Blackberry Auditing and Archiving Service for BBM Enterprise (BAAS) is quite simple for Retain, as the BBM Enterprise application directly inputs data to the Retain BAAS system.

The BBM Enterprise app can forward data to either the Retain Router or the Retain Server, but it will only archive to one or the other.

Because the BBM Enterprise app communicates directly to the Retain BAAS system, Retain needs to have an open connection to the Internet.

Whichever will be used, Router or Server, the configuration and a security certificate must be obtained before setup can be completed.

This supports the BBM App for Desktop (Windows and macOS).

---

**IMPORTANT:** Due to the Internet-open-connection requirement, the desired connection should be placed in the network's DMZ. To protect the Retain Server, the Retain Router has been designed to be placed in the DMZ. When the Router cannot be installed in the system, the Retain Server can handle all communication, but will need to be installed in the DMZ.

---

## Blackberry Environment Requirements Checklist:

- ◆ Enterprise ID (From Blackberry)
- ◆ Base API license (In licensing tab)
- ◆ Blackberry license (In Licensing tab)
- ◆ REST API base License (In REST API tab)
- ◆ BBM REST API license (In REST API tab)
- ◆ SSL security certificate obtained from a trusted third party certificate authority for either Server or Router (whichever is to be used).

## Pre-setup Tasks

- ◆ Create a Network structure plan (Where to place the Retain Server, and or to use the Router.)
- ◆ Set up and configure a Retain Server, or a Server and router.
- ◆ Make sure the Router or Server is connected to and accessible in DMZ.

## Setting Up the Retain Blackberry Environment

### 1. License Retain.

Retain requires a total of 4 licenses to enable Retain BAAS. The first two licenses, base Retain license and the Blackberry module license, are uploaded to the Licenses page in the Retain Server management console. The second two licenses are REST API licenses, REST API base license and the Blackberry REST API license, are installed under the Server Configuration | REST API tab.

### 2. Configure Retain server connection.

Found under Server Configuration | Communications tab, the Retain server connection info at the bottom of the page. This connection setting is the information which will be used by the REST applications, (in this case BBM Enterprise application), or the Retain Router, to connect to the Retain Server. If this is not correct, the Router or the REST applications will not be able to connect the Retain Server. This must be configured before moving on to step

### Retain Server Connection

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |                      |
|--------------------|----------------------|
| Server Protocol    | https                |
| Retain Server Host | retain2.qa.gwava.com |
| Retain Server Port | 443                  |
| Retain Server Path | /RetainServer        |

### 3. From Blackberry module, Export BBM configuration file.

The BBM Configuration file is generated through the Blackberry module configuration page. Open the module configuration and look at the Core Settings tab. Look at the BBM Integration section. Here the decision is made whether to use the Retain Router or to use the Retain Server. If the Retain Router is to be utilized, select the 'Use Message Router' check box.

The Device Transmission Frequency setting is the setting which determines how often the BBM Enterprise application will upload archive data to the Retain Server. If there is no information to be archived, the BBM Enterprise application will wait until there is. The setting is in minutes. Minimum is every 5 minutes, maximum is 1440 minutes (24 hours). Once configured, select the 'Export BBM Configuration' button and save the file; you will need it later.

The module may be given a name. The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

**BlackBerry**

BlackBerry specific information is configured here.

Core Settings **BES Servers**

---

**BES Integration**

Normally these entries should be enabled.

- Enable Address Book Caching determines if this module caches address book entries from its directory services during Maintenance.
- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                             |                                     |
|-----------------------------|-------------------------------------|
| Module name                 | BlackBerry-1                        |
| Enable Address Book Caching | <input checked="" type="checkbox"/> |
| Enable Jobs                 | <input checked="" type="checkbox"/> |

Normally this entry should be disabled.

- Send BlackBerry items to an external system.

Select Send Method

---

**BBM Integration**

There are three parts to setting up the BBM Integration: a Tenant ID, an optional Message Router and exporting the configuration. The BBM configuration will need to be updated when the Message Router connection settings, the device transmission frequency, the protected messages only flag, or the username and password change.

- A Tenant ID was generated for your Retain system when this page was loaded. It is used to identify your system during the registration and data collection processes.
- The Message Router can receive the registration and data collection requests from the devices and forward them on to your Retain Server.
- The Retain BBM configuration needs to be exported from Retain and then imported into the BlackBerry console.

|                                 |                                      |                  |
|---------------------------------|--------------------------------------|------------------|
| Tenant ID                       | c148f879-6ca3-4063-9cda-6b0f4bc6dc6a |                  |
| Use Message Router              | <input type="checkbox"/>             |                  |
| Device Transmission Frequency   | <input type="text" value="60"/>      | minutes (5-1440) |
| Only Archive Protected Messages | <input type="checkbox"/>             |                  |

4. Obtain a SSL security certificate for destination server/or router (if not already obtained)  
The security certificate must be obtained to configure the Blackberry Identity console. The security certificate needs to be in base 64 format.
5. Go to the Blackberry Enterprise Identity Console. (<https://idp.blackberry.com/enterprise>)

To access: Enterprise Identity By BlackBerry

Username

Password

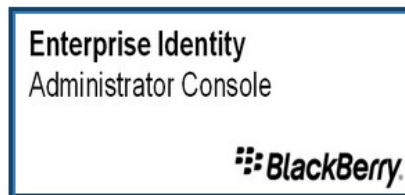
[Forgot password?](#)

[Don't have a BlackBerry ID? Create one.](#)

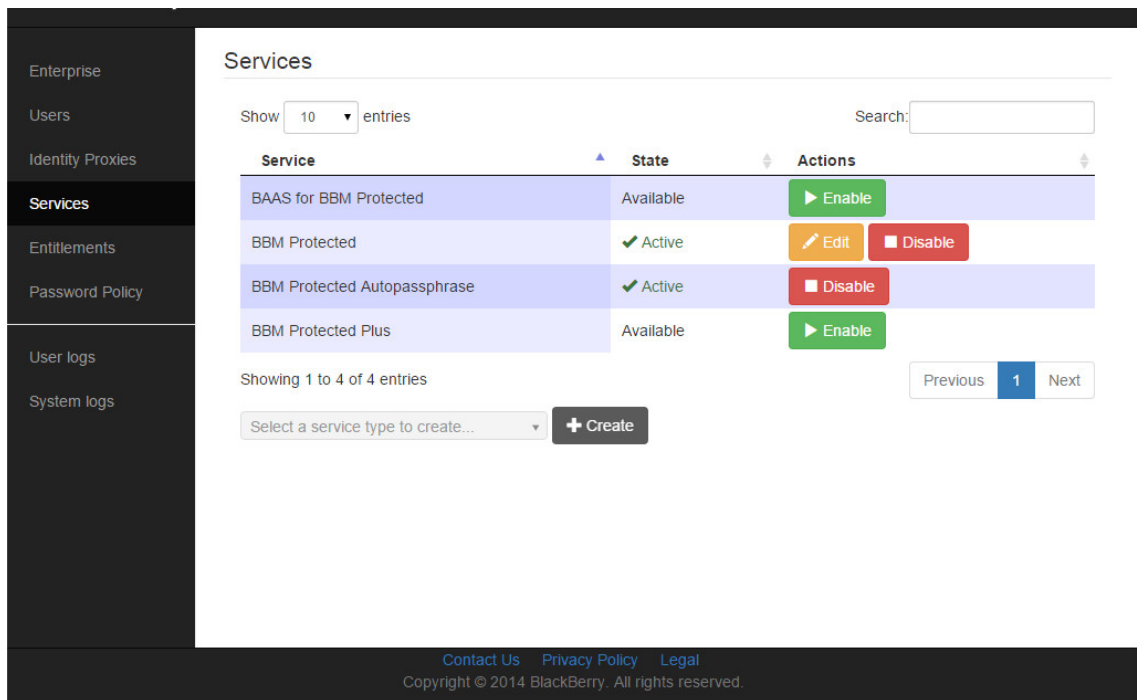
6. Enter the credentials provided by Blackberry when account was created.
7. Enter administrator console.

---

Welcome to Enterprise Identity by BlackBerry. Click the service below that you want to access.



8. Select the 'Services' page.
9. BBM Enterprise must be enabled.



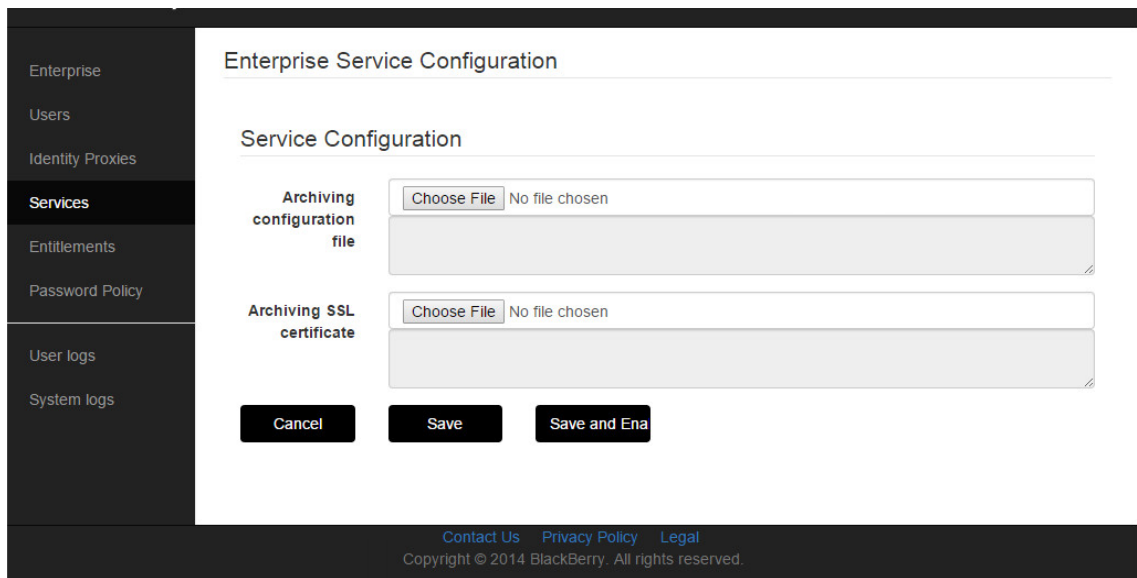
- Enter 'entitlements' and invite users/devices to be added to the service (In this case BBM Enterprise)

Users must first be added to the BBM Enterprise system before they can be added to Retain BAAS.



- Enable BAAS for Protected.

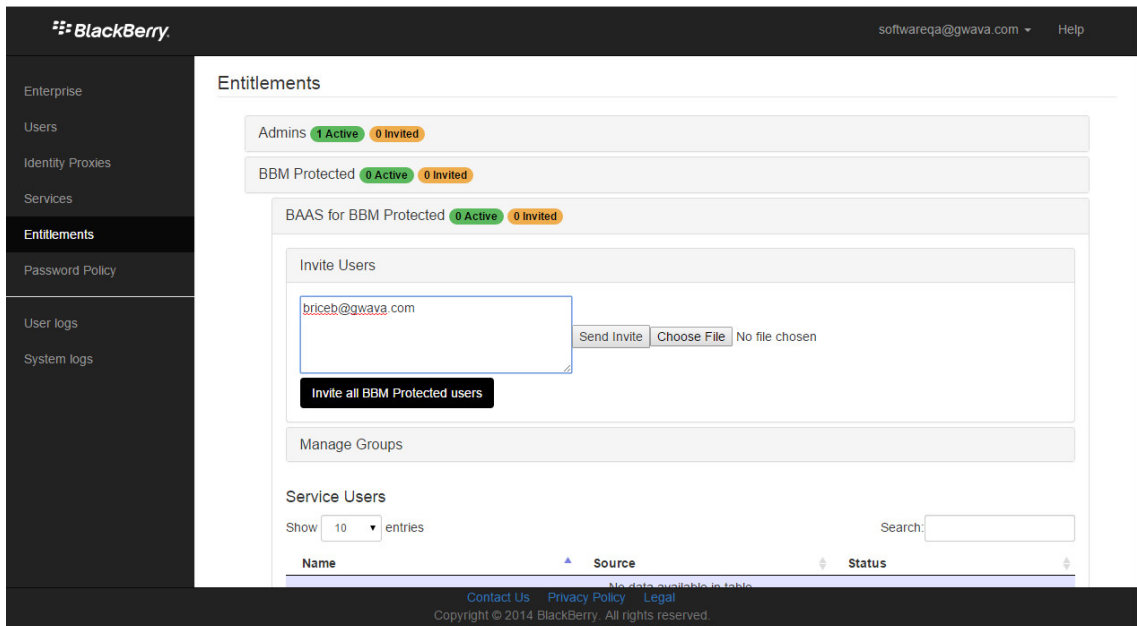
To enable BAAS for protected, from the 'Services' tab, select the 'enable' button for BAAS. There are two files which must be uploaded to the BlackBerry Identity Console, these are the two files saved earlier: the full chain SSL security certificate for the Retain Server or the Retain router, (whichever is going to be used), and the BBM Configuration file created in step 3.



The Archiving configuration file is the BBM Configuration File, and the full chain SSL certificate needs to be uploaded to the 'Archiving SSL Certificate' section. Select the 'Choose file' button and browse to the appropriate file to upload it. Once both files have been uploaded, select the 'Save' button.

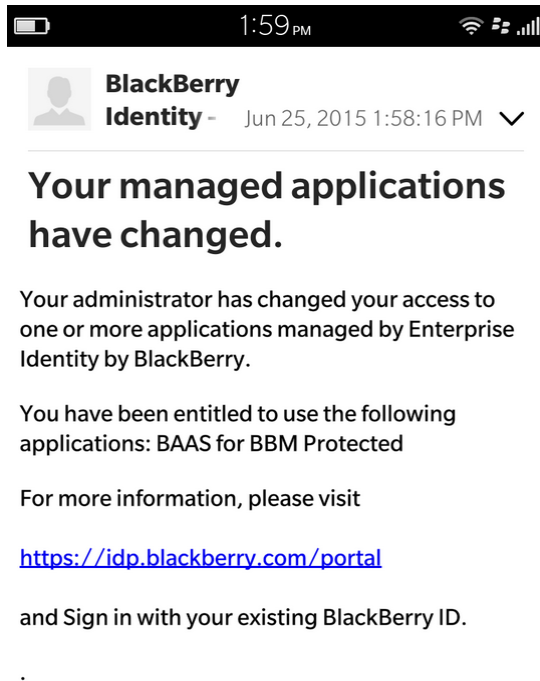
## 12. Enter Entitlements and invite users

Users invited to BAAS MUST already be users of BBM Enterprise. If users are not registered to use BBM Enterprise, BAAS will not work. First invite them to BBM Enterprise, and then invite to BAAS after the device has been registered with the BBM server for BBM Enterprise service.





13. Users will be notified that they have been added to the archiving



Once the devices and users have been invited to join the BAAS program, they will be sent a notification that they are now part of the BAAS archive.

They are now part of the BAAS system and their BBM Enterprise communication will be added to the Retain BAAS archive.

## Blackberry Device Management

Devices are deleted from Retain through the Device Management interface. “[Device Management Overview](#)” on page 481

## Blackberry Support Explained

Retain supports archiving data from both Blackberry devices and devices running the BBM Enterprise system. Devices running the BBM Enterprise system can have their communication data archived through the BBM app, obtained from Blackberry.

**Device Management**

Before managing devices, make sure the Mobile Profile is properly configured.

- Mobile devices can be added for existing Retain users or for a new user.
- Once added, an email with a registration .json file and link will be sent to the user.
- The user should open the email on the device and download the .json file or click the registration link.
- Once the registration completes, messages should flow from the device to the Message Router and then to Retain.
- Deleting a device will stop the message flow to Retain and un-register the device.
- Note: User provisioning options in the Mobile Module should be configured appropriately to ensure user accounts are created.

**Device List**

| <input type="checkbox"/> | Enrollment Code | Display Name   | E-Mail Address          | Phone Number | Device ID                | UID | Time of Registration |
|--------------------------|-----------------|----------------|-------------------------|--------------|--------------------------|-----|----------------------|
| <input type="checkbox"/> | CL38FBO         | Aileen O'Leary | aileen@sfgw14.gwava.net |              | VZDZQCNTPED53JY2TYBOM6WX |     |                      |
| <input type="checkbox"/> | 08C6SBC         | Aiden Li       | aiden@doc.gwava.net     |              | I4JR4PTKQDBPB808K3MZESAZ |     |                      |
| <input type="checkbox"/> | OIDMG8C         | Leroy Jenkins  | leroy@sfgw14.gwava.net  |              | AE8GJQ516OS0MOIMJYSCTX9V |     |                      |

Devices Selected: 0

**Batch Device Registration**

See sample for the expected structure. [Example](#)

No file selected.

The Blackberry device page displays all devices which have been registered into the Retain system. Native Blackberry and BBM Enterprise devices are displayed together. Retain registers Blackberry devices through log files from the BES server or through data sent by the device running the BBM Enterprise application. If a device is not yet registered, it is either not in the BES address book or no data has been archived for the device. The device list may be filtered for any specified content desired. In addition, devices may be selected for removal.

## Next Step

Configure [“Blackberry Jobs”](#) on page 326.

## Google Apps Module

The Google Apps module for G Suite allows Retain to archive Gmail data items. To configure Retain for Gmail archiving, Retain needs Gmail to be configured to allow Retain access, and the appropriate information entered into Retain.

Google Apps requires that a project be created, an OAuth key created and a Service Account specified and enabled before the Retain system can connect and archive mail.

To archive from Google Apps:

- ◆ Create a project
- ◆ Create a new Client ID key
- ◆ Record client secret
- ◆ Create a Service Account and Manage API Client Access
- ◆ Generate a P12 key certificate

# Google Apps Authentication Setup

Retain supports two-factor authentication with OpenId Connect for OAuth 2.0. To utilize OpenId the Retain Server needs to be accessible from the Internet. The URL through which the Retain Server is accessible from the Internet must be specified. For this, you must create a Project and Client ID.

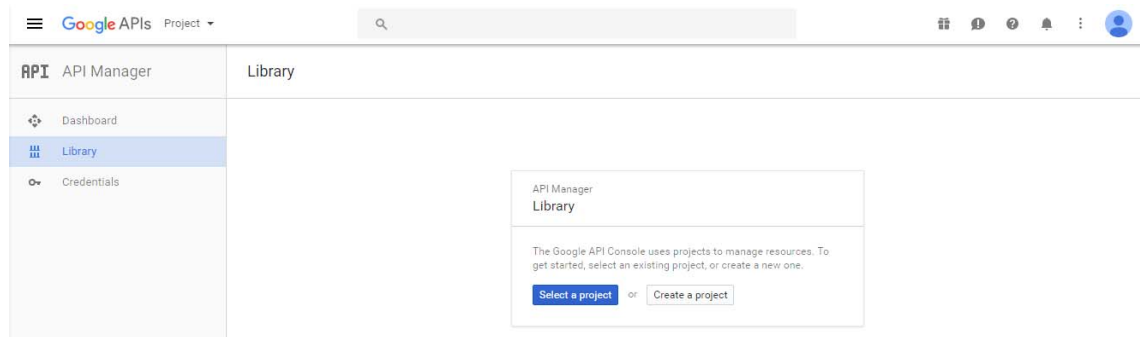
---

**IMPORTANT:** You must use the Google Apps Admin user when following the step below. If you use a user that has been given admin rights, the connection fails.

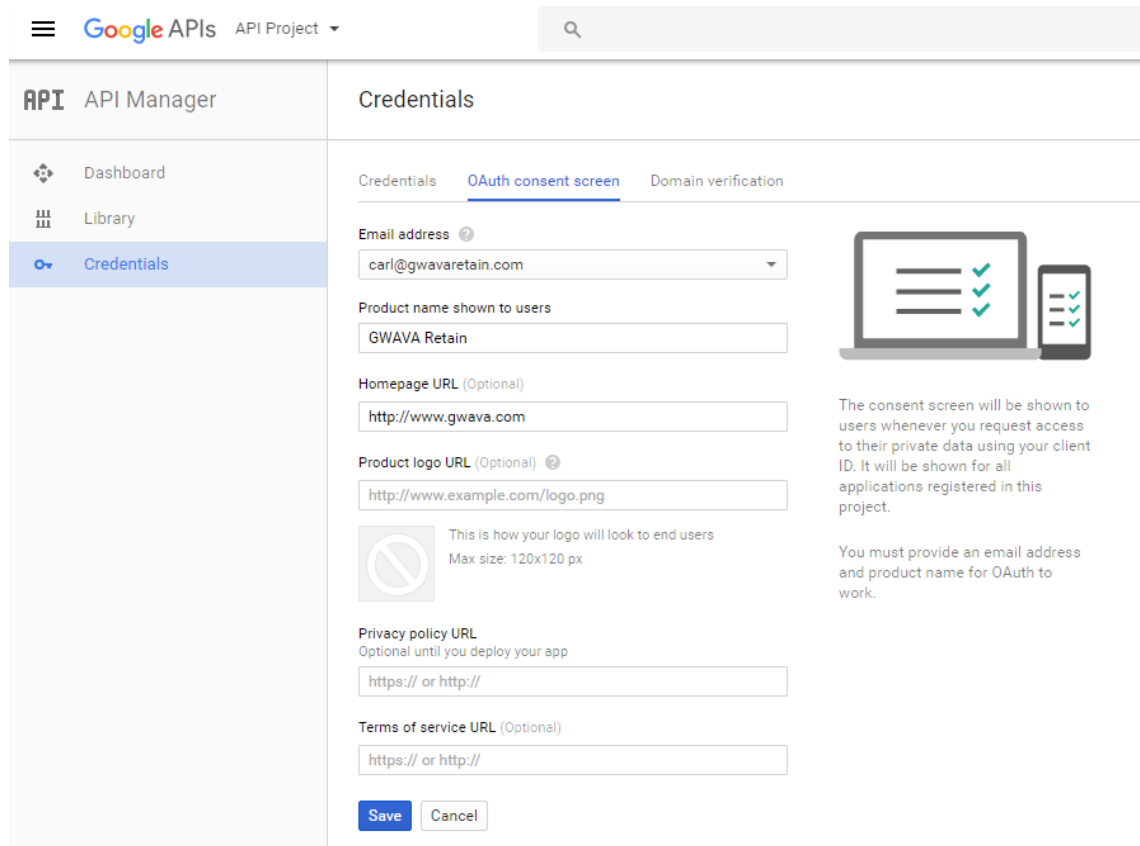
---

To configure OpenID for Retain use:

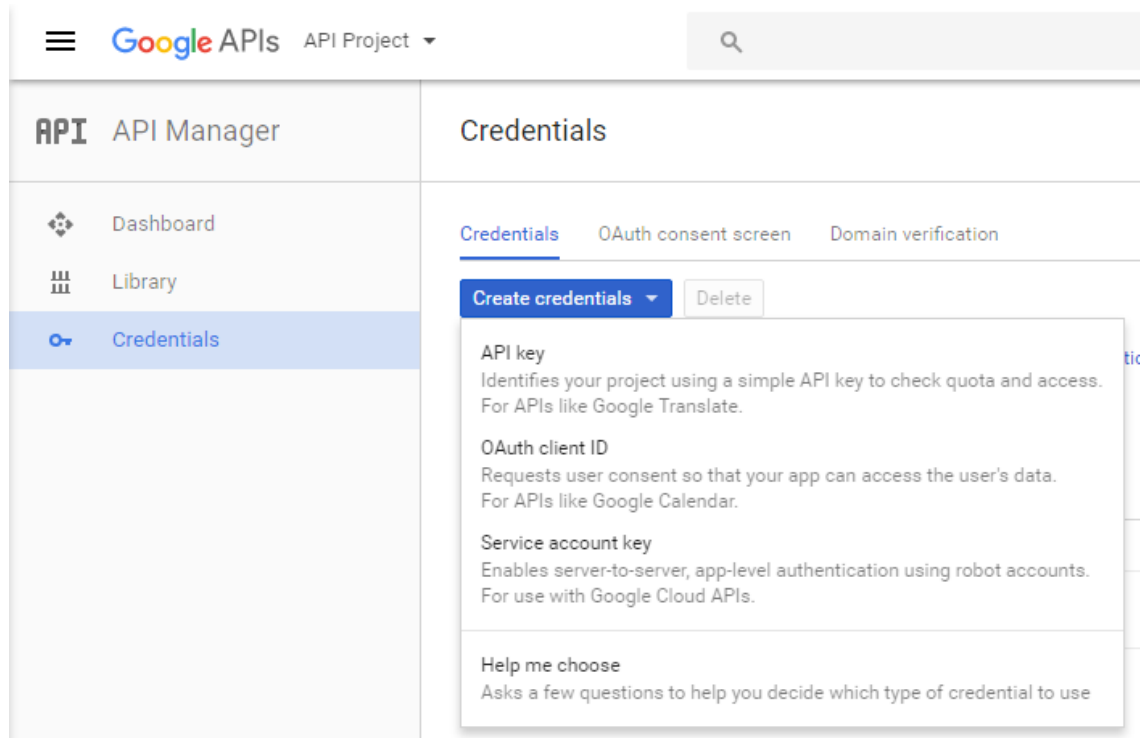
1. Go to the Google API Console, and select 'Create a project'



2. In the sidebar under "API Manager", select 'Credentials' and then select 'OAuth consent screen tab
3. Choose an 'Email Address', specify a 'Product Name', and press 'Save'



4. In the 'Credentials' tab, select the 'Create credentials' drop-down list, and select OAuth client ID



- Under 'Application type', select 'Web application' and Specify a name. The origin field should be the Retain Server's URL.

If using two-factor authentication for GMail login, enter an Authorized redirect URL (e.g. `http://retain.gwava.com/RetainServer/Server/openIdConnect.jsp?`).

When complete, select the 'Create' button.

API Manager

Dashboard

Library

Credentials

←

Create client ID

Application type

- Web application
- Android [Learn more](#)
- Chrome App [Learn more](#)
- iOS [Learn more](#)
- PlayStation 4
- Other

Name

Retain

Restrictions

Enter JavaScript origins, redirect URIs or both

**Authorised JavaScript origins**  
For use with requests from a browser. This is the origin URI of the client application. It can't contain a wildcard (`http://*.example.com`) or a path (`http://example.com/subdir`). If you're using a nonstandard port, you must include it in the origin URI.

http://retain.gwava.com ×

http://www.example.com

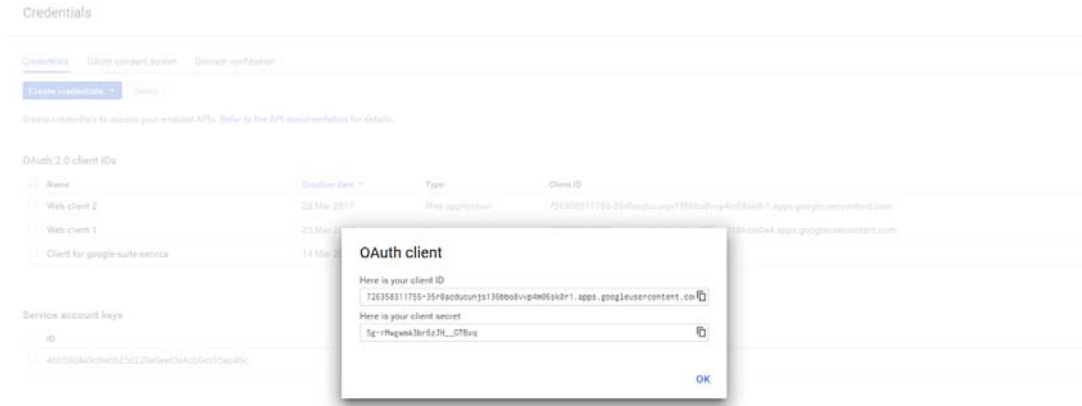
**Authorised redirect URIs**  
For use with requests from a web server. This is the path in your application that users are redirected to after they have authenticated with Google. The path will be appended with the authorisation code for access. Must have a protocol. Cannot contain URL fragments or relative paths. Cannot be a public IP address.

http://www.example.com/oauth2callback

Create Cancel

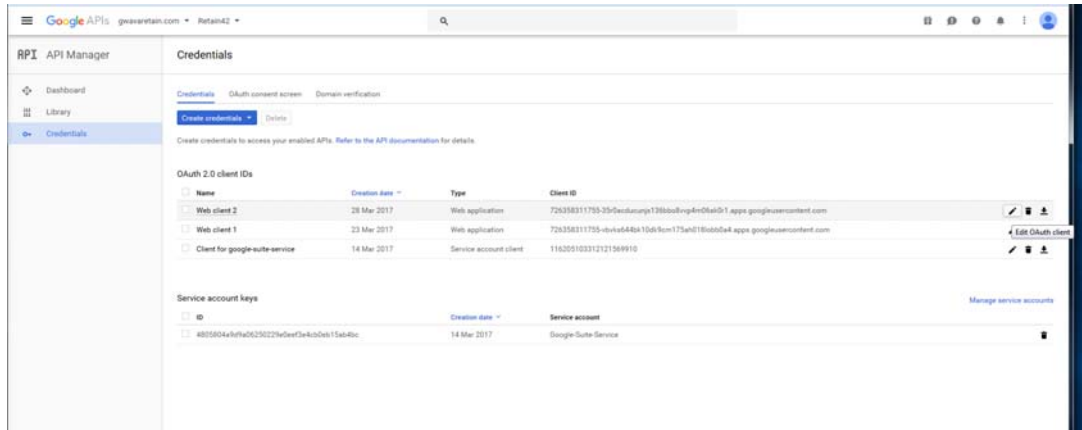
- The OAuth client dialog box should be displayed. This dialog box contains the Client ID and Client secret.
  - Copy the Client ID and paste it into the Retain Client ID field in the Google Apps module configuration. Do not lose the client secret.

- ◆ OAuth access requires the secret and ID. *This is the only time the secret will be displayed.*

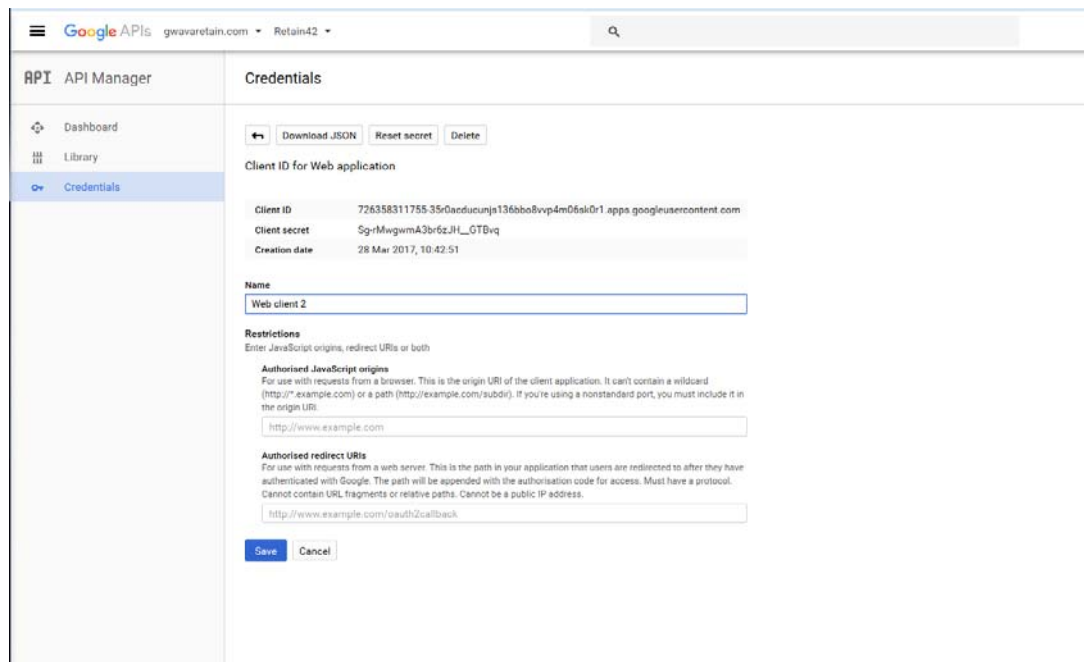


To attain the client secret for an existing project:

- Select the Web Client and click the *Edit OAuth Client* button

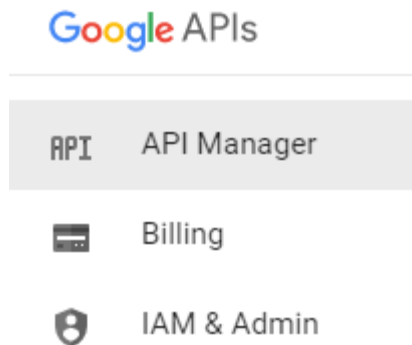


- Copy the Client ID and Client Secret which is required to configure OpenId tab for Google apps module.

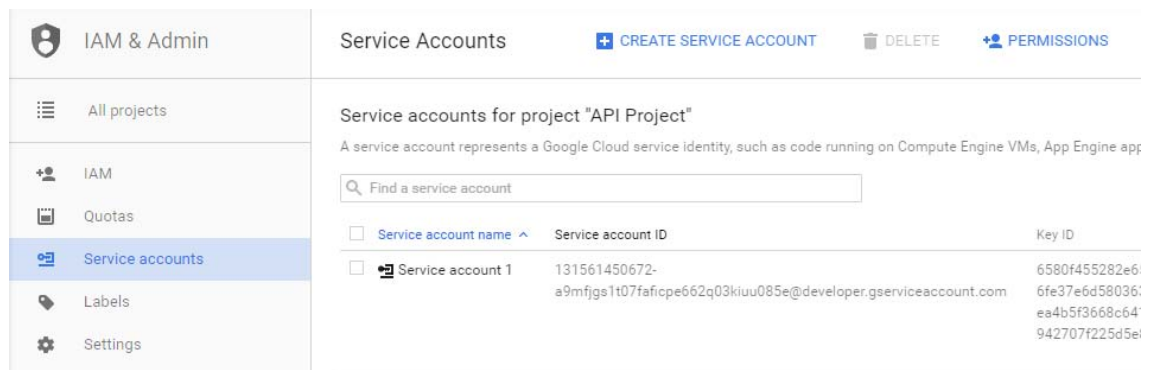


The OAuth Client needs to be enabled for domain-wide delegation to function. To enable domain-wide delegation, Retain requires a service account.

- From the Products and Services hamburger menu at the top-left: Select IAM & Admin



- Select the 'Service Accounts' and click the 'Create service account' button



9. Configure the Service Account Name and ID. No Role is needed.
- ◆ Select the option to Enable Google Apps Domain-wide Delegation.
  - ◆ Enable "Furnish a new private key" and select the P12 file.
  - ◆ Copy the Service Account name and ID. These are required by Retain.
  - ◆ Click 'Create'.

## Create service account

**Service account name** ? **Role** ?

Retain-Service Select a role

**Service account ID**

retain-service @civil-charmer-824.gwavaretain.com.iam.gserviceaccount.com ↻

**Furnish a new private key**  
Downloads a file that contains the private key. Store the file securely because this key cannot be recovered if lost.

**Key type**

JSON  
Recommended

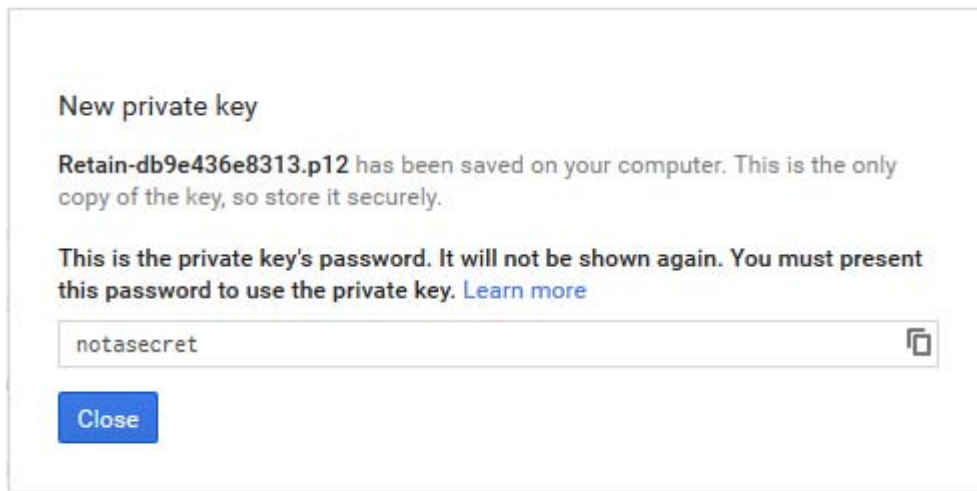
P12  
For backward compatibility with code using the P12 format

**Enable G Suite Domain-wide Delegation**  
Grants a client access to all users' data on a G Suite domain without manual authorisation on their part. [Learn more](#)

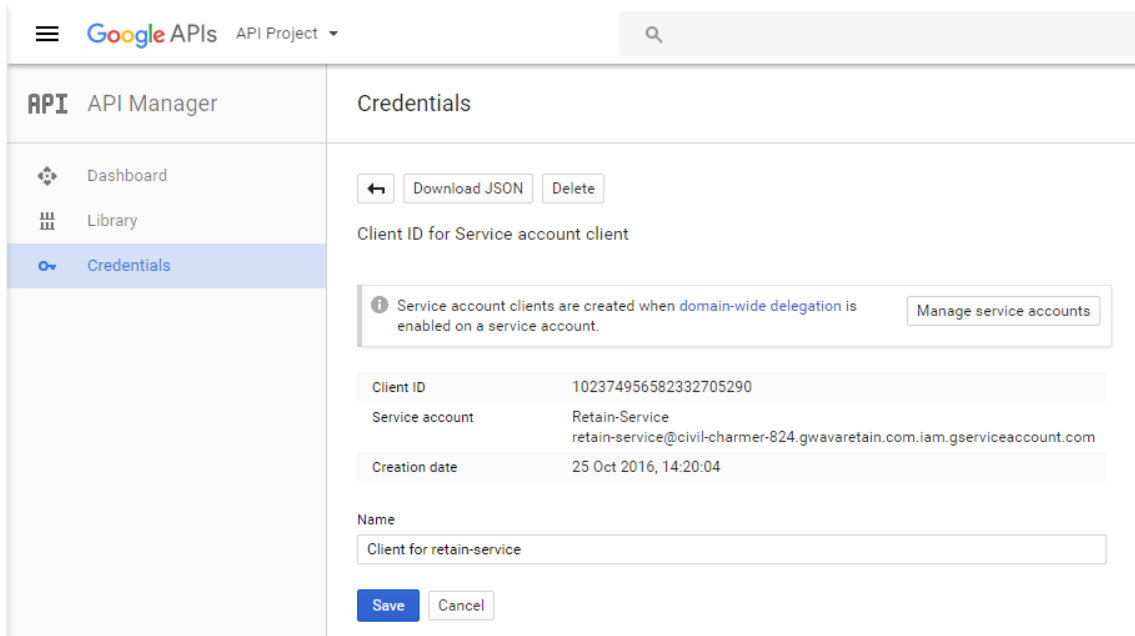
**CANCEL** **CREATE**

The key will be automatically created and downloaded to the local machine. Do not lose the P12 file. This is the only copy and it is required to configure Retain.

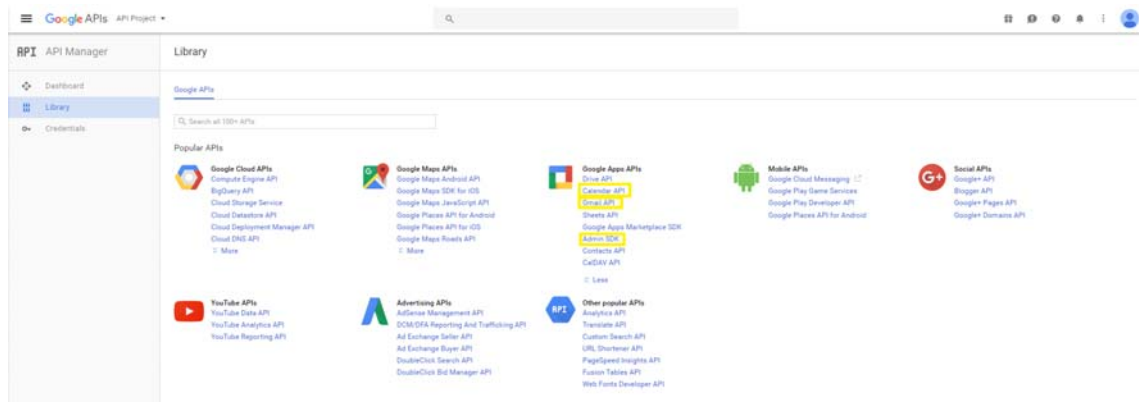




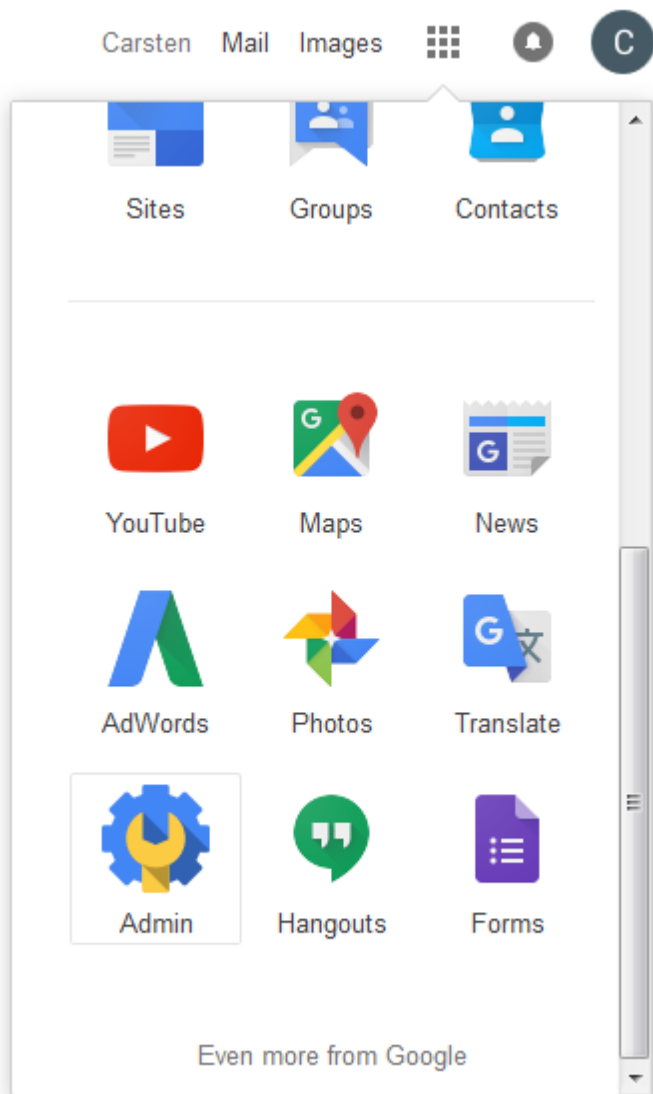
10. You will need the Client ID from the Service Account



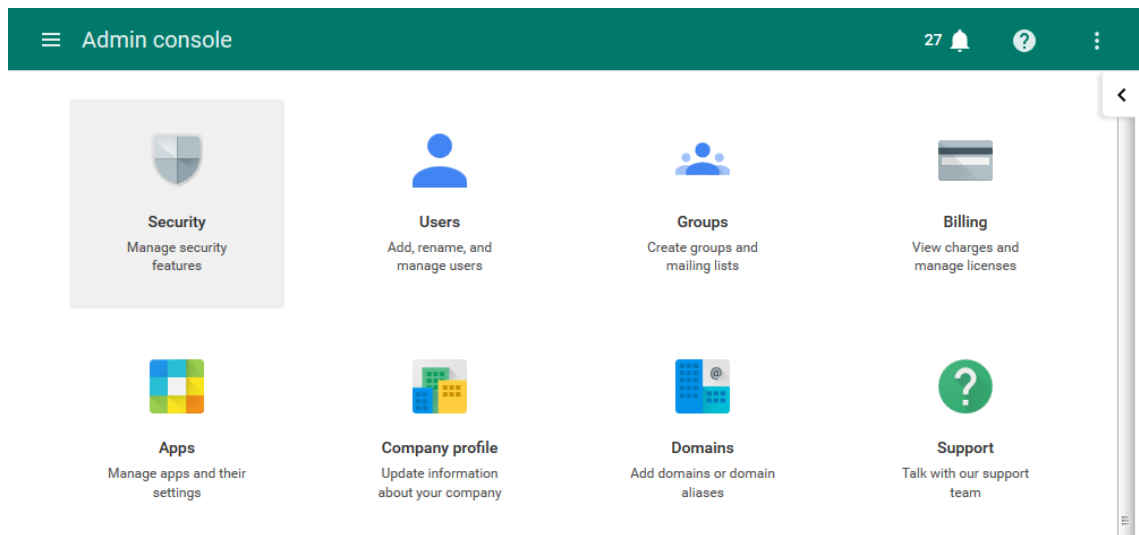
11. Go back to the API manager and enable: Calendar API, Gmail API and Admin SDK. Click on each one and click Enable on top.



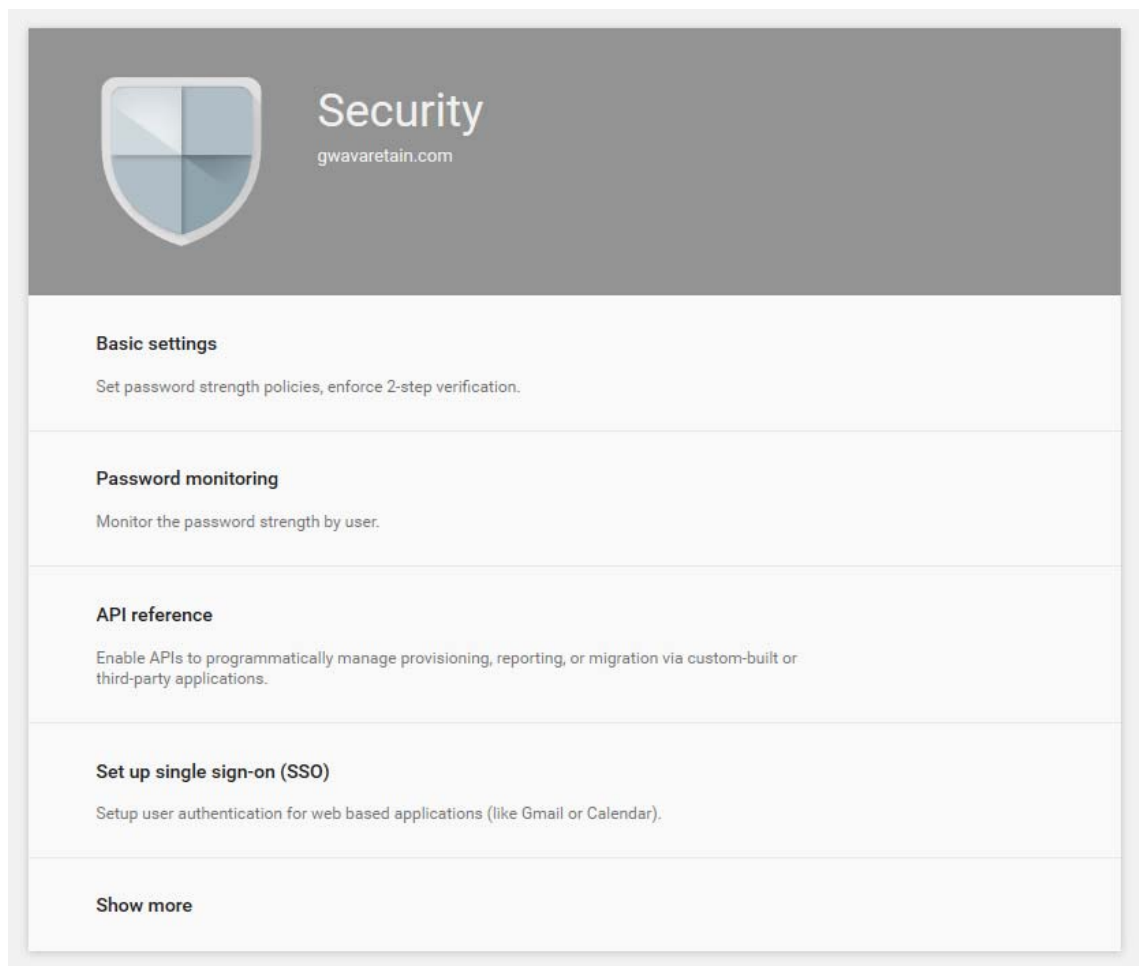
12. The last step is to authorize the domain. Browse to the Google home page and select 'Admin' from the drop down menu at the top right.



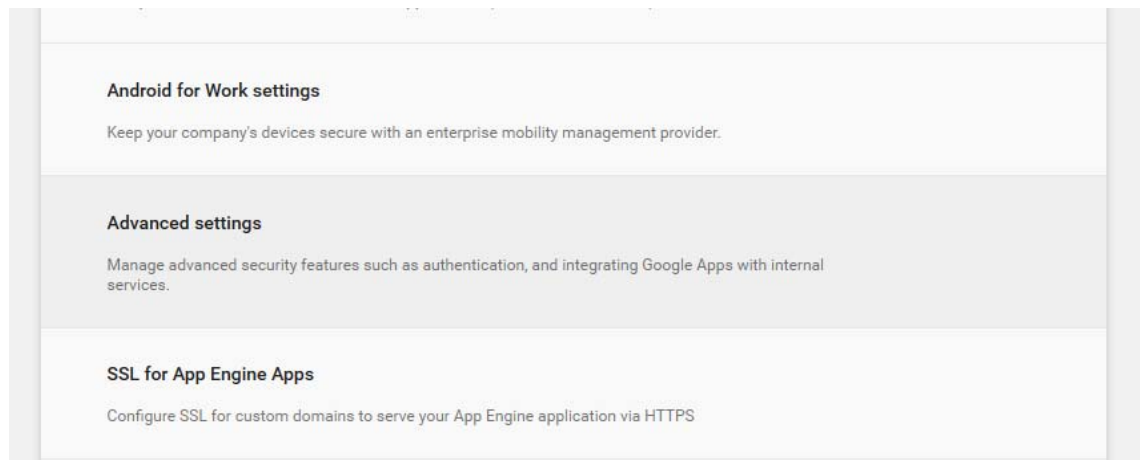
13. Select 'Security' from the administration menu.



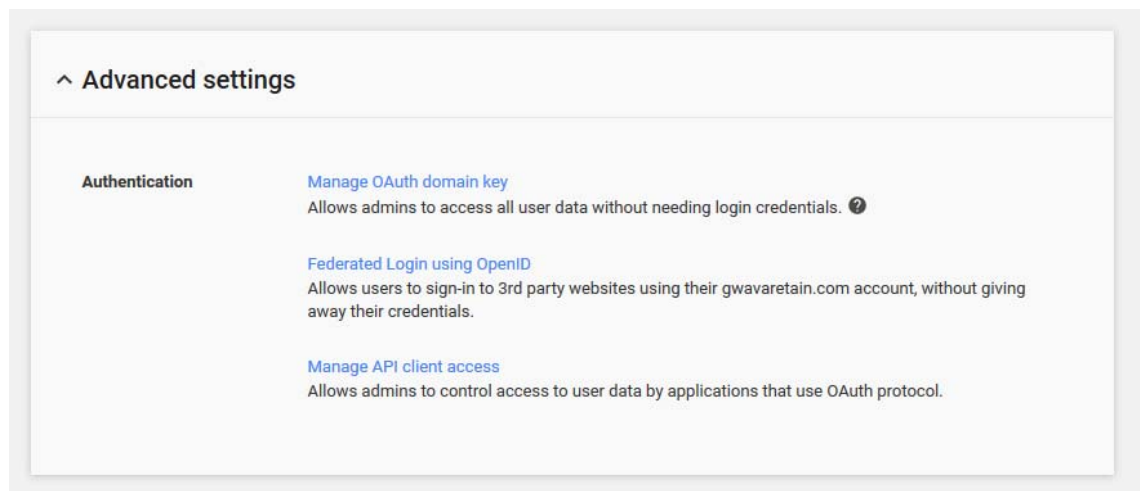
14. From the Security menu, click 'Show More'



15. Select the 'Advanced Settings' option.



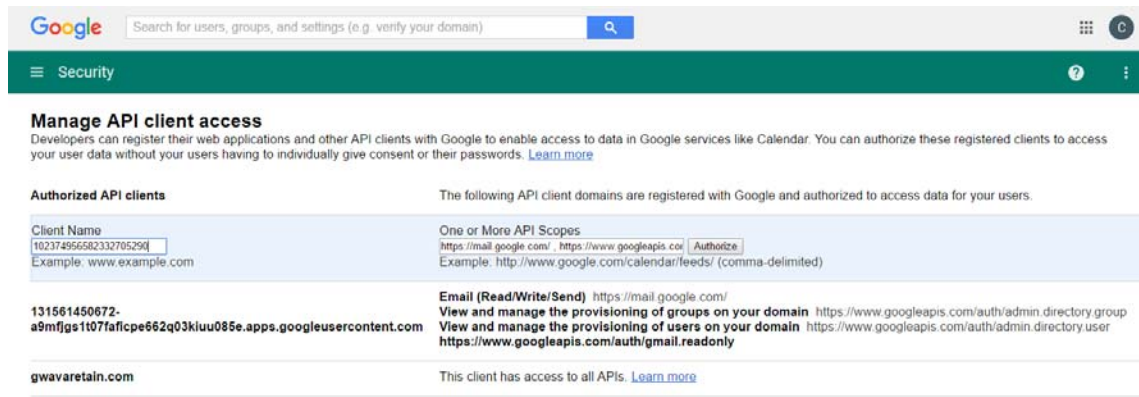
16. On Advanced Settings, select 'Manage API client access'



17. In this window, enter the client ID created with the service account, and then input the entire domain the client will be accessing.

The Service Account name would be like Retain-Service as above and the API Scopes (listed in the module) would be:

<https://mail.google.com/> , <https://www.googleapis.com/auth/admin.directory.group> ,<https://www.googleapis.com/auth/admin.directory.user> ,<https://www.googleapis.com/auth/gmail.readonly>



18. Once entered, click 'Authorize'.

## Google Apps Module Setup

All configuration required is now complete in Google Apps, and the information and files keys are available for configuration of Retain.

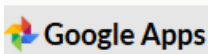


## Core Settings Tab—Google Apps

Once Google has been configured to allow access to Retain, the Google Apps Module may be configured.

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

Connections to Google Apps are configured here.

Core Settings Settings OpenId

**Core Settings**

Normally all of these entries should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|                             |                                     |
|-----------------------------|-------------------------------------|
| Module name                 | GoogleApps-1                        |
| Enable Address Book Caching | <input checked="" type="checkbox"/> |
| Enable Authentication       | <input checked="" type="checkbox"/> |
| Enable Jobs                 | <input checked="" type="checkbox"/> |

Normally this entry should be disabled.

- Send Google Apps items to an external system.

Select Send Method

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

Address book caching must be enabled to gather and maintain an updated list of users. Authentication is used to allow access to the Retain message store for users based on their existing Gmail account login. If the Enable Jobs option is not enabled, no jobs may be completed with the Google Apps module.

## Settings Tab—Google Apps

In order to connect to the Google system, Retain requires the email address of the Admin user OAuth Service Account and a p12 Certificate for authentication. Retain archives the Gmail system through IMAP, and will login and download the message data to the Retain data store.

**Google Apps**

Connections to Google Apps are configured here.

Core Settings Settings **OpenId**

**Connection**

Provide the information necessary to establish a connection. [A guide for Google API Authentication settings can be found here](#)

Add the following API scopes to the client id in the Google Admin Console under Security/Advanced/Manage API client access:  
 https://mail.google.com/ , https://www.googleapis.com/auth/admin.directory.group ,https://www.googleapis.com/auth/admin.directory.user ,https://www.googleapis.com/auth/gmail.readonly

|                                        |                                                                             |                                                            |
|----------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------|
| Email address of OAuth Service Account | 131561450672-a9mfjgs1t07fagicpe662q03kiuu085e@developer.gserviceaccount.com |                                                            |
| Certificate as p12 file                | A Certificate has already been uploaded                                     | <input type="button" value="Browse..."/> No file selected. |
| Email address of Admin User            | carl@gwavaretain.com                                                        |                                                            |

Test the connection to ensure that the configuration has been completed correctly.

Jobs and profiles for Gmail will not be visible until the address book has been cached. After the module has been cached, all configuration options for profiles, workers, schedules, jobs and data storage will be enabled and visible.

## OpenID Tab—Google Apps

Configure the OpenId Connect tab in Retain by inputting the Client ID, the Client Secret, and the Public RetainServer URL and saving changes. NOTE: The public RetainServer URL should look something like `http://<yourdomain.com>/RetainServer`. Only specify to the ".../RetainServer" portion of the URL, the rest is automatically filled-in. Specifying the complete URL will result in a connection error.

**Google Apps**

Connections to Google Apps are configured here.

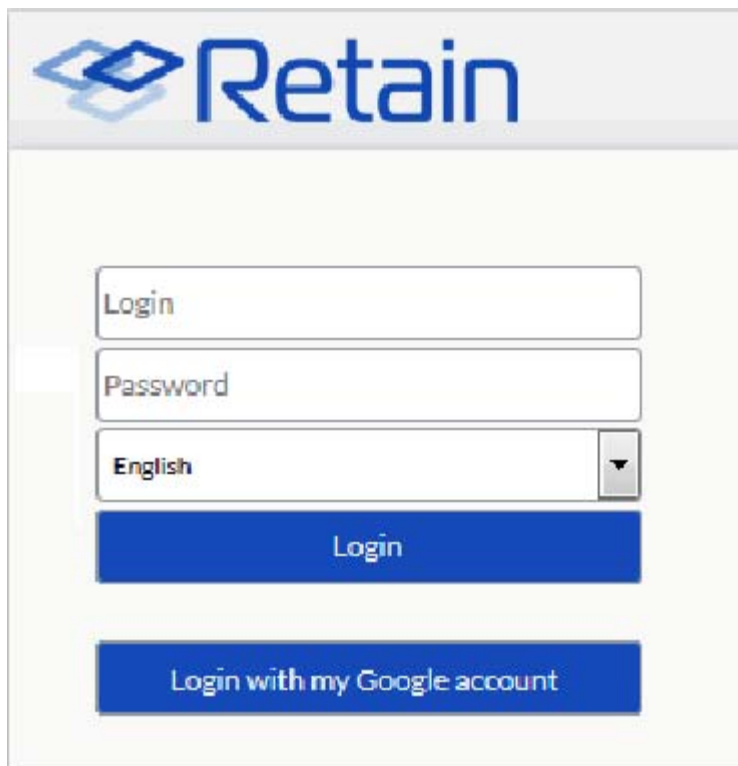
Core Settings Settings **OpenId**

**OpenId Account**

OAuth 2.0 client info

|                         |                                                                          |
|-------------------------|--------------------------------------------------------------------------|
| Client ID               | 726358311755-vbvks644bk10dk9cm175ah018lobb0a4.apps.googleusercontent.com |
| Client Secret           | u7C2-CW4_ZNtffyvhNrfVsG                                                  |
| Public RetainServer URL | http://retain4.qa.gwava.com/RetainServer                                 |

If Retain has been configured with OpenId credentials, the login page will display an option to login with Google credentials. If a user is currently logged-in to their Gmail account, simply clicking the "Login with my Google account" button will automatically log them into Retain.

The image shows the Retain login interface. At the top left is the Retain logo, which consists of a blue icon of two overlapping squares and the word "Retain" in a blue sans-serif font. Below the logo are four input fields: a text box labeled "Login", a text box labeled "Password", a dropdown menu currently showing "English", and a blue button labeled "Login". Below the "Login" button is another blue button labeled "Login with my Google account".

## Next Step

Configure [“Google Apps Jobs”](#) on page 329.

## Bloomberg Module

The Bloomberg module allows the collection of Bloomberg IM and Mail messages from the daily FTP downloads allowed from the Bloomberg System.

As electronic business communications, Bloomberg Mail is subject to the same compliance regulations as other electronically stored information. Potential litigation makes it critical for companies to archive this data and make it available for discovery. The U.S. Securities and Exchange Commission (SEC) also mandates retention.

### Prerequisites—Bloomberg

On the Bloomberg server create a user that Retain can use to log into the Bloomberg SFTP server.

### Module Configuration—Bloomberg

The module must be configured before archiving may occur.

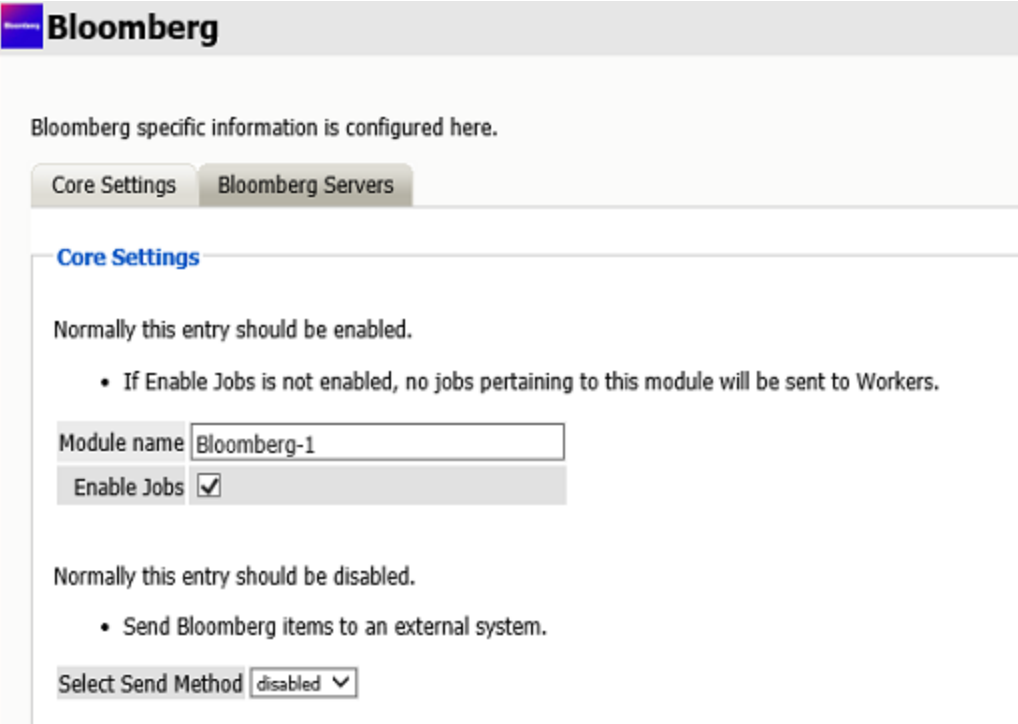


## Core Settings tab—Bloomberg

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.



The screenshot shows the Bloomberg configuration interface. At the top, there is a header with the Bloomberg logo and the title "Bloomberg". Below this, a sub-header states "Bloomberg specific information is configured here." There are two tabs: "Core Settings" (which is active) and "Bloomberg Servers". Under the "Core Settings" tab, there is a section titled "Core Settings" with the following content:

- Normally this entry should be enabled.
  - If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

Configuration fields include:

- Module name:
- Enable Jobs:

Below this, there is another section:

- Normally this entry should be disabled.
  - Send Bloomberg items to an external system.

Configuration field includes:

- Select Send Method:

Select Send Method: Send Bloomberg items to an external system via FTP or SMTP. Normally this entry should be disabled.

## Bloomberg Servers Tab

Add Bloomberg Server: Click on the green plus sign to add a Bloomberg server to download from. Multiple servers can be added.

Bloomberg specific information is configured here.

Core Settings Bloomberg Servers

Bloomberg CCNS SFTP Servers

The Retain Worker needs to know where the Bloomberg CCNS log files are located.  
Retain accesses the Bloomberg Servers via the SFTP protocol.

+ Add Bloomberg Server

Server Name Bloomberg Server 1

Logfile Path /opt/beginrate/retain/RetainWorker/logs

Number of days to keep log files  Delete log files after archive?

SFTP Host 151.155.210.52

SFTP Port 22

SFTP User sftpuser1

SFTP Password

SFTP SSH Key Filename /opt/beginrate/retain/RetainWorker/keys/private

SFTP SSH Key Passphrase

SFTP Encryption Key Filename /opt/beginrate/retain/RetainWorker/keys/pppprivate

SFTP Encryption Key Passphrase

Test Connection

**Server Name:** The name Retain will use to reference Bloomberg messages. You can use any name you wish.

**Logfile Path:** Where the worker will transfer the logfiles to locally before processing. The log file path must be unique for each server.

**Delete log files after archive?:** By default, Retain processes and archives the log files, keeping the log files in the Logfile Path directory indefinitely. Disabling this option allows you to set the *Numbers of days to keep Logfiles* option.

**Number of days to keep Logfiles:** How many days to keep the files downloaded from Bloomberg before Retain deletes the logfiles from the log file directory. 0 means never delete the files.

**SFTP Host:** The IP address or hostname of the Bloomberg server.

**SFTP Port:** Port 22, by default, but can be changed by the admin.

**SFTP User:** This user is created on the Bloomberg server by the Bloomberg server administrator. The user can authenticate either through password or SSH using a private key.

**SFTP Password:** This password is created on the Bloomberg server.

**SFTP SSH Key Filename:** The local path to the SSH key file downloaded from the Bloomberg Server.

**SFTP SSH Key Passphrase:** Created on the Bloomberg server.

**SFTP Encryption Key Filename:** The local path to the Encryption key file downloaded from the Bloomberg Server.

**SFTP Encryption Key Passphrase:** Created on the Bloomberg server.

## Next Step

Configure [Bloomberg Jobs](#).

# Mobile Module (Android)

The Retain for Mobile module allows the capture and archiving of MMS, SMS, and phone call information from Android smart phones. The mobile application, Retain Service, supports Android 4.4+ and utilizes the REST API in Retain. The Retain Service APK can be accessed on the 'tools' page. The Tools page is accessed by selecting 'Tools' from the top right of the Retain Administration interface.

You will also need to setup the RetainService app [“RetainService Android App” on page 704](#) for archiving the device, and the Retain app [“Retain App” on page 711](#) for accessing their data.

## Requirements—Mobile Module

To enable mobile data archiving the following tasks must be completed, in order:

For the newer application supporting Android 4.4+

1. The Router must be installed and be available outside the host network. (in DMZ) Server or Router must have a 3rd party signed TLS certificate.
2. The Mobile Module must be configured.
3. The Retain Android application (4.4+), must be installed to users' phones.
4. Devices must be registered under 'Device Management'.
5. Users must use the registration email to verify device registration with the Retain server.
6. The Storage path folder(s) must be manually created.
7. If the user will travel internationally it is important to set the device to connect with port 80 as port 48080 is blocked by telecom companies across borders.

---

**NOTE:** Jobs and Workers are not required with Retain Service, they are only present here to provide support for the legacy Android application. Retain Service utilizes the REST API, and will function as soon as the above steps have been completed. No additional work is necessary.

---

The Retain Router should be installed in the DMZ area of the host network. The Mobile Router or the Retain Server, whichever is to be used, requires a TLS certificate signed by a 3rd party for trusted communications. The Router must be available to the Internet and the Retain Server. The Router and Worker may be installed on the same machine, or apart.

It is recommended to use a Mobile Device Management (MDM) system to distribute Retain Service to devices. When using an MDM to distribute the Retain app, the system can be set to not allow app removal. The MDM will need the package name for Retain Service, which should be set to *com.gwava.retain.mobile*. Consult the MDM's documentation for instructions.

MDMs that have been tested with Retain include:

- ◆ ACE
- ◆ Airwatch
- ◆ BES
- ◆ Citrix XenMobile
- ◆ Good Dynamics

- ◆ Google XenMobile
- ◆ MobileIron
- ◆ Blackberry Dynamics

The application sends collected information, approximately every hour, to the Retain Router. *No data will be archived until the application is registered and configured.*

In the user's archive, the folder will be called: In-network SMS. And will contain SMS and MMS messages from the carrier.

## Configuration—Mobile Module

There are a few things that need to be configured.

### Core Settings Tab—Mobile Module

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

Mobile

Core Settings
Create Users

**Core Settings**

Normally this entry should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

Module name

Enable Jobs

Normally this entry should be disabled.

- Send Mobile items to an external system.

Select Send Method
disabled

There are two parts to setting up the Mobile Module: a Tenant ID and selecting the device connection endpoint.

- A Tenant ID was generated for your Retain system when this page was loaded. It is used to identify your system during the registration and data collection processes.
- The Message Router or the Retain Server can receive the registration and data collection requests from the devices. The Message Router will forward them on to the Retain Server.

Tenant ID
09a7ef67-e4a3-4b9b-a2a9-80150053a0e2

Use Message Router

Device Transmission Frequency
60
minutes (5-1440)

The default value for the LDAP synchronization interval is 8 hours

- Determines how often retain will sync with remote LDAP for device updates

LDAP Sync Frequency
8
hours (1-24)

Email Registration Expiration

- If you are planning to use email registration of your devices, you have the option to set the expiration time for the registration email.

Registration email expiration time in days
1

**Message Router Configuration**

The base URL to use when connecting to the Message Router.

Base URL
/RetainRouter/api/config

## Create Users—Mobile Module

The Create Users tab allows for automatic user accounts, and associated passwords mailed to the designated address or addresses.

Core Settings   **Create Users**

---

**Create Users**

Creating Retain User Accounts will provide end-user access to the archived messages in Retain system.

- During the registration process, the administrator can allow automatic creation of user accounts. If this is not enabled, the address book entries will still be created and items stored, but the administrator will have to manually create user accounts and/or link them.
- In addition, if the account is newly created, you can optionally email the administrator and/or user with the newly generated random password for the account. The password cannot be mailed if the user account already exists, since Retain does not store passwords.
- If you are planning to use email registration of your devices, you have the option to set the expiration time for the registration email.

|                                                |                                |
|------------------------------------------------|--------------------------------|
| Create user accounts automatically?            | <input type="checkbox"/>       |
| Mail the password if a new account is created? | <input type="checkbox"/>       |
| Mail to whom                                   | Both Administrators and User ▼ |
| Registration email expiration time in days     | 1                              |

Note: The mail generated can be customized. Please see the online documentation for more details.

After the module configuration has been saved, the Mobile, Profile, and Device Management menu pages will become be available.

## Worker—Mobile Module

The Worker is only required for legacy Android application support and is not necessary with the current application. The following information is only necessary for supporting older application systems.

The Mobile worker is a special worker configuration which contacts the Retain Router with all the information it needs to function. This includes the configuration settings for the data path and connection information. In general, the Mobile Worker is configured the exact same as most workers in the Retain system, however there is one setting for the Mobile Worker which is specific to the Mobile Module; the data path. The data path is essential for the worker to function with the Mobile Module. An existing worker may be used with the Mobile Module, however, it must have the bootstrap file re-uploaded once the data path has been configured.

The mobile data is delivered to the Retain Server through a router service, which must be informed how to contact the Retain Server. While the Router is gathering information between jobs, the mobile data is stored. The stored location is specified by the data path. This is why the Router and the worker must have direct and constant access to the data path; the data path stores the message data collected by the Router and retrieved by the Worker.

To ensure connection to both the data path and the Retain Server are correct, the Connection and the Module Specific tabs must be reviewed and configured. The Connection tab holds the connection address which the Retain Worker will use to contact the Retain Server. Depending on where the Server and the Worker are located in the network, and because the Worker may be installed alongside the Router in the DMZ, the connection information must be accurate to allow a clean connection to the Retain Server. An IP Address will work, but the DNS hostname of the Retain Server is also recognized and supported.

The port and address must be open or forwarded through security and firewalls from the Worker to the Server. In addition, the Retain Server will not accept connections without the password set here. The password is randomized and doesn't need to be changed.

Poling Logging Connection Module specific Status Bootstrap

### Server Connection

The worker will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Worker contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Worker or Server.

For administrators using the Reload interface, note the worker password assigned must be the same for each worker that contacts the Reload Server. As part of setting of the Reload Server, you must know this password.

|                  |                                |
|------------------|--------------------------------|
| Server Protocol  | http                           |
| Server Host Name | 10.1.12.60                     |
| Server Port      | 48080                          |
| Server Path      | /RetainServer                  |
| Worker Password  | ●●●●●●●● (Password is default) |

**Note:** Changing any of these parameters will require recopying the worker bootstrap file!

Once the Mobile Worker has been configured, save the changes. Once the settings have been saved, the worker will be created, and the configuration saved to the bootstrap file. The bootstrap file must be uploaded to the Retain Worker before the Worker will function. Select the 'Download File' link to save the configuration file. Browse to the worker's page, and upload the configuration file. Once uploaded, the worker automatically reads the configuration and checks with the Retain Server for jobs.

[Polling](#)
[Logging](#)
[Connection](#)
[Module specific](#)
[Status](#)
[Bootstrap](#)

---

**Boot Strap**

The Worker software needs a special "bootstrap" configuration file copied to its working directory before it can function correctly. You may copy it manually or use a web browser to upload the file. (<http://<RetainWorkeripAddress>/RetainWorker>)

[Download File](#)

Last downloaded: Thu Feb 19 14:14:43 MST 2015  
 Worker ID: 8BAC8663B58AE23AF84809FCACA41B2F


## Mobile Router Page

The Retain Router has its own web page. This page can be used to test the connection to the Retain Server, as well as verify that communication is open and that devices registered in the Retain Server are listed in the Retain Router.

To access the Router page, open a browser and enter the connection URL.

[http://Retain\\_Router\\_IP\\_or\\_Domain/RetainRouter](http://Retain_Router_IP_or_Domain/RetainRouter)

For example: <http://192.168.1.21/RetainRouter>



**Message Router**

Router Time: 2:09:39 AM

Retain Server: Message Router configuration missing

Tenant ID:  
 Mobile Data Path:  
 Archive Inbound:  
 Archive Outbound:

**Daily Mobile Stats**

| Date | SMS - Disabled | MMS - Disabled | Phone - Disabled | Total |
|------|----------------|----------------|------------------|-------|
|      |                |                |                  |       |

**Mobile Device List**

| <a href="#">Display Name</a> | <a href="#">Device ID</a> | <a href="#">E-Mail</a> | <a href="#">Last Connection</a> |
|------------------------------|---------------------------|------------------------|---------------------------------|
|                              |                           |                        |                                 |

Devices which are active are listed along with daily statistics. The daily statistics are reset every night.

This page is mainly an informational page.

## Customizing the Mobile Registration Email Template

The Retain registration email template (...\\RetainServer\\WEB-INF\\classes\\config\\mobile\\registeruser.html) has many variables which allow for a customized registration email. There are a few variables which must remain unchanged, but the rest may be removed or modified, as desired, to adapt the email to any organization.

This is a quick description of the different variables, and which can be modified. They are distinguished by double brackets “[[“and “]]”. The Retain Server code that sends out the email sets these variables with the product specific and user specific information.

Typically, only #1 will want to be changed – for use in mobile device management software. If an admin wishes to make the registration email to look like it is coming from their company, they should modify #'s 1-2, 6-9. However, variables 6-9 may be simply removed if the admin doesn't want users to know what they are using.

1. Your install location – This is typically the main variable to change. This variable is not included by default in the email to allow admins to utilize mobile device management software to push the Retain app to devices. It may be included in the email and filled in with the app's location so it can be manually downloaded to devices.
2. Product – This is automatically filled out with the Retain product name. Admins may set this to be the company name. This variable is used in the subject and the body of the email message.
3. Retainheader – This is automatically filled with the Retain product logo. Admins may set this to any branding or company image file. This must be an image file.
4. Name – Each user's individual username will be input here. This should not be changed.
5. GwavaURL – Automatically filled-in with a link to the Micro Focus website.
6. GwavaURLLabel – This determines text displayed for the GwavaURL link.
7. ProductNameURL – This is automatically filled-in with a link to the product website.
8. ProductNameLabel – This determines text displayed for the productNameURL link.

The registration code and information in that variable must not change. This information is generated by the device management page when the device is added.

The following variables must not change.

Do not modify the following:

- ◆ enrollmentCode: This is generated when the device is created on the device management page.
- ◆ tenantid: This is static number for retain. Displayed on the mobile page from Module Configuration.
- ◆ email: This is from the Device Management page.
- ◆ name: This is from the Device Management page.
- ◆ endpoint: This is the address of the Retain Server
- ◆ routerURL: This is pulled from the mobile page of Module Configuration.
- ◆ activateHREF: This is an identification string, a link specific to the user and installation.



## Next Step

Configure “[Mobile Jobs](#)” on page 338.

## CellTrust Module

The CellTrust SecureLine module allows the collection of data from the CellTrust SecureLine server into the Retain system. CellTrust SecureLine supports the archival of SMS from both Android and iOS phones. All devices which are supported by the SecureLine server are covered by Retain.

To archive CellTrust SecureLine information, the SecureLine server must be configured to log SMS data. The server log files are what Retain uses to collect the information about SMS activity. If the SecureLine server has not been configured to log the data, Retain will be unable to archive the information. See below for SecureLine server configuration.

Configuring the CellTrust SecureLine Module is incredibly simple. Essentially, the module needs to be enabled and configured with the log file location. Afterwards, the data is treated the same as any other data entering the Retain archive. Data is archived in the database under the user/phone it originated from and can be searched and viewed through the Search Messages interface.

To enable the CellTrust module, select the ‘Configure’ link under the ‘CellTrust’ icon from the module page.



## Core Settings—CellTrust Generation 1

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

**CellTrust SecureLine**

SecureLine specific information is configured here.

Core Settings | **SecureLine Servers**

**Core Settings**

Normally this entry should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

Module name

Enable Jobs

Normally this entry should be disabled.

- Send SecureLine items to an external system.

Select Send Method

## Adding SecureLine Servers

The log file path for each server in the system is required to archive the SMS data. To add a server to the Retain process, select the Green Plus Sign(+). Give the server a name (any name will do), and provide the log file path.


**CellTrust SecureLine**


How to collect the SecureLine server data is configured here.

Core Settings | **SecureLine Servers**

**SecureLine Servers**

The Retain Worker needs to know where the SecureLine log files are located.

 Add SecureLine Server

 Server Name

Logfile Path

The log files must be directly accessible to the worker tasked with archiving the CellTrust SecureLine data, whether through direct access or through a mapped drive. The logfile path is the direct file access path to the log files of the CellTrust SecureLine server, (/opt/PM/scheduler/external by default), and should be specified as the worker will access the log files.

## Archiving/Data Collection – Archiving Policy

Getting data into the archive is the core function of Retain. As such, sub-functions have been broken out to give you as much flexibility as possible in deciding your archive policy.

Your archiving policy will cover several points:

- ◆ What to archive (jobs)
- ◆ Includes what message server(s) to collect data from.
- ◆ What worker
- ◆ When will the data be collected (schedule)
- ◆ How to collect the data will cover (profile)
- ◆ Types of items or users to archive.
- ◆ Date range of items to be archived.
- ◆ Avoiding redundant data collection.
- ◆ Utilizing storage flags to achieve 100% retention.
- ◆ Whether to store attachments.
- ◆ Advanced criteria, such as attachment names, or folder locations.

## About Retain Job Components

### Schedule

The Schedule is the time framework that is set for the job to run on and provides the choice of how often, and when, the job is run. Single time, (job runs once), or a recurring time frame are available. Schedules are universal and are not module or job specific. They may be used for one or all jobs.

### Profile

The Profile dictates which kinds of files to retrieve from the message system. All message system items are selectable to be archived, but you may also specify time periods, exclude folders or subjects, and how the data is stored. Profiles are module specific, and the profile section contains sections specified by each module and information only applicable to that module.

The Profile also has a very important function, duplicate checking. This keeps the Retain system from storing multiple instances of the same message. Make sure you check and read the section on Purge (GroupWise), Retention (GroupWise), and Item Store (Exchange/GroupWise) flags.

### Worker

The worker is the part of Retain that actually pulls the data from the message system servers. The Worker contacts the Retain Server and gathers information on which jobs are associated with it, when to start them, and which items to get. Workers can only run one job at a time. Workers are not module specific, but may require module specific settings. These settings, where applicable, are found under the module specific tab.

## Jobs

The Jobs section is where the Worker, Profile, and Schedule are all brought together and associated into a comprehensive configuration by allowing the user to tie their configuration to a selected SecureLine server and selected user list. The desired SecureLine server must be selected. The Worker will not start archiving anything until a created job is bound to a Worker, Schedule, and Profile.

## Configuring the CellTrust Secureline Server

Retain requires the CellTrust SecureLine server to create log files for the worker to access, digest, and send to the Retain Server for storage. To configure the SecureLine server to create these files requires the scheduled run of a Gwava Report script, a tool provided by CellTrust.

The script may be scheduled through the quartz scheduler.

To configure the quartz scheduler to run the GwavaReport script, navigate to the /opt/PM/bin directory and run the start\_sched\_client.sh script, then follow the desired prompts.

For example:

```
[root@dev041201v bin]# ./start_sched_client.sh
Hi, welcome to PrimeMessage Scheduler configuration utility
You will be prompted to enter different values. Every time you finish to
enter something - just hit "Enter". You can quit any time - just enter
single 'q' character in the beginning of the line.
GOOOD LUCK!
Select operation (1 - add job; 2 - remove job; 3 - pause job; 4 - resume
job; 5 - current jobs):
1
Enter job name:
GwavaReport
Enter job class name (omit ".class" part):
GwavaReportJob
Please select Trigger type(1 - Simple, 2 - Cron):
```

At this point, select whether you want to use a Cron configuration for the triggers or a simple type – this is an example using the simple type:

```
Please select Trigger type(1 - Simple, 2 - Cron):
1
Enter delay (in seconds) before first execution:
30
Enter number of executions (0 for indefinite):
2
Enter interval between executions (in seconds):
30
Enter job additional params (String or int only)
When finished, enter empty line for attribute name
Enter attribute name:
```

The GwavaReport has no quartz attributes, so hit enter, then ctrl-c to exit the script.

Schedule the report to run as often as desired according to traffic and desired archival.

Once the report tool has run, it will place the necessary log file in the /opt/PM/scheduler/external directory. The files here are required by the Retain Worker. The Retain Worker required direct file access to these files. Whether by export or by local access, configure the CellTrust SecureLine module with the location of these files, the file location must be from the worker's point of view.

## CellTrust Generation REST Collector

CellTrust generation 2 uses the REST Collector model.

REST data flow can be monitored by the Archive User by Module Report [“Archive Summary by Module”](#) on page 456

### Prerequisites

- ◆ Install the Module License. [“Submitting a PEM License”](#) on page 101
- ◆ Install the REST License. [“Install a REST License”](#) on page 101

### Configure Retain Server Connection

Under *Server Configuration/Communications* you must setup the Retain Server Connection. This is the hostname or the public IP Address of the Retain server the host will be entered into the CellTrust system to connect to Retain. The port will be 48080 for HTTP or 443 for HTTPS protocols.

**Retain Server Connection**

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

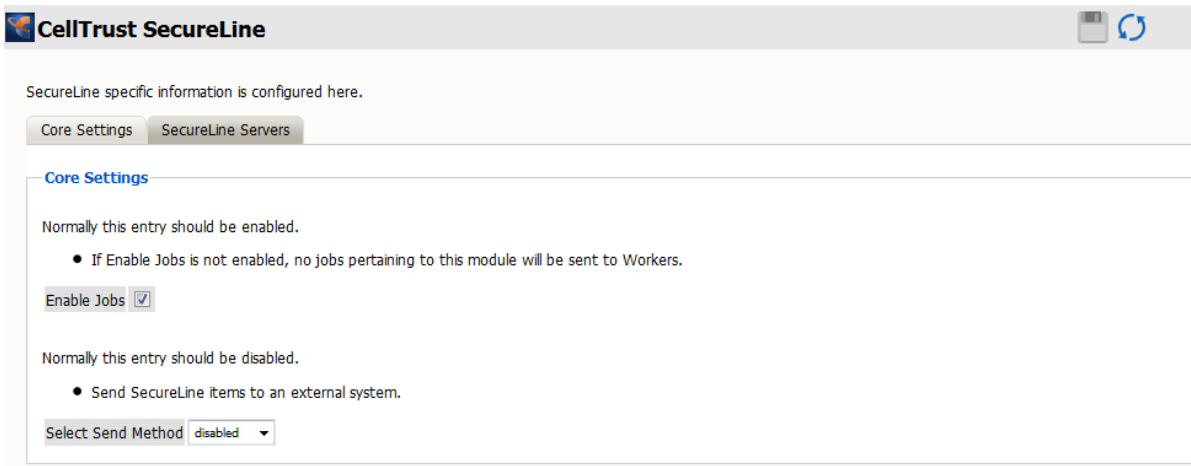
|                    |               |
|--------------------|---------------|
| Server Protocol    | https         |
| Retain Server Host | 10.1.4.10     |
| Retain Server Port | 443           |
| Retain Server Path | /RetainServer |

### Create a REST Collector

Create a REST collector under Server Configuration [“REST API”](#) on page 369. And send to your service provider.

### Configure the CellTrust Module

To configure the CellTrust module, all that is required is to enable the Jobs in the module and Save Changes.



The “Enable Jobs” box must be checked to have data archiving functionality.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page.

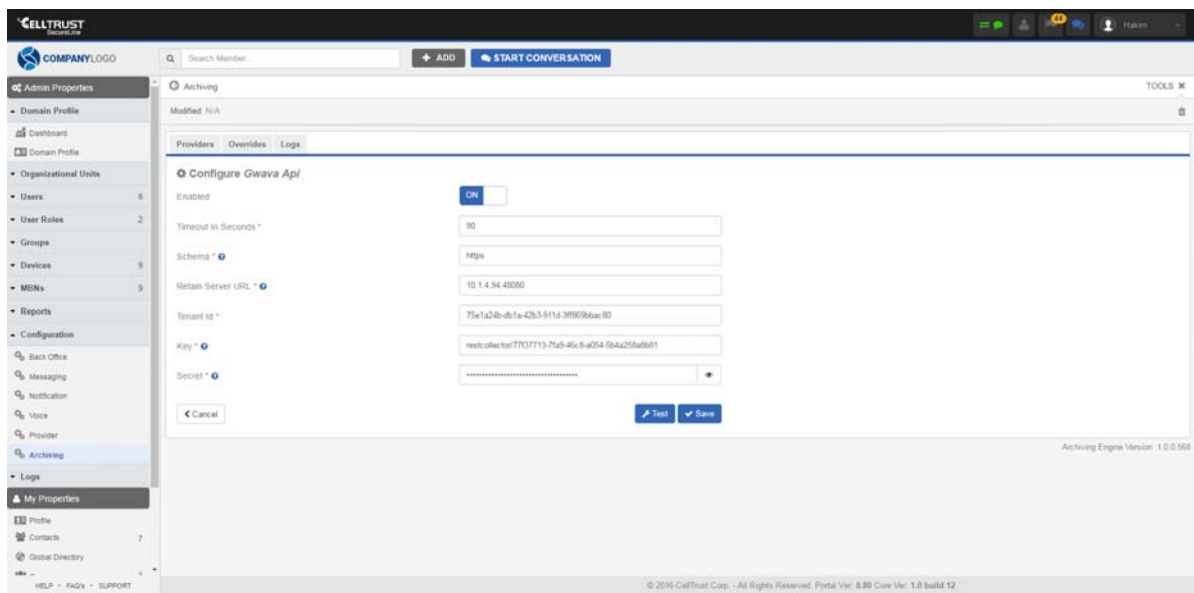
Save changes and the module is configured. You may need to disable and re-enable "Enable Job" before it will allow you to Save Changes.

There is no need to configure the SecureLine Servers.

## Configure CellTrust

The REST connection to the collector needs to be configured by the Admin on the CellTrust system side.

Provide the Retain Server URL, Tenant ID, Key and Secret.



Once the connection is made data will begin to flow into Retain from CellTrust and will appear in the user's Retain mailbox.

There are no Profiles or Jobs associated with this Module. Data flow can be monitored with the Archive Summary by Module report [“Archive Summary by Module” on page 456](#).

## GBS Notes Module

The GBS Notes module allows Retain to archive Lotus Notes/Domino communications via GBS. This is different from most modules in that there are no Profiles or Jobs. A REST API collector is connected between the GBS Notes and Retain systems and the data flows into the Retain archive as it created in the GBS Notes system. Data is archived immediately as it enters or is created in the GBS Notes system.

REST data flow can be monitored by the Archive User by Module Report [“Archive Summary by Module” on page 456](#)

### Prerequisites—GBS Notes

- ◆ Install the Module License. [“Submitting a PEM License” on page 101](#)
- ◆ Install the REST License. [“Install a REST License” on page 101](#)

### Configure Retain Server Connection—GBS Notes

Under *Server Configuration/Communications* you must setup the Retain Server Connection. This is the hostname or the public IP Address of the Retain server the host will be entered into the GBS system to connect to Retain. The port will be 48080 for http or 443 for https protocols.

**Retain Server Connection**

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |               |
|--------------------|---------------|
| Server Protocol    | https         |
| Retain Server Host | 10.1.4.10     |
| Retain Server Port | 443           |
| Retain Server Path | /RetainServer |

### Create REST Collector—GBS Notes

Create a REST collector under Server Configuration [“REST API” on page 369](#). And send to your service provider.

### Configure the GBS Notes Module

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

To configure the GBS Notes module, all that is required is to enable the Jobs in the module and Save Changes.

The screenshot shows the GBS Notes configuration interface. At the top, there is a header with the GBS Notes logo and title. Below the header, a message states: "GBS specific information is configured here." A tab labeled "Core Settings" is selected. Underneath, the "Core Settings" section is displayed. It includes a "Module name" field with the value "GBS Notes" and a "Tenant ID" field with the value "c148f879-6ca3-4063-9cda-6b0f4bc6dc6a". Below these fields, there is a note: "Normally this entry should be enabled." followed by a bullet point: "• If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers." The "Enable Jobs" checkbox is checked. Another note follows: "Normally this entry should be disabled." followed by a bullet point: "• Send GBS items to an external system." The "Select Send Method" dropdown menu is set to "disabled".

The "Enable Jobs" box must be checked to have data archiving functionality.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

Save changes and the module is configured. You may need to disable and re-enable "Enable Job" before it will allow you to Save Changes.

## Configuring GBS Notes to Work with Retain

The REST connection to the collector needs to be configured by the Admin on the GBS Notes system side.

Once the connection is made data will begin to flow into Retain from GBS Notes and will appear in the user's Retain mailbox.

There are no Profiles or Jobs associated with this Module. Data flow can be monitored with the Archive Summary by Module report "[Archive Summary by Module](#)" on page 456.



# Social Media Governance Module

The Social Media Governance module allows Retain to archive Social Messaging communications. Retain integrates with Micro Focus Social Media Governance (SMG) for the archived Social Messaging communications. You need to know the SMG server URL and then the Client ID, Client Secret, User name, and Password provided to you when you purchased SMG to connect Retain to SMG.

## Configuring the SMG Module

The module needs to be enabled to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

To configure the Social Messaging module, all that is required is to Enable Jobs in the module and Save Changes.

**Social Media Governance**

Core Settings Settings

Core Settings

Normally all of these entries should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.
- Channels that do not support a native address book will not support user level operations like AddressBook Sync, job include/exclude Users and default re-archiving of deleted user accounts.

Module name Socialmediagovernance-1

Enable Jobs

Enable Address Book Caching

Normally this entry should be disabled.

- Send Social Media Governance items to an external system.

Select Send Method disabled

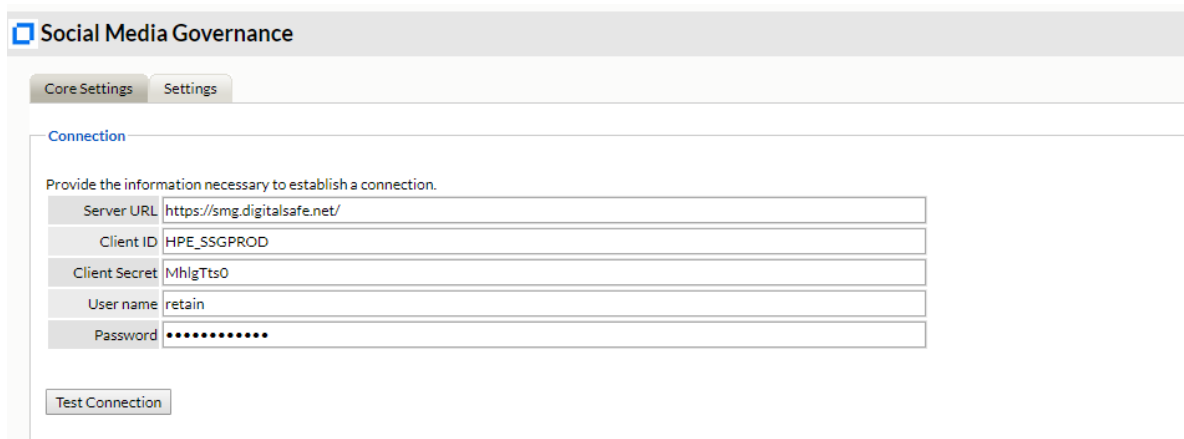
The “Enable Jobs” box must be checked to have data archiving functionality.

---

**NOTE:** SharePoint does not have address book sync. To view users accounts to add them to Retain, you must run at least one job for SharePoint.

---

You must also configure the Settings tab. Then you need to put in the information to connect to SMG including the Server URL, Client ID, Client Secret, Username, and Password.



The screenshot shows the 'Social Media Governance' interface with the 'Settings' tab selected. Under the 'Connection' section, there is a form with the following fields:

| Provide the information necessary to establish a connection. |                              |
|--------------------------------------------------------------|------------------------------|
| Server URL                                                   | https://smg.digitalsafe.net/ |
| Client ID                                                    | HPE_SSGPROD                  |
| Client Secret                                                | MhlgTts0                     |
| User name                                                    | retain                       |
| Password                                                     | ••••••••                     |

Below the form is a 'Test Connection' button.

Save changes and the module is configured. You must then create a Profile and a Job for the module.

## For Channels That Do Not Have a Native Address Book

Channels that don't have native address books don't include automatic user-level job archiving.

For example, SharePoint and Skype don't automatically support user-level job archiving because they don't have address books to synchronize.

If you want to filter by users for these channels, follow these principles:

- ◆ Address-book synchronization is not included because there is no book to synchronize.
- ◆ To view users accounts and add them to Retain, you must run at least one SharePoint or Skype job.
- ◆ As the initial Job runs, Retain archives all channel data.
- ◆ You can then add users to the Retain address book, and if desired, filter by including or excluding the users you have added.

---

**NOTE:** Filtering might slow job performance.

---

- ◆ Retain maintains Timestamps for the next job in the module unless you include/exclude users, in which case Retain updates the user-mailbox timestamp for this purpose.
- ◆ If you delete a user account from the Retain address book, re-archiving doesn't happen unless you run a complete archive retrieval.

## Wireless Carriers: AT&T Module

Retain can archive user SMS and MMS data from wireless carriers that have Message Archiving enabled.

For more detail see the AT&T site [http://serviceguidenew.att.com/sg\\_flashPlayerPage/AMA](http://serviceguidenew.att.com/sg_flashPlayerPage/AMA)

---

**NOTE:** Stored messages are pushed in near real-time to a company provided URL via HTTP POST and one-way SSL encryption. After a successful push, stored messages are deleted on the carrier side. If the push fails, retries will occur for an additional 5 days until items are deleted by the carrier. Messages are stored even when the user is roaming from the home network. All pushed messages are then encrypted, stored and viewed on the customer premise; no further end user action is required for message storage.

---

REST data flow can be monitored by the Archive User by Module Report [“Archive Summary by Module”](#) on page 456

## Prerequisites

- ◆ You will need to open the firewall, configure the module and create a REST collector, and send connection details to your carrier.
- ◆ Install the Module License. [“Submitting a PEM License”](#) on page 101
- ◆ Install the REST License. [“Install a REST License”](#) on page 101

## AT&T Module Setup

### Firewall Setup

This module will not work with message router or cloud router. This module requires a hostname accessible from the Internet. You will need to open the firewall to allow data to flow. Provide a Firewall exception for incoming data.

Data from AT&T will come from 12.130.30.68

### Retain Side Setup

On the Retain Server: Enter the license, configure the module, and create a REST Collector.

### Configure the Module

Select Module Configuration from the left navigation bar and click on the In-network: Wireless Carrier module to configure. A new tab will open



### Core Settings tab

To configure the module, disable and then re-enable Jobs and press Save to update the settings. You may also change the module name and set forwarding, if Module Forwarding is set up under Server Configuration.

W **Wireless Carriers: AT&T**

Wireless Carriers: AT&T specific information is configured here.

Core Settings

**Core Settings**

Normally this entry should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|             |                                     |
|-------------|-------------------------------------|
| Module name | Att-1                               |
| Enable Jobs | <input checked="" type="checkbox"/> |

Normally this entry should be disabled.

- Send Wireless Carriers: AT&T items to an external system.

|                    |            |
|--------------------|------------|
| Select Send Method | disabled ▼ |
|--------------------|------------|

### REST Key and Secret

Get REST Key and Secret from Retain Server to build the URL the carrier will need to connect to Retain.

1. The App Key and Secret are found in the Retain license directory. See Server Configuration | Storage | Advanced Settings.

For example: \retaindata\license\restapi\retain-att.zip

2. Extract and copy the **<applicationKey>** and **<applicationSecret>**.

### REST Collector

Create a REST collector under Server Configuration “REST API” on page 369. And send to your service provider.

You will need to provide a username and password to your carrier for it to connect properly. This will be the key and secret from the REST collector.

1. Create a REST Collector
2. Export the collector.
3. From the XML file copy the following: **<key>** and **<secret>**.

### URL

This will be the "Company Provided URL for Message Delivery". The Retain server URL needs to be Internet accessible by your carrier. The URL need to be formatted in the following way:

**https://<Retain Server Hostname>/RetainServer/RestAPI/v1/atnt/mobile-messages?appKey=<Application Key>&appSecret=<Application Secret>**

For example: <https://docs.microfocus.com/RetainServer/RestAPI/v1/atnt/mobile-messages?appKey=5DFD6637-23BA-4AD1-9533-5939B197D81F&appSecret=4b9b5d2d>

### Username and password

Provide the Rest Collector username and password from the REST Collector step above to your carrier within the reply email with the onboarding form. The credentials need to be formatted in the following way:

User name: **restcollector/<key>**

Password: **<secret>**

For Example: Username: `restcollector/6f460696-fe69-424b-a787-754c1953f792`

Password: `069ddd7a-3747-4025-b7ea-827ba747ab11`

### Carrier Side

Sign up for Business Archiving which requires an In-network: Wireless Carrier Business Account. You will then receive a form from your carrier to complete.

1. The form you will receive from your carrier will be titled something like "Message Archiving - Onboarding Form".
2. Supply the "Company Provided URL for Message Delivery"
3. Supply a REST Collector username and password in the correct format. NOTE: This is not specifically asked for on the form, so add it to the reply email you send the form back with.

There are no Profiles or Jobs associated with this Module. Data flow can be monitored with the Archive Summary by Module report [“Archive Summary by Module” on page 456](#).

## TeleMessage Module

The TeleMessage module allows Retain to archive those messages. This is different from most modules in that there are no Profiles or Jobs. A REST API collector is connected between the TeleMessage and Retain systems and the data flows into the Retain archive as it created in the TeleMessage system. Data is archived immediately as it enters or is created in the TeleMessage system.

REST data flow can be monitored by the Archive User by Module Report [“Archive Summary by Module” on page 456](#)

### Prerequisites—TeleMessage Module

- ◆ Install the Module License. [“Submitting a PEM License” on page 101](#)
- ◆ Install the REST License. [“Install a REST License” on page 101](#)

### Configure Retain Server Connection—TeleMessage Module

Under *Server Configuration/Communications* you must setup the Retain Server Connection. This is the hostname or the public IP Address of the Retain server the host will be entered into the system to connect to Retain. The port will be 48080 for http or 443 for https protocols.

### Retain Server Connection

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |               |
|--------------------|---------------|
| Server Protocol    | https         |
| Retain Server Host | 10.1.4.10     |
| Retain Server Port | 443           |
| Retain Server Path | /RetainServer |

## Creating a REST Collector—TeleMessage Module

Create a REST collector under Server Configuration “REST API” on page 369. Export the key and secret and send to your service provider.


## Configuring the TeleMessage Module

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

To configure the module, all that is required is to enable the Jobs in the module and Save Changes.

 **TeleMessage**

TeleMessage specific information is configured here.

**Core Settings**

**Core Settings**

Normally this entry should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

|             |                                     |
|-------------|-------------------------------------|
| Module name | Telemesssage-1                      |
| Enable Jobs | <input checked="" type="checkbox"/> |

Normally this entry should be disabled.

- Send TeleMessage items to an external system.

|                    |          |
|--------------------|----------|
| Select Send Method | disabled |
|--------------------|----------|

The “Enable Jobs” box must be checked to have data archiving functionality.

Save changes and the module is configured. You may need to disable and re-enable "Enable Job" before it will allow you to Save Changes.

## Configuring TeleMessage to Work with Retain

The REST connection to the collector needs to be configured by the Admin on the TeleMessage system side.

Once the connection is made data will begin to flow into Retain from TeleMessage and will appear in the user's Retain mailbox.

There are no Profiles or Jobs associated with this Module. Data flow can be monitored with the Archive Summary by Module report [“Archive Summary by Module” on page 456](#).

## UM Labs Module

The UM Labs module allows Retain to archive those messages. This is different from most modules in that there are no Profiles or Jobs. A REST API collector is connected between the UM Labs and Retain systems and the data flows into the Retain archive as it is created in the UM Labs system. Data is archived immediately as it enters or is created in the UM Labs system.

REST data flow can be monitored by the Archive User by Module Report [“Archive Summary by Module” on page 456](#)

## Prerequisites

- ◆ Install the Module License. [“Submitting a PEM License” on page 101](#)
- ◆ Install the REST License. [“Install a REST License” on page 101](#)

## Configure Retain Server Connection—UM Labs Module

Under *Server Configuration/Communications* you must set up the Retain Server Connection. This is the hostname or the public IP Address of the Retain server the host will be entered into the system to connect to Retain. The port will be 48080 for http or 443 for https protocols.

**Retain Server Connection**

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |               |
|--------------------|---------------|
| Server Protocol    | https         |
| Retain Server Host | 10.1.4.10     |
| Retain Server Port | 443           |
| Retain Server Path | /RetainServer |

## Creating a REST Collector—UM Labs Module

Create a REST collector under Server Configuration “REST API” on page 369. Export the key and secret and send to your service provider.

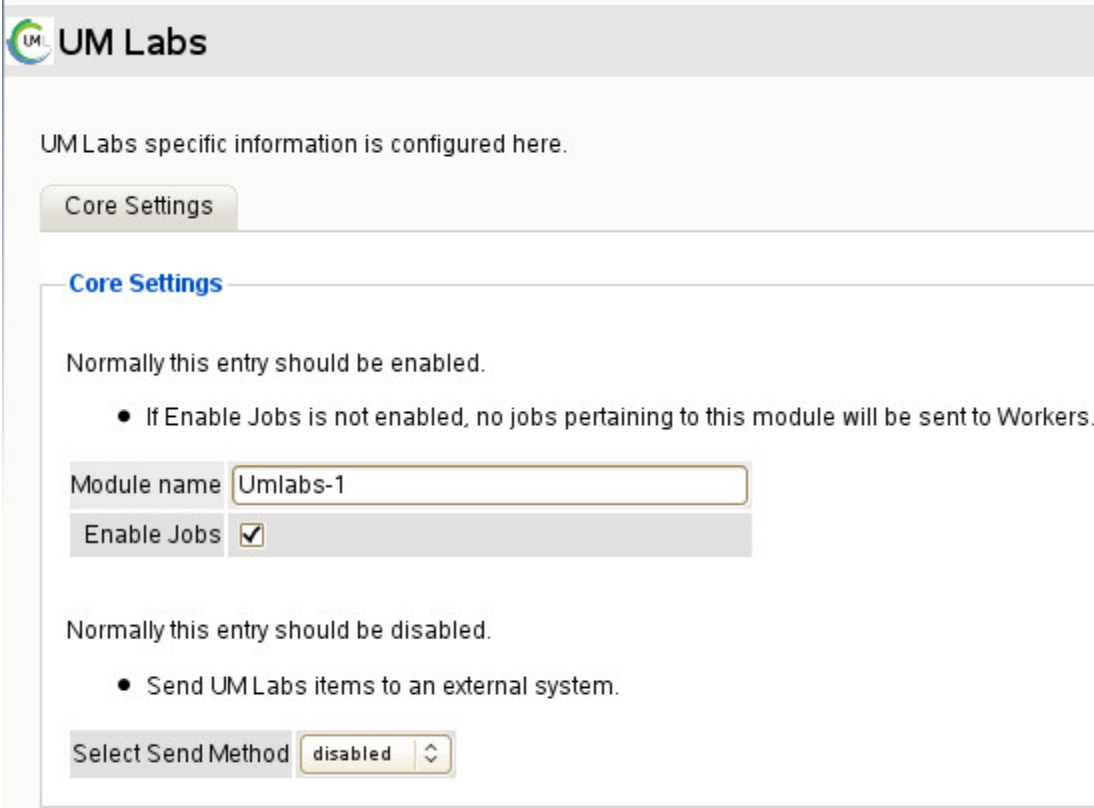
## Configure the UM Labs Module

The module needs to be enabled on this page to make it active in the Retain system.

The module can be given a name.

The Send Method option enables either the SMTP Forwarding or FTP features. For either feature to appear and function, the Module Forwarding tab must be configured on the Server Configuration page. See that section for more information.

To configure the module, all that is required is to enable the Jobs in the module and Save Changes.



The screenshot shows the configuration interface for the UM Labs module. At the top left is the UM Labs logo. Below it, a message states: "UM Labs specific information is configured here." A tab labeled "Core Settings" is selected. Under this tab, the heading "Core Settings" is displayed. The first section contains the text "Normally this entry should be enabled." followed by a bullet point: "If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers." Below this is a form with two fields: "Module name" with the value "Umlabs-1" and "Enable Jobs" with a checked checkbox. The second section contains the text "Normally this entry should be disabled." followed by a bullet point: "Send UM Labs items to an external system." Below this is a form with a "Select Send Method" dropdown menu currently set to "disabled".

The “Enable Jobs” box must be checked to have data archiving functionality.

Save changes and the module is configured. You may need to disable and re-enable "Enable Job" before it will allow you to Save Changes.



## Configure UM Labs to Work with Retain

The REST connection to the collector needs to be configured by the Admin on the UM Labs system side.

Once the connection is made data will begin to flow into Retain from UM Labs and will appear in the user's Retain mailbox.

There are no Profiles or Jobs associated with this Module. Data flow can be monitored with the Archive Summary by Module report [“Archive Summary by Module” on page 456](#).

## GroupWise Messenger Module

Retain 4.6 has the ability to archive GW Messenger items.

### Prerequisites

- ◆ GroupWise 18.1 or higher.
- ◆ Install the Module License [“Submitting a PEM License” on page 101](#).
- ◆ Install the REST License [“Install a REST License” on page 101](#).

### Create REST Collector

Create a REST collector under Server Configuration [“REST API” on page 369](#).

1. Export the REST key and secret.
2. Enter the REST key and secret, Tenant ID, Retain server address or hostname and port into *GroupWise Administration | GroupWise Messenger Archive*.

### Configure the Module

Open the module to configure.

**GW Messenger**

GW Messenger specific information is configured here.

Core Settings

**Core Settings**

Normally this entry should be enabled.

- If Enable Jobs is not enabled, no jobs pertaining to this module will be sent to Workers.

Module name

Enable Jobs

Normally this entry should be disabled.

- Send GW Messenger items to an external system.

Select Send Method

Change the name, if desired, make sure that jobs are enabled and save changes.

## Ionlake Module

The ionlake module let you send messages from ionlake MyRepChat to Retain for archiving. The data is pushed from ionlake to Retain so no Jobs or Profile is necessary in Retain. Because there is no Job or Profile, you can monitor the data flow using the [Archive Summary by Module](#) report. To configure the ionlake module, complete the sections that follow:

- ◆ [“Configuring the Ionlake Module in Retain” on page 266](#)
- ◆ [“Configuring Ionlake MyRepChat” on page 267](#)

## Configuring the Ionlake Module in Retain

- ❑ Install the ionlake module license and the REST License. See [“Submitting a PEM License” on page 101](#) and [“Install a REST License” on page 101](#) for more information.
- ❑ Create a [“REST Collector” on page 371](#) for ionlake MyRepChat. Export the key and secret to enter into ionlake MyRepChat. See [“REST Collector” on page 371](#) for more information.
- ❑ Obtain the Retain server Hostname or Cloud Router configuration for your Retain system.
- ❑ Obtain the Tenant ID for your Retain system. You need to enter this into ionlake MyRepChat. See [“Finding Your Tenant ID” on page 102](#) for more information.
- ❑ Configure the ionlake module in Retain with a Module Name. Make sure Enable Jobs in checked.

## Configuring Ionlake MyRepChat

Enter the information gathered in “[Configuring the Ionlake Module in Retain](#)” on page 266 in your ionlake MyRepChat system to send the archive data to Retain. Below is a screen shot of the MyRepChat interface to enter your Retain information:



MyRepChat can send your data to MicroFocus Retain for archival. In order to set this up you need to:

1. Enable the module in Retain.
2. Create a REST Collector in Retain and enter the information here:

REST COLLECTOR KEY

a8093ff9-66a5-4070-9651-bcfcab9b59cf

REST COLLECTOR SECRET

cd7dbbd7-3b63-4a4c-a0f5-02a3385e4647

3. Enter the Tenant ID for your Retain system:

943d1696-b314-4128-b57f-92125c2c42fe

4. Select the SSL-enabled destination for your application data:

RETAIN ROUTER

Hostname

RETAIN SERVER

Hostname

retain6.ga.gwava.com

CLOUD ROUTER

You must enable Cloud Router connections in Retain.

ACTIVATE ARCHIVING

SAVE



# 7 Schedules

## Schedule Overview

Once you have configured a module you must configure a job. A job is made up of a Schedule, a Worker, and a Profile.

Schedules define when to perform the data collection as defined in a job. A job defines what schedule, profile and worker to use.

- ◆ You can create as many schedules as you need.
- ◆ Schedules have no functionality until they are associated with one or more jobs.
- ◆ They can be shared across multiple jobs.
- ◆ You cannot delete a schedule that is currently associated with a job.
- ◆ Schedules can be recurring or single use.

## Single Schedules

Single schedules are single-use configured with one start time, and one date.

A single schedule is used if you want to start a job manually. [“Starting a Job Manually” on page 343](#)

To keep jobs from queuing up to the worker, enable (check) "If time assigned for job start has elapsed, don't resend job". Otherwise, a job will queue up on the worker if a previous job has not yet completed, causing the new job to start as soon as the current job is complete or terminated.

Don't forget to "Save Changes".

## Recurring Schedules

Recurring schedules are configured using a start and interrupt time, and which days to start on.

Choose when on which days you want this schedule to trigger a job.

You may specify maximum job duration. If the job runs longer than the time limit you set, it will be interrupted. For cases where you do not want the job to be interrupted. In an example with a job you know will last longer than 22 hours, you may prevent the schedule from interrupting the job.

Don't forget to "Save Changes".

# 8 Profiles

- ◆ [“Profiles Overview” on page 271](#)
- ◆ [“GroupWise Profile” on page 271](#)
- ◆ [“Exchange/O365 Profile” on page 281](#)
- ◆ [“Blackberry Profile” on page 288](#)
- ◆ [“Google Apps Profile” on page 291](#)
- ◆ [“Bloomberg Profile” on page 296](#)
- ◆ [“Mobile Profile” on page 301](#)
- ◆ [“Social Media Governance Profile” on page 302](#)

## Profiles Overview

Once you have configured a module you can configure a Profile for the module type.

Profiles describe what to archive.

Not all modules have profiles.

## GroupWise Profile

- ◆ [“Core Settings Tab” on page 272](#)
- ◆ [“Message Settings Tab” on page 274](#)
- ◆ [“Scope Tab” on page 275](#)
- ◆ [“Miscellaneous Tab” on page 278](#)
- ◆ [“Advanced Tab” on page 280](#)

The Profile lets you set what is to be dredged from your GroupWise system.

This requires that the module be configured [“GroupWise Module” on page 160](#).

Click on “Add Profile” and provide a profile name, or select an already existing profile to access the configuration tabs. All changes made on this page must be saved by selecting the “save changes”, disk icon, at the top right of the page. Tabs may be changed and navigated through without affecting new settings, but any move to another page will require saving, or abandoning the changes made.

# Core Settings Tab

**Retain** Language: English Welcome, admin | About | Tools | Status & Updates | Logout

**Overview**  
Documentation  
Search Messages  
Auditing  
System Log  
Reporting  
Monitoring

**Data Collection**  
Schedules  
Profiles  
GroupWise  
Exchange  
Social Messaging  
Mobile  
Google Apps  
BlackBerry  
CellTrust  
Workers

**Jobs**

**Management**  
Users  
Groups  
Device Management  
Deletion Management

**Configuration**  
Server Configuration  
Rules Configuration  
Module Configuration  
Router Configuration  
Storage Manager  
Stubbing Server  
Reporting and Monitoring  
Licensing

**Profiles**

Associated Jobs

- GW weekdays at 4:00
- GW7NTPO2
- GW on Wednesdays at 12:00
- GW CrapPO
- CBIPO A-D
- Dee Zero Oneby
- NTPO2
- NWPO
- GW8LXPO
- GW8NTPO
- RickL
- LXPO and 15&T
- GW weekdays at 10:15
- Mültiirigüäl
- Test
- NTPO
- GW14LXPO
- GW7NTPO

Profile AllFolders AllMessages NoArchiveMark NoStubbing ItemStore loaded.

Profile Name AllFolders AllMessages NoArchiveMark NoStubbing ItemStore

Core Settings Message Settings Scope Miscellaneous Advanced

**Profile Functions**

The normal function of Retain is to archive mail. However, GroupWise 8 introduces the capability to "Stub" items so they appear to be in the original mailbox, but are really stored in Retain. This can save disk space.

You may enable Archiving and Stubbing separately or together, depending on what you think your users would like.

We tend to recommend you do NOT stub Calendar Items, because it can lead to confusing results if they are rescheduled or reassigned. (Most Calendar Items aren't terribly large anyway).

You may safely enable stubbing on a GroupWise 7 post office, however the functionality will be ignored, and the item will not be stubbed.

Enable Archiving (store messages in Retain)  
 Enable Stubbing (if items are already archived)  
 Do not stub Calendar Items (Appointments, Notes, and Tasks)  
 Stub only items exceeding a size threshold  
2048 Size Threshold (bytes)

**Archive Mark**

You can request Retain to mark items as archived. You may view the status at the Windows client as a custom column.

Mark emails as archived

**Messaging System Deletion**

Delete archived messages from messaging system

Keep x number of days in messaging system 0

## Profile Functions

The Profile Functions tell the Retain Server what to do with the mail it archives from the GroupWise system. If Archiving is not enabled, mail will not be archived by any Retain jobs using this profile.



## Stubbing

Before enabling stubbing, make sure you understand the way stubbing works and how that will work in your system, because, once enabled, the stubbing process cannot be reversed. Stubbing, which requires GroupWise 8.02HP1 or above, allows Retain to replace archived messages and items in the GroupWise Post office with 'stubs' that link back to the full message or item in the Retain Archive. End users should not notice a difference as they have transparent access to the stubbed item through the GroupWise Post office, if they only use the client. The stub behaves much like the native item is still in the GroupWise system.

Stubbing cannot be reversed.

Plan your system and understand the positive and negative sides to Stubbing before you continue. To use stubbing, it is strongly recommended that the GroupWise system be at least 8.02HP1. Previous versions of GroupWise do not contain critical stability fixes.

Why you might want to implement stubbing (Pros):

- ◆ Save Disk space. Mail can be removed from the system without being 'deleted'.
- ◆ Users have easy access to items stored in Retain
- ◆ Transparent access, no need to log into Retain for common tasks.

Why stubbing may not work for your system (Cons):

- ◆ Mobile, Web, IMAP, and POP3 clients will only see posted empty items, not actual contents.
- ◆ Stubbing cannot be reversed. (Once a message is stubbed, it cannot be returned to the same position in the system)
- ◆ User training for stubbed items may be necessary due to decreased access speed
- ◆ No method for protecting stubs from deletion in the GroupWise client. (Recreation is difficult and complicated.)
- ◆ Non-mail items should not be stubbed. (Calendar and appointment items behave erratically when rescheduled).
- ◆ Stub items are not compatible with third party API's. These applications view the stubs as posted items only, with no text or attachments.



Determine the correct option for your system. If you wish to enable Stubbing, you need to install and configure the Stubbing Server as well. Refer to the install guide for your specific OS and the Stubbing Server sections. Stubbing can only be active for items which have been archived by Retain.

Calendar Items should not be stubbed unless necessary, as this can cause erratic behavior if archived items are rescheduled. If you wish to only stub large items in your Post Office, you may set a size threshold. Any item larger than the specified size will be stubbed. If this option is not set, all messages will be stubbed, regardless of size.

## Archive Mark

Some users may opt to use the Archive Mark in GroupWise for messages that have been archived by Retain. The archive mark is a custom flag and may be modified, therefore is not secure and should not be used for compliance. Archive Mark slightly degrades job performance. Check the check box to enable Archive Mark for the selected profile.

When the Archive Mark is active, Retain creates a custom column for mail, called "RetainArchived" which users and administrators may add to their GroupWise clients to view mail which has been archived. The "RetainArchived" column indicates an archived mail item by displaying a '1' in the message row, while remaining blank when the message is not archived.

|                                                                                   | From          | Subject             | Date              | RetainArchived |
|-----------------------------------------------------------------------------------|---------------|---------------------|-------------------|----------------|
|  | Suzie Wathen  | cool lightning      | 8/25/2008 4:21 PM |                |
|  | Steve Orchard | Old Ladies' Hoggins | 8/25/2008 4:17 PM | 1              |

To add the column, in the client: highlight desired mailbox or folder, right-click on columns header, select More Columns, select RetainArchived, and select Add.

## Messaging System Deletion

Retain can delete items from GroupWise after they have been archived by enabling "Delete archived messages from messaging system".

However, it is recommended that the messaging system do the deletion rather than Retain.

Set how far back the messages will be kept by entering a reasonable number. like 90, of "Keep x number of days in messaging system". The amount of time to keep messages is specified in days. The recommended setting depends on the archiving scheme in the system.

For example, if messages are to persist in the system for 30 days, then the system deletion setting should be set to '30' and enabled.

A setting of '0' will remove messages from the system as soon as they are archived. Be sure to configure the system before enabling the setting in the profile.

## Message Settings Tab

The message settings tabs allows you to restrict the types of messages to be archived.

- ◆ Mailbox type: You can restrict the type of mailbox users, resources, or both
- ◆ Message Item: Select what type of items within these mailboxes to dredge
- ◆ Message Source: Select whether incoming, outgoing, draft, or posted items get dredged
- ◆ Message Status: You can decide whether to dredge an item based on its GroupWise flags

The default settings dredge all items, regardless of flag status.

Core Settings Message Settings Scope Miscellaneous Advanced

---

**Mailbox Type**

You can choose to store items only from Users or from Resources.

Users  Resources

---

**Item Type**

By default, Retain stores every type of message. You can restrict this.

Mail  Appointment  Note  Task  Phone Message

---

**Item Source**

Messages are classified in one of these categories. You may restrict the storage of messages if desired.

Received  Sent  Draft  Personal

---

**Message Status**

You can restrict the storage of messages based upon the setting of various status flags.

Opened is  Read is  Private is

By default, all items are selected for collection.

## Scope Tab

This is the most critical tab to fill out as it sets the limits on how much to archive.

Core Settings Message Settings Scope Miscellaneous Advanced

**Date Range to Scan**

New items

---

**Advance Flags**

You may not want to advance the flag after running the job.

Don't Advance Timestamp

## Date Range to Scan

The Date Range determines which message items are collected, depending on the date of the message.

|                                                 |
|-------------------------------------------------|
| <b>New items</b>                                |
| All Items in Mailbox                            |
| Number of days before job start date and newer  |
| Number of days from job start date and older    |
| Specify custom date range                       |
| Specify custom date range relative to job start |

*New Items:* All items that have not been archived by Retain since the last time the job ran.

*All Items in Mailbox:* All items in the mailbox starting from 1/1/1970, duplicates will be processed but not stored if they already exist in the Retain archive.

*Number of day before job start date and newer:* Only items from the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or less.

*Number of days from job start date and older:* Only items previous to the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or more.

*Specify custom date range:* Only items between two absolute dates will be dredged.

*Specify custom date range relative to job start:* Only items between two relative dates will be dredged. E.g. messages that came into the email system between 7 and 5 days ago.

## Advance Flags

Enabling "Don't Advance Timestamp" will not update the timestamp flag. Items that are dredged will still be considered new by Retain the next time the job runs.

This is useful when troubleshooting, but is generally not used for normal jobs.

## About GroupWise's Purge and Retention Flags

The Purge, and Retention flags perform similar functions. The Purge and Retention flags are stored internally in the GroupWise post office on a per-mailbox basis. The Retain Server also keeps its own timestamp flag internally in the Retain configuration database.

Each can be thought of as simply a "time stamp" indicating the last time data was retrieved by a third-party application. There are a few subtle differences between the three flags, which are discussed below.

The Purge flag was introduced by Novell in GroupWise version 6.0.

With Purge enabled in GroupWise:

- ◆ The flag is a time stamp, stored in the user's mailbox.
- ◆ Items older than the time stamp can be deleted freely.
- ◆ Items newer than the time stamp cannot be deleted.
- ◆ A 3rd party application, such as backup software can retrieve and/or set this time stamp value. GroupWise never changes the time stamp value.
- ◆ The initial purpose of this was for backup software. Backup software can either manually or automatically, (via the SMS TSAGW component of GroupWise), advance this time stamp once all items are backed up. The backup software can also use this time stamp to "know" that all items older than this time stamp have already been backed up, and can be skipped.
- ◆ Retain can use this flag to skip archived items, and automatically advance it as well. However, in practice, you'll rarely want to do this, because backup software, including Micro Focus GroupWise Disaster Recovery, already uses this flag. There's no way to "share" the flag.

Because makers of retention and compliance software wanted a flag of their own, one that wasn't shared with the backup software Purge flag, the Retention flag was introduced by Novell in GroupWise 6.5.1.

In almost all respects, the Retention flag is identical in purpose and function to the Purge flag. Like the Purge flag, it is stored internally, and is primarily used to prevent premature deletion, and to skip previously stored messages. In fact, these are so identical in purpose, in theory virtually all backup software could switch to using the Retention flag, and all Retention software to the Purge flag, and you'd notice almost no difference. The primary difference is simply it's a different value, used by different vendors.

There are some small distinctions:

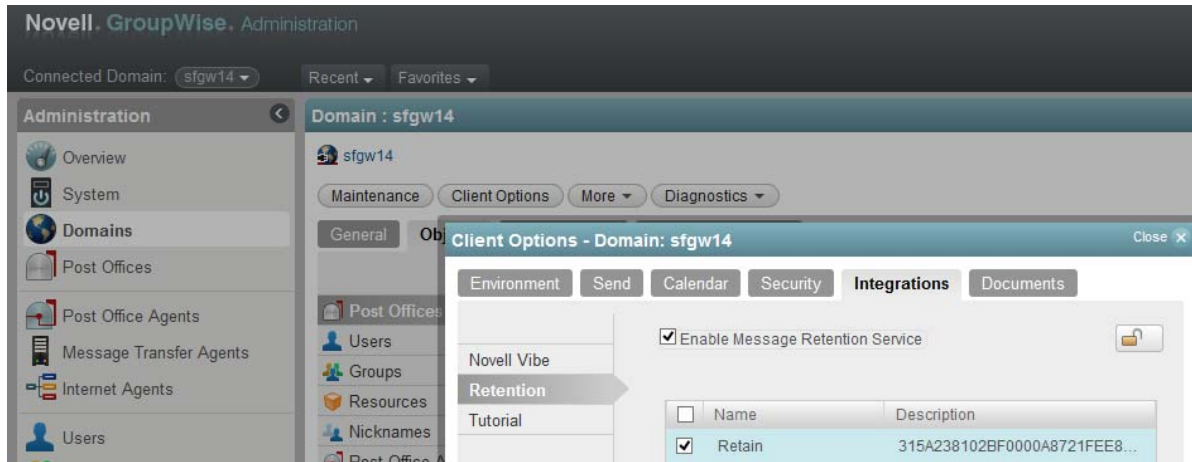
- ◆ It's enabled and configured in a different location in ConsoleOne.
- ◆ It cannot be enabled or configured until a Trusted Application (like Retain) is installed and specifically requests it be made available.
- ◆ The Purge flag is turned on/off globally. The Retention flag can be configured at the Domain, PO, or user level.

Most customers using Retain will want to use the Retention flag. It's logical and consistent to do so, and avoids conflict with backup software. It is recommended that you use this flag unless there is a compelling reason not to. A few possibilities are discussed below.

Retain can use the Purge and Retention flags.

## Setting up Purge and Retention flags in GroupWise

It is highly recommended that Message Retention Service is enabled, so users cannot delete items before the item is archived.



In GroupWise Administration, go to the Domain or Post Office you wish to enable Retention on.

- ◆ Open Client Options. Select Integrations and then Retention.
- ◆ Check the box to enable the Retention Flag service.
- ◆ Select the Trusted Application that uses the Retention Service.
- ◆ Finally, Lock it on and Ok to exit.

In GroupWise 8 through 2012 enable by highlighting the GroupWise system, domain, post office, or user object and selecting Tools | GroupWise System Operations | Retention Services.

## Miscellaneous Tab

Miscellaneous: What to do with attachments? Most of the time, you will want to store all attachments. That is the default setting.

Core Settings Message Settings Scope Miscellaneous **Advanced**

**Miscellaneous**

You can save disk space by restricting attachment storage. You can also attach the Routing Properties to the message, if desired.

Store all attachments  
 Don't store MIME.822 attachments  
 Don't store any attachments, other than the message

You may choose to store Sent Items properties, and/or store and index the Internet Headers. Both of these (particularly Sent Items properties) exact a performance penalty. However, it may be worthwhile to store and index the Internet Header if your compliance policy then allows Retain to choose to skip storing MIME.822 (which consumes lots of disk space since it's not usually single-instanceable).

Store/index Internet Headers  
 Include Routing Properties  
 Include Shared Folders

Disabled/Expired Users

When Retain encounters a disabled or expired mailbox:

Add to a special log file?

But if you don't want to store attachments, you can control this here. Note that the attachment names and sizes will still be listed when viewing the message, but the attachments will be clearly marked as unavailable.

Retain can stores the Index or Internet Headers and the Routing properties of messages. This information is stored in a XML attached to the message document and is searchable.

## Store/index Internet Headers

This option tells Retain to store the headers in the SQL database. In order to use the header search option in the search interface you must have this option selected. To save disk space and still satisfy storage compliance, select this option and select "Don't store the mime.822 attachments". All other parts of the MIME file are already being archived, so if you store and index the Internet Header, you will already be archiving all information required.

## Include Routing Properties

Routing Properties are kept in the MIME.822 file, if you are not storing that file, and are required to store the routing properties of the message then enable this option.

## Disabled/Expired Users

This option tells Retain how to react to a disabled or expired user in GroupWise. Be default, Retain will ignore a disabled mailbox and continue to the next mailbox. The Warn option will show a warning in the logs and the Reporting and Monitoring Server reports. The Error option will show an error in the log, will send an error email, if the job is configured to send error messages, and be shown in the Reporting and Monitoring Server reports.

A special log file can be created in the logs location.

## Advanced Tab

The Advanced tab allows you to limit what is stored by Retain. This must be used with caution as this opens holes for data to be lost through. It is recommended to store everything since storage space is inexpensive.

Core Settings Message Settings Scope Miscellaneous **Advanced**

**Advanced Criteria**

You may add advanced criteria such as specific attachment names, sizes, subject here.

Add

Delete Subject is

**Folder Scope**

Normally, you want to include all folders in your scan. However, you may have specific reasons to include or exclude folders. Choose a folder root, an optional subfolder (you may have multiple subfolders with the \ delimiter, and whether to include all subfolders in the pattern).

Items from All Folders

### *Advanced Criteria*

If you want to be more specific as to what to dredge or not to dredge, add the criteria here. Each line will be logically AND-ed together. Think “Dredge all items where the following is true:” Criteria A AND Criteria B AND Criteria C AND etc.

Subject  
Sender  
Recipient  
Attachment size (bytes)  
Attachment name  
Category

You may select based on:

- ◆ Subject
- ◆ Sender
- ◆ Recipient
- ◆ Attachment Size (in bytes)
- ◆ Attachment Name
- ◆ Category

And whether they are equal to, not equal to, contain or do not contain the item you specify.

This gives you great flexibility and granularity. It allows you to customize dredges and retention for many different groups, or even individuals.

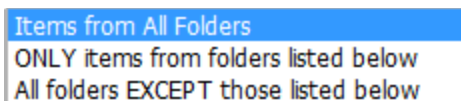


## Folder Scope

By default, we dredge items from all folders. You can specify one or more inclusions or exclusions.

Your choices are:

- ◆ Dredge everything
- ◆ Dredge only these listed folders
- ◆ Dredge everything except these listed folders



How to specify the list of folders to dredge/exclude:

1. Specify a System Folder (mandatory). Example: Calendar.
2. You specify a subfolder of that folder (optional).  
Example: entering "old" would mean the folder "old" under "Calendar".
3. You can have multiple hierarchies under that with the / delimiter.  
Example: "old/mail" would mean the subfolder "mail" under "old" under "Calendar".
4. You specify if the option includes subfolder.  
Example: If you select "old" and "includes subfolder" is unchecked, "Calendar/mail" is selected. If "includes subfolder" is CHECKED, "Calendar/old/mail" would also be selected.

You may now configure a Job ["GroupWise Job" on page 317](#).

## Exchange/O365 Profile

The job will need an Exchange profile setup to connect to the email system properly.

This requires that the module be configured ["Exchange Module: Office365 or Hosted Exchange without LDAP" on page 166](#) or ["Exchange Module: Exchange On-premise" on page 187](#).

After the Exchange Module has been configured, the Exchange Profile will be available for configuration. If an Exchange Profile is not configured, jobs cannot be run against the Exchange system.

Click on "Add Profile" and provide a profile name, or select an already existing profile to access the configuration tabs. All changes made on this page must be saved by selecting the "save changes", disk icon, at the top right of the page. Tabs may be changed and navigated through without affecting new settings, but any move to another page will require saving, or abandoning the changes made.

## Skype for Business

With O365, Retain will also archive Skype for Business conversations. They will be saved to the Conversation History folder of the user.

## Core Settings Tab

The core settings consist of an enabled/disabled option which must be enabled for any jobs based on this profile to archive anything.

The screenshot shows the Retain web interface. The top navigation bar includes the Retain logo, a language dropdown set to 'English', and user information: 'Welcome, admin | About | Tools | Status & Updates | Logout'. The left sidebar contains a navigation menu with sections: Overview (Documentation, Search Messages, Auditing, System Log, Reporting, Monitoring), Data Collection (Schedules, Profiles, GroupWise, Exchange, Social Messaging, Mobile, Google Apps, BlackBerry, CellTrust, Workers, Jobs), Management (Users, Groups, Device Management, Deletion Management), and Configuration (Server Configuration, Rules Configuration, Module Configuration, Router Configuration, Storage Manager, Stubbing Server, Reporting and Monitoring, Licensing). The main content area is titled 'Profiles' and features a search bar, a list of profiles, and buttons for 'Add Profile', 'Edit Profile', and 'Remove Profile'. The selected profile is 'Exchange Profile, No Flag, Journal by Year'. Below the profile name is a 'Profile Name' input field containing the same text. A 'Core Settings' tab is active, showing three sections: 'Profile Functions' with a checked checkbox for 'Enable Archiving (store messages in Retain)'; 'Archive Mark' with a description and an unchecked checkbox for 'Mark emails as archived'; and 'Messaging System Deletion' with an unchecked checkbox for 'Delete archived messages from messaging system' and a sub-section 'Keep x number of days in messaging system' with an input field set to '0'. An 'Associated Jobs' section shows 'Exchange Journal Now'.

## Profile Functions

The Profile Functions tell the Retain Server what to do with the mail it archives from the messaging system. If Archiving is not enabled, mail will not be archived by Retain.

## Archive Mark

Some users may opt to use the Archive Mark for messages that have been archived by Retain. The archive mark is a custom flag and may be modified, therefore is not secure and should not be used for compliance. Archive Mark slightly degrades job performance. Check the check box to enable Archive Mark for the selected profile.

When the Archive Mark is active, Retain creates a custom column for mail, called “RetainArchived” which users and administrators may add to their email client to view mail which has been archived. The “RetainArchived” column indicates an archived mail item by displaying a ‘1’ in the message row, while remaining blank when the message is not archived.

## Messaging System Deletion

For systems where the administrator wishes to have archived messages removed from the system automatically, the Messaging System Deletion option may be used. Messaging System Deletion will remove messages from a mailbox after they are archived, according to the time frame specified in the settings. The amount of time to keep messages is specified in days. The recommended setting depends on the archiving scheme in the system. For example, if messages are to persist in the system for 30 days, then the system deletion setting should be set to 30 and enabled. A setting of 0 will remove messages from the system as soon as they are archived. Be sure to configure the system before enabling the setting in the profile.

However, it is recommended that the messaging system do the deletion rather than Retain.

## Message Settings Tab

Retain can archive and select specific types of mail and Exchange system items to be archived. The Manage Settings tab provides access to manage those settings.

Core Settings Message Settings Scope Miscellaneous **Advanced**

**Mailbox Type**

You can choose to store items only from User mailboxes or from Room / Equipment resources.

Users  Room / Equipment

**Item Type**

By default, Retain stores every type of message. You can restrict this.

Mail  Appointment  Note  Task  Voice Message

**Item Source**

Messages are classified in one of these categories. You may restrict the storage of messages if desired.

Received  Sent  Draft  Personal

**Message Status**

You can restrict the storage of messages based upon the setting of various status flags

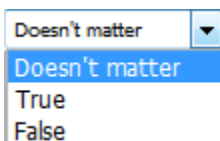
Read is  Private is  Personal is  Confidential is

The Mailbox type specifies whether to include or exclude the available types of mailboxes. Because there can be multiple profiles and jobs, it may be advantageous to archive the Users and Room / Equipment mailboxes separately as needed and appropriate for the system.

The Item Type option specifies the different types of messages found in Exchange that can be archived, and allows the exclusion of or inclusion of the different individual types.

The Item Source option allows administrators to exclude or include messages that have not yet been sent or received, or posted.

The Message Status allows messages which have or have not been read or opened, or marked private or confidential to be archived. The different options in the drop-down menu are as shown.



## Scope Tab

The Scope tab dictates the date range Retain will scan in the attached archiving jobs.

Core Settings Message Settings Scope Miscellaneous Advanced

**Date Range to Scan**

New items

---

**Advance Flags**

You may not want to advance the flag after running the job.

Don't Advance Timestamp

## Date Range to Scan

The Date Range to Scan instructs Retain to scan for, and archive, messages after, or before, a certain date. This is useful if only specific chunks or areas of mail are to be archived.

New items  
 All Items in Mailbox  
 Number of days before job start date and newer  
 Number of days from job start date and older  
 Specify custom date range  
 Specify custom date range relative to job start

*New Items:* All items that have not been archived by Retain since the last time the job ran.

*All Items in Mailbox:* All items in the mailbox starting from 1/1/1970, duplicates will be processed but not stored if they already exist in Retain's archive.

*Number of days before job start date and newer:* Only items from the relative number of days from the time the job began will be archived. E.g. messages that came into the email system less than 7 days ago.

*Number of days from job start date and older:* Only items previous to the relative number of days from the time the job began will be archived. E.g. messages that came into the email system more than 7 days ago.

*Specify custom date range:* Only items between two absolute dates will be dredged.

*Specify custom date range relative to job start:* Only items between two relative dates will be dredged. E.g. messages that came into the email system between 7 and 5 days ago.

It is recommended to archive all New items.

## Advance Flags

Enabling "Don't Advance Timestamp" will not update the timestamp flag. Items that are dredged will still be considered new by Retain the next time the job runs.

This is useful when troubleshooting, but is generally not used for normal jobs.

---

**NOTE:** Unlike GroupWise, Exchange does not ensure any compliance when scanning end user mailboxes; users may freely delete their email. The Item store flag does not prevent mail deletion. Only setting a rolling hold on all mailboxes guarantees all items have been archived.

---

## Miscellaneous Tab

The Miscellaneous tab allows access to settings detailing how messages are stored and what is archived. Attachments, message information such as the Internet headers, and how the data is stored and named, (by folders, year, or year and month), dictate not only the message store structure, but affect the storage size.

Miscellaneous options also allow for the archiving of the 'recoverable items'. To enable checking and archiving of the 'Recoverable Items' for compliance reasons, select the checkbox next to the option.

The screenshot shows a settings interface with five tabs: Core Settings, Message Settings, Scope, Miscellaneous (selected), and Advanced. The Miscellaneous tab is active, displaying the following content:

**Miscellaneous**

You can save disk space by restricting attachment storage.

- Store all attachments
- Don't store any attachments, other than the message

You may choose to store and index the Internet Headers. This exacts a performance penalty. However, it may be necessary for your compliance policy.

- Store/index Internet Headers

Note: The following options can dramatically slow down archiving and increase disk space utilization.

- Include user's archive mailbox
- Include user's recoverable items
- Include Public Folders(slow)

You may store Journaling Mailboxes in one flat folder, or partition them by year and/or month.

- Store in one folder
- Store by year (yyyy)
- Store by year and month (yyyyMM)

## Advanced Tab

The Advanced tab allows you to limit what is stored by Retain. This must be used with caution as this opens holes for data to be lost through. It is recommended to store everything since storage space is inexpensive.

Core Settings Message Settings Scope Miscellaneous **Advanced**

**Advanced Criteria**

You may add advanced criteria such as specific attachment names, sizes, subject here.

Add

Delete Subject is

**Folder Scope**

Normally, you want to include all folders in your scan. However, you may have specific reasons to include or exclude folders. Choose a folder root, an optional subfolder (you may have multiple subfolders with the \ delimiter, and whether to include all subfolders in the pattern).

Items from All Folders

### Advanced Criteria

If you want to be more specific as to what to dredge or not to dredge, add the criteria here.

Subject

- Subject
- Sender
- Recipient
- Message size (bytes)
- Attachment name
- Category

Each line will be logically AND-ed together. Think “Dredge all items where the following is true:”  
Criteria A AND Criteria B AND Criteria C AND etc.

You may select based on:

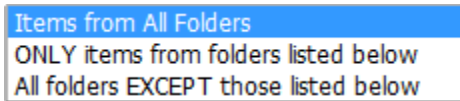
- ◆ Subject
- ◆ Sender
- ◆ Recipient
- ◆ Message size (in bytes)
- ◆ Attachment name
- ◆ Category

And whether they are *is*, *is not*, *contains*, or *does not contain* the items specified.

This provides flexibility and granularity. It allows customized dredges and retention for many different groups, or even individuals.

## Folder Scope

By default, we dredge items from all folders. You can specify one or more inclusions or exclusions.



Your choices are:

- ◆ Dredge everything
- ◆ Dredge only these listed folders
- ◆ Dredge everything except these listed folders

How to specify the list of folders to dredge/exclude:

1. Specify a System Folder (mandatory). Example: Calendar.
2. You specify a subfolder of that folder (optional).  
Example: entering “old” would mean the folder “old” under “Calendar”.
3. You can have multiple hierarchies under that with the / delimiter.  
Example: “old/mail” would mean the subfolder “mail” under “old” under “Calendar”.
4. You specify if the option includes subfolder.  
Example: If you select “old” and “includes subfolder” is unchecked, “Calendar/mail” is selected. If “includes subfolder” is CHECKED, “Calendar/old/mail” would also be selected.

You may now configure a Job [“Exchange/O365 Job” on page 321](#).

## Blackberry Profile

This requires that the module be configured [“Blackberry” on page 213](#).

To create a new profile to archive Blackberry data, first select the ‘add profile’ button and name the profile. Then continue configuring as desired.

## Core Settings Tab

The Core Settings tab holds the enabling setting, which allows jobs connected to this profile to run. This must be checked before jobs will run.



## Message Settings tab

The message settings tab can be used to exclude or include specific data types for this profile. By default, all types of messages will be archived. All Blackberry data which is selected to be archived must be logged in the Blackberry Enterprise Server or the data will not be available for Retain to archive it.

## Scope Tab

This is the most critical tab to fill out as it sets the limits on how much to archive.

Core Settings Message Settings Scope Miscellaneous Advanced

**Date Range to Scan**

New items

**Advance Flags**

You may not want to advance the flag after running the job.

Don't Advance Timestamp

## Date Range to Scan

The Date Range determines which message items are collected, depending on the date of the message.

New items  
 All Items in Mailbox  
 Number of days before job start date and newer  
 Number of days from job start date and older  
 Specify custom date range  
 Specify custom date range relative to job start

*New Items:* All items that have not been archived by Retain since the last time the job ran.

*All Items in Mailbox:* All items in the mailbox starting from 1/1/1970, duplicates will be processed but not stored if they already exist in the Retain archive.

*Number of days before job start date and newer:* Only items from the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or less.

*Number of days from job start date and older:* Only items previous to the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or more.

*Specify custom date range:* Only items between two absolute dates will be dredged.

*Specify custom date range relative to job start:* Only items between two relative dates will be dredged. E.g. messages that came into the email system between 7 and 5 days ago.

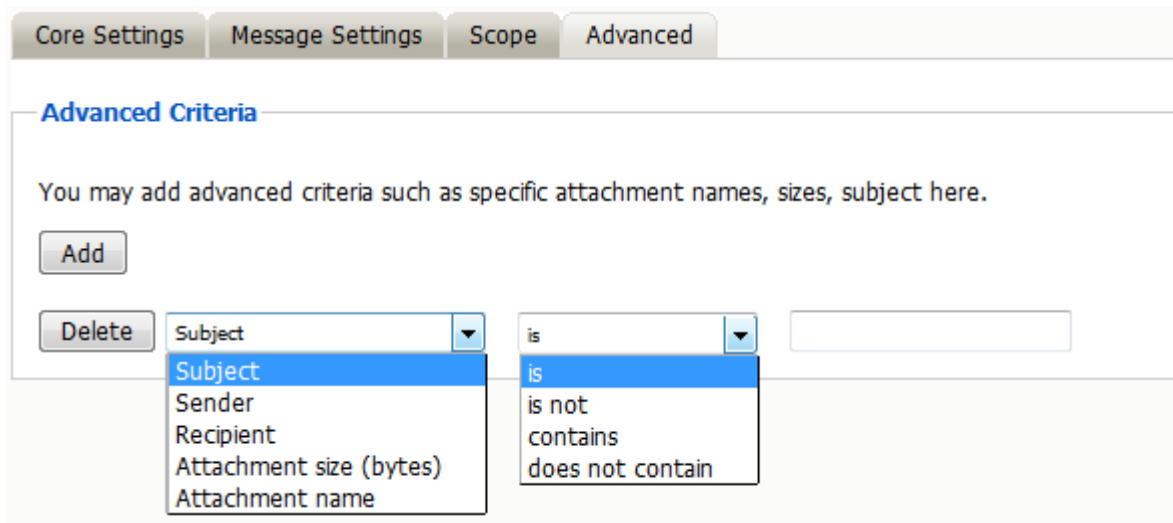
## Advance Flags

Enabling "Don't Advance Timestamp" will not update the timestamp flag. Items that are dredged will still be considered new by Retain the next time the job runs.

This is useful when troubleshooting, but is generally not used for normal jobs.

## Advanced Tab

If you want to be more specific as to what to dredge or not to dredge, add the criteria here. Each line will be logically AND-ed together.



The screenshot shows a web interface with four tabs: Core Settings, Message Settings, Scope, and Advanced. The Advanced tab is selected. Below the tabs is a section titled "Advanced Criteria" with the text: "You may add advanced criteria such as specific attachment names, sizes, subject here." There is an "Add" button and a "Delete" button. Below these buttons are two dropdown menus. The first dropdown menu is open, showing options: Subject, Sender, Recipient, Attachment size (bytes), and Attachment name. The second dropdown menu is also open, showing options: is, is not, contains, and does not contain. To the right of the second dropdown menu is an empty text input field.

Think “Dredge all items where the following is true:” Criteria A AND Criteria B AND Criteria C AND etc.

You may select based on:

- ◆ Subject
- ◆ Sender
- ◆ Recipient
- ◆ Size
- ◆ Attachment Name

Whether they are equal to, not equal to, whether they contain or do not contain the item may be specified.

This provides great flexibility and allows you to customize dredges and retention for many different groups, or even individuals.

You may now configure a Job [“Blackberry Jobs” on page 326.](#)

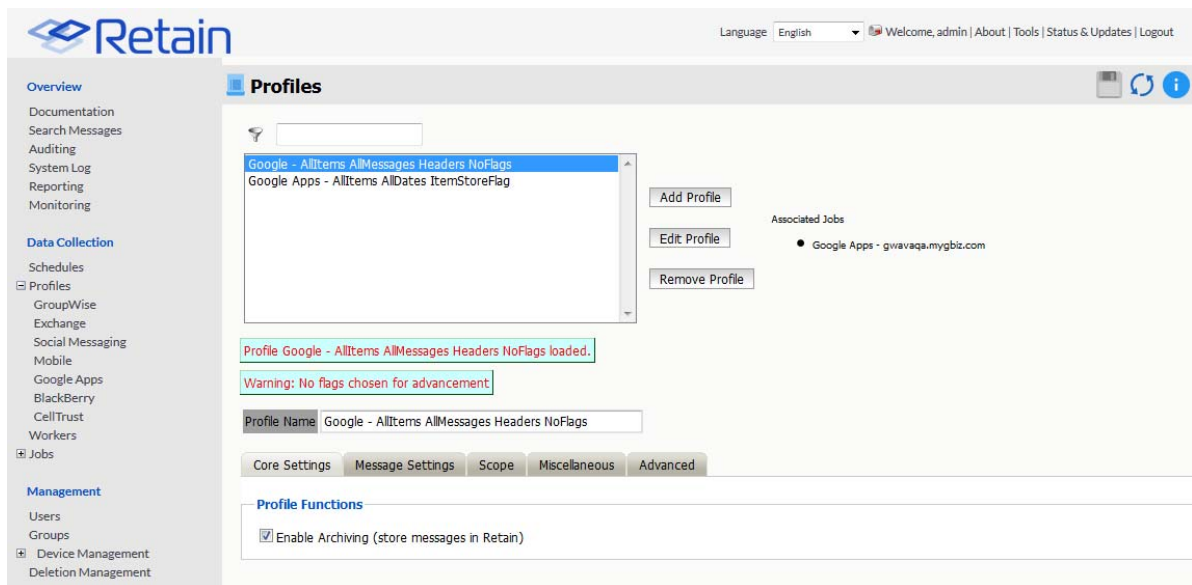
## Google Apps Profile

This requires that the module be configured [“Google Apps Module” on page 226.](#)

To create a profile to archive email and data from Google Apps, select the add profiles button and name the profile then continue configuring as desired. The Google Apps profile must be configured and all settings saved before a job can be created and run.

## Core Settings Tab

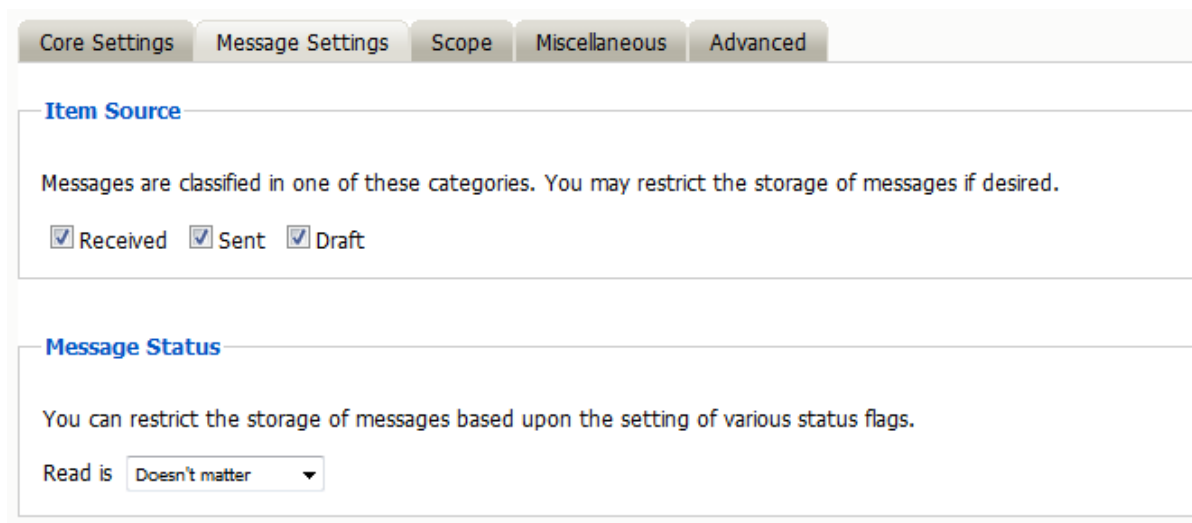
The profile will not become active and will not allow jobs to be run unless the profile is enabled. Enable the profile by placing a check mark in the 'Enable Archiving' checkbox.



The screenshot shows the Retain web interface. The top navigation bar includes the Retain logo, a language dropdown set to 'English', and user information: 'Welcome, admin | About | Tools | Status & Updates | Logout'. The left sidebar contains a navigation menu with sections: Overview, Documentation, Search Messages, Auditing, System Log, Reporting, Monitoring, Data Collection (Schedules, Profiles, GroupWise, Exchange, Social Messaging, Mobile, Google Apps, BlackBerry, CellTrust, Workers), Jobs, and Management (Users, Groups, Device Management, Deletion Management). The main content area is titled 'Profiles' and features a search bar, a list of profiles, and buttons for 'Add Profile', 'Edit Profile', and 'Remove Profile'. The selected profile is 'Google - AllItems AllMessages Headers NoFlags', with a warning: 'Warning: No flags chosen for advancement'. Below the profile name are tabs for 'Core Settings', 'Message Settings', 'Scope', 'Miscellaneous', and 'Advanced'. The 'Core Settings' tab is active, showing the 'Profile Functions' section with a checked checkbox for 'Enable Archiving (store messages in Retain)'. An 'Associated Jobs' section shows one job: 'Google Apps - gwavaqa.mygbiz.com'.

## Message Settings Tab

The Message Settings tab contains the source and status settings for the messages to be archived. Message types and sources which are checked will be archived in this profile.



The screenshot shows the 'Message Settings' tab in the Retain interface. At the top are tabs for 'Core Settings', 'Message Settings', 'Scope', 'Miscellaneous', and 'Advanced'. The 'Message Settings' tab is active. It contains two sections: 'Item Source' and 'Message Status'. The 'Item Source' section has the text: 'Messages are classified in one of these categories. You may restrict the storage of messages if desired.' Below this text are three checked checkboxes: 'Received', 'Sent', and 'Draft'. The 'Message Status' section has the text: 'You can restrict the storage of messages based upon the setting of various status flags.' Below this text is a dropdown menu labeled 'Read is' with the value 'Doesn't matter' selected.

Any item type or status which is not selected or specified will exclude qualifying items from being archived in Retain.

## Scope Tab

This is the most critical tab to fill out as it sets the limits on how much to archive.

Core Settings Message Settings Scope Miscellaneous Advanced

**Date Range to Scan**

New items

---

**Advance Flags**

You may not want to advance the flag after running the job.

Don't Advance Timestamp

## Date Range to Scan

The Date Range determines which message items are collected, depending on the date of the message.

New items  
 All Items in Mailbox  
 Number of days before job start date and newer  
 Number of days from job start date and older  
 Specify custom date range  
 Specify custom date range relative to job start

*New Items:* All items that have not been archived by Retain since the last time the job ran.

*All Items in Mailbox:* All items in the mailbox starting from 1/1/1970, duplicates will be processed but not stored if they already exist in the Retain archive.

*Number of days before job start date and newer:* Only items from the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or less.

*Number of days from job start date and older:* Only items previous to the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or more.

*Specify custom date range:* Only items between two absolute dates will be dredged.

*Specify custom date range relative to job start:* Only items between two relative dates will be dredged. E.g. messages that came into the email system between 7 and 5 days ago.

## Advance Flags

Enabling "Don't Advance Timestamp" will not update the timestamp flag. Items that are dredged will still be considered new by Retain the next time the job runs.

This is useful when troubleshooting, but is generally not used for normal jobs.

## Miscellaneous Tab

The miscellaneous tab allows the configuration to allow or deny archiving and indexing of attachments in Retain. If attachments are to be archived, they may also be indexed to provide searching capability in the browse messages interface.

The screenshot shows the 'Miscellaneous' tab selected in a configuration interface. The tabs are 'Core Settings', 'Message Settings', 'Scope', 'Miscellaneous', and 'Advanced'. The 'Miscellaneous' section is titled 'Miscellaneous' and contains the following text: 'You can save disk space by restricting attachment storage. You can also attach the Routing Properties to the message, if desired.' Below this are two radio buttons: 'Store all attachments' (selected) and 'Don't store any attachments, other than the message'. A paragraph follows: 'You may choose to store Sent Items properties, and/or store and index the Internet Headers. Both of these (particularly Sent Items properties) exact a performance penalty. However, it may be worthwhile to store and index the Internet Header if your compliance policy then allows Retain to choose to skip storing MIME.822 (which consumes lots of disk space since it's not usually single-instanceable).' At the bottom, there is a checked checkbox labeled 'Store/index Internet Headers'.

## Advanced Tab

The advanced tab allows the administrator to be even more specific in what to archive and what to exclude. The criteria added under the 'advanced' tab will limit associated jobs to only the items matching the criteria. Up to 6 lines of advanced criteria may be added to each profile. Each additional line will be logically AND-ed together. For example, the system will archive all items where the following is true: Criteria A AND Criteria B AND Criteria C AND etc.

The screenshot shows the 'Advanced' tab selected in the configuration interface. The tabs are 'Core Settings', 'Message Settings', 'Scope', 'Miscellaneous', and 'Advanced'. The 'Advanced' section is titled 'Advanced Criteria' and contains the text: 'You may add advanced criteria such as specific attachment names, sizes, subject here.' Below this is an 'Add' button. The section is titled 'Folder Scope' and contains the text: 'Normally, you want to include all folders in your scan. However, you may have specific reasons to include or exclude folders. Choose a folder root, an optional subfolder (you may have multiple subfolders with the \ delimiter, and whether to include all subfolders in the pattern).' Below this is a dropdown menu with the text 'Items from All Folders'.

You may select based on:

- ◆ Subject
- ◆ Sender
- ◆ Recipient
- ◆ Size

- ◆ Attachment Name

**Advanced Criteria**

You may add advanced criteria such as specific attachment names, sizes, subject here.

Specify the criteria, whether it is: equal to or not equal to, whether they contain or do not contain the item.

Subject

- Subject
- Sender
- Recipient
- Attachment size (bytes)
- Attachment name
- Category

is

- is
- is not
- contains
- does not contain

This gives you great flexibility and granularity. It allows you to customize archival jobs and retention for many different groups, or even individuals.

## Folder Scope

By default, we dredge items from all folders. You can specify one or more inclusions or exclusions.

Your choices are:

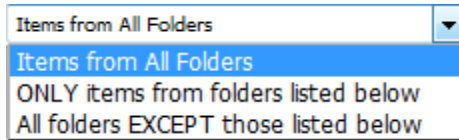
- ◆ Dredge everything
- ◆ Dredge only these listed folders
- ◆ Dredge everything except these listed folders

**Folder Scope**

Normally, you want to include all folders in your scan. However, you may have specific reasons to include or exclude folders. Choose a folder root, an optional subfolder (you may have multiple subfolders with the \ delimiter, and whether to include all subfolders in the pattern).

How to specify the list of folders to dredge/exclude:

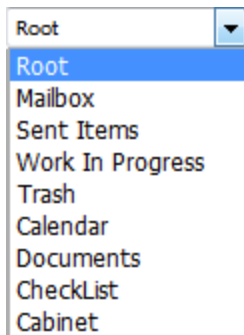
1. Select to only get items from the list, or all except items from the list, as desired



2. Select 'Add' to open a new selection



3. Specify a System Folder (mandatory). Example: Calendar



4. You may specify a subfolder of that folder (optional)  
Example: entering "old" would mean the folder "old" under "Calendar"
5. You can have multiple hierarchies under that with the / delimiter  
Example "old/mail" would mean the subfolder "mail" under "old" under "Calendar"
6. You specify if the option includes subfolder  
Example: If you select "old" and "includes subfolder" is unchecked, "Calendar/mail" is selected.  
If "includes subfolder" is checked, "Calendar/old/mail" would also be selected.

You may now configure a Job ["Google Apps Jobs" on page 329](#).

## Bloomberg Profile

This requires that the module be configured ["Bloomberg Module" on page 240](#).

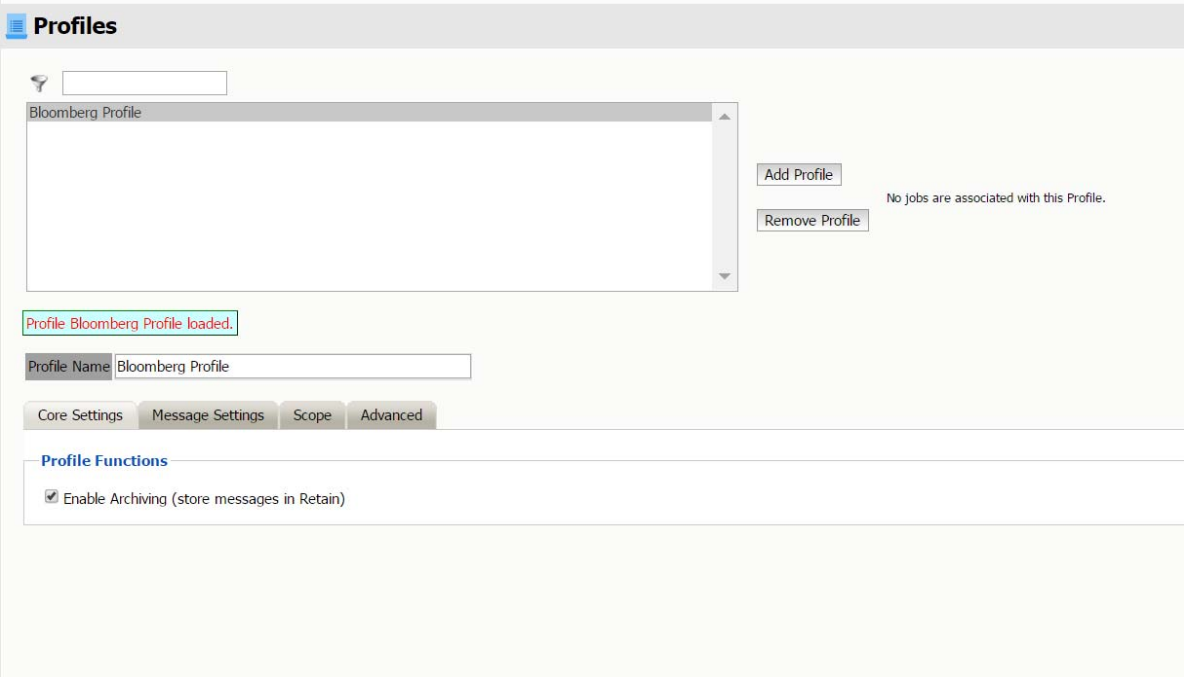
The Profile allows you to set what is to be dredged from your Bloomberg system.

Click on "Add Profile" and provide a profile name, or select an already existing profile to access the configuration tabs. All changes made on this page must be saved by selecting the "save changes", disk icon, at the top right of the page. Tabs may be changed and navigated through without affecting new settings, but any move to another page will require saving, or abandoning the changes made.



## Core Settings Tab

Core settings allow you to enable archiving.



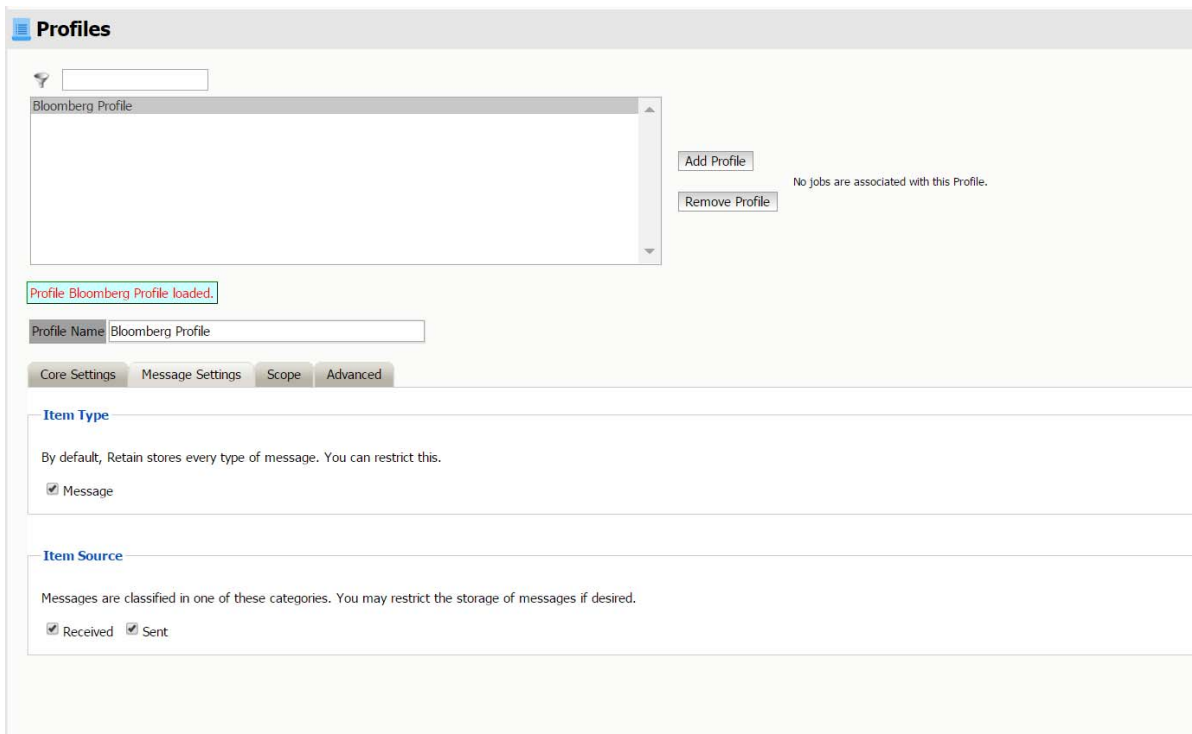
The screenshot displays the 'Profiles' management interface. At the top, there is a search bar and a list of profiles. The 'Bloomberg Profile' is selected and expanded to show its settings. The 'Core Settings' tab is active, showing a checkbox for 'Enable Archiving (store messages in Retain)' which is checked. Other tabs include 'Message Settings', 'Scope', and 'Advanced'. A message at the bottom of the profile list states 'Profile Bloomberg Profile loaded.' and another message indicates 'No Jobs are associated with this Profile.'

## Profile Functions

The Profile Functions tell the Retain Server what to do with the mail it archives from the Bloomberg system. If Archiving is not enabled, mail will not be archived by Retain.

## Message Settings tab

The message settings tab allows you to restrict the types of messages to be archived.

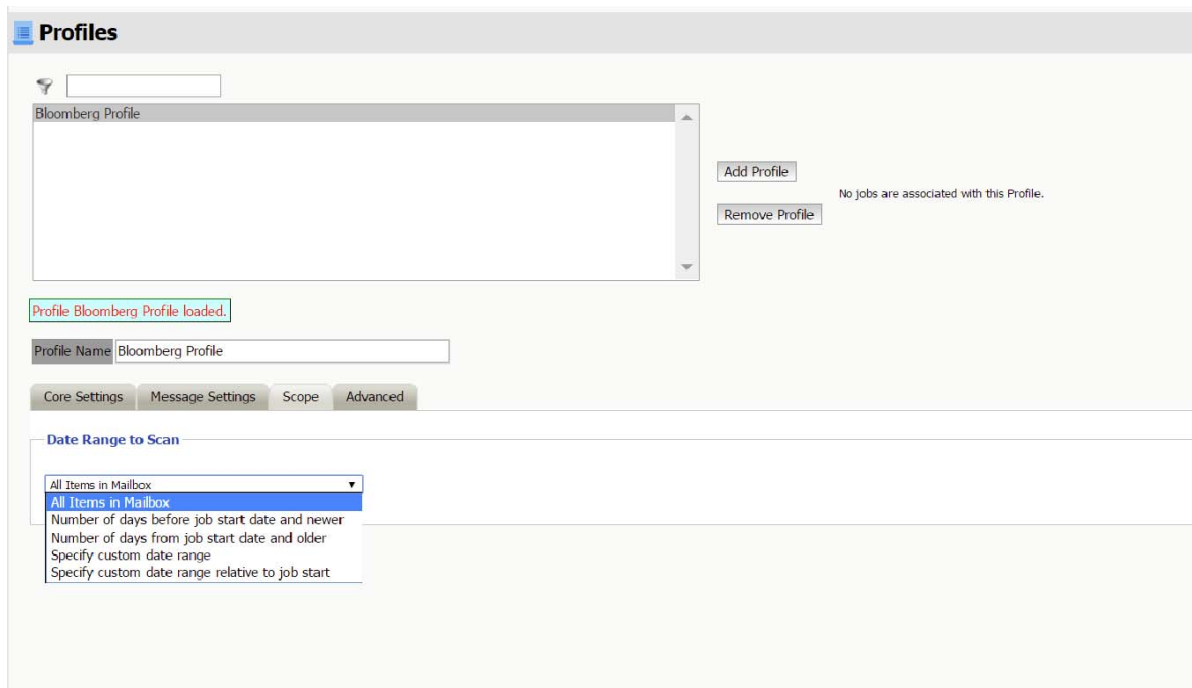


There is only one type of message, disabling this will prevent archiving. You can restrict the item source to received or sent items only or both.

By default, all items are selected for collection.

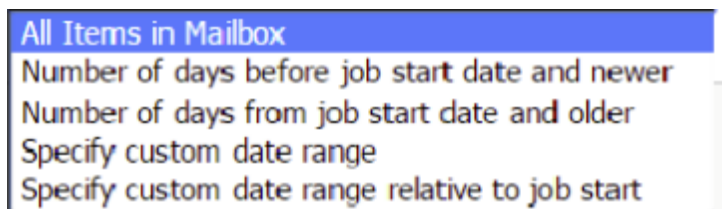
## Scope Tab

This is the most critical tab to fill out as it sets the limits on how much to archive.



## Date Range to Scan

The Date Range determines which message items are collected, depending on the date of the message.



*All Items in Mailbox:* All items in the mailbox starting from 1/1/1970, duplicates will be processed but not stored if they already exist in the Retain archive.

*Number of day before job start date and newer:* Only items from the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or less.

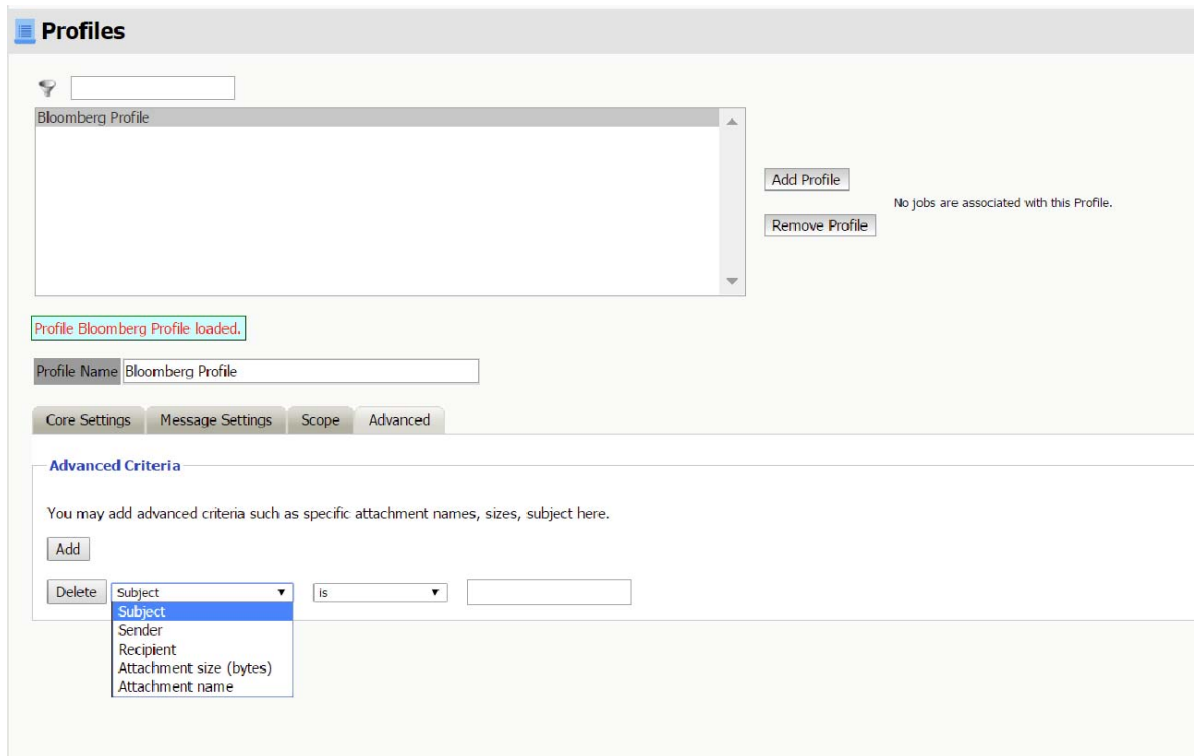
*Number of days from job start date and older:* Only items previous to the relative number of days from the time the job began will be archived. E.g. messages that came into the email system 7 days ago or more.

*Specify custom date range:* Only items between two absolute dates will be dredged.

*Specify custom date range relative to job start:* Only items between two relative dates will be dredged. E.g. messages that came into the email system between 7 and 5 days ago.

## Advanced Tab

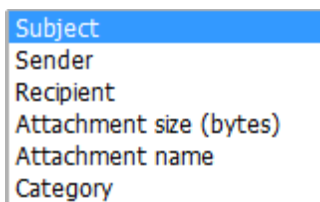
The Advanced tab allows you to limit what is stored by Retain. This must be used with caution as this opens holes for data to be lost through. It is recommended to store everything since storage space is inexpensive.



The screenshot shows the 'Profiles' configuration page. At the top, there's a search bar and a list of profiles, with 'Bloomberg Profile' selected. Below the list, there are 'Add Profile' and 'Remove Profile' buttons. A message states 'No jobs are associated with this Profile.' Below this, a notification says 'Profile Bloomberg Profile loaded.' The 'Profile Name' field contains 'Bloomberg Profile'. There are four tabs: 'Core Settings', 'Message Settings', 'Scope', and 'Advanced', with 'Advanced' being the active tab. Under the 'Advanced Criteria' section, there's a description: 'You may add advanced criteria such as specific attachment names, sizes, subject here.' There's an 'Add' button and a 'Delete' button. A dropdown menu is open, showing options: 'Subject', 'Sender', 'Recipient', 'Attachment size (bytes)', and 'Attachment name'. The 'Subject' option is currently selected.

### Advanced Criteria

If you want to be more specific as to what to dredge or not to dredge, add the criteria here. Each line will be logically AND-ed together. Think “Dredge all items where the following is true:” Criteria A AND Criteria B AND Criteria C AND etc.



You may select based on:

- ◆ Subject
- ◆ Sender
- ◆ Recipient
- ◆ Attachment Size (in bytes)
- ◆ Attachment Name
- ◆ Category

And whether they are equal to, not equal to, contain or do not contain the item you specify.

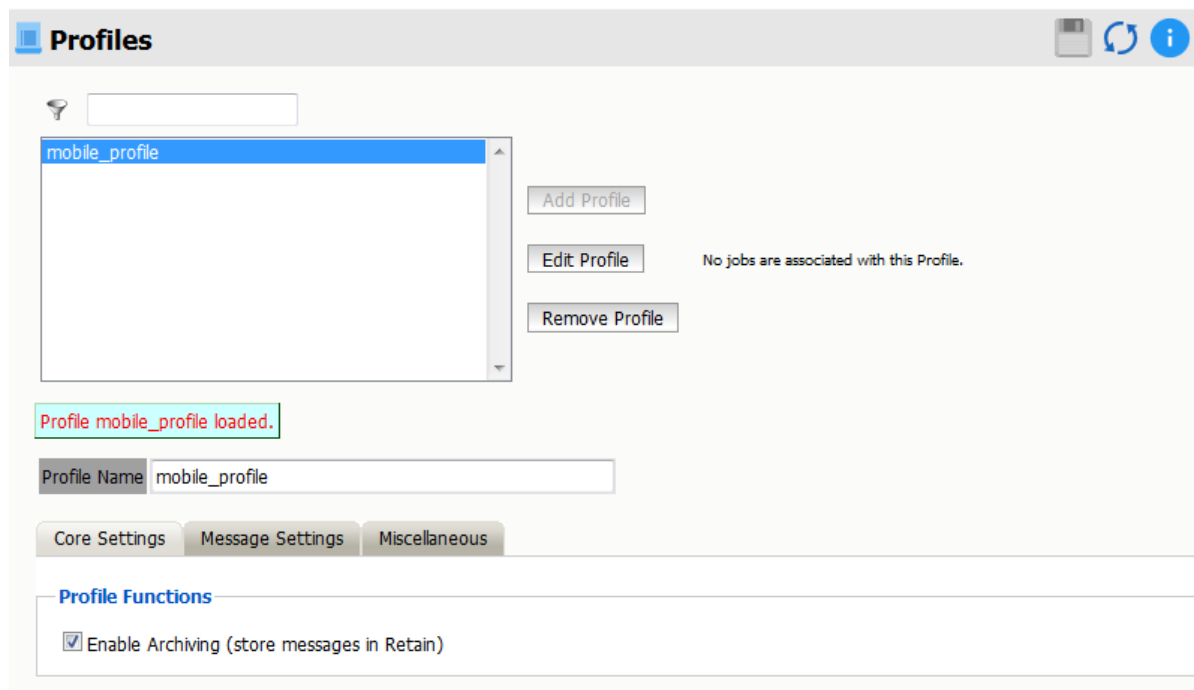
This gives you great flexibility and granularity. It allows you to customize dredges and retention for many different groups, or even individuals.

You may now configure a Job [“Bloomberg Jobs” on page 334](#).

## Mobile Profile

This requires that the module be configured [“Mobile Module \(Android\)” on page 243](#).

The Mobile Profile allows the administrator to dictate what types of message data is collected from registered mobile devices. The profile is universal, and once configured works for the entire mobile system.



The Mobile Profile is fairly straight-forward. To enable message data collection for the mobile system, the profile must be activated.

Under Message Settings, the different types of messages which can be archived from Mobile devices are listed and configured. The message source and type are available for selection or exclusion.

Core Settings Message Settings **Miscellaneous**

---

**Item Type**

By default, Retain stores every type of message. You can restrict this.

SMS  MMS  Phone Call

---

**Item Source**

Messages are classified in one of these categories. You may restrict the storage of messages if desired.

Received  Sent

Finally, the Miscellaneous tab allows for configuring attachments. Attachment size and general attachment settings can be configured here. If there is a maximum limit, set it in the field below.

Core Settings Message Settings **Miscellaneous**

---

**Miscellaneous**

You can save disk space by restricting attachment storage.

Store all attachments  
 Don't store any attachments, other than the message

Maximum attachment size  KB

The attachment size limit is listed in KB. If the size limit is configured to -1, then there is no limit and all attachments will be archived no matter the size.




There can only be one profile for the Mobile module. Once a profile has been created, the option to create a new profile will be disabled and grayed-out. If a new profile is desired, the existing profile must first be deleted. If there is no profile active in the system, the option to create a new profile will be active.


Once the module, worker, and profile have been configured, devices must be added through Device Management. [“Device Management Overview” on page 481](#)

## Social Media Governance Profile

This requires that the module be configured. See [“Social Media Governance Module” on page 257](#).

The Social Media Governance Profile allows the administrator to dictate what types of message data is collected and from which Social Messaging channels.

**Profiles** Save Changes   



No jobs are associated with this Profile.

Enter new profile below

Profile Name

---

**Channels To Archive**

You need to select channels to archive

|                                              |                                             |                                            |                                                          |                                                  |                                                       |
|----------------------------------------------|---------------------------------------------|--------------------------------------------|----------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------|
| <input checked="" type="checkbox"/> WhatsApp | <input type="checkbox"/> WeChat             | <input type="checkbox"/> LinkedIn          | <input type="checkbox"/> LinkedIn Companies              | <input type="checkbox"/> Facebook Accounts       | <input type="checkbox"/> Facebook Pages               |
| <input type="checkbox"/> Instagram           | <input checked="" type="checkbox"/> Twitter | <input type="checkbox"/> SharePoint - 0365 | <input checked="" type="checkbox"/> SharePoint - On-Prem | <input type="checkbox"/> Skype for Business 0365 | <input type="checkbox"/> Skype for Business - On-Prem |

The Social Media Governance Profile is fairly straight-forward. To enable message data collection for the Social Media system, the profile must be activated.

The Miscellaneous tab allows for configuring attachments. Attachment size and general attachment settings can be configured here. You set the attachment size in KB. If the size limit is configured to -1, then there is no limit and all attachments will be archived no matter the size.





# 9 Workers

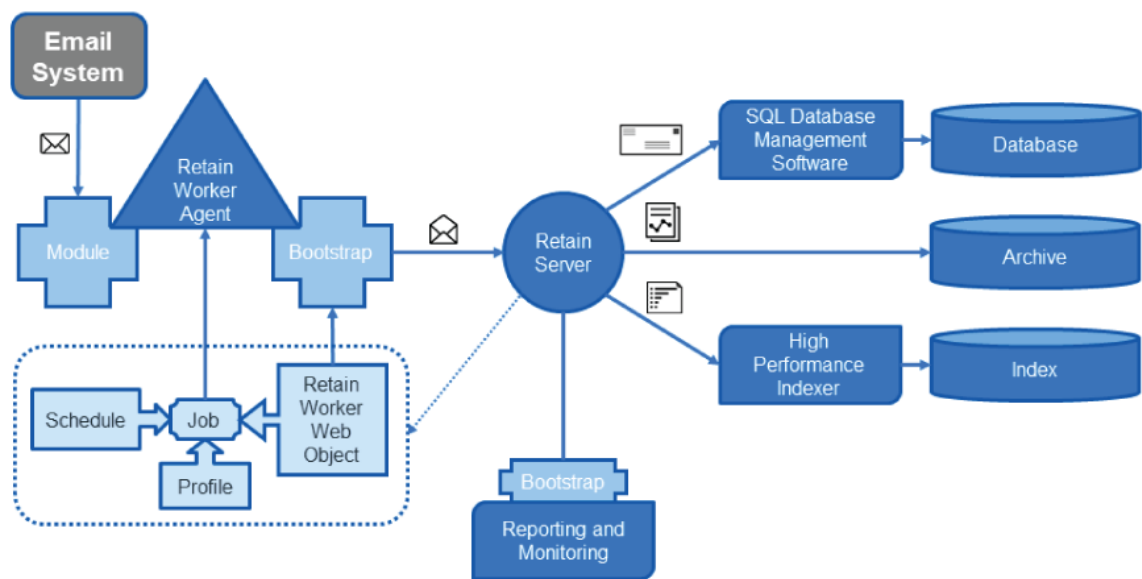
- ♦ [“Workers Overview” on page 305](#)

## Workers Overview

- ♦ [“Worker Configuration” on page 306](#)
- ♦ [“Uploading a Worker Bootstrap to the Worker Console” on page 311](#)
- ♦ [“Removing a Worker Bootstrap and Re-uploading” on page 314](#)

The Worker is how Retain connects to your messaging system.

Worker is an overloaded term in Retain. It can refer to the agent software that needs to be installed onto a server or it can refer to the web object in the Retain server console that provides the bootstrap information needed for the agent to connect to Retain.



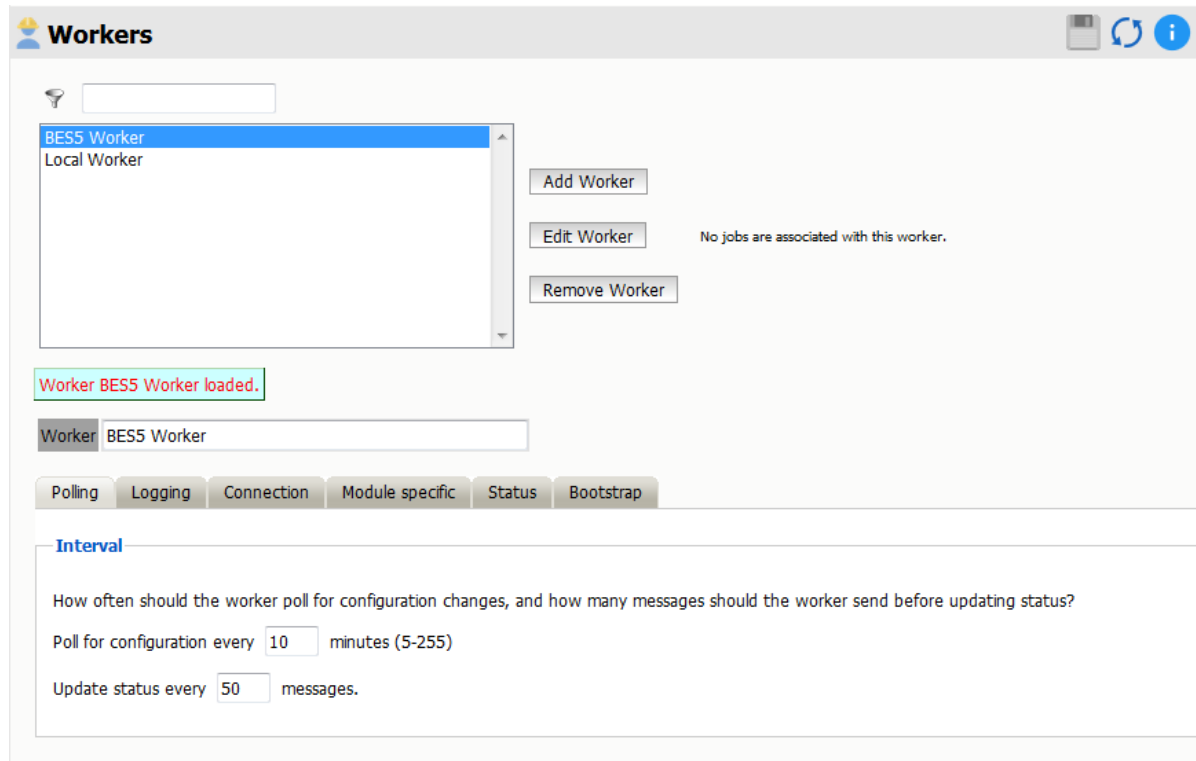
You will need to set up at least one Retain Worker. The Retain Worker does the actual work of collecting the data from a message system and delivering it to the Retain Server. The Retain Worker component is normally installed local to each GroupWise mail server, or any Exchange server from which you wish to collect data.

Although a Worker may be installed on a machine running Retain Server, this is normally not recommended or sufficient, except for very small (100 or fewer users) systems or for evaluation purposes.

Ideally, the worker you choose to dredge mail from a desired server is local to the server itself. Using a worker on Server A to pull data from a mailbox server on Server B is possible, but it uses up network bandwidth and will be slower than simply pulling data locally. For this reason, Retain was designed to allow you as many workers as you need, on Linux or Windows.

## Worker Configuration

From the Retain home page, click Workers. You will see this screen:



### Create a New Worker

This creates a Worker Web Object, which provides the bootstrap for the Worker Agent to connect to Retain and messaging system.

1. Click “Add Worker”.
2. Put the name of the worker in the “Worker” text field. Example: `Local Worker 0`. If using multiple workers on different servers give them unique names that will tell you where the worker agents are installed.
3. Configure the worker, see below.
4. Press “Save Changes”.
5. Download the bootstrap file. Default: `RetainWorker2.cfg`.
6. Browse to the Worker console.
7. Upload the bootstrap.

## Configuration Options

Set the worker configuration options to meet your system and retention needs.

### Polling Tab

Check the Connections Tab to be sure the Retain Server IP address settings are correct. This tells the Worker where the Retain Server is located. (Server Host Name or IP address must be correct; this should be populated automatically, but double check for accuracy.) The Server Connection setting must be able to resolve to the Retain Server if placed in a browser address bar.

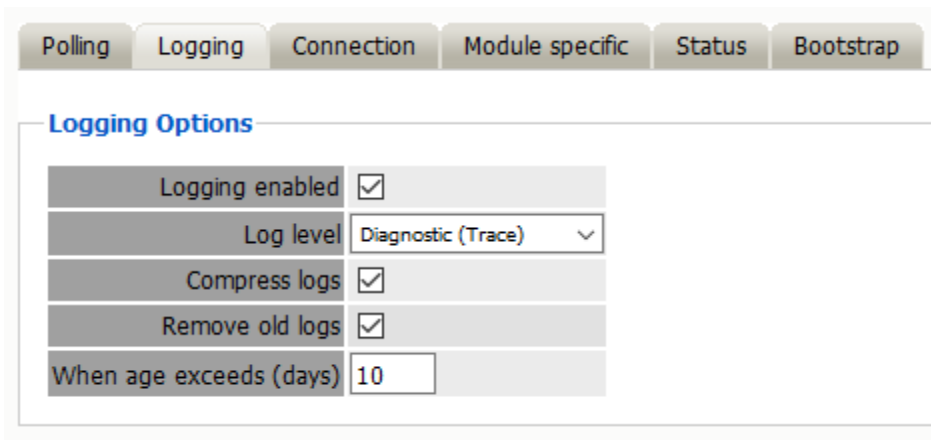
The default polling interval is 10 minutes and the update interval is 500 messages, shown on the Status tab.



The screenshot shows a configuration interface with tabs: Polling, Logging, Connection, Module specific, Status, and Bootstrap. The 'Polling' tab is active. Under the heading 'Interval', there is a question: 'How often should the worker poll for configuration changes, and how many messages should the worker send before updating status?'. Below this, there are two input fields: 'Poll for configuration every 10 minutes (5-255)' and 'Update status every 500 messages.'.

### Logging tab

This tab allows you to control logging. The logs are an important troubleshooting tool as it contains a record of what the Worker does.



The screenshot shows a configuration interface with tabs: Polling, Logging, Connection, Module specific, Status, and Bootstrap. The 'Logging' tab is active. Under the heading 'Logging Options', there are five rows of configuration options:

|                         |                                     |
|-------------------------|-------------------------------------|
| Logging enabled         | <input checked="" type="checkbox"/> |
| Log level               | Diagnostic (Trace) ▾                |
| Compress logs           | <input checked="" type="checkbox"/> |
| Remove old logs         | <input checked="" type="checkbox"/> |
| When age exceeds (days) | 10                                  |

Logging is enabled by default.

There are four logging levels:

- ◆ Diagnostic (Trace): Maximum logging level. Default logging level.
- ◆ Verbose (Debug)
- ◆ Normal (Info)
- ◆ Error Only: Minimum logging level.

Logs are compressed at midnight, by default.

Old logs are removed at midnight after 10 days, by default.

## Connection Tab

**Server Connection**

The worker will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Worker contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Worker or Server.

For administrators using the Reload interface, note the worker password assigned must be the same for each worker that contacts the Reload Server. As part of setting of the Reload Server, you must know this password.

|                  |                                  |
|------------------|----------------------------------|
| Server Protocol  | http                             |
| Server Host Name | localhost                        |
| Server Port      | 48080                            |
| Server Path      | /RetainServer                    |
| Worker Password  | •••••••••• (Password is default) |

**Note:** Changing any of these parameters will require recopying the worker bootstrap file!

The Connection tab holds very important contact information for the worker's connection to the Retain Server and the Post Office. Make sure that the Retain Server connection address is correct, or the Retain Worker will not be able to talk to the server.

Double check all these settings to ensure that you will have the best performance and connection for your system.

---

**NOTE:** It is vitally important that the connection information is correct before you save the worker. On a single server system, it is easy enough – it's the same server. However, in an enterprise setting where you might be using different components on different servers, it is extremely important that each component knows how to connect to the Retain Server.

---

If you do not set this correctly, the Retain Worker will not be able to contact the Retain Server and it will not run jobs. The bootstrap would have to be replaced.

## Module Specific Tab

The Module Specific tab contains information specific to individually configured modules, this tab may appear different depending on which modules are configured on your system.

Polling Logging Connection **Module specific** Status Bootstrap

Depending on the modules you have configured, you will need to provide additional configuration information here.

**GroupWise SOAP Access**

When using GroupWise, the Retain Worker needs to connect via SOAP to a initial default POA (preferably one local to the Worker) to gather job membership information. Initially this is set to the default you specified in the Groupwise Module Configuration, but it can be changed on a per worker basis.

POA Host Name

SOAP Port

Enable SSL

**Exchange**

As the worker processes each mailbox, it performs an auto-discovery process to find the "best" server to connect to. Providing an Active Directory Site improves the accuracy of the algorithm, although this is optional.

Active Directory Site (case sensitive)

**Message Router**

Messages received from the mobile devices are stored in datafiles for the Worker to process and send up to Retain. The Worker needs to know the path to the datafiles and how many days to keep the files.

Data Path

Delete files after  days

### ***GroupWise SOAP Access Section***

With GroupWise you may specify the particular Post Office Agent the Worker connects to. This is especially useful if you have multiple post offices to archive from. Set the POA Host Name to the post office the Worker is archiving from.

This allows Retain to support a multiple post offices, and mixed SSL and non-SSL GroupWise environments.

For example, if you have a mixed GroupWise 2014R2 and 18 system, with the 2014R2 POA not using SSL and the 18 POA requiring SSL. You would install two Worker Agents, set up two Workers objects in the RetainServer interface with the Module specific setting set to SSL disabled for the 2014R2 POA and for the 18 POA with SSL enabled, then two Jobs archiving each post office separately.

### ***Exchange Section***

With Exchange, you may optionally specify a specific Active Directory Site the worker is located in. That allows Retain to find the "closest" Exchange Server that is appropriate for the user to be archived.

The settings specified here are tied only to the specific worker configured, and does not affect the rest of the system, different worker may point to different Active Directory Sites. In general, this setting may be ignored unless required. If required, input the appropriate information.

## Message Router Section

Message Router. The message router settings must be set on the message router worker to reflect where the data path is for the Message Router. This path must be specified from the worker's point of view. If the worker is not local to the router, then the path must be fully accessible to the worker; direct file access is required. You may specify how long to keep files in this location. Default is shown.

---

**NOTE:** If REST is being utilized, do not configure the Message Router section. The Message Router will default to REST if this is not configured.

---

## Status Tab

After the worker has been saved, two additional tabs become visible for settings on the worker. You MUST save changes on a newly created worker before the 'Bootstrap' tab is available to be used. Before the bootstrap has been uploaded the Status will be empty.

| Worker Status           |            |
|-------------------------|------------|
| Registered              | never      |
| Last contact            | never      |
| Last Job                | Unknown {} |
| Last job start          | never      |
| Last job end time       | never      |
| Total mailboxes scanned | 0          |
| Total messages stored   | 0          |
| Total messages deleted  | 0          |

The status tab for the new worker will not hold any pertinent information until a job has been run or the worker has registered to the server and is in communication. Once a job has been completed, information will be displayed on the general status of the selected Worker.

Check this page after the worker has completed connecting to the Server for information and jobs. After a job has been run, or is running, more pertinent information, such as total mailboxes scanned and messages stored, will be displayed.

## Bootstrap Tab

After you have checked and set your settings, click "Save Changes" before browsing to another page to finish creating and to save your worker.

After you have saved the changes, the Bootstrap tab appears (see below). Click "Download File" to save the configuration to a local workstation.

Poling Logging Connection Module specific Status Bootstrap

**Boot Strap**

The Worker software needs a special "bootstrap" configuration file copied to its working directory before it can function correctly. You may copy it manually or use a web browser to upload the file. (<http://<RetainWorkeripAddress>/RetainWorker>)

[Download File](#)

Last downloaded: Thu Feb 19 14:18:38 MST 2015  
Worker ID: 4F4642A0CEFCDBC31702C0C20E0E5E27

## Uploading a Worker Bootstrap to the Worker Console

After creating the bootstrap file in the Retain Server Console you will need to upload it to the Worker Agent Console so it can connect to the Retain Server.

1. Save the bootstrap file to your hard drive in a place where you can find it. Click "Save".
2. Open a new browser window and type:  
`http://<retain worker address>/RetainWorker`  
The upload screen appears when a worker has not been initialized.
3. Upload the bootstrap file.

## Retain Worker

Each worker needs to be configured in the Retain Server web interface. Once a worker has been configured a "bootstrap" file needs to be downloaded and applied to the worker here.

Without a bootstrap file the Worker will not know how to find the Retain server. After applying the bootstrap file any configuration changes made in the server will be polled by this worker. You will not have to reconfigure the Worker manually unless you change the Connectivity settings configured in the Retain Server.

Upload Bootstrap Configuration

No file selected.

### More Information

To download the bootstrap file and upload it here:

- Open the Retain server's web interface.
- Select the Worker.
- Navigate to the Bootstrap tab.
- Select 'Download File'.
- Save the file to your desktop.
- Return to this interface.
- Click 'Browse' and locate the file on your desktop.
- Click 'Upload File' below.

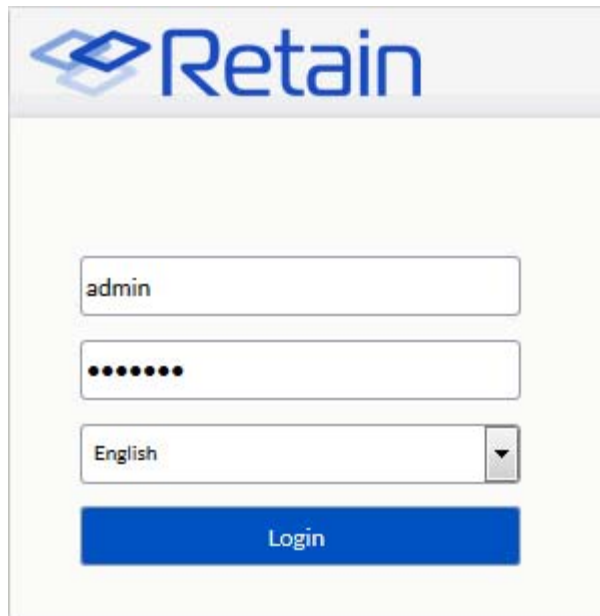
4. Click "Browse" to find the file you just downloaded, and select it.
5. Click "Open".
6. Click "Upload File".
7. If the upload went well, you will see this screen:

Configuration Complete. From now on, you'll have to log in as a user (such as the initially created admin user) with the Manage Workers right.

After you click the "Continue" button, you will be returned to the login page.

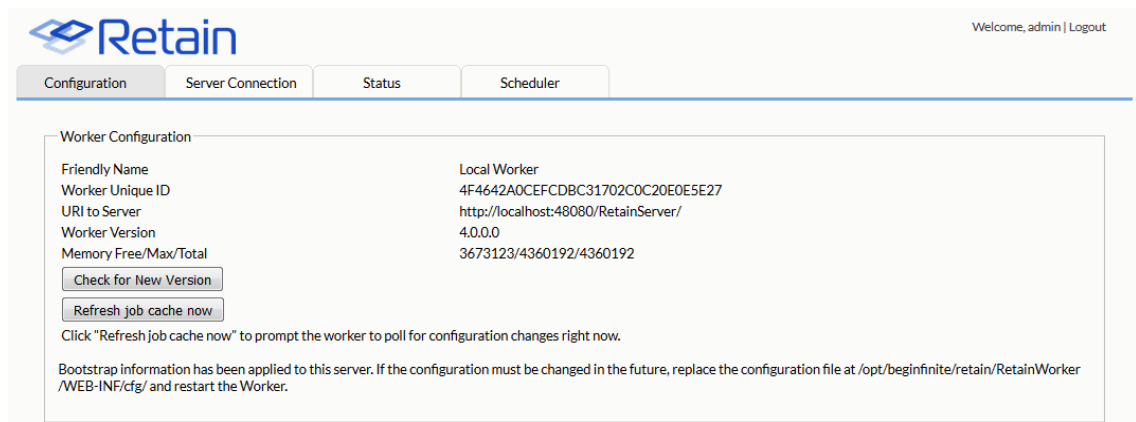
8. Login as Admin.





The image shows the Retain login interface. At the top left is the Retain logo. Below it are three input fields: a text field containing 'admin', a password field with masked characters, and a dropdown menu set to 'English'. A blue 'Login' button is positioned at the bottom of the form.

On all subsequent logins, you should be shown the configuration page first.



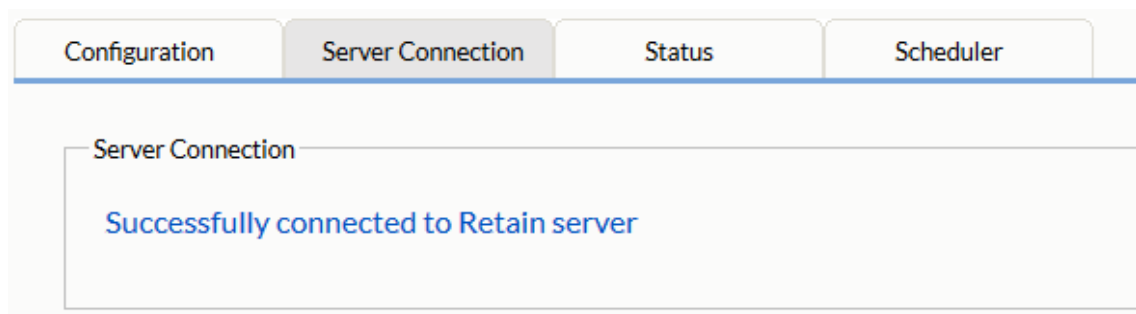
The image displays the Retain configuration page. At the top left is the Retain logo, and at the top right is the text 'Welcome, admin | Logout'. Below the logo is a navigation bar with four tabs: 'Configuration', 'Server Connection', 'Status', and 'Scheduler'. The 'Configuration' tab is selected. The main content area is titled 'Worker Configuration' and contains the following information:

|                       |                                      |
|-----------------------|--------------------------------------|
| Friendly Name         | Local Worker                         |
| Worker Unique ID      | 4F4642A0CEFCDBC31702C0C20E0E5E27     |
| URI to Server         | http://localhost:48080/RetainServer/ |
| Worker Version        | 4.0.0.0                              |
| Memory Free/Max/Total | 3673123/4360192/4360192              |

Below the table are two buttons: 'Check for New Version' and 'Refresh job cache now'. A note below the buttons reads: 'Click "Refresh job cache now" to prompt the worker to poll for configuration changes right now.' At the bottom, a note states: 'Bootstrap information has been applied to this server. If the configuration must be changed in the future, replace the configuration file at /opt/beginfinite/retain/RetainWorker/WEB-INF/cfg/ and restart the Worker.'

You should be able to see your configuration on the screen, as shown. The “Check for New Version” button checks for updates. The “Refresh job cache now” button tells the worker to poll the server for configuration changes and new jobs. After this button is selected, the Worker page will refresh automatically after the Retain Server has been polled. It takes just a few seconds.

9. Verify the Retain Server connection success by selecting the Server Connection tab.



The image shows the Retain 'Server Connection' page. The navigation bar at the top has four tabs: 'Configuration', 'Server Connection', 'Status', and 'Scheduler'. The 'Server Connection' tab is selected. The main content area is titled 'Server Connection' and displays the message 'Successfully connected to Retain server' in blue text.

10. Go back to the Retain Server.
11. Click “Workers”.
12. Click on the worker you just created. and go to the Status tab.  
You should now see the Registered and Last Contact data filled in:

| Polling                 | Logging                                         | Connection | Module specific | Status | Bootstrap |
|-------------------------|-------------------------------------------------|------------|-----------------|--------|-----------|
| <b>Worker Status</b>    |                                                 |            |                 |        |           |
| Registered              | 04-Jun-2014 19:04:10                            |            |                 |        |           |
| Last contact            | 15-Sep-2015 20:54:19                            |            |                 |        |           |
| Last Job                | Social 17:00 {8DDB069EE65E02CA82EC8BF4CF4F1F2A} |            |                 |        |           |
| Last job start          | 15-Sep-2015 17:00:30                            |            |                 |        |           |
| Last job end time       | 15-Sep-2015 17:00:33                            |            |                 |        |           |
| Total mailboxes scanned | 183419                                          |            |                 |        |           |
| Total messages stored   | 701394                                          |            |                 |        |           |
| Total messages deleted  | 0                                               |            |                 |        |           |

## Removing a Worker Bootstrap and Re-uploading

If you change something on a worker’s connection tab you will need to re-upload the bootstrap. You will first need to remove the old bootstrap to reset the worker connection and then you will be able to re-upload as above.

### Removing a Worker Bootstrap File

If a worker agent cannot connect to the Retain Server correctly, a new bootstrap may help. The old bootstrap will have to be removed to reset the Worker agent. This assumes only a single worker on the server.

1. On the Worker Agent server, stop tomcat. [“Starting and Stopping the Retain Server” on page 113](#)
2. Navigate to the Worker configuration folder.
  - a. Linux: `opt/beginfinite/retain/RetainWorker/WEB-INF/cfg`.
  - b. Windows: `[Disk]:Program Files\Beginfinite\Retain\RetainWorker\WEB-INF\cfg`.
3. Remove `RetainWorker2.cfg` and `RetainWorker2_bak.cfg`. Removing the bootstrap resets the worker to initial configuration.
4. Start tomcat. The Worker Agent is now in its un-configured state and needs a bootstrap.
5. Download the new or updated Worker bootstrap from the Retain Server Console.
6. Upload the bootstrap [“Uploading a Worker Bootstrap to the Worker Console” on page 311](#).

If you have multiple workers on a server you will need to make sure you are removing the bootstrap to the correct worker, which will be dependent on the worker number. See [“Deploying Production-Use Worker Agents on Linux” on page 109](#) or [“Installing Additional Retain Workers on Windows” on page 111](#)

1. On the Worker Agent server, stop tomcat. [“Starting and Stopping the Retain Server” on page 113](#)
2. Delete the Retain Worker.cfg file on the Worker machine. For security reasons, there is no way to do this except by manually deleting the file from the server console itself. The path is: .../RetainWorkerN/WEB-INF/cfg. [“System File Locations” on page 66](#). N being the number of the Worker Agent. Removing the bootstrap resets the worker to initial configuration.
3. Start tomcat. The Worker Agent is now in its un-configured state and needs a bootstrap.
4. Download the new or updated Worker bootstrap from the Retain Server Console.
5. Browse to the worker console of the worker you are updating. `http://<retain worker address>/RetainWorkerN`
6. Upload the bootstrap to the worker [“Uploading a Worker Bootstrap to the Worker Console” on page 311](#).



# 10 Jobs

As illustrated in [“Jobs—An Overview” on page 155](#), after you have created modules, schedules, profiles and workers, you are ready to organize them in jobs for your targeted messaging systems.

Use the information and instructions in the following sections to create and manage your archiving jobs.

- ◆ [“GroupWise Job” on page 317](#)
- ◆ [“Exchange/O365 Job” on page 321](#)
- ◆ [“Blackberry Jobs” on page 326](#)
- ◆ [“Google Apps Jobs” on page 329](#)
- ◆ [“Bloomberg Jobs” on page 334](#)
- ◆ [“Mobile Jobs” on page 338](#)
- ◆ [“Social Media Governance Jobs” on page 341](#)
- ◆ [“Starting a Job Manually” on page 343](#)
- ◆ [“Stopping a Job” on page 344](#)

## GroupWise Job

Before a job can be created the module must be configured [“GroupWise Module” on page 160](#).

A job is made up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“GroupWise Profile” on page 271](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“GroupWise Job” on page 317](#)

## Core Settings Tab

The Core Settings of a job contains configuration which must be set for the job to be saved and become active. A job must be enabled before it will run. Jobs must also have a specified schedule, profile, and worker. These are all selected from drop-down menus, and will not be populated unless those items are already configured in the system.

**Core Settings**

Job enabled

Each Job must have the following assigned to it:

- [schedule](#) - How often to run
- [profile](#) - What to do when running
- [worker](#) - Where to run the job

Schedule: GW8NTPO

Profile: AllFolders AllMessages NoArchiveMark NoStubbing ItemStore

Worker: Local Worker

Items archived with this job can optionally be set with an "expiration timestamp" which the Deletion Manager can use to remove obsolete items. The expiration timestamp can only be extended, never reduced.

Enable data expiration

Expire in: 1 Days

Base Expiration Time on: Date Item was delivered to mail server.

Some customers may wish to override the default expiration settings for specific folders. You may specify these folders below - any folders that do NOT meet these criteria will have the expiration settings specified above applied. If you only want the folders to have expiration policies, enter -1 above for the base expiration value.

Add

The Data Expiration setting is an option to place a time stamp on data in the Retain database, which allows for ease of automation for the deletion manager. In addition, devices such as NetApp, Centera, and Hitachi HCAP may use this number to enforce hardware level protection of the stored item so that no one (including Retain) may delete the item before its expiration date. Job Expiration is not retroactive for mail in the database, and only applies to mail archived by the job that it is active for. In order to have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Mailboxes Tab

The mailboxes tab is where the administrator specifies which entities (mail servers and/or Distribution Lists) are to be scanned. This tab is not displayed for the mobile module.

Expand the Post Office and/or Distribution List trees, and check off the items you want to be dredged.

---

**NOTE:** If you desire to have a job backup a single user, or selected group of users, select the Users menu and assign the users desired

---

Core Settings Mailboxes Notification Status

**Mailboxes**

Assign the Post Offices and/or Distribution Lists to be included in this job. Distribution Lists *must* have System Visibility.

Mail Servers  
 Distribution Lists  
 Distribution Lists (exclude)  
 Users

The Distribution List selection allows you to include or exclude a group of users from an archive job. If you want to use GroupWise Distribution Lists, the visibility needs to be set to “system wide”.

The users section allows you to select individual users to include, or exclude them from an archive job. For example: you can select an entire Mail Server to be archived, and then expand the users section to include or exclude users to the job.

This can also be used to select only certain users in the system for an archive job.

To add a user to the Include or Exclude list, select the respective ‘Add user’ button and search for the user. It can be helpful to unselect the ‘only show recently cached items’ option. Add the selected users to the list in the search window, then select ‘Ok’ to add them to the include or exclude list.

## GroupWise Job Option - GroupWise Disaster Recovery Tab

Selecting this option tells the job to use the GroupWise Disaster Recovery Integration “[GroupWise Disaster Recovery Integration](#)” on page 403 for systems utilizing GroupWise Disaster Recovery. See the GroupWise Disaster Recovery Integration section for instructions on configuration. The Server URL must be edited with the correct contact info for the GroupWise Disaster Recovery server. The default GroupWise Disaster Recovery port is 5555.

Core Settings Mailboxes GroupWise Disaster Recovery Notification Status

**GroupWise Disaster Recovery**

You can backup your GroupWise Disaster Recovery server, saving network bandwidth if desired. This requires GroupWise Disaster Recovery 2.5 or newer and some configuration changes on the GroupWise Disaster Recovery machine. Please consult the user manual for additional information.

Enable GroupWise Disaster Recovery Integration

GroupWise Disaster Recovery

Server Protocol:

Server Host Name:

Server Port:

[Advanced GroupWise Disaster Recovery Settings](#)

Retain instructs GroupWise Disaster Recovery to load the corresponding backup set for each date range in the profile. If a different set needs to be specified, the override setting specifies a date range specifically for GroupWise Disaster Recovery, which then will ignore the date range in the profile. Retain will still archive according to the profile date range or settings.

Normally the GroupWise Disaster Recovery Sets that are backed up correspond to the Date Range specified in the profile. Occasionally, you might want to override this.

Override GroupWise Disaster Recovery Date Range  Use the following number of backup sets (starting with the most recent):

Start: 1995 Jan 01  
End: 1995 Jan 01

## Notification Tab

When a job is run, the Notification option allows the administrator to be emailed a summary and report of any errors, for each running job.

Core Settings Notification Status

### Notification

You can have Retain e-mail a summary of errors that occurred after a device is processed. You may also specify the hour of the day to send the summary of activity.

|                                    |                             |
|------------------------------------|-----------------------------|
| SMTP Mail Server                   | mail.qa.gwava.com           |
| SMTP Security Protocol             | unencrypted                 |
| SMTP Port                          | 25                          |
| SMTP Mail From Address             | Retain40@qa.gwava.com       |
| SMTP To Address                    | softwareqa@gwava.com        |
| SMTP Username                      |                             |
| SMTP Password                      | ..... (Password is default) |
| Mail when errors occur             | <input type="checkbox"/>    |
| Enable summary reports             | <input type="checkbox"/>    |
| Hour to send summary report (0-23) | 0                           |

Test Connection

For notification to function correctly, the SMTP information for the desired SMTP server must be fully filled-out. How much information is required varies depending on the mail system used.

## Status Tab

The Status tab displays the status of any currently running jobs, as well as the stats of the last completed job.



| Core Settings   Notification   Status           |         |       |         |
|-------------------------------------------------|---------|-------|---------|
| <b>Status [Refreshes in 6]</b>                  |         |       |         |
| Job: brice-1 (4E57377E7FF223B76811B534E9470561) |         |       |         |
|                                                 | Current | Last  | Overall |
| Job began                                       | ---     | never | ---     |
| Job ended                                       | ---     | never | ---     |
| Mailboxes                                       | 0       | 0     | 0       |
| Messages Archived                               | 0       | 0     | 0       |
| Messages Processed                              | 0       | 0     | 0       |
| Messages Deleted                                | 0       | 0     | 0       |
| Errors                                          | 0       | 0     | 0       |
|                                                 | Current | Last  | Error   |
| Mailbox                                         |         |       |         |
| MS                                              |         |       |         |
| Error                                           |         |       | ---     |

On some modules, currently running jobs may be terminated here. For the rest, this tab is informational only.

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

## Exchange/O365 Job

Use Exchange jobs for On-premise Exchange or Office365.

Before a job can be created the module must be configured [“Exchange Module: Office365 or Hosted Exchange without LDAP” on page 166](#) or [“Exchange Module: Exchange On-premise” on page 187](#).

A job is made up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“Exchange/O365 Profile” on page 281](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“Exchange/O365 Job” on page 321](#)

## Core Settings Tab

The Core Settings of a job contains configuration which must be set for the job to be saved and become active. A job must be enabled before it will run. Jobs must also have a specified schedule, profile, and worker. These are all selected from drop-down menus, and will not be populated unless those items are already configured in the system.

**Core Settings**

Job enabled

Each Job must have the following assigned to it:

- [schedule](#) - How often to run
- [profile](#) - What to do when running
- [worker](#) - Where to run the job

Schedule: GW8NTPO

Profile: AllFolders AllMessages NoArchiveMark NoStubbing ItemStore

Worker: Local Worker

Items archived with this job can optionally be set with an "expiration timestamp" which the Deletion Manager can use to remove obsolete items. The expiration timestamp can only be extended, never reduced.

Enable data expiration

Expire in: 1 Days

Base Expiration Time on: Date Item was delivered to mail server.

Some customers may wish to override the default expiration settings for specific folders. You may specify these folders below - any folders that do NOT meet these criteria will have the expiration settings specified above applied. If you only want the folders to have expiration policies, enter -1 above for the base expiration value.

Add

The Data Expiration setting is an option to place a time stamp on data in the Retain database, which allows for ease of automation for the deletion manager. In addition, devices such as NetApp, Centera, and Hitachi HCAP may use this number to enforce hardware level protection of the stored item so that no one (including Retain) may delete the item before its expiration date. Job Expiration is not retroactive for mail in the database, and only applies to mail archived by the job that it is active for. In order to have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Mailboxes Tab

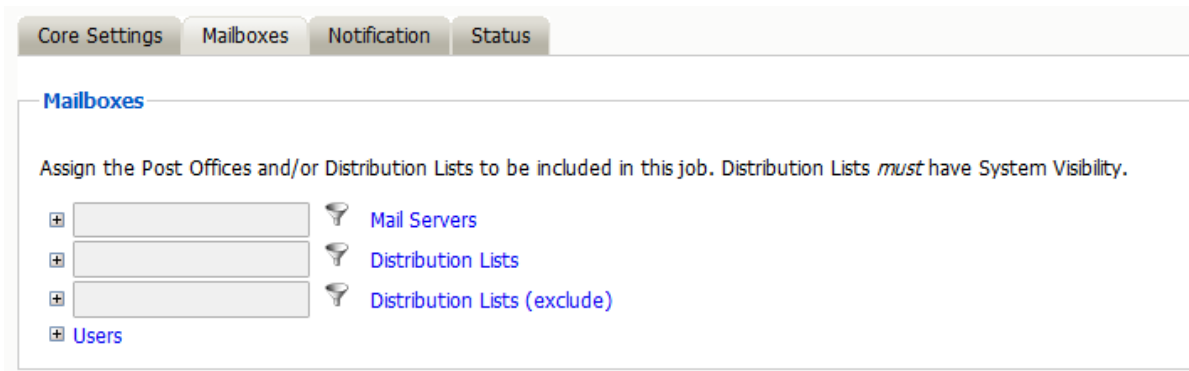
The mailboxes tab is where the administrator specifies which entities (mail servers and/or Distribution Lists) are to be scanned. This tab is not displayed for the mobile module.

Expand the Post Office and/or Distribution List trees, and check off the items you want to be dredged.

---

**NOTE:** If you desire to have a job backup a single user, or selected group of users, select the Users menu and assign the users desired

---



The Distribution List selection allows you to include or exclude a group of users from an archive job. If you want to use GroupWise Distribution Lists, the visibility needs to be set to “system wide”.

The users section allows you to select individual users to include, or exclude them from an archive job. For example: you can select an entire Mail Server to be archived, and then expand the users section to include or exclude users to the job.

This can also be used to select only certain users in the system for an archive job.

To add a user to the Include or Exclude list, select the respective ‘Add user’ button and search for the user. It can be helpful to unselect the ‘only show recently cached items’ option. Add the selected users to the list in the search window, then select ‘Ok’ to add them to the include or exclude list.

## Exchange Job Option - Journaling

In order to achieve compliance, Exchange utilizes a Journaling mailbox. This mailbox can be set to be archived by retain to collect all messages on the system. The Journaling mailbox can rapidly grow in size if it is not cleaned out after messages have been archived. The Journaling option for Exchange jobs allows Administrators to set whether Retain will automatically clean out messages from the Journaling mailbox which have been archived.

Core Settings   Journaling   Mailboxes   Notification   Status

---

**Journaling**



Exchange uses Journaling to achieve compliance. You can list journaling mailboxes to be dredged by the Worker below, and indicate if you wish the original journal entry to be deleted after being archived (recommended). You may also consolidate all archived items to a single mailbox (funnel mailbox) in Retain. If you do not select a funnel mailbox, each journaling mailbox will create separate mailboxes in Retain.

Make sure all entries belong to the domain you specified in the Core Settings tab, or they will not be saved.

Enable Journaling

Delete archived items from journal

Journaling mailbox

  JournalMB (mass.ERIC-EXCH2013)

Funnel mailbox

On larger systems where there are multiple journaling mailboxes, Retain will automatically create a mailbox for each of them in the archive. However, if desired, the journaling mailboxes may be all archived to the same specified mailbox in the archive. This is the funnel mailbox. If desired, specify the mailbox by selecting the 'funnel mailbox' button, search for and select the desired mailbox. Only existing mailboxes in the Retain system may be specified as a funnel mailbox.

Once a job begins the job may be monitored in Reporting and Monitoring or on the Worker Console.

## Notification Tab

When a job is run, the Notification option allows the administrator to be emailed a summary and report of any errors, for each running job.

Core Settings Notification **Status**

**Notification**

You can have Retain e-mail a summary of errors that occurred after a device is processed. You may also specify the hour of the day to send the summary of activity.

|                                    |                             |
|------------------------------------|-----------------------------|
| SMTP Mail Server                   | mail.qa.gwava.com           |
| SMTP Security Protocol             | unencrypted                 |
| SMTP Port                          | 25                          |
| SMTP Mail From Address             | Retain40@qa.gwava.com       |
| SMTP To Address                    | softwareqa@gwava.com        |
| SMTP Username                      |                             |
| SMTP Password                      | ..... (Password is default) |
| Mail when errors occur             | <input type="checkbox"/>    |
| Enable summary reports             | <input type="checkbox"/>    |
| Hour to send summary report (0-23) | 0                           |

Test Connection

For notification to function correctly, the SMTP information for the desired SMTP server must be fully filled-out. How much information is required varies depending on the mail system used.

## Status Tab

The Status tab displays the status of any currently running jobs, as well as the stats of the last completed job.

Core Settings Notification **Status**

**Status [Refreshes in 6]**

Job: brice-1 (4E57377E7FF223B76811B534E9470561)

|                    | Current | Last  | Overall |
|--------------------|---------|-------|---------|
| Job began          | ---     | never | ---     |
| Job ended          | ---     | never | ---     |
| Mailboxes          | 0       | 0     | 0       |
| Messages Archived  | 0       | 0     | 0       |
| Messages Processed | 0       | 0     | 0       |
| Messages Deleted   | 0       | 0     | 0       |
| Errors             | 0       | 0     | 0       |
|                    | Current | Last  | Error   |
| Mailbox            |         |       |         |
| MS                 |         |       |         |
| Error              |         |       | ---     |

On some modules, currently running jobs may be terminated here. For the rest, this tab is informational only.

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

## Blackberry Jobs

Before a job can be created the module must be configured [“Blackberry” on page 213](#).

A job is made up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“Blackberry Profile” on page 288](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“Blackberry Jobs” on page 326](#)

All data collection for the Blackberry module [“Blackberry” on page 213](#) is configured through the Blackberry job interface. The jobs here combine the Profile [“Blackberry Profile” on page 288](#), the Schedule [“Schedule Overview” on page 269](#), and a Worker [“Workers Overview” on page 305](#) together to archive the specified server logs. A Job must have a Profile, Schedule, Worker, and a selected server, before it can be saved or run. To create a new job, click, ‘Add Job’, and configure and save.

Blackberry devices are managed through Device Management [“Blackberry Device Management” on page 520](#).

## Core Settings Tab

The core settings tab contains the basic configuration. Select the ‘Job enabled’ option to enable archiving. Also, select a Schedule, Profile, and Worker to complete the job. If the SMTP Send is enabled, the worker will forward BES message data.

The screenshot displays the Retain Jobs configuration interface. On the left is a navigation menu with categories: Overview, Data Collection, Management, and Configuration. The main area is titled 'Jobs' and features a search bar and a list of jobs. The job '0 BES 10 Now' is selected, and its settings are shown in the 'Core Settings' section. The settings include:
 

- Job enabled:**
- Each Job must have the following assigned to it:**
  - **schedule** - How often to run
  - **profile** - What to do when running
  - **worker** - Where to run the job
- Schedule:** 0 BES 10 Now
- Profile:** BES Profile - Ignore Item Store Flag
- Worker:** Local Worker
- Send BES items via the SMTP connector to an external system:**
- Enable SMTP Send:**
- Items archived with this job can optionally be set with an "expiration timestamp" which the Deletion Manager can use to remove obsolete items. The expiration timestamp can only be extended, never reduced.**
- Enable data expiration:**
- Expire in:** 1 Days
- Base Expiration Time on:** Date Item was delivered to mail server.

The Data Expiration is an option to place a timestamp on the data in the Retain database, which allows for ease of automation for the deletion manager. In addition, devices such as NetApp, Centera, and Hitachi HCAP may use this number to enforce hardware level protection of the stored item so that no one (including Retain) may delete the item before its expiration date.

Job Expiration is not retroactive for mail in the database, and only applies to mail archived by the job that it is active for. The base folders and criteria are specified under the custom expiration dates accessed through the 'Add' button at the bottom. All messages included in any specified folders will have a different date or be exempted from the standard expiration date.

To have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Mailboxes Tab

The mailboxes tab contains the target users, and BES servers to be archived by the selected job.

Core Settings Mailboxes Notification Status

**Mailboxes**

Select the BES server to be included in this job.

BES10 via NFS

+ Users

Under the Mailbox tab, select the BES server to be included in the Job. The list of available BES servers is configured from the Modules page. Once selected, all users associated or present on the BES server are included.

Once a job has been run, the user list will be populated and further configuration is possible. The job may also be restricted to specific users, specified on the 'Include Users' list, or restricted to exclude users listed on the 'Exclude' list. To add users, expand the User's option box and select the users to be archived. Users may be selected through the user search interface, spawned through selecting the 'add user' button.

If there are users listed, then the users listed in the 'Include Users' box are the ONLY included users, while those listed in the 'Exclude' window are excluded from the jobs.

## Notification Tab

All errors, summaries, and statistics may be sent in an email notification to a desired address on job completion. If it is desired to be notified, configure the notifications under this tab. At least one of the two notification options must be selected for an email notification to be created.

Core Settings Mailboxes Notification Status

**Notification**

You can have Retain e-mail a summary of operations and/or errors that occurred when the job completes.

|                                |                                     |
|--------------------------------|-------------------------------------|
| SMTP Mail Server               | mail.qa.gwava.com                   |
| SMTP Security Protocol         | unencrypted                         |
| SMTP Port                      | 25                                  |
| SMTP Mail From Address         | Retain40@qa.gwava.com               |
| SMTP To Address                | softwareqa@gwava.com                |
| SMTP Username                  |                                     |
| SMTP Password                  | ..... (Password is default)         |
| Mail when errors occur         | <input checked="" type="checkbox"/> |
| Mail summary when job complete | <input type="checkbox"/>            |

Test Connection



## Status Tab

On initial creation, there will be nothing of interest shown under the 'Status' tab, as the job is under creation or has not yet run.

However, after a job has been run, or has begun, the 'Status' tab becomes a monitoring tool to report on exactly how much mail and mailboxes have been archived, along with any errors encountered.

|                    | Current | Last                 | Overall |
|--------------------|---------|----------------------|---------|
| Job began          | ---     | 11-Mar-2015 12:10:55 | ---     |
| Job ended          | ---     | 11-Mar-2015 12:11:25 | ---     |
| Mailboxes          | 4       | 4                    | 10977   |
| Messages Archived  | 0       | 30                   | 826     |
| Messages Processed | 0       | 923                  | 3997    |
| Messages Deleted   | 0       | 0                    | 0       |
| Errors             | 0       | 0                    | 1       |

|         | Current | Last | Error |
|---------|---------|------|-------|
| Mailbox |         |      |       |
| MS      |         |      |       |
| Error   |         |      | ---   |

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface "[Search Interfaces](#)" on page 525.

## Google Apps Jobs

Before a job can be created the module must be configured "[Google Apps Module](#)" on page 226.

A job is made up of:

1. Schedule "[Schedule Overview](#)" on page 269
2. Profile "[Google Apps Profile](#)" on page 291
3. Worker "[Workers Overview](#)" on page 305
4. Job "[Google Apps Jobs](#)" on page 329

All data collection for Google Apps is configured through the Google Apps job interface. The jobs here combine the Profile, the Schedule, and a Worker together to archive a specified mailbox, distribution list, or domain. A Job must have a Profile, Schedule, Worker, and a target, mailbox, list, or domain, before it can be saved or run.

The Schedule, Profile, and Worker selected here will determine what is archived, when it is archived, and what worker does the actual archival work. The Job MUST be enabled to run. Only previously configured Schedules, Profiles, and Workers can be selected.

## **Core Settings Tab**

Core settings allows you to enable the job and set the Schedule, Profile and Worker needed to run the job.

**Jobs** [Icons]

🔍

- Google Apps - gwavaqa.mygbiz.com
- Google Apps - gwavaretain.com
- Google Apps - Now
- Google Apps weekdays at 7:00**

Job Google Apps weekdays at 7:00 loaded.

Job

---

**Core Settings**

Job enabled

Each Job must have the following assigned to it:

- **schedule** - How often to run
- **profile** - What to do when running
- **worker** - Where to run the job

Weekdays at 07:00  
 Google Apps - AllItems AllDates ItemStoreFlag  
 Local Worker

Items archived with this job can optionally be set with an "expiration timestamp" which the Deletion Manager can use to remove obsolete items. The expiration timestamp can only be extended, never reduced.

Enable data expiration  
 Expire in    
 Base Expiration Time on

Some customers may wish to override the default expiration settings for specific folders. You may specify these folders below - any folders that do NOT meet these criteria will have the expiration settings specified above applied. If you only want the folders to have expiration policies, enter -1 above for the base expiration value.

The Data Expiration is an option to place a timestamp on the mail in the Retain database, which allows for ease of automation for the deletion manager. In addition, devices such as NetApp, Centera, and Hitachi HCAP may use this number to enforce hardware level protection of the stored item so that no one (including Retain) may delete the item before its expiration date.

Job Expiration is not retroactive for mail in the database, and only applies to mail archived by the job that it is active for. The base folders and criteria are specified under the custom expiration dates accessed through the 'Add' button at the bottom. All messages included in any specified folders will

have a different date or be exempted from the standard expiration date. To have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Mailboxes Tab

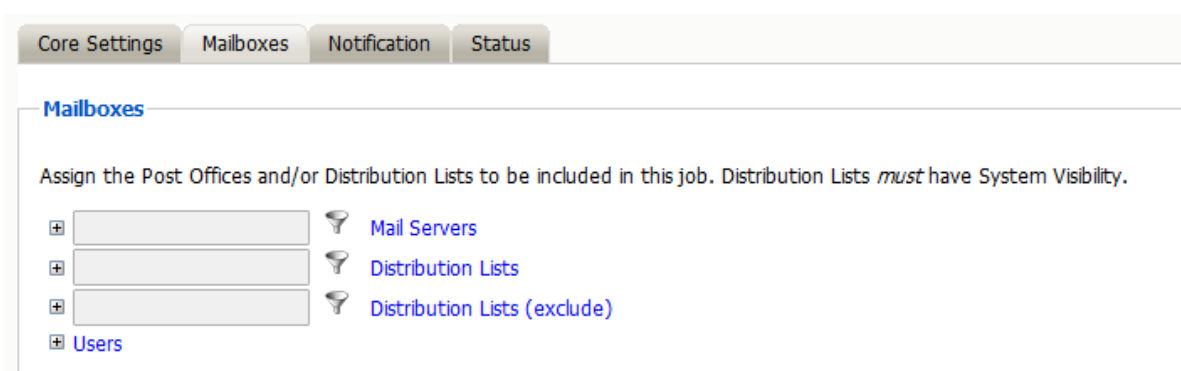
The mailboxes tab is where the administrator specifies which entities (mail servers and/or Distribution Lists) are to be scanned.

Expand the Post Office and/or Distribution List trees, and check off the items you want to be dredged.

---

**NOTE:** If you desire to have a job backup a single user, or selected group of users, select the Users menu and assign the users desired.

---



The screenshot shows a web interface with four tabs: 'Core Settings', 'Mailboxes', 'Notification', and 'Status'. The 'Mailboxes' tab is active. Below the tabs, the heading 'Mailboxes' is displayed. A instruction reads: 'Assign the Post Offices and/or Distribution Lists to be included in this job. Distribution Lists *must* have System Visibility.' There are three input fields, each with a plus sign icon to its left. To the right of each field is a funnel icon and a label: 'Mail Servers', 'Distribution Lists', and 'Distribution Lists (exclude)'. Below these fields is a 'Users' section with a plus sign icon to its left.

The users section allows you to select individual users to include, or exclude them from an archive job. For example: you can select an entire Mail Server to be archived, and then expand the users section to include or exclude users to the job.

This can also be used to select only certain users in the system for an archive job.

To add a user to the Include or Exclude list, select the respective 'Add user' button and search for the user. It can be helpful to deselect the 'only show recently cached items' option.

Add the selected users to the list in the search window, then select 'Ok' to add them to the include or exclude list.

## Notification Tab

When a job is run, the notification option allows the administrator to be emailed a summary of each running job if desired.

Core Settings Mailboxes Notification **Status**

**Notification**

You can have Retain e-mail a summary of operations and/or errors that occurred when the job completes.

|                                |                                     |
|--------------------------------|-------------------------------------|
| SMTP Mail Server               | mail.qa.gwava.com                   |
| SMTP Security Protocol         | unencrypted                         |
| SMTP Port                      | 25                                  |
| SMTP Mail From Address         | Retain40@qa.gwava.com               |
| SMTP To Address                | softwareqa@gwava.com                |
| SMTP Username                  |                                     |
| SMTP Password                  | ..... (Password is default)         |
| Mail when errors occur         | <input checked="" type="checkbox"/> |
| Mail summary when job complete | <input type="checkbox"/>            |

Test Connection

For notification to function correctly, the SMTP information for the desired SMTP server must be fully filled-out. How much information is required varied depending on the mail system used.

## Status Tab

The Status tab displays the status of any currently running jobs, as well as the stats of the last completed job.

Core Settings Mailboxes Notification **Status**

**Status [Refreshes in 0]**

Job: Google Apps weekdays at 7:00 (02B07093B77A0A0E3D4B493216643EB6)

|                    | Current | Last                 | Overall |
|--------------------|---------|----------------------|---------|
| Job began          | ---     | 11-Sep-2015 09:06:16 | ---     |
| Job ended          | ---     | 11-Sep-2015 09:07:08 | ---     |
| Mailboxes          | 2       | 2                    | 429     |
| Messages Archived  | 0       | 9                    | 457     |
| Messages Processed | 0       | 12                   | 9345    |
| Messages Deleted   | 0       | 0                    | 0       |
| Errors             | 0       | 0                    | 17      |
|                    | Current | Last                 | Error   |
| Mailbox            |         | carl@gwavaretain.com | colinb  |
| MS                 |         | GoogleApps           |         |
| Error              |         |                      | ---     |

This tab is informational only unless a job is currently running. If the selected job is running, an option to abort the job is displayed.

This window will refresh every ten seconds to keep you up to date as to the status of the selected job. The completed line is displayed during an active job. The completed status is a display of how many mailboxes have been completed, the job mailbox total, and gives an incrementing percentage for the amount completed. This amount is based entirely on the number of mailboxes, not the amount of mail. Because the last mailbox could be larger than the rest of the system, this percentage may not be accurate according to time.

You may now configure Schedules, Workers and Jobs.

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

## Bloomberg Jobs

Before a job can be created the module must be configured [“Bloomberg Module” on page 240](#).




A job is make up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“Bloomberg Profile” on page 296](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“Bloomberg Jobs” on page 334](#)

Retain can archive Bloomberg logs.

Create a new job:

1. Press the “Add Job” button to create a new job.
2. Give it a name.
3. Fill out the tabs.
4. Press the “Save Changes” button.

**Jobs** Save Changes   

**Bloomberg**

**Job Bloomberg loaded.**

Job

## Core Settings Tab

Job

Core Settings | Mailboxes | Notification | Status

**Core Settings**

Job enabled

Each Job must have the following assigned to it:

- [schedule](#) - How often to run
- [profile](#) - What to do when running
- [worker](#) - Where to run the job

Schedule

Profile

Worker

Items archived with this job can optionally be set with an "expiration timestamp" which the Deletion Manager can use to remove obsolete items. The expiration timestamp can only be extended, never reduced.

Enable data expiration

Expire in

Base Expiration Time on

A job must be enabled or it will not run.

Select each of the following:

1. Schedule
2. Profile
3. Worker

If you want Retain to remove data from your message system as it archives you may use Enable data expiration, but it is recommended to remove items with your message system administration console which is better suited to the task.

## Mailboxes Tab



The screenshot shows a web interface with a top navigation bar containing four tabs: "Core Settings", "Mailboxes", "Notification", and "Status". The "Mailboxes" tab is selected and highlighted. Below the navigation bar, the page title "Mailboxes" is displayed in blue. The main content area contains the following elements:

- A text instruction: "Select the Bloomberg server to be included in this job."
- A dropdown menu currently showing "Server 1".
- A link labeled "Users" with a small icon to its left.
- A section titled "Include Users:" with an "Add User" button below it.
- A large, empty rectangular box intended for listing included users.
- A section titled "Exclude Users:" with an "Add User" button below it.
- A smaller, empty rectangular box intended for listing excluded users.

Select the server to archive from.

Alternatively, you may select to include or exclude individual users from the archive job.



## Notification Tab

Core Settings Mailboxes Notification Status

**Notification**

You can have Retain e-mail a summary of operations and/or errors that occurred when the job completes.

|                                |                                     |
|--------------------------------|-------------------------------------|
| SMTP Mail Server               | rick-gw18.qa.gwava.com              |
| SMTP Security Protocol         | unencrypted                         |
| SMTP Port                      | 25                                  |
| SMTP Mail From Address         | retain2_noreply@qa.gwa\             |
| SMTP To Address                | softwareqa@gwava.com                |
| SMTP Username                  |                                     |
| SMTP Password                  | ..... (Password is default)         |
| Mail when errors occur         | <input checked="" type="checkbox"/> |
| Mail summary when job complete | <input checked="" type="checkbox"/> |

Test Connection

To send status messages about the job:

1. Enter the mail server connection data.
2. Enter the desired To: email address.
3. Enable “Mail when errors occur”, if desired.
4. Enable “Mail summary when job is complete”, if desired.

After entering the data use the “Test Connection” button to send a test message from Retain.

## Status Tab

Core Settings Mailboxes Notification Status

Status [Refreshes in 5]

Job: Bloomberg (6C4818D3B6C9A0E61E0D340280C39459)

|                    | Current | Last                 | Overall |
|--------------------|---------|----------------------|---------|
| Job began          | ---     | 06-Apr-2017 14:42:28 | ---     |
| Job ended          | ---     | 06-Apr-2017 14:42:39 | ---     |
| Mailboxes          | 2       | 2                    | 10      |
| Messages Archived  | 0       | 5                    | 5       |
| Messages Processed | 0       | 5                    | 5       |
| Messages Deleted   | 0       | 0                    | 0       |
| Errors             | 0       | 0                    | 0       |

|         | Current | Last | Error |
|---------|---------|------|-------|
| Mailbox |         |      |       |
| MS      |         |      |       |
| Error   |         |      | ---   |

The Status tab will show the current status of the job.

While a job is running an abort button will appear. [“Stopping a Job” on page 344](#)

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

## Mobile Jobs

Before a job can be created the module must be configured [“Mobile Module \(Android\)” on page 243](#).

A job is make up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“Mobile Profile” on page 301](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“Mobile Jobs” on page 338](#)

Job configuration is only required for legacy Android application support and is not necessary with the current application. The following information is only necessary for supporting older application systems.

## Core Settings Tab

The core settings tab contains information on the schedule, profile, and worker utilized for the mobile module, as well as the data expiration date.

The screenshot shows the 'Jobs' management interface. At the top, there's a header with a 'Jobs' title and icons for save, refresh, and help. Below the header is a search bar and a list area with 'Add Job', 'Edit Job', and 'Remove Job' buttons. A red box highlights the text 'Enter new job below'. Below this is a text input field containing 'new job'. There are three tabs: 'Core Settings' (selected), 'Notification', and 'Status'. The 'Core Settings' tab is expanded, showing a 'Job enabled' checkbox checked. Below it, a note states 'Each Job must have the following assigned to it:' followed by a bulleted list: 'schedule - How often to run', 'profile - What to do when running', and 'worker - Where to run the job'. There are three dropdown menus for 'Schedule', 'Profile', and 'Worker', all currently set to '(none)'. A note explains that items archived with this job can have an 'expiration timestamp' for the Deletion Manager. Below this, there's a section for 'Enable data expiration' with a checkbox, an 'Expire in' field set to '0' days, and a 'Base Expiration Time on' dropdown set to 'Date Item is stored in Retain (recommended)'.

The Data Expiration is an option to place a time stamp on data in the Retain database, which allows for ease of automation for the deletion manager. In addition, devices such as NetApp, Centera, and Hitachi HCAP may use this number to enforce hardware level protection of the stored item so that no one, including Retain, may delete the item before its expiration date. Job Expiration is not retroactive for messages in the database, and only applies to messages archived by the job that it is active for. In order to have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Notification Tab

When a job is run, the notification option allows the administrator to be emailed a summary of each running job if desired.

Core Settings Notification **Status**

**Notification**

You can have Retain e-mail a summary of errors that occurred after a device is processed. You may also specify the hour of the day to send the summary of activity.

|                                    |                             |
|------------------------------------|-----------------------------|
| SMTP Mail Server                   | mail.qa.gwava.com           |
| SMTP Security Protocol             | unencrypted                 |
| SMTP Port                          | 25                          |
| SMTP Mail From Address             | Retain40@qa.gwava.com       |
| SMTP To Address                    | softwareqa@gwava.com        |
| SMTP Username                      |                             |
| SMTP Password                      | ..... (Password is default) |
| Mail when errors occur             | <input type="checkbox"/>    |
| Enable summary reports             | <input type="checkbox"/>    |
| Hour to send summary report (0-23) | 0                           |

Test Connection

For notification to function correctly, the SMTP information for the desired SMTP server must be fully filled-out. How much information is required varied depending on the mail system used.

## Status Tab

The Status tab displays the status of any currently running jobs, as well as the stats of the last completed job.

Core Settings Notification **Status**

**Status [Refreshes in 6]**

Job: brice-1 (4E57377E7FF223B76811B534E9470561)

|                    | Current | Last  | Overall |
|--------------------|---------|-------|---------|
| Job began          | ---     | never | ---     |
| Job ended          | ---     | never | ---     |
| Mailboxes          | 0       | 0     | 0       |
| Messages Archived  | 0       | 0     | 0       |
| Messages Processed | 0       | 0     | 0       |
| Messages Deleted   | 0       | 0     | 0       |
| Errors             | 0       | 0     | 0       |
|                    | Current | Last  | Error   |
| Mailbox            |         |       |         |
| MS                 |         |       |         |
| Error              |         |       | ---     |

This tab is informational only for the Mobile module.

## Next Step

Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

## Social Media Governance Jobs

Before a job can be created the module must be configured [“Social Media Governance Module” on page 257](#).

A job is made up of:

1. Schedule [“Schedule Overview” on page 269](#)
2. Profile [“Social Media Governance Profile” on page 302](#)
3. Worker [“Workers Overview” on page 305](#)
4. Job [“Social Media Governance Jobs” on page 341](#)

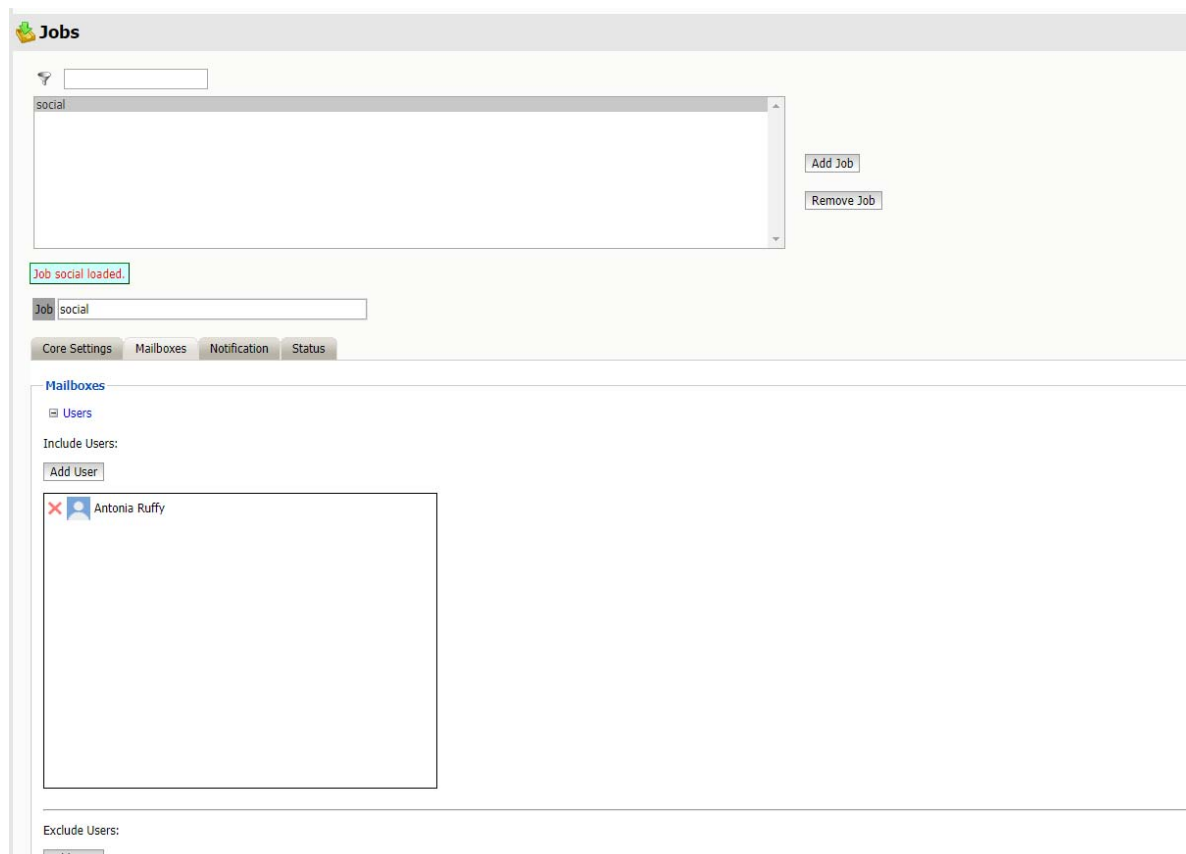
## Core Settings Tab

The core settings tab contains information on the schedule, profile, and worker utilized for the Social Media Governance module, as well as the data expiration date.

The Data Expiration is an option to place a time stamp on data in the Retain database, which allows for ease of automation for the deletion manager. Job Expiration is not retroactive for messages in the database, and only applies to messages archived by the job that it is active for. In order to have messages with custom job or folder expiration dates properly expire, the deletion management date scope must be set to delete messages with an Expiration Date older than 1 day.

## Mailboxes Tab

The mailboxes tab is where you connect the Job to the Social Media Governance Module. Add a Job and the users you want to archive.



## Notification Tab

When a job is run, the notification option allows the administrator to be emailed a summary of each running job if desired.

For notification to function correctly, the SMTP information for the desired SMTP server must be fully filled-out. How much information is required varied depending on the mail system used.

## Status Tab

The Status tab displays the status of any currently running jobs, as well as the stats of the last completed job.

This tab is informational only for the Social Media Governance module.

## Next Step

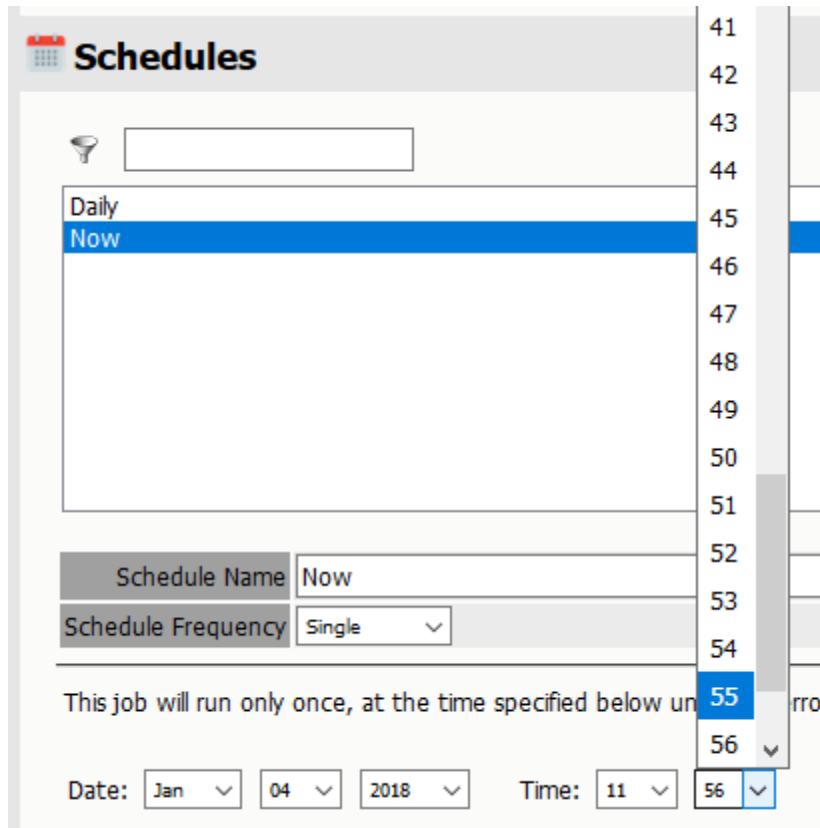
Once a job has completed you can confirm the items are in the archive by checking the Search Message interface [“Search Interfaces” on page 525](#).

# Starting a Job Manually

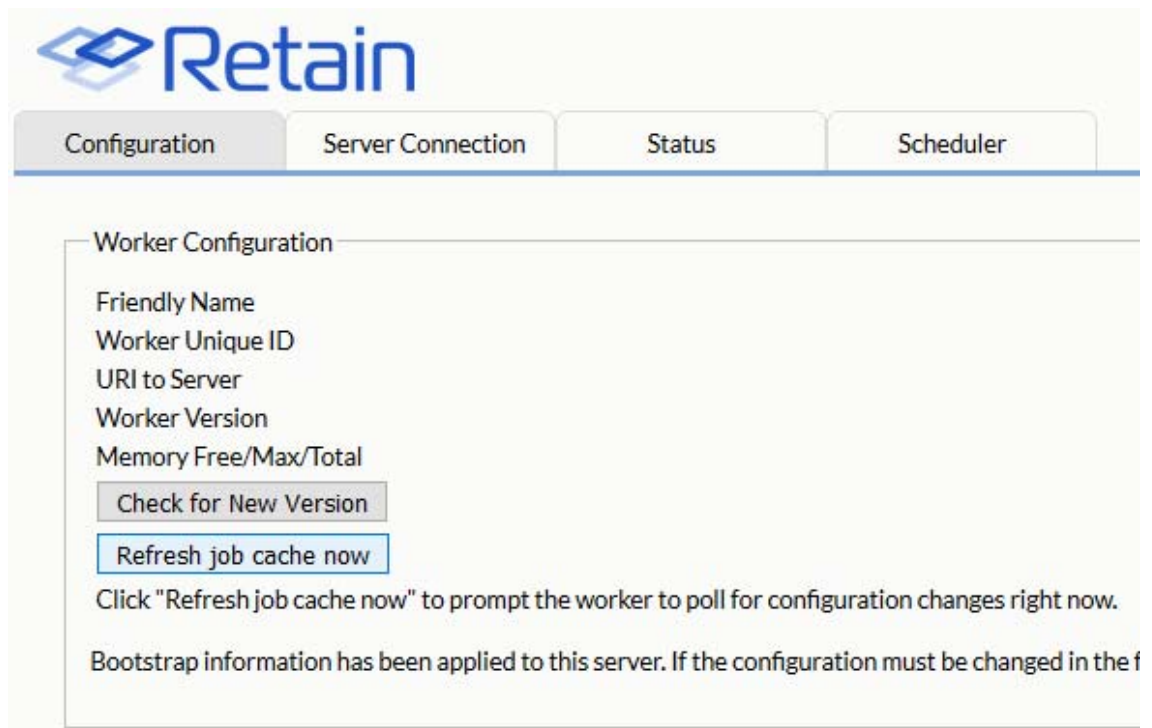
Jobs will start automatically at the date and time they are set to.

To start an archive job manually you need to:

1. Select a Single Frequency Schedule for the job. Save Changes
2. Go the selected single frequency schedule and set the time at least 1 minute into the past.



3. Browse to the Worker Console <[http://<Retain\\_Worker\\_Host>/RetainWorker](http://<Retain_Worker_Host>/RetainWorker)
4. Click the **"Refresh job cache now"** button.




5. The job will begin momentarily.
6. Once the job has completed you will want to confirm the data is in the archive. [“Search Interfaces” on page 525](#)


## Stopping a Job

A running job can be aborted.

Go to **Jobs | Status tab**. There will be an abort button visible. Press it and in a few moments the job should abort.



 **Jobs**



Daily  
**Special**

Job Special loaded.

Job Special

Core Settings   Journaling   Mailboxes   Notificati

**Status [Refreshes in 3]**

Job: Special (3801A8E6DD96BC844F7EF9E9A0FA447)

|                        | Current                                  |
|------------------------|------------------------------------------|
| Job began              | 21-Mar-2018 12:51:02                     |
| Job ended              | <input type="button" value="Abort Job"/> |
| Completed: 0 / 28 (0%) |                                          |
| Mailboxes              | 28                                       |
| Messages Archived      | 0                                        |
| Messages Processed     | 0                                        |
| Messages Deleted       | 0                                        |
| Errors                 | 0                                        |
|                        | Current                                  |
| Mailbox                | retain@ex121.doc.mf.net                  |
| MS                     | EX121                                    |
| Error                  |                                          |

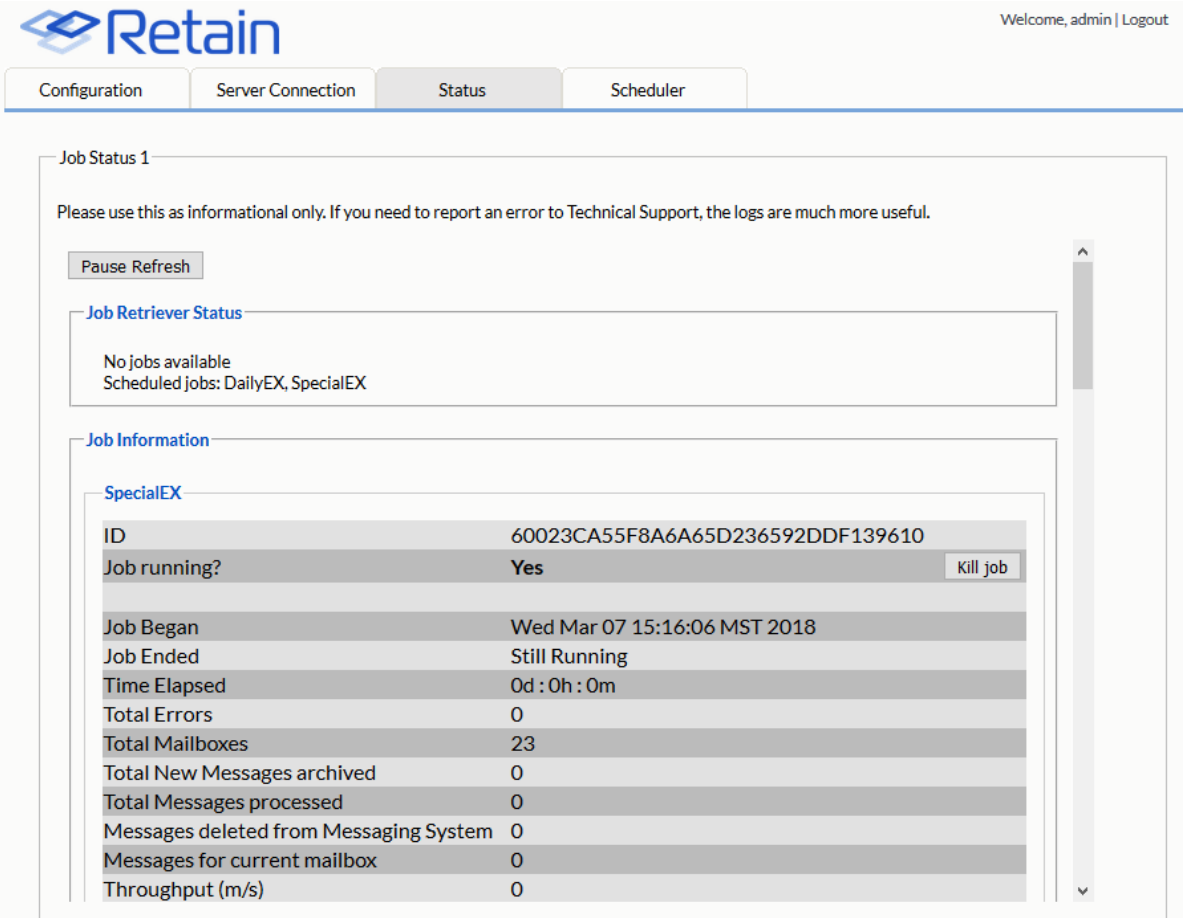
If after at least **five minutes** the job does not abort, you may want to consider killing the job.

## Killing a Job

To kill a job, go to the Retain Worker Console and under the Status tab attempt to kill the job with the “Kill Job” button.

**WARNING:** Do NOT use this button if you have not already attempted to use the Abort Job button in Retain Server | Job | Status.

**Alternatively,** you can restart tomcat to stop a job.



The screenshot shows the Retain Worker Console interface. At the top, there is a navigation bar with tabs for Configuration, Server Connection, Status (selected), and Scheduler. The main content area is titled "Job Status 1" and contains a "Pause Refresh" button. Below this is a "Job Retriever Status" section indicating "No jobs available" and "Scheduled jobs: DailyEX, SpecialEX". The "Job Information" section displays details for a "SpecialEX" job:

|                                        |                                  |
|----------------------------------------|----------------------------------|
| ID                                     | 60023CA55F8A6A65D236592DDF139610 |
| Job running?                           | Yes <span>Kill job</span>        |
| Job Began                              | Wed Mar 07 15:16:06 MST 2018     |
| Job Ended                              | Still Running                    |
| Time Elapsed                           | 0d : 0h : 0m                     |
| Total Errors                           | 0                                |
| Total Mailboxes                        | 23                               |
| Total New Messages archived            | 0                                |
| Total Messages processed               | 0                                |
| Messages deleted from Messaging System | 0                                |
| Messages for current mailbox           | 0                                |
| Throughput (m/s)                       | 0                                |

# 11 Configuration

- ◆ [“Server Configuration” on page 347](#)
- ◆ [“Rules Configuration” on page 371](#)
- ◆ [“Retain Message Router Configuration” on page 375](#)
- ◆ [“Storage Manager” on page 379](#)
- ◆ [“Stubbing Server” on page 382](#)
- ◆ [“Mailbox Mapping Options” on page 399](#)
- ◆ [“GroupWise Disaster Recovery Integration” on page 403](#)

## Server Configuration

- ◆ [“Communications tab” on page 348](#)
- ◆ [“Database Connectivity” on page 349](#)
- ◆ [“Notification” on page 349](#)
- ◆ [“Retain Server Connection” on page 349](#)
- ◆ [“Cloud Mobile Service \(CMS\) Proxy Connection” on page 350](#)
- ◆ [“Index tab” on page 350](#)
- ◆ [“Storage tab” on page 353](#)
- ◆ [“Accounts tab” on page 359](#)
- ◆ [“Maintenance Tab” on page 362](#)
- ◆ [“Ignore Domains” on page 364](#)
- ◆ [“Logging tab” on page 364](#)
- ◆ [“Auditing Records” on page 365](#)
- ◆ [“Miscellaneous tab” on page 366](#)
- ◆ [“Export XML” on page 366](#)
- ◆ [“Module Forwarding” on page 366](#)
- ◆ [“REST API” on page 369](#)

The overall operation of Retain is configured in this section.

**Server Configuration**

Communications Index Storage Accounts Maintenance Logging Miscellaneous Module Forwarding REST API

### Database Connectivity

The message store data is stored on a database server.

To successfully create the tables, the database server must already be running, with a database named retain created. Be sure to specify:

- The correct JDBC URL. If the database server is not running on the same machine as Retain, the IP address or host name of the machine must be included in the URL.
- You must provide a user and password for the database server which has full rights to the database you created.

|                        | Message Store DB                     | Configuration DB                          |
|------------------------|--------------------------------------|-------------------------------------------|
| Database Driver        | PostGres 9.0+                        | PostGres 9.0+                             |
| Database URL           | jdbc:postgresql://127.0.0.1/retain35 | jdbc:postgresql://127.0.0.1/retain35_conf |
| Database User Account  | retain                               | retain                                    |
| Database User Password | •••••••• (Password is set)           | •••••••• (Password is set)                |

### Notification

Retain uses these values for forwarding search results and for sending job notifications. If the mail server is not set, forwarding search results is disabled.

|                        |                                     |
|------------------------|-------------------------------------|
| SMTP Mail Server       | mail.qa.gwava.com                   |
| SMTP Security Protocol | unencrypted                         |
| SMTP Port              | 25                                  |
| SMTP Mail From Address | Retain402@qa.gwava.com              |
| SMTP To Address        | softwareqa@gwava.com                |
| SMTP Username          |                                     |
| SMTP Password          | •••••••• (Password is set)          |
| Mail when errors occur | <input checked="" type="checkbox"/> |

### Retain Server Connection

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |                      |
|--------------------|----------------------|
| Server Protocol    | https                |
| Retain Server Host | retain2.qa.gwava.com |
| Retain Server Port | 443                  |
| Retain Server Path | /RetainServer        |

Each tab will be explained below.

Along the top, you will see configuration options for the Retain server and workers known to this server.

The most important topic is communications. These are the settings you have set when you initially installed Retain. You may make changes here.

After changing any communications options, it is strongly recommended that Tomcat be restarted immediately.

## Communications tab

The settings for the Communications tab are set in the initial setup of Retain. These include the connection to the SQL Database server, the REST and Router connection information, and the notification or SMTP information. If any changes in the system or corrections are needed, they should be configured here.

# Database Connectivity

**Database Connectivity**

The message store data is stored on a database server.

To successfully create the tables, the database server must already be running, with a database named retain created. Be sure to specify:

- The correct JDBC URL. If the database server is not running on the same machine as Retain, the IP address or host name of the machine must be included in the URL.
- You must provide a user and password for the database server which has full rights to the database you created.

|                        | Message Store DB                     | Configuration DB                          |
|------------------------|--------------------------------------|-------------------------------------------|
| Database Driver        | Postgres 9.0.9.1                     | Postgres 9.0.9.1                          |
| Database URL           | jdbc:postgresql://127.0.0.1/retain35 | jdbc:postgresql://127.0.0.1/retain35_conf |
| Database User Account  | retain                               | retain                                    |
| Database User Password | ..... (Password is set)              | ..... (Password is set)                   |

The Database Connectivity tab contains the connection information for both the configuration and storage databases. This information should never change unless the database server is being migrated to a new location.

# Notification

In this location, the admin user specifies what address receives notifications about the general system, as well as what SMTP Gateway to utilize to send these notifications. This is also used for forwarding messages from Retain to the SMTP Mail Server for transmission to the recipients.

**Notification**

Retain uses these values for forwarding and for job notifications. If the mail server is not set, forwarding is disabled.

|                        |                                     |
|------------------------|-------------------------------------|
| SMTP Mail Server       | mail.qa.gwava.com                   |
| SMTP Security Protocol | unencrypted                         |
| SMTP Port              | 25                                  |
| SMTP Mail From Address | Retain40@qa.gwava.com               |
| SMTP To Address        | softwareqa@gwava.com                |
| SMTP Username          |                                     |
| SMTP Password          | ..... (Password is set)             |
| Mail when errors occur | <input checked="" type="checkbox"/> |

# Retain Server Connection

This location dictates the connection address, port, and protocol to which the Retain Server will listen for communications from the Router and from any other REST applications. The communication settings must be correct from the point of view of the applications trying to use it. The hostname or IP address must successfully connect to the Retain Server.

### Retain Server Connection

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the Router or REST application contacting the Server, which may or may not match the URL you'd use from your browser to reach the Router or Server.

|                    |                 |
|--------------------|-----------------|
| Server Protocol    | https           |
| Retain Server Host | 151.155.211.121 |
| Retain Server Port | 443             |
| Retain Server Path | /RetainServer   |

## Cloud Mobile Service (CMS) Proxy Connection

This option allows you to specify a Proxy server for your Retain server to connect to Cloud Mobile Service (CMS) if you use CMS to automatically provision and register devices in Retain.

### Cloud Mobile Service (CMS) Proxy Connection

To route automatic (IMEI) mobile registration messages from Retain through a proxy, specify the proxy server settings.

|                   |                          |
|-------------------|--------------------------|
| Enable CMS Proxy? | <input type="checkbox"/> |
| Proxy Server Host |                          |
| Proxy Server Port | 80                       |
| Proxy User        |                          |
| Proxy Password    |                          |

## Index tab

The Index tab allows the management of the indexing engine as well as the ability to decide what kinds of attachments are indexed and what size.

## Indexing Engine

Retain utilizes two index engine choices. These choices are set at install or upgrade. The index engine is the same between the Standard High Performance Index and the High Availability Index options, (HAI). However, while the Standard engine is nested with the Retain Server, the HAI is a cluster of index engines, managers, and replicas which provide scalability and disaster insurance. The standard index engine will perform better than the HAI under all but heaviest loads. (Index engine speed is limited by disk IO for the Standard, and Disk IO and network speed. The trade off of performance and bottleneck moved in the favor of HAI when the system is very large and under large demand.

**Server Configuration**

Communications Index Storage Accounts Maintenance Logging Miscellaneous Module Forwarding REST API

### Indexing Engine

At the core of Retain's searching functionality is the indexing engine.

In the fields below you specify the host name and port number for one of the Index Manager instances. All information about the index cluster will be automatically retrieved from this instance.

Connect to this Index Manager:

Index Manager Host Name

Index Manager Port

Index Manager Ensemble:

|   |                |
|---|----------------|
| 1 | localhost:9081 |
|---|----------------|

Index schema: 403

| Index Cluster: |                            | Indexed: 1125994, unindexed: 0, failed: 6 |        |               |              |
|----------------|----------------------------|-------------------------------------------|--------|---------------|--------------|
|                | Indexing Node              | Core                                      | Shard  | Cluster State | Connectivity |
| 1              | https://localhost:8081/hpi | retaincore                                | shard1 | member        | online       |

## Indexing

You can control what Retain indexes here. You may add as many items as you wish to the list of attachment types to index. Note the explanation at the top of the table. The items are listed (in order) by type, extension, archived form (extractor used), and maximum stream size and file size. Choose whether to index the attachment based on its filename extension or its MIME type (the content itself). You also choose which extractor to use to index the attachment. Select as many as you need. If an attachment type is common in the system and needs to be indexed, but is not already indexed, it may be added by using the 'add' row.

## Indexing

Here, you adjust the different types of items to be indexed. You may add, delete, or edit items.

- The first column indicates if the entry is based on a filename extension or MIME type.
- The next column is the entry itself, filename extension or MIME type.
- The third column indicates the built-in extractor to use to process the attachment. New extractors may be provided in future versions of Retain.

Note: If an extension or mime type is not listed, the indexing engine will not index the contents.

| <input checked="" type="checkbox"/> | Extension | Item:                                           | excel   | Add    |
|-------------------------------------|-----------|-------------------------------------------------|---------|--------|
| <input checked="" type="checkbox"/> | Extension | xls                                             | excel   | Delete |
| <input checked="" type="checkbox"/> | MIME      | application/excel                               | excel   | Delete |
| <input checked="" type="checkbox"/> | MIME      | application/vnd.ms-excel                        | excel   | Delete |
| <input checked="" type="checkbox"/> | Extension | htm                                             | html    | Delete |
| <input checked="" type="checkbox"/> | Extension | html                                            | html    | Delete |
| <input checked="" type="checkbox"/> | MIME      | text/html                                       | html    | Delete |
| <input checked="" type="checkbox"/> | Extension | odp                                             | ooffice | Delete |
| <input checked="" type="checkbox"/> | Extension | ods                                             | ooffice | Delete |
| <input checked="" type="checkbox"/> | Extension | odt                                             | ooffice | Delete |
| <input checked="" type="checkbox"/> | MIME      | application/vnd.oasis.opendocument.presentation | ooffice | Delete |
| <input checked="" type="checkbox"/> | MIME      | application/vnd.oasis.opendocument.spreadsheet  | ooffice | Delete |
| <input checked="" type="checkbox"/> | MIME      | application/vnd.oasis.opendocument.text         | ooffice | Delete |

## Rebuilding Indexes

Under rare circumstances - and usually due to hardware failure/issues - the indexes used by Retain when the search feature is invoked become damaged or files become missing. Resetting the index state of messages in the Retain database causes the Retain indexer to re-index the affected messages.

---

**WARNING:** This should only be done under the direction of a Retain customer support engineer. It is recommended that you first back up your Retain database. Rebuilding indexes uses significant amounts of CPU, RAM, disk IO and time.

---

---

**NOTE:** Depending on the number of messages to be re-indexed, this process could take a long time. Most systems index 2M - 8M messages per day, which is dependent upon various hardware factors.

---

There are 3 options:

1. Re-index Failed Messages: Re-indexes messages where one or more parts of the message failed to index. Existing indexes are updated with changes. Searches will work as normal during the re-index process.
2. Re-index All Messages: Re-indexes all messages and updates existing index with changes. Searches will work as normal during the re-index process.



3. Delete Index: Deletes the current index and re-indexes all messages. Searches will not be accurate until the re-index completes.

### Rebuilding Indexes

Under rare circumstances - and usually due to hardware failure/issues - the indexes used by Retain when the search feature is invoked become damaged or files become missing. Resetting the index state of messages in the Retain database causes the Retain indexer to re-index the affected messages.

WARNING: This should only be done under the direction of a Retain customer support engineer. It is recommended that you first back up your Retain database.

NOTE: Depending on the number of messages to be re-indexed, this process could take a long time. Most systems index 2M - 8M messages per day, which is dependent upon various hardware factors.

**Re-index Failed Messages**

Re-indexes messages where one or more parts of the message failed to index. Existing indexes are updated with changes. Searches will work as normal during the reindex process.

**Re-index All Messages**

Re-indexes all messages and updates existing index with changes. Searches will work as normal during the re-index process.

**Delete Index**

Deletes the current index and re-indexes all messages. Searches will not be accurate until the re-index completes.

Index performance can be increased by the number of threads allowed to the indexer. Again this uses significant amounts of CPU, RAM and disk IO and any one of these can limit indexing and Web UI performance.

To increase indexing threads:

1. Stop tomcat
2. Edit ../RetainServer/WEB-INF/classes/config/solrcloud.indexing.properties
3. At the end of the file, change the setting: `indexingThreads=0` to `indexingThreads=[1 - 24]` (You should not go higher than 10 times the number of CPU cores; otherwise, the overhead of CPU slicing would actually work against you.)
4. Start tomcat

You will also need to keep in account users needing to access their Retain mailboxes and perform searches. Increasing threads could slow down the web UI response, so you'll need to experiment with what works best for your system.

## Storage tab



Use this tab to specify where the Retain archive files are stored and to manage encryption of archive BLOB files.

**Path:** Retain Server Manager > Configuration > Server Configuration > Storage Tab

**Table 11-1** Using the Storage Tab

| Panels                | Information and/or Action                          |
|-----------------------|----------------------------------------------------|
| Storage               | See “Storage Panel” on page 354.                   |
| Storage Encryption    | See “Storage Encryption Panel” on page 355.        |
| Keystore              | See “Keystore Sub-panel” on page 357               |
| Storage Re-encryption | See “Storage Re-encryption Sub-panel” on page 358. |

## Storage Panel

**Storage**

The configuration database, indices, XML files, and the archive files are stored under the storage path which should be on a highly reliable storage device with plenty of disk space.

The standard storage engine places archive files under the storage path. You may change the storage path on this screen; the storage engine can be changed from the Storage Manager menu.

Storage Engine

Base Storage path

**Advanced Settings**

For more advanced scenarios, some paths may be assigned to one device and some to another.

Derive all file locations from above base path?

Store attachments under this path

Store xml mappings under this path

Store indexes under this path

Store PDF exports under this path

Store backups under this path

Store license under this path

Compression (always on)

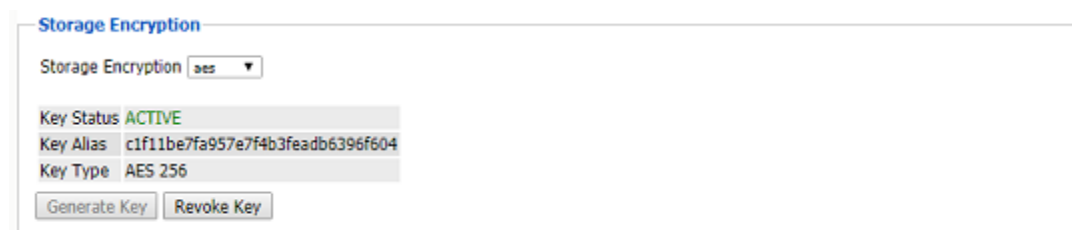
**Path:** Retain Server Manager > Configuration > Server Configuration > Storage Tab > Storage Panel

**Table 11-2** Using the Storage Panel

| Option, Field, or Sub-panel | Information and/or Action                                                                                                                                                                                                                                                                          |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage Engine              | Only informational. Configurable in the Storage Manager                                                                                                                                                                                                                                            |
| Base Storage Path           | Sets the default path for where the Retain archive, XML files, search index files, PDF exports, backups, and license files are stored.<br><br>Customized paths for these can be set by clicking the <b>Advanced Settings</b> link and deselecting the <b>Derive all file locations ...</b> option. |

| Option, Field, or Sub-panel | Information and/or Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Advanced Settings</b>    | <p>Use this link to access customizable storage paths for the Retain archive, XML files, search index files, PDF exports, backups, and license files.</p> <p>Deselect the <b>Derive all file locations ...</b> option to display the list of paths.</p> <p>You can specify customized paths for the following:</p> <ul style="list-style-type: none"> <li>◆ Attachments</li> <li>◆ XML Mappings</li> <li>◆ Indexes</li> <li>◆ PDF Exports</li> <li>◆ Backups</li> <li>◆ License Files</li> </ul> |
| <b>Compression</b>          | A reminder that compression is always used.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Storage Encryption Panel



- ◆ “Keystore Sub-panel” on page 357
- ◆ “Storage Re-encryption Sub-panel” on page 358

**NOTE:** Encryption is not currently supported on MS SQL databases.

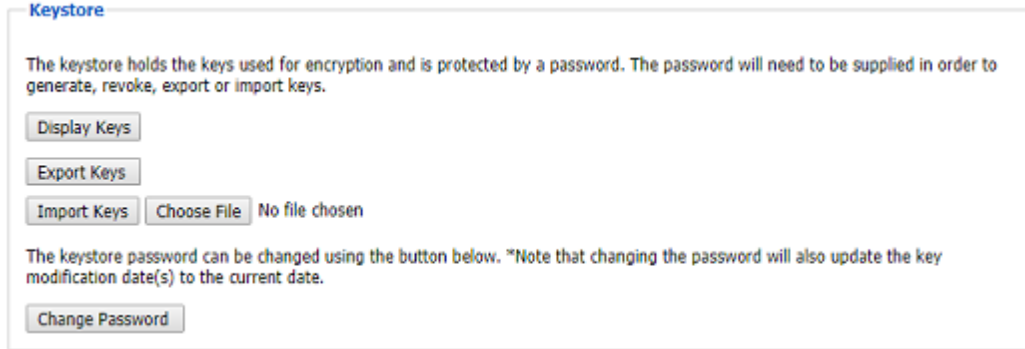
**Path:** Retain Server Manager > Configuration > Server Configuration > Storage Tab > Storage Encryption Panel

**Table 11-3** Using the Storage Encryption Panel

| Option, Field, or Sub-panel | Information and/or Action                                                                                              |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b>                | The following options, fields, etc. display only after you change the <b>Storage Encryption</b> option to <b>aes</b> . |

| Option, Field, or Sub-panel | Information and/or Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage Encryption option   | <ul style="list-style-type: none"> <li>◆ <b>none:</b> This is the default state. Jobs run normally and Retain archive files are not encrypted.<br/><br/>If you switch back to this option after encrypting archive files, new archive archive files won't be encrypted, but files that are already encrypted remain encrypted.</li> <li>◆ <b>aes:</b> When you select this, Job processing is suspended until a new key is generated using the <b>Generate Key</b> button.<br/><br/>After a key is generated, Job processing resumes, and Retain encrypts new files as they come in. Existing files are encrypted in the background when the server is idle.<br/><br/>Although encrypting a large amount of archived data can take some time, there are no impacts on user tasks or the overall user experience.</li> </ul> |
| Key Status field            | <ul style="list-style-type: none"> <li>◆ <b>Initial:</b> This indicates that the system is waiting for key generation. Jobs are suspended until that is done.</li> <li>◆ <b>Active:</b> This indicates that the key with the Alias name displayed below is currently being used to encrypt the Retain archive files.</li> <li>◆ <b>Revoked</b> This indicates that the encryption key that was previously active is no longer in use for encrypting archive files. Encryption is currently suspended until a new key is generated and stored in the keystore.</li> </ul>                                                                                                                                                                                                                                                    |
| Key Alias                   | This is the system name that Retain assigned to the currently active encryption key. Keys are listed in the keystore using this system name (alias).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Key Type                    | <p>The encryption type and level of the currently active encryption key.</p> <p>Retain generates new keys to the 256-bit Advanced Encryption Standard (AES 256).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Generate Key button         | <p>Clicking this causes Retain to generate a new AES 256 key and to begin encrypting the Retain archive files with that key.</p> <p>When generating the system's first key, you must set and confirm a keystore password that</p> <ul style="list-style-type: none"> <li>◆ Contains at least 6 upper- or lower-case alphanumeric characters.</li> <li>◆ Does not contain special characters.</li> </ul> <p><b>IMPORTANT:</b> Make sure you don't lose the keystore password.</p> <p>For generating subsequent keys, you need only enter the password once.</p>                                                                                                                                                                                                                                                              |
| Revoke Key button           | <p>Clicking this and confirming the action, causes the encryption key to be revoked. Encryption of incoming archive items is suspended and the <b>Key Status</b> changes to <b>Revoked</b>.</p> <p>The revoked key is saved in the keystore so that Retain can decrypt any archive files that were encrypted with it.</p> <p>Revoked keys are only removed after all items that were previously encrypted by the revoked keys are re-encrypted by a new key through Retain's Storage Re-encryption functionality.</p>                                                                                                                                                                                                                                                                                                       |

## Keystore Sub-panel



**Path:** Retain Server Manager > Configuration > Server Configuration > Storage Tab > Storage Encryption Panel > Keystore Sub-panel

**Table 11-4** Using the Keystore Sub-panel

| Option, Field, or Sub-panel | Information and/or Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Display Keys</b> button  | <p>Clicking this displays the names (key aliases) and modification dates of all keys in the keystore.</p> <p>To view the contents of an exported .jks file that is offline, use one of the following options.</p> <p>At a terminal prompt,</p> <ol style="list-style-type: none"><li>1. Install Java 1.8.</li><li>2. Use the command line tool <code>keytool.exe</code> (<a href="https://docs.oracle.com/javase/8/docs/technotes/tools/unix/keytool.html">https://docs.oracle.com/javase/8/docs/technotes/tools/unix/keytool.html</a>) to view the file.</li></ol> <p>For example,</p> <pre>keytool -list -v -keystore key-store-file.jks</pre> <p>In a desktop GUI environment,</p> <ol style="list-style-type: none"><li>1. Install and use a GUI tool, such as <a href="https://www.ssldesk.com/portecle-advanced-keystore-creation-and-manipulation-tool/">Portecle</a> (<a href="https://www.ssldesk.com/portecle-advanced-keystore-creation-and-manipulation-tool/">https://www.ssldesk.com/portecle-advanced-keystore-creation-and-manipulation-tool/</a>).</li></ol> |
| <b>Export Keys</b> button   | <p>Clicking this and entering the keystore password causes the keystore to be exported as a .jks file named <code>retainKeyStore.jks</code> and downloaded to the browser's default download location on the machine that is running the management browser.</p> <p>We recommend renaming this file to reflect its origin. For example, <code>Retain-svr01-KeyStore.jks</code> for a retain server named <code>Retain-svr01</code>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Import Keys</b> button   | <p>Before clicking this button, you must first browse to and choose a .jks file.</p> <p>After clicking this button, you must enter the keystore password for this Retain server and then the keystore password for the keystore on the server where the .jks file originated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Choose File</b> button   | <p>Click this button to browse to and select a .jks keystore file for importing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

---

| Option, Field, or Sub-panel | Information and/or Action |
|-----------------------------|---------------------------|
|-----------------------------|---------------------------|

---

|                        |                                                                           |
|------------------------|---------------------------------------------------------------------------|
| Change Password button | Click this button to change the keystore password for this Retain server. |
|------------------------|---------------------------------------------------------------------------|

---

## Storage Re-encryption Sub-panel

**Storage Re-encryption**

Items in the storage area can be re-encrypted using the active key referenced above. This is a lengthy process as it involves the modification of all items in the storage area. The process can be started immediately or it can be scheduled to run during off-hours, for a specified amount of time, until it is complete. Upon completion, a report can be sent to the Retain administrator, if desired.

**Configuration**

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Enable Re-encryption Process        | <input checked="" type="checkbox"/> |
| Schedule                            | Daily ▼                             |
| Run at                              | 19 ▼ : 43 ▼                         |
| Mail report to Retain administrator | <input type="checkbox"/>            |
| Limit processing time               | <input checked="" type="checkbox"/> |
| Hours                               | 1                                   |
| Processing threads                  | 1                                   |

Start Re-encryption Now   Stop

**Process Status**

The information below shows the progress of the current cycle, if running, or the final state of the last cycle. Use the Update Stats button to refresh the data when processing is active.

|                                |         |
|--------------------------------|---------|
| Current cycle                  | RUNNING |
| Status of previous cycle       | UNKNOWN |
| Items to process               | 33256   |
| Processed in current cycle     | 3002    |
| Processing rate (items/second) | 35      |
| Duration (hhh:mm:sec)          | 0:1:25  |

Update Stats

**Path:** Retain Server Manager > Configuration > Server Configuration > Storage Tab > Storage Encryption Panel > Storage Re-encryption Sub-panel

**Table 11-5** Using the Storage Re-encryption Sub-panel

---

| Option, Field, or Sub-panel | Information and/or Action |
|-----------------------------|---------------------------|
|-----------------------------|---------------------------|

---

**Configuration Section:** Use the following to manage and control the re-encryption process.

|                                            |                                               |
|--------------------------------------------|-----------------------------------------------|
| <b>Enable Re-encryption Process</b> option | Re-encryption only runs when this is enabled. |
|--------------------------------------------|-----------------------------------------------|

|                                |                                                                            |
|--------------------------------|----------------------------------------------------------------------------|
| <b>Schedule</b> drop-down list | You can schedule re-encryption processes to run daily, weekly, or monthly. |
|--------------------------------|----------------------------------------------------------------------------|

|                      |                                                                       |
|----------------------|-----------------------------------------------------------------------|
| <b>Run at</b> option | Specify when you want re-encryption processes to run in 24-hour time. |
|----------------------|-----------------------------------------------------------------------|

|                                                   |                                                                                                                                                                                                |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mail report to Retain administrator</b> option | If you have configured the system with SMTP services and the Retain administrator has an associated email account, enabling this causes Retain to email the administrator with status updates. |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                     |                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Limit processing time</b> option | If you want to limit the length of time spent on re-encryption in each run cycle, enable this option. |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|

---

| <b>Option, Field, or Sub-panel</b>                                                             | <b>Information and/or Action</b>                                                                                |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Hours field</b>                                                                             | Specify the number of hours the system can spend on re-encryption in each run cycle.                            |
| <b>Processing threads option</b>                                                               | Specify the number of threads the system can devote to re-encryption processes.                                 |
| <b>Start Re-encryption Now button</b>                                                          | Click this to circumvent the schedule and start re-encryption immediately.                                      |
| <b>Stop button</b>                                                                             | Click this to halt the current re-encryption process.                                                           |
| <b>Process Status Section:</b> Informational fields for tracking re-encryption process status. |                                                                                                                 |
| <b>Current cycle</b>                                                                           | <ul style="list-style-type: none"> <li>◆ Not running</li> <li>◆ Running</li> </ul>                              |
| <b>Status of previous cycle</b>                                                                | <ul style="list-style-type: none"> <li>◆ Unknown</li> <li>◆ End_of_Processing</li> <li>◆ Manual_stop</li> </ul> |
| <b>Items to process</b>                                                                        | The total number of archived items that require re-encryption.                                                  |
| <b>Processed in current cycle</b>                                                              | The total number of items encrypted during the current cycle.                                                   |
| <b>Processing rate (items/second)</b>                                                          | The average number of items processed per second.                                                               |
| <b>Duration (hhh:mm:sec)</b>                                                                   | How long the current cycle has been running.                                                                    |
| <b>Update Stats button</b>                                                                     | Click this to immediately update the statistics displayed above it.                                             |

## Accounts tab

The accounts tab allows you to control the creation of accounts.

**Server Configuration**

Communications Index Storage Accounts Maintenance Logging Miscellaneous Module Forwarding REST API

### Account Management

You may expire unused accounts, disable new accounts from being created automatically, and restrict some users from logging in.

Expire unused accounts after how many days (0=never)

Disable new accounts

Prohibited Logins

Remove selected address

Address  Add

You may enable a password strength policy if you want to enforce strong passwords for users. Keep in mind these passwords may be overridden by individual messaging systems.

Password strength:

Must be between 5 and 15 characters in length.

### KeyShield SingleSignOn

Configure this feature if Keyshield Single Sign On is to be used for user authentication.

Enable Keyshield SSO authentication?

KeyShield SSO Server URL (e.g. http://127.0.0.1:8485)

Connection timeout (in seconds)(e.g. 5)

User ID alias (e.g. x-retain)

API key

Test Connection

### Intruder Lockout

Enable this feature to temporarily lockout an account that may be the subject of an illegal entry attempt. You may clear lockouts using the button below, or by restarting Tomcat

Enable Intruder Lockout?

Number of invalid login attempts

Time interval (minutes)

If triggered, lock account for this period (minutes)

Clear lockouts

## Account Management

*Expire unused accounts after how many days:* Enabling this will remove ANY account, including admin, not logged into for the set number of days (0=never expire)

*Disable new accounts:* will prevent new accounts from being enabled by default.

*Prohibited logins:* Block specific users from logging into Retain. Enter the username or email address and add or select and press Remove selected address.

### Password strength

#### Open System vs. Closed System

Normally, Retain lets all mail system users log in. This is considered to be an “open” system. When that happens, Retain will check to see if a Retain account already exists and if not, it will create a new account for them and assign them to the group default.

Sometimes, you don’t want certain users to have access to the Retain archives. In this case, you may add these users to the list of Prohibited Logins. You do so by entering their name in the Address field and click “Add”.



To make a “closed” Retain system, simply click on “Disable New Accounts”. If you use this option, it means that you will have to manually create accounts in Retain for authorized users. In other words, the only people who can access your system will be people who you specifically create an account for.

In Retain, user accounts expire after 30 days of inactivity by default. You may choose the number of days or choose 0 for “accounts never expire”.

See “User Rights” for more information.

### Password Strength

User-created passwords may be controlled for strength. By default, Retain accepts any password set by users. To require a higher security password, select the higher level desired. Requirements for the low, medium, and high settings are defined as:

Will accept any password

Will accept any password

Low: Must be between 5 and 15 characters in length.

Must be between 5 and 15 characters in length.

Medium: Must be between 5 and 20 characters in length, with at least 1 lower case characters, at least 1 upper case characters and at least 1 numerical characters.

Must be between 5 and 20 characters in length, with at least 1 lower case characters, at least 1 upper case characters and at least 1 numerical characters.

High: Must be between 8 and 20 characters in length, with at least 2 lower case characters, at least 2 upper case characters, at least 2 numerical characters, and at least 2 special characters.. Also, the password will be checked against a dictionary.

Must be between 8 and 20 characters in length, with at least 2 lower case characters, at least 2 upper case characters, at least 2 numerical characters, and at least 2 special characters.. Also, the password will be checked against a dictionary.

### KeyShield SingleSignOn

Retain supports the use of KeyShield SSO for users. To use the KeyShield client in coordination with Retain, Retain needs to have an open connection to the KeyShield server, the User ID alias, and the API key. Specify the KeyShield SSO Server URL, Alias, and API key. The Timeout is set in seconds, and may be anything required, 5 is recommended. Test the connection to ensure proper function.

**KeyShield SingleSignOn**

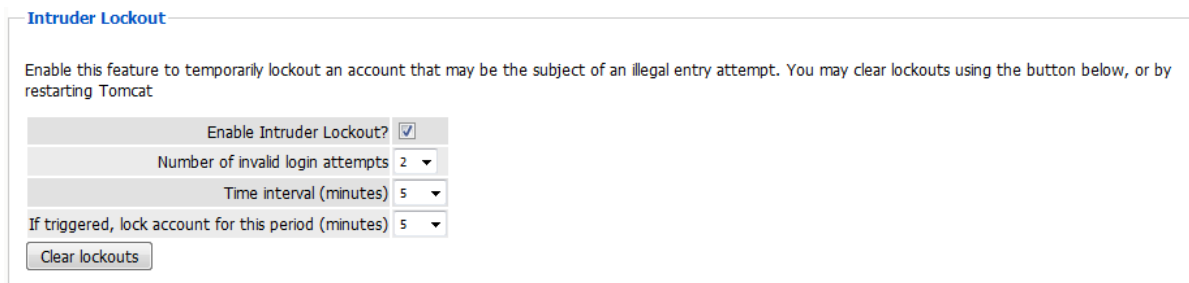
Configure this feature if Keyshield Single Sign On is to be used for user authentication.

|                                                       |                                     |
|-------------------------------------------------------|-------------------------------------|
| Enable Keyshield SSO authentication?                  | <input checked="" type="checkbox"/> |
| KeyShield SSO Server URL (e.g. http://127.0.0.1:8485) | http://10.1.10.20.:8485             |
| Connection timeout (in seconds)(e.g. 5)               | 5                                   |
| User ID alias (e.g. x-retain)                         | x-retain                            |
| API key                                               | sIBRdc7Yk9Kiu4RFoDopdy              |

When configured, Retain checks to see if the KeyShield client is running and if the user is currently logged in. If they are logged in, Retain checks the user against the specified KeyShield Server and then either fails authentication and sends users to the login page, or immediately passed them to their interface. The effect is that users who are already logged into the KeyShield client will not be required to login to Retain, but will be immediately taken to their appropriate interface.

### Intruder Lockout

Accounts may be locked if multiple failed attempts are detected, according to the specified time window. This is useful to deny password cracking attempts on the server.



The screenshot shows a configuration window titled "Intruder Lockout". Below the title is a descriptive text: "Enable this feature to temporarily lockout an account that may be the subject of an illegal entry attempt. You may clear lockouts using the button below, or by restarting Tomcat". The configuration area contains four rows of controls: a checkbox for "Enable Intruder Lockout?" which is checked; a dropdown menu for "Number of invalid login attempts" set to 2; a dropdown menu for "Time interval (minutes)" set to 5; and a dropdown menu for "If triggered, lock account for this period (minutes)" set to 5. At the bottom of the configuration area is a button labeled "Clear lockouts".

To enable Intruder Lockout, select the checkbox next to the 'Enable Intruder Lockout' option and save the changes. All changes will be immediate as soon as the save button is selected.

If a user has locked their account and requires immediate access to the system, all lockouts may be cleared. To clear any locked accounts, select the 'clear lock outs' button at the bottom of the page. There is no need to save changes; the clear command is immediate.

## Maintenance Tab

Maintaining a Retain system involves many tasks:

- ◆ Backup Configuration (Embedded) Database
- ◆ Compress Configuration Database
- ◆ Indexing (All Indexes)

These items are all controlled here.

**Server Configuration**

Communications Index Storage Accounts **Maintenance** Logging Miscellaneous Module Forwarding REST API

**Maintenance/Caching**

You may automatically backup and/or compress the embedded database at a specified time. The indices are also backed up. The Retain Server is offline at this time, so no jobs may be active at this point.

Enable Backup of Indices  Weekly Sunday

Enable Index Optimization  Daily

Mail Job Report

Purge exported files when older than 12 hours

Run maintain procedure at 01:00

Last Backup of Indexes (never)

Last Index Optimization 24-Jul-2019 01:02:00 [Optimize Index Now](#)

**Ignore Domains**

You might want specific Domains (and their child POs and users) to be completely ignored - not cached, not stored, etc.

Ignored Domains: admtdom, cbiwebdomain, cbidomain, dmsdom, emaildom, exchangeqa, faxdom, gw5ntdom, gw6ntdom, mythos

[Remove Selected Domain](#)

Domain  [Add](#)

This configuration database – the “Embedded” database:

- ◆ Should be backed up regularly
- ◆ Contains your system address book
- ◆ Also contains key information used by Retain
- ◆ Configure how often it gets backed up here.

## Index Maintenance and Optimization

You can also configure how often indexes get backed up and how often the indexes are optimized for speed.

Use the **Optimize Index Now** button if you need to optimize the index immediately rather than waiting for the scheduled cycle. While the optimization proceeds, the **Last Index Optimization** field changes to *In Process*. When the process finishes, the date and time display, and the indexer log is updated.

---

**WARNING:** Index optimization will temporarily *double* the amount of index storage used as new index files are written. If a job is running the space use can *triple*. It is recommended to run index optimization on the weekend while no jobs are running.

---

## Datastore Maintenance

Retain also lists a history of backups and maintenance here.

---

**NOTE:** This maintenance section does not involve backup or maintenance of the data store. You must back that up yourself with your normal backup tools.

---

You must backup:

- ◆ SQL Database
- ◆ File System where your data is stored

## Ignore Domains

Some mail systems allow for the addition of non-system, or external domains. Sometimes, you might do this to add external domains to the mail system address book. However, the mail system cannot pull up e-mail from these domains and you may want to tell Retain to ignore references to these external domains to avoid wasting time during data collection.

**Ignore Domains**

You might want specific Domains (and their child POs and users) to be completely ignored - not cached, not stored, etc.

| Ignored Domains | Actions                                               |
|-----------------|-------------------------------------------------------|
| emaildom        | <input type="button" value="Remove Selected Domain"/> |
| gw5ntdom        |                                                       |
| admndom         |                                                       |
| cbiwebdomain    |                                                       |
| dmsdom          |                                                       |
| faxdom          |                                                       |
| gw6ntdom        |                                                       |
| outthere        |                                                       |
| mythos          |                                                       |
| travdom         |                                                       |

Domain

Specify these domains in this window.

## Logging tab

Configure the system logging here. Normally, you want verbose logging. Diagnostic is ordinarily done just for troubleshooting purposes.

**Server Configuration**

Communications | Index | Storage | Accounts | Maintenance | **Logging** | Miscellaneous | Module Forwarding | REST API

**Logging**

|                         |                                     |
|-------------------------|-------------------------------------|
| Logging enabled         | <input checked="" type="checkbox"/> |
| Log level               | D diagnostic (Trace) ▼              |
| Compress logs           | <input checked="" type="checkbox"/> |
| Remove old logs         | <input checked="" type="checkbox"/> |
| When age exceeds (days) | 28                                  |

You also specify how long to keep logs here. By default, logs are deleted after 10 days. Logs may be compressed to save disk space.

## Auditing Records

Retain now will create an auditing record of all actions, specified by the user, which are taken on a specific piece of mail. Auditing records can be removed automatically after a specified length of time.

The variable is set in days. All of the options associated with this feature are found under the Server Configuration page, Logging tab.

**Auditing**

Retain audits all access to messages by default, allowing you to trace when and who opened a message, forwarded a message etc.

Some advanced auditing options are disabled by default, because they would generate enormous audit logs. Enable them with care. Also, consider clearing your audit logs regularly (see below) or exporting your logs from the audit table on your SQL Server.

Days before audit records are removed (0=never remove)

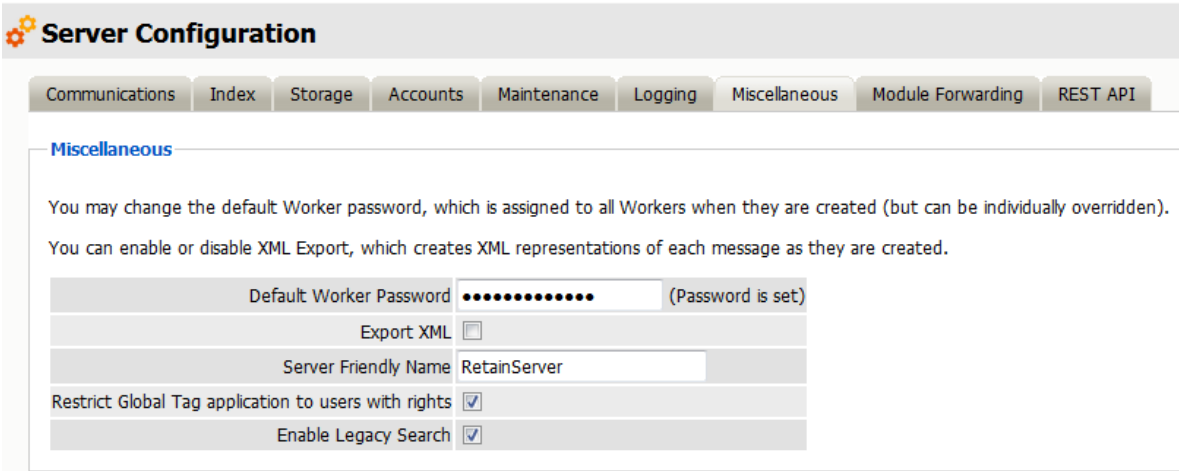
Advanced auditing options

- Select/Unselect all
- Changed User/Group
- Mailbox Switch
- Exported
- Mobile Device Management
- Router Configuration
- Reporting and Monitoring
- Cloud Router Configuration
- Changed Data Collection
- Audited
- Published
- Rules Configuration
- Storage Manager
- Deletion Management
- Skipped Message
- Searched
- Server Config Change
- Restored Message
- Module Configuration
- Stubbing Server
- Licensing

This logging option creates very detailed activity logs for the options selected. It is very important to know that if every option is turned on the logs can become extremely large. However, the audit log cannot be searched for any items or activity which is not configured to be logged. If activity on any of the offered items it must first be enabled here. It is highly recommended that an expiration date is set for the logs so that they are automatically removed from the system to avoid filling up your disk space. Selecting all options for logging will also adversely affect performance. Do not select all the options at one time unless requested by Support.

## Miscellaneous tab

You may choose the default worker password here. One is automatically generated for you when you create a worker but you may change the password here if you like.



**Server Configuration**

Communications Index Storage Accounts Maintenance Logging **Miscellaneous** Module Forwarding REST API

**Miscellaneous**

You may change the default Worker password, which is assigned to all Workers when they are created (but can be individually overridden).  
You can enable or disable XML Export, which creates XML representations of each message as they are created.

|                                                      |                                     |                   |
|------------------------------------------------------|-------------------------------------|-------------------|
| Default Worker Password                              | ••••••••••                          | (Password is set) |
| Export XML                                           | <input type="checkbox"/>            |                   |
| Server Friendly Name                                 | RetainServer                        |                   |
| Restrict Global Tag application to users with rights | <input checked="" type="checkbox"/> |                   |
| Enable Legacy Search                                 | <input checked="" type="checkbox"/> |                   |

## Export XML

This XML Export function is included in Retain in case you have an XML compliance mandate. You enable it here.

When selected, each attachment will have an XML export file of its parent message. In other words, an XML representation of the metadata is created and linked to the blobs as the messages are stored. There's nothing more done.

Ordinarily, you would not want to do this because it consumes enormous quantities of disk space, loads up your file system and degrades performance.

When you do NOT use the XML export function, you will benefit from Retain's single-instance message storage and data compression to save disk space and improve performance.

## Module Forwarding

Modules can be set to forward all new items to another location.

|                |       |         |          |             |         |               |                   |          |
|----------------|-------|---------|----------|-------------|---------|---------------|-------------------|----------|
| Communications | Index | Storage | Accounts | Maintenance | Logging | Miscellaneous | Module Forwarding | REST API |
|----------------|-------|---------|----------|-------------|---------|---------------|-------------------|----------|

---

### SMTP Forwarding for Modules

An SMTP mail server only needs to be defined when forwarding a copy of the items collected by Retain to an external system.

|                        |                                |
|------------------------|--------------------------------|
| SMTP Mail Server       | 10.1.109.24                    |
| SMTP Security Protocol | unencrypted                    |
| SMTP Port              | 25                             |
| SMTP Mail From Address | Retain402                      |
| SMTP To Address        | hakimr@smtparhive.qa.gwava.com |
| SMTP Username          | hakimr                         |
| SMTP Password          | ●●●●●●●●                       |

---

### FTP Forwarding for Modules

An FTP server only needs to be defined when uploading a copy of the items collected by Retain to an external system.

|                       |             |
|-----------------------|-------------|
| FTP Server            |             |
| FTP Security Protocol | unencrypted |
| FTP Port              | 21          |
| FTP Upload Location   |             |
| FTP Username          |             |
| FTP Password          |             |

### SMTP Forwarding

SMTP Forwarding is a feature which instructs Retain to forward a copy of any archived message data to the specified address and domain, when the message item is archived. For Module Forwarding to function, it must be configured here on the Server Configuration and also enabled on the specific desired module. Any module which has the SMTP Forward option enabled will send messages according to the settings configured here.

This setting is designed for exporting data to an external SMTP system for redundant archival. This is most often used for mobile, social, or blackberry message systems. SMTP Forwarding will take a text, pin, sms, or posted message and message data, convert it into a MIME file and send the message to the specified SMTP system. The Forward process checks for and sends any queued data once every 10 minutes. If a message is unable to be sent for any reason, after 5 days the MIME file will be saved to the local disk and may be reviewed and repaired by an administrator.

This feature is not recommended for use with any SMTP system which Retain is currently archiving. If Module Forwarding is enabled and configured to use the SMTP system which Retain is currently archiving, duplicate data will be archived; Mobile, Blackberry, and Social data will be doubled in the Retain archive.

DO NOT use SMTP Forwarding with any email module if Retain is archiving the destination SMTP Mail System. This will cause a feedback loop which will rapidly fill the archive and email system.

### *Requirements*

- ◆ Separate, working SMTP system
- ◆ Mobile module requires the mobile app 4.0.1 or higher

### *Configuration*

The SMTP Forwarding feature requires a SMTP Mail Server connection configured. Input the destination Mail Server's DNS name, protocol, and port.

The SMTP Mail From Address will be the address which displays as the 'from' address for the forwarded messages.

The SMTP To Address is the destination account for messages. If a single address is to be used, it should be a journaling mailbox. Retain can also send each message to a destination mailbox for each originating user. If it is desired to send the messages to each respective owner's mailbox, configure the 'SMTP To Address' with: {userid}@<yourdomain>.com

Retain will automatically use the userID of the originating device or account. Use of this feature requires that the SMTP server has an existing mail account for each user which matches the userID Retain shows for the mobile or Blackberry device.

If the destination SMTP server requires a login, provide an appropriate login. The login username and password will have no bearing on the 'from' address.

Press the "Test Connection" button to have Retain send a test message to the destination.

For troubleshooting, attempting to telnet from the Retain server to the SMTP server may provide useful information. Configuration data is stored in ASConfig.cfg.

### *FTP Forwarding*

This feature instructs Retain to take a copy of any archived message data to the specified location, when the data item is archived. This feature must be configured here, in Server Configuration as well as selected on the desired system module configuration page.

FTP Forwarding is designed for exporting data to an external FTP server for redundant archival. While the FTP Forwarding service does not have the inherent danger of duplicating data as the SMTP Forwarding feature does, it is important to note that should the exported data be sent through any system the Retain system archives, it will duplicate data in the Retain archive. FTP forwarding simply sends a copy of the data in the format that it is received, (Mime, text, etc.). The FTP Forwarding service is run every 10 minutes, checking for any data queued for delivery.

### *Requirements*

- ◆ Separate, working FTP Server
- ◆ Module and Server Configuration must both be configured

### *Configuration*

The FTP Forwarding feature must have a configured FTP Server connection before the forward option will appear in the Module configuration pages. To configure the FTP Forwarding option fill out all the required information and then test the connection. Test results will be displayed after the test completes.

FTP Server is the connection address or DNS name of the FTP Server



FTP Security Protocol is the security of the receiving FTP server. Options are Unencrypted, SSL, or TLS.

FTP Port is the listening port of the FTP server.

FTP Upload Location is the path to the desired destination directory of the FTP Server. This must be the location as you would view it in an FTP client. FTP Username and Password are the login credentials to the FTP Server.

Once configured, select 'Test Connection' and then save the settings by selecting the disk icon at the top right of the page. Now the FTP Forwarding option has been configured the FTP option will appear in the module forwarding section of each individual module configured in the system. Only the modules which have had the FTP option saved will utilize FTP Forwarding. The feature must be configured in both places in order to function.

For troubleshooting, attempting to FTP from the Retain server to the FTP server may provide useful information. Configuration data is stored in ASConfig.cfg.

## **REST API**


The REST API is an interface built into Retain which allows third-party applications to input data into the Retain archive. This API was developed to open new horizons to the Retain Archive for any application which conforms to the API requirements. Because of the access the API grants to applications, an additional API license file is required for each application. This license contains credentials and access rights. In order for a third-party application to utilize the REST API, the application must have a credentialed key provided by Micro Focus.

## REST API

The Retain REST API allows external applications to interact with the archive. In order to enable the API, a base API license is required. Additionally, an application license is required for each application that requires access to the API.

### License Summary

#### Global Settings

|                                                                                               |                              |
|-----------------------------------------------------------------------------------------------|------------------------------|
|  API Enabled | True                         |
| License begins                                                                                | Mon Dec 28 12:02:10 MST 2015 |
| License expires                                                                               | Mon Feb 21 10:59:59 MST 2033 |
| Maximum read requests per minute                                                              | 100000                       |
| Maximum write requests per minute                                                             | 60000                        |
| Maximum read requests per application per minute                                              | 10000                        |
| Maximum write requests per application per minute                                             | 6000                         |
| Maximum read requests per user per minute                                                     | 10000                        |

#### Application Settings

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | Retain Outlook Plugin                |
| Application Key                   | 306E8774-105F-41A4-8BD2-EBCA5B0D43AD |
| Enabled                           | True                                 |
| License begins                    | Mon Dec 28 12:06:44 MST 2015         |
| License expires                   | Mon Feb 21 10:59:59 MST 2033         |
| Maximum read requests per minute  | 10000                                |
| Maximum write requests per minute | 0                                    |
| Capabilities                      | Read, Search                         |

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | Retain Publisher                     |
| Application Key                   | EC72B537-6663-4DC9-BEBE-CF8E63CCF74D |
| Enabled                           | True                                 |
| License begins                    | Tue Dec 29 08:07:21 MST 2015         |
| License expires                   | Tue Feb 22 10:59:59 MST 2033         |
| Maximum read requests per minute  | 10000                                |
| Maximum write requests per minute | 0                                    |
| Capabilities                      | Read, Search                         |

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | Retain Mobile                        |
| Application Key                   | 54925AA2-872B-4049-94CD-42F2280DC9E3 |
| Enabled                           | True                                 |
| License begins                    | Mon Dec 28 12:02:10 MST 2015         |
| License expires                   | Mon Feb 21 10:59:59 MST 2033         |
| Maximum read requests per minute  | 10000                                |
| Maximum write requests per minute | 6000                                 |
| Capabilities                      | Search, Insert, Read, Manage         |

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | GBS Development License              |
| Application Key                   | BA5F9F21-DB49-4EA3-9AAB-C717F54380C7 |
| Enabled                           | True                                 |
| License begins                    | Tue Oct 25 11:35:02 MDT 2016         |
| License expires                   | Wed Nov 18 10:59:59 MST 2020         |
| Maximum read requests per minute  | 10000                                |
| Maximum write requests per minute | 6000                                 |
| Capabilities                      | Search, Insert, Read, Manage         |

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | Retain Worker                        |
| Application Key                   | 75C1F268-9AC9-43C4-BBD5-DB31F856E30C |
| Enabled                           | True                                 |
| License begins                    | Sat Feb 11 12:10:32 MST 2017         |
| License expires                   | Thu Mar 03 10:59:59 MST 2033         |
| Maximum read requests per minute  | 100000                               |
| Maximum write requests per minute | 100000                               |
| Capabilities                      | Search, Insert, Read, Manage         |

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Application                       | Retain Cloud Router                  |
| Application Key                   | FAAC93E9-88D7-4812-AF06-FDA47D8892EE |
| Enabled                           | True                                 |
| License begins                    | Fri Oct 14 13:36:57 MDT 2016         |
| License expires                   | Sat Nov 07 10:59:59 MST 2037         |
| Maximum read requests per minute  | 10000                                |
| Maximum write requests per minute | 6000                                 |
| Capabilities                      | Search, Insert, Read, Manage         |

### Submit License

No file chosen

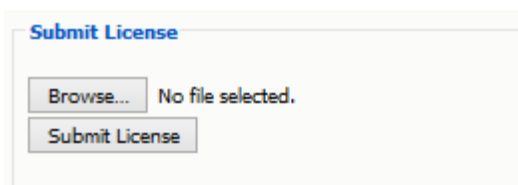
### REST Collectors

REST Collectors are given rights to push data inside of Retain using the REST API.

The REST API is an input protocol only. For Archive security, the API prohibits migrating data out of the Retain Archive. There are also limits placed in each applications API license file to protect the integrity of the data being input into the archive, based on the application.

## Submit License

To gain a credentialed key for a third party application, contact a Micro Focus sales representative. Use of the REST API will require a REST API base license, and an application specific license for each desired application.



## REST Collector

Some modules use the REST API for data collection. You need to create a collector to connect to the message system. You may have multiple REST collectors.

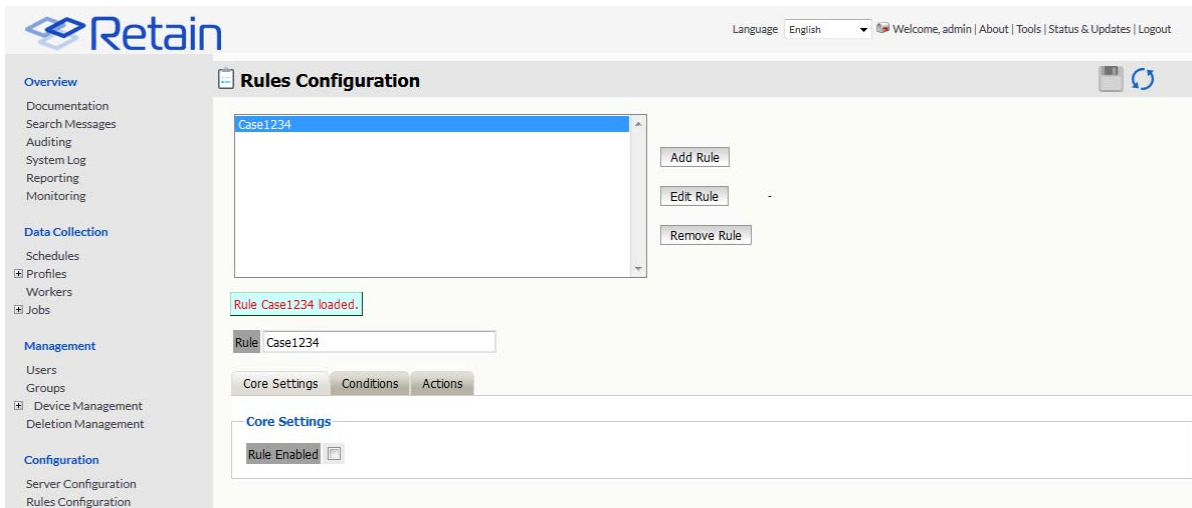


| Collector Name     | Key                                |        |        |
|--------------------|------------------------------------|--------|--------|
| MigrationCollector | 2cc009b0-6cb6-41f6-93ac-1c57d4dcd0 | Delete | Export |

- ◆ *Create* a REST Collector by providing:
  1. The *Collector Name* can be anything you want, but we recommend something easy to identify with the system it connects with. A Key and Secret will be created for the collector. The Key and Secret will be used on the message system side of the system for authentication.
  2. Then press "*Add collector*" to enable the collector.
  3. *Export* the collector allows you to export the Key and Secret to disk for use with the message system.
  4. Send exported file to your message service provider.
- ◆ *Delete* removes the collector.

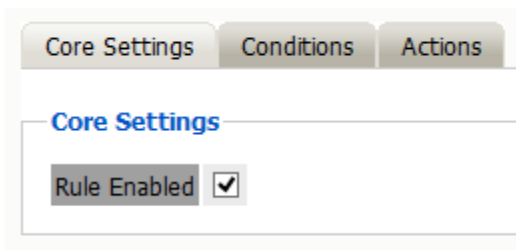
## Rules Configuration

Rules for Retain is a way for administrators to automate tasks and administration based on criteria. This means that any message containing items or information specified in the criteria to have the described action applied automatically. A rule must be enabled, have at least one condition, and one action defined before a rule comes into effect.



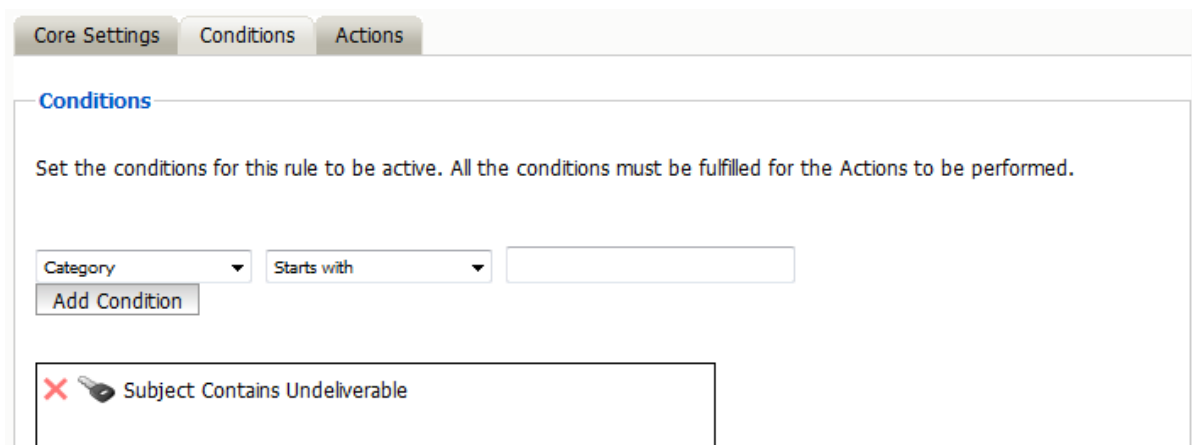
## Core Settings tab

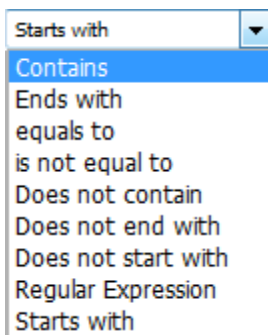
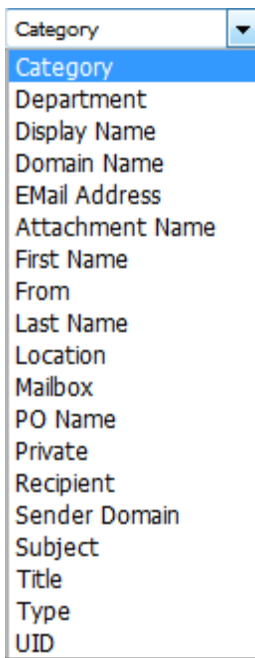
To create a rule, select the 'add rule' button and name the rule. To make the rule active, select 'Rule Enabled'.



## Conditions tab

The conditions are the criteria which determine whether the action is applied to message data or not.





## Category list

Department

Display name

Domain name

Email address

Attachment name

First name

From

Last name

Location

Mailbox

PO name

Private  
Recipient  
Sender domain  
Subject  
Title  
Type  
UID

Criteria is entered in plain text or in regular expression, and are separated into categories. Select the category that the criteria is to be restricted to, from the menu.

Contains  
Ends with  
Equal to  
Is not equal to  
Does not contain  
Does not end with  
Does not start with  
Regular expression  
Starts with

Once a category has been selected, the criteria to be applied to that needs to be specified. The 'Starts with' menu further defines the criteria. The 'Starts with' menu also allows the administrator to either relax some constraints by selecting a vague entry like 'Contains' or 'Starts with', or specify the criteria with 'Regular Expression'. Select the appropriate limiter and then select the 'Add Condition' button. Multiple conditions may be added. Make sure to save changes before leaving the page.

## **Actions tab**

The actions tab defines which actions are to be taken. There are four different options to choose from.

Core Settings   Conditions   **Actions**

---

**Actions**

Set the actions that will be performed by this rule if the conditions are fulfilled.

Apply litigation hold to item ▼

Add Action

✖ Tag item (Case1234)

All four actions may be applied to any one rule. Once the desired actions are applied to a rule, save changes before leaving the page.

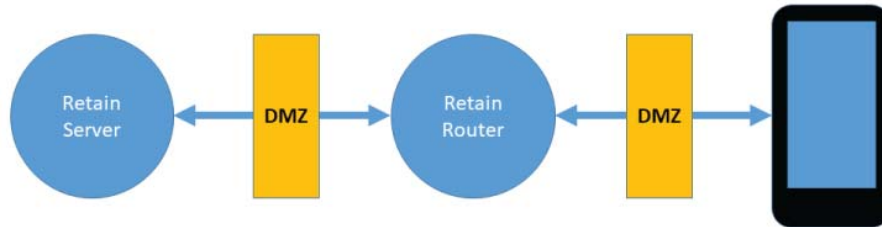
Apply litigation hold to item ▼

- Apply litigation hold to item
- Mark item confidential
- Tag item
- Abort rule processing

## Retain Message Router Configuration

If you don't want to expose your Retain server to the Internet yet still need to allow devices to be archived that are not inside your network you may use the Message Router to provide secure access.

Configuration for the Retain Message Router may be changed or checked on this page. The Router is used in conjunction with the mobile module, the Blackberry module, and any other REST API integrations. In contrast with the Retain Server, the Router is best placed in a network's DMZ, enabling it to be fully accessible to communication from the Internet as well as the network.



## Router Overview

### Prerequisites

Make sure that the connection information under Server Configuration | Communications | Retain Server Connection are filled in. Make note of these settings as you will need to refer to them later.

### On-Premise Router

If you have set up an On-Premise Router in your DMZ:

1. Under the Communications tab and Message Router Connections enter the hostname or IP address of the server the Router agent software resides on. Make sure that the Port and Security match that from the Retain Server Connection set in the prerequisite.
2. Under the Storage tab, enter the storage path you created on the Router Server after installing the Router agent.
3. Under the Logging tab confirm that the log level is Diagnostic (Trace) and old logs are removed after a few days.
4. Press "Save Changes".
5. Press "Test Connection" to connect to the router and send the configuration information.

### Retain Cloud Router

If you have bought the Cloud Router:

1. Under the Communications tab and Cloud Router Configuration, enable Connected to Cloud Router.



2. Then press “Generate Credentials”
3. A Key and Secret will be generated. Those will have to be given to the Micro Focus Cloud team, through your Sales Engineer.
4. Press “Save Changes”.

## Communications tab

The Router’s communication settings and port for both the Retain Server and the Internet is kept here. This is the address that the mobile devices use to talk to the router and should be accessible to the outside world.

Communications
Storage
Logging

The Message Router needs to be able to communicate with the Retain Server, REST based applications and Mobile devices.

**Tenant ID**

A Tenant ID was generated for your Retain system when this page was loaded. It is used by Retain, the Message Router and the devices to verify the connections made to the Retain system.

**Tenant ID** e79d5a4f-4f97-4b68-a328-d54a4e867326

**Message Router Connections**

The Retain system, the Mobile devices and the REST applications need to communicate with the Message Router. It may be critical that this endpoint be accessible from the Internet.

|          |       |
|----------|-------|
| Host     |       |
| Port     | 443   |
| Security | SSL ▾ |

Test Connection

**Cloud Router Configuration**

Cloud Router configuration allows the Retain system to receive requests directed to this system’s Tenant ID from the cloud.

Connected to Cloud Router

|           |               |
|-----------|---------------|
| Key       |               |
| Secret    |               |
| Local URL | Not Connected |

Use message router connections

Get Connection Status
Generate Credentials
Cloud Router URL is not configured

## Tenant ID Panel

Retain automatically creates a Tenant ID for the system when this page is first loaded. This is user to identify the Retain server in various contexts for allowing connections.

This is important for connecting the Retain Router to the Retain server.

This is also used for connecting REST applications and modules to the Retain server.

---

**NOTE:** The Router software agent does not need to be installed to generate this Tenant ID.

---

## Message Router Connections Panel

The Retain server needs to know where the Message Router is on the network.

The Router software must be installed on a server, generally placed in your network's DMZ so Retain will be safe behind the firewall and not exposed to the Internet directly.

Provide the following data:

- ◆ Host name or IP address of the server where the Router software is installed.
- ◆ Port. Default 443 for SSL, 48080 for Plain Text.
- ◆ Security used between the Retain server and router. Default SSL.

Press the "Test Connection" button to send the connect data to the router.

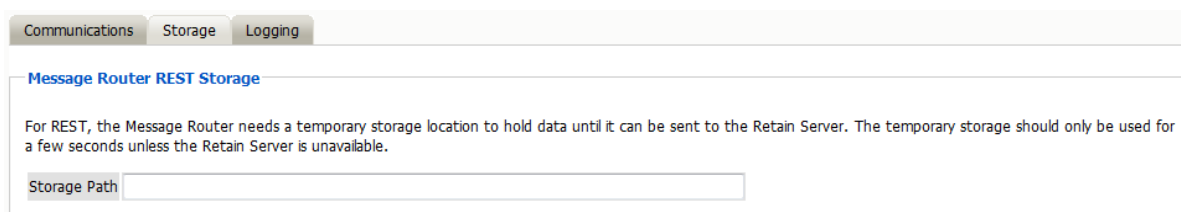
## Cloud Router Configuration Panel

If using the Micro Focus Retain Cloud Router, enable "Connected to Cloud Router" and then the "Generate Credentials" button. These credentials will have to be given to your Micro Focus Salesperson to connect your system to the cloud router system.

Once enabled and setup, the "Get Connection Status" button will provide data about the connection status to the cloud router.

## Storage tab

The storage tab contains the path to the temporary storage location local to the REST Router.



The screenshot shows a web interface with three tabs: "Communications", "Storage", and "Logging". The "Storage" tab is selected. Below the tabs, there is a section titled "Message Router REST Storage". A paragraph of text explains that for REST, the Message Router needs a temporary storage location to hold data until it can be sent to the Retain Server, and that this storage should only be used for a few seconds unless the Retain Server is unavailable. Below this text is a text input field labeled "Storage Path".

The storage is used by the REST Router to store data for a few seconds before it is sent on to the Retain Server. In the event of a failure to access the Retain Server, the REST Router will house the data until the Server is accessed. This storage area is not required to be large, and a few gigabytes is

more than sufficient. When specifying the Storage path, note that the Retain System automatically appends the storage directory. So specifying a path of "/Retain/storage" will result in an actual path of "/Retain/storage/storage".

---

**NOTE:** The Storage Path must not be the same as the Mobile Module Data path.

---

## Logging tab

The logging tab contains settings to enable logging, dictate the logging level of the Router, and settings to purge old logs from the system after a specified age.

The screenshot shows the 'Logging' tab in a configuration interface. At the top, there are three tabs: 'Communications', 'Storage', and 'Logging', with 'Logging' being the active tab. Below the tabs is a section titled 'Message Router Logging Options'. This section contains several settings:

|                         |                                     |
|-------------------------|-------------------------------------|
| Logging enabled         | <input checked="" type="checkbox"/> |
| Log level               | Diagnostic (Trace) ▼                |
| Compress logs           | <input checked="" type="checkbox"/> |
| Remove old logs         | <input checked="" type="checkbox"/> |
| When age exceeds (days) | 10                                  |

## Storage Manager

Retain Supports the ability to change the location or engine used to store the archived mail.

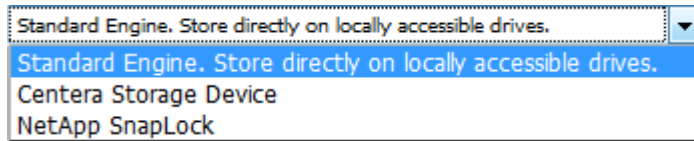
The screenshot shows the 'Storage Manager' configuration interface. At the top, there is a title bar with 'Storage Manager' and some icons. Below the title bar, there is a paragraph of text: "Here, you may configure the storage engine to use with Retain. The Standard engine stores all attachment and e-mail pieces directly on a standard drive mapping. This engine works with all platforms." Below this, it says "Other engines include:" followed by a bulleted list:

- Centera - Used to store files on the EMC Centera storage devices.
- NetApp SnapLock - Used for configuring the NetApp SnapLock feature. This is optional - NetApp works without it. It is used to ensure compliance.

Below the list, it says "Regardless of which engine you select, substantial disk space may be consumed locally as well. (The default drive-based engine consumes the most space)." and "Restarting Tomcat after changing the Storage Engine configuration is strongly advised." Below this, there is a dropdown menu for "Storage Engine" with the selected option "Standard Engine. Store directly on locally accessible drives." Below the dropdown, there is a section titled "Standard Engine" with a paragraph of text: "The Standard Engine supports file consolidation. This is particularly useful when archiving smaller messages. This option is recommended only if archiving mobile or social messages." Below this, it says "Note: You can alter the the storage paths in the Storage tab of the Server Configuration menu option." Below the note, there are two checkboxes: "Enable file consolidation?" (unchecked) and "Last Access Date" (unchecked) with a sub-option "Set Last Access Date according to Expire Date". Below the checkboxes, it says "In addition, if desired, you may define and remove 'partitions' here."

To change the storage option settings which were created during the initial setup of Retain, simply select the different storage engine of your choice.

If the Standard Engine is selected, then the Standard Engine window is displayed. This details the setting location for the default storage location, under Server Configuration | Storage Tab.



The other two options are:

- ◆ Centera Storage Device
- ◆ NetApp SnapLock

## Standard Engine

The standard storage engine is the standard storage option which should be selected for all new installations of Retain. The storage engine utilizes locally accessible drives and media. When selecting this option, make sure that storage requirements will be easily met, size or capacity increased, and managed.

The engine also allows for background compression to be used. Background compression is recommended for social media and mobile modules, to help keep the size of the data store down.

## Legacy Engine

The legacy engine works as a seamless connection to the 2.x line of Retain, and is available as a bridge for upgraded devices and legacy support systems.

## Centera Storage Device

The Centera Storage option simply requires you to put the storage server IP address or DNS name, and the authentication method.

A screenshot of a web-based configuration page titled "Centera". Under the heading "Server Connectivity Settings", there is a note: "Note: The hostname/ip may be suffixed with a :port entry, and you may enter more than one hostname. For example, mycenterbox.com:4256,152.62.65.11,152.62.65.12?name=2profile3,secret=2profile3 is a valid entry. At least one hostname must be entered." Below the note is a text input field labeled "Centera Server/IP". Under the heading "Server Access settings", there is a paragraph: "With Centera devices, you have three options for authentication:" followed by a bulleted list: "• Anonymous, which requires no password, but is insecure.", "• Credentialed, in which you supply a traditional username and password.", and "• PEA, in which you supply a file system path accessible by Retain of the PEA file you encrypted to provide authentication information. A good place to put this is in the license directory, (/retain/license).". At the bottom, there is a dropdown menu labeled "Authentication Method" with "Anonymous" selected.

The different Authentication options are PEA and Credentialed.

The PEA requires the full path to the PEA file.

|                       |     |
|-----------------------|-----|
| Authentication Method | PEA |
| PEA Path (full path)  |     |

For a credentialed authentication, simply input the username and the password for the Centera server.

|                       |                       |
|-----------------------|-----------------------|
| Authentication Method | Credentialed          |
| User                  |                       |
| Password              | (Password is not set) |

## NetApp SnapLock

NetApp is fully supported with SnapLock for storage. Note the information in the option. To enforce WORM rules you MUST set the Job Expiration feature. Also set the IP address, user name, password, and the correct path to the server. The path must be set in netapp format.

**NetApp SnapLock**

SnapLock settings

If you enable SnapLock, then as items are stored on the NetApp appliance with a Job specifying an expiry date, their retention date is set according to your Job options. This effectively enforces WORM rules. You may use NetApp without this setting, if preferred, in which case none of the parameters on this screen need to be filled out.

A note about the path requested below: it is not a Linux, Windows, or UNC path. There is no definite correlation for example between this path and a share path. It uses the NetApp format, and must point to the directory containing all of the Retain blob files. Consult your NetApp Technical Support for more information on this or on enabling SnapLock.

|                                                                  |                       |
|------------------------------------------------------------------|-----------------------|
| Enable SnapLock?                                                 | No                    |
| NetApp Server/IP                                                 |                       |
| Port                                                             | 80                    |
| Admin User                                                       |                       |
| Admin Password                                                   | (Password is not set) |
| Base path to archive directory (example: /vol/myvolname/archive) |                       |

## Partitions

Retain also supports the ability to define a different storage location, through the partitioning option. Partitioning is only available when Storage is set to the 'local' drive. To access the partitions option click on "partitions" in the Enhanced or Standard Engine window. Ideally, this option would only be used to archive to a new, larger, location when the current storage path has been filled, or to separate mail storage between years. (I.e. /archive/2008; /archive/2009)

**Partitions**

Creating a partition allows you to direct all new attachment blobs to a new storage device. (Your old device might be running out of space, or you might prefer to split the storage on a yearly basis etc.). Retain retrieves and stores blobs based upon the partition's date threshold.

**Deleting or adding a partition can easily result in the loss of data. For example, deleting a partition that contains data, will make all of that data completely inaccessible to Retain, unless it is moved to another partition. Carefully read the user manual and/or consult with Technical Support before proceeding.**

Current path used for storage: /retain/archive

There are no partitions defined currently. All blobs will be stored to the default storage path configured in Server Configuration.

You may add a partition below. Just enter a name and the full path to the directory to store blobs under.

New Partition Name

New Partition Path

A Retain system without a specified partition location will store all mail in the default storage location. This is defined in the Server Configuration menu, under the Storage tab mentioned previously. The default location is set during the initial install.

---

**NOTE:** Read the bold warning on changing partitions!

---

You may only specify one new partition at a time. After you have entered the new partition information, click 'save changes'. Creation or changes to a partition requires Tomcat to be restarted. When adding a Partition on Linux, the path needs to be created manually on the Linux Server before specifying the path within Retain. Ensure that the permissions for the new path are given to Tomcat.

Once Tomcat has been restarted, the new partition can be viewed, edited, or deleted from this window.

Partitions are listed with their Begin Date, Name, and Path. The Begin Date is the creation date. A partition is used to store all archived mail from the moment it is created

Because of how Retain indexes and tracks messages that are archived, deleting a partition can lead to catastrophic data loss. Do not delete an active storage partition or location without first consulting support.

If a partition is deleted Retain will look for the archived mail that was stored in the deleted partition to be stored in the default storage location. (This is defined in Server Configuration, under the Storage Tab.) Removing a designated partition in the management console does not delete the storage directories or data on the hard drive or SAN, but it does disconnect Retain from the storage location.

All partition changes are logged in the partition.log file, located in the backup directory specified in Server Configuration. (By default this is located in <your storage location>/backup)

## Stubbing Server

Retain has the ability to use the Stubbing capabilities of GroupWise. Stubbing was designed as a way to reduce disk space usage in a time when the cost of disk space was at a premium. This is less of an issue today.

# Stubbing Server Overview

The Stubbing server has two abilities:

1. Enabling Retain Archive search [“Performing Retain Searches Within The GroupWise Client”](#) on [page 393](#) from the GroupWise desktop client.
2. Removing items [“Configure Stubbing To Remove Messages from GroupWise and Leave Only Stubs”](#) on [page 396](#) from GroupWise and leaving stub pointers to the data in the Retain Archive. This functionality CANNOT be reversed. *We do not recommend enabling this functionality.*

## How Retain Interacts With GroupWise Stubbing

When GroupWise is set up for stubbing and the Stubbing Server is configured in Retain, the archive job that runs will archive all the items and place in their stead in the GroupWise mailbox a "stub". Since the actual message gets placed into the Retain system, GroupWise replaces the original message with a stub that points to the message residing in Retain. A user's GroupWise mailbox will look the same - the user will see a list of messages; however, the icon is different.

When a user clicks on a stubbed message, the GroupWise POA will send a request to the Retain Stubbing Server for the item. Retain sends the item to the POA and the client displays it; however, this does NOT place the message back into GroupWise. When the user closes the message, the stub is all that remains.

## Why Stubbing Is Good

- ◆ Save Disk space. Mail can be removed from the system without being deleted.
- ◆ Users have easy access to items stored in Retain.
- ◆ Transparent access, no need to login to Retain for common tasks.
- ◆ The "Restore" feature in Retain can be enabled. However, it does not actually restore the message into GroupWise. It only restores the stub if the stub is missing (user deleted it).

## Why Stubbing May Not Work for a System

- ◆ *Stubbing CANNOT be reversed.* Once a message is stubbed, it cannot be returned to the same position in the system.
- ◆ *Stub items are NOT COMPATIBLE with third party APIs.* These applications view the stubs as posted items only, with no text or attachments. Mobile, Web, IMAP, and POP3 clients will only see posted empty items, not actual contents.
- ◆ User training for stubbed items may be necessary due to decreased access speed.
- ◆ No method for protecting stubs from deletion in the GroupWise client (re-creation is difficult and complicated).
- ◆ Non-mail items should not be stubbed (calendar and appointment items behave erratically when rescheduled).

Determine the correct option for your system. If you wish to enable Stubbing, you need to install and configure the Stubbing Server as well. If you wish to only stub large items in your mail server, you may set a size threshold. Any item larger than the specified size will be stubbed. If this option is not set, all messages will be stubbed regardless of size.

## Prerequisites

- ◆ You must be using GroupWise 8.0HP1 or greater.
- ◆ The GroupWise module must be configured. This means that a Trusted App Key exists for Retain to use already.
- ◆ Confirm that stubbing is *disabled* in *all* the GroupWise profiles:

Profile Name

Core Settings Message Settings Scope Miscellaneous **Advanced**

### Profile Functions

The normal function of Retain is to archive mail. However, GroupWise 8 introduces the capability to "Stub" items so they appear to be in the original mailbox, but are really stored in Retain. This can save disk space.

You may enable Archiving and Stubbing separately or together, depending on what you think your users would like.

We tend to recommend you do NOT stub Calendar Items, because it can lead to confusing results if they are rescheduled or reassigned. (Most Calendar Items aren't terribly large anyway).

You may safely enable stubbing on a GroupWise 7 post office, however the functionality will be ignored, and the item will not be stubbed.

Enable Archiving (store messages in Retain)  
 Enable Stubbing (if items are already archived)  
     Do not stub Calendar Items (Appointments, Notes, and Tasks)  
     Stub only items exceeding a size threshold  
         Size Threshold (bytes)

## Stubbing Install

If you did not install the Stubbing Server during the initial install of the Retain Server you can install it now.

Run the installer and click through to the point where the installer detects what you have installed.

```
Retain Installer 4.1.0.0
```

```
Retain has already been installed on this system with the following components:
```

```
Retain Server
Retain Reporting & Monitoring Server
Retain Worker
```

```
Choose one of these options:
```

- ```
1) Upgrade current installation of Retain  
2) Upgrade current installation of Retain and add new components  
3) Exit this installer
```

```
Choose (1-3): █
```


Choose "2) Upgrade current installation of Retain and add new components."

Retain Installer 4.1.0.0

Retain has already been installed on this system with the following components:

Retain Server
Retain Reporting & Monitoring Server
Retain Worker

Choose one of these options:

- 1) Upgrade current installation of Retain
- 2) Upgrade current installation of Retain and add new components
- 3) Exit this installer

Choose (1-3): 2

Choose components...

Install Retain Stubbing Server (y/n)?y
Install Retain Message Router (y/n)?n

Then tell the installer to Upgrade Retain, preserving configuration. The installer will stop tomcat, install the Stubbing server and restart tomcat.

Stubbing Configuration

GroupWise

Update Trusted Application Key

1. Go to the Retain Trusted App Key and enable "Allow access to archive service"
2. Set the Archive Service Address to the Retain server IP Address or hostname

3. Set the port to 48080 (the Retain tomcat port)

The screenshot shows a configuration window titled "Retain". It includes the following elements:

- Name:** Retain
- Description:** Trusted App key for Retain archiving
- Restrict use of the trusted app key to connections from:
 - Address:** [Empty field]
 - Port:** 0
 - Require SSL
- Provides Message Retention Service
- Allow access to archive service
 - Archive Service Address:** 10.1.4.131
 - Port:** 48080
 - Require SSL

Buttons at the bottom: ? (help), OK, Cancel.

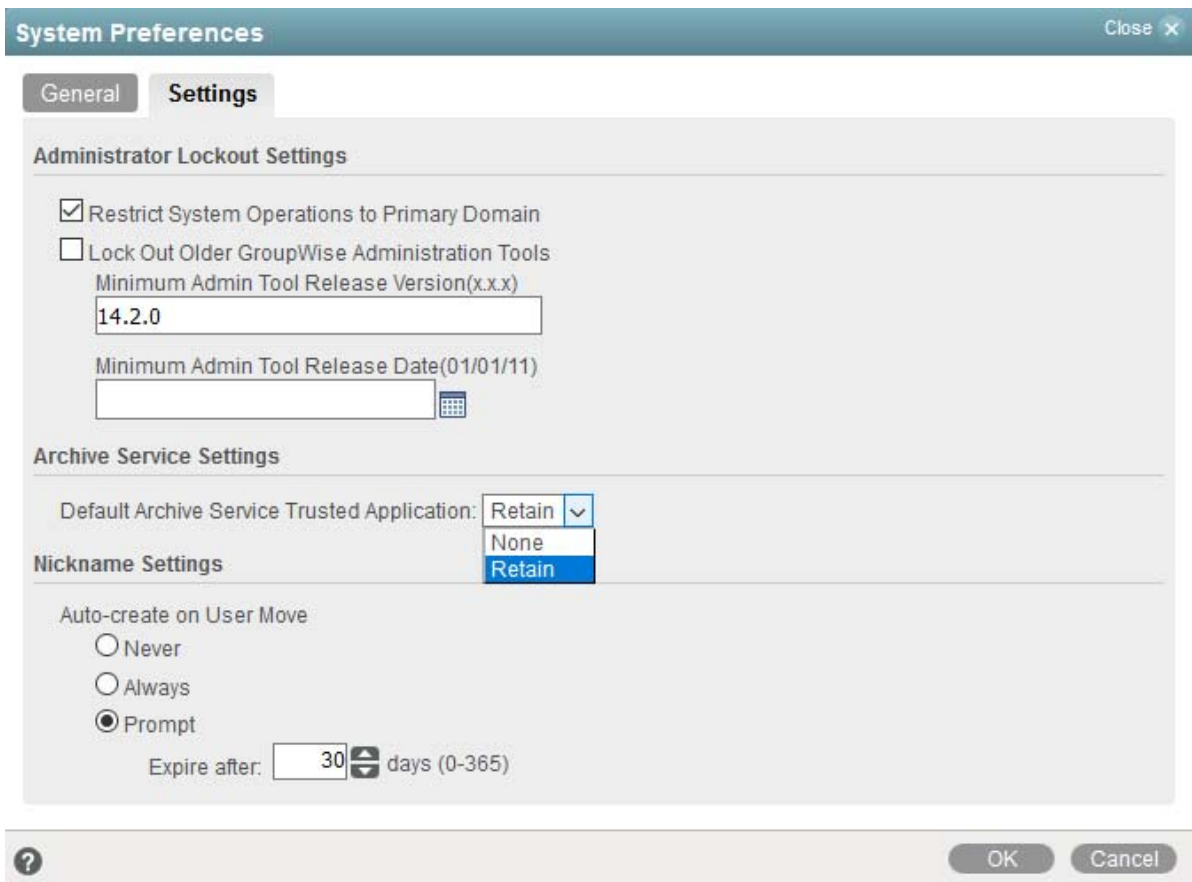
Now you have to decide if you are going to use stubbing on a particular Post Office or System wide.

Archive Service System Setting

If you are enabling stubbing across the entire system you will need to override the Archive Service Trusted Application setting in System Preferences.

Go to System | System Preferences.

Under Settings and Archive Service Trusted Application, enable the Override and select the Trusted Application Key that Retain is using.

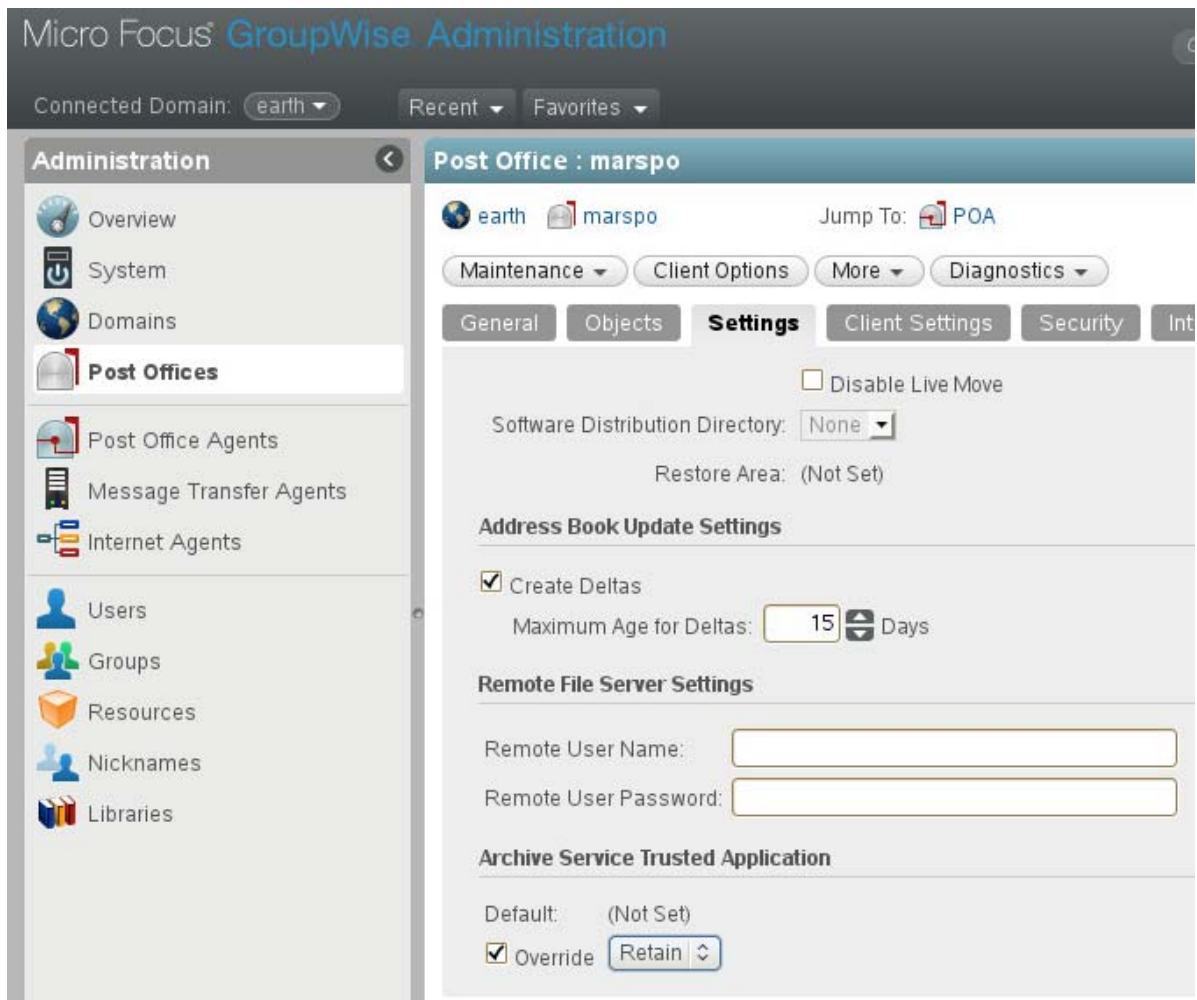


Archive Service Post Office Settings

If you are just stubbing one, some but not all Post Offices you will need to override the Archive Service Trusted Application setting for each Post Office.

Go to the Post Office that will be stubbed.

Under Settings and Archive Service Trusted Application, enable the Override and select the Trusted Application Key that Retain is using.






Retain

In Retain, open the Stubbing Server page from the left-navigation bar.

Core Settings tab

Check the box next to "Enable Stubbing Server"

You may restrict the IP addresses POA connections will be accepted from. Use commas to separate multiple addresses.

Stubbing Server Save Changes   

Stubbing is a new feature in GroupWise 8, where a message item may be "stubbed" -- removing the message permanently from GroupWise, and replacing it with an item (a stub) that connects to Retain to access the message. Effectively, the user has transparent access to the stubbed item from their GroupWise client, and the stub behaves largely as if a native GroupWise item was still there. Consult the user manual for detailed instructions and the pros and cons of stubbing.

Core Settings | **Logging** | Connection

Basics

Choose whether to enable the stubbing server. If it is not enabled, it will not accept requests from any GroupWise POA. In addition, for security purposes, you may enter a comma delimited list of IP addresses, and only these POAs will be serviced.

Enable Stubbing Server

Accept POA connections only from these IP Addresses:

Interval

How often should the stubbing server poll for configuration changes?

Poll for configuration every minutes

Logging tab

Set the logging level to Diagnostic (Trace)

Stubbing Server   

Stubbing is a new feature in GroupWise 8, where a message item may be "stubbed" -- removing the message permanently from GroupWise, and replacing it with an item (a stub) that connects to Retain to access the message. Effectively, the user has transparent access to the stubbed item from their GroupWise client, and the stub behaves largely as if a native GroupWise item was still there. Consult the user manual for detailed instructions and the pros and cons of stubbing.

Core Settings | **Logging** | Connection | Bootstrap

Logging Options

Logging enabled	<input checked="" type="checkbox"/>
Log level	Diagnostic (Trace) 
Compress logs	<input checked="" type="checkbox"/>
Remove old logs	<input checked="" type="checkbox"/>
When age exceeds (days)	<input type="text" value="10"/>

Connection tab

If you have installed the stubbing server on a separate server you will need to specify the location of the Retain server so that it can connect.

Stubbing Server

Stubbing is a new feature in GroupWise 8, where a message item may be "stubbed" -- removing the message permanently from GroupWise, and replacing it with an item (a stub) that connects to Retain to access the message. Effectively, the user has transparent access to the stubbed item from their GroupWise client, and the stub behaves largely as if a native GroupWise item was still there. Consult the user manual for detailed instructions and the pros and cons of stubbing.

Core Settings | Logging | Connection | **Bootstrap**

Retain Server Connection

The Stubbing Server will need to know how to connect to the Retain Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Stubbing Server contacting the Retain Server**, which may or may not match the URL you'd use from your browser to reach the Stubbing Server or Retain Server.

Server Protocol	http
Retain Server Host Name	10.1.4.131
Retain Server Port	48080
Retain Server Path	/RetainServer/
Stubbing Server Password (Password is set)

Note: Changing any of these parameters will require recopying the stubbing server bootstrap file!

The connection to the Retain Server is very important. This must be set to the address of the Retain Server, and is automatically filled out for you. Verify that the Retain Server is located at the specified address and is accessible. Generally you may leave this section default as the Stub Server should be installed local to the Retain Server. If your Retain Server IP address is assigned by DHCP, which we do not recommend, change the Host Name to the DNS name or localhost (127.0.0.1).

Press "Save Changes" and the Bootstrap tab will appear.

Bootstrap tab

Click on "Download File" to save the bootstrap file.

Stubbing Server

Stub Server saved.

You need to copy the bootstrap information

Stubbing is a new feature in GroupWise 8, where a message item may be "stubbed" -- removing the message permanently from GroupWise, and replacing it with an item (a stub) that connects to Retain to access the message. Effectively, the user has transparent access to the stubbed item from their GroupWise client, and the stub behaves largely as if a native GroupWise item was still there. Consult the user manual for detailed instructions and the pros and cons of stubbing.

Core Settings | Logging | Connection | **Bootstrap**

Boot Strap

The Stubbing Server software needs a special "bootstrap" configuration file copied to its working directory before it can function correctly. You may copy it manually or use a web browser to upload the file. (<http://<RetainStubServeripAddress>:48080/RetainStubServer>)

[Download File](#)

Configure Stubbing Server

Browse to `http://<Retain_Stubbing_Server_Address>/RetainStubServer` or `http://<Retain_Stubbing_Server_Address>:48080/RetainStubServer` and upload the bootstrap.



Retain Stubbing Server

The Stubbing Server needs to be configured in the Retain Server web interface. Once it has been configured a "bootstrap" file needs to be downloaded and applied here.

Without a bootstrap file the Stubbing Server will not know how to find the Retain server. After applying the bootstrap file any configuration changes made in the Retain Server will be polled by the stubbing server. You will not have to reconfigure the Stubbing Server manually unless you change the Connectivity settings configured in the Retain Server.

Upload Bootstrap Configuration

When the Configuration is complete, press Continue.

Configuration Complete. From now on, you'll have to log in as a user (such as the initially created admin user) with the Manage Workers right.

Stubbing Server

Log into the console with the admin user.

You will then see the Stubbing Server Configuration tab page, which looks much like the Worker page.

Retain Welcome, admin | Logout

Configuration **Server Connection** Status Scheduler

Stub Server Configuration

URI to Server	http://10.1.4.131:48080/RetainServer/
Stub Server Version	4.0.3
Memory Free/Max/Total	2911783/8354560/4160256

Click "Refresh Configuration now" to prompt the Stubbing Server to poll for configuration changes right now.

Bootstrap information has been applied to this server. If the configuration must be changed in the future, replace the configuration file at /opt/beginfinite/retain/RetainStubServer/WEB-INF/cfg/ and restart the Stubbing Server.

Server Connection

This tab will show you if the Stubbing server was able to connect to the Retain Server.

Retain Welcome, admin | Logout

Configuration **Server Connection** Status Scheduler

Server Connection

Successfully connected to Retain server

Status

This tab provides statistics about what has been happening with the Stubbing server.

Retain Welcome, admin | Logout

Configuration Server Connection **Status** Scheduler

Status 9

Up since	Wed Dec 14 11:56:55 MST 2016
Successful Logins	0
Failed Logins	0
Message Served	0
Attachments Served	0
Communication Errors (POA)	0
Communication Errors (Retain)	0
Cached Sessions	0
Max Sessions	0
Expired Sessions	0

Scheduler

This tab is mainly used by support.

Scheduler Status

To see advanced information regarding the thread scheduler, click [here](#).

Performing Retain Searches Within The GroupWise Client

Once GroupWise and the Stubbing server is configured to this point, it is possible to use the Retain Stubbing Server to allow GroupWise to search the Retain archive from the GroupWise client.

GroupWise client only performs whole-word searches. For example, searching for "wel" will only return messages with the word "wel" in them. Retain performs begins-with searches "wel*" and will return "wel", "well", "welcome" and so on.

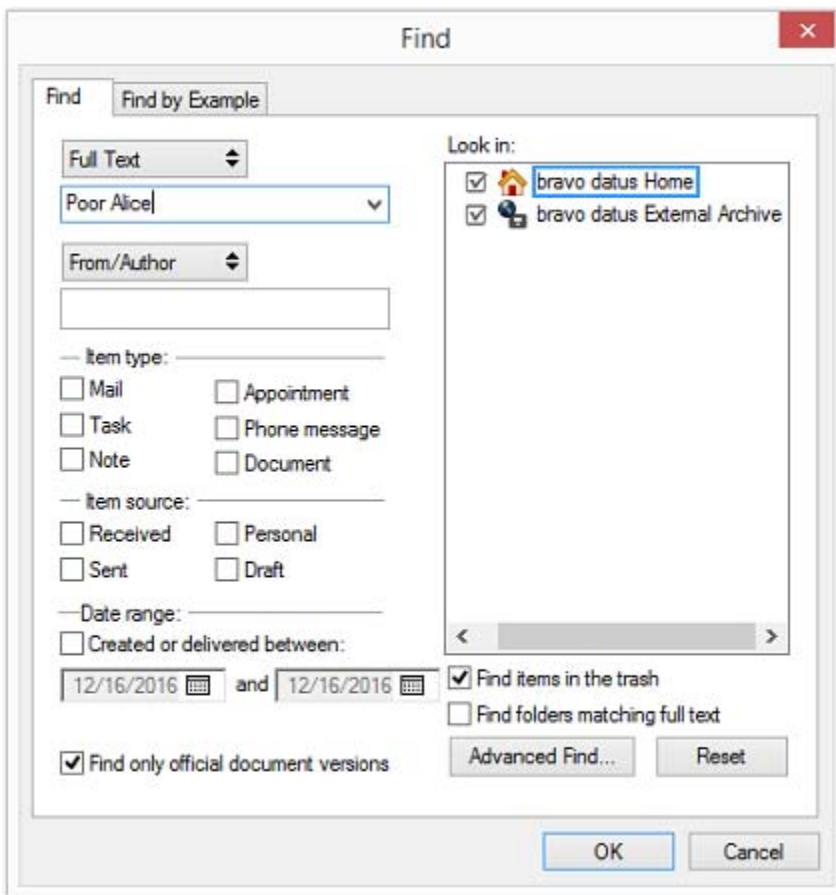
NOTE: GroupWise client is hard-coded to search only up to 5 years in an archive search.

Prerequisites

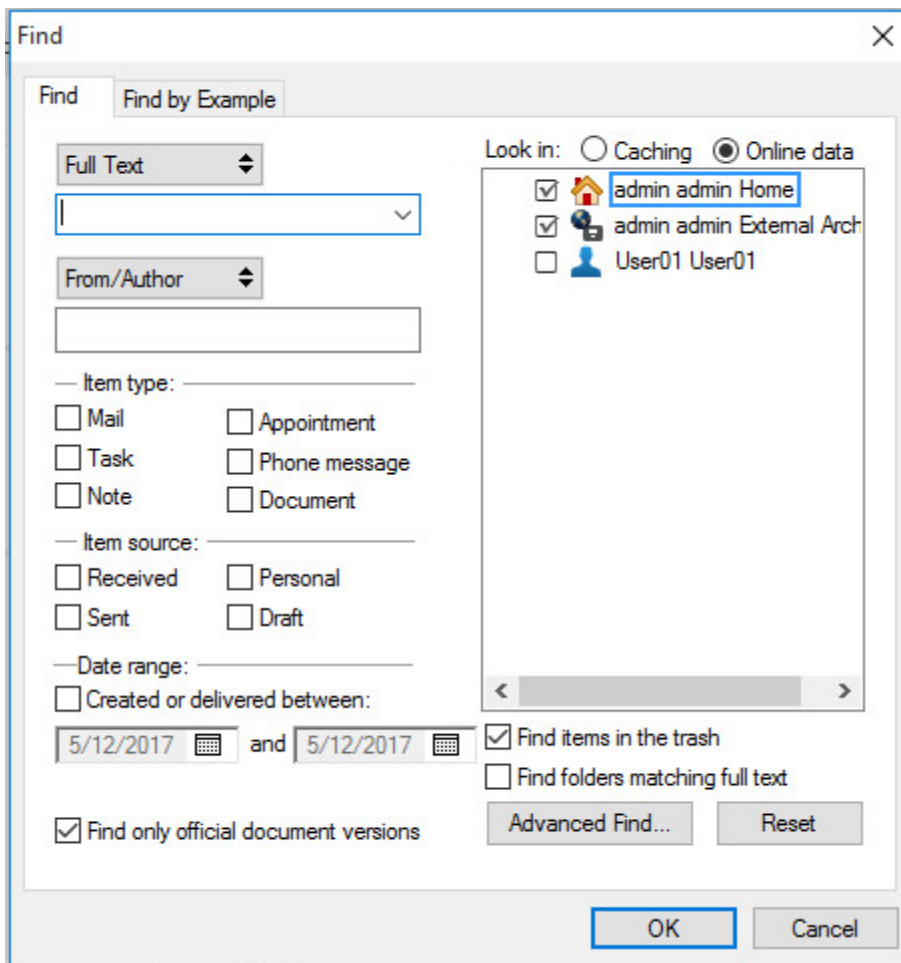
Setup Stubbing Server as above. However, do *NOT* enable stubbing in the Retain Profile.

In the GroupWise client click on the search magnifying glass icon. Under the Find tab you'll see an External Archive for the user that is the Retain archive.

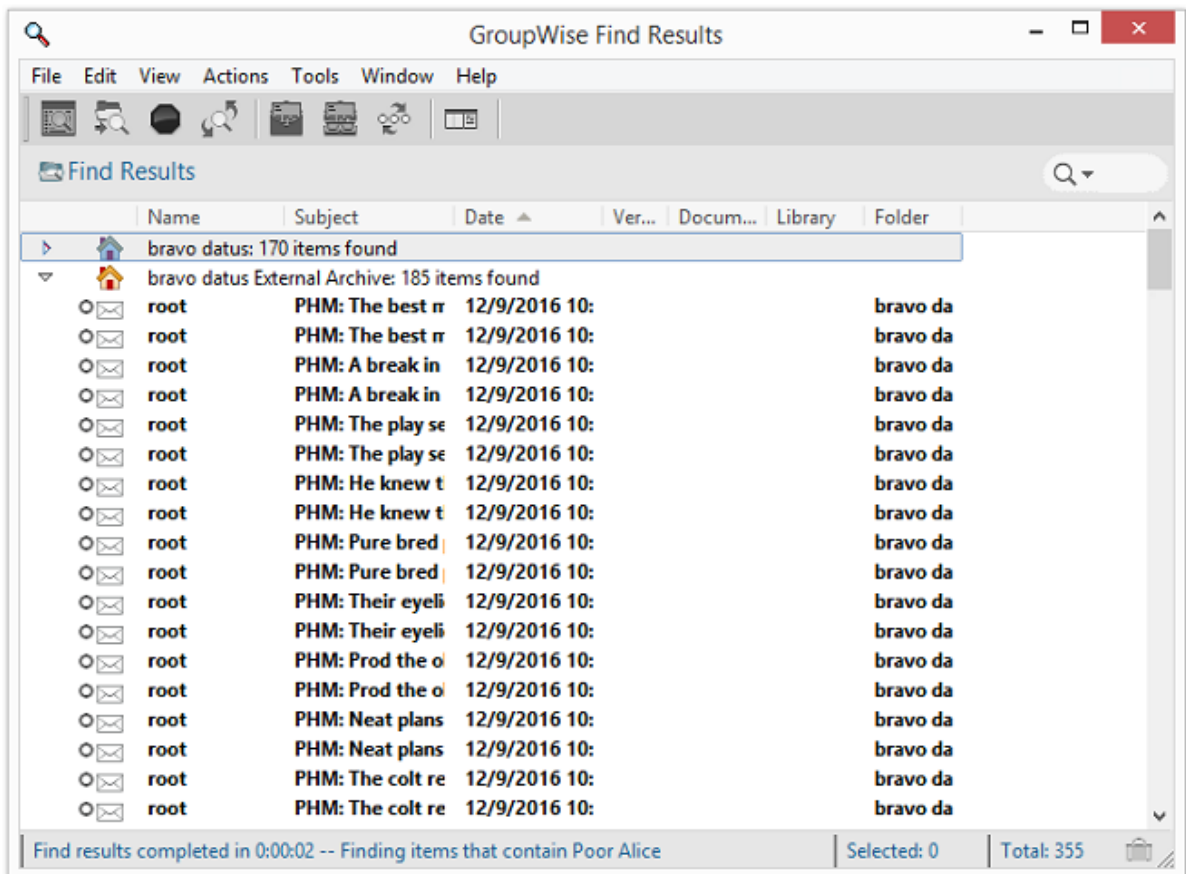
In *Online* mode, click the checkbox to enable the *External Archive* search.



In *Caching* mode, you will also have to set Look in to *Online data*.



Now a search will search not only the GroupWise mailbox but also the Retain mailbox. The Retain ones will show the empty circle stubbing icon for the messages it has.



Configure Stubbing To Remove Messages from GroupWise and Leave Only Stubs

Enabling Stubbing in the Profile will cause Retain to automatically delete items from GroupWise and replace them with a stub pointer to the Retain Archives. This will have effects, for example, you will be able to see the header data in GroupWise but not the message bodies or attachments, on viewing the items in anything other than the desktop client.

Once you start stubbing in the profile you cannot reverse it. We do not recommend this use of stubbing.

Once GroupWise and the Stubbing Server have been configured as above, you need to enable stubbing in the Profile.

Profile Name

Core Settings Message Settings Scope Miscellaneous Advanced

Profile Functions

The normal function of Retain is to archive mail. However, GroupWise 8 introduces the capability to "Stub" items so they appear to be in the original mailbox, but are really stored in Retain. This can save disk space.

You may enable Archiving and Stubbing separately or together, depending on what you think your users would like.

We tend to recommend you do NOT stub Calendar Items, because it can lead to confusing results if they are rescheduled or reassigned. (Most Calendar Items aren't terribly large anyway).

You may safely enable stubbing on a GroupWise 7 post office, however the functionality will be ignored, and the item will not be stubbed.

Enable Archiving (store messages in Retain)

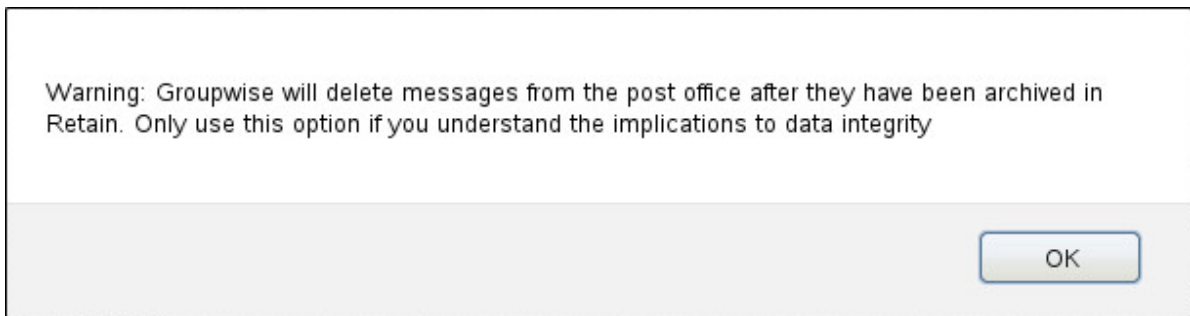
Enable Stubbing (if items are already archived)

Do not stub Calendar Items (Appointments, Notes, and Tasks)

Stub only items exceeding a size threshold

Size Threshold (bytes)

Retain will show a popup warning of the effects of stubbing.



WARNING: GroupWise will delete messages from the post office after they have been archived in Retain. Only use this option if you understand the implications to data integrity.

The next job that runs will delete items from GroupWise and replace them with stubs that point to the Retain Archives. Users will not be able to see anything other than the header data (Subject, to, from, date, &etc.) in WebAcc, or mobile clients. User will be able to read the whole message only in the desktop GroupWise client.

You would want to set the Date Range to Scan to "All Items in Mailbox" because what would be the point of stubbing only new messages.

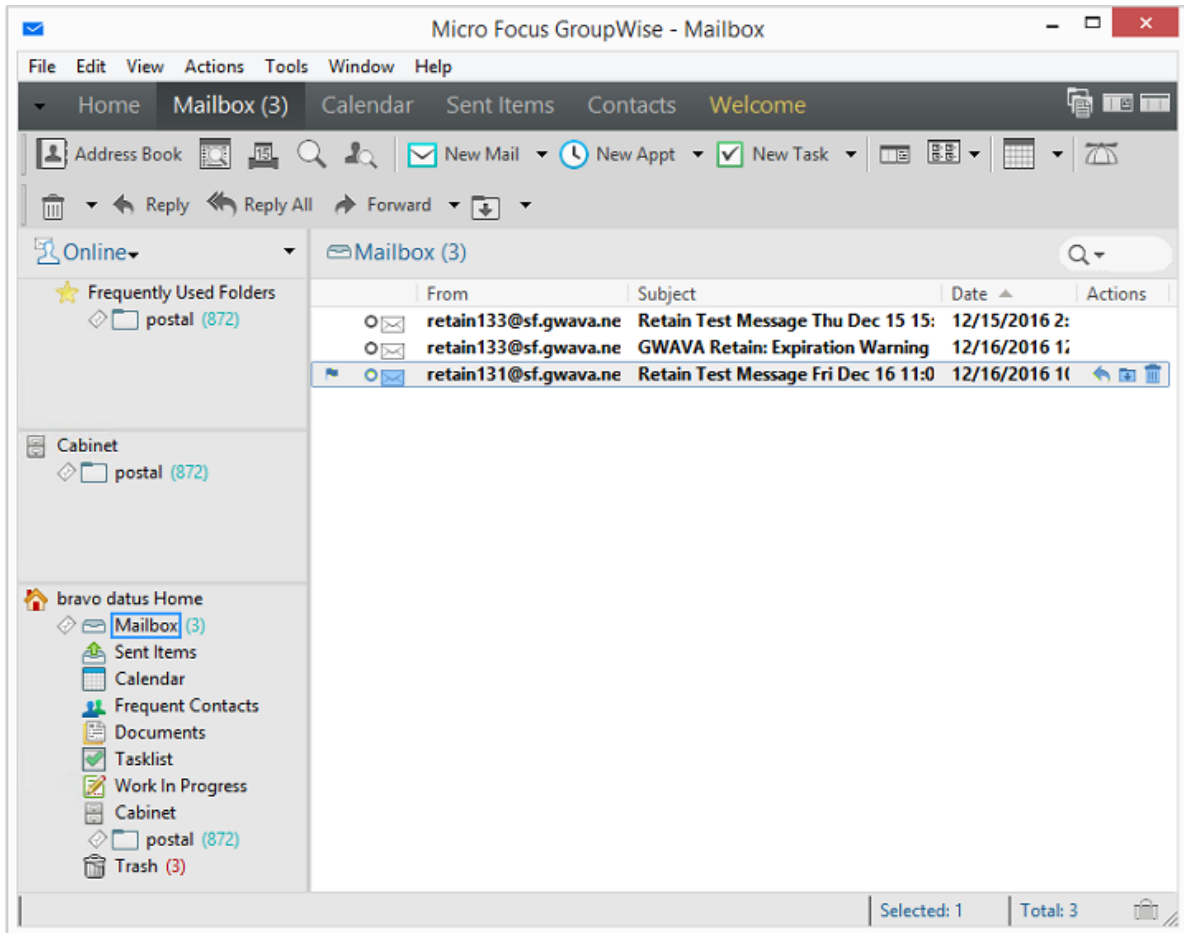
Set up the Job

You can set up the job to use the Stubbing profile and select the Mailboxes to a particular Post Office or a particular User.

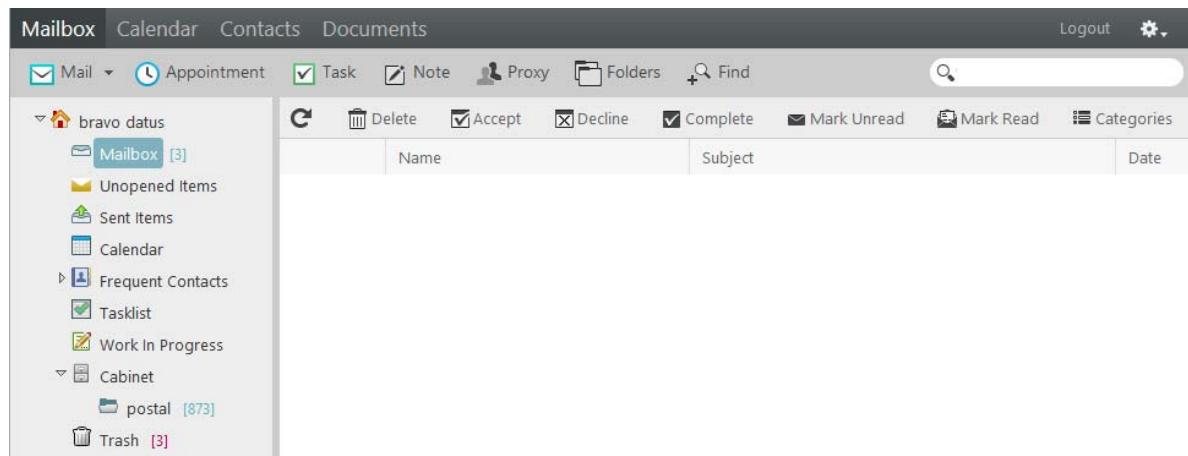
When the worker successfully dredges each item in the mailbox the item will be deleted and stubs placed.

GroupWise Client

In the GroupWise Client, messages that have been stubbed will be marked with an open circle icon. Opening messages may take a moment as the data is retrieved from Retain.



But in web access and third-party applications, you'll see nothing:



Mailbox Mapping Options

Mailbox mapping automates the merging of users' login names that have both GroupWise and Exchange accounts, combining the GroupWise and Exchange archives under the same user in Retain. Retain connects the internal GUID's of accounts to reflect the same user.

To map one mail system to another, both message systems, Exchange and GroupWise, must be functioning and have the desired accounts created on the system which allows for identification of the different users. How Retain should map the users must be added to Active Mappings, and the options must be saved. Only then an Address Book refresh can be triggered. This needs to happen before the next server maintenance cycle, or the mapping may fail.

After mailbox mapping has been activated, an immediate caching of the address books of both systems is required.

Mailbox mapping is not necessarily permanent; however, splitting must be performed manually via the Mailbox Merger / Splitter tool found on the 'About' screen.

If a refresh of the mailboxes is not performed before users attempt to login or other activity is present on the server, the merge may fail, leaving extra entities created in the Retain archive which must be removed manually. Furthermore, the merge option is a once-off option. Please contact support for further options.

Go to Module Configuration and click the Mailbox Mapping Options button to reveal the tool.

Mailbox Mapping Options

When running more than one email system, it is often desirable to automatically "map" two mailboxes from different email systems together. Effectively, these two separate mailboxes become one virtual mailbox.

Switching between the two is a simple matter of the user choosing the mailbox from the current browse view.

Also, rights to mailboxes become shared between the two, so the user need only log on as one mailbox to have access to them all.

To achieve this, during address book caching the administrator needs to have enabled at least one mailbox mapping option.

This **must** be enabled before the newly added email system is cached for the first time.

You may enable multiple address book mappings if you wish.

It is usually sufficient to enable mapping only for address book caching and only as a one-time procedure, unless both email systems will remain active. (For the latter case, enabling for all processes, and for constant activity, is advised)

Mapping Enabled

Last time mappings were used

If you enable the XML File mapping option, you must provide the full path to the XML file, including the filename.

XML File Path

Active Mappings

Match the E-Mail Addresses

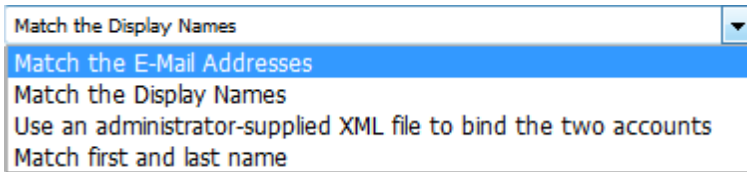
Accounts may be matched via email address, display names, and/or specified by an administrator supplied XML file. We generally recommend a combination of Email Addresses, Display Names and First and Last Names. The mapping will attempt to map by the first criteria and then continue down the list until it finds a match or not.

Active Mappings

Use an administrator-supplied XML file to bind the two accounts

Custom	Description	Class	
	Match the E-Mail Addresses	com.gwava.management.uid.EmailAddressUIDMapper	↑ ↓ ×
	Match the Display Names	com.gwava.management.uid.DisplayNameUIDMapper	↑ ↓ ×
	Match first and last name	com.gwava.management.uid.FirstLastNameUIDMapper	↑ ↓ ×

Most organizations maintain a naming scheme from one system to the next which results in the email address being the same in both systems. For this situation, the email address match is the easiest and quickest way to map the users. For systems, which have listed the first and last name of each user, but have different email addresses, the name matching is the best option. The final option is for an administrator provided xml file to bind the accounts together is time consuming and requires the administrator to build a list of matching addresses with UUID's in both systems.



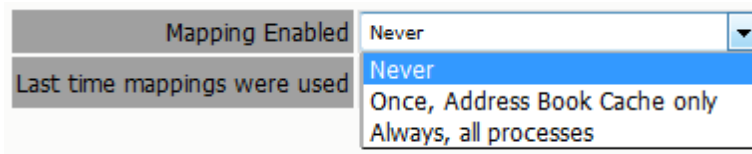
Any mis-mapped addresses may be corrected by using the Mailbox Merger/splitter utility found on the 'About' page. see the 'About and Diagnostics Page' section for more information.

The Address book MUST be refreshed immediately in order to merge the users. The merge will not complete unless the Address Book is cached afterwards, and the merge cannot be re-run.

How the merge runs depends on the different users in the local system. If both message systems are to remain active, with users being added and removed from the system, it will be necessary to have mailbox mapping on all the time. Merged addresses are also required for the GroupWise to Exchange migration to function.

Mailbox Mapping Enabled

The settings here are designated for the different situations which a system migration may be in.



Never

This setting disables mailbox mapping, and is to be used in most cases.

Once, Address Book Cache only

To migrate a system, or for systems which have already been switched over, where the old system is no longer being used, but is still running.

Always, all processes

For situations where both mail systems continue to have incoming, new mail, the mapping needs to be completed repeatedly, to keep the message data mapping to be accurate for newly archived mail. The Address Book is refreshed whenever the button is pressed, during the nightly maintenance cycle, and before each job.

XML File

The supplied XML file is the way for an administrator to manually dictate which addresses are to be mapped or tied together in the Retain system. This process is not recommended as it is time consuming and somewhat complicated. In general, it is likely quicker to use the Mailbox Merger/Splitter tool from the 'About' page instead. Both situations require the administrator to know which email addresses are to be tied together before beginning.

The XML file requires the administrator to specify, in pairs, which addresses are to be tied.

The source address is the address from which the system is being migrated.

The destination address is the address which the user is the new system, or where the data is being migrated to.

The 'removeOrphanedEntity' option tells Retain to remove any unconnected entities left over. Default for the XML file is 'true', while the default in the Mailbox Merger/Splitter tool is 'false'. By rule of thumb, if you are uncertain, don't remove it.

A sample XML file is provided and can be download from the 'Mailbox Merger/Splitter' utility page, it is also shown below.

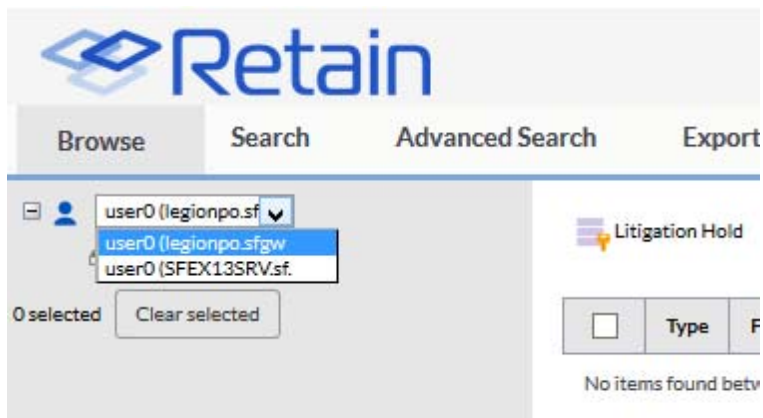
```

- <MergeTasks>
  - <tasks>
    - <MergeTask>
      <sourceMailbox>source0</sourceMailbox>
      <destinationMailbox>destination0</destinationMailbox>
      <removeOrphanedEntity>true</removeOrphanedEntity>
    </MergeTask>
    - <MergeTask>
      <sourceMailbox>source1</sourceMailbox>
      <destinationMailbox>destination1</destinationMailbox>
      <removeOrphanedEntity>true</removeOrphanedEntity>
    </MergeTask>
    - <MergeTask>
      <sourceMailbox>source2</sourceMailbox>
      <destinationMailbox>destination2</destinationMailbox>
      <removeOrphanedEntity>true</removeOrphanedEntity>
    </MergeTask>
    - <MergeTask>
      <sourceMailbox>source3</sourceMailbox>
      <destinationMailbox>destination3</destinationMailbox>
      <removeOrphanedEntity>true</removeOrphanedEntity>
    </MergeTask>
    - <MergeTask>
      <sourceMailbox>source4</sourceMailbox>
      <destinationMailbox>destination4</destinationMailbox>
      <removeOrphanedEntity>true</removeOrphanedEntity>
    </MergeTask>
  </tasks>
</MergeTasks>

```

Mailbox Mapping View From The User Mailbox

Once mailbox mapping is enabled the user will see a dropdown menu that will allow them to switch easily between their mailboxes.



GroupWise Disaster Recovery Integration

Micro Focus GroupWise Disaster Recovery and Micro Focus Retain perform very different functions. Retain is an archiving product whose main feature is the storage of data in one place for later search and retrieval. GroupWise Disaster Recovery is a Hot Backup, Quick Restore and Push-Button Disaster Recovery product whose main feature is the storage of instances of GroupWise post offices for the purposes of restoring items to their original location in their original form or providing disaster recovery of domains or post offices.

So, why would you want to integrate GroupWise Disaster Recovery and Retain?

- ◆ GroupWise Disaster Recovery is very good at moving data efficiently from point A to point B.
 - ◆ It copies your post office data in its original form.
 - ◆ It can make what is effectively a full backup by moving and storing as little as 12% of the total amount of data in the post office.
 - ◆ By having the backed up data available in its original form, it can serve as a data source for Retain.
 - ◆ GroupWise Disaster Recovery's backups are available the moment the backup job is complete.
- ◆ Retain moves a lot of data and needs strong network links to do so rapidly.
 - ◆ An archiving job moving "everything" will move all of the data. This may seem self evident but when you combine GroupWise Disaster Recovery with Retain, you can achieve the same thing by moving only 12% of the data.
 - ◆ If you don't integrate them, you will pull data twice over the link – once for GroupWise Disaster Recovery, and once for Retain. On top of that, if you don't have GroupWise Disaster Recovery and you only have Retain, you will definitely have to move your data twice.
 - ◆ By integrating GroupWise Disaster Recovery and Retain, you can centralize your archives and ensure good backups and achieve a single data pull.

A Brief Review on How GroupWise Disaster Recovery Works

No Helper Software Needed.

GroupWise Disaster Recovery runs on a Linux server. It does not use agents or helper software on the source post offices to work. In other words, no agents or TSA's are required. GroupWise Disaster Recovery simply connects to the server where a post office or domain is stored and then copies the data to its backup storage location.

Backups are instantly available.

Because the data is copied in its original format, the data becomes available as soon as a backup job is complete by simply running a post office agent (POA) against it (for post office backups) or a message transfer agent (MTA) (for domain backups).

Backups Have Little or no Impact on Users.

Because GroupWise Disaster Recovery does not use the Post Office Agent to make backups, there is very little impact on users. The POA will continue to run and service users as normal. GroupWise Disaster Recovery also does not use TSA software or helper agents on the live post office server. Backups can be made while the users are logged in and working.

GroupWise Disaster Recovery Leverages GroupWise's Architecture to Save Bandwidth.

A GroupWise post office is composed of databases and overflow files. Databases contain users' mailbox layouts and indexes and other databases contain users' authentication information. For any GroupWise item exceeding 2KB in size, such as e-mail with attachments, overflow files are stored, commonly called BLOBs (Binary Large Object).

While the contents of the databases changes almost constantly, the BLOBs are static. Therefore, in a Standard Backup, GroupWise Disaster Recovery grabs the databases in their entirety but only those BLOBs that have been newly created since the last backup.

Generally, the BLOBs take up almost 90% of the space occupied by the whole post office. Therefore, with a standard backup, GroupWise Disaster Recovery only need to copy the new data which is 12% of the data – the databases and only those BLOBs which have recently been added. For those BLOBs that have been backed up in prior backup instances, GroupWise Disaster Recovery links to a master backup directory, taken the first time a backup was run, using a Linux feature called symbolic links. A symbolic link is like a Windows shortcut except that it looks, feels, and acts like the real thing.

This is how GroupWise Disaster Recovery can achieve VERY fast backups. In addition, using GroupWise Disaster Recovery to move data will save tremendously on network bandwidth compared to traditional backup systems which grab all of the data.

Backups Can be Made of Backups Allowing Centralization and Redundancy

GroupWise Disaster Recovery was made to backup live post offices and domains and it can also make backups of other GroupWise Disaster Recovery backups. The following two cases can help illustrate how useful this can be:

- ◆ Consider client “A” who has two physical locations, one post office in each. This client wants redundant backups – a primary backup plus a secondary in case the primary fails.
- ◆ This client installed a GroupWise Disaster Recovery server in each location. The servers backed up the local post office in addition to making a backup of the GroupWise Disaster Recovery server in the other location. Thus, each GroupWise Disaster Recovery box effectively had backups of both servers.
- ◆ Consider client “B” who has one central data center and four branch offices. This client wants the head office to have backups of all post offices in all locations.
- ◆ Branch offices 1, 2, and 3 have fast WAN links to head office but branch office 4 has a very weak connection to head office. However, branch office 4 has a strong WAN link to branch office 2.

So the client installed a GroupWise Disaster Recovery server in each office and one in the head office. The GroupWise Disaster Recovery server in the head office was set to back up the GroupWise Disaster Recovery servers in branch offices 1, 2, and 3. For Branch office 4, the GroupWise Disaster Recovery server in Branch office 2 was set up to back up the data from the GroupWise Disaster Recovery server in branch office 4 and then the head office was set to back this data up from the GroupWise Disaster Recovery server in branch office 2.

Thus, backups can make as many hops and can be backed up in as many places as you need.

Using the ability to backup one GroupWise Disaster Recovery server with another, you can achieve data centralization and redundancy. The redundancy also gives you the ability to use GroupWise Disaster Recovery for off-site disaster recovery.

Additionally, for client “B”, their old backup system moved all of the data every day. Using GroupWise Disaster Recovery, they managed to cut their network traffic by 88%.

How Retain Takes Advantage of the Features of GroupWise Disaster Recovery

Consider client “B” from the earlier example who has four branch offices and a head office. They want their Retain Server to be located at head office. So they need to centralize their data.

Without GroupWise Disaster Recovery, they would have Retain Workers on the branch office POA servers and the data would be sent over the WAN links. For a data collection involving “everything”, all data would surely saturate the WAN links.

Plus, their backup/restore software would use the WAN links too, if they were centralizing their backups.

Adding GroupWise Disaster Recovery to the mix, they are able to achieve huge bandwidth savings and performance gains.

GroupWise Disaster Recovery would be set up to centralize the data to one GroupWise Disaster Recovery server in head office, saving immediately 88% of their bandwidth compared to their existing backup/restore system.

Next, A Retain Worker would be set up on the central GroupWise Disaster Recovery box to draw data from all backed up post offices.

One Retain Worker can only run one job at a time, so the post offices would be archived one at a time.

Multiple Workers on One Server

It is possible to install more than one Retain Worker on one server but this would double the hardware requirements, Tomcat memory tuning, and is limited to Linux as the platform OS. This option is built into the Linux installer and is activated by using the 'addworker' switch to the install command. (For example: ./RetainInstall.sh addworker)

You would normally only add additional workers if you wanted to dredge more than one post office at a time.

On a GroupWise Disaster Recovery server, it might not be so time critical to dredge the post offices on it since there is no impact on the end users. On top of that, GroupWise Disaster Recovery has a special feature made especially for Retain, a special post office agent that stays up all the time, except to move to the latest backup. This way, it is always available to Retain.

So you will have to decide if it is acceptable to have the post offices dredged one at a time or if you would prefer to dredge many at a time. To do many at a time requires multiple workers.

Timing

It's important to time the data collection on Retain so that the GroupWise Disaster Recovery backup will be complete long before the Retain job is scheduled to start. This is set in the schedule section under the Data Collection menu in Retain.

Retain Settings

The three tasks to configure Retain to work with GroupWise Disaster Recovery are to assign the GroupWise Disaster Recovery password for the worker, assign the running jobs to use the GroupWise Disaster Recovery integration, (this setting is found in the Jobs configuration page in the Retain management console), and configure the Profile to use the Item store flag for duplicate checking.

Enter the management console, and select Jobs from the Data Collection menu.

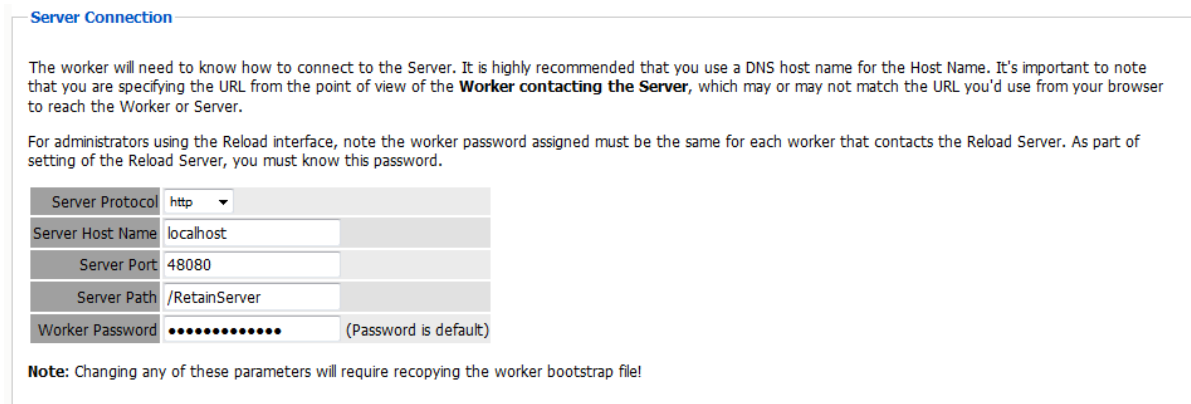


Create or select a job which you desire to use against the GroupWise Disaster Recovery system, and select the GroupWise Disaster Recovery Tab. You must select the Enable GroupWise Disaster Recovery Integration option, as well as supply the correct connection address for the GroupWise Disaster Recovery Server URL. (Both IP address and DNS name will work, but DNS is recommended wherever possible.)

Set the rest of the Core Settings, Notification, and Status as you would normally for your Retain system, but note that in the Mailboxes section you MUST assign the mailbox that GroupWise Disaster Recovery is backing-up.

Save the changes.

To specify the GroupWise Disaster Recovery –Retain password to the worker, open the specified worker in the worker settings page, and click on the Connection tab. Specify the new Worker Password by entering it into the provided field and then click ‘Save changes’ in the top corner of the page. You must re-upload the bootstrap file to the worker after creating a new password. (See the worker section to get instructions on correcting the bootstrap file.)



How to Setup GroupWise Disaster Recovery to work with Retain

This part assumes that you have already set up and configured one or more Retain workers to collect data from your GroupWise Disaster Recovery box.

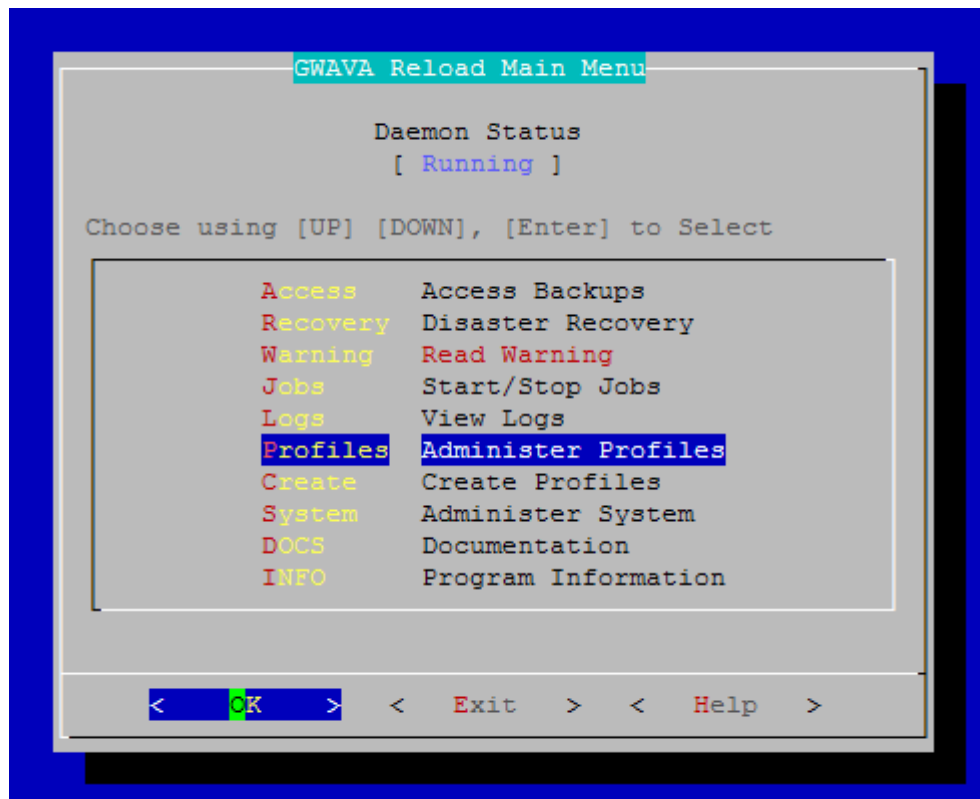
First, GroupWise Disaster Recovery must be set up so that the backups are available. There is a special feature in GroupWise Disaster Recovery for this. It calls up a post office agent that stays up all the time and it only goes down long enough to change to the most recent backup. So it will always be there with very small interruptions as the POA is brought down then up.

Setting up GroupWise Disaster Recovery is done on a Profile-by-profile basis. Each post office that you set up for Retain to dredge from must be configured within the profile configuration menu.

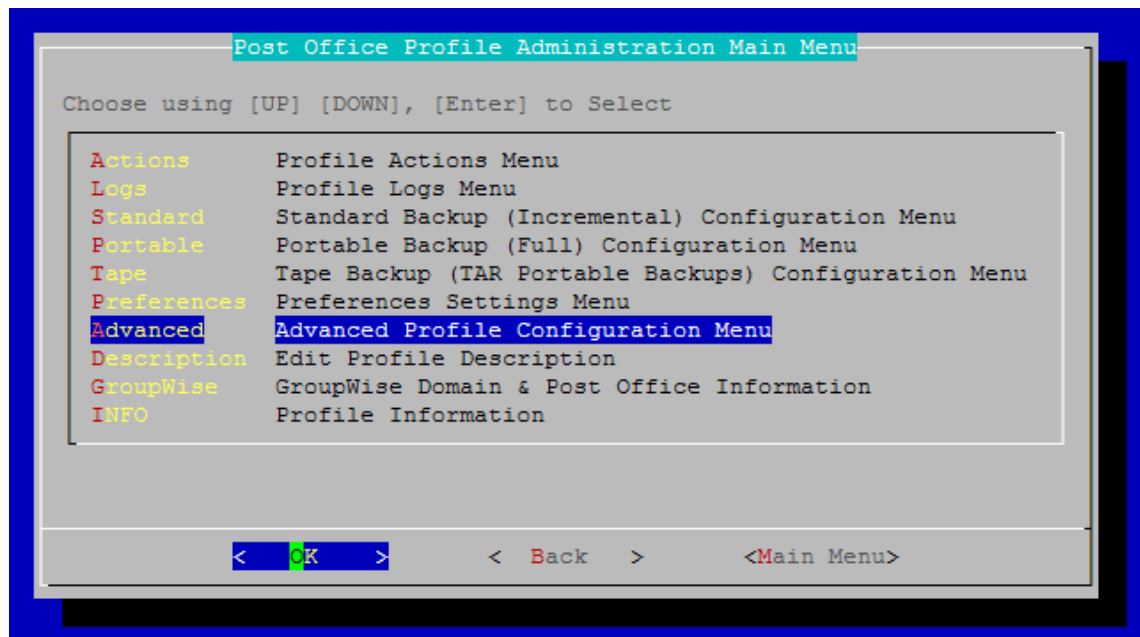
1. Start up GroupWise Disaster Recovery's Administration menu.



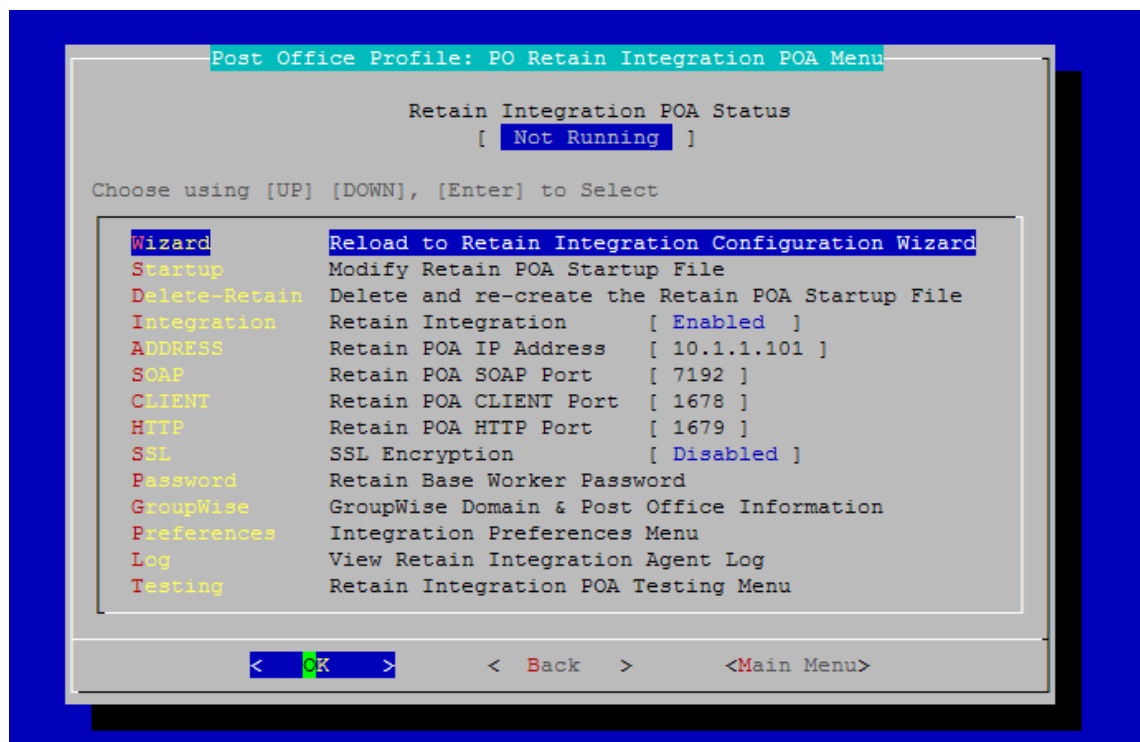
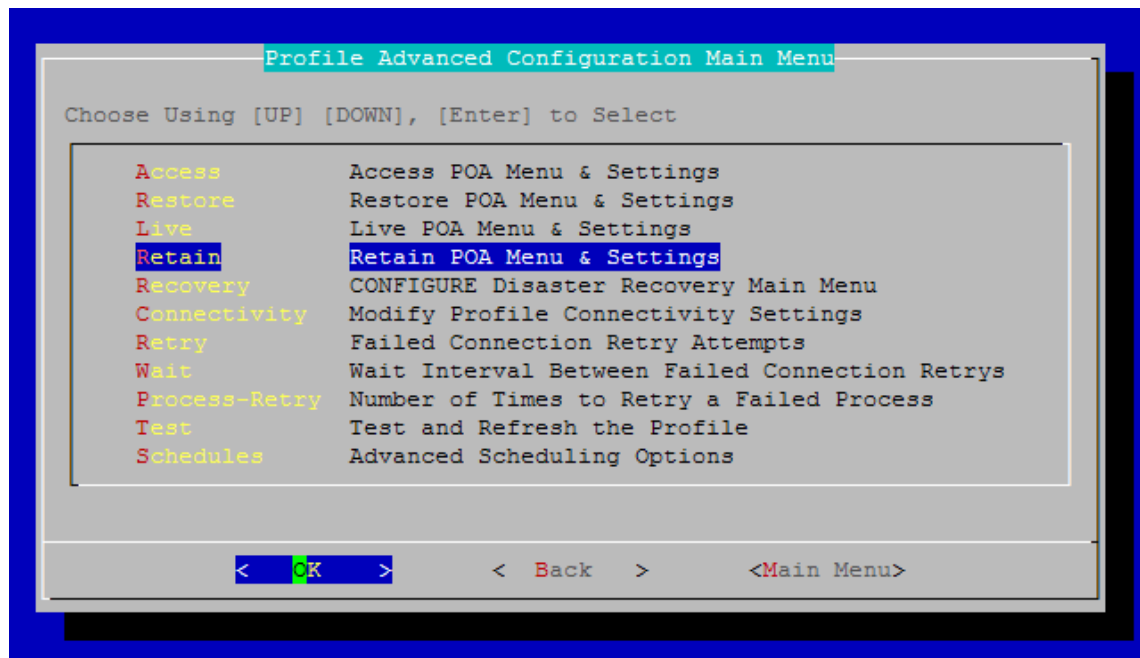
2. From the main menu, choose Profiles – Administer Profiles.



3. Choose Advanced Profile Configuration Menu

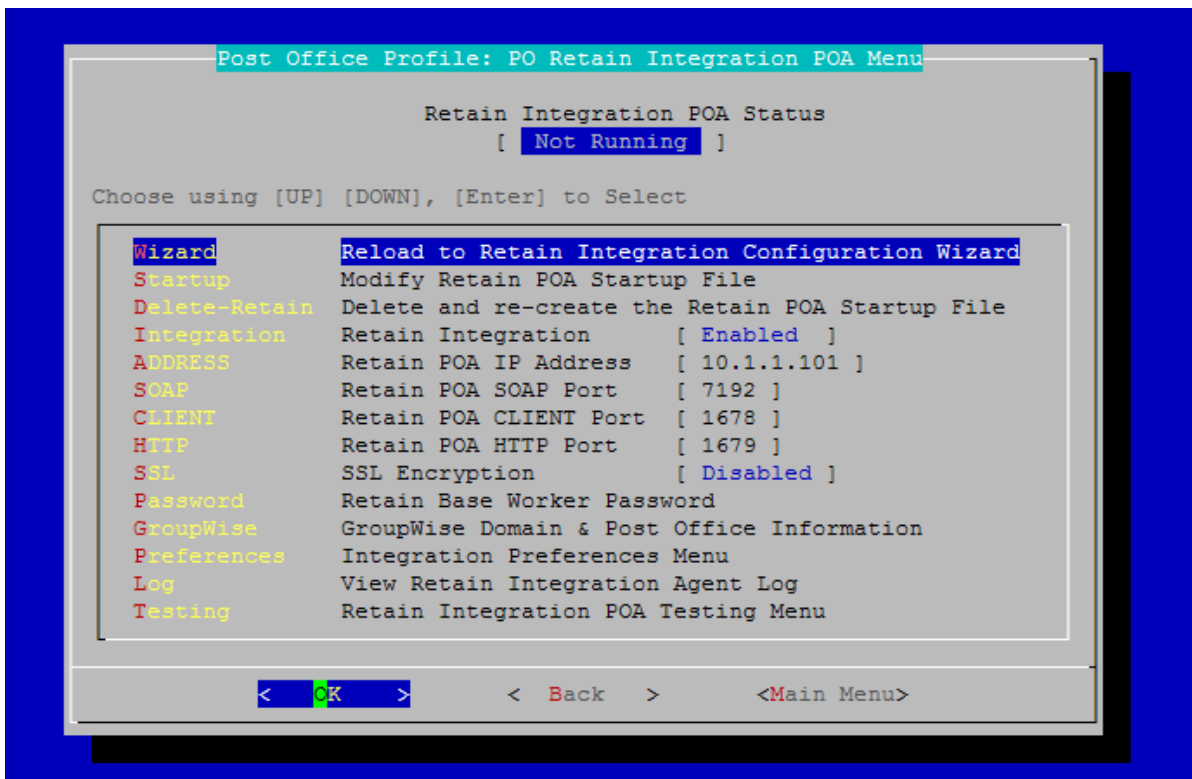


4. Choose Retain POA Menu & Settings



Now it's worthwhile examining this menu. It contains all the settings you will need to make the Retain integration work. This will be a new post office agent running and it will not interfere with the POA being used to access, backup or disaster recovery. Thus, the settings NEED to be different. The easiest way to start is to run the wizard.

Here is another shot of the configuration screen after running the wizard. You will see sample settings and the menu options will be described below.

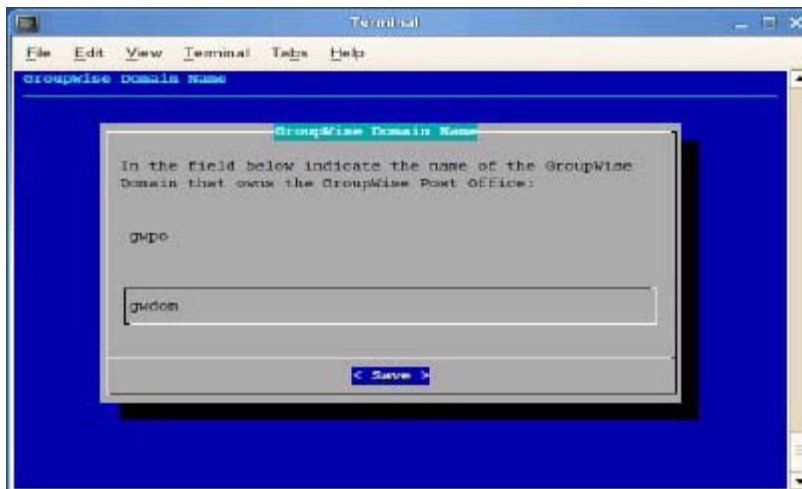
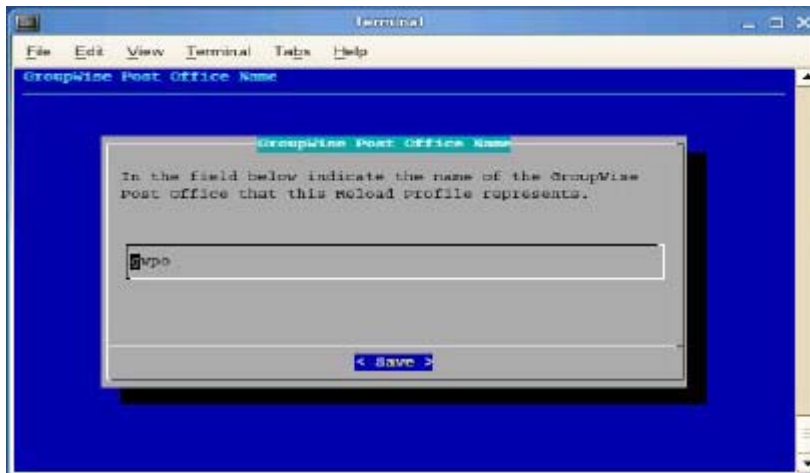


At the top, the status of the Retain Integration POA is displayed.

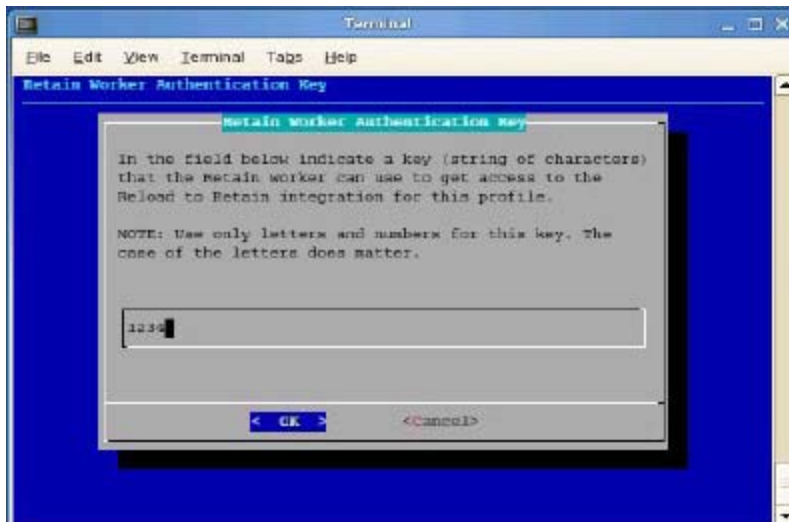
- ◆ Wizard: Run the configuration wizard.
- ◆ Startup: modify the startup file for the POA if you want to make specific changes to it.
- ◆ Delete-Retain: delete the startup file if you want to start fresh and configure from default.
- ◆ Integration: Enable or disable the Retain Integration
- ◆ Address: The IP address this POA will listen on.
- ◆ SOAP: The SOAP port this POA uses.
- ◆ CLIENT: The port that a GroupWise client may use to access this POA.
- ◆ HTTP: The HTTP port for this POA.
- ◆ SSL: Enable or disable SSL (Generally keep SSL Disabled)
- ◆ Key: A password Retain uses to access this POA.
- ◆ GroupWise: Specify the domain name and post office name for this POA.
- ◆ Log: View the Integration Agent Log.

The wizard will be shown below.

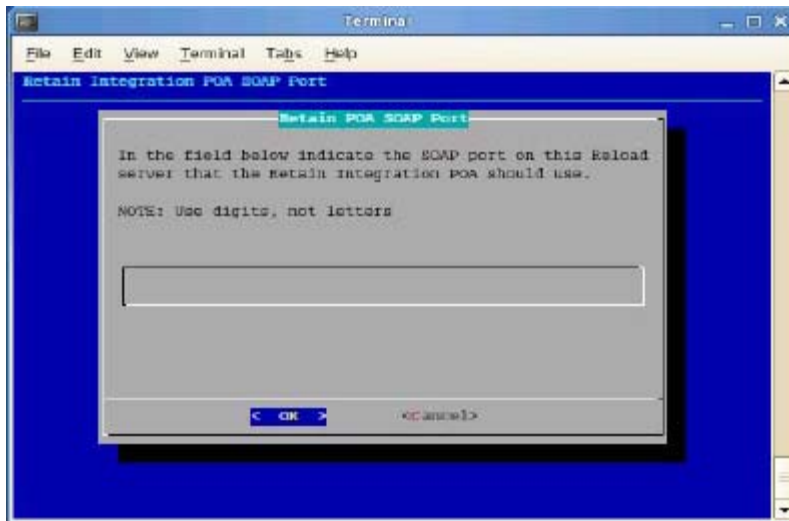
1. Run the Wizard



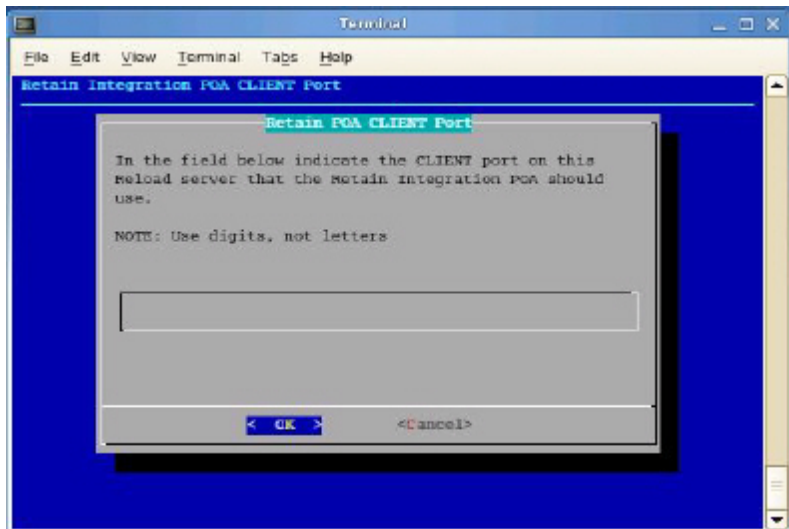
2. Enter the name of the post office and domain.



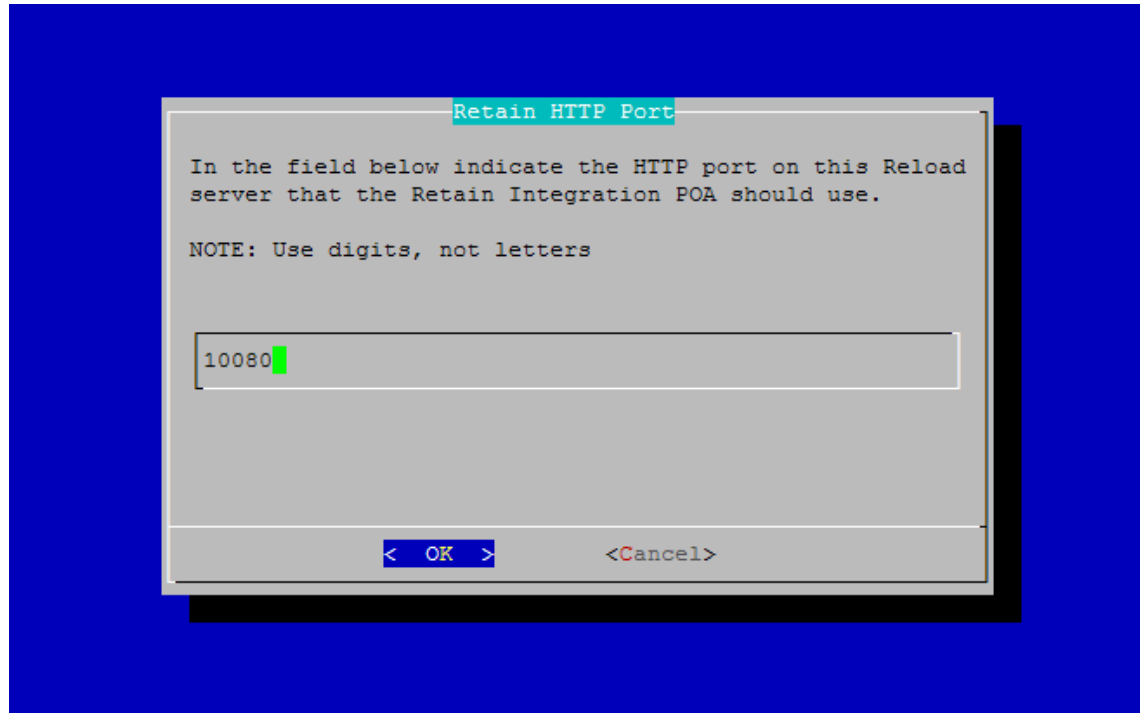
3. Choose an authentication key that Retain uses to access this POA. This must match the password you assigned to the Retain Worker.



4. Specify the IP address and SOAP port for this POA. Be sure it is unique. Some will choose one IP for the whole box with different client ports and SOAP ports for each POA. Others use the same ports but the IP addresses are different.



5. Choose the HTTP port for this POA.



Because GroupWise Disaster Recovery is creating a faux POA for Retain to archive mail from, the GroupWise Disaster Recovery POA must be on a different or unique port, so there is no conflict with your original POA. If your GroupWise Disaster Recovery installation is on a separate machine from your POA, any port will do, but if it is the same, pick a port that you know is open, different from the live system.

Retain will pull all necessary connection information from the GroupWise Disaster Recovery server. There is no need to enter these settings into the Retain Server.

Now that you have set up the basics, you may edit the POA startup file in case you wish you change any other settings, (Retain.poa), or you can re-run the wizard from step 1.

IMPORTANT Notes for the Integration

Retain

Because GroupWise Disaster Recovery essentially creates a snapshot of the Post Office, the duplicate checks that Retain can use are very limited. The retention flag and purge flag will not function as they are kept within GroupWise and would be changed back as soon as GroupWise Disaster Recovery creates a new backup. The Item Store Flag is the only duplicate check that is internal to Retain, and is the ONLY duplicate check ability that will work when Retain archives against a GroupWise Disaster Recovery system. Again, the retention and purge flags will not work but the item store flag will. Be sure your Retain Profile matches this setting.

The screenshot shows the Retain Profiles configuration interface. On the left is a navigation menu with sections like Overview, Data Collection, Management, and Configuration. The main area is titled 'Profiles' and contains a search bar, a list of profiles, and buttons for 'Add Profile', 'Edit Profile', and 'Remove Profile'. The selected profile is 'AllFolders AllMessages NoArchiveMark STUBBING NoFlags'. Below the list, there are status messages: 'Profile AllFolders AllMessages NoArchiveMark STUBBING NoFlags loaded.' and 'Warning: No flags chosen for advancement'. The 'Profile Name' field is populated with the selected profile name. The 'Core Settings' tab is active, showing 'Date Range to Scan' set to 'All Messages (ignore date)', 'Duplicate Check' set to 'Try to publish all messages (SLOW)', and 'Set Storage Flags' with 'Retention Flag', 'Purge Flag', and 'Item Store Flag' all checked.

The item store flag is set in two places: Duplicate Check under the Scope tab and under Set Storage Flags under the Miscellaneous tab. The correct settings are shown.

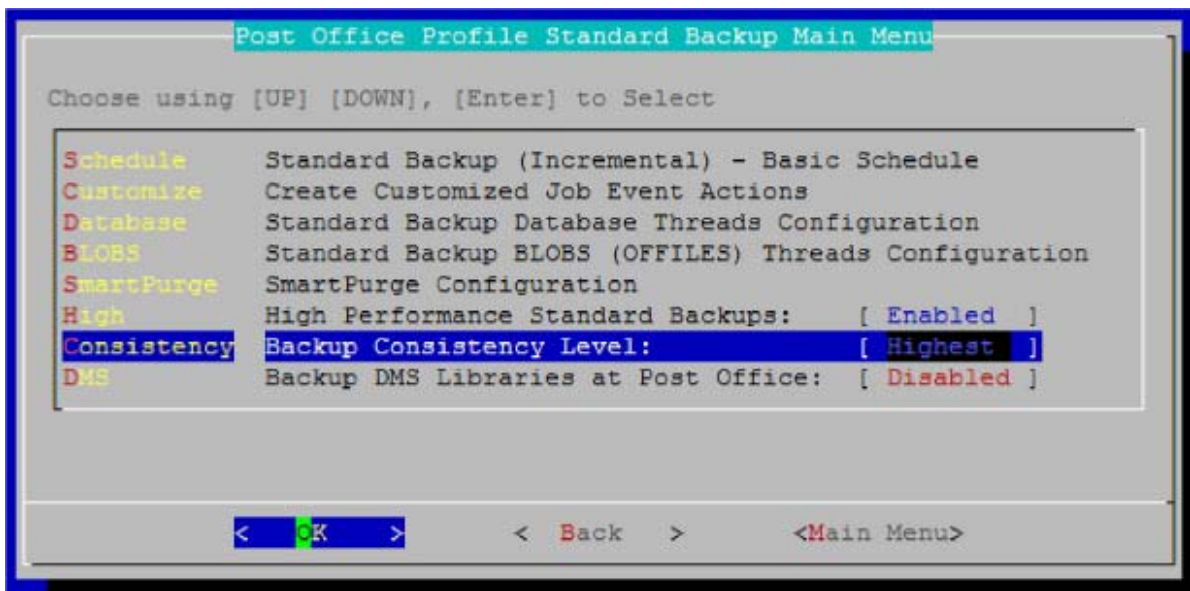
The close-up shows the 'Set Storage Flags' section. It contains the following text: "If you are using either the Purge or Retention features in GroupWise, you probably want these to be advanced automatically as items are stored so users may delete messages in their mailbox that have been stored by Retain. The Item Store flag is of similar function, stored in Retain itself, but cannot prevent users from deleting item. It is most useful in conjunction with GWAVA Reload or in use with multiple overlapping jobs." Below the text are three checkboxes: Retention Flag, Purge Flag, and Item Store Flag.

GroupWise Disaster Recovery

To mitigate the chances of getting Retain Worker archive errors while working against a GroupWise Disaster Recovery POA, it is **STRONGLY** recommended that GroupWise Disaster Recovery is set to create highly consistent backups.

This setting is located at:

Main menu > Profiles (Administer Profiles) > Standard (Standard backup (incremental) Configuration Profile) > Consistency (Backup Consistency level): Set to highest.



This is enabled by default for new installs of GroupWise Disaster Recovery, but will have to be manually enabled on systems that are upgraded to GroupWise Disaster Recovery 2.5 You want a highly consistent backup, to make sure that you have all the blobs associated with the database. Database is picked-up first, so the blobs that are referenced in the database will be consistent with the current backup.

12 Management

- ◆ “Users” on page 417
- ◆ “Groups” on page 428
- ◆ “Account Linking” on page 433
- ◆ “Reporting and Monitoring” on page 438
- ◆ “Reports” on page 445
- ◆ “Mailbox Error Monitoring” on page 467
- ◆ “Audit and System Logs” on page 469
- ◆ “Deleting Data” on page 471
- ◆ “Device Management Overview” on page 481
- ◆ “Mobile Device Management” on page 482
- ◆ “Blackberry Device Management” on page 520
- ◆ “Litigation Hold” on page 522

Users

User and Rights Management in Retain include:

- ◆ Creating, deleting, and editing users
- ◆ Allowing new user accounts, and restricting specific ones from being created
- ◆ User expiration
- ◆ Assigning users to groups, to conveniently grant rights or set initial settings on a multiple user basis
- ◆ Granting access to mailboxes other than the user's personal mailbox
- ◆ Changing the specific functions the user can perform

To access User and Groups Management, the user logging in needs the `Manage users` and `groups` or the `Assign Rights` administrative right.

Creating Users

The primary purpose of a user account is to store their preferences, rights, mailboxes to which they have access, and authentication information.

Users come from one of two places

- ◆ They may be valid message system users logging in with their credentials
 - ◆ These users use SOAP authentication for GroupWise and Active Directory authentication for Exchange; Retain checks their login credentials with GroupWise or Exchange

- ◆ These users initially belong to the group default. You may change this later default.
- ◆ You may restrict users (prevent them from logging in)
- ◆ Users may be specially created in Retain independently of any message system
 - ◆ Users created in Retain do not need to have a message system account
 - ◆ Users who don't exist in the message system use the [Offline Password](#).

Offline Password

There are, however, occasions when you might want someone to search through the Retain archives, but who is not part of the mail system. Such a person might be an independent auditor, a lawyer, a user deleted from the live system, etc.

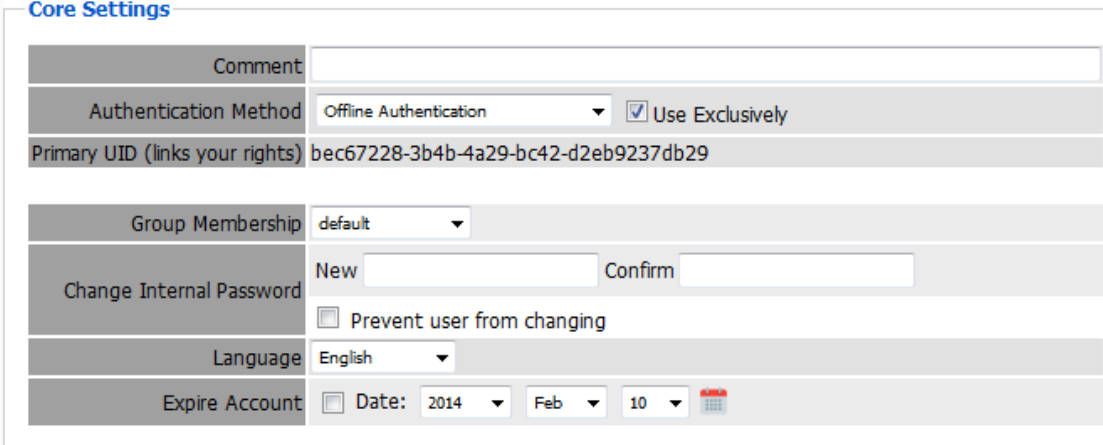
For this reason, Retain has an offline password system. These passwords are stored in Retain's control database. Retain does not care how a user authenticates: whether offline, via SOAP for GroupWise, Exchange, or LDAP, the same rights can be assigned. An administrator who possesses the `Assign Rights` administrative right can assign all pertinent rights.

Users may also be assigned access to more than one mailbox. Offline users will need to be given access to at least one mailbox to perform searches. Users who are assigned "Search All Mailboxes" rights have access to all users' mailboxes.

GroupWise Proxy support only works for users who authenticate via GroupWise SOAP protocol.

Creating a new user

1. Begin by clicking on the "Add User" button

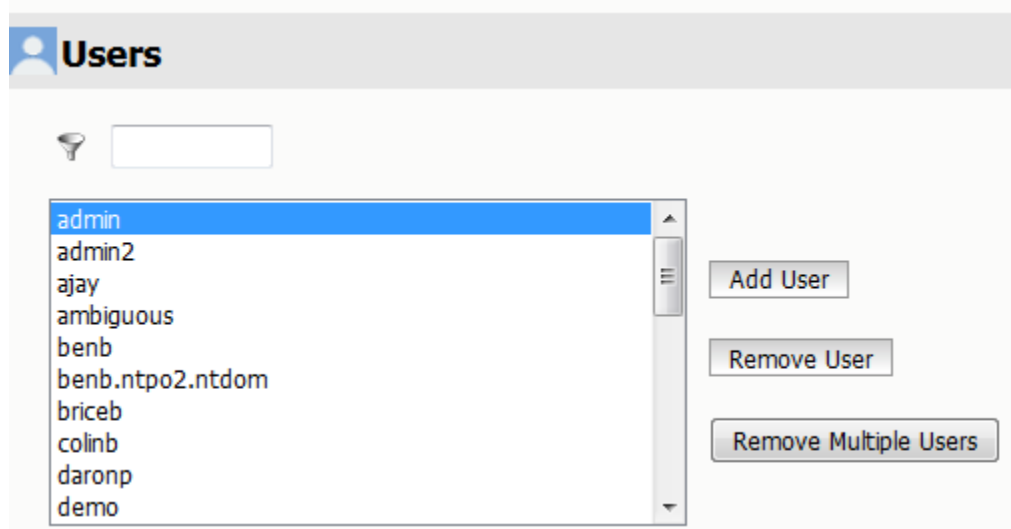


Core Settings

Comment	<input type="text"/>
Authentication Method	Offline Authentication <input checked="" type="checkbox"/> Use Exclusively
Primary UID (links your rights)	bec67228-3b4b-4a29-bc42-d2eb9237db29
Group Membership	default
Change Internal Password	New <input type="text"/> Confirm <input type="text"/> <input type="checkbox"/> Prevent user from changing
Language	English
Expire Account	<input type="checkbox"/> Date: 2014 Feb 10

2. Enter a new user name and then fill out the options under each tab

3. When you are done, click the save changes disk icon at the upper right



All previously created users are listed and can be edited or removed, by clicking on the user and editing the values, or through clicking on the Remove User button.

Core Settings

Authentication method

- ◆ SOAP (for GroupWise users)
 - ◆ GroupWise users logging in are authenticated using SOAP.
 - ◆ These users are automatically entered into Retain’s user list.
- ◆ Exchange (SOAP for Exchange). Exchange users are authenticated via SOAP for Exchange and users are added to Retain’s user list.
- ◆ Offline Password (credentials stored within Retain, any type of user).
- ◆ Google IMAP. Google users are authenticated through IMAP to the Google system.
- ◆ LDAP authentication – LDAP Authentication (GW): Must be set up in the GroupWise module > [“LDAP Tab” on page 164.](#)
- ◆ You can lock a user account so it can only use one type of authentication.
 - ◆ If **exclusive** is not checked, it will try one, then the other.

Primary UID

- ◆ Offline only accounts usually won’t have this.
- ◆ The initial admin account is set to use offline exclusively, so it never has one offline.

Group Membership

- ◆ Default is **default**.
- ◆ Create groups under Groups and they will appear as choices here.
- ◆ Users can belong to only one group. From an assigned group, additional rights, mailboxes, and initial settings can be inherited

Account Expiration

- ◆ Check this box if this user's account should not expire. This is especially useful for administrator accounts.
- ◆ By default, accounts never expire, (0=never), but the setting can be changed in Server Configuration.

Offline Password

- ◆ If you use this authentication method, store the password here.
- ◆ Can be changed as needed.
- ◆ You can prevent users from changing this.
- ◆ Passwords are always stored in an encrypted format – never in clear text.

Default Language

- ◆ Choose which language will be used in the Search Interface for this user.

Disable account

- ◆ This allows the admin to pick a date when the account will no longer be allowed to log in, but the account will not be deleted.

User Rights

When an administrator-level right is granted to a user, that user will see that right in the management console when they log into Retain. If a right that the full Administrator can view is missing from the menu of that user, they are missing that right. To view and have access to that option, they must have the missing right granted to that user. If you have performed an upgrade and are missing options, check for a missing administrator right.

- ◆ Control what rights you grant to the user here. Check the box to enable the right
- ◆ These are extra rights
 - ◆ You don't need any of them for the user to access their mailboxes
 - ◆ You do need them to do "special things". The first admin account gets them all
- ◆ Retain first checks your assigned group and you start with the Group Rights
- ◆ The rights you explicitly set here are added to the group rights for the user's effective rights
- ◆ This way, you can control users as a group and give different rights to different groups
- ◆ If you don't have rights to an administrative option, it won't appear on the left

It should be clear from this screen that there is no such thing as an Administrator per se in Retain. Instead, some users simply have more rights to do more things than others. A distinction is made between Administrator level rights (which allow a user global system wide power) and User level rights, but any user can have zero or more rights in either category. The Administrator you created in the setup wizard was simply a user account with all of the Administrator level rights granted by default.

Core Settings User Rights Mailboxes Miscellaneous

User Rights

Rights explicitly granted to the user.

Administrator level rights

- Search all mailboxes
- Publish messages
- Restore messages [any mailbox]
- See confidential items [other mailboxes]
- View all Messages
 - View Message Content
 - View Message Metadata
- Manage Server
 - Encryption Management
- Access Reporting and Monitoring Server
- Assign Rights
- Access all audit logs
- Deletion Manager
- Device Management
- Add, edit, remove global tag definitions
- Apply or remove litigation hold
- Manage Users and Groups
- Manage Workers, Schedules, Profiles, Jobs

User level rights

- Apply confidential tag [other mailboxes]
- View/Save attachments
- View personal audit log
- Delete messages [other mailboxes]
- Delete messages [own mailbox]
- Export messages
- Forward messages
- Print messages
- Read configuration (Redline)
- Restore messages [own mailbox]
- Apply confidential tag [own mailbox]
- Add, edit, remove user tag definitions

Administrator-level Rights

- ◆ Search all mailboxes: also grants View all Messages rights.
- ◆ Publish messages: allows user to connect to Retain with the Publisher tool.
- ◆ Restore messages [any mailbox]: returns message to live mailbox in Exchange, adds stub to GroupWise mailbox.
- ◆ See confidential items [other mailboxes]: Allows users to view items which others have tagged as confidential

- ◆ View all messages: All messages and content in Search Messages.
 - ◆ View Message Content: Only the message body and attachments.
 - ◆ View Message Metadata: Only the properties of the message.
- ◆ Manage Server: Allows user access to the Configuration section of the Retain Server and access diagnostic utilities.
 - ◆ Encryption Management: Generate and revoke storage encryption keys under Server Configuration | Storage.
- ◆ Access Reporting and Monitoring Server
- ◆ Assign Rights: Can assign rights to other users.
- ◆ Access all audit logs: Enables access to the audit logs.
- ◆ Deletion Manager: Access to Item and Mailbox Deletion.
- ◆ Device Management: May add, remove, and edit devices.
- ◆ Add, edit, remove global tag definitions: Allows manipulation of global tags in the view messages interface.
- ◆ Apply or remove litigation hold: On individual users or groups.
- ◆ Manage Users and Groups: Create users and groups and modify rights.
- ◆ Manage Workers, Schedules, Profiles, Jobs: Control archive jobs.

NOTE: Only users with administrative rights will see the administrator's screen on login. Non-admin users are simply forwarded to the Search Interface.

User-level Rights

All user level rights are strictly optional, and add functionality. None are needed to access your own mailbox and other mailboxes assigned to you. The "Default" group grants Forwarding, View Attachment, and Printing rights. Note: There is no way to perfectly block printing in a web browser, so using this feature should not be taken as a 100% guarantee that users won't be able to print. Nonetheless, for most users, it is effective. Rights marked [other mailbox] refers to other mailboxes the user has been granted rights to as explained below for the Mailboxes tab.

- ◆ Apply confidential tag [other mailboxes]
- ◆ View/Save attachments
- ◆ View personal audit log
- ◆ Delete messages [other mailboxes]
- ◆ Delete messages [own mailbox]
- ◆ Export messages: Enables the export to PDF button.
- ◆ Forward messages
- ◆ Print messages
- ◆ Read configuration (Redline)
- ◆ Restore messages [own mailbox]
- ◆ Apply confidential tag [own mailbox]
- ◆ Add, edit, remove user tag definitions

The Read Configuration right (GroupWise Reporting and Monitoring Integration)

If you are integrating with GroupWise Reporting and Monitoring (GWRM) product, you will need to create a user account so that GWRM can log in and retrieve monitoring information. We recommend the following settings:

- ◆ Account Never Expires
- ◆ Offline Password Authentication is required. (use exclusively) (be sure to set the password)
- ◆ Read Configuration (Redline) right.

Mailboxes

Select the mailboxes this user will be able to access in addition to their own. This allows one user to access another user's mailbox.

The screenshot shows the 'Mailboxes' configuration page. At the top, there are four tabs: 'Core Settings', 'User Rights', 'Mailboxes', and 'Miscellaneous'. The 'Mailboxes' tab is selected. Below the tabs, the page is titled 'Mailboxes' and contains the following sections:

- Mailboxes:** A text block explaining that these are additional mailboxes beyond the primary mailbox. It states that a non-admin user will only view messages addressed to these e-mail addresses (and to their primary mailbox), and might be able to forward/delete messages if given rights. An admin with *Search All Mailboxes* rights can access all mailboxes and perform any operation in the Search Interface.
- Currently Selected:** A list box containing one entry: 'administrator' with a red 'X' icon to its left, indicating it is not selected.
- Criteria:** A search section with the following elements:
 - A dropdown menu for 'First Name'.
 - A dropdown menu for 'begins with'.
 - An empty text input field.
 - A 'Search' button.
 - A 'System' dropdown menu currently set to 'GroupWise'.
 - Two checkboxes: 'Show only users' (unchecked) and 'Show only recently cached items' (unchecked).
 - Two buttons: 'Add Selected' and 'Add All'.
- Address Book:** A search field with the placeholder text 'Enter criteria to search the cached addressbook.'

Granting Rights to All Mailboxes

You may want some users to be able to search through more than just their own mailbox. Administrators have the "Search All Mailboxes" under User Rights as a right which gives them access to everything. If that is too much access for that user you can grant rights to individual mailboxes.

Granting Rights to Individual Mailboxes

You may grant rights to some users so they can access just certain mailboxes. For example we can give the facilities manager rights to two of his workers.

The screenshot shows a web interface for configuring mailbox rights for a user. At the top, the 'User ID' is set to 'facilities-management'. Below this are four tabs: 'Core Settings', 'User Rights', 'Mailboxes', and 'Miscellaneous'. The 'Mailboxes' tab is active. Under the 'Mailboxes' heading, there is a descriptive paragraph: 'These are additional mailboxes beyond the primary mailbox that the user may access. A non-admin user will only view messages addressed to these e-mail addresses (and to their primary mailbox), and might be able to forward/delete messages if given rights. An admin with *Search All Mailboxes* rights can access all mailboxes and perform any operation in the Search Interface.'

Below the text is a section titled 'Currently Selected' containing a list of two items: 'loki odinson' and 'thor odinson'. Each item has a red 'X' icon to its left, indicating it can be removed. Below this is a 'Criteria' section with a search interface. It includes a dropdown for 'Display Name', a dropdown for 'begins with', and an empty text input field. A 'Search' button is to the right. Below these are two checkboxes: 'Show only users' (checked) and 'Show only recently cached items' (unchecked). At the bottom of the criteria section are two buttons: 'Add Selected' and 'Add All'. Finally, there is an 'Address Book' section with a text input field containing the placeholder text 'Enter criteria to search the cached addressbook.'

In the example above, the user has explicit rights to two mailboxes. These mailboxes can be taken away from the user simply by clicking on the red 'X'.

Address Book Selector

Adding users to the list is done using the Address Book selector. In the criteria section, you may enter information to search for a mailbox or a set of mailboxes. The search results will appear in the Address Book section. Each listed entry has a check box you can use to select that mailbox for addition to the list. Once you are done selecting, click Add Selected Items to add those mailboxes to your list of searchable mailboxes.

This interface is utilized in various other areas, but is described here.

Criteria

First Name begins with

System Show only users Show only recently cached items

Address Book

Previous ... Next

<input type="checkbox"/>	First	Last	Mail Server	Mailbox	Dept.	Type	Domain
<input type="checkbox"/>	retain		Exchange2013	retain		U	ExchangeQA
<input type="checkbox"/>	Administrator		Exchange2013	Administrator		U	ExchangeQA
<input type="checkbox"/>	Archive310		LXPO	Archive310		R	LXDom
<input type="checkbox"/>	BladP		GW7NTPO	BladP		U	GW7NTDom
<input type="checkbox"/>	CobraCal		CBIPO	CobraCal		R	CBIDOMAIN
<input type="checkbox"/>	Conf 1		CBIPO	Conf 1		R	CBIDOMAIN
<input type="checkbox"/>	Conf 2		CBIPO	Conf 2		R	CBIDOMAIN

It shows the currently selected items at the top, and lets you delete an item by clicking the red X. (The New Mailbox selector in the Search Interface is an exception; just choose another item)

Adding Mailboxes

1. Choose between the configured module systems
2. Fill out basic criteria to narrow your search results (or no criteria for the first 100)
3. Click Search
4. The results up to a maximum of 100 are displayed
5. The user can then page back and forth among the first 5 pages of results
6. Choose which of the results you want to add to the selected list
7. Click Add Selected Items

Notes: You can restrict to just Users (skipping Resources). You can show only recently cached items (last 10 days). The search is not case sensitive.

About “Show only recently cached items”

This option restricts the list of items shown in the selector to those with items stored within the last 10 days. In user/group management, it restricts the list to users who have logged in to the live Mail system within the last 10 days. The idea is to show only current items. If you DO want to see all items regardless of whether they’ve shown activity within the last 10 days, just uncheck this option.

Miscellaneous Tab

This tab contains settings that mainly govern the way the Search Interface works for the selected user.

Note that the user can change any of these settings by using the User Options tab in the Search interface.

Comment

The default comment appended to forwarded messages can be set here.

Comment	<input type="text"/>
---------	----------------------

Forward Messages

Internet Domain	<input type="text"/>
-----------------	----------------------

Date/ Time Formats

Defines how dates and times are displayed.

Date	Day-SHORT-Month-Year
Time	24 Hour

Example: 17-Aug-2016 11:36

Display Number

How many items to display per page

Display Number	25
----------------	----

Message Age Display

How many days of messages should be displayed by default?

Message Age Display	Last 30 days
---------------------	--------------

Message HTML View

View HTML messages by default when available.

Message HTML View	<input type="checkbox"/>
-------------------	--------------------------

Session Timeout

Time in minutes, to expire an inactive login session.

Time (minutes)	10
----------------	----

- ◆ Comment: Default comment for forwarding messages
- ◆ Date/Time Format: How you want your dates and times to be displayed

- ◆ Display Number: How many items to display per page
- ◆ Forward Messages: Automatically append the specified address to forwarded messages
- ◆ Message Age Display: Default date filter for searching. May be changed on the fly
- ◆ Message HTML View: Have Retain display HTML messages by default, when available
- ◆ Session Timeout: Inactive session timeout. Can be between 10 and 480 minutes

GroupWise Proxy Support

Retain supports the GroupWise proxy function. To enable it, check the box in the Module Configuration section. (NOTE: using proxy is useless if the user you wish to enable this function for is set to use offline authentication – found under the core settings of the user)

NOTE: The ‘all user rights access’ in GroupWise is not supported.

This function is used to enable a user to access the mailbox of another user. For example, if user B grants the right to user A to access their mailbox in the GroupWise client, then user A can “proxy” in to user B’s mailbox.

Much the same way, if user A has proxy rights into user B’s mailbox in GroupWise, and the function is enabled in Retain, then user A may select user B’s mailbox for browsing or may search through user B’s mailbox in the Search Screen.

In Retain, it is the MAIL READ right which grants access.

Retain uses the list of available mailboxes shown in the GroupWise client to determine which mailboxes will be made available to the logged in user (user A in our example). Thus, it is important that user A has logged into user B’s mailbox as proxy using the GroupWise client before doing this in Retain. While user B might have granted the rights to user A, if user A has not yet logged in as proxy to user B’s mailbox with GroupWise, then user B will not appear in user A’s list of available accounts to proxy into.

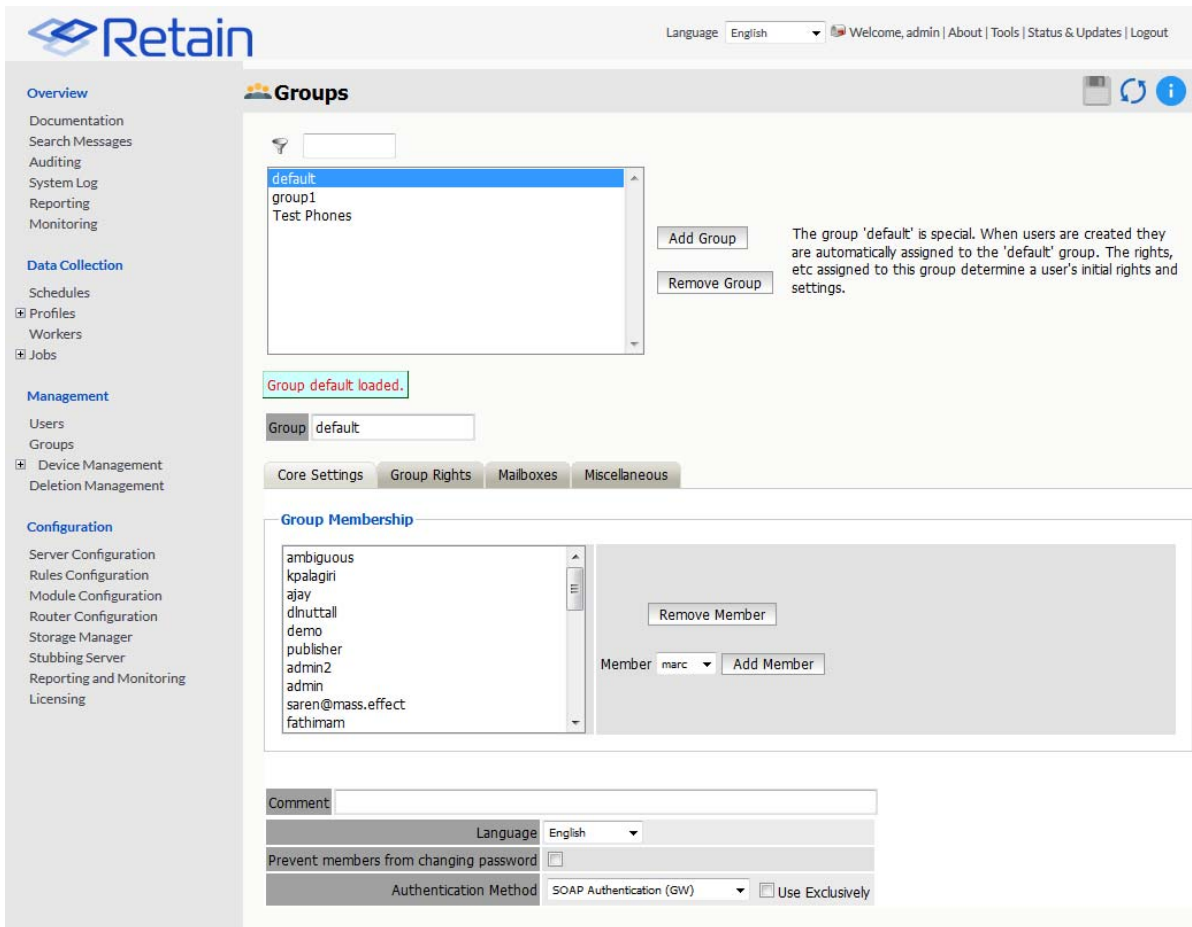
Retain checks these proxy rights the first time you access a proxy users mailbox, then caches the information for 7 days as configured in the server Configuration – Miscellaneous tab. (Default is 7 days.)

If you have access to another mailbox by virtue of GroupWise proxy, then you will see that mailbox appear in the mailbox selector in the search screen or you may search through that mailbox as well.

Groups

Once you have created users, you can group them and give them common rights. For instance, you can make a group called “Auditors” and this group will have rights to certain specific functions. If you then add users to this group, these users will get those specific rights in addition to the rights you have explicitly given them.

This is a great way to save time in managing the rights of a large number of users.



This is the main Groups administration screen. It's laid out just like the Users screen and rights are assigned the same way, for the most part.

In the Groups screen, you will see all defined groups. The group default is created when you install Retain. Users are automatically assigned to this group. If you want users to be part of another group, you must first create that group and then add users to it.

You will notice the drop-down list that allows you to select a member. If it says "(no users)", it means that all users are part of the currently selected group and that there are no more users available to add.

You may specify the default language used in the Search Interface for this group of users.

Creating a New Group

If you want to create a new group, simply

1. Click "Add Group"
2. Type the name in "Group"
3. Change the properties of the group in the tabs below
4. Click "Save Changes"

Group Rights

Group rights are the same as user rights “User Rights” on page 420, just applied to the entire group.

Group Rights

Rights granted to the group. Members of the group will inherit these rights, as well as ones explicitly assigned to them.

Administrator level rights

- Search all mailboxes
- Publish messages
- Restore messages [any mailbox]
- See confidential items [other mailboxes]
- View all Messages
 - View Message Content
 - View Message Metadata
- Manage Server
 - Encryption Management
- Access Reporting and Monitoring Server
- Assign Rights
- Access all audit logs
- Deletion Manager
- Device Management
- Add, edit, remove global tag definitions
- Apply or remove litigation hold
- Manage Users and Groups
- Manage Workers, Schedules, Profiles, Jobs

User level rights

- Apply confidential tag [other mailboxes]
- View/Save attachments
- View personal audit log
- Delete messages [other mailboxes]
- Delete messages [own mailbox]
- Export messages
- Forward messages
- Print messages
- Read configuration (Redline)
- Restore messages [own mailbox]
- Apply confidential tag [own mailbox]
- Add, edit, remove user tag definitions

In this tab, you define all the rights that will be common to all members of the group. These rights are ADDITIVE and will be in ADDITION to the rights you have explicitly given to the individual user.

For this reason, if you want to manage users as a group, you would typically not assign any individual rights. Rather, you would assign rights to their group. These rights have all the same meanings and functions as the user rights.

To log into and manage or monitor Workers, a User or Group must have the manage workers, Schedules, Profiles, Jobs right. To set or work with the Deletion Manager, the user must likewise have the Deletion Manager right, or they will not be able to modify those settings. There are, however, certain rights which implicitly grant other rights. For example, granting a Group the Restore Messages [Any Mailbox] right automatically grants the Restore Messages [Own Mailbox] right.

TIPS

Typically, you will not want to grant GroupWise Reporting and Monitoring rights to a group, but in a situation where you have more than one GroupWise Reporting and Monitoring control center and you want to see which one is monitoring, group-level GroupWise Reporting and Monitoring rights would be appropriate.

Typically, you will want to make the default group's rights rather restrictive, granting very limited access by default. If you wanted a user to have more rights, you would simply assign them to another group or you could assign additional explicit rights.

By using groups, you can have groups of individuals with rights to totally different sets of archives. Other than their own mailboxes, users only get rights to the mailboxes that you grant to them.

Mailboxes

Core Settings Group Rights Mailboxes Miscellaneous

Mailboxes

These are additional mailboxes beyond the primary mailbox that the members of the group may access. A non-admin user will only view messages addressed to these e-mail addresses (and to their primary mailbox), and might be able to forward/delete messages if given rights. An admin with *Search All Mailboxes* rights can access all mailboxes and perform any operation in the Search Interface.

Include these objects:

BES10 (BlackBerry)

Currently Selected

Criteria

First Name begins with

System Show only users Show only recently cached items

- ◆ This screen works exactly like the user's access to mailboxes. Please see the user's mailbox section for details on how to select which mailbox or mailboxes to assign to the group.
- ◆ You use the address book selector to choose which mailbox or mailboxes to give the group access to.
- ◆ By default, groups have access to NO mailboxes; users may only access their own mailboxes. If the user exists only in Retain (no GroupWise account) and their group has access to no mailboxes, then they will have access to no mailbox either.
- ◆ Only give group access to mailboxes when you want all members of the group to be able to access a particular mailbox. Some examples could include a general sales account or accounts being audited by a group of auditors, a workgroup needing to access each other's archives, and so on.

Groups – Miscellaneous

Comment

The default comment appended to forwarded messages can be set here.

Comment

Forward Messages

Internet Domain

Date/Time Formats

Defines how dates and times are displayed.

Date Day-Sign Month-Year

Time 24 Hour

Example: 17-Aug-2016 11:36

Display Number

How many items to display per page

Display Number 25

Message Age Display

How many days of messages should be displayed by default?

Message Age Display Last 30 days

Message HTML View

View HTML messages by default when available.

Message HTML View

Session Timeout

Time in minutes, to expire an inactive login session.

Time (minutes) 10

This is exactly like the users' miscellaneous configuration screen. It applies to all users in the group and users' explicit settings will override the group settings.

These settings govern the way the search interface works for the selected group. See more information about these settings in the users' miscellaneous section.

Account Linking

Account linking allows user accounts to be linked together. This is used when you have migrated from one email system to another and you wish to allow users to access their previous data.

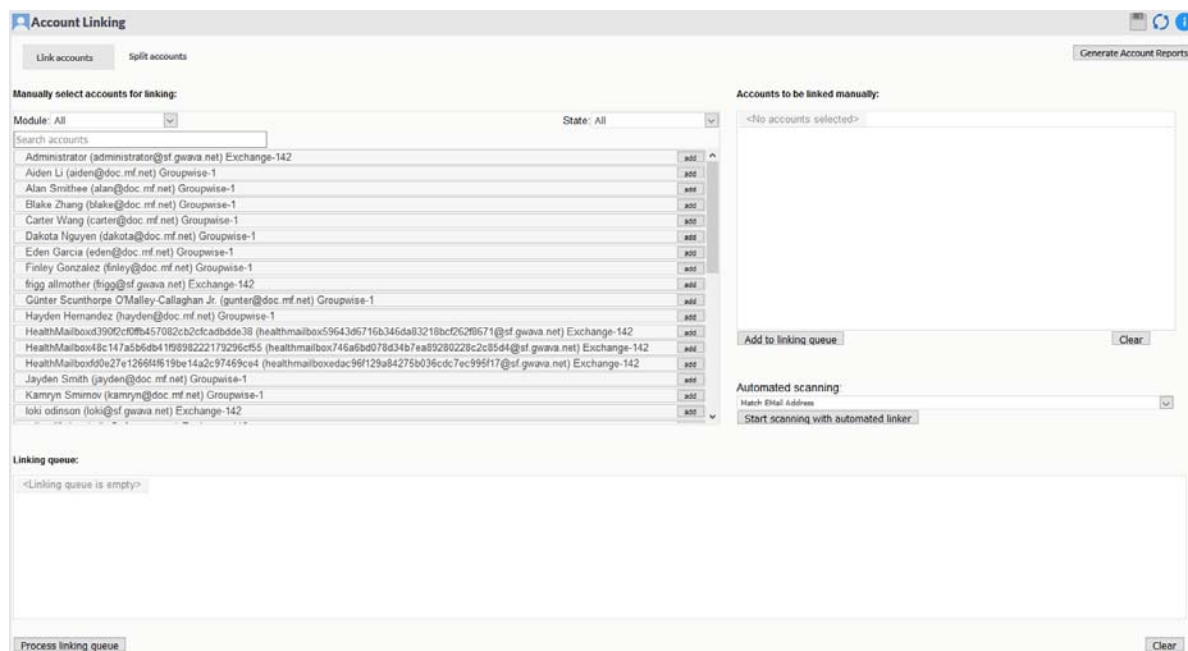
A report may be downloaded by pressing the "Generate Account Reports" button.

If you want to allow one user to access the archived mailbox of another user, use the Mailboxes tab of Users Management section “Mailboxes” on page 423.

There are two functions: Link accounts, which will bring accounts together and split accounts which will separate accounts.

Link Accounts

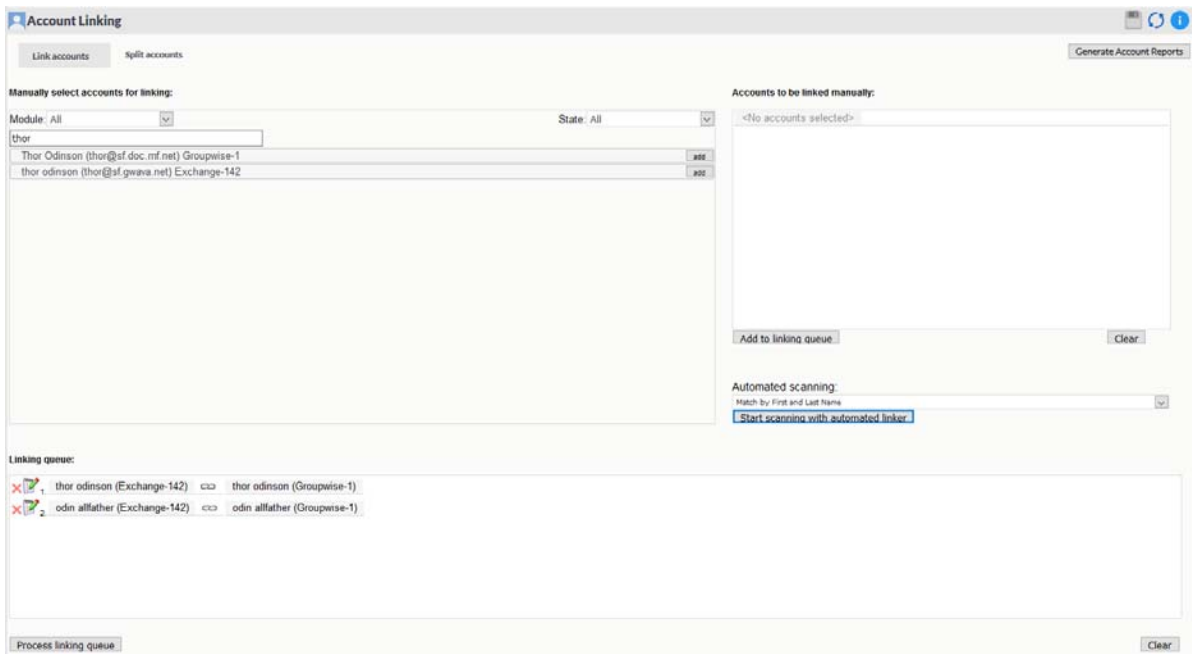
When you add a new email module Retain will ask you if you wish to link accounts. If you agree, you will be taken to the Account Linking page.



There are two ways to link accounts: Automatically and manually.

Automatic Linking

Automatic linking will attempt to link accounts by a selected criteria.

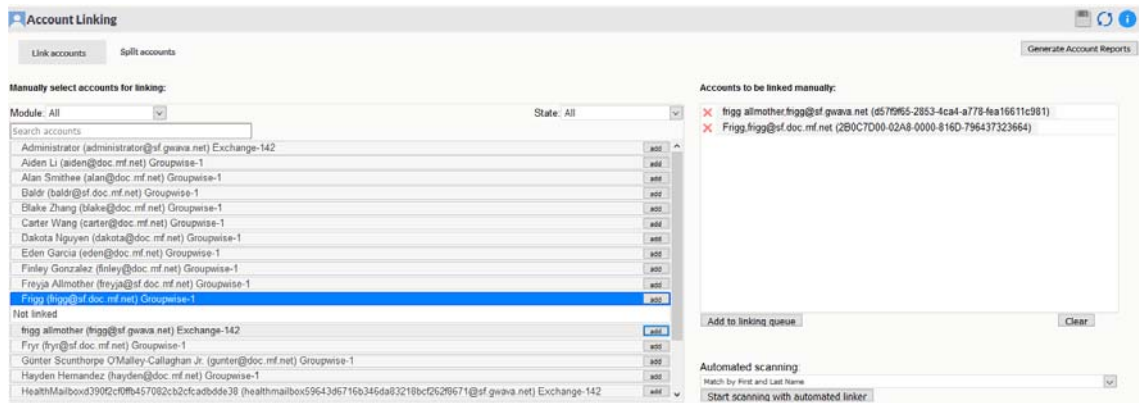


1. Select one of the criteria:
 - ◆ Match EMail Address
 - ◆ Match Display Name
 - ◆ Match by First and Last Name
2. Press the “Start scanning with automated linker” button. Matches will be added to the Linking queue.
3. You may select a different scan criteria and scan again.
4. You may remove incorrect links by pressing the red X next to the account.
5. Press the “Process linking queue” button to link the accounts.

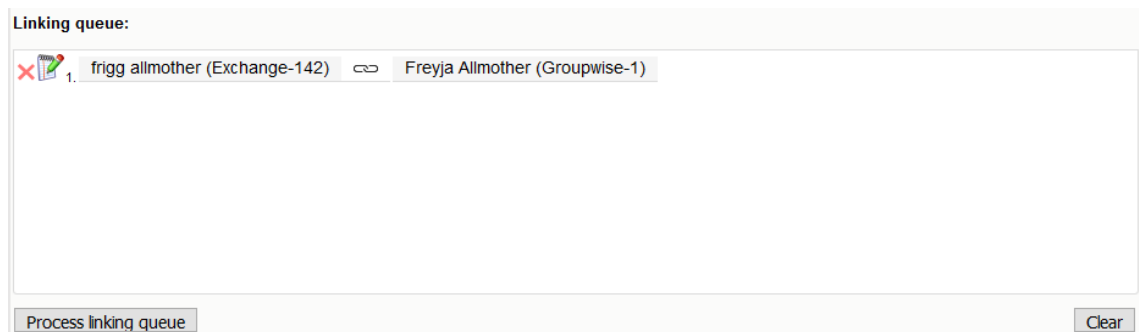
Manual Linking

You may also link accounts manually. For example if the user had a name change during the migration.

1. Select an account from the “Manually select accounts for linking:” pane, and press the “add” button. It will now appear in the “Accounts to be linked manually:” pane.
2. Select another account and press “add.”



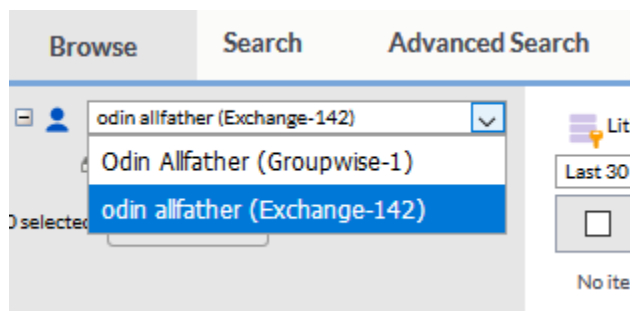
3. Press the “Add to linking queue” button to add the selected accounts to the linking queue. You may press the red X to remove a link from the queue.



4. Press the “Process linking queue” button to link the accounts in the queue.

Verify Linking

Verify that this worked by running an archive job on the new server with one of the linked or all accounts. You should see a drop down menu to switch between the accounts.



Split Accounts

Accounts may also be split so the archive mailboxes are no longer associated with each other.

Account Linking 🔄 ⓘ

Link accounts **Split accounts** Generate Account Reports

Manually select accounts for splitting:

Module: All ▼

Search accounts

Freyja Allmother (freyja@sf.doc.mf.net) Groupwise-1	edit	split
Frigg (frigg@sf.doc.mf.net) Groupwise-1	edit	split
frigg allmother (frigg@sf.gwava.net) Exchange-142	edit	split
Odin Allfather (odin@sf.doc.mf.net) Groupwise-1	edit	split
odin allfather (odin@sf.gwava.net) Exchange-142	edit	split
Thor Odinson (thor@sf.doc.mf.net) Groupwise-1	edit	split
thor odinson (thor@sf.gwava.net) Exchange-142	edit	split

Remove accounts from link:

- ✗ frigg allmother,frigg@sf.gwava.net (d57f9f65-2853-4
- ✗ Freyja Allmother,freyja@sf.doc.mf.net (F26CA381-0;
- ✗ Frigg,frigg@sf.doc.mf.net (2B0C7D00-02A8-0000-8;

Apply changes

Split All

In case you want to split all account linkings in Retain, you can do so by pressing the button "Split All".

Split All

Splitting Accounts Automatically

You may split all links between all accounts by pressing the “Split All” button at the bottom of the page.

Splitting Accounts Manually

Existing links will be shown under the “Manually select accounts for splitting:” pane.

Split all links between an account by pressing the “split” button next to one of the account.

Editing Links

Links between accounts may be edited:

1. Select a link to edit from the “Manually select accounts for splitting:” pane
2. Press “edit” next to one of the accounts to load it into the “Remove accounts from link:” pane. For this example Frigg was added incorrectly to Freyja.

The screenshot displays a web interface for managing account links. It is divided into two main sections:

- Manually select accounts for splitting:** This section contains a dropdown menu for 'Module' set to 'All', a search box labeled 'Search accounts', and a table of account entries. Each entry includes the account name, email address, and group name, along with 'edit' and 'split' buttons.
- Remove accounts from link:** This section shows a list of accounts that have been added to the link, each with a red 'X' icon indicating it is selected for removal.

An 'Apply changes' button is located at the bottom right of the interface.

Manually select accounts for splitting:		Remove accounts from link:	
Module: All		✗ frigg allmother,frigg@sf.gwava.net (d57f9f65-2853-4	
Search accounts		✗ Freyja Allmother,freyja@sf.doc.mf.net (F26CA381-0	
Freyja Allmother (freyja@sf.doc.mf.net) Groupwise-1	edit split	✗ Frigg.frigg@sf.doc.mf.net (2B0C7D00-02A8-0000-8	
Frigg (frigg@sf.doc.mf.net) Groupwise-1	edit split		
frigg allmother (frigg@sf.gwava.net) Exchange-142	edit split		
Odin Allfather (odin@sf.doc.mf.net) Groupwise-1	edit split		
odin allfather (odin@sf.gwava.net) Exchange-142	edit split		

3. Press the “Apply changes” button to split the link.
4. Verify by going into Browse Messages and changing to the Freyja account and finding no drop down menu to the other accounts.

Reporting and Monitoring

Retain comes equipped with a separate Reporting and monitoring server. Reporting and Monitoring may be installed on the same or a different physical or virtual machine as the Retain Server. Installing on the Retain server is highly recommended.

Reporting and Monitoring

The Reporting and Monitoring Module, if enabled, can collect various statistics from the Workers and generate useful reports.

Core Settings
Logging
Connection
Notification
Bootstrap

Basics

Choose whether to enable the Reporting and Monitoring Module. If it is not enabled, statistics information will not be stored for Retain jobs. In addition, for security purposes, you may enter a comma delimited list of IP addresses, and only these servers will be allowed to update the statistics.

Days to retain job information	14
Run maintenance at (hour)	02 <small>▼</small> :00
Update interval for Server Statistics (minutes)	10
Update interval for Archive Statistics (minutes)	10

Accept Server connections only from these IP Addresses:

Do not expire inactive sessions

Disable the disk usage statistics

Disable the number of messages statistics

Interval

How often should the R&M Server poll the Retain Server for configuration changes?

Poll for configuration every minutes (10-100)

Reporting and Monitoring functions much like the Retain Worker in that it is installed as a separate entity and requires connection information from the Retain Server. Additional security is provided through the option to specify exactly which IP address(es) the Retain Server will allow a connection from. Separate with commas the IP addresses allowed if more than one. No mail data is transferred through this connection, only server statistic information.

Setup

The Core Settings, Logging, Connection and Notification sections of Reporting and Monitoring configuration work identically to the Worker connection settings, and should be filled-out accordingly. Most server implementations will require little to no modification to these settings save the notification tab.

Core Settings

Days to retain job information: Default 14 days.

Run maintenance at (hour): Default 0200 or 2 AM.

Update interval for Server Statistics (minutes): Default 10 minutes. Specify the time interval that the server statistics (like CPU usage, disk storage, &etc) should be collected.

Update interval for Archive Statistics (minutes): Default 10 minutes. Specify the time interval that the archiving statistics (like number of messages archived, processed, errors, &etc) should be collected.

Accept Server connections only from these IP Addresses: Limiting the server connections to specified IP Addresses limits which machines have access to the Reporting and Monitoring module. Separate multiple addresses with a comma.

Do not expire inactive sessions: Putting a check-mark in the 'Do not expire inactive sessions' will allow sessions with the R&M module to never expire. This is useful in conjunction with the 'monitoring' page. Default disabled.

Disable the disk usage statistics: Selecting the 'Disable the disk usage statistics' box will disables the 'archive size' from server utilization report. Default enabled.

Disable the number of messages statistics: Selecting 'Disable the number of messages statistics' disables the 'total messages stored' on the Reporting and Monitoring dashboard. These options are for systems which encounter a bottle-neck which impacts system performance with these checks. Default disabled.

Interval: Poll for configuration every xx minutes. Default 10, limited from 10 to 100 minutes.

Logging

Set the logging level to the desired setting. Leaving the logging as default 'normal' is recommended unless instructed to increase the logging level by Support.

The screenshot shows a web interface with a navigation bar containing tabs for 'Core Settings', 'Logging', 'Connection', 'Notification', and 'Bootstrap'. The 'Logging' tab is selected. Below the navigation bar is a section titled 'Logging Options' with a light blue header. This section contains five configuration items, each with a label and a control element:

Logging enabled	<input checked="" type="checkbox"/>
Log level	Diagnostic (Trace) ▼
Compress logs	<input checked="" type="checkbox"/>
Remove old logs	<input checked="" type="checkbox"/>
When age exceeds (days)	10

Connection

The Connection between Reporting and Monitoring, and the Retain Server should not be changed unless the Retain Server requires a modified connection path, (such as a custom port.)

Core Settings	Logging	Connection	Notification	Bootstrap
Connection from R&M Server to Retain Server				
The R&M Server will need to know how to connect to the Retain Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the R&M Server contacting the Retain Server , which may or may not match the URL you'd use from your browser to reach the R&M Server or Retain Server.				
Server Protocol	http			
Retain Server Host Name	10.1.12.62			
Retain Server Port	48080			
Retain Server Path	/RetainServer/			
R&M Server Password	●●●●●●●● (Password is set)			
Note: Changing any of these parameters will require recopying the R&M Server bootstrap file!				
Connection from Retain Server to R&M Server				
The Retain Server will need to know how to connect to the R&M Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the Retain Server contacting the R&M Server , which may or may not match the URL you'd use from your browser to reach the R&M Server or Retain Server.				
Server Protocol	http			
R&M Server Host Name	10.1.12.62			
R&M Server Port	48080			
R&M Server Path	/RetainStatsServer/			
Connection from Browser to R&M Server				
Your web browser will need to know how to connect to the R&M Server in order for browser redirects to work properly. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the browser contacting the R&M Server , which may or may not match the fields above.				
Server Protocol	https			
R&M Server Host Name	retain2.qa.gwava.com			
R&M Server Port	48080			
R&M Server Path	/RetainStatsServer/			

The R&M server is different from the Retain Worker in that the Retain Server is able to contact the R&M server as well. The connection address to R&M should not be modified unless custom connection settings have been created.

The connection from the Browser to the R&M Server is how the browser is going to connect to the R&M server when redirected from links in the Server. This connection information needs to be accurate for where the R&M Server is installed and listening.

When configured to use HTTPS, the web server must be configured to use a full TLS certificate chain signed by a trusted third party Certificate Authority, not self-signed, and configured with both server and intermediate certificates.

Notification

Core Settings | Logging | Connection | **Notification** | Bootstrap

Notification

You can have the R&M Server e-mail a summary of operations and/or errors that occur while the R&M Server runs.

SMTP Mail Server	<input type="text" value="mail.qa.gwava.com"/>
SMTP Security Protocol	<input type="text" value="unencrypted"/>
SMTP Port	<input type="text" value="25"/>
SMTP Mail From Address	<input type="text" value="Retain351@qa.gwava.cc"/>
SMTP To Address	<input type="text" value="softwareqa@gwava.com"/>
SMTP Username	<input type="text"/>
SMTP Password	<input type="text"/> (Password is not set)

Notification defaults to the standard notification address specified in the Retain Server activation and initial configuration. If the notification is desired to be different, modify the settings here. Make sure to test the connection to ensure proper function.

Bootstrap

Core Settings | Logging | Connection | Notification | **Bootstrap**

Boot Strap

The R&M Server software needs a special "bootstrap" configuration file copied to its working directory before it can function correctly. You may copy it manually or use a web browser to upload the file. (<http://10.1.12.62:48080/RetainStatsServer/>)

[Download File](#)

Like the Retain Worker, the R&M server must be uploaded a saved configuration or 'bootstrap' file. To access this tab, the configuration must be saved first. Then the bootstrap tab will become available. Download the file to a known location and then browse to the R&M server webpage. The default connection address is shown on the connection tab.

Uploading Bootstrap

The screenshot shows the Retain Reporting and Monitoring Server interface. At the top left is the Retain logo, and at the top right is a language dropdown menu set to English. The main heading is "Retain Reporting and Monitoring Server". Below this, there is a paragraph explaining that the Reporting and Monitoring Server needs to be configured in the Retain Server web interface and that a "bootstrap" file needs to be downloaded and applied here. Another paragraph states that without a bootstrap file, the Reporting and Monitoring Server will not know how to find the Retain server, and after applying the bootstrap file, any configuration changes made in the Retain Server will be polled by the Reporting and Monitoring Server. Below the text, there is a section titled "Select the Reporting and Monitoring configuration file on your local machine" with two buttons: "+ Browse" and "Upload". A large blue box contains "More Information" and a list of steps to download and upload the bootstrap file.

More Information
To download the bootstrap file and upload it do the following:

- Open the Retain server's web interface.
- Select the Reporting and Monitoring Server Configuration.
- Navigate to the Bootstrap tab.
- Select 'Download File'.
- Save the file to your desktop.
- Return to this interface.
- Click 'Browse' and locate the file on your desktop.

From the R&M initial webpage, click on the “Browse” button and browse to the saved bootstrap file and select it.

Click ‘Continue’ to upload the bootstrap file. As the bootstrap file is uploaded, R&M functions will become available. Only users with the administrative “Access Reporting and Monitoring Server” right will be able to login to the stat server.

To log into the R&M server, select the ‘Reporting’ or ‘Monitoring’ links from the Retain Server left menu to spawn a new tab or page to the R&M module.

Reporting and Monitoring Home Page

On login, Reporting and Monitoring opens to the Home page. The Home page is also accessible through the ‘Home’ button along the top bar. The R&M server has different page links and menus across the top of the menu bar, accessing different functionality. The R&M server has many tables and columns displaying a large amount of information. To make this information more accessible, every column has been made sortable. To sort the columns, simply click on them. They may be sorted to show the highest number first, lowest number first, or not sorted at all.

The screenshot shows the Retain Reporting and Monitoring Home Page. At the top left is the Retain logo, and at the top right is a language dropdown menu set to English and a Logout link. Below the header is a navigation bar with links: Home, Report, Schedule Report, Manage Scheduled Reports, System Monitor, Mailbox Error Monitoring, and Maintenance. Below the navigation bar is a table with columns: Job Name, Worker, Profile, Schedule, Email System, and Last Reported Time. The table contains two rows of data.

Job Name	Worker	Profile	Schedule	Email System	Last Reported Time
Special Job	Exchange0	Special	Now	Exchange	2016-10-28 11:40
GW Job	Exchange0	Daily	Now	GroupWise	2016-10-26 16:39

The Home page lists the different jobs, associated workers, profiles, schedules, and last reported run times configured for the system. These jobs can be selected to display the job history and detailed information for each instance of when that job was run.

Retain							Welcome to the Reporting and Monitoring Home Page		Language English		Logout
Home Report Schedule Report Manage Scheduled Reports System Monitor Mailbox Error Monitoring Maintenance											
Jobs Refresh											
Job Name	Worker	Profile	Schedule	Email System	Last Reported Time						
Special Job	Exchange0	Special	Now	Exchange	2016-10-28 11:40						
GW Job	Exchange0	Daily	Now	GroupWise	2016-10-26 16:39						
Job History											
Job Name	Job Run ID	Status	Messages Processed	Archived Messages	Speed (Messages/s)	Errors	Warnings	Start Time	End Time	Duration (hh:mm:ss)	
GW Job	5	Completed	89492	88717	3.82	1555	0	2016-10-26 10:07	2016-10-26 16:39	06:31:55	
Job Details											
Job Name	GW Job	Status	Completed								
Worker	Exchange0	Duration (hh:mm:ss)	06:31:55								
Start Time	2016-10-26 10:07	End Time	2016-10-26 16:39								
Mailboxes Processed	25	Archived Messages	88717								
Messages Processed	89492	Message Data Stored	652.88 MB								
Last PO Scanned	legionpo	Last Mailbox Scanned	user9								
Errors	1555	Last Error	java.io.IOException: GWPOA HTTP server returned http error (gw error: 400(0xC081) , Code: c081)								
Job Mailbox Summary											
Mailbox	Messages Processed	Archived Messages	Errors	Warnings	Advanced Date Flags	Start Time	End Time	Duration (hh:mm:ss)			
user9 (legionpo)	4268	4244	48	0	Retention Flag (2016-10-26 09:18), Last Archived Flag (2016-10-26 09:18)	2016-10-26 16:22	2016-10-26 16:39	00:16:51			
user8 (legionpo)	4269	4238	64	0	Retention Flag (2016-10-26 09:18), Last Archived Flag (2016-10-26 09:18)	2016-10-26 16:05	2016-10-26 16:22	00:17:09			
user7 (legionpo)	4287	4248	77	0	Retention Flag (2016-10-26 09:18), Last Archived Flag (2016-10-26 09:18)	2016-10-26 15:48	2016-10-26 16:05	00:16:44			
user6 (legionpo)	4280	4239	82	0	Retention Flag (2016-10-26 09:18), Last Archived Flag (2016-10-26 09:18)	2016-10-26 15:31	2016-10-26 15:48	00:17:12			

Further selection of a listed job instance will display details for that selected run of the selected job. If an error exists on any job, it will show up as a linked number under the error column. Errors reported here are linked to information on the error which has occurred.

A selected error will spawn a new window which displays the error and any applicable information, such as any associated files or error code numbers, a quick description (if a Retain error), the severity level, how often it has occurred, and in how many different mailboxes it has occurred.

The last error encountered in a job is also displayed in the Job details window. Select a column header to sort it as desired. The Errors column shown below has been sorted to show the highest number of errors first.

Job Details											
Job Name	x 20:30	Status	Completed								
Worker	Local Worker	Duration (hh:mm:ss)	03:18:59								
Start Time	2015-09-17 20:39	End Time	2015-09-17 23:57								
Mailboxes Processed	238	Archived Messages	270								
Messages Processed	157436	Message Data Stored	2.14 MB								
Last PO Scanned	gw_po	Last Mailbox Scanned	mkures								
Errors	70	Last Error	java.io.IOException: GWPOA HTTP server returned http error (gw error: 400(0x920C) , Code: 920c)								
Job Mailbox Summary											
1 2 3 4 5 6 7 8 9 10 10											
Mailbox	Messages Processed	Archived Messages	Errors	Warnings	Advanced Date Flags	Start Time	End Time	Duration (hh:mm:ss)			
mkures(gw_po)	26	0	0	0	Last Archived Flag (2015-08-26 07:18)	2015-09-17 23:57	2015-09-17 23:57	00:00:03			
mgondek(gw_po)	27	0	0	0	Last Archived Flag (2015-08-26 07:18)	2015-09-17 23:57	2015-09-17 23:57	00:00:03			
BradH(IS&T)	47	0	0	0	Last Archived Flag (2015-08-26 15:18)	2015-09-17 23:57	2015-09-17 23:57	00:00:08			

Reports

Report and Schedule Report

Report and Schedule Report functions are accessed through drop-down menus in the interface. To access the different reports, select the 'Report' or 'Schedule Report' menus from the top menu and then click on the desired report. Most reports which are accessible through the 'Report' menu are also available as a 'Scheduled Report', except for 'Job Run Mailbox Summary'.

All reports under the 'Report' menu except 'Job Run Mailbox Summary', can be scheduled and have a 'Schedule' button at the bottom of the delivered HTML report. Selecting this button copies the settings used to generate the visible report to the Schedule Report interface. This convenience is designed to allow rapid fine-tuning of reports to deliver the desired information. First select the report you wish to run, and then fine-tune the report until it reaches the desired effect. Once the desired settings have been achieved, select the 'Schedule' button from the bottom of the report to carry all settings into the corresponding 'Schedule Report' interface, and schedule the report.



Reports differ from Scheduled reports in more than immediate delivery, reports support HTML in addition to PDF and XLS delivery formats. However, both report structures may be emailed to a desired recipient. When a report is created and emailed it is formatted as selected and then attached to a message which is sent to the desired recipient.

When the Email delivery option is selected, additional configuration is required. The R&M module needs to know not only what address to send the report to and what mail server to use, but also allows the configuration of the email subject and sender address. If an SMTP username and password are required for the desired host system, they should be provided.

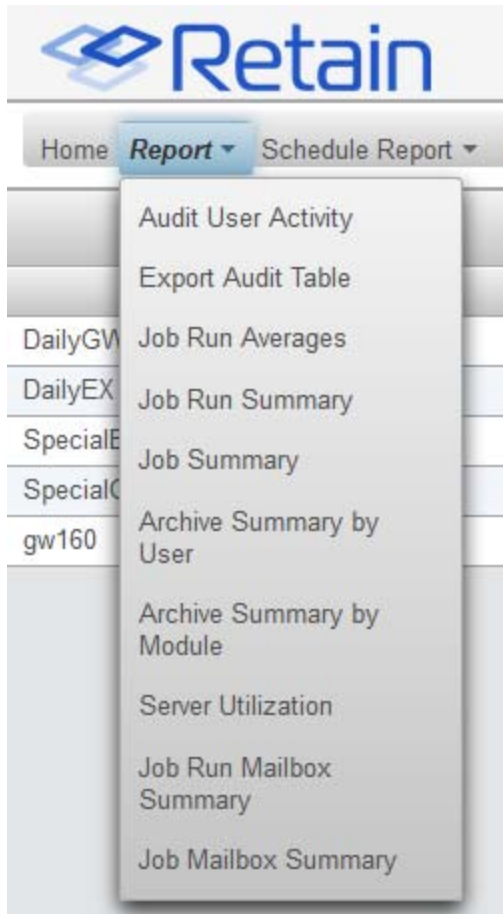
The Reporting and Monitoring module will automatically copy the SMTP configuration from the Retain Server. If this information is not correct, it should be configured here before selecting the 'Generate' button.

Scheduled reports have an additional section for the email details needed for sending the scheduled reports automatically via email.

Email Details:		Report Schedule:	
Mail Server Hostname/IP	<input type="text" value="10.1.4.213"/>	Send Report	<input type="text" value="Daily"/>
Sender Email Address	<input type="text" value="retain10@gwava.net"/>	At Time (24-Hour Format)	<input type="text" value="00"/> : <input type="text" value="00"/>
Recipient Email Address(es)	<input type="text" value="test0@sf.gwava.net"/>	Schedule Start Date	<input type="text" value="2017-10-06"/>
Email Subject	<input type="text" value="Job Mailbox Summary"/>	Schedule End Date	<input type="text"/>
Report Name	<input type="text" value="Report"/>		
SMTP Username (Optional)	<input type="text"/>		
SMTP Password (Optional)	<input type="text"/>		
<input type="button" value="Schedule"/>			

Reports

Reports may be created in HTML, PDF, or XLS, and may be delivered straight to the Browser or in a specified email. Different reports have different settings, however the basics are the same; select or specify the desired criteria, specify the format and delivery method, then click on the “Generate” button to create the report.



Audit user activity

Export audit table

Job run averages

Job run summary

Job summary

Archive summary by user

Archive summary by module

Server utilization

Job run mailbox summary

Job mailbox summary

Audit User Activity

The Audit User Activity report details the different actions performed in the Retain system by different users. This report is a detailed list of all auditable actions taken and which users took them in the Retain system.

Generate report: Audit User Activity

Create a summary of all the auditable actions each user has taken.

Report Output Format

Start Date

End Date

Deliver Report In

While this report lists all actions by all users, it may still be restricted by a date range. The date ranges are specified through a calendar interface.

Sep 2015

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Time 14:08

Hour


Minute

The date and year are selected through the top bar, while the hour and minute, if desired, are selected through sliders. The date can be immediately set to the current moment by selecting the 'Now' button. When configuration has been completed, select the 'Done' button to set the date. Both the Start and End Date have identical date tools.

When the settings are as desired select the 'Generate' button to create the report.

The report lists all users, a quick description of the action taken and how many times it was performed, and the date of the last time it was performed. Actions such as viewing an item, searching the archive, changing settings on either the server or in the interface, forwarding items, applying litigation holds, publishing items, etc. To take the same settings used when creating this report, select the 'Schedule' button to enter the Schedule Report interface with the same settings.

Schedule



Actions Performed on Archive

User Name	Count	Action	Last Action
admin	138	Login	2015-09-18 14:01
	36	Changed User or Group	2015-09-17 09:47
	89	Switched	2015-09-17 11:04
	2	Litigation Hold	2015-09-17 09:38
	187	Viewed	2015-09-18 00:03
	88	Searched	2015-09-18 00:02
admin2	4	Switched	2015-09-10 11:59
	3	Changed User or Group	2015-09-17 14:02
	54	Login	2015-09-18 13:32
	4	Changed Server	2015-09-15 15:53
	39	Searched	2015-09-11 15:19
	14	Viewed	2015-09-10 11:57
ajay	0	No action performed	None
ambiguous	0	No action performed	None

Export Audit Table

The Export Audit Table sorts the entire Audit log with the settings desired and creates a report for specific users or all users, with specific events or all events. This report can be limited in size and date.

Generate report: Export Audit Table

This report exports the audit log entries and filters the results by date range, user, mailbox or action performed.

Report Output Format: HTML

Start Date: 2016-09-28 13:23

End Date: 2016-10-28 13:23

Sort Rows by Column: Date, Descending

Maximum Returned Rows: 1000

Actions:

- Select/Unselect all actions
- Archived
- Deleted
- FTP Forwarded
- Forwarded
- Litigation Hold
- Login
- SMTP Forwarded
- Viewed

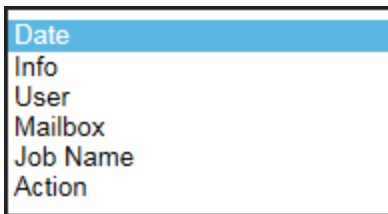
Run Report On: All Users Select Users

Deliver Report In: Browser

Generate

Auditable Users			
	User Name	User UID	Display Name
<input type="checkbox"/>	admin	398d6ee4-0ac8-48e4-bec4-1fafed9d2554	admin
<input type="checkbox"/>	admin@sf.gwava.net	b13ade26-24eb-4017-8e48-054e974048a9	admin
<input type="checkbox"/>	administrator@sf.gwava.net	e9b91a20-13f9-4b00-88a9-39feb7ae249f	Administrator
<input checked="" type="checkbox"/>	aileen@sfgw14.gwava.net	B6AA4480-05ED-0000-A473-666733343035	Aileen O'Leary
<input type="checkbox"/>	alan@sf.gwava.net	6832d441-69b5-4dea-9569-e21f6e4169a7	Alan Smithee
<input type="checkbox"/>	alpha@sfgw14.gwava.net	56E72D00-02BF-0000-A473-666733343035	Alpha Datus
<input type="checkbox"/>	beta@sfgw14.gwava.net	5BABA100-02BF-0000-A473-666733343035	Beta Datus
<input type="checkbox"/>	charlie@sf.gwava.net	fbcb7b778-64e2-4902-972c-9f4e24cdd351	Charlie Foxtrot
<input type="checkbox"/>	code@sf.gwava.net	0611c520-c4f9-4c0c-9bc8-aa55b4a15dec	code developer
<input type="checkbox"/>	code@sfgw14.gwava.net	F1775500-1806-0000-A473-666733343035	code code

If restricting the report to a specific user or users, a menu displaying 'auditable users' is displayed. The different fields are searchable. The option to select all, or none, is also present. Users may be searched for via User Name or email address, User UID, or the user Display Name.




The rows and columns are not sortable in the generated report, but they can be sorted or organized from the report generation interface. The rows may be organized by the columns listed.

- Date
- Info
- User
- Mailbox
- Job name
- Action

This has the exact same effect as organizing columns for the jobs on the reporting and monitoring home page. Configure as desired and then select 'Generate' to create the report.

Schedule



Export of Audit Log Items

Date	Info	User	Mailbox	Job Name	Action
2015-09-18 14:05	Happy games chthurti		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Happy games chthurti		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	And this is not ganesh		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Cool pic		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Nice pic		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Happy games chthurti		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Picture Shared www.bbcm.com/update		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:05	Picture Shared www.bbcm.com/update		c728b33c-31ca-4ae6-b970-0925e115753d		Archived
2015-09-18 14:01	failure [10.1.126.1]	admin	admin	-	Login
2015-09-18 14:01	failure [10.1.126.1]	admin	admin	-	Login
2015-09-18 13:32	success [10.1.12.1]	admin2	admin2	-	Login
2015-09-18 13:31	success [206.251.40.129]	admin	admin	-	Login
2015-09-18 13:16	success [206.251.40.129]	admin	admin	-	Login
2015-09-18 10:21	success [10.1.12.1]	admin2	admin2	-	Login
2015-09-18 04:02	Today's Headlines: Carly Fiorina Offers Republicans a Pathway to Reach Women	local worker	User09	x 22:30	Archived
2015-09-18 03:46	Today's Headlines: Carly Fiorina Offers Republicans a Pathway to Reach Women	local worker	Stubby14	x 22:30	Archived
2015-09-18 03:39	Share the View: The Fed and the Future	local worker	MengT	x 22:30	Archived

Friday 18 September 2015 Page 1 of 50

To Schedule the report, select the 'Schedule' button from the top of the report to keep the settings.

Job Run Averages

The job run averages report takes the performance of any selected particular job and creates a chart to display the trends. The effectiveness, overall load, and performance can be rapidly displayed. The Job Run Averages report requires a single job to be selected. The 'Jobs' selection window has columns which are sortable for convenience.

Generate report: Job Run Averages

This report generates a summary of the performance of a job throughout the course of its history.

Report Output Format:

Start Date:

End Date:

Deliver Report In:

Generate

Jobs					
<input type="checkbox"/>	Job Name	Worker	Schedule	Profile	Email System
<input type="checkbox"/>	Special Job	Exchange0	Now	Special	Exchange
<input type="checkbox"/>	GW Job	Exchange0	Now	Daily	GroupWise

Once the date period has been configured, select 'Generate' to create the report.

Schedule

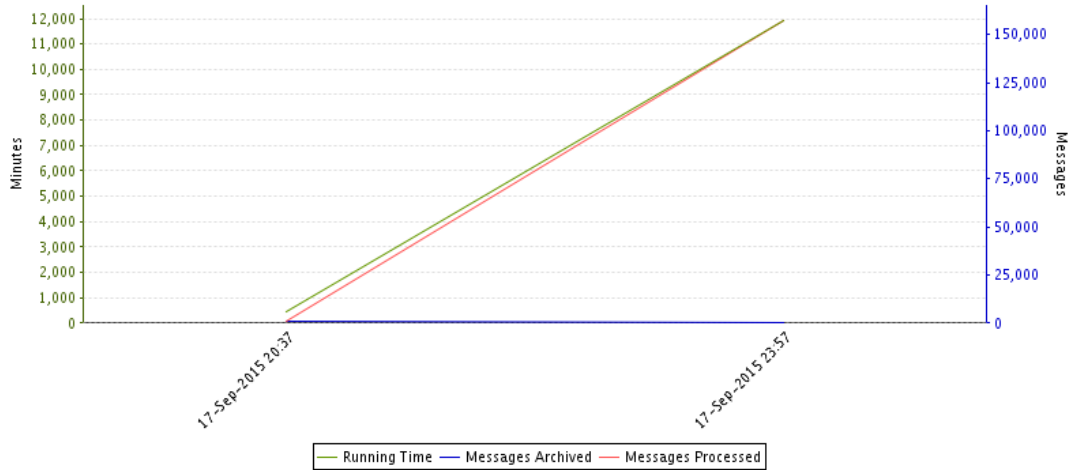


Job/s: x 20:30

Averages for x 20:30

Average Used	Running Time	Messages Processed	Messages Archived	Message Data Stored	Mailboxes Processed
	01:43:16	18794946	83005	1814.00 MB	181.00

Running Time and Archived Messages Trends



Friday 18 September 2015

Page 1 of 1

Performance trends are immediately apparent as run time is compared with message counts over a time period. The averages used to create the graph are listed above the graph, as well as a legend below.

As with the rest of the reports which exist in the 'Schedule Report' interface, to schedule this report with the settings which created it, select the 'Schedule' button from the top of the report to use the same settings and be linked directly to the 'Schedule Reports' interface.

Job Run Summary

The Job Run Summary report gives a complete report of the performance of a single job. Whereas the Job Run Averages report charts raw performance averages, the Job Run Summary report goes into greater detail on the total number of archived messages, the errors, and mailbox summary for a single instance of a job.

Job Run Summary and Job Summary reports have the option to limit the number of reported errors displayed.

Generate report: Job Run Summary

This report generates a summary for a single job run that includes the number of messages archived, the errors that have occurred, and a summary by mailbox.

Report Output Format:

Maximum Error Item Occurrences:

Deliver Report In:

Job Runs			
<input type="checkbox"/>	Job Name	Start Time	End Time
<input checked="" type="checkbox"/>	x 20:30	2015-09-17 20:39	2015-09-17 23:57
<input type="checkbox"/>	x 20:30	2015-09-17 20:30	2015-09-17 20:37

1 of 1 | Page 1 of 10

Select the desired single instance of a job and then select 'Generate'.



Jobs: x 20:30, x 20:30

Job Run Summary

Mailboxes Processed	Messages Processed	Messages Archived	Message Data Stored	Errors	Start Time	End Time	Duration
166	158397	1084	27 MB	70	2015-09-17 20:30	2015-09-17 23:57	03:28:32

Errors Encountered During Job

Error Name	Description	Error ID	Severity	Occurred	Last Occurrence
java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0x920C) Code: 920c	823762	Normal	3	17-Sep-2015 23:29
java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081) Code: c081	888713	Normal	67	17-Sep-2015 22:42
com.gwava.gweasysoap.CUser Database is temporarily disabled	Code: d714	887176	Warning	1	17-Sep-2015 20:36
com.gwava.gweasysoap.CUser account is expired	Code: d023	887178	Warning	1	17-Sep-2015 20:36

Errors Encountered In Mailboxes

User Name	Error Name	Description	Error ID	Severity	Occurred	Last Occurrence
DeeZeroOneBee	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081) Code: c081	888713	Normal	23	17-Sep-2015 22:42
RickL	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0x920C) Code: 920c	823762	Normal	2	17-Sep-2015 23:29
SeeZeroEightOne	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0x920C) Code: 920c	823762	Normal	1	17-Sep-2015 22:42

Friday 18 September 2015

Page 1 of 18

The summary displays the total mailboxes, messages, data store, errors, and running time of the job. Afterwards, this information is broken down by each mailbox the job covers.

Job Summary

The Job Summary report is much the same to the Job Run Summary report, except that this report covers the entire history of a job and not just a single run. To run the report, select the desired job and any time period, if desired, the desired output and delivery method, and click 'Generate'.

Job Summary contains the option to limit the number of reported errors displayed.

Generate report: Job Summary

This report generates a cumulative summary for a job over the selected date range that includes the number of messages archived, the errors that have occurred, and a summary by mailbox.

Report Output Format:

Start Date:

End Date:

Maximum Error Item Occurrences:

Deliver Report In:

Jobs					
<input type="checkbox"/>	Job Name	Worker	Schedule	Profile	Email System
<input type="checkbox"/>	brice-1	Local Worker	0 Now	mobile_profile	Mobile
<input type="checkbox"/>	BBM protected Job	Local Worker	BBM Protected schedul	BBM Protected profile	Blackberry
<input type="checkbox"/>	Exchange Journal Now	Local Worker	Exchange 2013 Journal Now	Exchange Profile, No Flag, Journal by Year	Exchange
<input type="checkbox"/>	BES05 at 09:00	Local Worker	Daily at 09:00	BES Profile - ItemStore	Blackberry
<input type="checkbox"/>	GW CrapPO	Local Worker	GWCrappO	AllFolders AllMessages NoArchiveMark NoStubbing ItemStore	GroupWise
<input type="checkbox"/>	Mobile Job	Mobile Worker	Mobile Now	mobile_profile	
<input type="checkbox"/>	1new job1	BES5 Worker	BES 05 Now	BES Profile	
<input checked="" type="checkbox"/>	x 20:30	Local Worker	x 20:30	AllFolders AllMessages NoFlags SLOW	GroupWise
<input type="checkbox"/>	BES10 11:00	Local Worker	Daily at 11:00	BES Profile - ItemStore	Blackberry
<input type="checkbox"/>	BES05 at 12:00	Local Worker	Daily at 12:00	BES Profile - ItemStore	Blackberry

1 of 11 | 1 2 3 4 5 6 7 8 9 10 | 10

The report generated displays the number of mailboxes that the job processes, the total messages the job has processed, how many messages are actually archived, the message data stored, the total errors encountered, when the job first started, and the total time the job has been active.

Immediately below the initial information, a pie chart displays the amount of messages actually archived in comparison to the number of messages the job processed.

Finally, below the pie chart is a summary, by individual mailbox, of job actions. Each mailbox is displayed with the pertinent information, including the messages archived, messages processed, critical errors, a record of the advancement of message store flags, and the duration of the job in that mailbox.

To schedule this job with the settings desired, select the 'Schedule' button from the top of the report. All settings used to create the report will automatically be copied into the 'Schedule Report' interface.

Job Summary

Mailboxes Processed	Messages Processed	Messages Archived	Message Data Stored	Errors	Start Time	End Time	Duration
166	158397	1084	27 MB	70	2015-09-17 20:30	2015-09-17 23:57	03:26:32

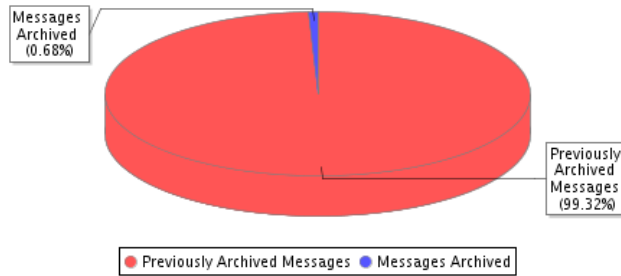
Errors Encountered During Job

Error Name	Description	Error ID	Severity	Occurred	Last Occurrence
java.io.IOException	GWPOA HTTP server returned http error (gw error): 400 (0x920C) Code: 920c	823762	Normal	3	17-Sep-2015 23:29
java.io.IOException	GWPOA HTTP server returned http error (gw error): 400 (0xC081) Code: c081	888713	Normal	67	17-Sep-2015 22:42

Errors Encountered In Mailboxes

User Name	Error Name	Description	Error ID	Severity	Occurred	Last Occurrence
DeeZeroOneBee	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081) Code: c081	888713	Normal	23	17-Sep-2015 22:42
RickL	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0x920C) Code: 920c	823762	Normal	2	17-Sep-2015 23:29
SeeZeroEightOne	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0x920C) Code: 920c	823762	Normal	1	17-Sep-2015 22:42
SeeZeroEightOne	java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081) Code: c081	888713	Normal	44	17-Sep-2015 22:42

Archive Ratio of Processed Messages



Archive Summary per Mailbox

Mailbox	Messages Processed	Messages Archived	Errors	Warnings	Advanced Date Flags	Start Time	End Time
aa	218	0	0	0	Last Archived Flag (2015-09-08 17:07)	2015-09-17 22:40	2015-09-17 23:42

Archive Summary by User

The Archive Summary by User report creates a summary of all users', or a specific user's, archive history. The summary includes all pertinent information for each mailbox's archive over the last 3 months of jobs. To run the report, either all or one mailbox must be selected. If all mailboxes are selected, the maximum returned rows may be a very important setting to keep the report from becoming immense.

While the report cannot be sorted after it is generated, it may be sorted at generation through the 'Sort Rows by Column' feature. The columns may be sorted by either descending or ascending order. Select 'Generate' to create the report.

Generate report: Archive Summary by User

This report generates a summary of messages archived for each user including the disk space used and modified timestamps.

Report Output Format: HTML

Start Date: 2015-08-19 16:06

End Date: 2015-09-18 16:06

Sort Rows by Column: User Name

Sort Order: Ascending

Maximum Returned Rows: 1000

Run Report On: All Users Select Users

Deliver Report In: Browser

Generate

Users				
Mailbox	First name	Last name	Email	Mail Server
/AKarger	/AKarger		akarger@qa.gwava.com	BES10 via NFS
/BlackBerryQ10	BlackBerry	Q10 QA Phone	blackberryq10@qa.gwava.com	BES10 via NFS
14388818984	Colin	Bretagne	colinb@gwava.com	ssms.gwava.com
15148176356	Stephen	Cohen		ssms.gwava.com
18012445386	Jared	Allen	jpallen@gwava.com	ssms.gwava.com
18013619867	18013619867			ssms.gwava.com
18016757821	18016757821		samsunggalaxysiii@qa.gwava.com	ssms.gwava.com
18018577552	18018577552		lgoptimusexceed@qa.gwava.com	ssms.gwava.com
AAguirre	Aaron	Aguirre	aaguirre@qa.gwava.com	CBIPO

1 of 51

The report displays the total information for every mailbox selected; User name, the time stamps and their advanced dates, and the message store for the associated user.

Schedule



Total Users in Address Book: 10367

Messages Archived by User

User Full Name (Mail Server)	Message Store	Timestamps
a0conn01 (EXCHANGEQA)	Archived: 9 Processed: 83 Disk Space Used: 0 MB	Item Store Flag: Not set Last Archive Flag: 2015-07-30 08:05 Retention Flag: Not set Purge Flag: Not set
Data Since: 2015-06-05 02:00		
a0izyu01 (EXCHANGEQA)	Archived: 0 Processed: 0 Disk Space Used: 0 MB	Item Store Flag: Not set Last Archive Flag: Not set Retention Flag: Not set Purge Flag: Not set
Data Since: 2015-07-24 00:04		
a0john01 (EXCHANGEQA)	Archived: 8 Processed: 35 Disk Space Used: 0 MB	Item Store Flag: Not set Last Archive Flag: 2015-07-30 08:05 Retention Flag: Not set Purge Flag: Not set
Data Since: 2015-06-21 02:00		
aa (LXPO)	Archived: 2 Processed: 679 Disk Space Used: 0 MB	Item Store Flag: Not set Last Archive Flag: 2015-09-08 17:07 Retention Flag: Not set Purge Flag: Not set
Data Since: 2014-02-10 21:33		
Administrator (LXPO)	Archived: 1 Processed: 454 Disk Space Used: 0 MB	Item Store Flag: Not set Last Archive Flag: 2015-08-26 15:18 Retention Flag: Not set Purge Flag: Not set
Data Since: 2014-06-14 02:00		

Friday 18 September 2015

Page 1 of 35

The most valuable part of this report, and what will make this report a staple for administrators, is the ability to monitor and get a concise report for the disk space used for each individual user along with the messages processed and stored.

If the report is to be scheduled, select the 'schedule' button from the top of the report to use the same settings which created the report.

Archive Summary by Module

Not all modules gather data with a Job, REST based modules have data enter at any time. To monitor those data streams use this report.

REST modules include:

- ♦ Mobile
- ♦ AT&T
- ♦ Celltrust
- ♦ GBS Notes
- ♦ BBM
- ♦ Social Messages
- ♦ Tele Messages
- ♦ UM Labs

Generate report: Archive Summary by Module

This report generates archiving detail for accounts processed during the selected modules that includes the number of messages archived, disk space used, and any errors that were encountered.

Report Output Format	<input type="text" value="HTML"/>	
Start Date	<input type="text" value="2018-01-06 14:48"/>	<input type="button" value="📅"/>
End Date	<input type="text" value="2018-02-05 14:48"/>	<input type="button" value="📅"/>
Maximum Error Item Occurrences	<input type="text" value="1000"/>	
Deliver Report In	<input type="text" value="Browser"/>	
<input type="button" value="Generate"/>		

<input type="checkbox"/>	Module ⚡
<input type="checkbox"/>	Exchange
<input type="checkbox"/>	Groupwise

Report Output Format: HTML, PDF or XLS.

Start Date: Default, one month ago.

End Date: Default, today.

Maximum Error Item Occurrences: How many times to repeat an error report. Default, 1000.

Deliver Report In: Browser or Email

Module: Select the module for the source.

Server Utilization

The Server Utilization report is a direct report on the load that the Retain Server is under. The only option is to limit the date range for which the report is active. Select the report period and then select 'Generate' to produce the report.

Generate report: Server Utilization

This report summarizes the server health as it changes over time. This report includes information such as CPU and memory usage, index and archive size, as well as thread count.

Report Output Format:

Start Date:

End Date:

Deliver Report In:

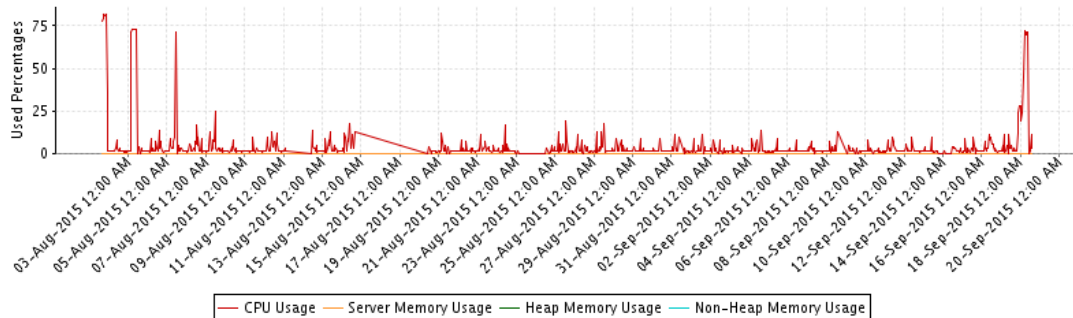
The Server utilization report details the memory, CPU utilization, Archive size, Thread usage, Index size, heap memory, and non-heap memory usage all in quick to digest charts.

To schedule the report, select the 'Schedule' button from the top of the report to utilize the same settings.

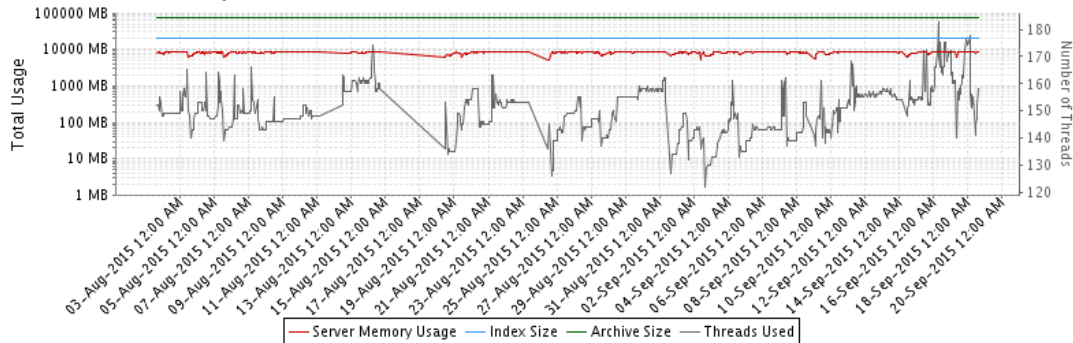


	Average Used	Minimum Used	Maximum Used	Total Available
CPU Usage	4.57 %	0.00 %	82.00 %	Not Applicable
Server Memory	8,273.98 MB	4,900.70 MB	8,611.11 MB	8,731.74 MB
JVM Heap Memory	2,139.97 MB	642.09 MB	4,019.47 MB	4,326.50 MB
JVM Non-Heap Memory	1,882.90 MB	164.05 MB	4,735.27 MB	0.00 MB
Index Size	18.41 GB	16.43 GB	21.38 GB	Not Applicable
Threads	149.93 GB	122.00 GB	183.00 GB	Not Applicable
Archive Size	72.46 GB	72.38 GB	72.57 GB	Not Applicable

Resource Utilization History - Percentages



Resource Utilization History - Totals



Job Run Mailbox Summary

The Job Run Mailbox Summary report is much like the Job run Summary except it is dedicated to specific mailboxes and specific jobs. This job requires both a job, and a user or users to be selected.

Generate report: Job Run Mailbox Summary

This report generates a summary of the archiving detail for accounts processed during the selected job run(s) that includes the number of messages archived, disk space used, duration of the mailbox scan, and any errors that were encountered.

Report Output Format:

Sort Rows by Column:

Maximum Returned Rows:

Run Report On: All Users Select Users

Deliver Report In:

Job Runs				
<input type="checkbox"/>	Job Name <input type="text" value="Select a value"/>	Start Time ↕	End Time ↕	Duration (hh:mm:ss) ↕
<input type="checkbox"/>	Special Job	2016-10-28 11:54		00:00:00
<input type="checkbox"/>	Special Job	2016-10-26 16:39	2016-10-28 11:40	43:00:37
<input type="checkbox"/>	GW Job	2016-10-26 10:07	2016-10-26 16:39	06:31:55
<input type="checkbox"/>	Special Job	2016-10-12 16:25	2016-10-15 10:07	65:42:02

Select the desired job and either all users, or only select users. If desired, the columns may be sorted by a selected value through the 'Sort Rows by Column' drop-down menu. Once set as desired, select the 'Generate' button.

The report shows the details for the selected job and mailboxes. The user name, messages archived, disk space used, and archiving time is all displayed for each mailbox as well as for the total job.



Archive Report Totals

Messages Archived	122
Disk Space Used	0 MB
Archiving Time	00:12:54

Archiving Detail by User

User Name	Messages Archived	Disk Space Used	Archiving Time
Rasoli, Hakim	111	0 MB	00:00:18
User, Stubby	11	0 MB	00:06:21
User, Stubby 14	0	0 MB	00:06:15

This report cannot be scheduled.

Job Mailbox Summary

The Job Mailbox Summary report is a scheduled report only, that displays the number of messages archived, the disk space used, and the time the job took, separated by separate mailboxes. This report may be restricted to a date range, a limited amount of rows, and may be performed on all, or only select users. This report may also sort the data according to a selected column, in either ascending or descending value.

Report Schedule: Job Mailbox Summary

This report generates a summary of the archiving detail for accounts processed during the selected job that includes the number of messages archived, disk space used, duration of the mailbox scan, and any errors that were encountered.

Report Output Format: PDF

Sort Rows by Column: User Name

Sort Order: Ascending

Maximum Returned Rows: 1000

Run Report On: All Users Select Users

Use Data from Last: Day(s)

7

Email Details:

Mail Server Hostname/IP: 10.1.4.213

Sender Email Address: retain10@gwava.net

Recipient Email Address(es): test10@st.gwava.net

Email Subject: Job Mailbox Summary

Report Name: Report

SMTP Username (Optional):

SMTP Password (Optional):

Job Name	Worker	Schedule	Profile	Email System
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange
DailyGW	Worker0 Local	DailyGW	Regular	GroupWise
DailyEX	Worker1 Local	DailyEX	30 day initial	Exchange

1 of 3

Report Schedule: Daily

Send Report: Daily

At Time (24-Hour Format): 00:00

Schedule Start Date: 2017-10-06

Schedule End Date:

Select the 'Schedule' button to create the report.



Archive Report Totals

Messages Archived: 1084
 Disk Space Used: 27 MB
 Archiving Time: 03:19:18

Archiving Detail by User

User Name	Messages Archived	Disk Space Used	Archiving Time
aa	0	0 MB	00:00:18
Administrator	0	0 MB	00:00:04
Allen, Jared	4	0 MB	00:06:59
Alungh, Suman	160	4 MB	00:00:41

Device Management

The device management report generates the device registration details by user, generation time, registration time.

Generate report: Device Management

This report generates the device registration details by user, generation time, registration time.

Report Output Format: HTML

Sort Rows by Column: Registration Date

Descending

Maximum Returned Rows: 1000

Select/Unselect all actions

Actions: Registered Users, Non-Registered Users

Deliver Report In: Browser

The resulting report will show Non-registered Users with a Registration date of Not Registered until the registration process is complete on their device. The Generation Date shows when the registration process was begun.



Device Management

First Name	Last Name	Registration Date	Generation Date	Email	Phone
Mandeep	S.	2017-04-04 12:10	2017-02-07 09:35	mandeeps@qa.gwava.com	
TongN		2017-04-04 10:08	2017-02-03 10:00	tongn@qa.gwava.com	
Diana	Stanley	2017-02-02 12:30	2017-02-02 12:20	diana@mythos.com	
knox	in canada	2017-01-19 08:08	2017-01-18 13:32	hakmr@qa.gwava.com	
Lily	Chen	2017-01-17 10:30	2016-10-27 08:03	lily@mythos.com	
Jacqueline	Fine	2016-12-15 12:24	2016-12-15 11:32	jacqueline@mythos.com	
vampire		Not Registered	2016-10-27 08:03	vampire@mythos.com	

Schedule Report

Scheduling reports is accomplished through the Schedule Report interface. Every report which can be scheduled is also available as an instant report with a 'schedule report' button located at the top of the HTML report. Because these instant reports are easier to fine-tune, it is recommended to first configure a scheduled report through the 'Report' interface first, to allow immediate fine tuning and

viewing of the results. Once achieved, selecting the 'Schedule' button on the report will take all settings used to generate that report and input them into the schedule Report interface. To schedule any report, a destination email address, SMTP information, and a set schedule are required.

Scheduled reports differ from normal reports in that, due to the scheduled nature, they must be given a time to generate the report and be given an email address to deliver the report to. Reports are delivered as an attachment in an email sent to a specified user. As such, scheduled reports are only offered in PDF and XLS formats.

Report Schedule: Audit User Activity

Create a summary of all the auditable actions each user has taken.

Report Output Format: PDF

Use Data from Last: Day(s)

7

Email Details:

Mail Server Hostname/IP: 10.1.4.213

Sender Email Address: retain10@gwava.net

Recipient Email Address(es): test0@sf.gwava.net

Email Subject: Audit User Activity

Report Name: Report

SMTP Username (Optional):

SMTP Password (Optional):

Schedule:

Report Schedule:

Send Report: Daily

At Time (24-Hour Format): 00 : 00

Schedule Start Date: 2017-10-04

Schedule End Date:

Reports which have a time frame attached to them as part of the criteria will have a floating time window which they may take information from.

- Hour(s)
- Day(s)
- Week(s)
- Month(s)

Also, the frequency of the report may be configured to be either a single instance or a reoccurring report. The frequency allows for hourly, multiple times on specified hours every day, daily, weekly or on any specified number of days in the week, or at any specified day or days in the month.

- Once
- On the hour(s)
- Daily
- On weekday(s)
- On day(s) of month

Configure Reports

The configuration allows reports to use data created in the past number of hours, days, weeks, or months. The number of time periods may be set by the user.

In addition, a scheduled start and end date allow the administrator to control exactly when the start and stop dates for any specific report can be. The end date is optional.

Specify the Mail server, sender email address, recipient email addresses (comma separate additional addresses), and the SMTP username and password, if required.

You can set the Email Subject of the report email, and the Report Name of the attached file which will have a timestamp added to it so as to not overwrite any other reports.

Manage Scheduled Reports

Once reports have been scheduled, it may be necessary to either cancel or modify the frequency or settings of the report. The Manage Scheduled Reports interface allows jobs to be immediately run, modified, or removed.



As with all other columns in the R&M interface, the columns are sortable and even searchable to allow quick access to any desired Report through any of the scheduled criteria. For instance, a user which doesn't want to receive a report anymore, but doesn't know what report is being delivered to their email, only needs to know the email subject, or the next delivery time, to immediately identify the report. Unique sender addresses or subjects will readily allow any report to be identified.

To modify or view a report's settings select the 'View/Change details' window.

Currently Scheduled Jobs					
Report Name ↕	Output Format ↕	Schedule Type ↕	Next Fire Time ↕	Sender Email Address ↕	Email Subject ↕
Job Mailbox Summary	pdf	Daily	2016-10-29 06:00	Retain@gwava.com	Job Mailbox Summary
View/Change Details					

Once the desired report has been located, select the report and then select the 'View/Change details' button at the bottom to be taken to the Report's configuration. Make any desired changes and select the 'Update' button at the bottom to save the changes.

To remove or immediately run a scheduled report, select the 'Run and Delete reports' window.

Currently Scheduled Jobs						
	Report Name ↕	Output Format ↕	Schedule Type ↕	Next Fire Time ↕	Sender Email Address ↕	Email Subject ↕
<input checked="" type="checkbox"/>	Job Mailbox Summary	pdf	Daily	2016-10-29 06:00	Retain@gwava.com	Job Mailbox Summary
Run report now						✘ Remove selected

Any report or reports may be immediately run or removed from the system through this window. All scheduled reports will be displayed. A select all/none box is at the top left of the table, and allows for a quick selection or clearing of all previous selections which have been made.

To run a report or reports, select the desired report by clicking on the associated checkbox and then select the 'Run report now' button at the bottom. The report will be immediately triggered, and emailed to the specified recipient.

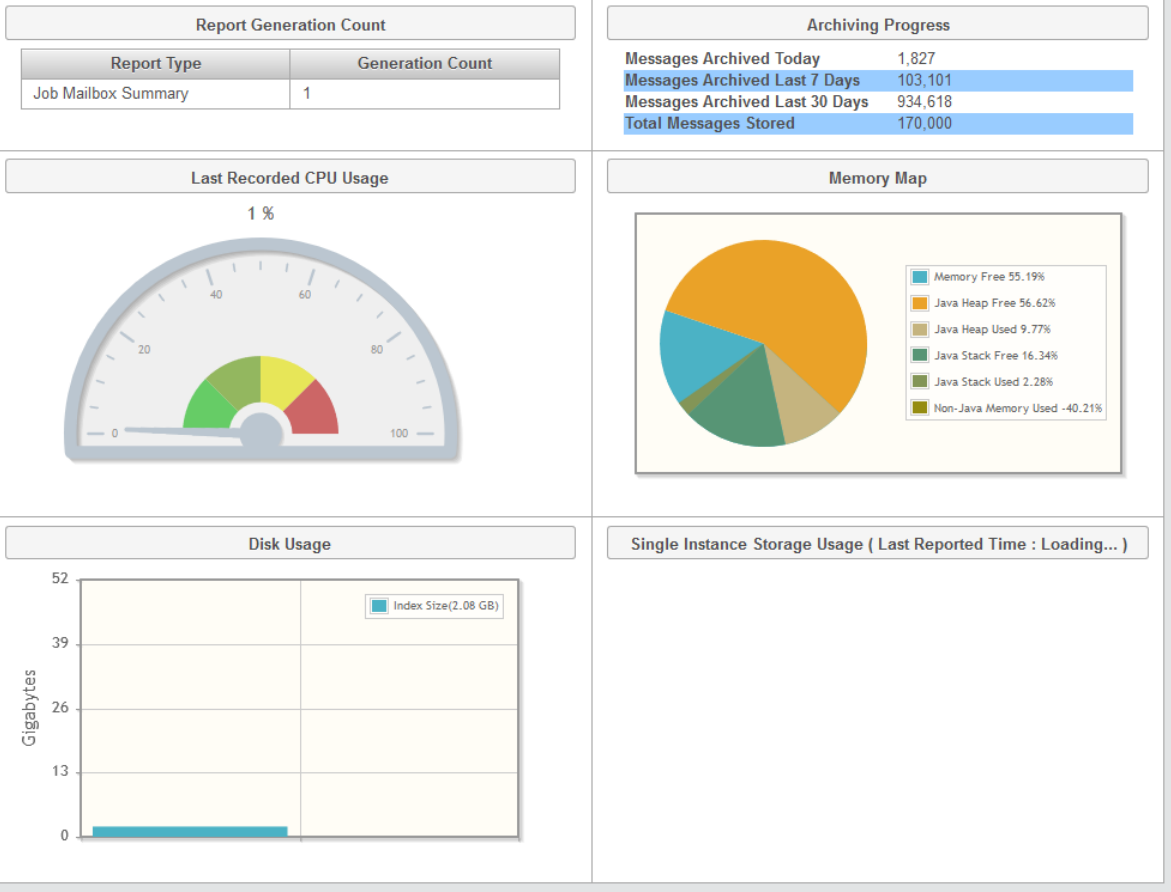
To remove a report or reports, select the desired reports by placing a check in the associated checkbox. Once the reports are selected, click the 'Remove selected' button at the bottom of the table.

System Monitor

The System Monitor page is a quick, graphed page which displays the essential stats of the Retain Server system. The R&M module statistics are displayed, with how many reports have been created and of what type. The basic archive progress is also displayed showing the daily, weekly, monthly, and total amount of messages which have been archived in the system.

The system CPU load, memory usage map, and Disk Usage are displayed. The dashboard also contains statistics for disk space saved through single storage instances. These numbers are for the actual host server, and not just the Retain system, with exception of the memory map, which has both. The Memory map is broken out to total system memory free and used, but also includes Java memory statistics – which will be Retain specific unless additional Java applications are running on the Retain Server. This page will not time-out or expire, to allow quick monitoring of the system.

NOTE: A problem has recently been identified with gathering some system-level variables for the System Monitor page. Affected variables include CPU, RAM, and system memory usage. To avoid additional problems these variables have been set to '0' until the issue is resolved.

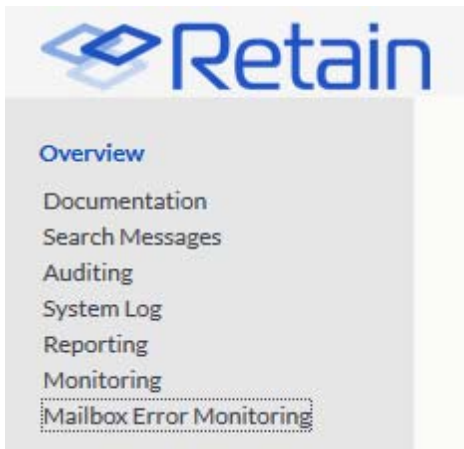


Mailbox Error Monitoring

Mailbox Error Monitoring is a function that allows the Administrator to deal with message errors. The email system reports errors to Retain when there is an issue accessing a message. Sometimes these errors are transient and other times they are permanent. This function will help the Administrator determine the next action.

This function requires the Reporting and Monitoring server to be installed.

Find "Mailbox Error Monitoring" under the Overview section of the left navigation bar.



Clicking on "Mailbox Error Monitoring" will open a new window or tab. This will show the Mailbox Error Monitoring page of the Reporting and Monitoring server.

"Error Summary for all the Mailboxes with Errors" shows a list of mailboxes with errors.

The screenshot shows the 'Error Summary for all the Mailboxes with Errors' page. It features a table with the following data:

Mailbox	Errors
user10@legionpo	2
user11@legionpo	1
user15@legionpo	2
user17@legionpo	1
user19@legionpo	1
user20@legionpo	4
user7@legionpo	1
user8@legionpo	2

To access the errors click on the error number, which is a link that opens a new window or tab. This window will show the "Error Summary for Mailbox [mailboxName]" list.

The screenshot shows the 'Error Summary for Mailbox user20' page. It features a table with the following data:

Error	Description	Code	Mailbox Path	Subject	Sender	Attachment Name	Delivered Date
<input checked="" type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	Gray paint stretched for miles	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-19 20:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	Act on these orders with great	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-20 05:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	The stems of the tall glasses	root <root@slgw14srv.gwava.r>	gopostal.sh	2016-10-20 12:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	The wagon moved on well oiled	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-20 15:19

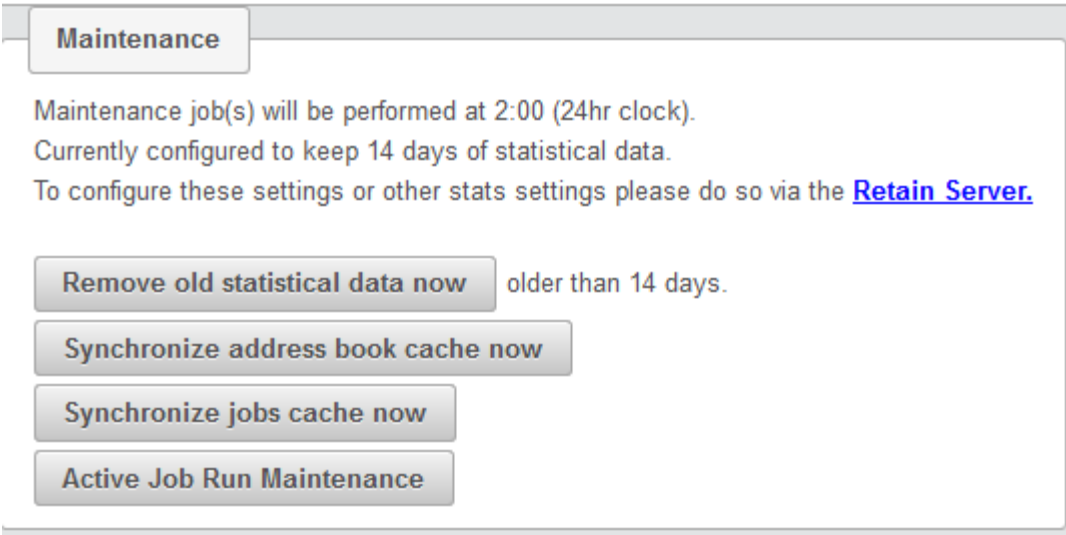
Each line will include: the error, a description of the error, the error code, the mailbox path to the folder the message was found in, the subject, the sender, the attachment that the error occurred on, and the delivered date.

If the message is accessible from the user's client, save the message from the client. Import the message into Retain using the PST Importer or GroupWise Personal Archive Migrator.

To skip a message, select a message by clicking the checkbox by a message, or use the title bar checkbox to select all. Click on the "Skip Errors" button to have Retain skip those errors the next time the job runs. This will remove the message from the list.

Maintenance

The Maintenance page contains the basic maintenance for the R&M module. This is not maintenance for the entire Retain Server. Because the R&M module maintains individual statistics, it needs to be refreshed and purged at regular intervals. The defaults are shown.



The screenshot shows a web interface for the Maintenance page. At the top, there is a tab labeled "Maintenance". Below the tab, the text reads: "Maintenance job(s) will be performed at 2:00 (24hr clock). Currently configured to keep 14 days of statistical data. To configure these settings or other stats settings please do so via the [Retain Server](#)." Below this text are four buttons: "Remove old statistical data now" (with "older than 14 days." to its right), "Synchronize address book cache now", "Synchronize jobs cache now", and "Active Job Run Maintenance".

Remove old statistical data now: By default, the statistics server only maintains a record of statistics for 14 days, and all data older than 14 days will be automatically expired and the data deleted. If the statistic data is required for longer or shorter, configure and save the setting. It is not recommended to maintain statistical data older than 30 days.

Synchronize address book cache now

Synchronize jobs cache now: The R&M Module maintains a separate record of the address book and the job cache. The system automatically synchronizes this information with the Retain Server every 24 hours. Still, the different records may become out of sync. If a synchronize job is required before regular maintenance, a manual sync may be individually triggered.

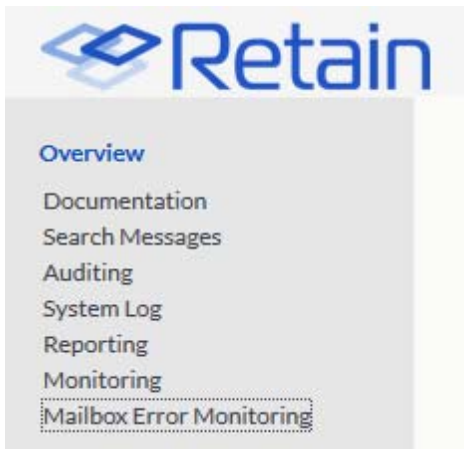
Active job run maintenance: If a job has completed but R&M thinks it is still running, press this button to clear.

Mailbox Error Monitoring

Mailbox Error Monitoring is a function that allows the Administrator to deal with message errors. The email system reports errors to Retain when there is an issue accessing a message. Sometimes these errors are transient and other times they are permanent. This function will help the Administrator determine the next action.

This function requires the Reporting and Monitoring server to be installed.

Find "Mailbox Error Monitoring" under the Overview section of the left navigation bar.



Clicking on "Mailbox Error Monitoring" will open a new window or tab. This will show the Mailbox Error Monitoring page of the Reporting and Monitoring server.

"Error Summary for all the Mailboxes with Errors" shows a list of mailboxes with errors.

The screenshot shows the 'Error Summary for all the Mailboxes with Errors' page. It features a table with the following data:

Mailbox	Errors
user10@legionpo	2
user11@legionpo	1
user15@legionpo	2
user17@legionpo	1
user19@legionpo	1
user20@legionpo	4
user7@legionpo	1
user8@legionpo	2

To access the errors click on the error number, which is a link that opens a new window or tab. This window will show the "Error Summary for Mailbox [mailboxName]" list.

The screenshot shows the 'Error Summary for Mailbox user20' page. It features a table with the following data:

Error	Description	Code	Mailbox Path	Subject	Sender	Attachment Name	Delivered Date
<input checked="" type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	Gray paint stretched for miles	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-19 20:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	Act on these orders with great	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-20 05:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	The stems of the tall glasses	root <root@slgw14srv.gwava.r>	gopostal.sh	2016-10-20 12:19
<input type="checkbox"/> java.io.IOException	GWPOA HTTP server returned http error (gw error): 400(0xC081)	c081	\\Unnamed_Folder Home\Mailbox(user20)	The wagon moved on well oiled	root <root@slgw14srv.gwava.r>	Mime 822	2016-10-20 15:19

Each line will include: the error, a description of the error, the error code, the mailbox path to the folder the message was found in, the subject, the sender, the attachment that the error occurred on, and the delivered date.

If the message is accessible from the user's client, save the message from the client. Import the message into Retain using the PST Importer or GroupWise Personal Archive Migrator.

To skip a message, select a message by clicking the checkbox by a message, or use the title bar checkbox to select all. Click on the "Skip Errors" button to have Retain skip those errors the next time the job runs. This will remove the message from the list.

Audit and System Logs

Audit Log

All pertinent actions performed by users in Retain are logged and can be discovered and printed. If Reporting and Monitoring is installed, four buttons are added to the following page, as shown below.

The screenshot shows the Retain Audit interface. At the top, there is a header with the Retain logo and the word "Audit". Below the header, there are several filter sections:

- Start date:** 2015-08-17 01:12
- End date:** 2015-09-16 01:12
- Sort rows by column:** Date, Descending
- Maximum returned rows:** 1000
- Actions:** A list of actions with checkboxes: Archived, Audited, Changed User/Group, Deleted, Exported, Forwarded, Litigation Hold, Login.
- Run report on:** All users (selected), Select users

Below the filters is a "Search" button and a "Reset" button. The main part of the interface is a table with the following columns: Date, Info, User, Mailbox, Job Name, and Action. The table contains 10 rows of data, including entries for "loaded", "success", "failure", and "event for aman".

Date	Info	User	Mailbox	Job Name	Action
15-Sep-2015 23:15	loaded	admin	default	Group	Changed User or Group
15-Sep-2015 22:19	loaded	admin	admin	User	Changed User or Group
15-Sep-2015 22:19	loaded	admin	admin	User	Changed User or Group
15-Sep-2015 22:19	loaded	admin	admin2	User	Changed User or Group
15-Sep-2015 22:18	loaded	admin	admin	User	Changed User or Group
15-Sep-2015 21:22	success [206.251.40.129]	admin	admin	-	Login
15-Sep-2015 21:11	success [206.251.40.129]	admin	admin	-	Login
15-Sep-2015 21:11	failure [206.251.40.129]	admin	admin	-	Login
15-Sep-2015 20:39	success [206.251.40.129]	admin	admin	-	Login
15-Sep-2015 20:29	event for aman		c728b33c-31ca-4ae6-b970-0925e		Archived

At the bottom of the interface, there are buttons for "Export as PDF", "Export current page?", "Generate report", and "Schedule email report".

- ◆ Accessing the audit log requires the “Access all audit logs” administrative right.
- ◆ Ordinary users cannot access their audit logs unless you grant the “View Personal Audit Log” right, in which case they can find the audit log on a per-message basis under the Properties tab.

To view actions, select the desired actions, one or all, a date range, and a user, one or all, and then select ‘Search’. The results will be displayed in a table below. All columns in this table are sortable.

The results appear below. This may be printed by selecting the 'Export as PDF' button at the bottom, and printing the resulting PDF. The PDF export button will only display what is shown in the action table, not the criteria or the interface.

If you have rights, you may click on the Action link to open the message. An auditor does not automatically gain the rights to READ messages in mailboxes that are not assigned to them.

If the Reporting and Monitoring module is installed, the 'Report' and 'Schedule Report' menu options on the top bar, and the 'Generate Report' and 'Schedule email report' buttons along the bottom will appear. These buttons link to the R&M interface to extend R&M ability to generate and schedule reports based on the selected criteria. If the Generate report or Schedule email report buttons are pressed, the criteria used in the Audit window will be automatically propagated to the Reporting interface.

System Log

This option lets you read and parse through the latest system log file. The level of detail is controlled in system configuration.

The actual filename and path on the server is also listed. You may clear the view buffer at any time in case you want to monitor a particular operation for troubleshooting purposes.

The screenshot shows the Retain web interface. The top navigation bar includes the Retain logo, a language dropdown set to English, and user information: Welcome, admin | About | Tools | Status & Updates | Logout. The left sidebar contains a navigation menu with sections: Overview (Documentation, Search Messages, Auditing, System Log, Reporting, Monitoring), Data Collection (Schedules, Profiles, GroupWise, Exchange, Social Messaging, Mobile, Google Apps, BlackBerry, CellTrust, Workers, Jobs), Management (Users, Groups, Device Management, Deletion Management), and Configuration (Server Configuration, Rules Configuration, Module Configuration, Router Configuration, Storage Manager, Stubbing Server, Reporting and Monitoring, Licensing). The main content area is titled 'Logs' and features a 'Clear Buffer' button. Below the button, the log file path is displayed: /opt/beginfinite/retain/tomcat7/logs/RetainServer.2015-09-16.log. The log entries show a series of scheduled tasks, many of which are marked as 'will NOT be sent'.

Location of log files

At the end of each day the logs are closed and compressed to save space. After 10 days, by default, the logs are removed from the system.

The full length logs can be found in, by default:

Linux: /opt/beginfinite/retain/tomcat8/logs

Windows: C:\Program Files\Beginfinite\Retain\Tomcat 8.0\logs

There are several log files that are stored here, the ones of primary interest are:

RetainServer.<date>.log: Contains server transactions.

RetainWorkerN.<date>.log: Contains worker transactions. N being the worker number.

Indexer.<date>.log: Contains indexer transactions.

Deleting Data

Formerly known as deletion management. At some point the data in Retain will reach the end of its lifespan or otherwise need to be removed from the system.

Mailbox Deletion: Users leave the company and eventually their mailboxes may be removed. Retain's Data Removal section is able to accomplish these tasks.

Item Deletion: The data retention period has been met and you are free to dispose of the excess data en masse, which will free up considerable disk space.

Delete Messages: Individual emails may also be removed from Retain.

Litigation Hold: If items or mailboxes should NOT be removed.

Deletion Report and Logging: The report of what was removed.

Deleting Mailboxes

Mailbox Deletion will delete one or more entire mailboxes from Retain.

If you are trying to clean up mailboxes for your license report, run mailbox deletion on the target users. All messages are deleted, except those flagged with a litigation hold.

Deleting Users


The primary action is to press the *Add User* button to select users to be deleted from Retain.

Core Settings—Data Deletion

Core Settings allows you to choose between *Generate a report but don't delete message* and *Delete messages as they are processed* when processing the job.

Mailbox Deletion

Full deletion of user mailbox data including folders

✕  kamryn (docdom.docpo)

Core Settings


When processing job	<input type="button" value="Generate a report but don't delete messages"/> <input type="button" value="Delete messages as they are processed."/>
---------------------	--

Data Deletion Notifications

To be notify about errors and/or when the job is complete, fill out this tab. By default it is filled in with the notification data from Server configuration.

Mailbox Deletion

Full deletion of user mailbox data including folders

✖  kamryn (docdom.docpo)

Add User

Run Job Now

Core Settings

Notification

Notification

You can have Retain e-mail a summary of operations and/or errors that occurred when the job completes.

SMTP Mail Server	<input type="text" value="10.1.4.214"/>
SMTP Security Protocol	<input type="text" value="unencrypted"/>
SMTP Port	<input type="text" value="25"/>
SMTP Mail From Address	<input type="text" value="retain10@gwava.net"/>
SMTP To Address	<input type="text" value="aileen@sfgw14.gwava.n"/>
SMTP Username	<input type="text"/>
SMTP Password	<input type="text"/> (Password is not set)
Mail when errors occur	<input checked="" type="checkbox"/>
Mail summary when job complete	<input checked="" type="checkbox"/>

Press the *Run Job Now* button to begin the process.

Item Deletion

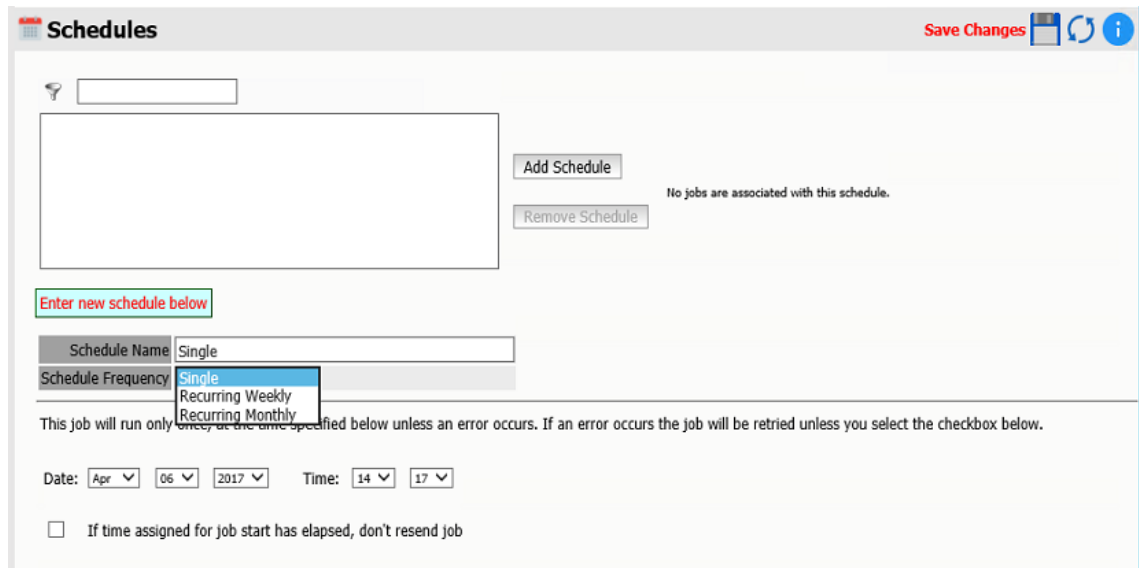
When items pass out of their retention period it is time to remove them from the system.

An item deletion job is set up much like an archive job with a schedule, profile and job, but there is no need for a worker because Retain can connect to itself just fine.

Scheduling Item Deletion

There are three types of schedules:

- ◆ *Single*, the job will run only once at the assigned date and time



The screenshot shows the 'Schedules' configuration page. At the top, there is a search bar and a 'Save Changes' button with a refresh icon. Below the search bar is a large empty box for job associations, with 'Add Schedule' and 'Remove Schedule' buttons. A message states 'No jobs are associated with this schedule.' Below this is a section titled 'Enter new schedule below' with a red border. It contains a 'Schedule Name' field with 'Single' entered, and a 'Schedule Frequency' dropdown menu with 'Single', 'Recurring Weekly', and 'Recurring Monthly' options. Below the dropdown is a note: 'This job will run only once, at the time specified below unless an error occurs. If an error occurs the job will be retried unless you select the checkbox below.' The 'Date' is set to 'Apr 06 2017' and the 'Time' is '14:17'. At the bottom, there is a checkbox labeled 'If time assigned for job start has elapsed, don't resend job' which is currently unchecked.

- ◆ *Recurring Weekly*, the job will run each week on the assigned day and time

Schedules

Monthly
Single
Weekly

Add Schedule
Remove Schedule

Schedule Weekly saved.

Schedule Name: Weekly
Schedule Frequency: Recurring Weekly

Sunday
 Monday
 Tuesday
 Wednesday
 Thursday
 Friday
 Saturday

Start Job at: 01 00

- ◆ *Recurring Monthly*, the job will run each month on the assigned day and time

Schedules

Monthly
Single
Weekly

Add Schedule
Remove Schedule

Schedule Name: Monthly
Schedule Frequency: Recurring Monthly

Run job on 1 day of the month
Start Job at: 01 00

Data Deletion Profiles

The profile sets the type and age of the items to be deleted.

Basic Options

Sets the limits on the Type, Source and Status of the items to be deleted

Profiles Sa

No jobs are associated with this Profile.

Enter new profile below

Profile Name x

Basic Options
Date Scope

Item Type

By default, Retain stores every type of message. You can restrict this.

Mail
 Appointment
 Note
 Task
 Voice Message
 Message
 Phone Call
 BB PIN
 BBM
 Social Messages

Item Source

Messages are classified in one of these categories. You may restrict the storage of messages if desired.

Received
 Sent
 Draft
 Personal

Message Status

You can restrict the storage of messages based upon the setting of various status flags

Read is
 Private is
 Personal is

Item Types include: Mail, Appointment, Note, Task, Voice Message, Message, Phone call, BB PIN, BBM, and Social Messages. Social messages include wall posts, chats, likes, comment, group posts, media, ratings, requests, events, status update, search, forward, and webmail.

Item Sources include: Received, sent, draft and personal.

Message Status can include Read, private or personal, depending on Doesn't matter, True or False.




Date Scope—Data Deletion

Items can be deleted by the

- ◆ *Date Stored in Retain:* This date is set by Retain. This is when your Retain server copied the message to the Retain archive. This is a good time to use if Retain has archiving for at least as long as your organization's retention period and is a trusted source.

- ◆ *Delivered Date*: This date is set by the recipient mail server. This is when your organization's mail server received the message. This is considered the most accurate date as your email server sets this time and is a trusted source.
- ◆ *Expiration Date*: This date is set by your Retain server and is based on when the message is stored in Retain. Configure this in the Job | Core Settings tab. This date will be set in the future.
- ◆ *Created Date*: This date is set by the sending mail client. This date is set by an untrusted source. This is considered the least desirable date to use as spammers often set the date to the far future to keep their messages at the top of the list of the recipient's mail client.

And if the items are older than a specified number of Days, Months or Years or between two specific dates.

Profiles Save Changes   

No jobs are associated with this Profile.

Enter new profile below

Profile Name

Date Scope

Here the date range of messages to be deleted is defined. It's important to choose the correct range, and the correct date type. The creation and delivered date are internal dates of the message. The stored date is when the message was stored in Retain. The expiration date is related to the expiration settings active in the Job when the message was stored.

Delete messages where is:

Older than

Between two specific dates

Start Date: Time:

End Date: Time:

Job—Data Deletion

Creating a deletion job is just like creating an archive job select a schedule and profile to prepare the job.

Core Settings

A job can be enabled or disabled.

Core Settings allows you to choose between *Generate a report but don't delete message* or *Delete messages as they are processed* when processing the job.

A Schedule and a Profile must be chosen.

Jobs

🔍

Enter new job below

Job

Core Settings

Job enabled

When processing job Generate a report but don't delete messages
Delete messages as they are processed.

Each Job must have the following settings:

- **schedule** - How often to run
- **profile** - What to do when running

Selecting Mailboxes for Data Deletion

Select the objects to be included for the deletion job.

- ◆ Journaling Mailboxes may be excluded.
- ◆ An entire mail server or post office can be included.
- ◆ Individual users may be included or excluded.

Jobs

Add Job

Remove Job

Enter new job below

Job

Core Settings Mailboxes Notification

Mailboxes

Exclude Journaling Mailboxes

Include these objects:

Add Mail Server

Add User

 Hayden Hernandez

Exclude these objects:

Add User

Notification—Data Deletion Job Completion

To be notify about errors and/or when the job is complete, fill out this tab. By default it is filled in with the notification data from Server configuration.

Jobs

Enter new job below

Job

Notification

You can have Retain e-mail a summary of operations and/or errors that occurred when the job completes.

SMTP Mail Server	<input type="text" value="10.1.4.214"/>
SMTP Security Protocol	<input type="text" value="unencrypted"/> ▼
SMTP Port	<input type="text" value="25"/>
SMTP Mail From Address	<input type="text" value="retain10@gwava.net"/>
SMTP To Address	<input type="text" value="aileen@sfgw14.gwava.n"/>
SMTP Username	<input type="text"/>
SMTP Password	<input type="text"/> (Password is not set)
Mail when errors occur	<input checked="" type="checkbox"/>
Mail summary when job complete	<input checked="" type="checkbox"/>

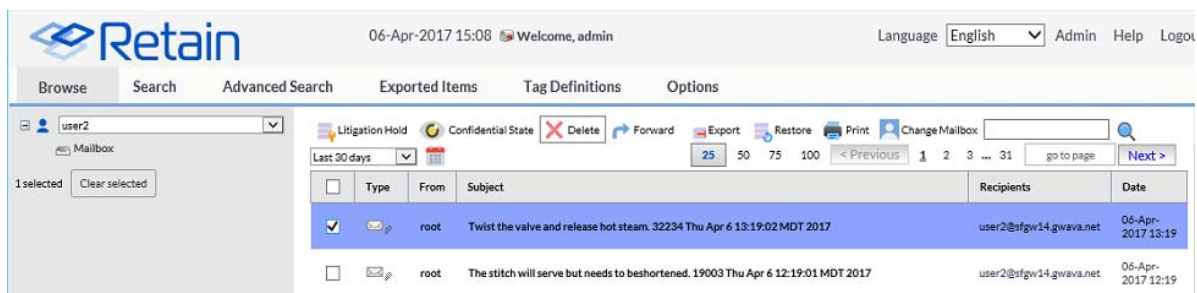
If tomcat crashes during a deletion job, then the job will continue when the tomcat is restarted.

If there is an issue and the server goes down during a job, then the job will need to be rerun.

Deleting Individual Messages

Individual Messages can be deleted by the admin or a user given [sufficient rights \(RetainDocs/Administration/User_and_Group_Management/User and Group Management.htm#XREF_User_rights\)](#). Deletion actions will be logged in the RetainServer log.

Within the users mailbox one or more messages can be deleted by selecting with the checkbox and pressing the *Delete* button.



Deletion Report and Logging

The resulting report CSV file will be placed in the archive directory. For large deletion jobs, the report file will be split into CSV files of up to 500,000 line each. The mailbox will be labeled by the user's first, last and display names with a list of items removed.

The job will be logged in the RetainServer log.

Device Management Overview

Retain manages Blackberry and mobile devices such as Android and iOS devices.



In the Device Manager Interface devices can be:

- ◆ Added
- ◆ Removed
- ◆ Reported on

NOTE: Connection information from Server Configuration | Communications tab | Retain Server Connection panel will be used. If users will travel internationally, it is important to set the Retain Server Port to port 80 as port 48080 is blocked by telecom companies across borders.

Searching for Devices

Use the search text box to filter devices.



This is a “Starts with...” type of search. You may search by Enrollment Code, Display Name and Email Address.

Clicking on a column can change the sort direction.

Deleting Devices

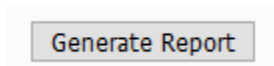
The *Delete Device* button will only remove the selected device or devices from device management, but will not remove the data from the Retain archive.



To remove data you would have to use Data Removal as described in “[Deleting Data](#)” on page 471.

Generating Reports

The *Generate Report* button will take open a new tab or window to the Reporting and Monitoring server and open a Device Management Report configuration page.



See Reporting and Monitoring Device Management Report “[Device Management](#)” on page 460 for more information.

Mobile Device Management

Mobile Device Management Overview

Mobile devices are managed through the device management interface on the Mobile page. You may click on columns to sort by ascending or descending, or search with the filter text field.



The screenshot shows the 'Device Management' interface. At the top, there are buttons for 'Delete Devices', 'Generate Report', 'Add Devices', and 'Reregister Devices'. Below these is a 'Device List' table with the following columns: Enrollment Code, Display Name, Email Address, Phone Number, Device ID, HPOP ID, UUID, Device Added, Registration Sent, Time of Registration, FDN, and IMEI. The table contains five rows of device data.

Enrollment Code	Display Name	Email Address	Phone Number	Device ID	HPOP ID	UUID	Device Added	Registration Sent	Time of Registration	FDN	IMEI
LR3BVAQ	Device1180083	1180083@hammer.com		1180083	-	58b54f41-4207-4cef-be6c-214618731c88	20-Jan-2016 22:20:49		20-Jan-2016 22:20:49		
G7M2PFLU	Device1866910	1866910@hammer.com		1866910	-	894800a8-c830-4439-9f0c-283639d6777	26-Jan-2016 10:33:17		26-Jan-2016 10:33:18		
2V2S5DK	Device1868169	1868169@hammer.com		1868169	-	ec416c8c-9cd0-43e2-a2c0-5ca8f41f9a8c	21-Jan-2016 08:55:59		21-Jan-2016 08:36:00		
U480R1YF	Device2277610	2277610@hammer.com		2277610	-	cdcf74e4-176d-4e4e-afab-915b7cc0ff9a	26-Jan-2016 11:47:58		26-Jan-2016 11:47:58		
4FVPAWSP	Device6014601	6014601@hammer.com		6014601	-	8c495818-696c-4e66-922c-9911f4c4836	20-Jan-2016 22:20:49		20-Jan-2016 22:20:49		

Provisioning Mobile Devices

Before mobile devices can be registered in Retain they need to be provisioned.

From the Retain device management page, devices can be provisioned in three different ways:

- ◆ Using the *Add Devices* button.
- ◆ Batch device registration.
- ◆ Provisioned group or groups from an LDAP directory.

NOTE: Phone numbers can only be added with “Add Device for A New User” or adding the phone number to the CSV file for Batch Device Registration. There is no option to edit the user to add the phone number when adding the user by searching “Add Devices for Existing Retain Users”.

You can add existing users that are cached in the Retain system, that have a user name and email address from another module.

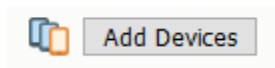
You can also add users which are not cached in the Retain system, but they must be added one at a time by manually entering the display name, email address, phone number and device IMEI associated with each device.

You have the option to add a user via:

- ◆ Email registration
- ◆ Automatic registration

Add Device Button

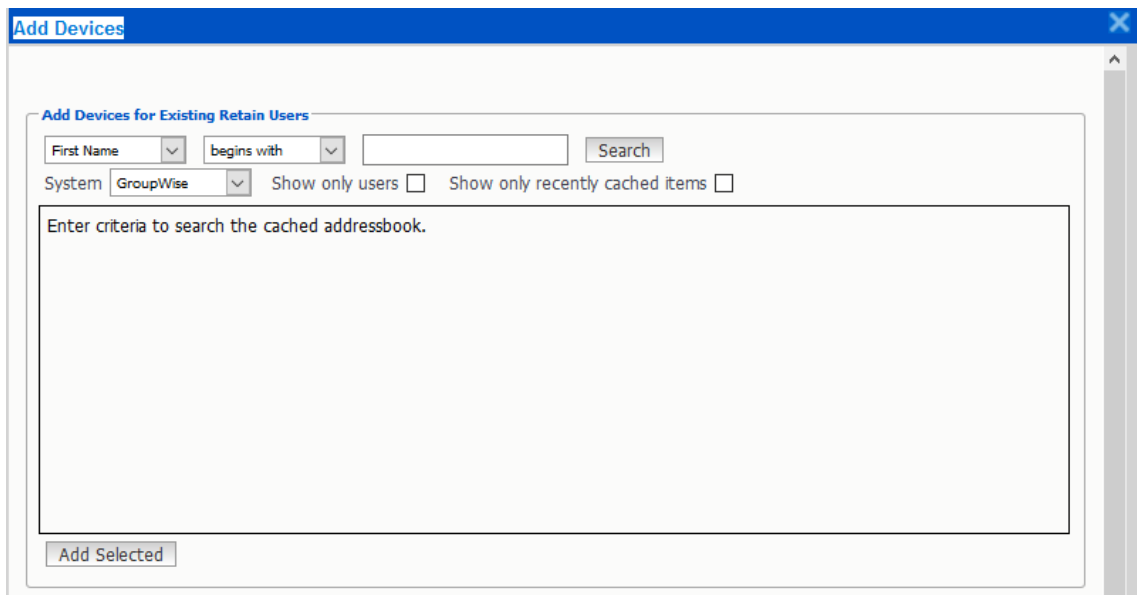
Devices can be added individually through the *Add Devices* button for either existing Retain users or new Retain users.



Existing User

To add devices for users that are already cached in the Retain system, navigate to the device management page and click on the Add Devices button.

1. In the Add Devices window that opens, under Add Devices for Existing Retain Users, enter the criteria to search the cached address book of Retain and click on the Search button.
2. Select the desired users from the returned search results.
3. Click on Add Selected button at the bottom left corner.



4. Your selected users are now added to the device management table.

New User (email)

Email registration requires end user intervention as Retain sends a registration email to the user, which must be accessed from the device in order to register with the Retain Server.

The user must have the **RetainService** application installed on the device for successful registration.

Email registration offers two options to register with the Retain Server:

1. *Via Retain Registration JSON file*: the user downloads the JSON file and places it in the device's Download folder to complete the registration process.
2. *Via the activation link*: the user opens the activation link using the **RetainService** application to complete the registration process.

To use email registration:

1. Navigate to the device management page and click on the Add Devices button.
2. In the Add Devices window that opens, under Add Device for a New User.
3. Provide values for Display Name and Email Address.
4. Click on *Add User* button found on the bottom left corner.
5. Your user is now added to the device management table and an email is sent to the user, which will be used to complete the registration process.

New User (automatic with IMEI)

Automatic registration will register devices without end user intervention. The user must have the RetainService application installed for successful registration.

Add Devices

Enter criteria to search the cached addressbook.

Add Selected

Add Device for a New User

To add a device for a user not already in Retain via email registration, enter their Display Name and Email Address, otherwise, if you choose automatic registration, enter their Display Name, Email Address, Phone Number and Device IMEI:

Display Name

EMail Address

Phone Number

Register Device Automatically

Device IMEI

Add User

To use automatic registration:

1. If using IMEI automatic registration the Retain server must have access to the Micro Focus Retain Cloud Mobile Service (CMS) through the firewall (via whitelisting etc.). Customers who use automatic registration need to permit the Retain server to access: `cms.qa.gwava.com`.
2. Navigate to the device management page and click on the *Add Devices* button.
3. In the Add Devices window that opens, under Add Device for a New User, check the box to Register Device Automatically.
4. Provide values for Display Name, Email Address, Phone Number and Device IMEI.
5. Click on *Add User* button found on the bottom left corner.
6. Your user is now added to the device management table and an automatic registration attempt takes place.

Batch Device Registration

To register multiple devices, a file can be used to specify the Display Name, EMail Address, Phone Number, and Device International Mobile Equipment Identity (IMEI) Number for each device that is uploaded to Retain which will sent registration data to the device.

Batch Device Registration

See sample for the expected structure.[Example](#)

No file selected.

The display name and email address is required in all cases. The RetainService app must be on the target device before attempting to register the device.

To register a device with an email message, enter the display name and email address of the users. A registration email will be sent to the user and the user will need to open the email and click the link to register the device.

To register a device automatically, enter the display name, email address, phone and IMEI numbers of the users, no further user intervention is necessary.

Once the file is prepared, upload the file to Retain.

To upload the registration file, click on Browse, select the file and click on Upload a CSV file. Once the file is processed, the entries will appear in the list of devices.

Batch Registration CSV file

You will find a sample file under the “Example link” on the Add Device page.

The registration file must contain *one record per line with these four fields*, delimited by a comma (,) character: *Display Name, EMail Address, Phone Number, Device IMEI*

For **email registration**, the Phone Number and IMEI fields can be left empty, but must still include the comma delimiter like this example:

```
Joe Cole,joec@microfocus.com,,
```

For **automatic registration**, all fields must be supplied, like this example:

```
Bob Wood,bobw@microfocus.com,4548278127,451289080261454
```

The Retain Server must have access to CMS as adding a new user above. To upload the registration file, click on Browse, select the file and click on Upload a CSV file. Once the file is processed, the entries will appear in the list of devices.

Provisioned Groups

A provisioned group of users in your LDAP system can be used to add user devices in Retain by providing the necessary attributes in the device management page, under Provisioned Groups section.

Provisioned groups are synced every 8 hours by default. The LDAP sync frequency can be changed in the Mobile Module configuration page under the Core Settings tab. A manual sync process can be triggered by clicking on the Synchronize Now button in the device management page.

Adding Users To Retain with a Provisioned Group

When a user is added to the provisioned group, during the sync process the user will be identified as new user by Retain.

If there are only name and email address fields a registration email will be sent and the user will have to complete the registration process manually.

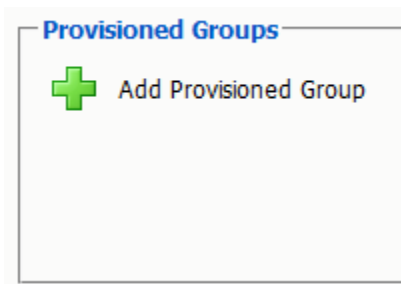
If there are name, email, phone and IMEI fields then the device will be registered automatically.

If there is no email address then an error will be logged and the user will not be added. Changing the email address will trigger a new registration during the next synchronization process.

If a user is removed from the provisioned group then the archiving of messages will be disabled during the next synchronization. If the user is added back into the group archiving will resume after the next synchronization, messages and calls from the period outside of the group will not be archived. The same mailbox will be used unless the email address was changed.

Add a Provisioned Group

Add a new group by pressing the green plus sign.



You may now fill in the group information so that Retain can connect to and gather data from your LDAP directory.

A screenshot of the "Provisioned Groups" form. The form is titled "Provisioned Groups" and has a green plus sign icon and "Add Provisioned Group" text. The form fields are: "Common Name (e.g. cn=users)" with a red 'X' icon and the value "cn=RetainMobileDevices"; "Context (e.g. o=beginfinite)" with the value "ou=GWTestSystem,o=gwava"; "LDAP Directory Implementation" with a dropdown menu showing "NetIQ eDirectory"; "LDAP Server (Host/IP)" with the value "rick-edir.qa.gwava.com"; "LDAP Port (usually 389 or 636)" with the value "389"; "Use SSL" with an unchecked checkbox; "LDAP Admin User (e.g. cn=admin,o=beginfinite)" with the value "cn=ldapuser,o=gwava"; "Password for LDAP Admin User" with masked characters "•••••"; "LDAP attribute for Full name" with the value "fullName"; "LDAP attribute for Email" with the value "mail"; "LDAP attribute for Mobile phone number" with the value "mobile"; and "LDAP attribute for IMEI" with the value "mobileIMEI". A "Synchronize now" button is located at the bottom right of the form.

Common name: The common name of the provisioned group. The distinguished name of the organizational unit of the group. For example, CN=MobileUsers.

Context: The context of the group, or the LDAP path to the organizational unit. For example, OU="Special Groups",OU=Users

LDAP Directory Implementation: Choose NetIQ eDirectory or Microsoft Active Directory.

LDAP Server: The hostname or IP address of the LDAP server.

LDAP Port: 389 or 636.

Use SSL: Enable, if desired. Set the port appropriately above.

LDAP Admin User: The distinguished name of an LDAP admin. For example, CN=admin,OU=Users,DC=company,DC=com

Password for LDAP Admin User: Password of the LDAP admin user.

LDAP attribute for Full Name: Specify the Display name field used in the directory. Required for email registration. Required for IMEI automatic registration.

LDAP attribute for Email: Specify the email field used in the directory. Required for email registration. Required for IMEI automatic registration.

LDAP attribute for Mobile phone number: Specify the mobile phone number field used in the directory. Required for IMEI automatic registration.

LDAP attribute for IMEI: Specify the IMEI of the mobile device field used in the directory. Required for IMEI automatic registration.

Press the *Synchronize Now* button to have Retain synchronize with the LDAP group.

Registering Mobile Devices

Once mobile devices are provisioned they can be registered with Retain. Devices can be registered via email or automatically.

Device Permissions

The Retain APK requires permission to access certain areas of the device. RetainService needs to be allowed to:

- ◆ Make and manage phone calls.
- ◆ Access contacts.
- ◆ Access photo, media and file storage.
- ◆ Send and view SMS messages.

Email Registration

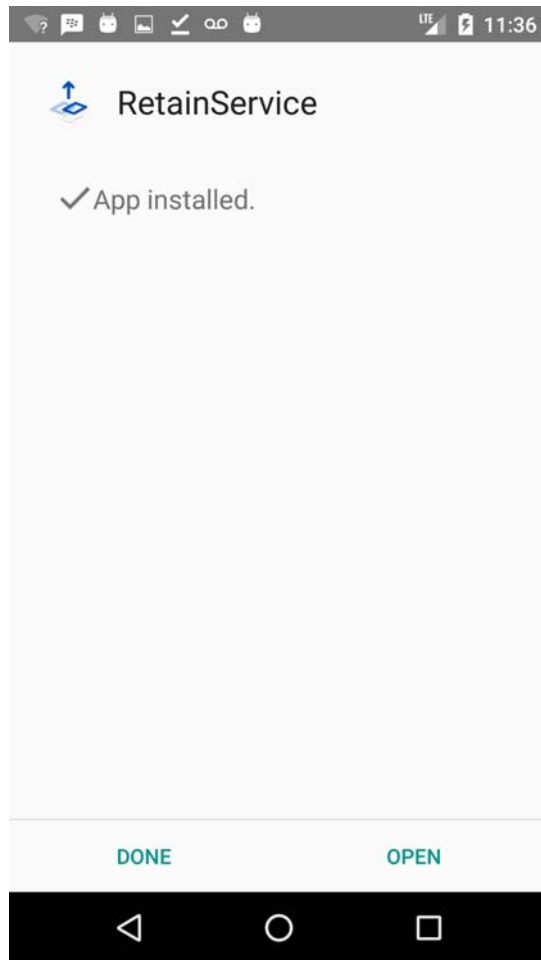
Email registration takes place when:

- ◆ Only the Display Name and the Email Address are provided at the time the user was added in Retain.
- ◆ The sysadmin clicks on the *Reregister Devices* button on the device management page.

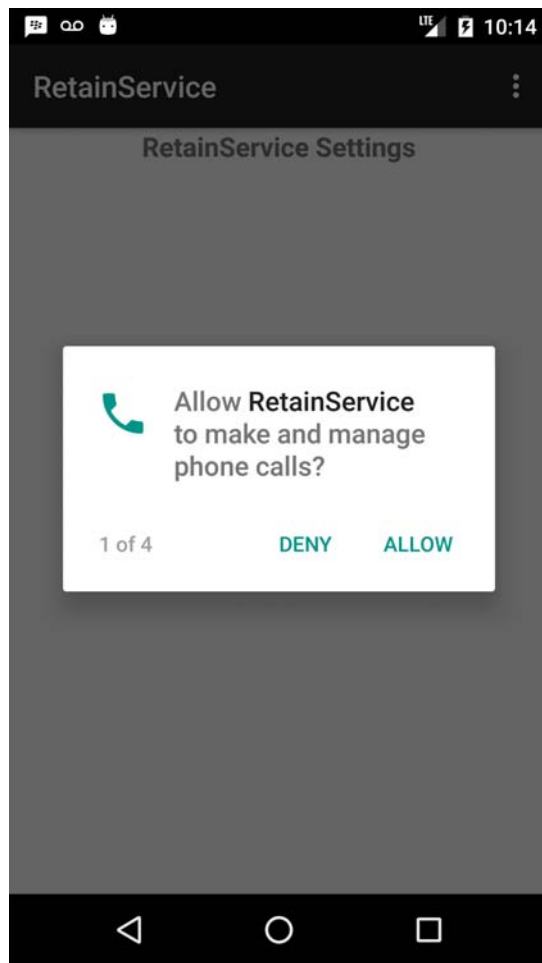
Email Registration by JSON

The RetainService application needs to be registered to a Retain Server before any data collection is done.

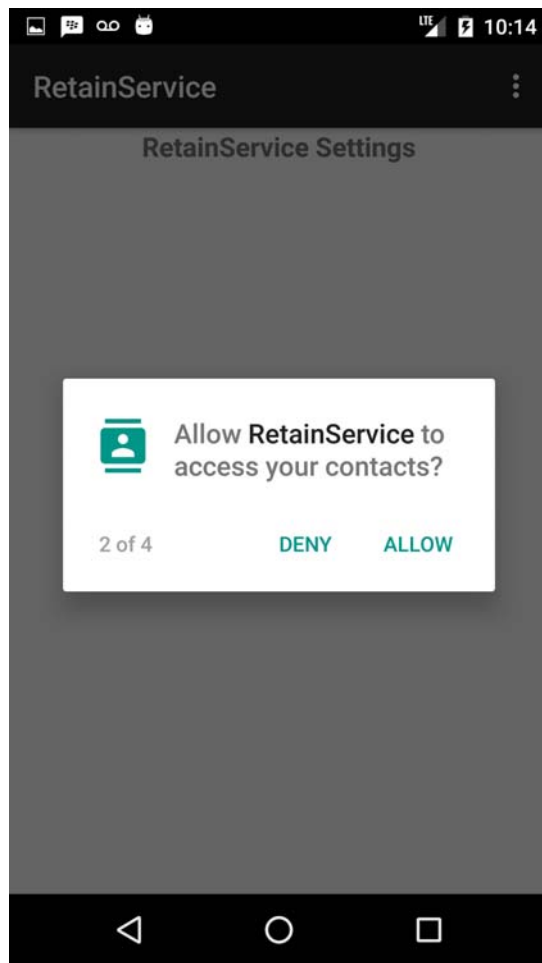
1. Install the RetainService application on your Android device.
2. Click on Open once the installation is complete.



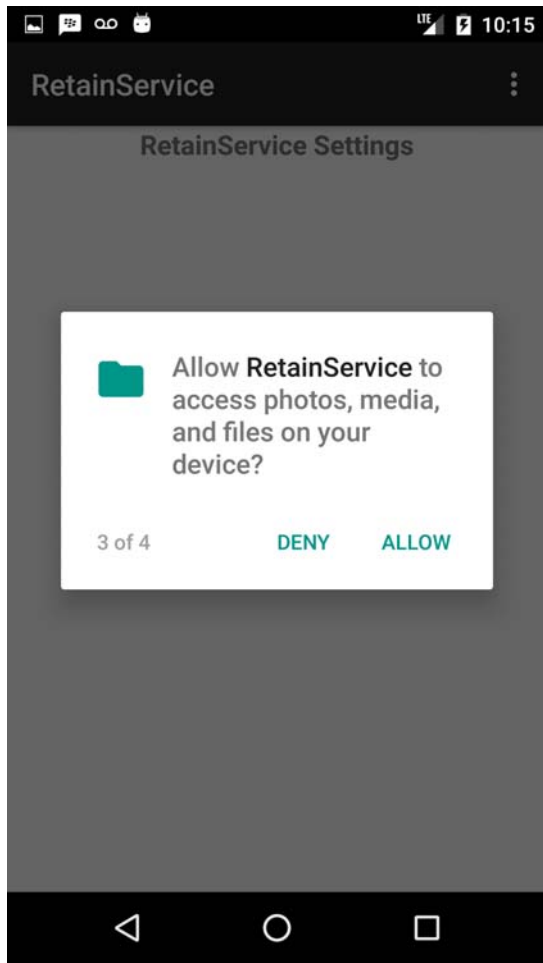
3. The application has to be launched once in order to be subscribed to notifications. The user/MDM will have to grant all rights to the app:
 - ◆ Allow RetainService to make and manage phone calls.



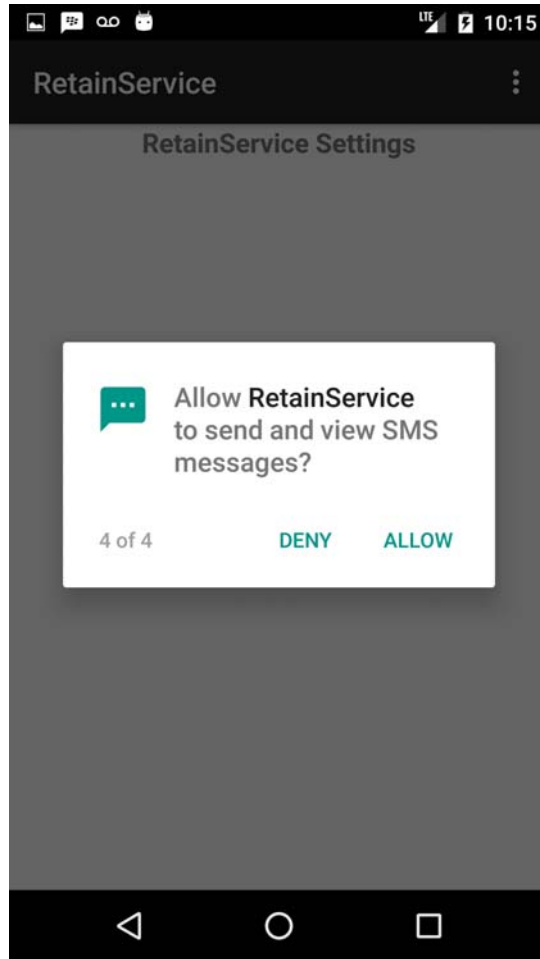
- ◆ Allow RetainService to access your contacts.



- ◆ Allow RetainService to access photos, media and files on your device.



- ◆ Allow RetainService to send and view SMS messages.



4. Close the RetainService application and make sure it is not running.
5. From your Android device, open the registration email sent by Retain.

From: <retain2_noreply@qa.gwava.com>
To: <Fathimam@qa.gwava.com>
Subject: **Installation of Retain on your mobile device**
Attachments: [RetainRegistration.json](#) (377 Bytes) [View](#)



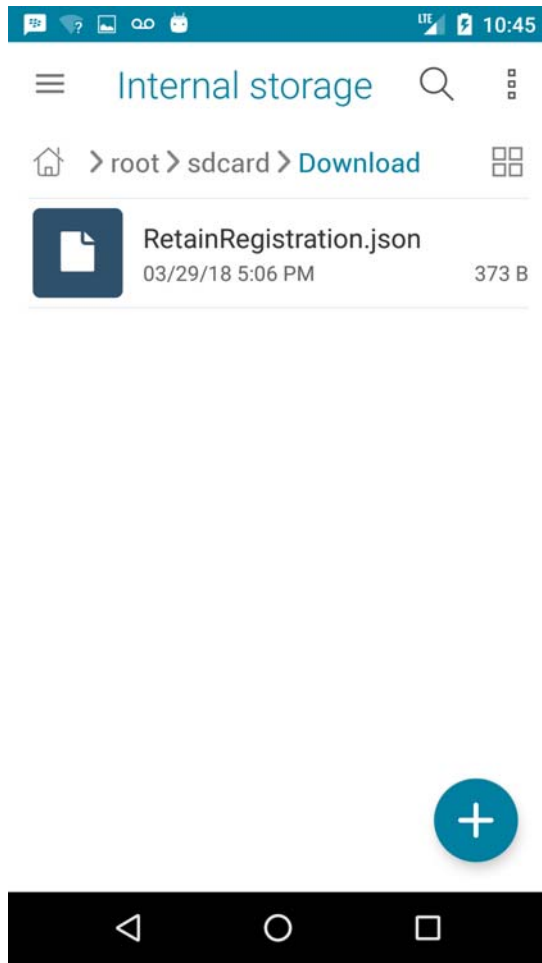
Fathima M

Your administrator has invited you to use the Retain archiving system

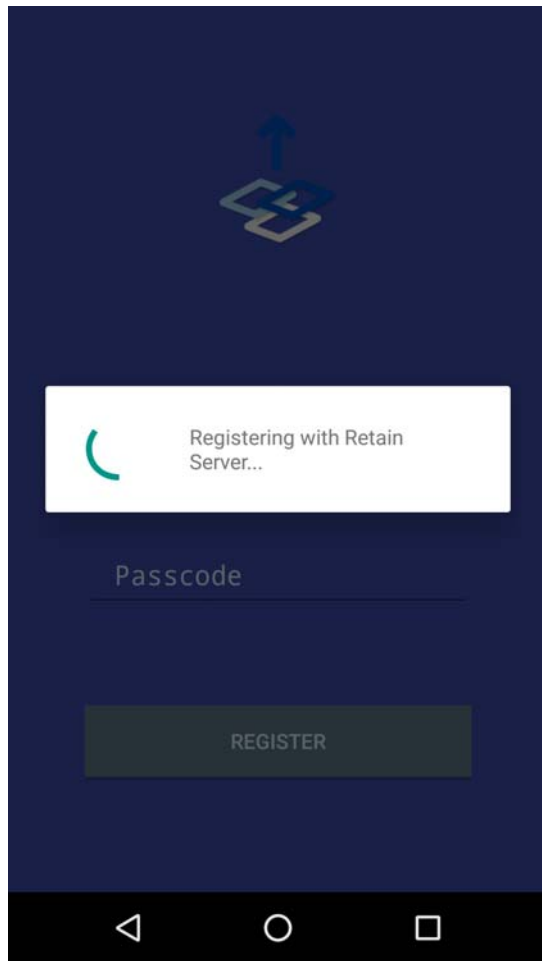
Open this email on the device and [click here](#) to activate.

<http://www.microfocus.com> • Retain

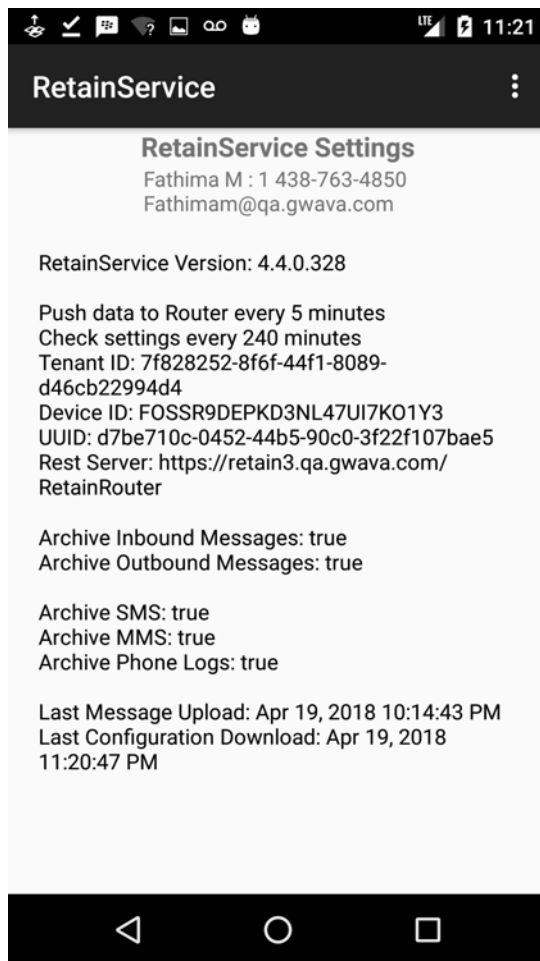
6. Place the RetainRegistration.json file inside the Download folder on your mobile device.



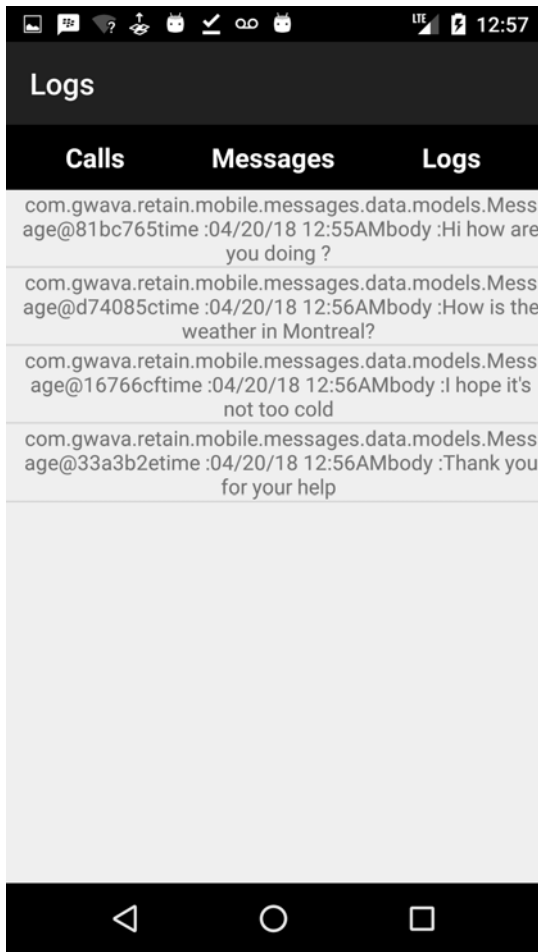
7. Open the RetainService application.

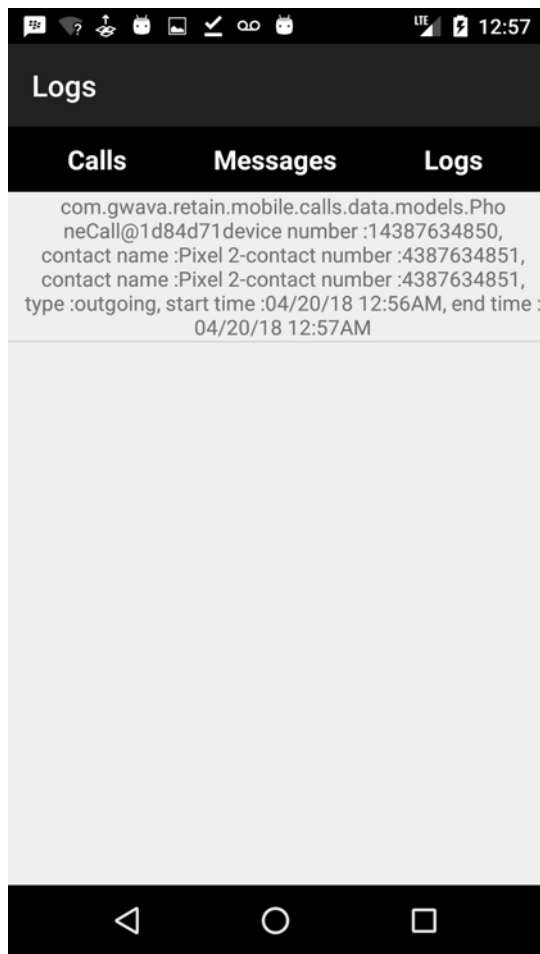


8. Upon successful registration, your main activity screen should display the Tenant ID, DeviceID, UUID and Rest Server URL.



9. You can now begin archiving your SMS/MMS messages as well as phone calls. SMS/MMS messages will appear in the logs under the Messages tab and phone calls will appear under Calls tab.





JSON File Details

The registration email will contain a RetainRegistration.json file with the registration metadata.

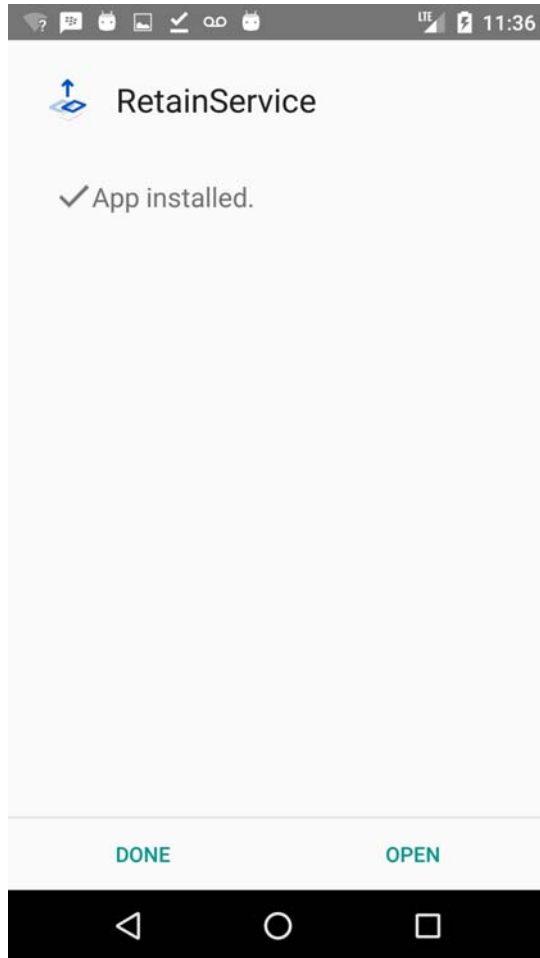
RetainRegistration.json file contains:

- ◆ *Timestamp*: Time device was add or reregistered in Retain.
- ◆ *EnrollmentCode*: This is generated when the device is created on the device management page.
- ◆ *Tenantid*: This is static number for Retain. Displayed on the mobile page from Module Configuration. It is used to identify your system during the registration and data collection processes.
- ◆ *Deviceid*: This is from the Device Management page.
- ◆ *Email*: This is from the Device Management page.
- ◆ *Name*: This is from the Device Management page.
- ◆ *RouterURL*: This is pulled from the mobile page of Module Configuration.
- ◆ *RestServer*: This is pulled from the mobile page of Module Configuration.

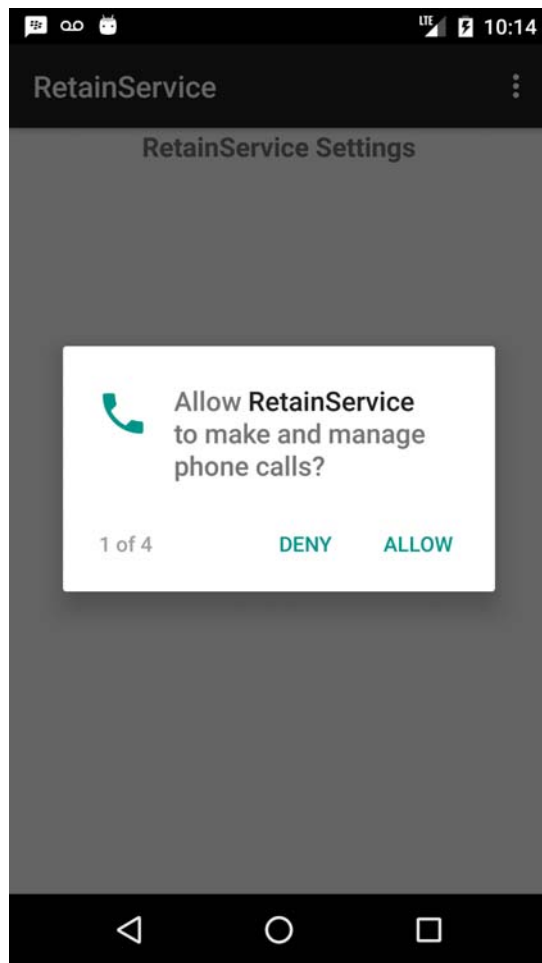
Email Registration by Link

Retain creates an email which contains an activating link. Users need to open this email and follow the link on their mobile device. The link should be activated through the Retain application on the Android device. Therefore, the RetainService application must be installed on the Android device prior to clicking the activation link.

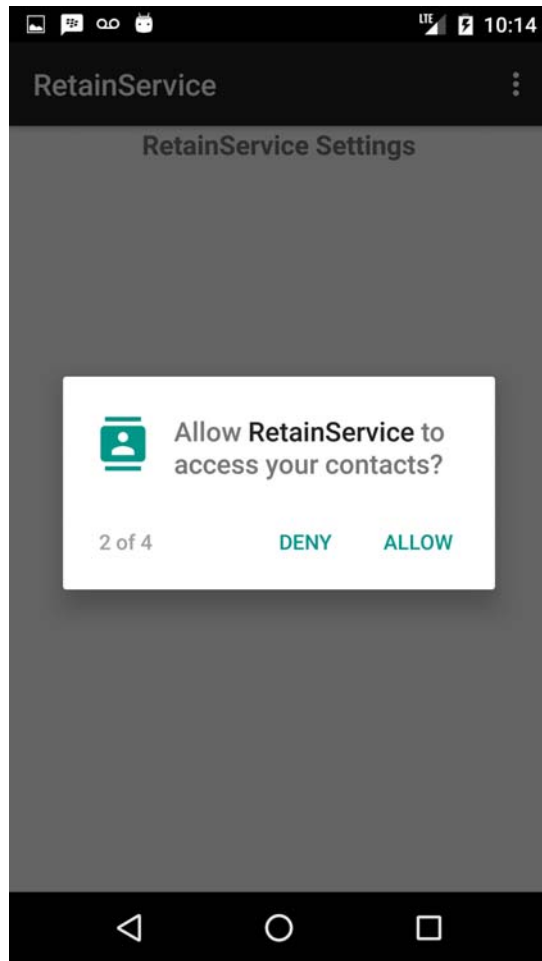
1. Install the RetainService application on your Android device.
2. Click on Open once the installation is complete.



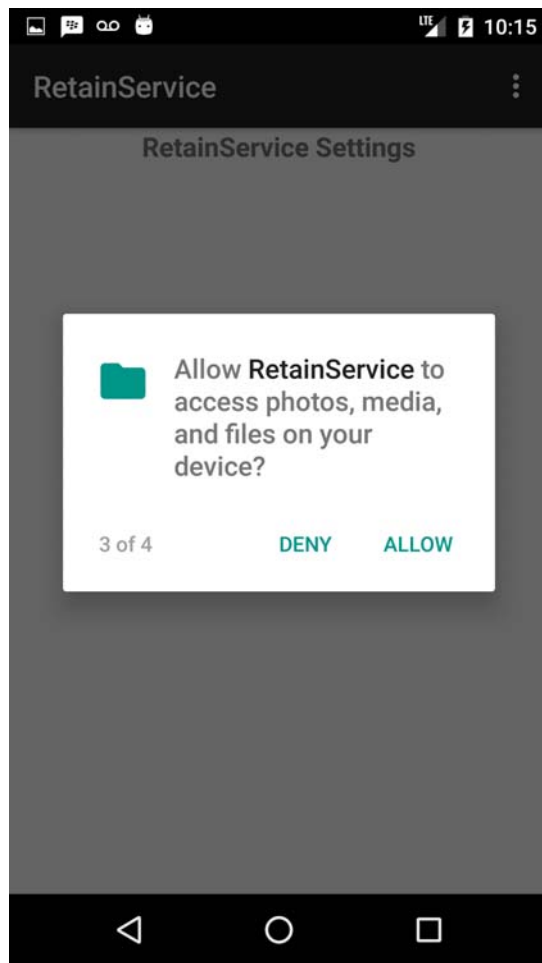
3. The application has to be launched once in order to be subscribed to notifications. The user/MDM will have to grant all rights to the app:
 - ◆ Allow RetainService to make and manage phone calls.



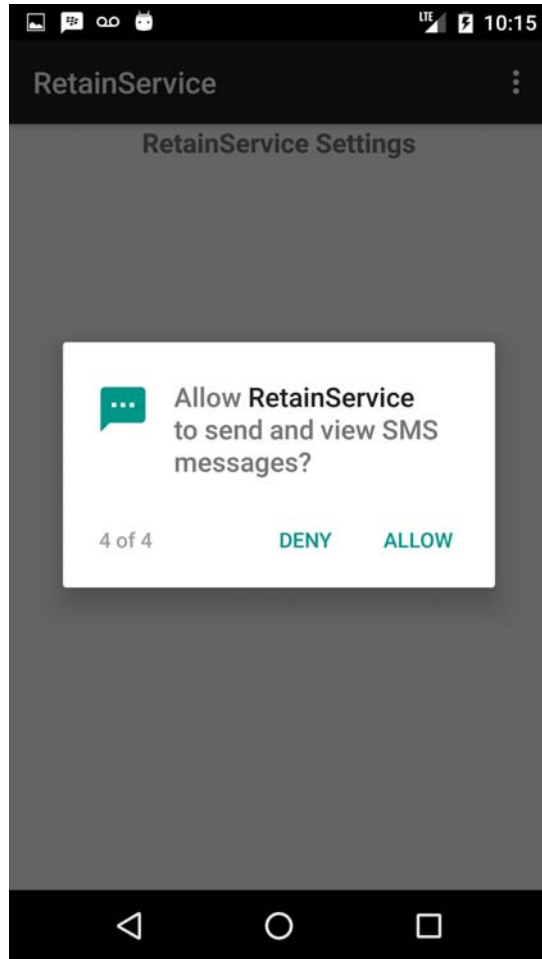
- ◆ Allow RetainService to access your contacts.



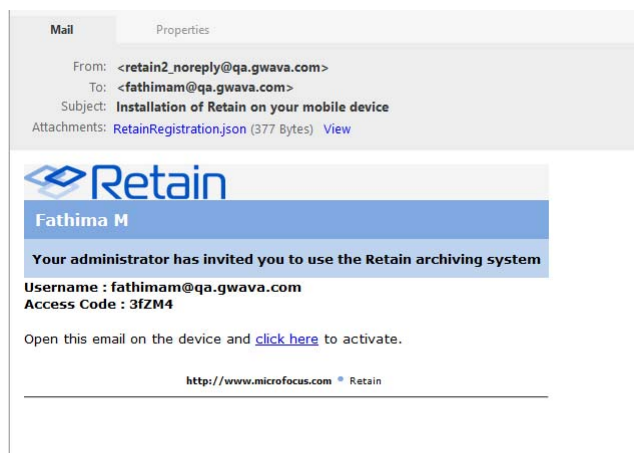
- ◆ Allow RetainService to access photos, media and files on your device.



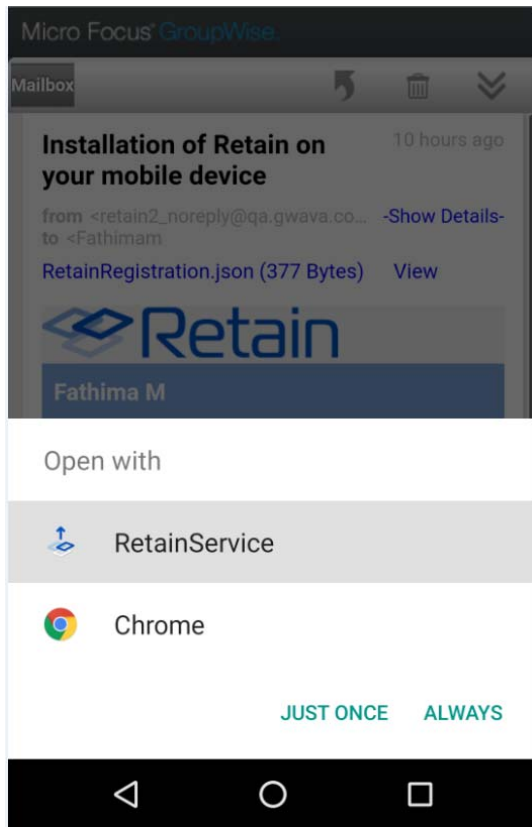
- ◆ Allow RetainService to send and view SMS messages.



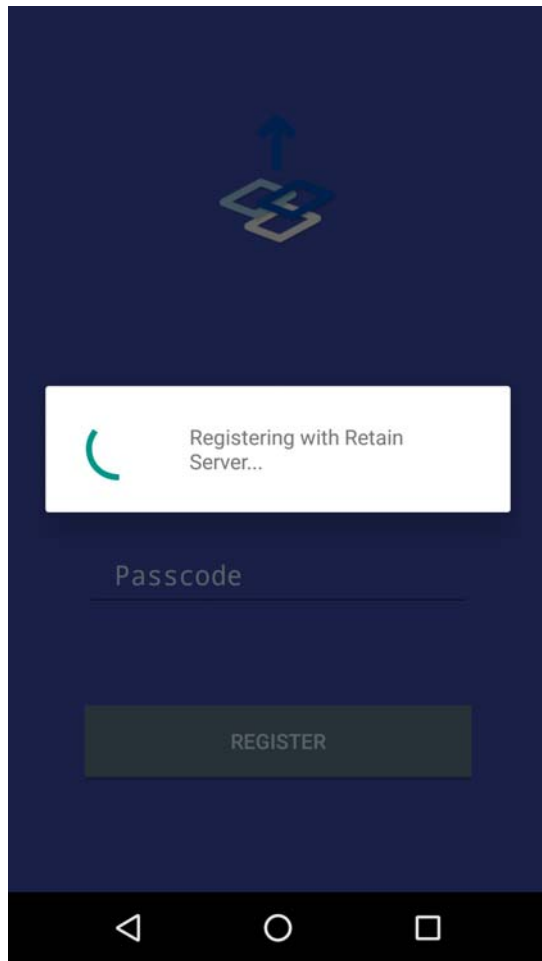
4. Close the RetainService application and make sure it is **not running**.
5. From your Android device, open the registration email sent by Retain.



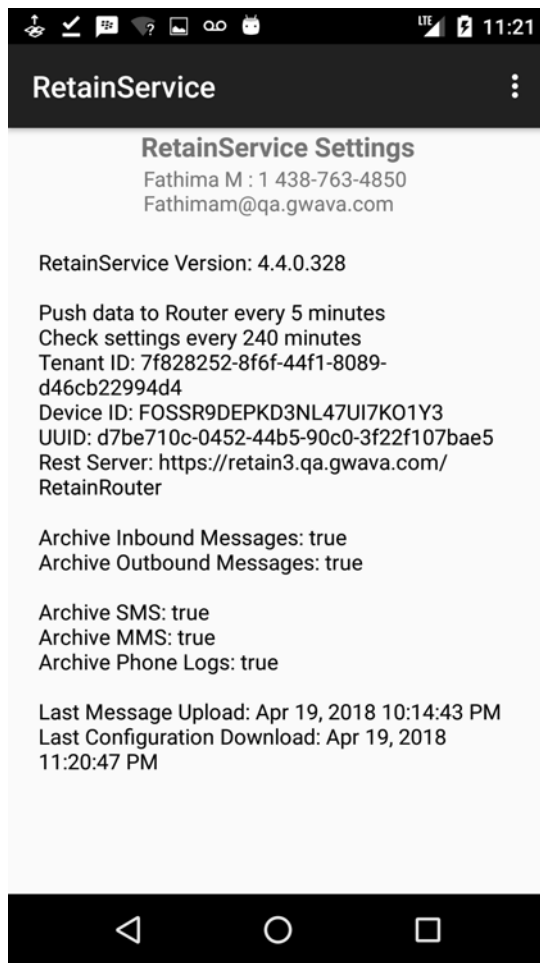
6. When prompted, click on open with RetainService and then click ALWAYS.



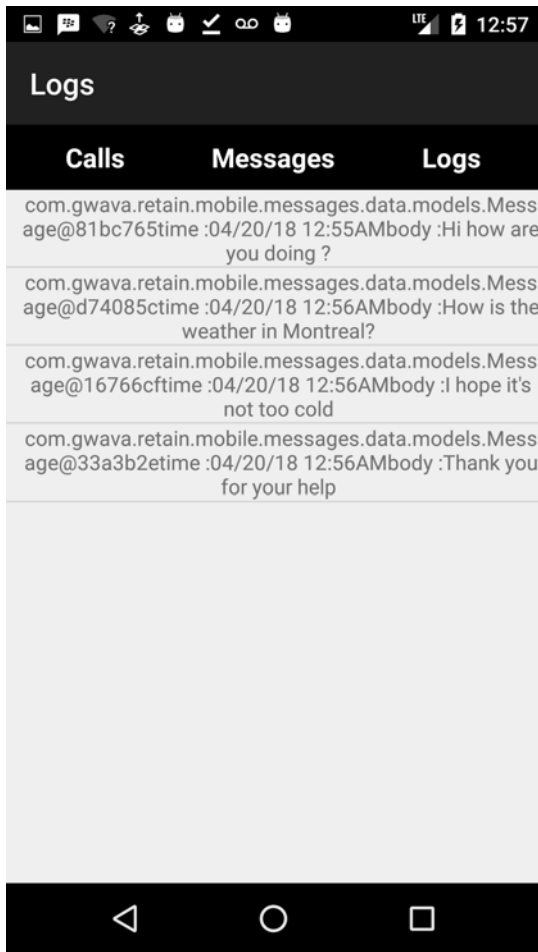
7. Open the RetainService application.

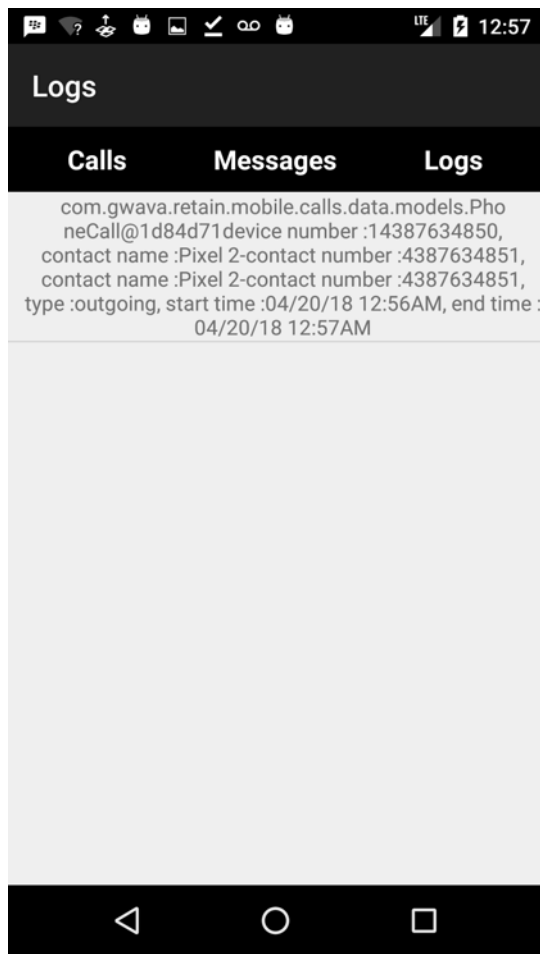


8. Upon successful registration, your main activity screen should display the Tenant ID, DeviceID, UUID and Rest Server URL.



9. You can now begin archiving your SMS/MMS messages as well as phone calls. SMS/MMS messages will appear in the logs under the Messages tab and phone calls will appear under Calls tab.





Customizing the Registration Email

An activation email will be sent to the associated email address. The activation email can be customized. The template from which the email is generated is located in the file:

```
...\RetainServer\WEB-INF\classes\config\mobile\registeruser.html
```

The template contains different variables that are distinguished by double brackets "[[]]". The below variables can be customized to adopt the email sent out by Retain to any organization:

- ◆ *Product*: This is automatically filled out with the Retain product name. Admins may set this to be the company name. This variable is used in the subject and the body of the email message.
- ◆ *Retainheader*: This is automatically filled with the Retain product logo. Admins may set this to any branding or company image file. This must be an image file.
- ◆ *GwavaURL*: Automatically filled-in with a link to the Micro Focus website.
- ◆ *GwavaURLLabel*: This determines text displayed for the GwavaURL link.
- ◆ *ProductNameURL*: This is automatically filled-in with a link to the product website.
- ◆ *ProductNameLabel*: This determines text displayed for the productNameURL link.

The below variables **cannot** be changed. This information is generated by the device management page when the device is added:

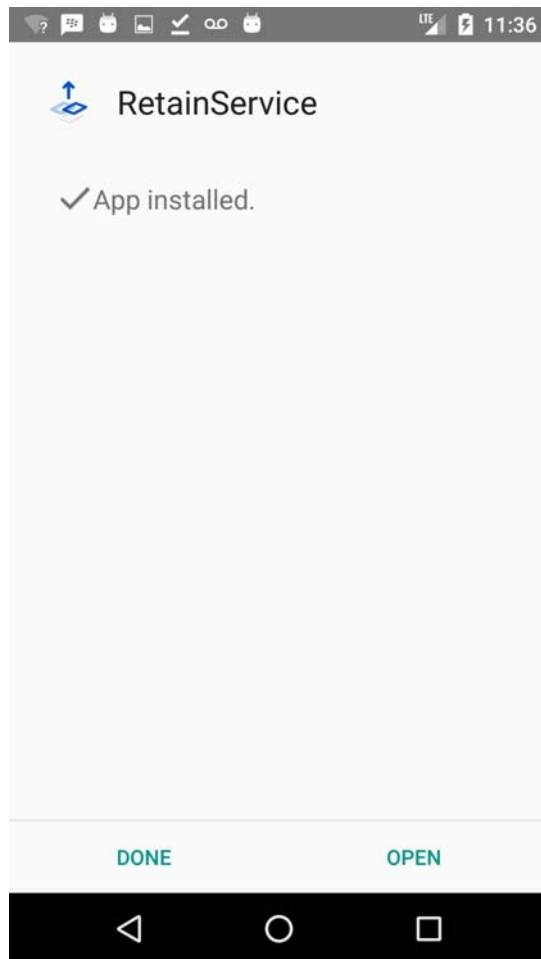
- ◆ *Name*: Each user's individual user name will be inputted here.
- ◆ *ActivateHREF*: This is an identification string, a link specific to the user and installation.
- ◆ *Username*: Applicable for cloud registration only.
- ◆ *Password*: Applicable for cloud registration only.

Automatic (IMEI) Registration

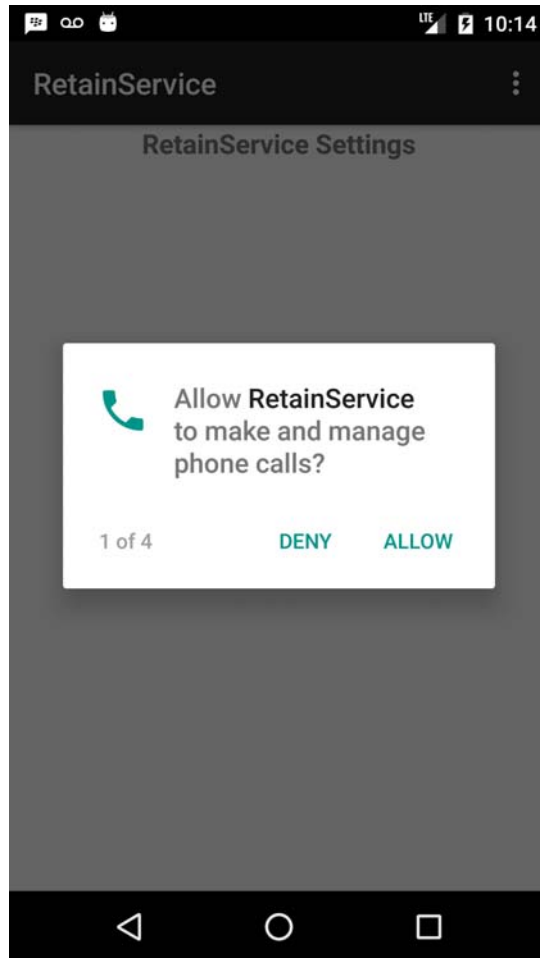
Automatic registration is done through our Cloud Registration Service (CMS). This registration method requires no end user intervention and ideally, the user should not be aware of the registration process. Automatic registration requires four mandatory values to be provided in the device management page at the time of registration: display name, email address, phone number and IMEI number.

Before attempting an automatic registration, ensure that the RetainService application is installed on the Android device.

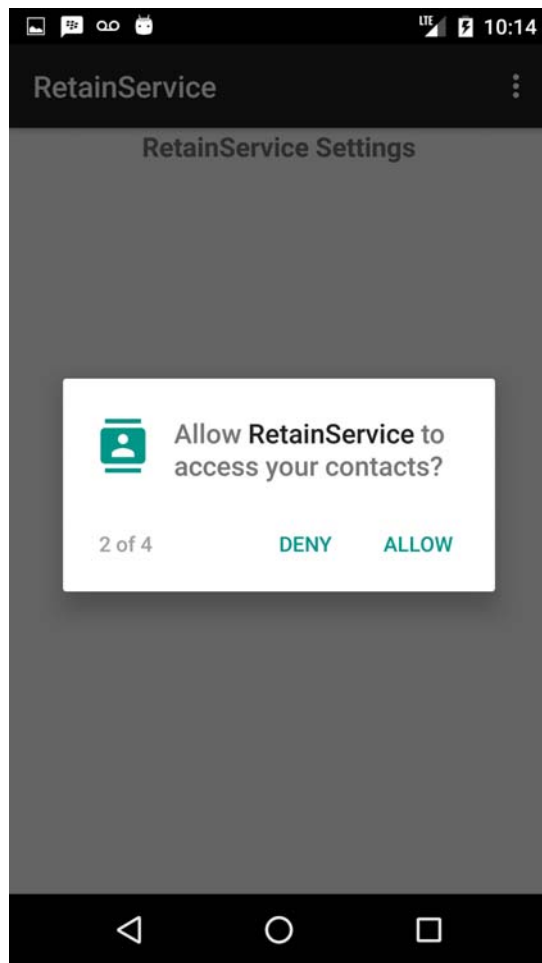
1. Install the RetainService application on your Android device.
2. Click on Open once the installation is complete.



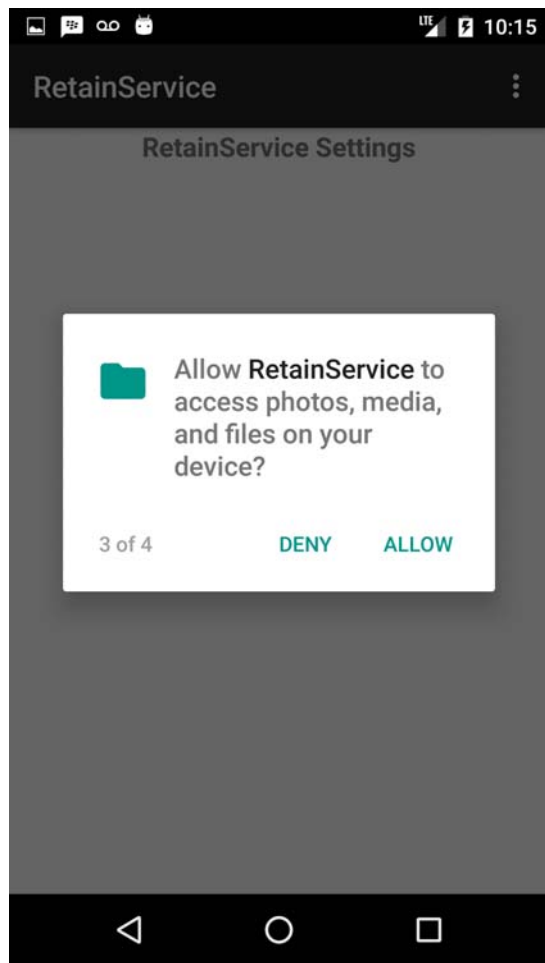
3. The application has to be launched once in order to be subscribed to notifications. The user/MDM will have to grant all rights to the app:
- ◆ Allow RetainService to make and manage phone calls.



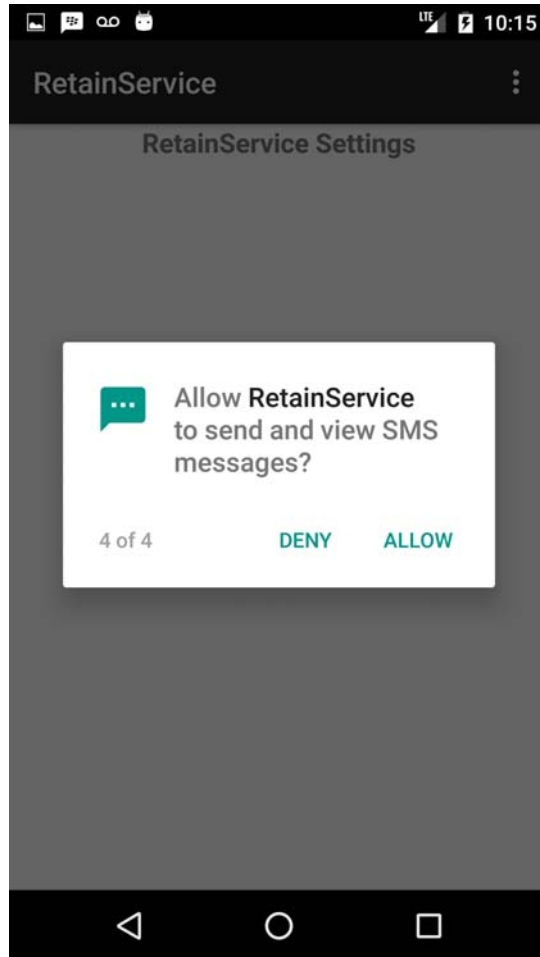
- ◆ Allow RetainService to access your contacts.



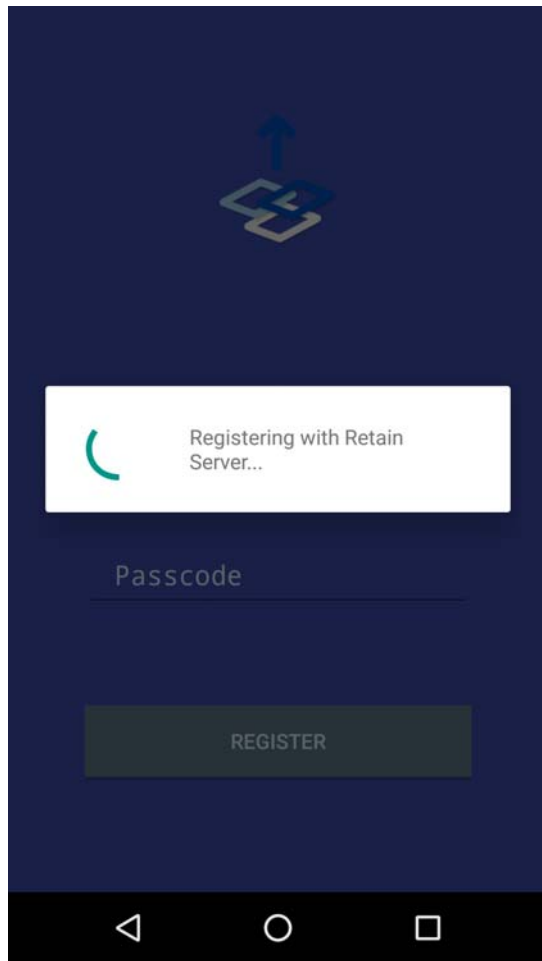
- ◆ Allow RetainService to access photos, media and files on your device.



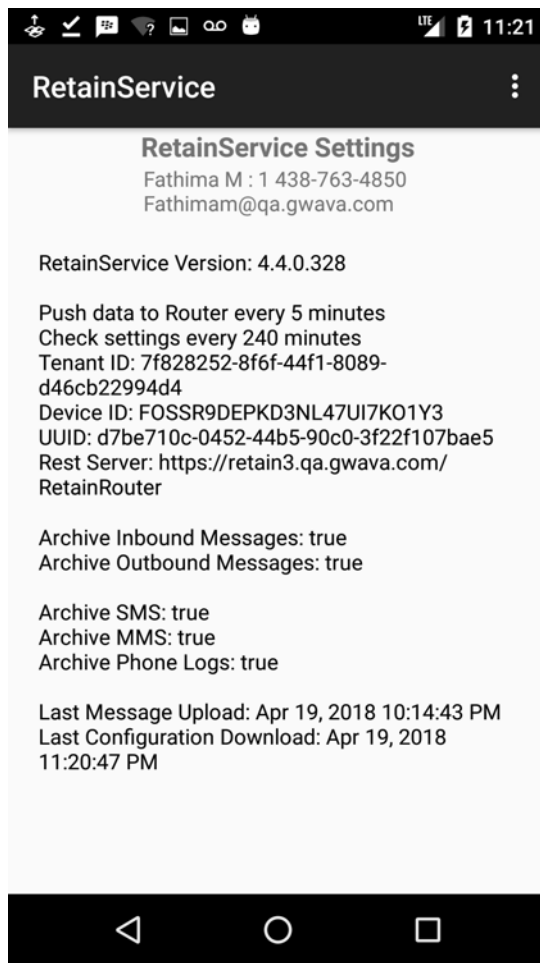
- ◆ Allow RetainService to send and view SMS messages.



4. Close the RetainService application and make sure it is not running.
5. In the Retain device management page, add a device that is eligible for automatic registration. Hence, provide display name, email address, phone number and IMEI number. For more information, refer to the device provisioning section of this document. "[Provisioning Mobile Devices](#)" on page 483
6. Open the RetainService application.



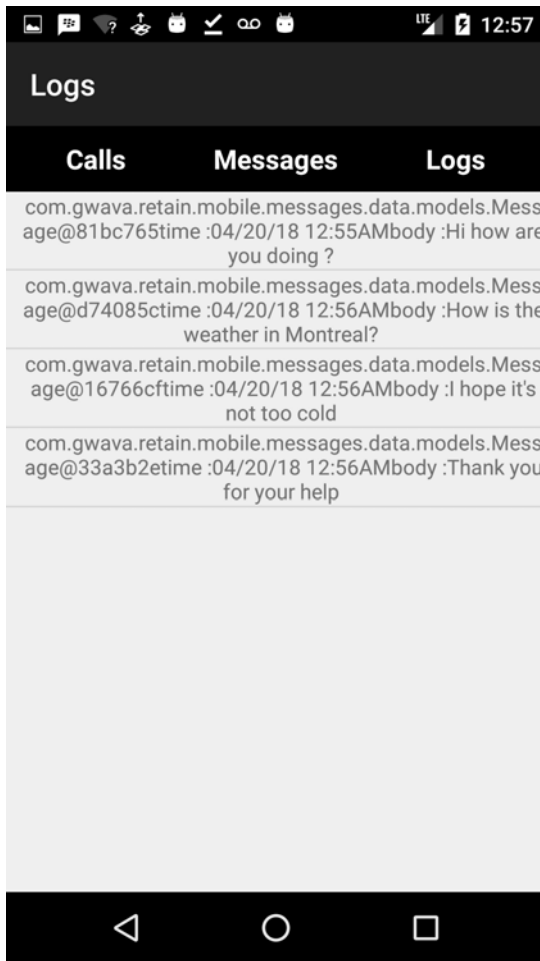
7. Upon successful registration, your main activity screen should display the Tenant ID, DeviceID, UUID and Rest Server URL.

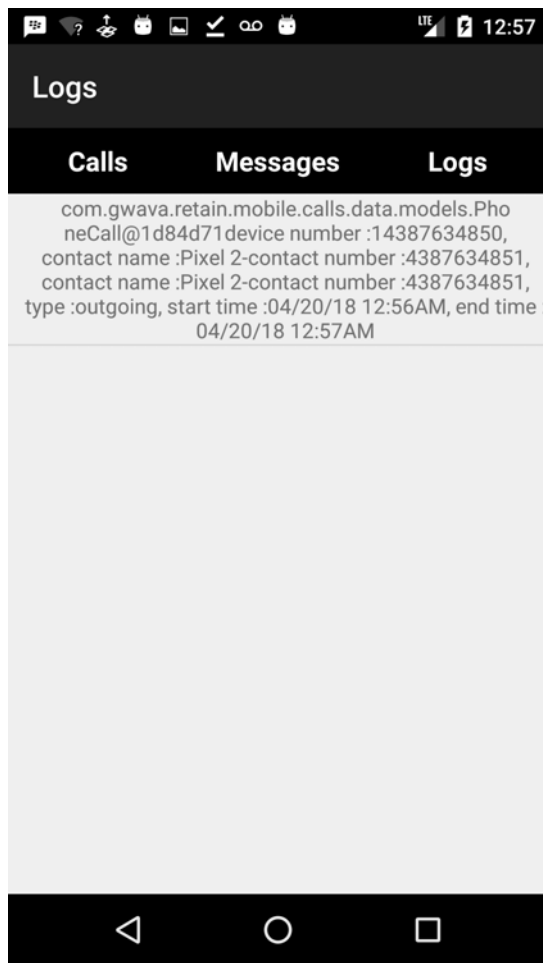


- The “Time of Registration” field will be updated for your device in the device management table of Retain.

Enrollment Code	Display Name	Email Address	Phone Number	Device ID	HPOP ID	UID	Device Added	Registration Sent	Time of Registration	FDN	IMEI
MUJRGCP	LG Optimus Diced QA Phone	lgoptmusexceed@qa.gwava.com		FT62A85Y30URH01KTD3R00VY		93f996dc-916f-4d18-b253-18fa2a9431a7	25-Apr-2018 09:35:46	25-Apr-2018 09:35:46	25-Apr-2018 10:52:29		

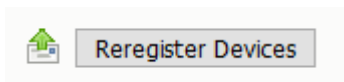
- You can now begin archiving your SMS/MMS messages as well as phone calls. SMS/MMS messages will appear in the logs under the Messages tab and phone calls will appear under Calls tab.





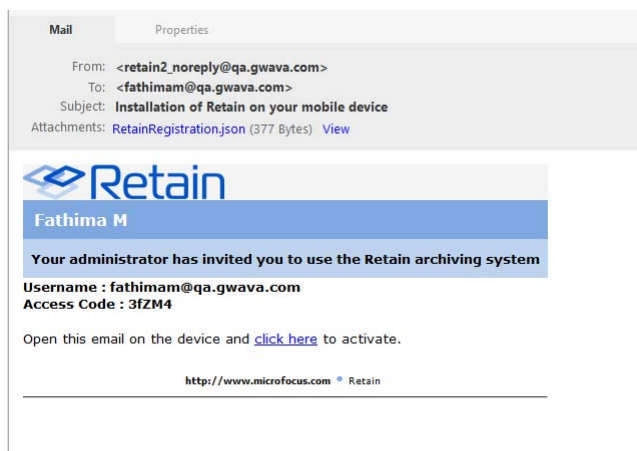
Re-registering Devices

To re-register a device, navigate to the Device Management page, select the desired device and press the *Reregister Devices* button. Once pressed, Retain will recreate the enrollment, remove the old Device ID, and resend the registration email. The end user will need to repeat the enrollment process.



NOTE: Important Note Regarding Reregistration. Regardless of the registration method initially used to register the device with Retain Server (email registration or automatic registration), once the *Reregister Devices* button is clicked, the reregistration will be done through email. The only difference is, if the device was initially provisioned to use automatic registration, the reregistration email sent will contain two new fields: a Username and an Access Code as seen below. In other words, if a device that contains values for display name, email address, phone number and IMEI number has been selected for reregistration, Retain will fall back to the email registration method. The email will always contain the embedded link, .json file and additionally, it will contain the username/access code combination for access through the RetainService UI.

The Username and Access Code provided in the reregistration email can be entered in the first page of the RetainService application to re-register the device with the Retain Server. Once done, click on REGISTER to connect to the Retain Server.



Deleting Mobile Devices

Mobile devices can be selected and deleted from Device Management enrollment by selecting one or more devices and pressing “Delete Device”.



Blackberry Device Management

Blackberry Device Management Overview

Retain supports archiving data from both Blackberry devices and devices running the BBM Enterprise system. Devices running the BBM Enterprise system can have their communication data archived through the BBM app, obtained from Blackberry.

You must first configure the Blackberry Module “Blackberry” on page 213, and Job “Blackberry Jobs” on page 326.

Device Management

Before managing devices, make sure the Mobile Profile is properly configured.

- Mobile devices can be added for existing Retain users or for a new user.
- Once added, an email with a registration .json file and link will be sent to the user.
- The user should open the email on the device and download the .json file or click the registration link.
- Once the registration completes, messages should flow from the device to the Message Router and then to Retain.
- Deleting a device will stop the message flow to Retain and un-register the device.
- Note: User provisioning options in the Mobile Module should be configured appropriately to ensure user accounts are created.

Device List

<input type="checkbox"/>	Enrollment Code	Display Name	Email Address	Phone Number	Device ID	UID	Time of Registration
<input type="checkbox"/>	CL38FBO	Aileen O'Leary	aileen@sfgw14.gwava.net		VZDZQCNTPED53JY2TYBOM6WX		
<input type="checkbox"/>	08C6SBC	Aiden Li	aiden@doc.gwava.net		I4JR4PTKQDBP808K3MZESAZ		
<input type="checkbox"/>	OIDMG8C	Leroy Jenkins	leroy@sfgw14.gwava.net		AE8GJQ516OS0MOIMJYSCTX9V		

Devices Selected: 0

Batch Device Registration

See sample for the expected structure. [Example](#)

No file selected.

The Blackberry device page displays all devices which have been registered into the Retain system. Native Blackberry and BBM Enterprise devices are displayed together. Retain registers Blackberry devices through log files from the BES server or through data sent by the device running the BBM Enterprise application. If a device is not yet registered, it is either not in the BES address book or no data has been archived for the device. The device list may be filtered for any specified content desired. In addition, devices may be selected for removal.

Blackberry Device Management

Adding Blackberry Devices

Blackberry devices are managed through the device management interface on the Blackberry page.

Device Management

Information about the BlackBerry devices known to Retain.

- One way the device information is added to Retain is during the BES Address Book synchronization.

Device List

<input type="checkbox"/>	Enrollment Code	Display Name	Email Address	PIN	Phone Number	HPOP ID	UID	Time of Registration
<input type="checkbox"/>	W8SP13K	test device display name	testdevice@mail@test.com				7028e34-f4ec-413e-922b-054b13c6933e	05-Apr-2018 13:18:06
<input type="checkbox"/>	VR7N055V	test device display name	testdevice@mail@test.com				7028e34-f4ec-413e-922b-054b13c6933e	05-Apr-2018 13:18:51
<input type="checkbox"/>	Tm2P4bPw-Wb0va3zcb6h2Wsm0rQz	Example User	user@borg.com	28EA0000	+1514631195		794f7b34-f63b-4a2c-beeb-e57877e2d8ee	28-Feb-2017 11:15:55

Devices are added automatically after an address book sync from the BES servers. You may click on columns to sort by ascending or descending, or search with the filter text field. Retain supports Blackberry Multiple Points of Presence, which has not been deployed by Blackberry Limited as of this release.

Deleting Blackberry Devices

Blackberry devices can be selected and deleted from Device Management enrollment by selecting one or more devices and pressing "Delete Device".

Device Management

Information about the BlackBerry devices known to Retain.

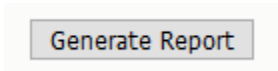
- One way the device information is added to Retain is during the BES Address Book synchronization.

Device List

Enrollment Code	Display Name	E-Mail Address	FIR	Phone Number	HPQP-ID	UID	Time of Registration
<input type="checkbox"/> W8SPF3K	test device display name	testdevice@mail@test.com				7028e34-f4ec-413e-922b-05db13cfd93e	05-Apr-2018 13:18:46
<input type="checkbox"/> VRTN055W	test device display name	testdevice@mail@test.com				7028e34-f4ec-413e-922b-05db13cfd93e	05-Apr-2018 13:18:51
<input type="checkbox"/> Tm2P4bPw-Wb0va3zcv6Bhch2Wan0rGz	Example User	user@b0rg.com	28EAC000	+15144631395		794f7b34-f63b-4a2c-baeb-e57877c2d8ee	28-Feb-2017 11:15:55

Generating Reports

The *Generate Report* button will take open a new tab or window to the Reporting and Monitoring server and open a Device Management Report configuration page.



The *Generate Report* button will open a new Reporting and Monitoring: Generate report window, where a report can be created.

Welcome to the Reporting and Monitoring Home Page

Home Report Schedule Report Manage Scheduled Reports System Monitor Mailbox Error Monitoring Maintenance

Generate report: Device Management

This report generates the device registration details by user, generation time, registration time.

Report Output Format:

Sort Rows by Column:

Descending:

Maximum Returned Rows:

Select/Unselect all actions

Actions: Registered Users Non-Registered Users

Deliver Report In:

See Reporting and Monitoring Device Management Report [“Device Management”](#) on page 460 for more information.

Litigation Hold

Litigation hold prevents a mailbox and its associated data from being deleted until the hold is released. This will prevent items from being removed from disk by Mailbox Deletion, Item Deletion or by users with the Delete Messages rights. If Data Removal is run and disk space does not increase it may be because items are under Hold. Items not removed because of a hold will be shown in the RetainServer log.

Add User

Add mailboxes by clicking on the *Add User* button and selecting user or users from the dialog box.

Litigation Hold Save Changes

Litigation Hold

If you have been granted rights to do so, you may apply or remove litigation hold on an entire users mailbox. You can apply a hold on a per item basis from the main search interface. Holds placed here will prevent ALL messages from being deleted from the relevant user listed when running a deletion manager job.

- ✗ Jayden Smith
- ✗ Alan Smithee

Add User

Add Item

Individual or groups of items may have litigation hold applied by a user with the litigation hold right, for example the admin user.

In the user's mailbox, select the item or items and click on the Litigation Hold action to apply the hold.

Litigation Hold Confidential State Delete Forward Export Restore Print

<input type="checkbox"/>	Type	From	Subject
<input checked="" type="checkbox"/>	✉	root <root@mail2.gwava.net>	The couch cover and hall drapes were blue. 26832 Tue A
<input checked="" type="checkbox"/>	✉	<DataSoong@omicrontheta.com>	FILE:The stems of the tall glasses cracked andbroke. 321

13 Searching Retain's Archives

- ◆ “Search Interfaces” on page 525
- ◆ “The Browse Tab” on page 528
- ◆ “How Retain Searching Works” on page 542
- ◆ “The Advanced Search Tab” on page 549
- ◆ “The Legacy Search Tab” on page 554
- ◆ “The Exported Items Tab” on page 555
- ◆ “The Tag Definitions Tab” on page 556
- ◆ “Options” on page 556
- ◆ “Retain Mobile Apps” on page 560

Search Interfaces

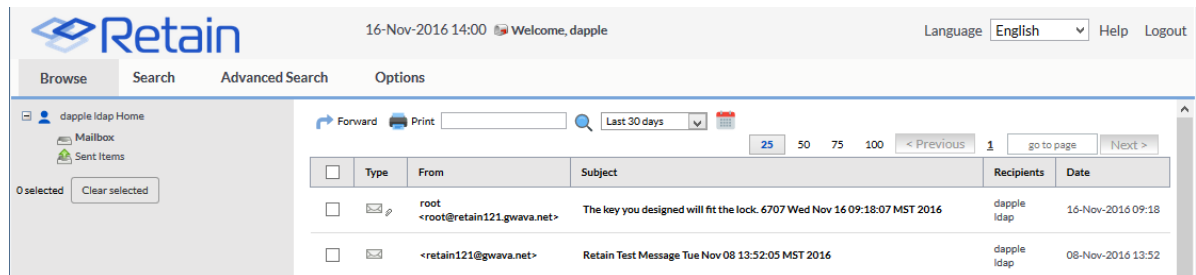
- ◆ “Retain Web Interface” on page 525
- ◆ “View Message Interface” on page 526

Retain Web Interface

The Retain web search interface is the core of the information retrieval system for the Retain archive. Administrators, auditors, and users search for what they want and can view, print, export, or forward the results. General users have the right to view their own archive, and will immediately be brought to the Retain mailbox interface, but limited to their own account.

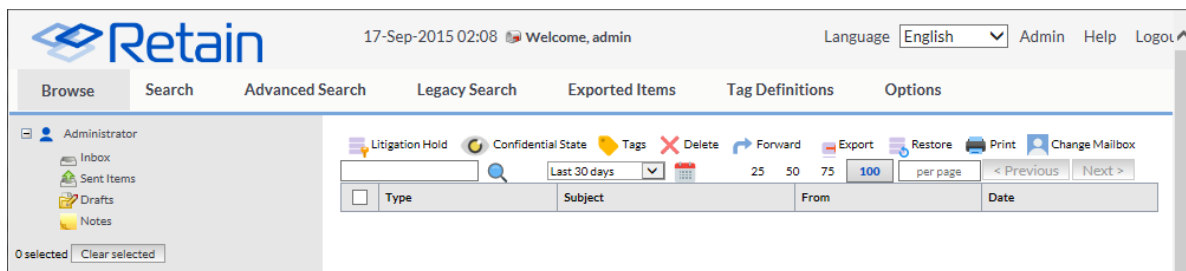
Retain takes a snapshot of each mailbox as an archive is made. Each message is stored where it was found at the time it was archived.

A normal user will be directed to their Retain Mailbox. Users by default have the rights to View and Save attachments, and Forward and Print messages.



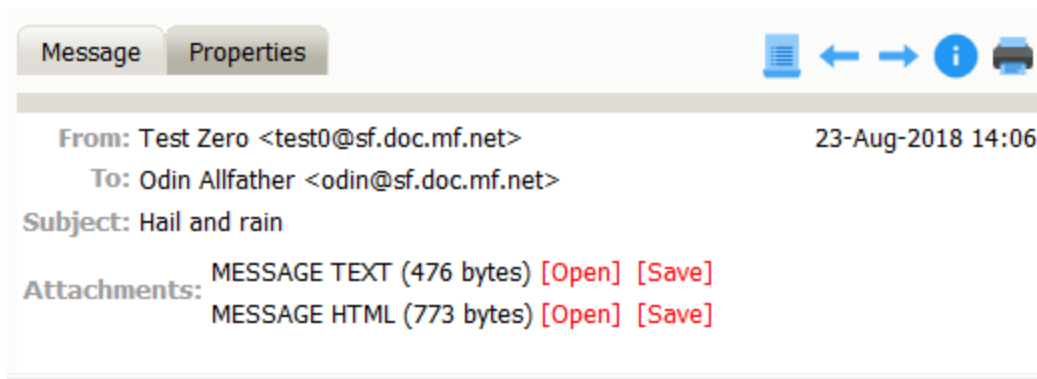
If a user has at least one administrative right assigned, the user will see the Retain Management console on login, and must select the ‘Search Messages’ option from the navigation window in order to access the archive.

The full administrator interface opens with the following tabs, users may or may not have access to all of these depending on the rights assigned by the admin:



View Message Interface

You may double-click on a message to view the contents. From the Message tab you may open (if the proper viewing agent is installed) or save the message or attachments to disk.



```
Remember how free clouds are. They just lay around in the sky
all day long. Don't be bashful drop me a line.
We don't have to be concerned about it. We just have to let it
fall where it will.

There are no limits in this world. The least little bit can do
so much. See how easy it is to create a littl
e tree right in your world. We'll have a super time. We don't
really know where this goes - and I'm not sure
we really care. It's a super day, so why not make a beautiful
sky?
```

The Properties tab shows various properties about the message.

Message

Properties



From: Test Zero <test0@sf.doc.mf.net>

23-Aug-2018 14:06

To: Odin Allfather <odin@sf.doc.mf.net>

Subject: Hail and rain

Attachments: MESSAGE TEXT (476 bytes) [\[Open\]](#) [\[Save\]](#)
MESSAGE HTML (773 bytes) [\[Open\]](#) [\[Save\]](#)

Core

Item Type: Mail

Box Type: Received

Owner UID: E1BC2D80-02A7-0000-816D-796437323664

Parent Node: 48379

Read: no

Confidential: no

Indexing: [EMail fully indexed.]

Created: 23-Aug-2018 14:06:12

Delivered: 23-Aug-2018 14:06:13

Stored: 23-Aug-2018 14:09:03

Expiration Date: 31-Dec-1969 17:00

Tags: (none)

Path:

Additional Properties

emailSystem: gw

internet: false

postoffice: PO

senderUUID: EC64D680-1803-0000-816D-796437323664

abSystem: gw

domain: MyDomain

Audit

Date	Info	User	Mailbox	IP Address	Action	NodeID
28-Aug-2018 13:26	Hail and rain	admin	Odin	137.65.60.224	Viewed	48379

About Dates Stored in Retain

The Created Date is set by the sending messaging system and is stored in the message header, which Retain reads and stores.

The Delivered Date is set by the receiving messaging system and is stored in the message header, which Retain reads and stores.

The Stored Date is set by Retain when the message is stored in Retain.

The Expiration Date may set by Retain, if that feature is set as part of Job | Core Settings.

The Browse Tab

- ◆ [“Exchange” on page 530](#)
- ◆ [“GroupWise” on page 530](#)
- ◆ [“Social Media Governance” on page 530](#)
- ◆ [“Google Apps” on page 530](#)
- ◆ [“Blackberry” on page 531](#)
- ◆ [“CellTrust” on page 531](#)
- ◆ [“Mobile” on page 531](#)
- ◆ [“GBS Notes” on page 531](#)
- ◆ [“Toolbar” on page 532](#)

The Browse tab immediately grants access to the selected mailbox. Individual users will only see their own mailbox, while users with the administrator right to search all mailboxes will have the option to change mailboxes to another user.

Retain is an archiving solution not a message management system. All items are stored in the location Retain found them in the production system and cannot be moved.

To change to a different mailbox, select the ‘Change Mailbox’ button in archive toolbar. Once clicked, the ‘Select Mailbox’ dialog will open.

Criteria

First Name

System Show only users Show only recently cached items

Currently Selected

Stubby User (69890680-14F9-0000-B519-1BB8B426358D)

	First	Last	Mail Server	Mailbox	Dept.	Type	Domain
<input checked="" type="radio"/>	amandeepk		SocialMessage	amandeepk@EDIR4		U	SocialMessage
<input type="radio"/>	amandeepk		SocialMessage	amandeepk@NBLOCAL		U	SocialMessage
<input type="radio"/>	amandeepk		SocialMessage	amandeepk@NBLOCAL		U	SocialMessage
<input type="radio"/>	colinb		SocialMessage	colinb@NBLOCAL		U	SocialMessage
<input type="radio"/>	ericm		SocialMessage	ericm@EDIR4		U	SocialMessage
<input type="radio"/>	james		SocialMessage	james@EDIR4		U	SocialMessage
<input type="radio"/>	james		SocialMessage	james@NBLOCAL		U	SocialMessage

The Select Mailbox dialog asks for specific information. The Select which mailbox you want to see by clicking on its radio button and clicking OK.

When searching for a mailbox, the system of the mailbox must be selected as mailboxes from different systems may have the same user name or criteria. Select which mail system the desired user belongs to, specify any further criteria, or leave the criteria blank to display all possible mailboxes from that system.

(If Retain for Social Messaging is set to anonymous user, all Social Messaging data will be contained under the single user '?@?', and separate user names and pertinent information is contained in the 'from' dialog. Otherwise, individual user accounts will be displayed.)

If the search results are extensive, the system will have a 'Next' or 'Previous' button at the bottom of the search results window, which displays the next set of results.

Refine search parameters to reach a manageable search result.

In Retain, you can only browse one mailbox at a time. To search multiple mailboxes simultaneously, use the search function.

After selecting a mailbox, click 'Ok' to load that mailbox into the viewer.

How the browse interface appears will depend on the email system being archived.

Exchange

17-Sep-2015 02:08 Welcome, admin Language English Admin Help Logout

Browse Search Advanced Search Legacy Search Exported Items Tag Definitions Options

c0peve01

- Inbox
- Sent Items
- Calendar
- Archive
- Junk Email
- Drafts
- Deleted Items

0 selected Clear selected

Litigation Hold Confidential State Tags Delete Forward Export Restore Print Change Mailbox

Last 30 days

25 50 75 100 per page < Previous Next > go to page

Type	From	Subject	Recipients	Date
No items found between 18-Aug-2015 02:21 and 17-Sep-2015 02:21.				

GroupWise

17-Sep-2015 02:08 Welcome, admin Language English Admin Help Logout

Browse Search Advanced Search Legacy Search Exported Items Tag Definitions Options

User Eight Home

- Mailbox
- Sent Items
- Calendar
- Trash

0 selected Clear selected

Litigation Hold Confidential State Tags Delete Forward Export Restore Print Change Mailbox

Last 30 days

25 50 75 100 per page < Previous Next >

Type	Subject	From	Date
------	---------	------	------

Social Media Governance

05-Mar-2019 15:25 Welcome, admin Language English Admin

Browse Search Advanced Search Exported Items Tag Definitions Options

Steve Genovese

- Social Media Governance
- WhatsApp
- Facebook
- Instagram
- Twitter

0 selected Clear selected

Litigation Hold Confidential State Delete Forward Export Restore Print Change Mailbox

Last 30 days

25 50 75 100 per page < Previous Next > go to page

Type	From	Subject	Recipients	Date
From phone	Steve Genovese	From phone	Bob Talmán	28-Jan-2019 13:14
from desktop	Steve Genovese	from desktop	Bob Talmán	28-Jan-2019 13:13
	Steve Genovese	You can make great returns now! Guaranteed! See www.Rt.com.	Bob Talmán	25-Jan-2019 17:43
	Bob Talmán	Outstanding!	Steve Genovese	25-Jan-2019 14:39
	Steve Genovese	How was the egg nog?	Bob Talmán	25-Jan-2019 14:26
	Bob Talmán	Bring on the egg nog!	Steve Genovese	13-Dec-2018 11:06
	Bob Talmán	UGH!! I hate Fruit Cakes!	Steve Genovese	13-Dec-2018 11:09
	Steve Genovese	It was a big hit last year!	Bob Talmán	13-Dec-2018 10:54
	Steve Genovese	I'm bringing my Foculake that I make every year!	Bob Talmán	13-Dec-2018 10:53

Google Apps

01-Dec-2015 17:53 Welcome, admin Language English Admin Help Logout

Browse Search Advanced Search Legacy Search Exported Items Tag Definitions Options

Carsten Piske

- Work In Progress
- Bob
- Carsten
- Colin
- Stuff from Gert
- Mail

0 selected Clear selected

Litigation Hold Confidential State Delete Forward Export Restore Print Change Mailbox

Last 30 days

25 50 75 100 per page < Previous 1 2 go to page Next >

Type	From	Subject	Recipients	Date
	Bob Fisher	attachment from google drive	Carsten Piske	01-Dec-2015 17:46
	Colin Bretagne	hierogram: Dictionary.com Word of the Da	Carsten Piske	01-Dec-2015 17:46
	Colin Bretagne	Ex- President of India dies last night	Carsten Piske	01-Dec-2015 17:46
	Colin Bretagne	Credit Card Information	Carsten Piske	01-Dec-2015 17:46

Blackberry

01-Dec-2015 17:58 Welcome, admin

Language English Admin Help Logout

Browse Search Advanced Search Legacy Search Exported Items Tag Definitions Options

BlackBerryZ10
 BlackBerry
 SMS
 MMS
 Phone Calls
 BB PIN
 BB Messages

0 selected Clear selected

Litigation Hold Confidential State Delete Forward Export Restore Print Change Mailbox

Last 3 Years

Type	From	Subject	Recipients	Date
456		Your My.T-Mobile.com temporary password	BlackBerryZ10	01-Jun-2015 17:13
156		Free T-Mobile Msg: Unlimited web include	BlackBerryZ10	01-Jun-2015 16:58
156		Free T-Mobile Msg: Welcome to Canada Un	BlackBerryZ10	01-Jun-2015 16:58

CellTrust

01-Dec-2015 17:48 Welcome, admin

Language English Admin Help Logout

Browse Search Advanced Search Legacy Search Exported Items Tag Definitions Options

Jared Allen
 SecureLine
 SMS

0 selected Clear selected

Litigation Hold Confidential State Delete Forward Export Restore Print Change Mailbox

Last 30 days

No items found between 01-Nov-2015 15:47 and 01-Dec-2015 15:47.

Mobile

19-Jul-2016 12:00 Welcome, admin

Language English Admin Help Logout

Browse Search Advanced Search Exported Items Tag Definitions Options

Tong Niu
 Mobile
 Messages
 Phone Calls

0 selected Clear selected

Litigation Hold Confidential State Tags Delete Forward Export Restore Print Change Mailbox

Last 30 days

Type	From	Subject	Recipients	Date
Text 3	Tong Niu	Text 3	Alan Matt	19-Jul-2016 13:00
Text 2	Tong Niu	Text 2	Alan Matt	19-Jul-2016 12:45
Text for fresh install of build 67	Tong Niu	Text for fresh install of build 67	Alan Matt	19-Jul-2016 12:42
Text for fresh install of build 67	Tong Niu	Text for fresh install of build 67	Alan Matt	19-Jul-2016 12:42
Last text on the sd	Tong Niu	Last text on the sd	Alan Matt	19-Jul-2016 11:37

GBS Notes

19-Dec-2016 16:21 Welcome, admin

Language English Admin Help Logout

Browse Search Advanced Search Exported Items Tag Definitions Options

Alan Smithos
 Projects
 Marketing

0 selected Clear selected

Litigation Hold Confidential State Delete Forward Export Restore Print Change Mailbox

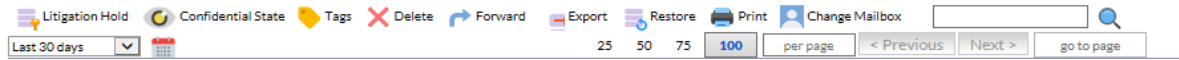
Last 30 days

Type	From	Subject	Recipients	Date
Re: New message that will test the REST collector key	Juliet Tango	Re: New message that will test the REST collector key	Alan Smithee	15-Dec-2016 18:22
New message that will test the REST collector key	Alan Smithee	New message that will test the REST collector key	Juliet Tango	15-Dec-2016 18:20

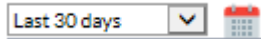
Toolbar

The toolbar has many different tools. Which tools are visible to each user will depend on what user rights they have been granted.

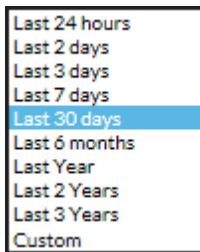
You will first have to select one or more items with the checkbox before these will function.



Date range



Pay special attention to the date range tool. Only messages which fall into this specified time frame will be displayed. The date range can be any of the drop-down options or it can be a custom range as selected through the 'custom' calendar button.



Last 24 hours

Last 2 days

Last 3 days

Last 7 days

Last 30 days

Last 6 months

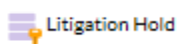
Last year

Last 2 years

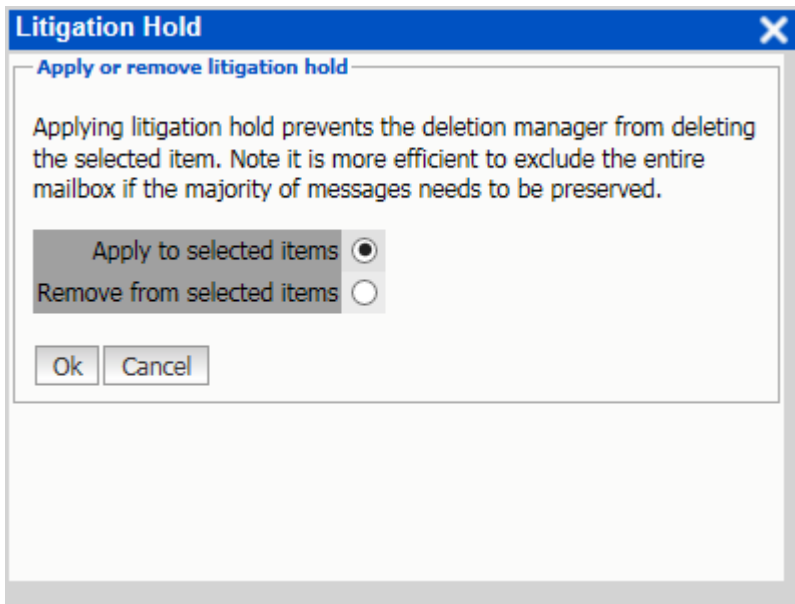
Last 3 years

Custom

Litigation hold



The Litigation hold button applies the litigation hold property to messages and items. Items with a litigation hold cannot be removed from the system. To apply or remove the litigation hold from items in the archive, a user must have the litigation hold right.



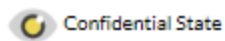
To apply or remove a litigation hold, first select the desired item or items, then click the 'Litigation Hold' button to open the litigation hold window.

Select whether to apply or remove the hold. Select 'Ok' to continue.

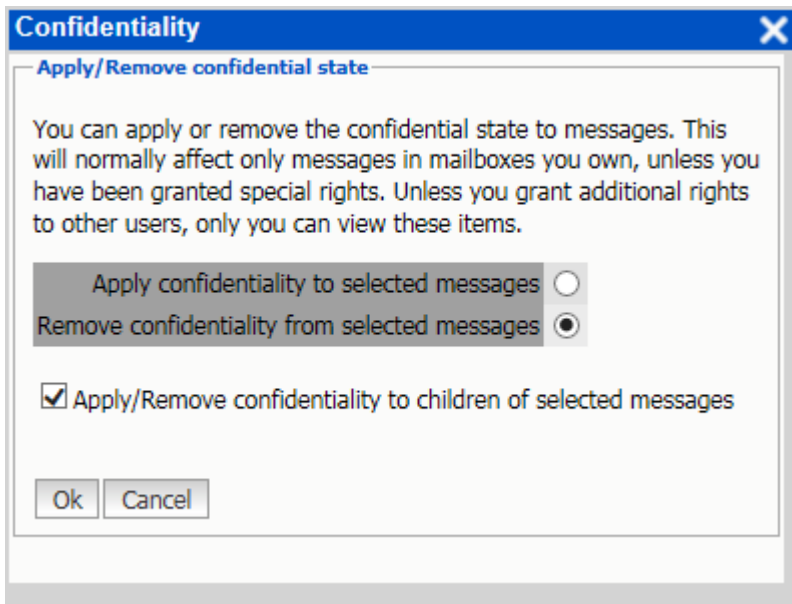
Items which have a hold placed on them display a miniature hold icon next to the message icon.



Confidential State



Toggles the confidential state. Confidential items are only visible with Admin rights, or to those specified by the user under the *Options | Confidential Exceptions* tab. Items which a user has marked in their box as Confidential may be viewed by other users who have the 'See Confidential Items [other mailboxes]' admin right.



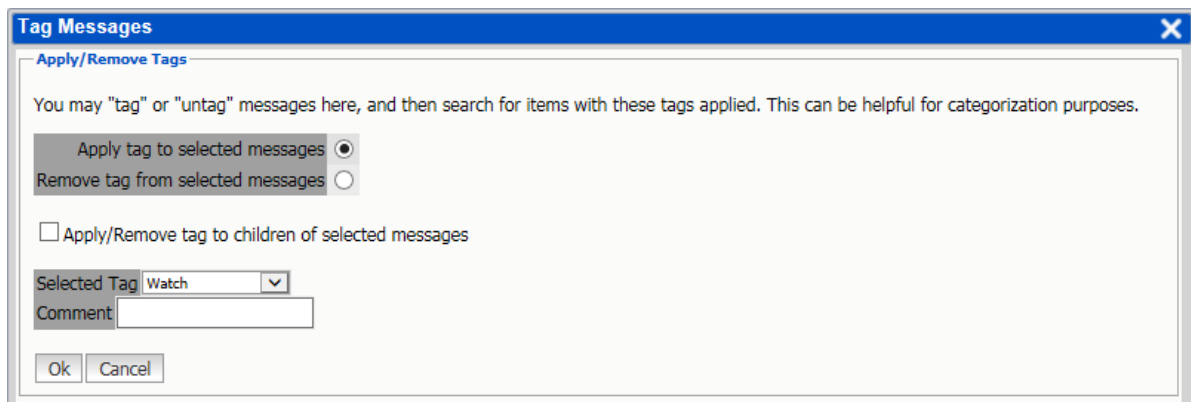
To apply a confidential state to an item, select the item then select the 'Confidential State' button. Items which have been marked confidential display the confidential icon below the message icon.



Tags



The tags icon allows the application or removal of tags from items. This is only visible with appropriate rights. Tags are an informative note which can be attached to any data item in the search messages interface. To apply a tag, select an item and click the 'Tags' icon.



Select the tag which is to be applied. All tags open to use by the user will be displayed. There is no limit to the amount of tags an item may have. An additional comment may be added to the tag for the specific item or items selected. Additionally, any associated items or messages, 'children', such as all messages in a thread, may also be selected for tag creation. Tags must be created previous to applying them to messages. See the Tag Definitions tab for more info.

Messages with a tag applied to them, either a global or personal, will show a miniature tag icon next to the message or item icon.

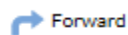
Delete



The delete option allows users to mark items for removal from personal archives. This right is only visible with rights. To delete an item, highlight the item and then select the 'Delete' button.

The Delete right is not a default right, it must be specifically added to users or groups. Messages or data marked to be deleted will not necessarily be immediately removed, but will be queued for deletion. The actual item removal will depend on server availability and the amount of items queued for deletion.

Forward



The Forward option allows users to forward messages out of their archive to a specified address. This right is only visible to users who have the Forward Messages right. The SMTP server must be setup by the admin user under Server Configuration | Notification for this to function successfully.

Select a message or messages and then the 'Forward' button. Specify the address or comma-separated addresses the messages should be forwarded to, a desired subject, and any comments. Finally, select the 'Forward Messages' button and Retain will send the message via SMTP. This is a default user right.

There will also be a notification entered in your Notification Center found under "Welcome, [username]" at the top center of the Retain Mailbox web console.

Notification Center


Refresh

Mark All Read

Delete All

When you perform actions such as forwarding, exporting, and restoring, you will receive notification messages here to let you know that the task has completed, and provide some information as to the success or failure of the task.

Today

 PDF: Retain Export Job "Export Today" Completed 15:51

 FORWARD: Mail forwarding complete 15:49

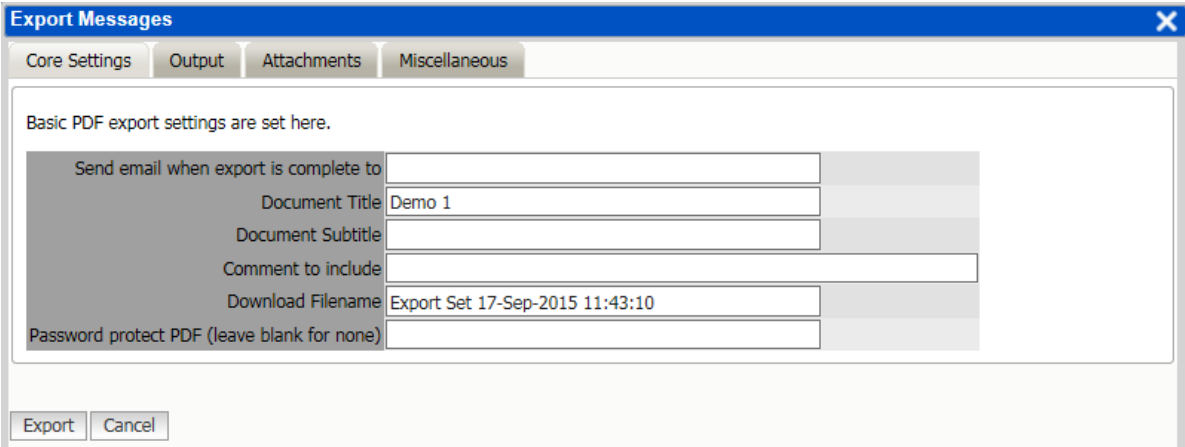
Export

 Export

The Export option opens a PDF export window to create a PDF of the selected messages and emails a notification to the specified email address. Messages will be displayed as navigable files in an Adobe PDF Portfolio. The default view provides a list on top of the PDF viewer which works as a table of contents to provide access to the exported archive and requires Adobe Flash to be installed on the viewing workstation.

Core Settings tab

Select the desired message or messages and then the 'Export' button.



Basic PDF export settings are set here.

Send email when export is complete to

Document Title

Document Subtitle

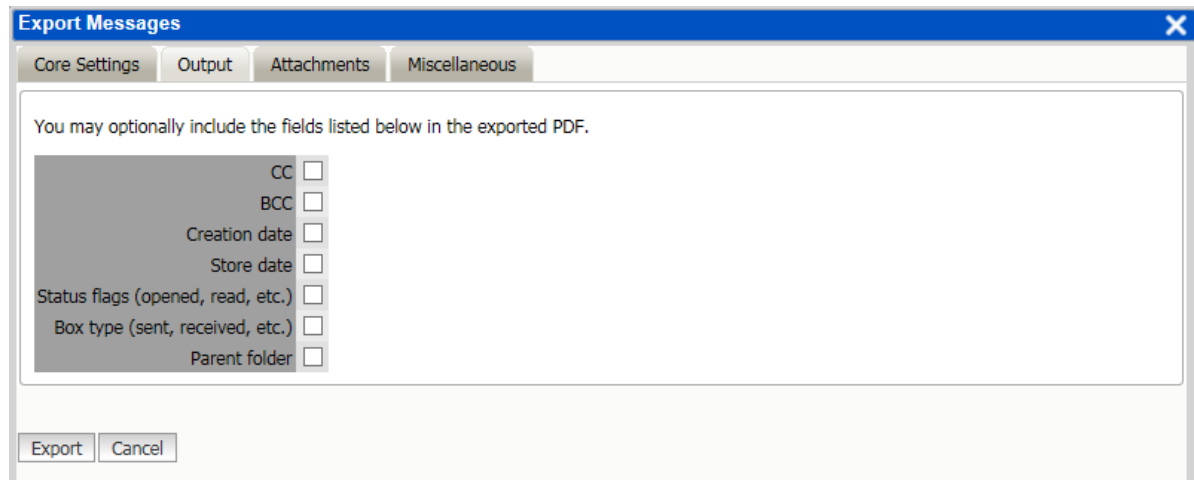
Comment to include

Download Filename

Password protect PDF (leave blank for none)

Output tab

Fill out the various options as desired.



CC

BCC

Creation date

Store date

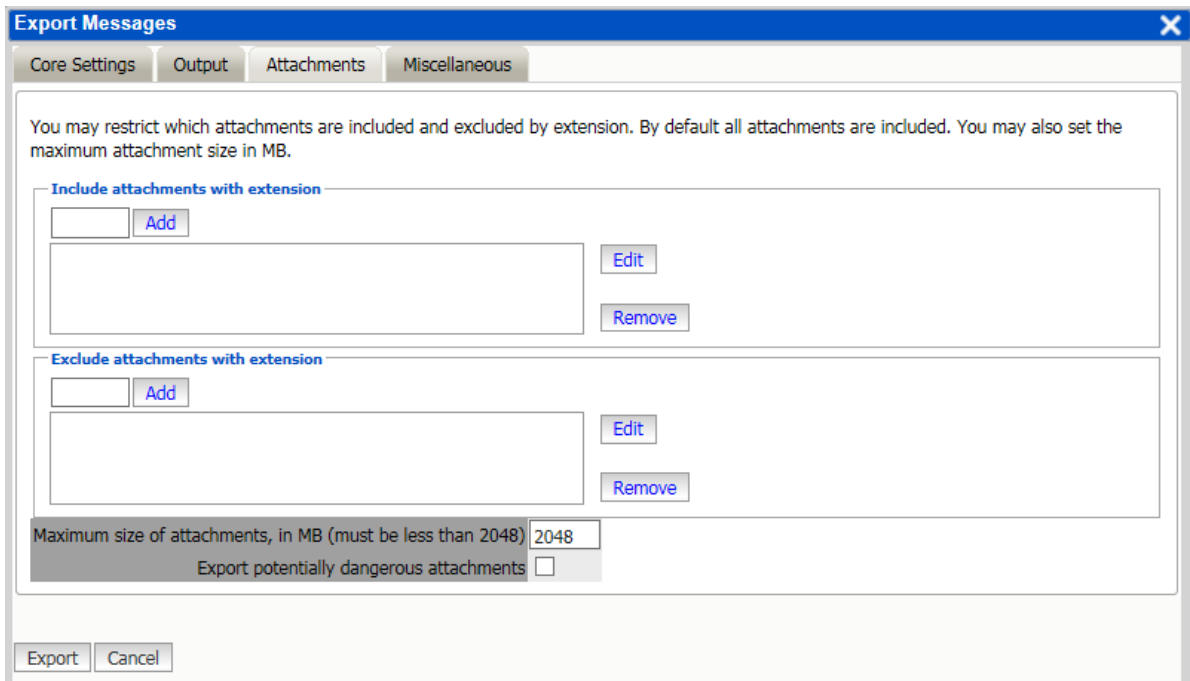
Status flags (opened, read, etc.)

Box type (sent, received, etc.)

Parent folder

Attachments tab

File output and included fields can be edited



You may restrict which attachments are included and excluded by extension. By default all attachments are included. You may also set the maximum attachment size in MB.

Include attachments with extension

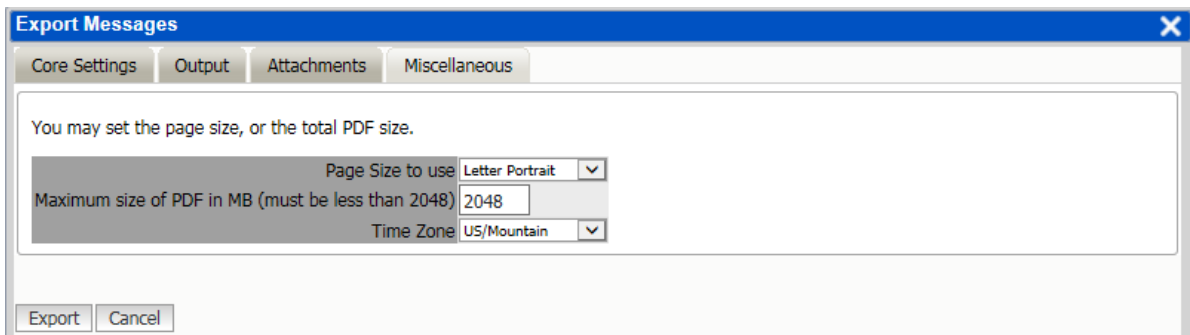
Exclude attachments with extension

Maximum size of attachments, in MB (must be less than 2048)

Export potentially dangerous attachments

Miscellaneous tab

Select which attachments to include and exclude from the PDF.



You may set the page size, or the total PDF size.

Page Size to use

Letter

A4

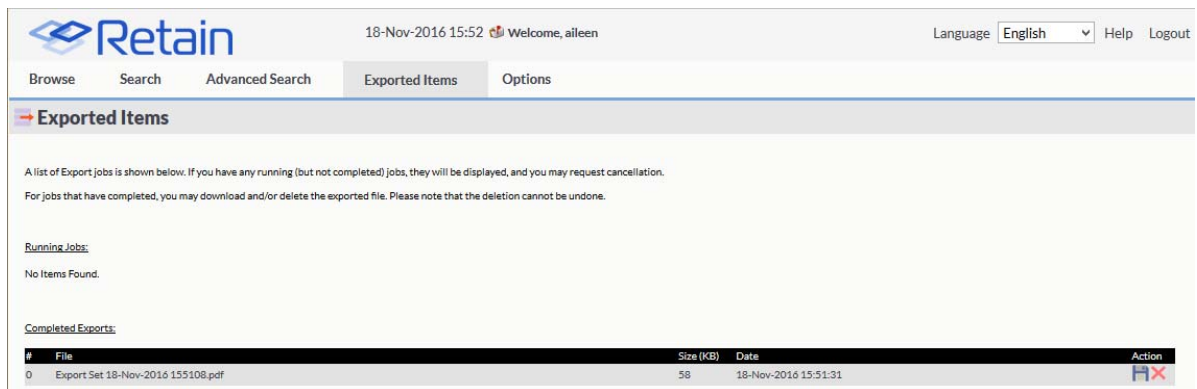
Maximum size of PDF in MB (must be less than 2048)

Time Zone



Additionally, any restrictions to the size or time zone for the PDF. If the archive size does not exceed the maximum size, then the archive will be contained in one file. If the archive is larger than the defined limit, it will be exported in multiple PDFs. Time zone information will be used for formatting any time and date information in the email headers. The time written to the cover sheet and date column in the PDF table of contents is written according to the time zone of the Retain Server.

When ready to export, select 'Export'. Depending on the size of the selected archive, the export may take some time.

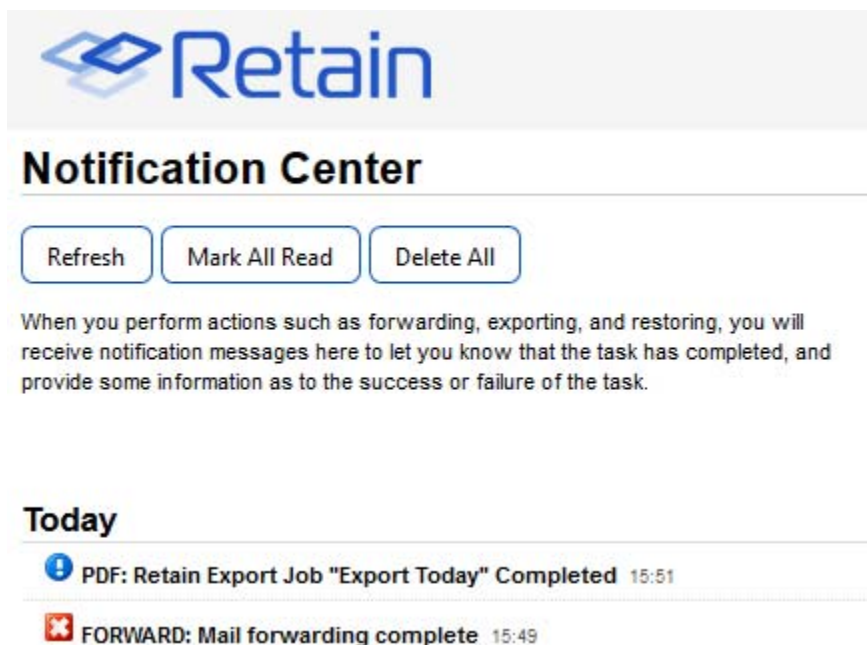
Currently running export jobs are listed under the 'Exported Items' tab.



The screenshot shows the 'Exported Items' tab in the Retain Mailbox web console. The page header includes the Retain logo, the date and time '18-Nov-2016 15:52', a welcome message 'Welcome, aileen', and a language dropdown set to 'English'. The navigation menu includes 'Browse', 'Search', 'Advanced Search', 'Exported Items', and 'Options'. The main content area is titled 'Exported Items' and contains instructions: 'A list of Export jobs is shown below. If you have any running (but not completed) jobs, they will be displayed, and you may request cancellation. For jobs that have completed, you may download and/or delete the exported file. Please note that the deletion cannot be undone.' There are two sections: 'Running Jobs' with 'No Items Found.' and 'Completed Exports' which contains a table with one entry.

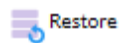
#	File	Size (KB)	Date	Action
0	Export.Set.18-Nov-2016.155108.pdf	58	18-Nov-2016 15:51:31	 

Once complete, a notification email is sent, if a notification address was provided, and the PDF is available under the 'Exported Items' tab. Locate the desired export and select the disk icon to download the finished PDF. There will also be a notification entered in your Notification Center found under "Welcome, [username]" at the top center of the Retain Mailbox web console.



The screenshot shows the 'Notification Center' in the Retain Mailbox web console. It features the Retain logo at the top, followed by the title 'Notification Center'. Below the title are three buttons: 'Refresh', 'Mark All Read', and 'Delete All'. A message explains: 'When you perform actions such as forwarding, exporting, and restoring, you will receive notification messages here to let you know that the task has completed, and provide some information as to the success or failure of the task.' Under the heading 'Today', there are two notifications: 'PDF: Retain Export Job "Export Today" Completed 15:51' and 'FORWARD: Mail forwarding complete 15:49'.

Restore



This option restores messages to the message system. Forwarding is the preferred method to return mail to the email system. To use, select the desired messages and select the 'restore' button. Once there, select the target message system and mailbox. (If the user has rights to restore to any mailbox, the target mailbox must be selected. Select the 'Restore Message' button and messages will be restored to that account.

Restoring a message which currently exists in the target mailbox results in a duplicate message existing in that mailbox. It is recommended to only restore messages that have been deleted from the mail system, but exist in the Retain archive.

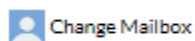
Restore works best with On-Premise Exchange, restoring the message completely to the Exchange Inbox, which is seen as a new message by the system. With GroupWise, it restores a link to the message, if stubbing server is configured in Retain but stubbing does not need to be enabled in GroupWise and we do not recommend enabling Stubbing in GroupWise. Restore does not work with GMail.

Print



This option allows users the ability to print selected messages. To use this option, select the desired messages and then select the 'print' button. The 'print' function utilizes the user's local print configuration; if there is no printer accessible to the local workstation, print will not function. This is a default user right.

Change Mailbox



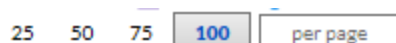
This option allows users who have the administrator right to see all mailboxes, or who have proxy rights to another mailbox, the ability to switch mailboxes.

Quick Search



The Quick Search is a way to rapidly search for data in the subject field of messages in the selected mailbox.

Results per page selector



Results are automatically set to 100 per page. The selector allows the user to specify how many messages are to be displayed on each page. There are predefined values, or the user may put their own dictated limit in the field provided.

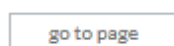
Previous/Next



The Previous/Next option allows users to navigate through the search or browse result pages. The total number of pages is displayed next to the 'Next' button.

Select a number to immediately move to the desired page

Go to Page



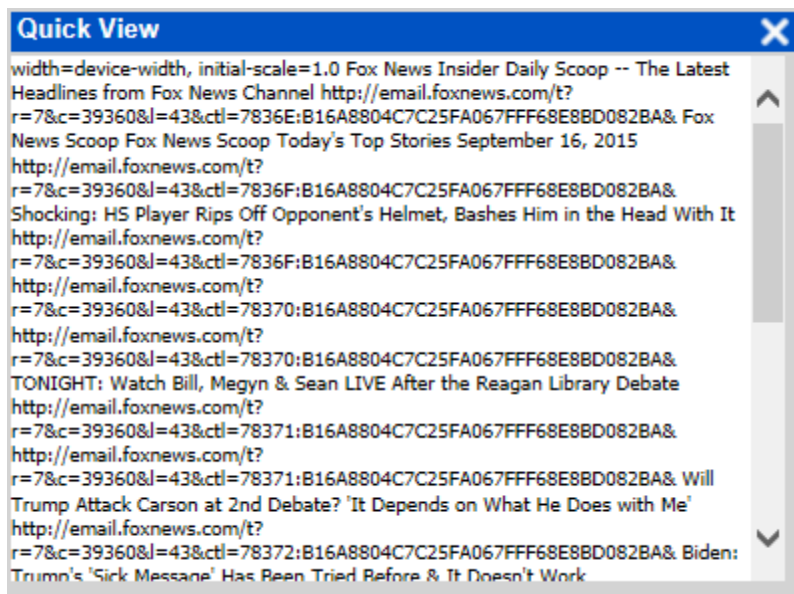
The Go To Page option allows users to specify what page they want to jump to.

Select the option box, specify the page number desired, and hit 'enter' to immediately go to that page.

Quick View



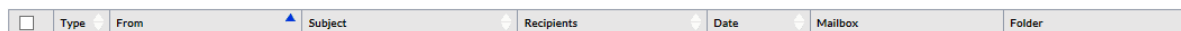
The Search interface incorporates a quick view option. This option allows users to quickly view the body of a message without having to actually open the message in the interface. To access the quick view, click on the message or data item icon next to the check box.



Once selected, the quick view window opens to quickly display the message contents.

The Quick View is a display only function and there are no actions available from this interface. When complete, close the window by clicking on the 'X' at the top right corner of the window.

Selection and sorting



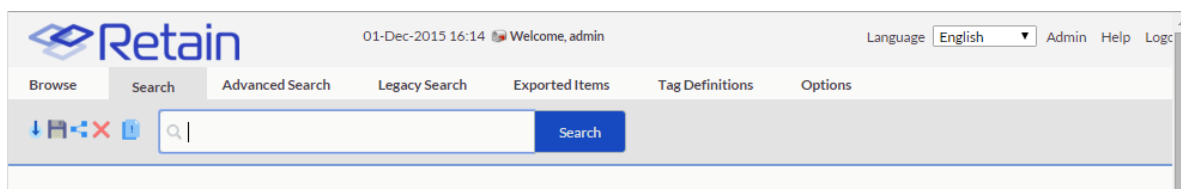
The top column bar contains all the different column headers and is located directly beneath the toolbar. This tool contains a select all/none checkbox as well as sortable column headers. Every column in this bar may be sorted by order except the 'Mailbox' and 'Folder' columns. (They are multi-value attributes and thus are not sortable.)

Browse Tab Defaults

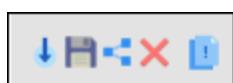
By default, the browse window remembers which mailbox last browsed was, and will return to that mailbox when opened. When Administrators first login, they will be taken immediately to their mailbox. Afterwards, the browse will remember their last location.

How Retain Searching Works

The search in Retain 4 is designed to work much like a Google search, with anticipated auto-correct search terms. The Search tab will allow searching across the entire Archive for administrators, while users will only be able to search their own archive.



The Search tab allows for management of searches. This is accomplished by Saving searches for later use. These searches can then be shared with others, loaded later, removed when no longer desired, and trimmed to remove duplicate data.



The icons for these functions are on the right, next to the search field. In order: *Load, Save, Share, Delete, and Collapse Duplicates*. Collapse duplicates removes all duplicate results but only functions with GroupWise mailboxes.

To begin a search, type the desired search term into the search query field, or load a saved search. The search results will be automatically populated on specified search terms after a sufficient pause in typing. The auto complete suggestion feature requires at least 3 characters to be specified and a pause of several seconds before it will begin to work.

Tokenized Search Phrase

The indexing engine follows Unicode Standard Annex #29. This standard uses many common characters such as ' " . : @ + - * / and , as phrase ending or beginning characters. These characters will cause the system to read any character separated terms as individually entered items when the search is performed. Individually entered terms are treated as OR searches. For example, this means

that using the search term 10/20 will be processed as 10 OR 20. Substituting a space instead of the character will provide a logical 'AND' search. For example, searching for 10 20 will be processed as 10 AND 20 as the search term. For example, searching for an email address test@gwava.com will drop the @ even in an exact search with double quotes and with return test AND gwava.com.

Spaces between normal search terms are a delimiter between search terms:

The search algorithm follows these criteria:

1. Highest weighting: All delimited words together consecutively. (e.g. Searching for "quick brown fox" while the message contains: "The quick brown fox jumped over the lazy dog.")
2. All delimited words in the string although they may not be right next to each other. (e.g. quick AND brown AND fox)
3. Least weighting: Any of the delimited words in the string. (e.g. quick OR brown OR fox)

Results from these different terms are weighted in the order listed above. This behavior can be overridden by locating the solarcloud.indexing.properties file and changing the property phraseSearch.singleWordMatch. Setting this property to '0' turns this off, while leaving it set at '1' activates this search behavior.

Result terms are also highlighted in the user interface to ease visual confirmation that the term exists in the message. However, terms in attachments are not highlighted.

Wildcard Search

Accepted wildcard characters are: *, ?, and "". The "*" denotes 'any character or characters', while the '?' denotes 'any one unknown character'. The double quotes("") denote an exact phrase, and only that exact phrase. Retain does not index letter case, so "IT" is the same as "it".

For example, a search for the term "We all love spoons" will fetch a result of that exact phrase. Asterisks may be added inside the double quotes to allow for incomplete or unknown words: "*e all love sp*" will return both 'We all love spoons for our ice cream', and 'We don't like sporks but we all love space.'. While the '?' works like the asterisk, it is only for a single unknown character. This is particularly helpful when searching for exact phrases where the terms may be misspelled. For example, "Their going" would miss a misspelled 'there going'. However, if the search term were "The?? going", it would catch both.

Supported Regex characters are listed in the Advanced Search section.

The screenshot shows the Retain search interface with a search query of 'report'. The search results are displayed in a table with columns for Subject, Recipients, Date, Mailbox, and Folder. The search term 'report' is highlighted in yellow in the subject lines of several messages. The interface includes a navigation menu at the top, a search bar, and a list of search filters on the left side.

Subject	Recipients	Date	Mailbox	Folder
Retain Test Message Tue Aug 18 14:53:54	Samsung Galaxy SIII QA Phone	18-Aug-2015 14:53	SamsungGalaxySIII	Trash
Retain Test Message Tue Aug 18 14:53:54	Samsung Galaxy SIII QA Phone	18-Aug-2015 14:53	SamsungGalaxySIII	Mailbox
Foreign Annual Report submission receive	Jody Diétel	20-Feb-2008 09:35	JDietel	licensing'
Your Annual Report has been filed	Jody Diétel	20-Feb-2006 13:46	JDietel	licensing'
Your Annual Report has been filed	Jody Diétel	26-Feb-2007 15:51	JDietel	Exec Asst
Your Annual Report has been filed	Jody Diétel	28-Feb-2008 08:43	JDietel	Exec Asst
Seen on 20/20: Miracle Anti-Aging Pill	emaughan79@gmail.com	06-Jun-2014 13:10	StarLord	Inbox
Seen on 20/20: Miracle Anti-Aging Pill	emaughan79@gmail.com	06-Jun-2014 13:10	DraxTheDestroyer	Inbox

Select a final query, either by hitting enter, clicking with the mouse, or using arrows and hitting enter.

Search results will display the results with the search term highlighted for each message. The message type, Sender, Subject, Recipients, date, mailbox, and folder are all displayed.

The screenshot shows the Retain search interface with a search query of 'rep'. The search results are displayed in a table with columns for Type, From, Subject, Recipients, Date, Mailbox, and Folder. The search term 'rep' is highlighted in yellow in the subject lines of several messages. The interface includes a navigation menu at the top, a search bar, and a list of search filters on the left side.

Type	From	Subject	Recipients	Date	Mailbox	Folder
✉	"Rep, Marsha Blackburn" <website@nrcc.or	Fight the Liberal Smears on Sarah Palin	Jody Diétel	19-Sep-2008 09:59	JDietel	Trash
✉	Marcia Gehris	"Rep. Marsha Blackburn" <website@nrcc.org>	Jody Diétel	14-Jan-2008 09:07	JDietel	Human Resources
✉	Terry Bentley	Ikon rep/ Document Solutions/ AM Meeting (personal)	(personal)	06-Dec-2007 10:33	TBentley	Calendar
✉	Linda Campbell	T3 Rep for TSPA	Therassa Cheng	14-Feb-2008 09:31	LCampbell	Sent Items
✉	Terry Bentley	Creative Benefits Account Rep?	mcruz@telepacifc.com	05-Dec-2007 13:05	TBentley	Sent Items
✉	Linda Campbell	Re: T3 Rep for TSPA	Therassa Cheng	14-Feb-2008 09:51	LCampbell	Sent Items
✉	<Tara.Manno@VerizonWireless.com>	Verizon wireless Rep ""Please Read""	TimBentley	28-Aug-2008 16:16	TimBentley	VERIZON
✉	<news@1	From: Rep, Wikipedia: the free encyclo	<news@1	11-Feb-2014 13:01	<news@1	Inbox

Search In

Once search results have begun to populate, the left hand scope pane is populated with limiting and filtering options. If faceting is enabled the side bar will show numbers next to each section, indicating how many hits there are for each particular topic. The hits are total numbers of matching instances, not items. So if a message states a search term several times in the message body, it will be counted as that many hits even though it is only one message.

Search In - less

Subject(0)
Sender(18,838)
Recipient(8,388)
Domain(18,849)
Attachment Name(0)
Message Content(19,230)
Category(0)

Subject

Sender

Recipient

Domain

Attachment name

Message content

Category

The Search In criteria limits the area in the message or data where the search is performed:

- ◆ The Subject indicates hits in the Subject field.
- ◆ The Sender field contains the sender of the message or data item.
- ◆ The Recipient is the recipient of the item or message.
- ◆ The Message Content will search in the following locations within a message:
 - ◆ body
 - ◆ attachment
 - ◆ subject
 - ◆ headers

Searching exclusively for the domain will be effective with search terms if a complete domain is provided, otherwise the term is recognized as text. If the top level domain is not known, (.com, .org, .edu, .etc) then the search term should use an asterisk afterwards. For example, searching for gwava.com will yield good results, as will searching for gwava.* or gwava*, though results will vary.

Searching for an item that has BCCed recipients has some special behavior. Retain acts like a normal email system, only the sender and the BCCed recipient can see themselves. If you are logged in as the sender, you will be able to see To, CC and BCC recipients as normal. If you are logged in as the To, or CC recipients, you will only see the Sender, To and CCed recipients. If you are logged in as a BCC recipient, you will see the Sender, To, CC, and no other BCC recipients. If you are logged in as admin and in a mailbox other than the Sender, you will not see the BCC recipients listed in the item even though they are returned from the correct mailboxes, except from the Sender folder, because admin is not one of the BCC recipients.

Item Type

The Item Type criteria option limits the type of message which is to be searched. All item types are available in the scope term. Again, the number of available hits is displayed to the side.

The Message Item Type includes:

- ◆ Mail
- ◆ Phone Message
- ◆ Appointment
- ◆ Task
- ◆ Note
- ◆ Message
- ◆ Phone Call
- ◆ BB Pin
- ◆ Social Media Governance

Item Source

The Item Source criteria option limits the results to a particular source. This source can be limited to show 'received', 'personal', 'sent', or 'draft' items.

Date Range

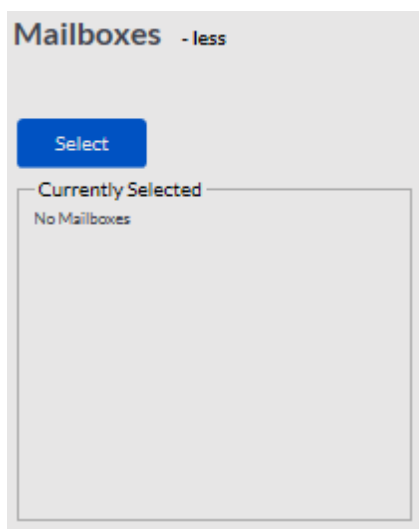
The Date Range criteria limits the time frame of item's creation. Only messages which conform to the date range selected will be displayed in the results field.

The date range may be specified for any of the dates corresponding with an item. The range may also be selected from the drop-down menu, with pre-configured times for last week, month, or year. These time frames are for the past 7 days, the past 30 days, or the past year, not the previous calendar time frame.

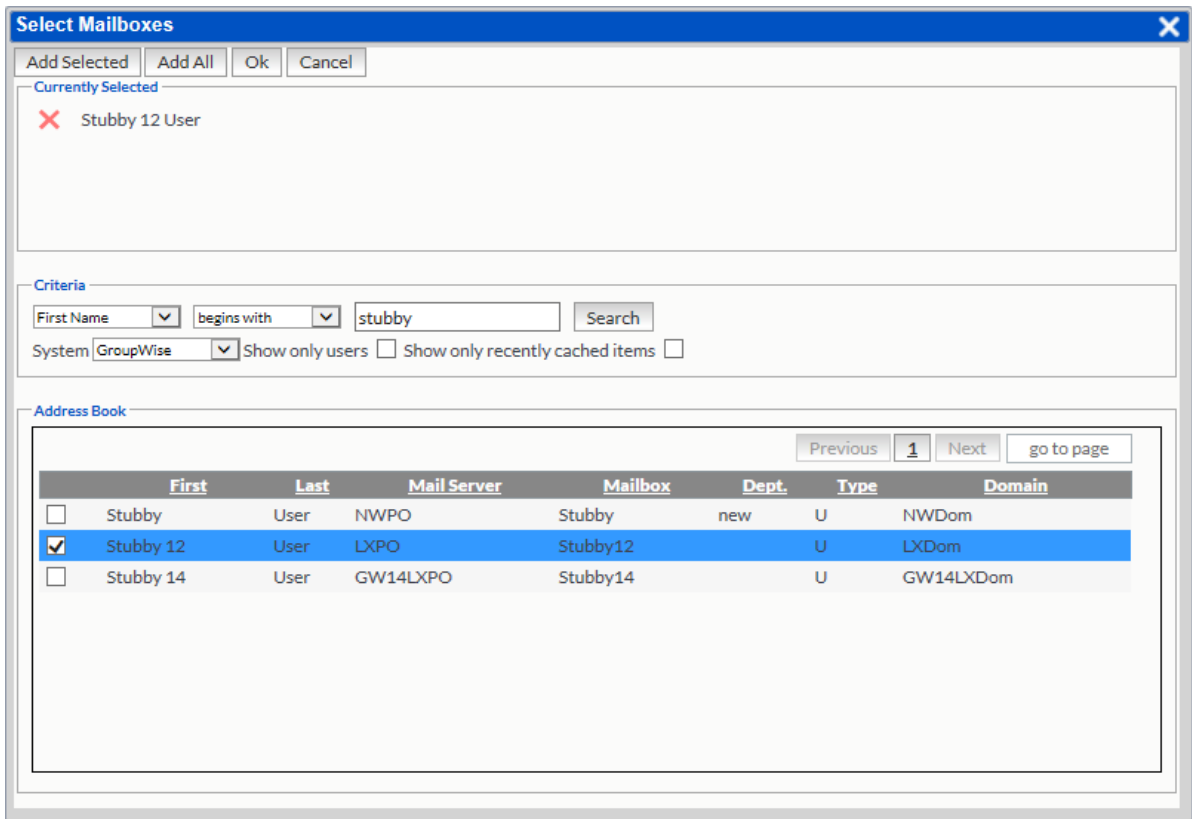
The screenshot shows a search interface for 'Date Range' with a '-less' indicator. It features a dropdown menu currently set to 'Received Date'. Below this are two input fields for dates in 'mm/dd/yyyy' format, separated by 'To'. An 'OR' section follows with another dropdown menu and a blue '>>' button. Two callout boxes highlight specific options: the top one lists 'Received Date', 'Sent Date', 'Begin Date', and 'End Date'; the bottom one lists 'Last Week(0)', 'Last Month(284)', and 'Last Year(6,208)'.

Mailboxes

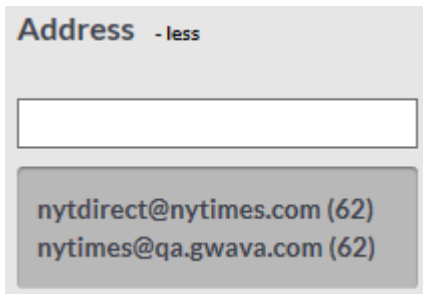
The Mailboxes criteria limit which mailbox or mailboxes the search will pull results from. To add users to the selected mailboxes list, click on the 'Select' button to launch the mailbox selection window.



The Select Mailboxes window allows for searching of every mailbox available to the user, the admin user can search all mailboxes. Mailboxes must be searched for by system and specified criteria. The results of the search are displayed below, while the active selected mailboxes can be added to the dialog through the use of the 'Add Selected' button along the top. Alternately, if the 'Add All' button is clicked, it will add all mailboxes displayed in the search results, the Address Book field. Addresses which have been added to the top field may be removed by selecting the red 'X'.

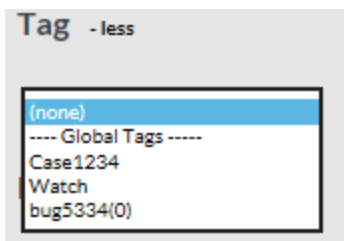


Once the desired addresses have been added to the top window, select the 'OK' button to load them into the search pane.



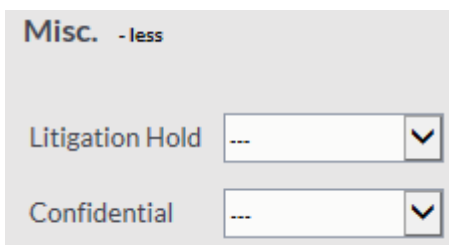
The Address option limits the results to a selected address. The addresses available are displayed below, and may be selected. Addresses in the window are dictated by what is in the result set. Selecting an address adds it as a filter to the top of the search window, or the user may specify an address manually. Multiple addresses may be added to the search window at a time. To remove an address filter, select the 'X' next to the active address, and the result set will be reset.

Tag



The Tag option limits the search to items which have been tagged with a specific tag definition. The tag definitions may be personal or global. Tags must be specified in advance and applied before this option will work. Select the desired tag to limit the result set.

Misc.

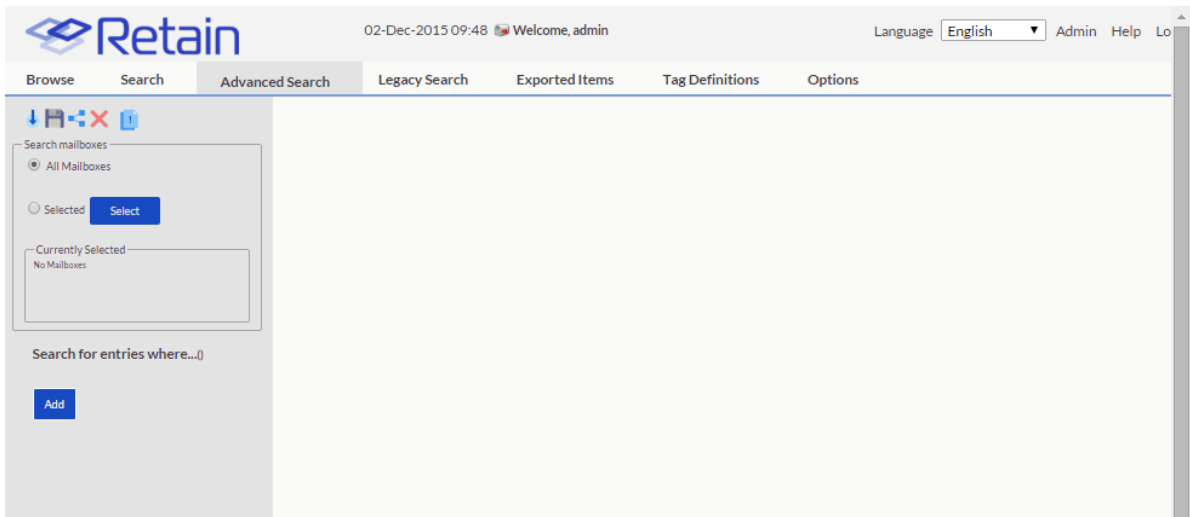


The Misc option contains limits for the Litigation hold and the Confidential tags. They have two settings: True or False. A Setting of 'True' restricts all results to only items which have the selected tag.

The Advanced Search Tab

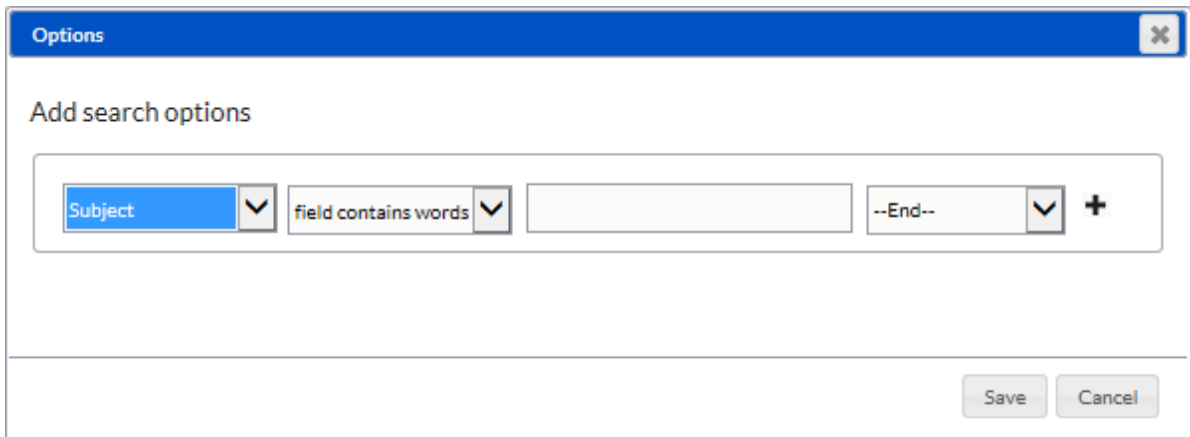
- ◆ [“RegEx and Wildcards” on page 554](#)

The Advanced Search tab contains the ability to specify vast amounts of criteria and combine search terms to exclude and include various searchable items to retrieve specific information. This search works better, the more you know about what you are looking for, as it allows fine tuning of criteria.



Searches will be restricted to the mailboxes specified in the 'Search Mailboxes' window. By default, all mailboxes are set for searching. To limit the search to the mailbox or mailboxes specified, click on the 'Select' button to open the 'Select Mailboxes' window. The 'Select Mailboxes' window functions exactly the same in advanced search as it does in the standard search.

The system will begin to display results as soon as either the search mailboxes have been specified, or new search criteria has been added. To add new criteria, select the 'Add' button.



The Search Criteria contains the ability to specify where to search, operating criteria - (word ends with, word starts with, field contains words, field contains phrase), and the desired search terms. The list of search items and fields available to be specified in the drop-down list is shown. Each variable on the list is tied to appropriate search operators, (date range allows the specification of a date, Confidential tags have a true/false operator, etc.)

Search Field

Subject: search the message subject field.

Recipient: search the message recipient field.

Attachment name: search the names of the message attachments.

Category: search the item's category field.

Date: this depends on the type of item. This can be a range. If it is a sent email or instant message, it is the sent date. If it is a received email, then the received date; an appointment, the appointment date.

Sent date: search the message sent date field. If the message is an email this can set by email sender and can be spoofed.

Received date: search the message received date field. If the message is an email, it is set by receiving email server and is very reliable.

Begin date: The earliest date to be searched for calendar items, appointments, tasks and so on.

End date: The latest date to be searched for calendar items, appointments, tasks and so on.

Tag: search tags set within Retain.

Litigation hold: search items that have litigation hold applied by Retain.

Confidential: search items that have confidentiality applied by Retain.

Item Type: search the item type, which may be Mail, Phone message, Appointment, Task, Note, Message, Phone call, BB PIN, and Social Media Governance.

Item Source: search the item source of Received, Sent, Personal, or Draft.

Sender (email): search sender by email address.

Sender (display): search sender by display name.

Sender Domain: search by the sender domain.

Recipient Domain: search by the recipient domain.

Mail server: search by the mail server of sender and recipient.

Messaging Domain: search by the messaging domain of sender and recipient.

Phone number: search by phone number, if the phone number field exists.

Location: search by location, if the location field exists.

Internet Header: search the term in the Internet header field

Message Content: search only the content (body and attachments)

Attachment size: search by attachment size in bytes.

Opened: search only messages that have been opened.

Read: search only messages that have been read.

Private: search only messages that have been marked private.

Operating Criteria

Each field can be restricted to:

Field Contains Phrase: An exact search of the phrase, the same as enclosing the phrase in quotes in simple search. Basically ANDing each word in the phrase. For example, search for "The quick brown fox" will return only items with the entire phrase 'The quick brown fox'

Field Contains Words: will search for each word in the phrase. This will be ranked by closest match at the top. Basically ORing each word in the phrase. For example, search for “The quick brown fox” will return only items with the entire phrase ‘The OR quick OR brown OR fox’.

Field Does Not Contain Words: will exclude search results with the words.

Words Start With: will search for the word but with a wildcard at the end. For example, deter will be treated like deter* and return determine, determined, deterred, and so on.

Word Ends With: will search for the word but with a wildcard at the front. For example, “tion” will be treated like *tion and return action, playstation, function, and so on.

Cascading Options

In addition, the interface allows for no limit of search terms, additional terms may be added to the search criteria and connected to the previous search terms. Additional criteria may be logically connected with ‘and’, ‘or’, or ‘new group’. To add a new search term and criteria, select the ‘+’ directly to the right of the existing search criteria.

The screenshot shows a dialog box titled "Options" with a close button in the top right corner. Below the title bar, the text "Add search options" is displayed. The main area contains three rows of search criteria, each with a dropdown menu for the field, a dropdown for the search type, an empty text input field, a dropdown for the logical operator, and plus/minus buttons. The first two rows have "AND" as the operator, while the third row has "--End--". At the bottom right, there are "Save" and "Cancel" buttons.

Field	Search Type	Text	Operator	Buttons
Subject	field contains words		AND	+ X
Subject	field contains words		AND	+ X
Subject	field contains words		--End--	+ X

By default, when a new search term is added, it is automatically ‘AND-ed’ together with the previous search term. This allows you to be able to build complex search terms to fit known data.

When building complex search criteria, it is critical to know what you are looking for. For instance, if an insider trading tip was suspected, and the recipient was known as well as some details about the message and when it must have been sent by, the following search could be compiled:

Options
✕

Add search options

Subject	word starts with	Merge	AND	+ ✕
Message Content	field contains words	company trade secret	OR	+ ✕
Subject	field contains words	NYSE	OR	+ ✕
Message Content	word starts with	share	New Group	+ ✕
OR				
Recipient	field contains words	sec@insidetrader.com	AND	+ ✕
Sent Date	<=	12/13/2015 23:50:00	--End--	+ ✕

In this search, any message sent which stated 'merge', or 'merger' in the subject, and contained a known company secret in the message body, or, discussed the name of an executive involved, would be displayed. In addition, the search would also grab any messages sent to the suspected contact before the merger date. Additional criteria which could be added includes the company's stock listing or any further details pertaining to the proposed leak.

Subject	word starts with	Merge	AND
Message Content	field contains words	company trade secret	OR
Subject	field contains words	NYSE	OR
Message Content	word starts with	share	
OR			
Recipient	field contains words	sec@insidetrader.com	AND
Sent Date	Less than or equal to	12/13/2015 23:50	

0 selected

To begin the search, select the 'Save' button at the bottom of the query window to perform the search. The active criteria is now listed in the left pane, and may be edited or removed. To add criteria, select the **Edit** button to add to or refine the search criteria.

RegEx and Wildcards

Both the Search and Advanced Search contain *limited* support for Regular Expression (regex) searches. An explanation of regular expression searches are beyond the scope of this documentation. There are extensive tutorials on the Internet.

To use Regular Expressions, simply put the desired regex string into the criteria field, denoted by a '/' on either side of the regex, for example `/red queen/`. If the '/' is not used, Search will not recognize it as regex.

Wildcard searches may be done with the '*' and '?' characters. The '*' will match zero or more characters, and the '?' will match exactly one character.

Special Characters

The Search has a list of special characters which cannot be searched for, and will cause erratic results with search criteria. The list of non-supported characters is: @,+,-,|,[,],{,},(),",\,#,&,&tilde. All of these characters are viewed as delimiters, and will break up the query. They are not supported and will be replaced by a space.

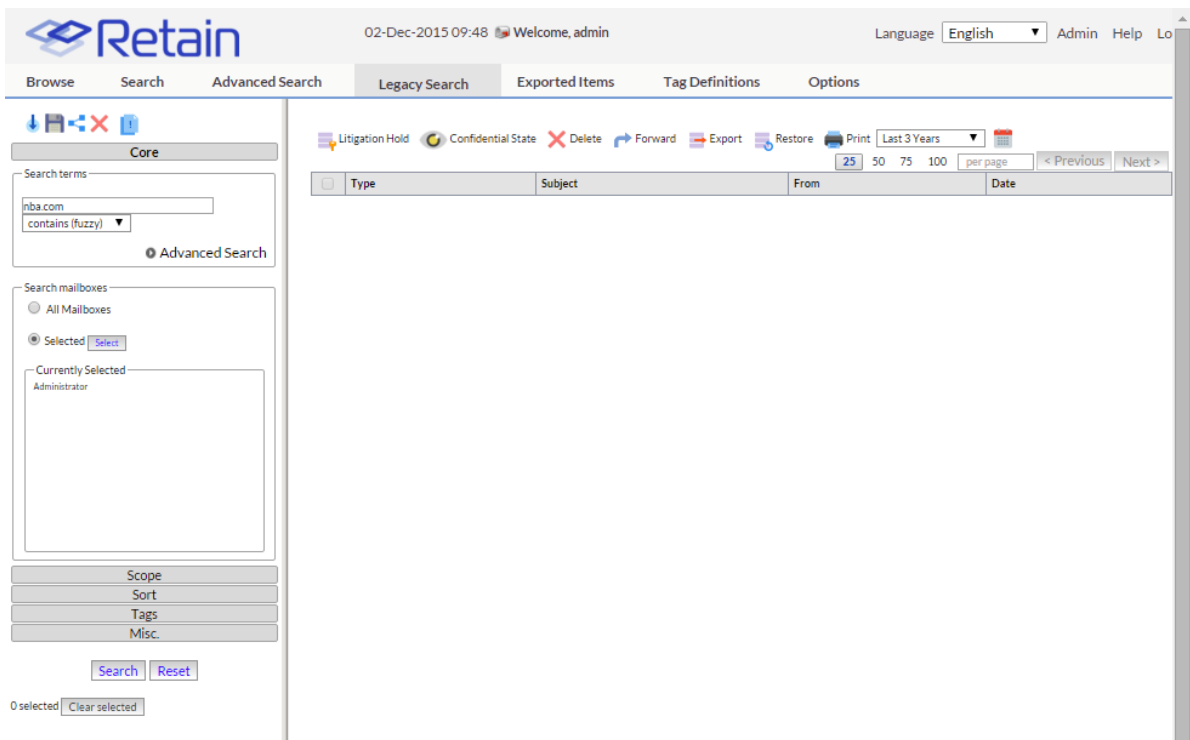
RegEx Example

You can search for a string of numbers, for example a US telephone number, of the format: (012) 345-6789.

You can enter into the search field `/[0-9]{3}/` `/[0-9]{3}/` `/[0-9]{4}/` and all number strings that match a three digit, three digit, four digit grouping will be returned.

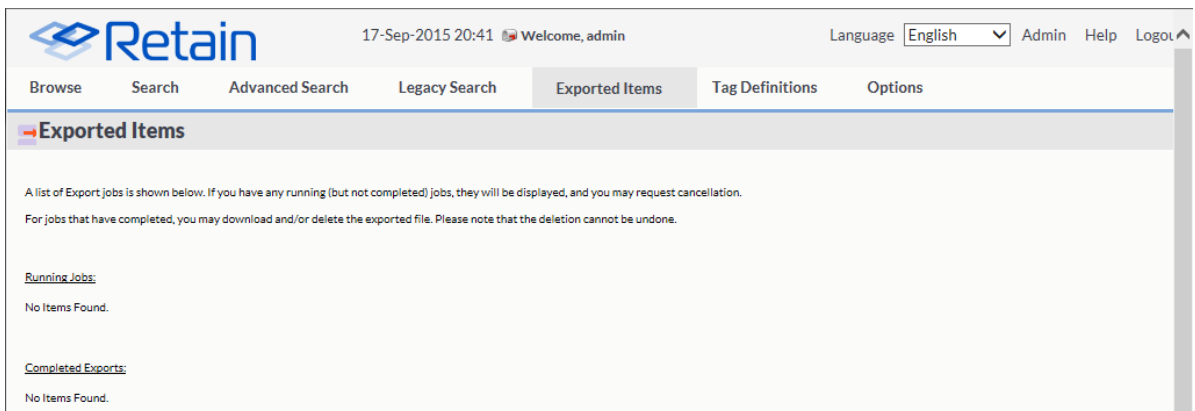
The Legacy Search Tab

The Legacy Search tab provides access to the older search engine, and is included as a courtesy for those who wish to continue using it. While the UI has had an update, the functions and search process remains the same.



The Exported Items Tab

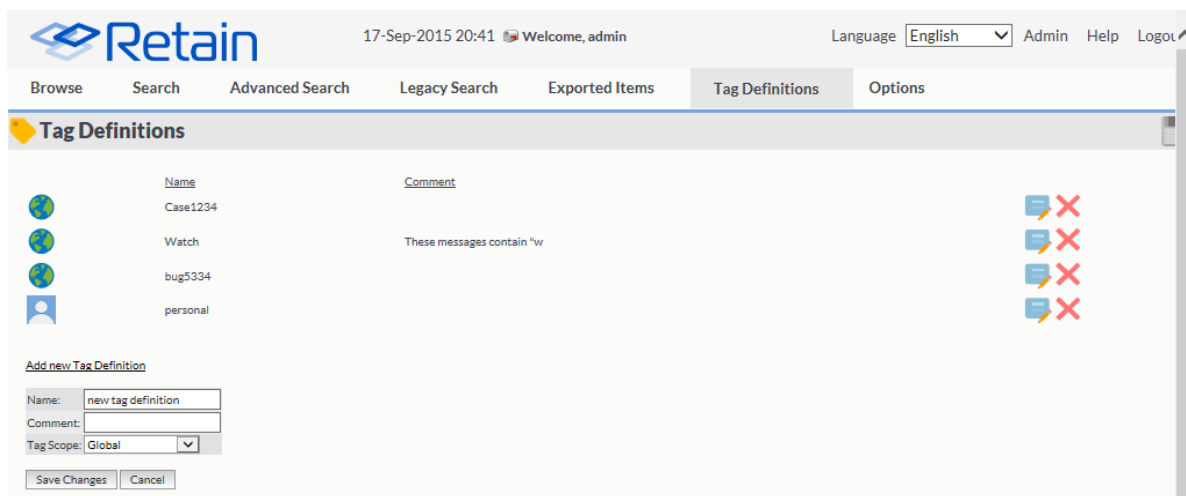
The Exported Items tab shows the export jobs which are currently running, or have been run in the past, on the system. If an export job has completed, this tab will contain the file and provides a link for download of the completed export job.



NOTE: The download is an Adobe PDF Portfolio which requires Adobe Flash to be installed to view items.

The Tag Definitions Tab

The Tag Definitions tab allows the creation and removal of Tags, their automatic comment, and name. Tags are an informative note which can be attached to any data item in the search messages interface. There is no limit to how many tags any one item may have applied to it, and there is no limit to how many tags a user may create. In addition, tags are also a searchable item, making this one of the most versatile ways to add long-term identification for items in the data store.



Before the tag icon will appear on the in the search interface tool bar, there must be at least one tag defined. To define a tag, enter the tag name and initial comment if desired, then, if the user has permissions to do so, define whether the tag is personal or global. Once saved the tag is available for use.

Global tags are tags that any user with the rights to see global tags will be able to view and apply. Personal tags are limited to the user who created them. Only tags visible to users will be available to be searched for by that user.

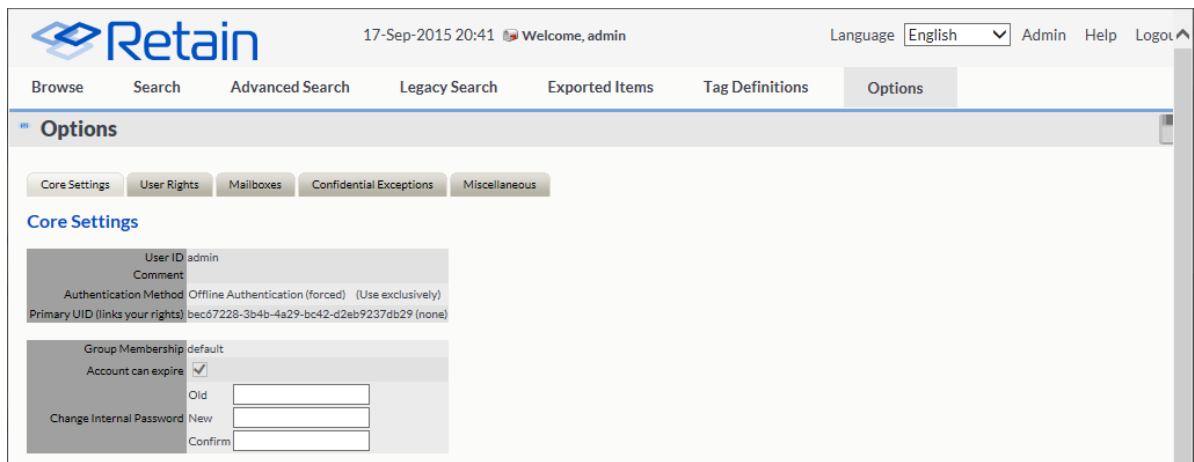
Any tags created or subject to manipulation by the user logged-in will be displayed under this tab.

To apply a tag to a message or data item in the search messages interface, simply select the data item or items, and then click the 'Add / Remove' tag button in the tool bar.

Options

- ◆ [“The User Rights Tab” on page 557](#)
- ◆ [“The Mailboxes Tab” on page 557](#)
- ◆ [“Managing Confidential-Mark Exceptions” on page 558](#)
- ◆ [“The Miscellaneous Tab” on page 558](#)

The options section here is exactly like the section in the Administration | Users section. These settings here are specific to the currently logged in user. The current loaded user is shown next to “User ID” located below the Core Settings tab.



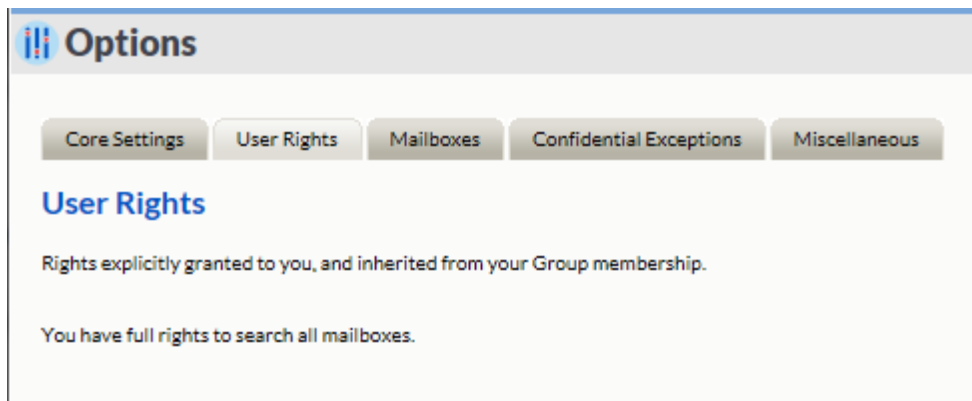
Core Settings

Among the information displayed is:

- ◆ Your User ID (internally generated by Retain)
- ◆ Your Group Membership (you cannot change that here)
- ◆ Your authentication method (you may change this if you have rights to)
- ◆ Your offline password if you don't use SOAP to authenticate
- ◆ You may change the password only if you have rights to change it

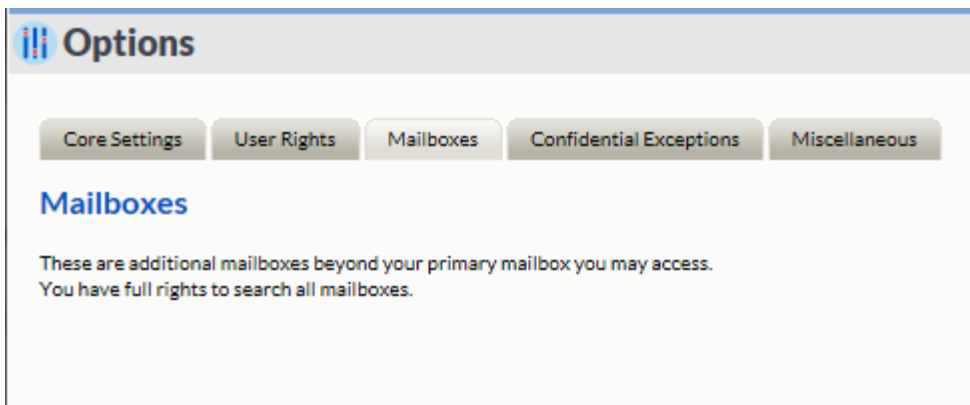
The User Rights Tab

You're shown the rights you have within Retain on this screen. Available rights may only be changed by a user administrator within the Administration screen.



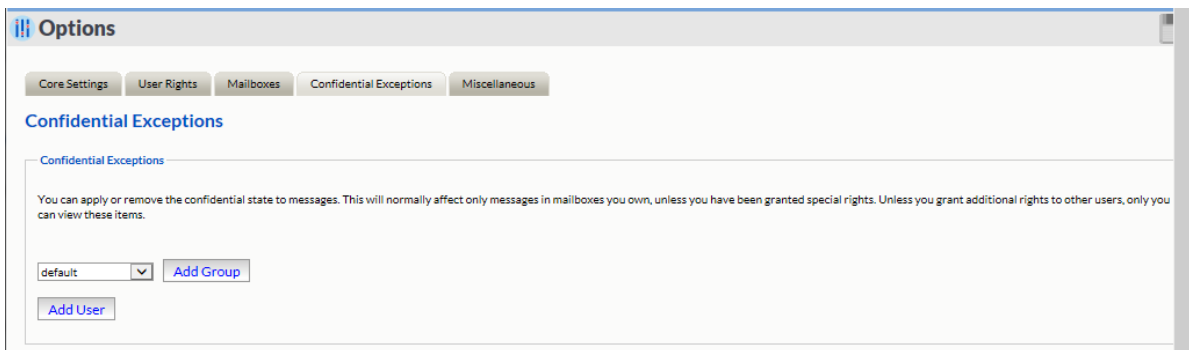
The Mailboxes Tab

In this section, you're shown the mailboxes you have been given explicit rights to work in. By default, you have rights to only your own mailbox. If an administrator explicitly gives you rights to other mailboxes or you are a member of a group that has rights to other mailboxes explicitly, those mailboxes will be shown here.



Managing Confidential-Mark Exceptions

When a user marks a message as 'Confidential' in the archive, the message becomes invisible to all except administrators who have been given the confidential right, or any user which is specified in the exception list.



The 'Confidential Exceptions' allows users to add any necessary exceptions to the confidential tagging. Confidential tagging may be applied to protect sensitive. However, sometimes this information may need to be viewed by others and instead of granting that user rights to see confidential items for all users, a user may apply that right to only their items.

A group or individual user may be added to or removed from the list.

The Miscellaneous Tab

This contains your display and session options

Options

Core Settings

User Rights

Mailboxes

Confidential Exceptions

Miscellaneous

Miscellaneous

Comment

The default comment appended to forwarded messages can be set here.

Comment	<input type="text"/>
---------	----------------------

Forward Messages

Internet Domain	<input type="text"/>
-----------------	----------------------

Date/Time Formats

Defines how dates and times are displayed.

Date	Day-ShortMonth	▼
Time	24 Hour	▼

Example: 18-Sep-2015 00:30

Display Number

How many items to display per page

Display Number	100	▼
----------------	-----	---

Message Age Display

How many days of messages should be displayed by default?

Message Age Display	Last 30 days	▼
---------------------	--------------	---

Session Timeout

Time in minutes, to expire an inactive login session.

Time (minutes)	90
----------------	----

These work just as described in the user display options in the Administration screen.

Options are:

Comment	Default comment for forwarding messages
Date/Time Format	How you want the dates and times to be displayed
Display Number	How many items to display per page
Message Age Display	Default date filter for searching - may be changed 'on-the-fly'
Session Timeout	Inactive session timeout - set between 5 and 60 minutes

Retain Mobile Apps

Retain may be accessed through apps available for Android and iOS. You can manually install the App on Mobile devices through Google Play and the Apple App Store or use an Enterprise Mobile Management product that has AppConfig support. The Retain app supports Username, Password, Server and AllowCopyPaste through AppConfig.

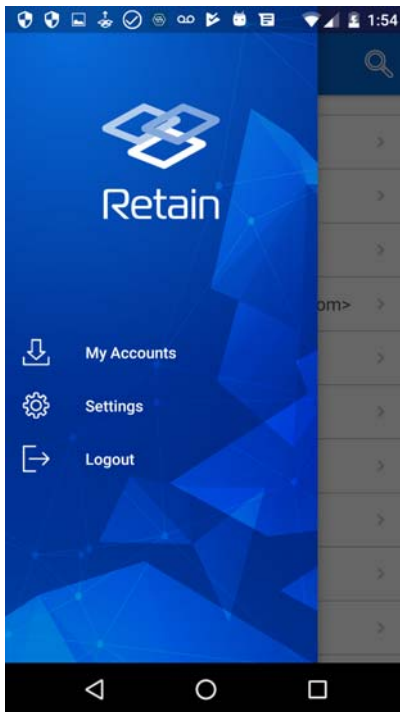
IMPORTANT: AllowCopyPaste must be specified on iOS.

Android App

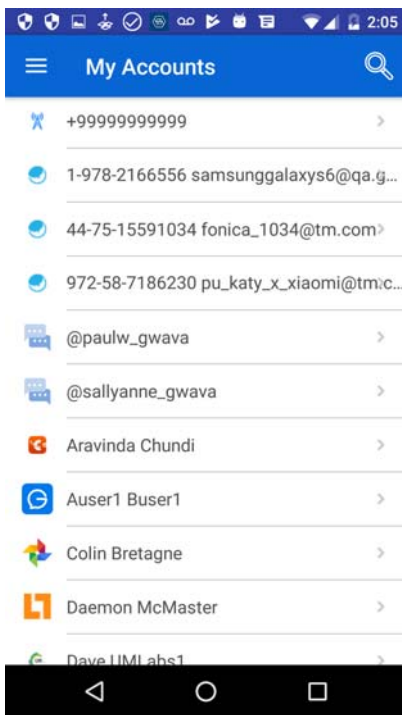
Once the app is downloaded and installed, enter the Retain Server address. This should be given to you by the system administrator and is in the form of `https://<Retain-Server-URL>/RetainServer`. Log in with your email credentials



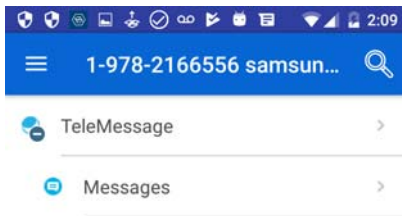
Once logged in, you may view your accounts, change settings or logout.



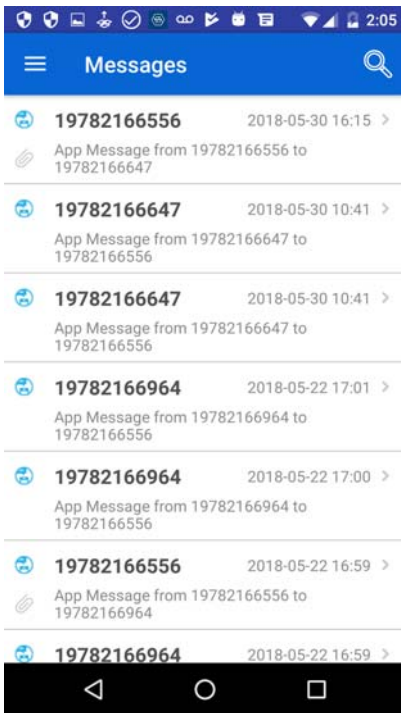
Pressing "My Accounts" will take you to the Retain archive mailboxes you have access to.



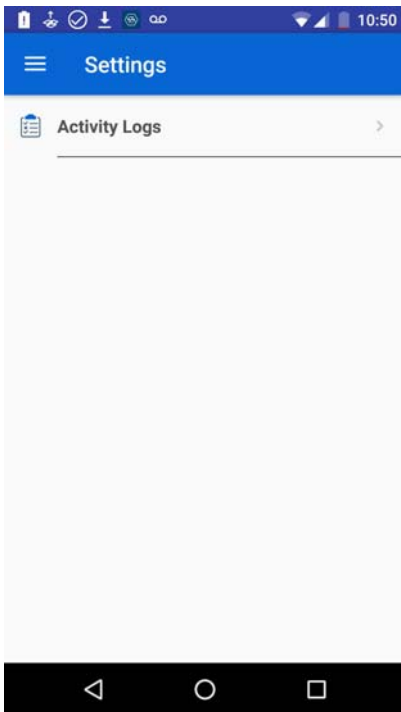
Select a message system to browse messages from. For example, TeleMessage.



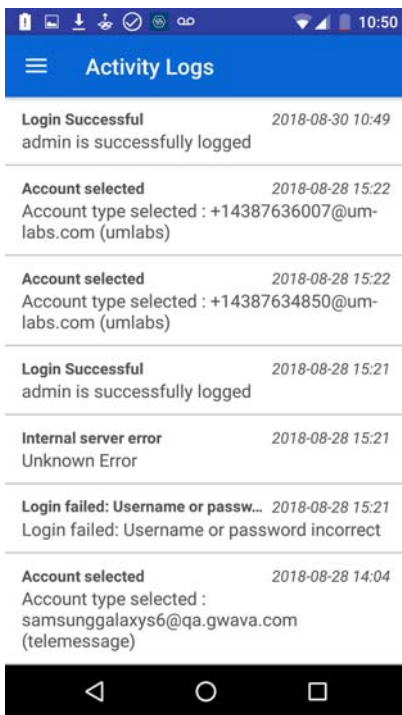
Press “Messages” to be taken to the message view.



You can press the hamburger menu at the top left to access settings.

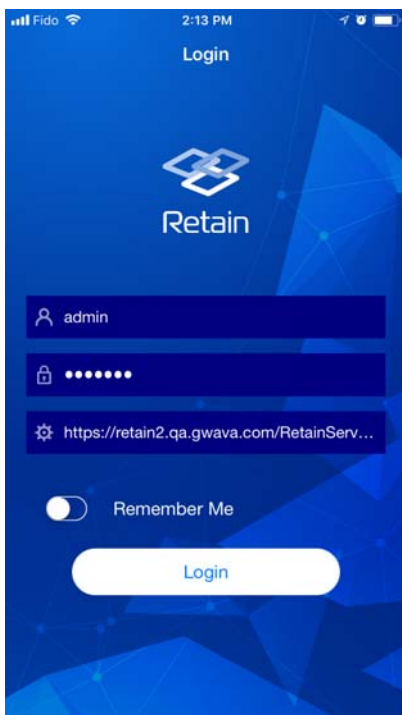


You can access the Activity Logs here. This is used for troubleshooting by the system administrator.



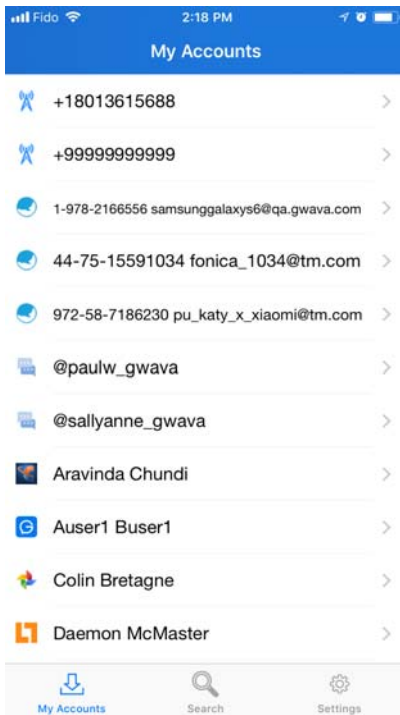
Retain App: iOS: iPhone

Once the app is downloaded and installed, enter the Retain Server address. This should be given to you by the system administrator and is in the form of “<https://<Retain-Server-URL>/RetainServer>”. Log in with your email credentials

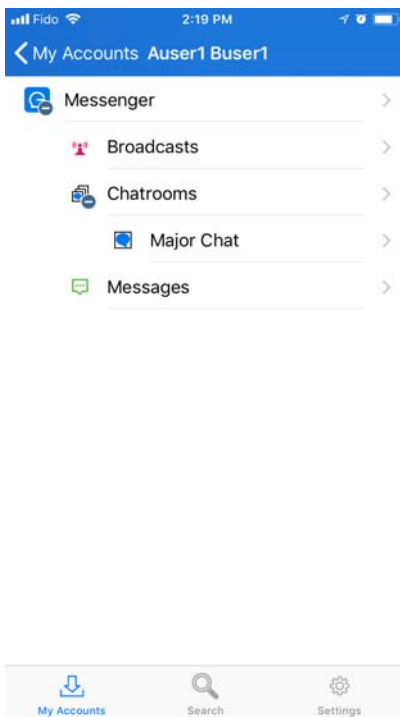


Viewing Messages

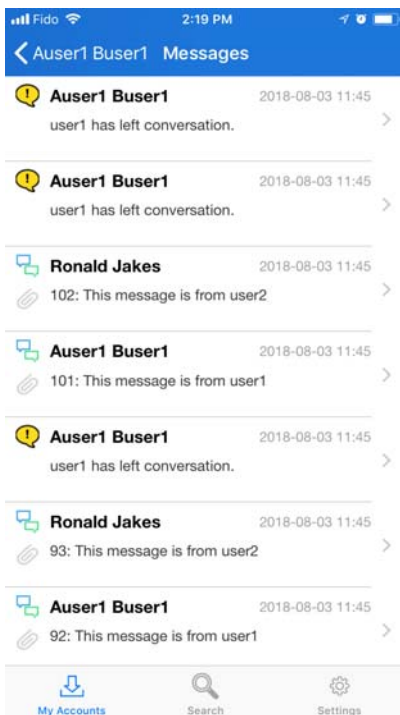
Select an account to access, you will generally have access only to your own.



Then select the message system you wish to browse. For example, GroupWise Messenger.

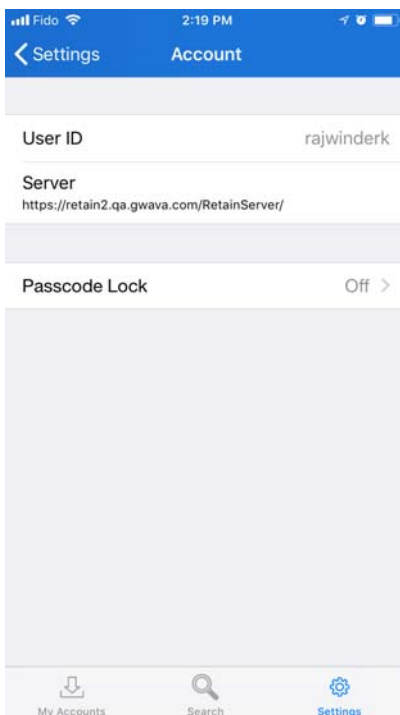


You can then select messages to view or search for particular messages.

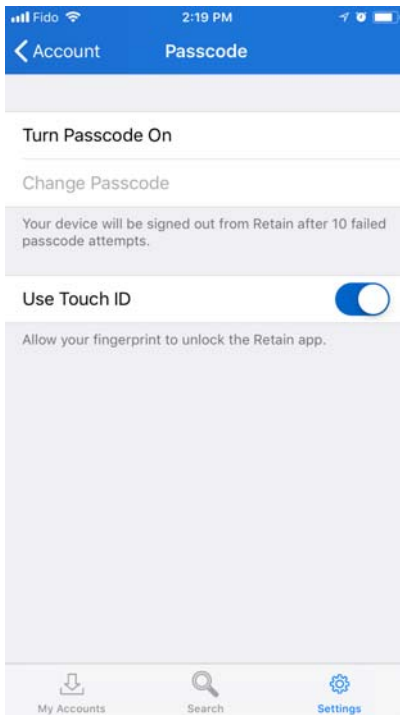


iPhone Settings

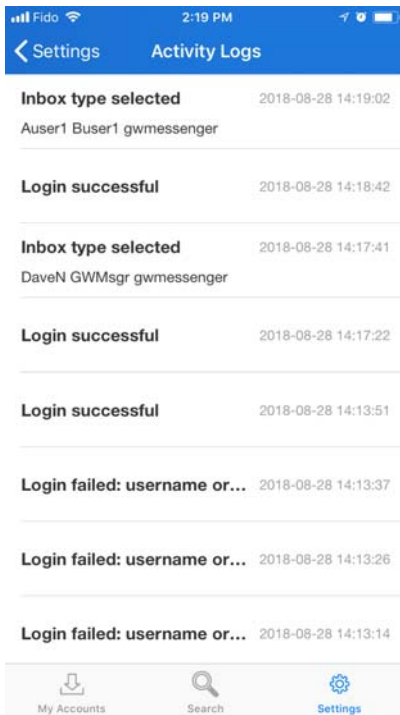
Press the Settings button to go to the settings screen.



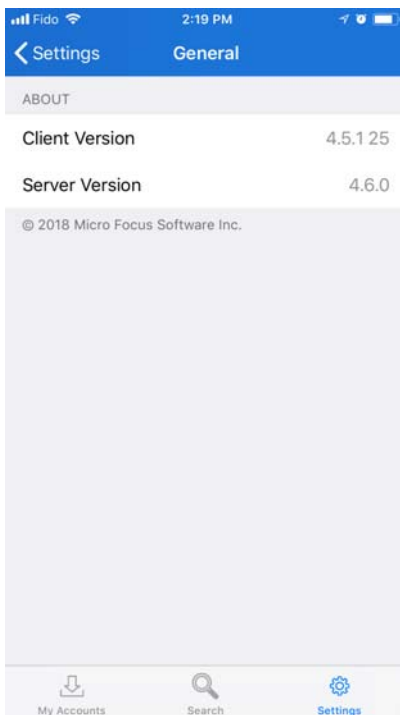
You may also enable Passcode Lock to require authentication for access. This may use TouchID.



Press on the User ID to get a log what the app has done.



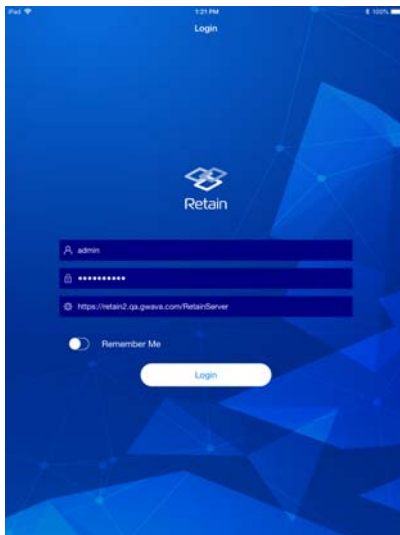
Press Server to get version information.



Retain App: iOS: iPad

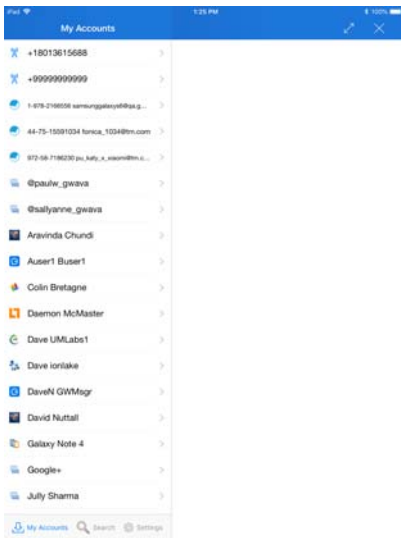
When viewed on an iPad the Retain app provides a multi-pane view.

Once the app is downloaded and installed, enter the Retain Server address. This should be given to you by the system administrator and is in the form of “https://<Retain-Server-URL>/RetainServer”. Log in with your email credentials



Viewing Messages

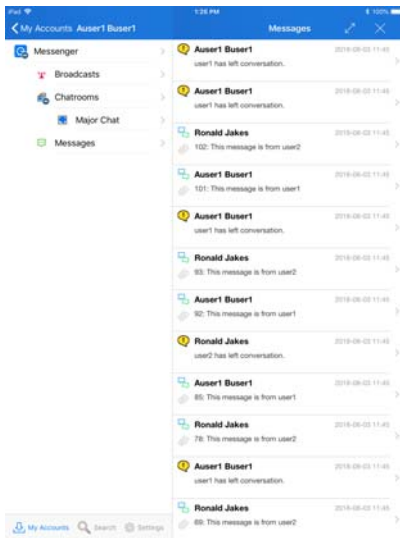
You will be able to see a list of accounts you have access to in the left pane.



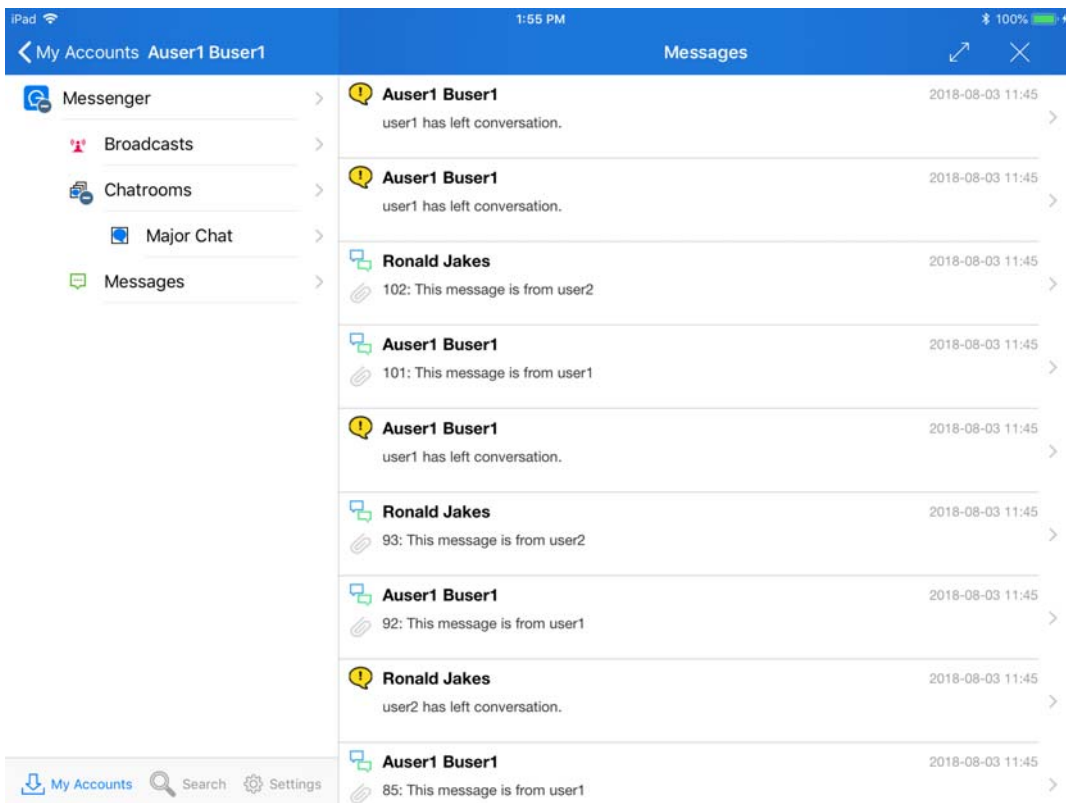
Select a message system to access those messages. In this case GroupWise Messenger.



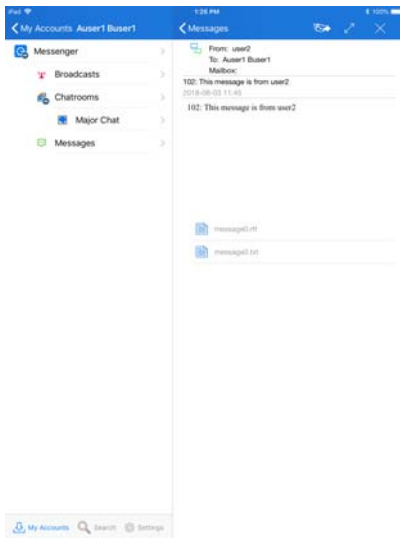
You will be able to browse messages.



This can also be viewed in landscape mode.



And view individual messages.



iPad Settings

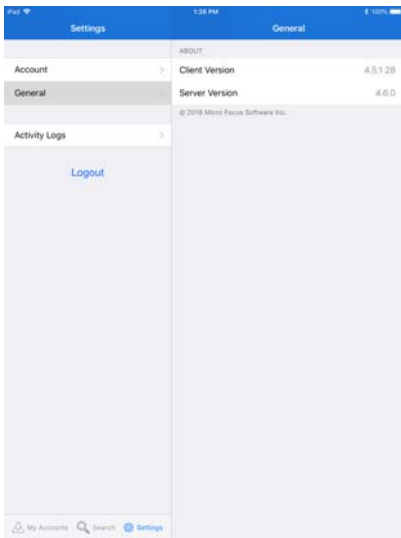
Access the app settings by pressing the Settings button.

Under the Account section you will be able to see your User ID and the Server the app is connecting to.

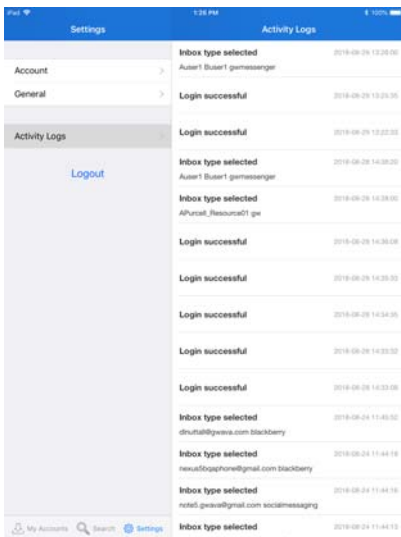
A Passcode Lock can be enabled as an extra level of security. You may use TouchID to secure the app.



Under the General tab you can find the app client version and the Retain server version.



Under the Activity Log tab you can see what the app is doing. These are helpful for troubleshooting. Generally you'll only have to deal with this if you are a system administrator.



14 Tools

- ◆ [“Tools Overview” on page 573](#)
- ◆ [“Retain Publisher and Viewer” on page 574](#)
- ◆ [“M+ and Netmail to Retain Migrator” on page 610](#)
- ◆ [“Outlook Plugin Administrators Guide” on page 624](#)
- ◆ [“Outlook Plugin” on page 645](#)
- ◆ [“Outlook Web App Plugin” on page 656](#)
- ◆ [“Retain PST Importer” on page 666](#)
- ◆ [“GroupWise WebAccess Plugin” on page 675](#)
- ◆ [“GroupWise Client Plugin” on page 682](#)
- ◆ [“GroupWise Archive Migration Tool” on page 691](#)
- ◆ [“Mobile Tools” on page 703](#)
- ◆ [“Retain App” on page 711](#)
- ◆ [“Swagger UI” on page 712](#)
- ◆ [“Managing Retain Language Support” on page 717](#)

Tools Overview

- ◆ [“Tool Compatibility with Retain 3.x \(Lucene\) Indexes” on page 573](#)

Retain has a number of tools available for importing and exporting data, as well as connecting to other programs.

To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.

Tool Compatibility with Retain 3.x (Lucene) Indexes

Not all tools are compatible with the Retain 3.x (Lucene) indexes.

Tool	Compatibility
Retain web console	Compatible
Publisher	Not compatible
Outlook Plugin	Not compatible
Retain App for Android Phones	Not compatible
Retain App for iOS Phones	Not compatible

Tool	Compatibility
Retain Single Sign-on plugin for GroupWise Client	Does not use indexes
Retain Single Sign-on plugin for GroupWise WebAccess	Does not use indexes
GroupWise Archive Migrator/PAM Tool	Does not use indexes
PST Importer	Does not use indexes
Netmail and M+ to Retain Migration Utility	Does not use indexes
PowerShell Sync Script	Does not use indexes

Retain Publisher and Viewer

Retain comes with the ability to export selected messages to a local archive for searching and viewing or to fulfill the need of a mobile archive for legal compliance. This can be extremely useful for larger systems or systems which have a high load, and where the need for review or legal compliance is being exercised, but access to the entire Retain archive is not necessary. Instead of allowing or facilitating constant access to the entire Retain Server, the Publisher can export and index groups of messages to a local archive, and the Viewer can search, view, and forward messages from the local archive.

The process is performed in two parts: the Publisher and the Viewer. The publisher, using an existing account with the `Publish Messages` right, connects to the Retain Server and exports the messages complying with the search request, and creates a local database archive on the host machine. The viewer accesses the local archive and allows browsing, searching, and message exportation from the local archive.

System Requirements:

- ◆ Windows 7x, 8x, 10x (32-bit or 64-bit).
- ◆ .Net 4.5 SP1.
- ◆ PST migration requires Outlook to be installed. (32 and 64-bit systems are supported.)
- ◆ Network connection to Retain Server.
- ◆ Retain user with rights to export mail (See User management in Retain Administration. [“Users” on page 417](#))

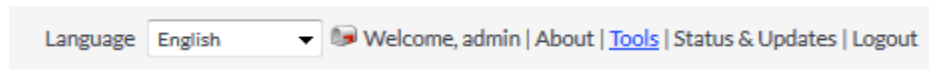
NOTE: Due to file access, the publisher cannot publish archives to a network drive.

The Viewer can be run or be installed as stand-alone client wherever a published archive exists, but it is recommended to install the Viewer when you install the Publisher. While the Viewer and Publisher can be installed and run separately, the Viewer must have direct access to the published archive. Do not place the published archive on a network share. Accessing the published database from a remote machine may cause instability and is insecure. For this reason, it is best to use the Viewer local to the published archive.

Download the tools from the Retain site

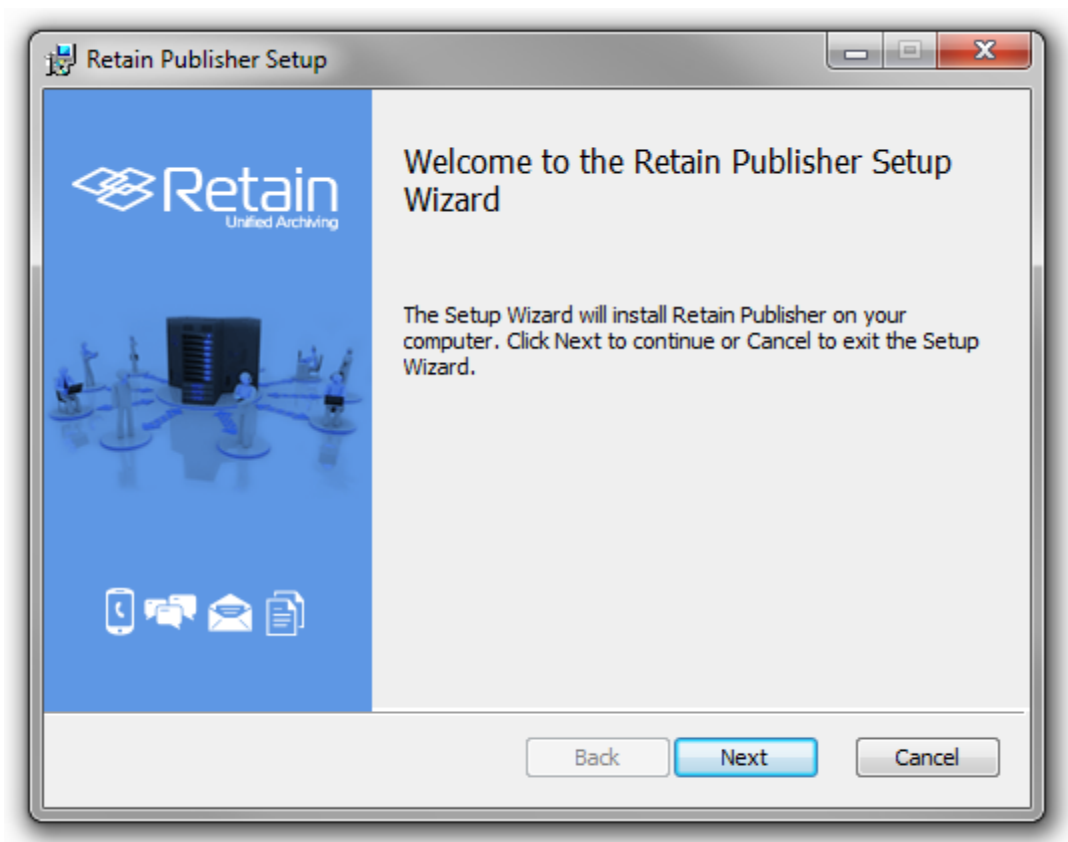
Run the installers on the desired machine.

The Retain Publisher and Viewer are found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.

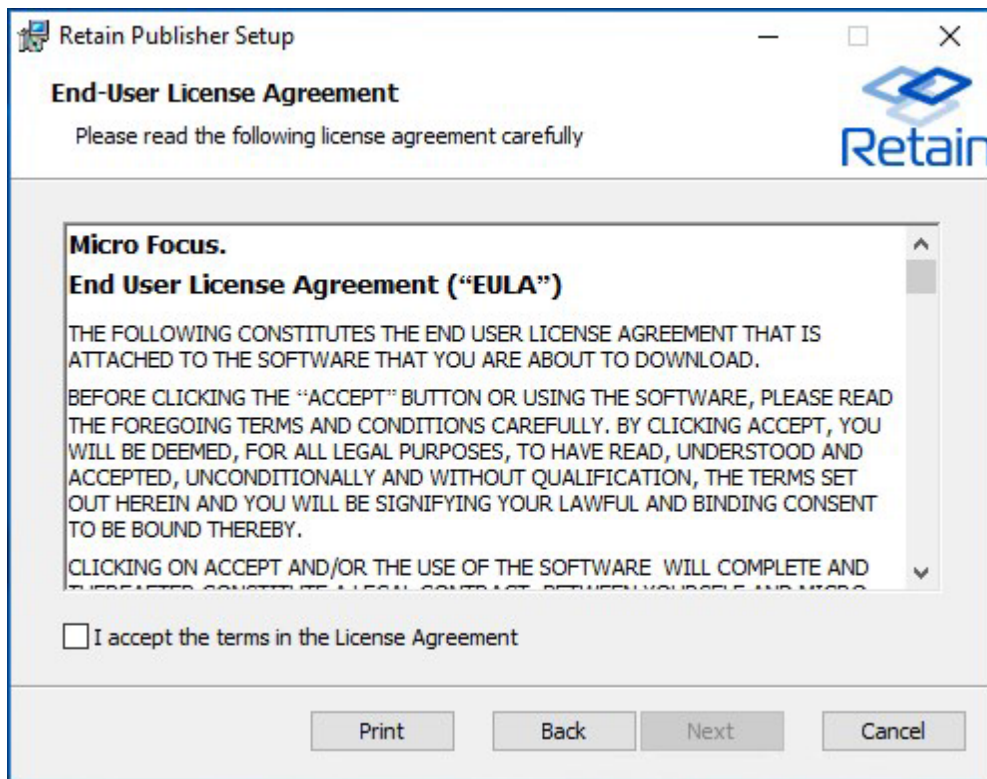


Installation

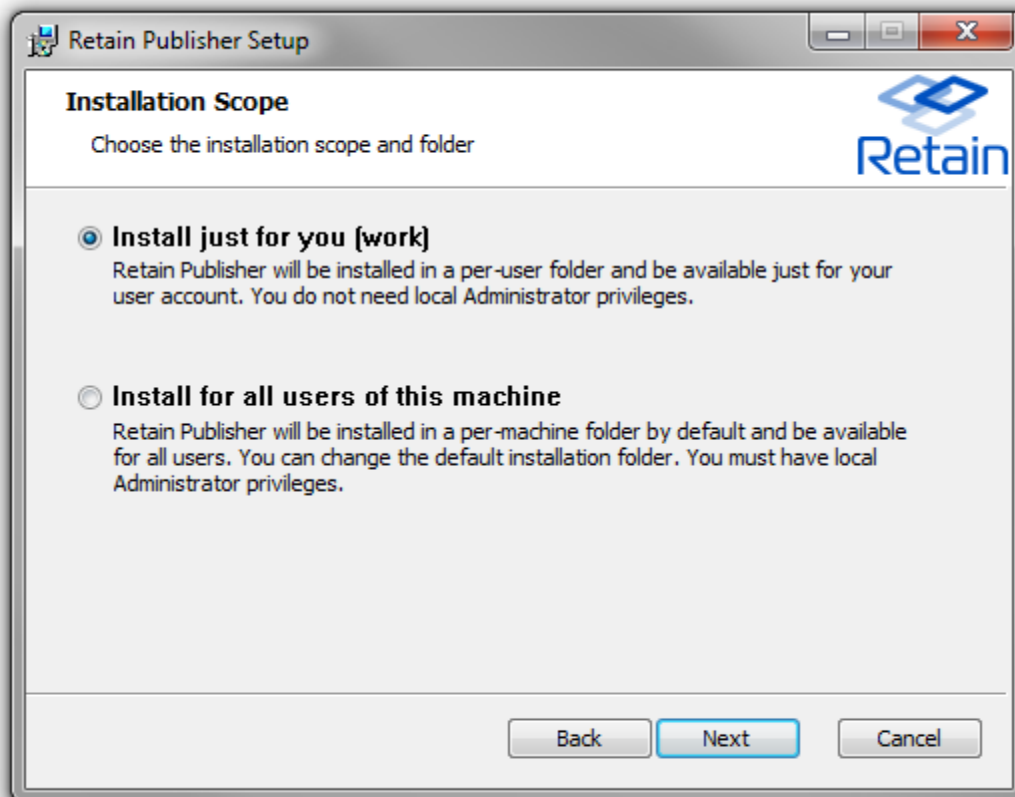
The Retain Publisher installation is very similar to the Viewer installation. Basic questions are asked, and the installer checks for .NET 4.5 SP1 before copying or installing any files. Click 'Next' to continue.



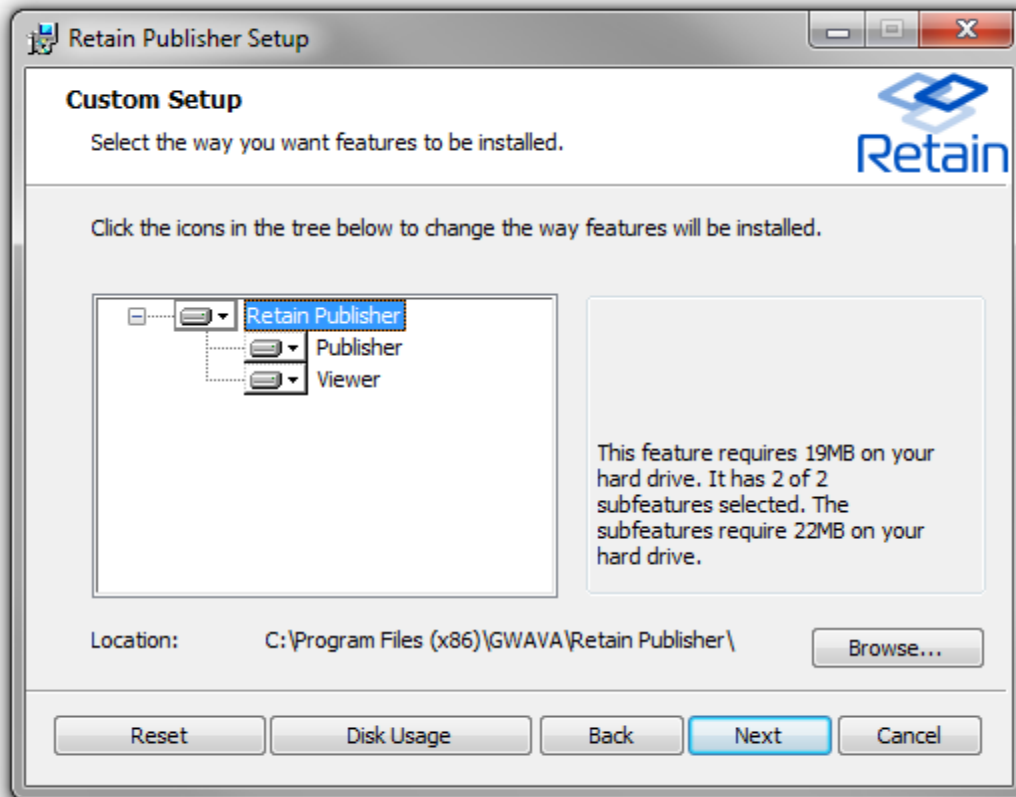
Read and accept the license agreement. Select 'Next' to continue.



The installer checks for any programs that need to be closed for installation. Close any applications specified and click 'Next'. Otherwise you will need to choose which users to install the software to.



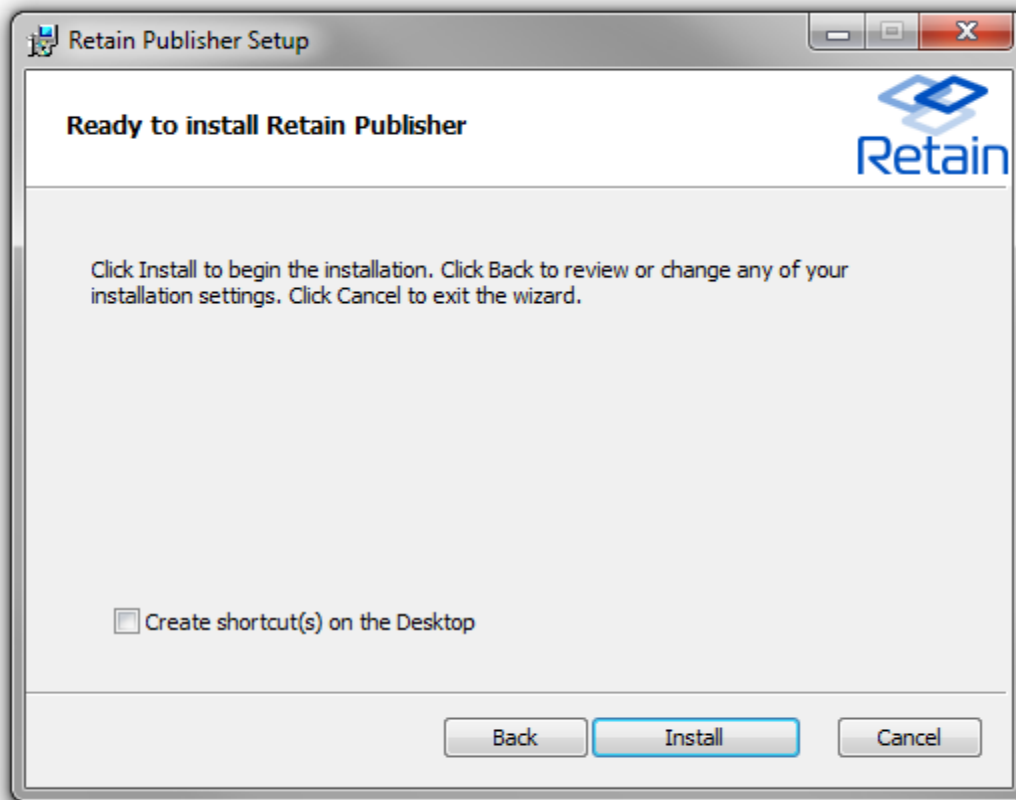
Select the scope of the install



Select which components to install.

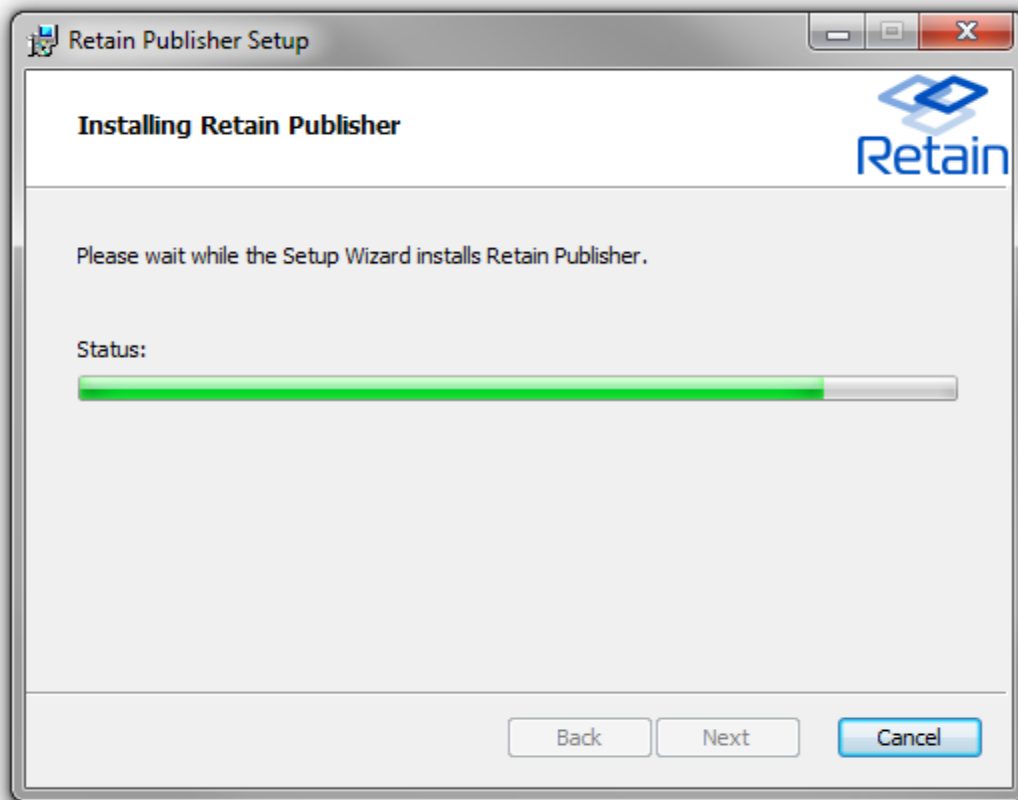
The Publisher installation provides the option to install the viewer alongside the publisher. If the viewer has already been installed, this is not necessary. It is recommended to have both the viewer on the same machine as the publisher. To only install the viewer, unselect the publisher. Select the desired setting and click 'Next' to continue.

Select the install location. The default is shown. If the default location does not work for the system, browse to, or specify the desired install location.

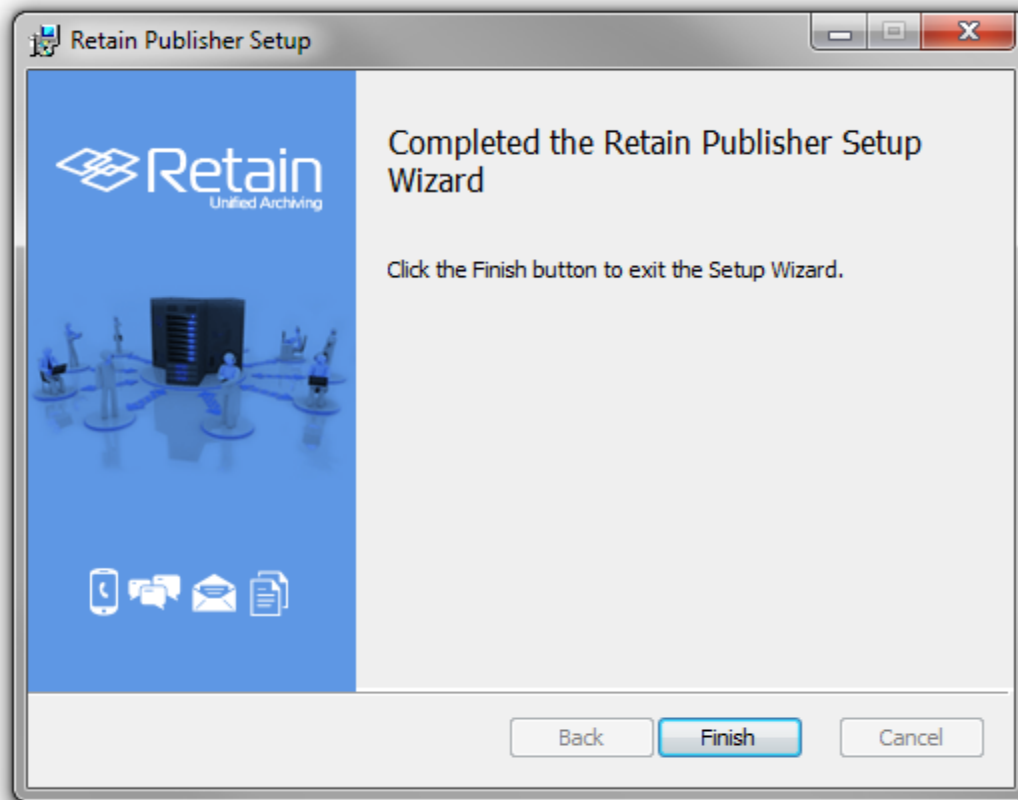


Select whether to create shortcuts or not. Default is to not create shortcuts. Select the check box to create shortcuts on the Desktop.

Click 'Install' to begin installation.



Wait for installation to complete.



After install has completed, select 'Finish'.

Retain Publisher

The Retain Publisher must be run to create the local archive for the Viewer to connect to. The Publisher does not display messages, it just accesses and exports messages into a portable message archive.

User Rights

Rights explicitly granted to the user.

Administrator level rights

- Access Reporting and Monitoring Server
- Access all audit logs
- Deletion Manager
- Add, edit, remove global tag definitions
- Apply or remove litigation hold
- Manage Server
- Manage Users and Groups
- Manage Workers, Schedules, Profiles, Jobs
- Publish Messages
- Restore messages [Any Mailbox]
- Search all mailboxes
- See Confidential Items [other mailboxes]

The Publisher must be used in conjunction with a user that has administrator rights to publish messages. Because the Publisher connects over the network, it requires an open network connection to the Retain Server.

The Administrator account for Retain automatically has the publish messages right, and can be used here, though it is highly recommended to create and use an auditor account with the mail export right and access to the desired mailboxes or post offices required.

Core Settings | User Rights | Mailboxes | Miscellaneous

Mailboxes

These are additional mailboxes beyond the primary mailbox that the user may access. A non-admin user will only view messages addressed to these e-mail addresses (and to their primary mailbox), and might be able to forward/delete messages if given rights. An admin with *Search All Mailboxes* rights can access all mailboxes and perform any operation in the Search Interface.

Currently Selected

- ✗ Brice Bitter
- ✗ User02-Projects

Criteria

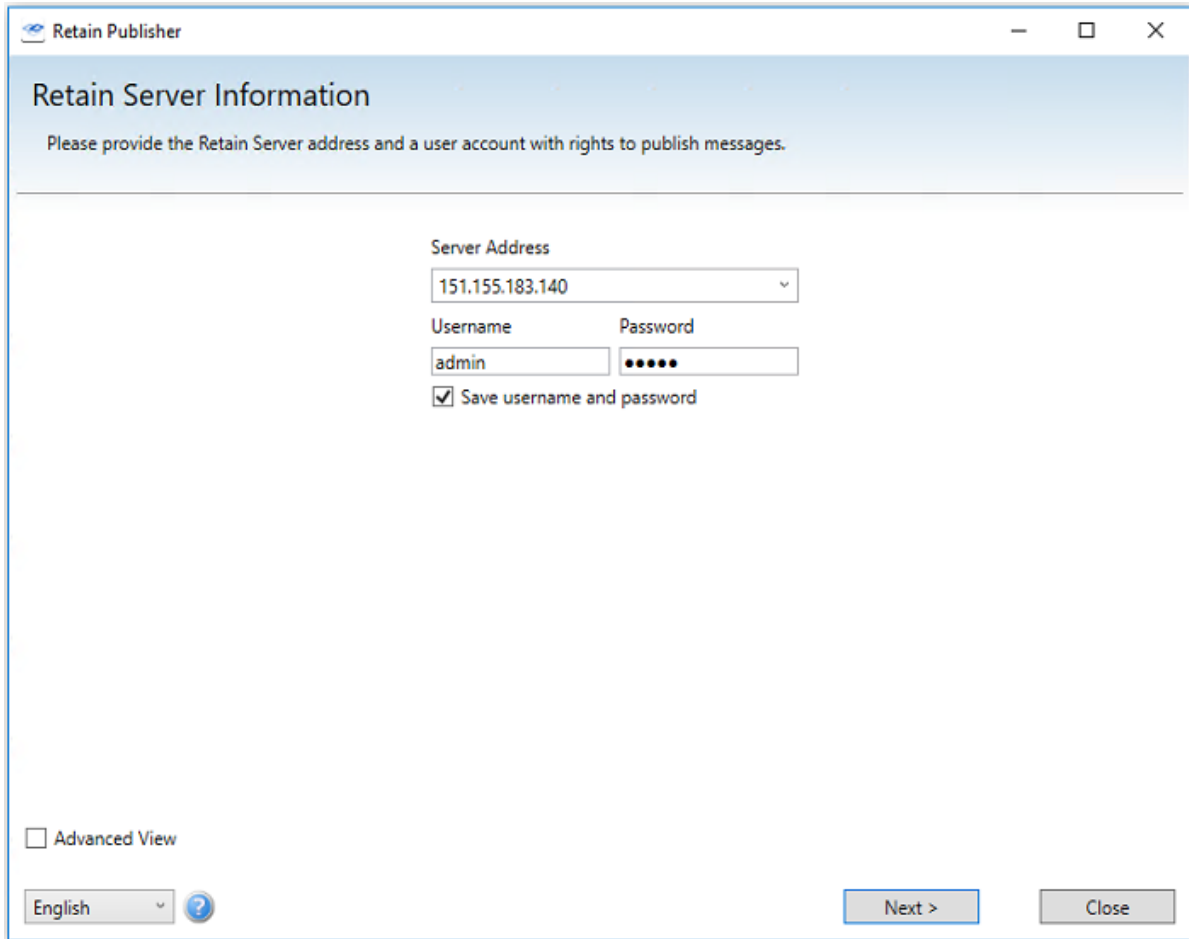
Mail Server begins with

System Show only users Show only recently cached items

Start Retain Publisher by opening the program Publisher.exe.

Retain Server Information Page

Input the Retain Server's DNS or IP Address and the login for the account with message export rights and rights to the desired mailboxes. Unless the login account has the administrator level right to 'search all mailboxes', only the mailboxes granted to the auditor account will be accessible. Granting rights to mailboxes other than the active user's own mailbox are specified in the user rights section, under the 'mailboxes' tab.



The screenshot shows a window titled "Retain Publisher" with a sub-header "Retain Server Information". Below the sub-header is a message: "Please provide the Retain Server address and a user account with rights to publish messages." The form contains the following fields and controls:

- Server Address:** A dropdown menu with the value "151.155.183.140".
- Username:** A text input field containing "admin".
- Password:** A text input field with masked characters "•••••".
- Save username and password:** A checked checkbox.
- Advanced View:** An unchecked checkbox.
- Language:** A dropdown menu set to "English" with a help icon.
- Navigation:** "Next >" and "Close" buttons.

The advanced view provides a protocol and port options.

Retain Publisher

Retain Server Information

Please provide the Retain Server address and a user account with rights to publish messages.

Protocol	Server Address	Port
http://	151.155.183.140	48080

Username: admin Password: ●●●●

Save username and password

Advanced View

English ?

Next > Close

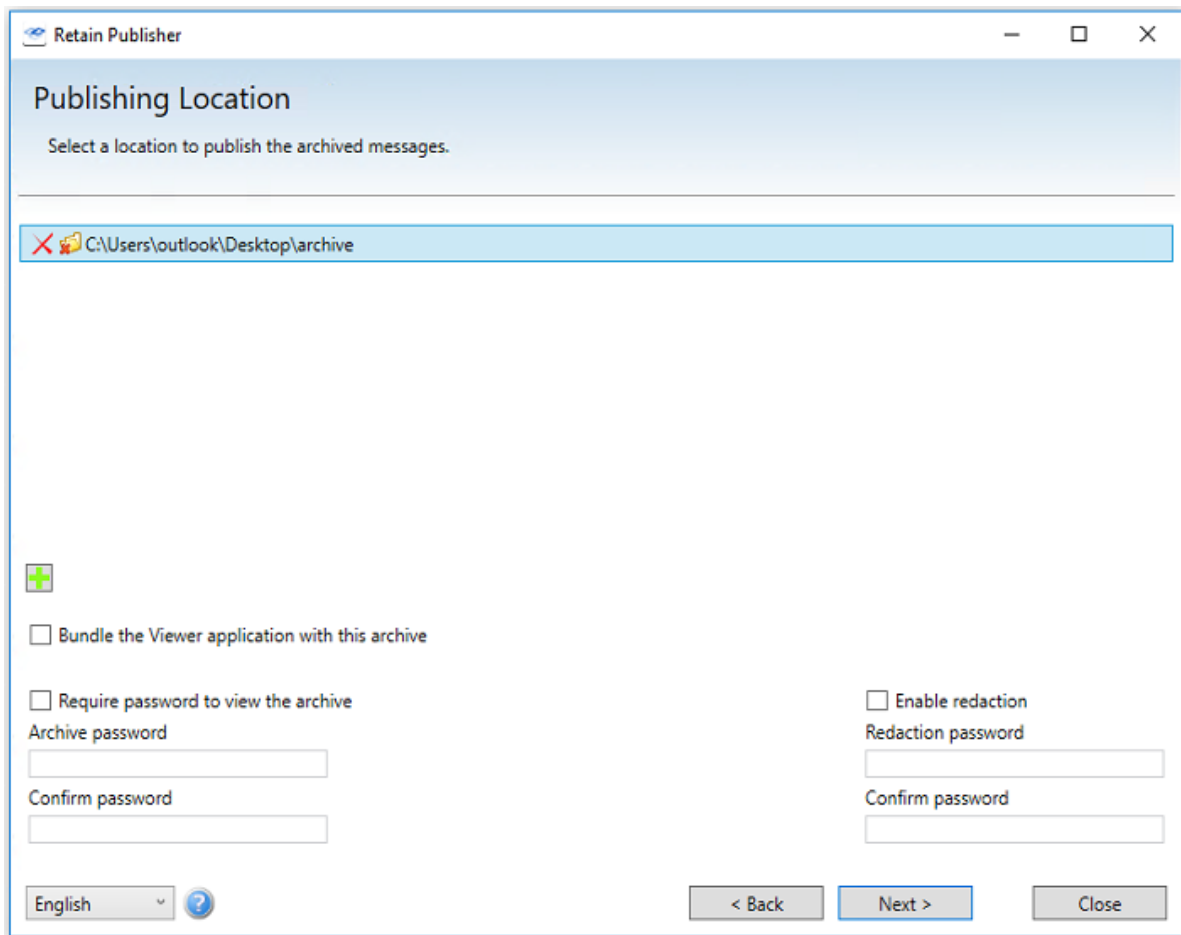
Select 'Next' to login to the Retain Server.

Publishing Location Page

The Publisher then asks for the desired location for the exported archive messages.

The messages extracted from the Retain Server will be saved in a database at this location. Select an existing location or select the green plus button and then browse to, or create a new folder for the published archive destination. If a destination is selected which already contains an existing archive, a warning of overwriting an existing archive will be displayed.

You must select, or create and select, a location for the messages to be exported to before you may proceed to the next screen.



The options to password protect and use Redaction, both require passwords. To use them, select the checkbox and specify a password. The passwords can be different and both options may be present on the same archive.

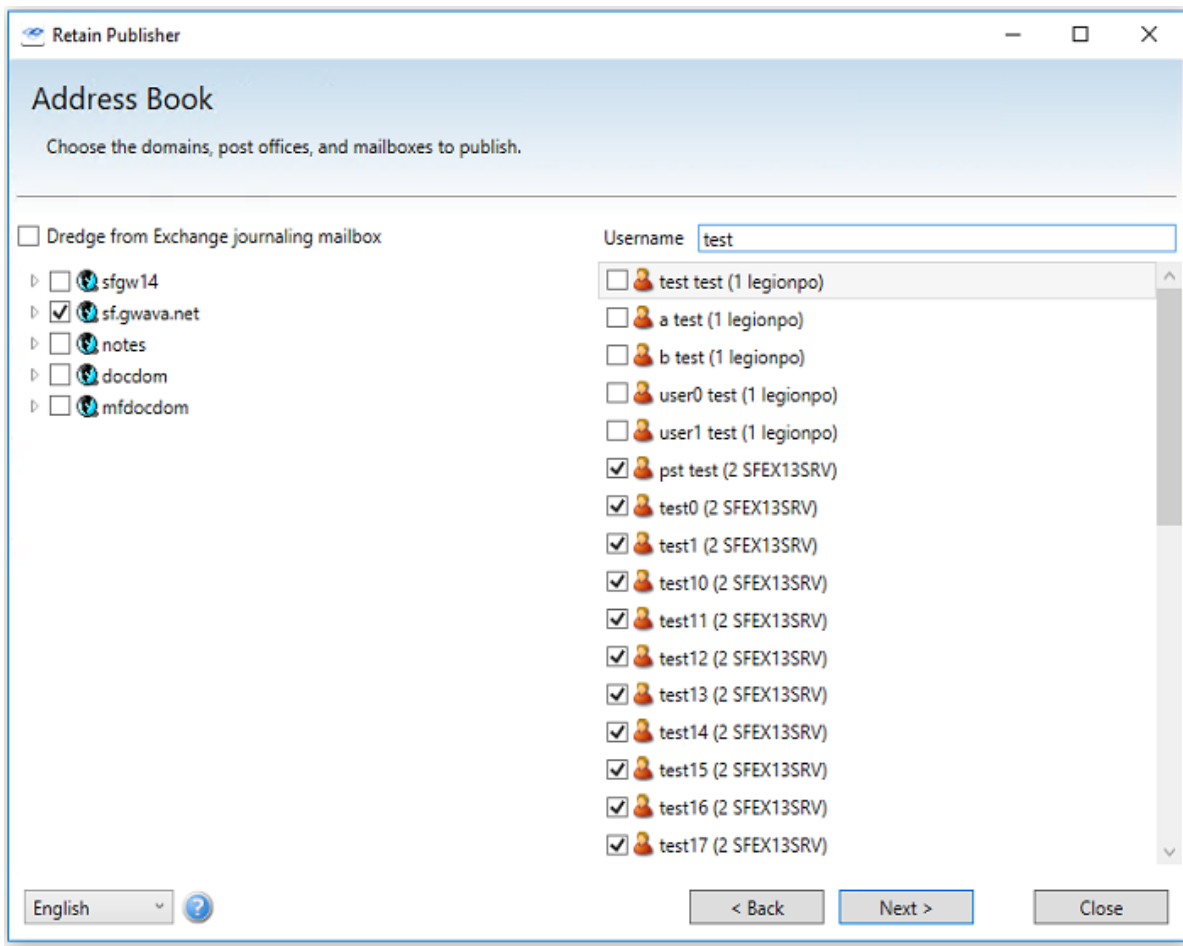
When the 'Bundle the Viewer application with this archive' option is selected, the Viewer installation file is copied into the archive as well, preparing it to be completely mobile; the entire destination folder can then be copied or sent to any system with all that is required to read and search the archive. If the archive is to be distributed on a burned DVD or CD, further redaction will not function from the disk. All redaction comments should either be made before the archive is burned to a disk, or the archive should be copied from the disk to a local location where changes can be saved. When writing the archive to a read-only medium, it is always prudent to finalize the compilation.

Making the archive mobile can be very useful in situations where direct access to the Retain archive, such as during legal discovery, when email information is required to be surrendered for a user or group of users, an archive can be created and provided without disrupting current Retain operation. Click 'Next' to continue.

Address Book Page

Select the Post office and/or users to dredge.

Search for users by their display name.



Query Form Page

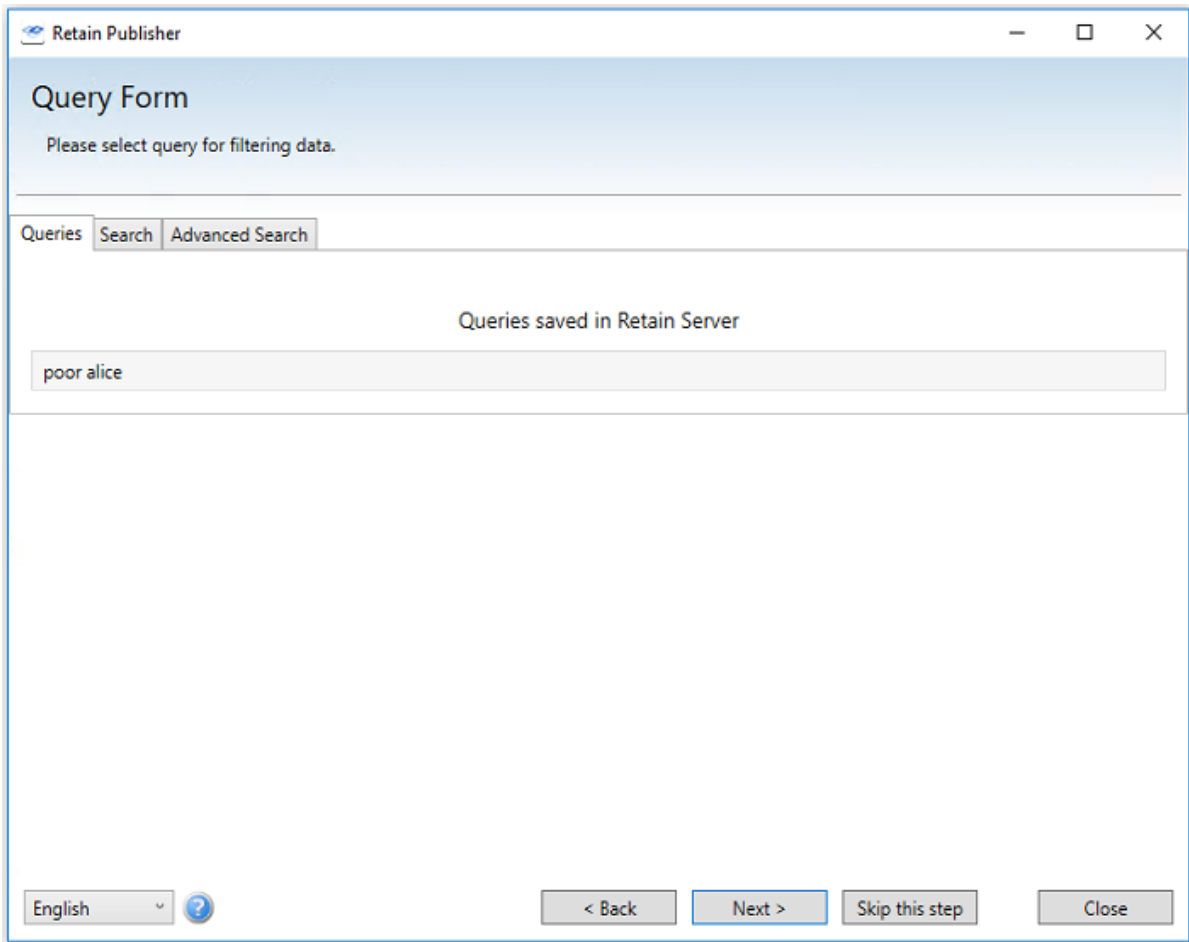
Select or create a query to filter the scope of the export job. There are three tabs but you only need to use the one you need to build the query. You can use a query saved in the Retain Web console, a simple search or an advanced search.

If you don't want to perform a query, press the "Skip this step" button.

Queries Tab

A query saved ["How Retain Searching Works" on page 542](#) on the Retain Server can be loaded at this point.

Queries can be saved under the Search and Advanced Search tabs in the Search Messages Web interface. Publisher requires you to log in to the same account as the one used in the web interface to access the saved query.



Search Tab

The Search tab allows you to create a simple search query within Publisher.

The screenshot shows a window titled "Retain Publisher" with a "Query Form" header. Below the header is the instruction "Please select query for filtering data." There are three tabs: "Queries", "Search", and "Advanced Search", with "Advanced Search" being the active tab. Under the "Advanced Search" tab, there is a "Core" section with a search phrase input field containing "poor alice" and an "Operator" dropdown menu set to "Equals". Below the "Core" section are two collapsed sections: "Scope" and "Misc.". At the bottom of the window, there is a language dropdown set to "English", a help icon, and four navigation buttons: "< Back", "Next >", "Skip this step", and "Close".

Advanced Search Tab

The Advanced Search Tab allows you to create a complex search query within Publisher.

The Publisher may restrict what mail or items are published into the message archive by specifying search or query terms. If a message or item does not apply to the search terms, it will not be added to the published archive. There are three opportunities to specify search terms or criteria; Core (query), Scope, and Misc.

Each of the three different criteria panels at this step may be shown or hidden by clicking on the hide/show arrow. Previously saved searches or searches that have been shared with the logged-in user will be displayed in the queries menu.

Retain Publisher

Query Form

Please select query for filtering data.

Queries Search **Advanced Search**

Core

Search Terms

Search Type	Operator	Search Phrase	Connecto
SenderEmail	Equals	hatter@carroll.co	AND
Content	Contains	poor alic	AND

Scope

Misc.

English ?

< Back Next > Skip this step Close

Core Panel

To add criteria to the Core query parameters, simply select the green '+' icon, then select the different desired operator, search type, and phrase.

For instance, a very exclusive 'contains' search of the message contents will only publish messages that have the exact specified word or phrase in them. Fuzzy searches for approximates to the specified phrase, producing results including the words, but not in the specific order, or similar words.

Scope Panel

The Scope details what types of messages will be searched for. If no items are checked, all are allowed, and that setting is default.

To restrict to specific messages and types, (some are mail system specific), at least one item must be selected. If one item is selected, or something is desired to be excluded from the published archive, select all desired item types. The Item Type, Item Source, and Attachment size, are all independent factors and must be specified independently or left blank. A blank item source and attachment size will not restrict those criteria when combined with a specified type.

Attachment sizes can be restricted or allowed into the message archive, and are accessible through the drop-down menu at the bottom of the query screen, under the 'Attachment Size' menu.

Less than 100 kilobytes

Greater than 100 kilobytes, but less than 1 megabyte

Greater than 1 megabyte, but less than 10 megabytes

Greater than 10 megabytes, but less than 100 megabytes

Greater than 100 megabytes

Misc Panel

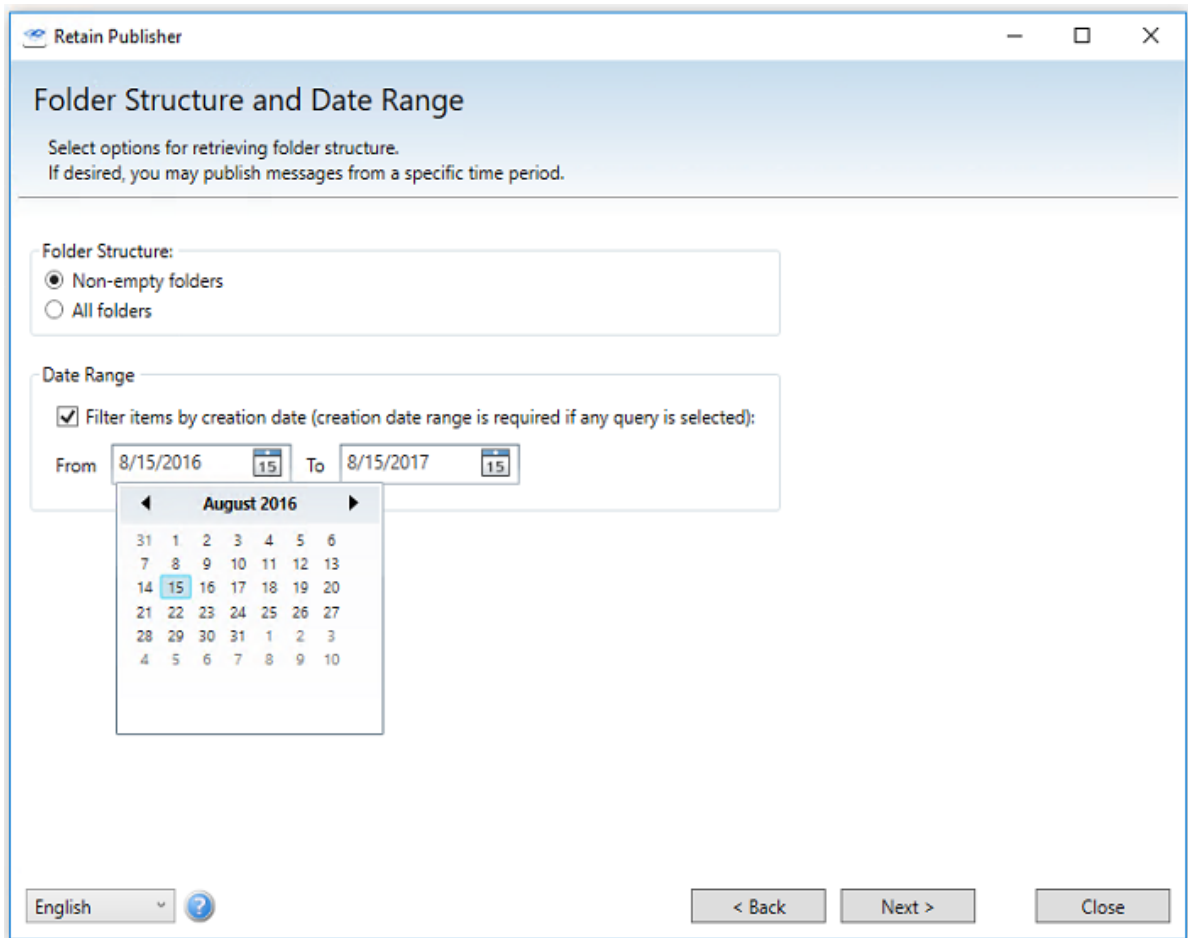
The Miscellaneous panel allows you to restrict the message based on the message's status. Options are Doesn't matter, True or False.

The screenshot shows a window titled "Retain Publisher" with a "Query Form" header. Below the header is the instruction "Please select query for filtering data." There are three tabs: "Queries" (selected), "Search", and "Advanced Search". Under the "Queries" tab, there are three expandable sections: "Core" (expanded), "Scope" (expanded), and "Misc." (collapsed). The "Core" section contains a "Status" group with three dropdown menus: "Opened" (Doesn't matter), "Read" (Doesn't matter), and "Private" (Doesn't matter). The "Scope" section contains a "Litigation Hold" dropdown menu (Doesn't matter). The "Misc." section contains a "Confidential" dropdown menu (Doesn't matter). At the bottom left, there is a language dropdown set to "English" and a help icon. At the bottom right, there are four buttons: "< Back", "Next >" (highlighted in blue), "Skip this step", and "Close".

Select 'Next' to continue.

Folder Structure and Date Range Page

Choose how much of the folder structure and date range you wish to download. By default, the entire date range of the system will be searched.



Simply selecting the desired setting will make it active in the search criteria. Set as desired and continue.

The publisher can also be restricted to exclude all empty folders from the published archive.

The Date Range allows for specific item date ranges to be selected or excluded. The query will cause the publisher to only look for the specific mail required within the specified time frame. The time range may have a start date, and end date, or both. This feature is disabled if a saved query is being used.

This setting differs from the following time restriction in that the start and end times may be specified in a range, instead of a specific hard date. Only messages strictly adhering to the range will be published. If a date range is desired, enable the date range and select the desired range.

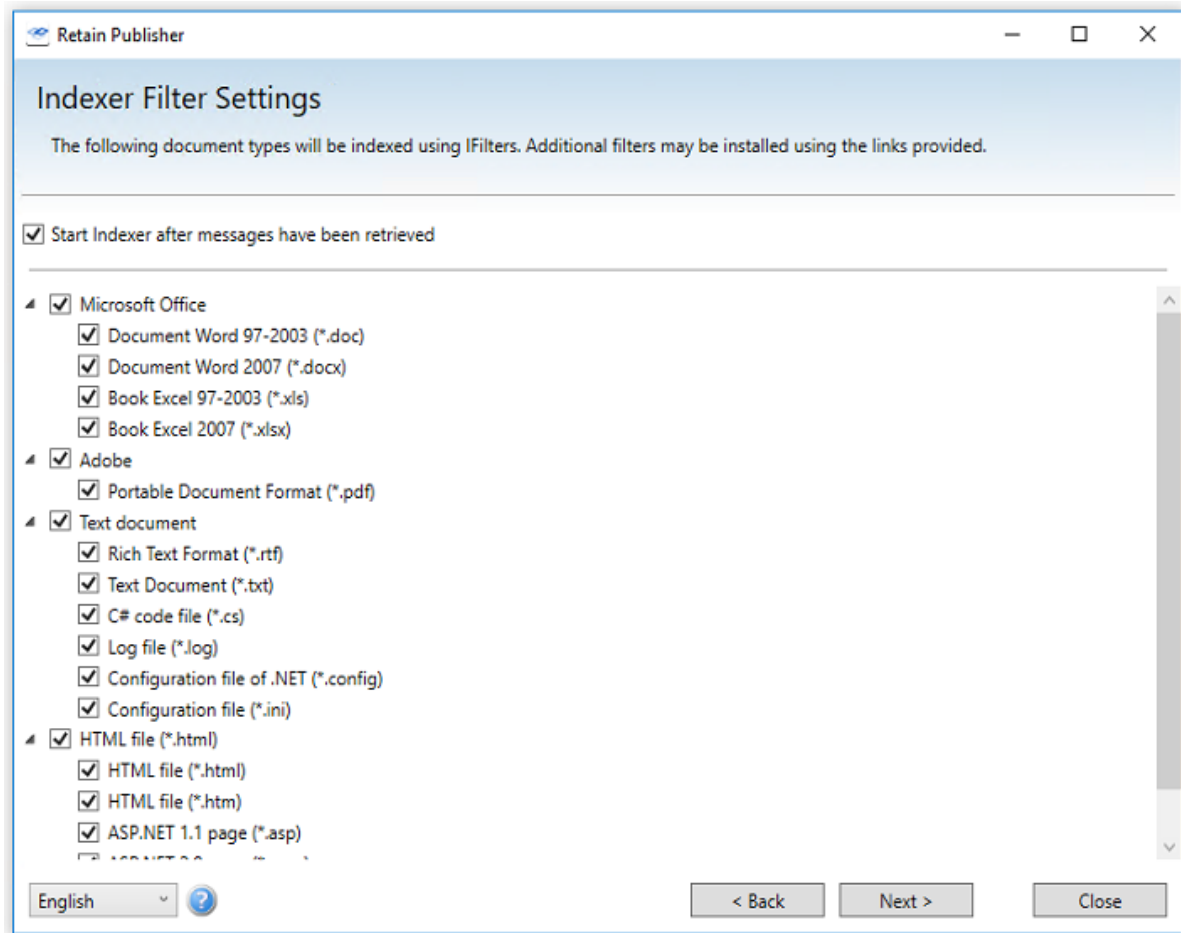
A date range is required to be specified if the active query is anything other than a previously saved query, so make sure it is set to an acceptable window for the desired data. The publisher automatically defaults the date range to one year.

Click on the 'From' or 'To' dates to reveal the data selection calendar and specify the date as desired.

Click 'Next' to continue.

Indexer Filter Settings Page

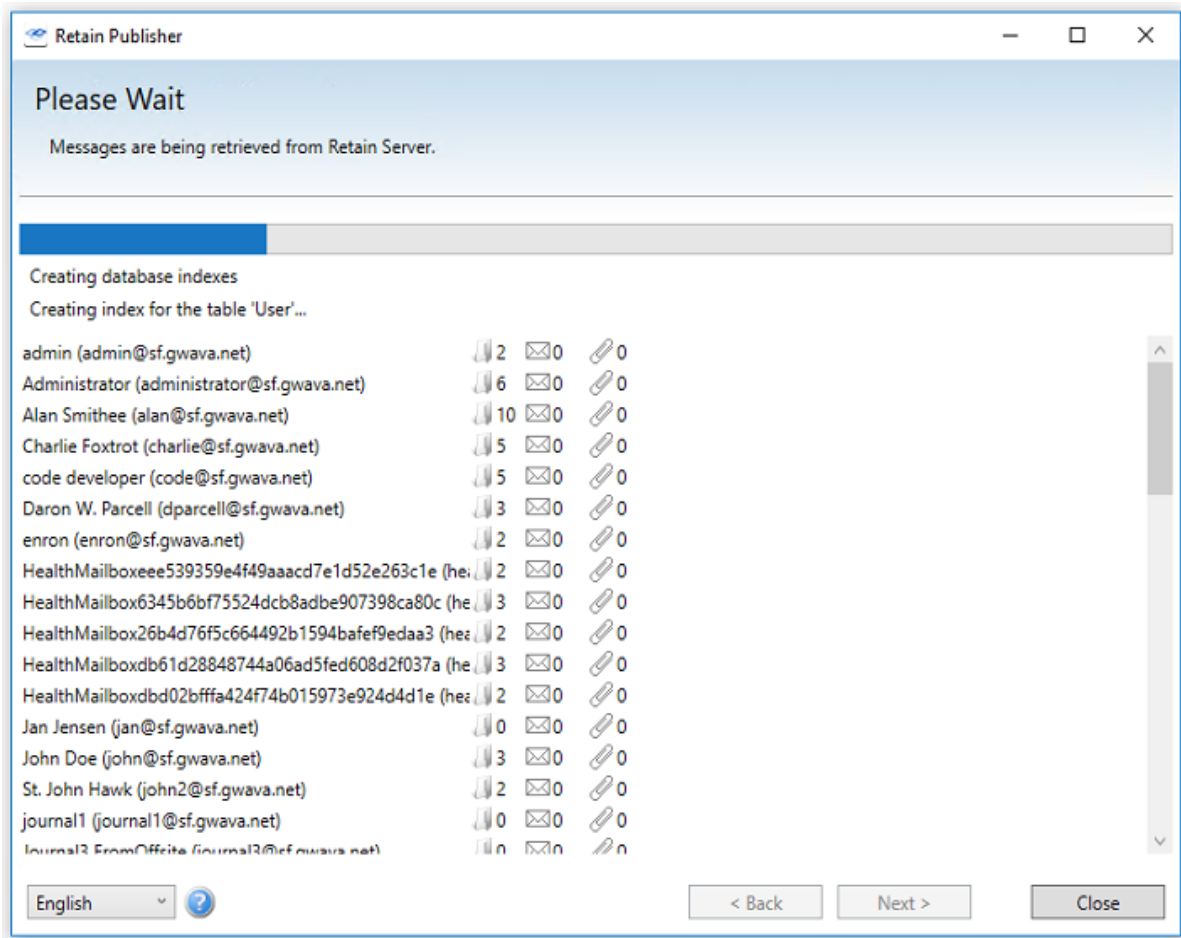
Select what types of documents to be indexed. It is best to index all types of documents so all items may be searched.



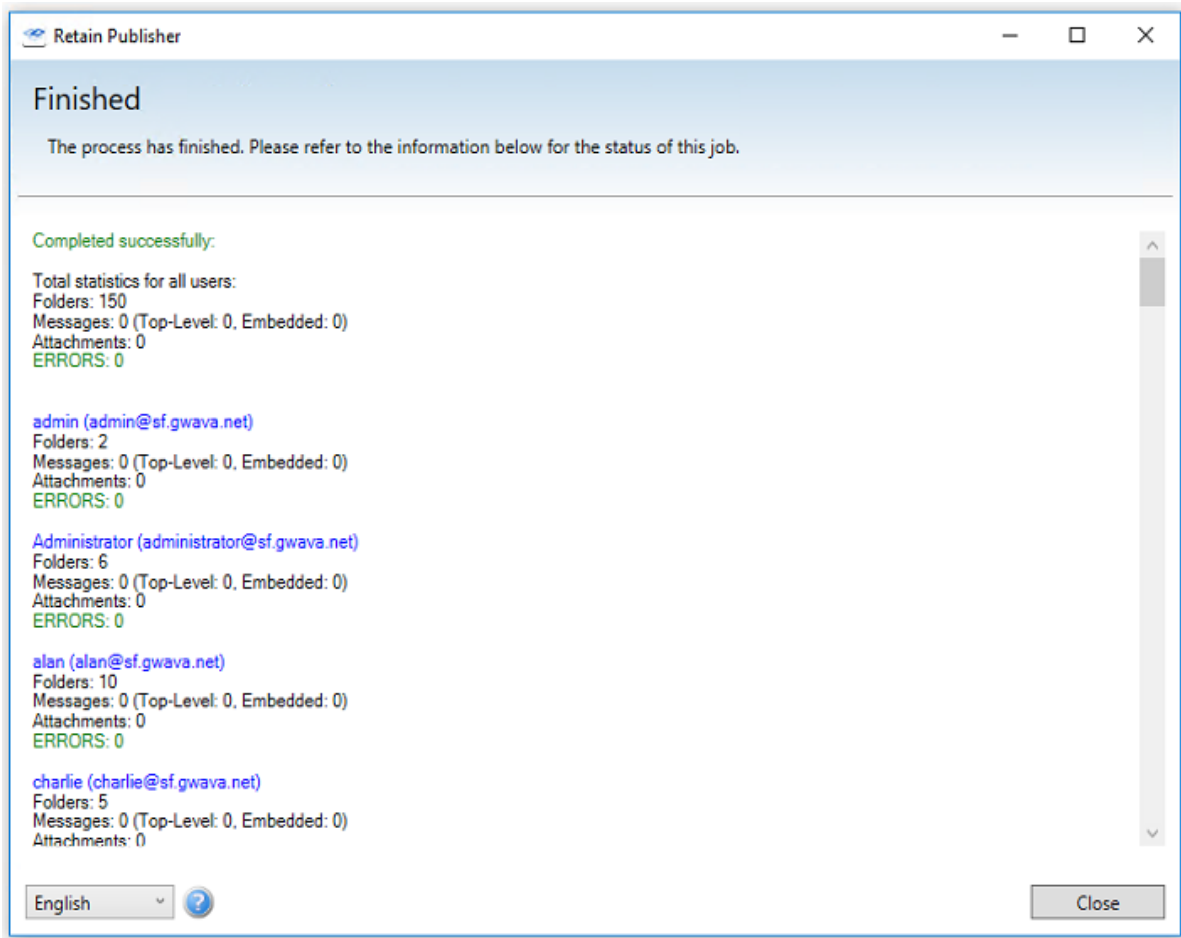
The Publisher can create and index the archive for faster searching and browsing by the Viewer. It is highly recommended to index a published archive. All default filters are shown. To enable Adobe PDF indexing you will need to install Adobe PDF iFilter found on Adobe's web site.

Click 'Next' to continue.

The Publisher will connect to the Retain Server and export the qualifying messages from the selected users mailboxes and builds the local archive.



When the Publisher is done, it will display a report on the job. Depending on whether the exported archive was selected to be indexed after the job is done, the indexer will run. A.net error may occur at the end of Indexing, caused by an error in Adobe iFilter, if this error occurs, please install the latest Adobe PDF iFilter found on Adobe's web site.

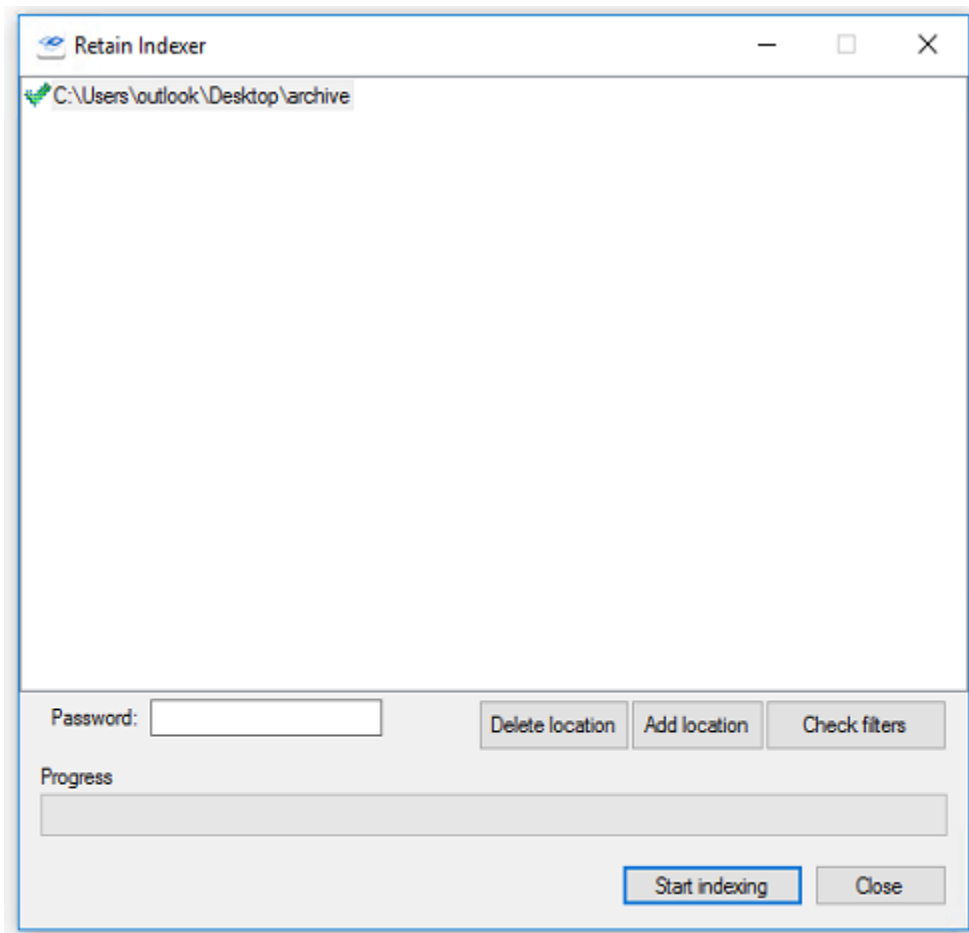


Select 'Close' to exit the publishing wizard and the indexer will automatically run if that option was selected. With a successful publishing job, the archive is now ready to be connected to the Viewer.

Retain Indexer

Retain Indexer runs automatically after Publisher completes the download. If the Indexer was not automatically run, it must be run before the Viewer can search the archive.

Select the archive and press "Start indexing"



If an archive is password protected, you will need to provide the password before indexing can be run successfully.

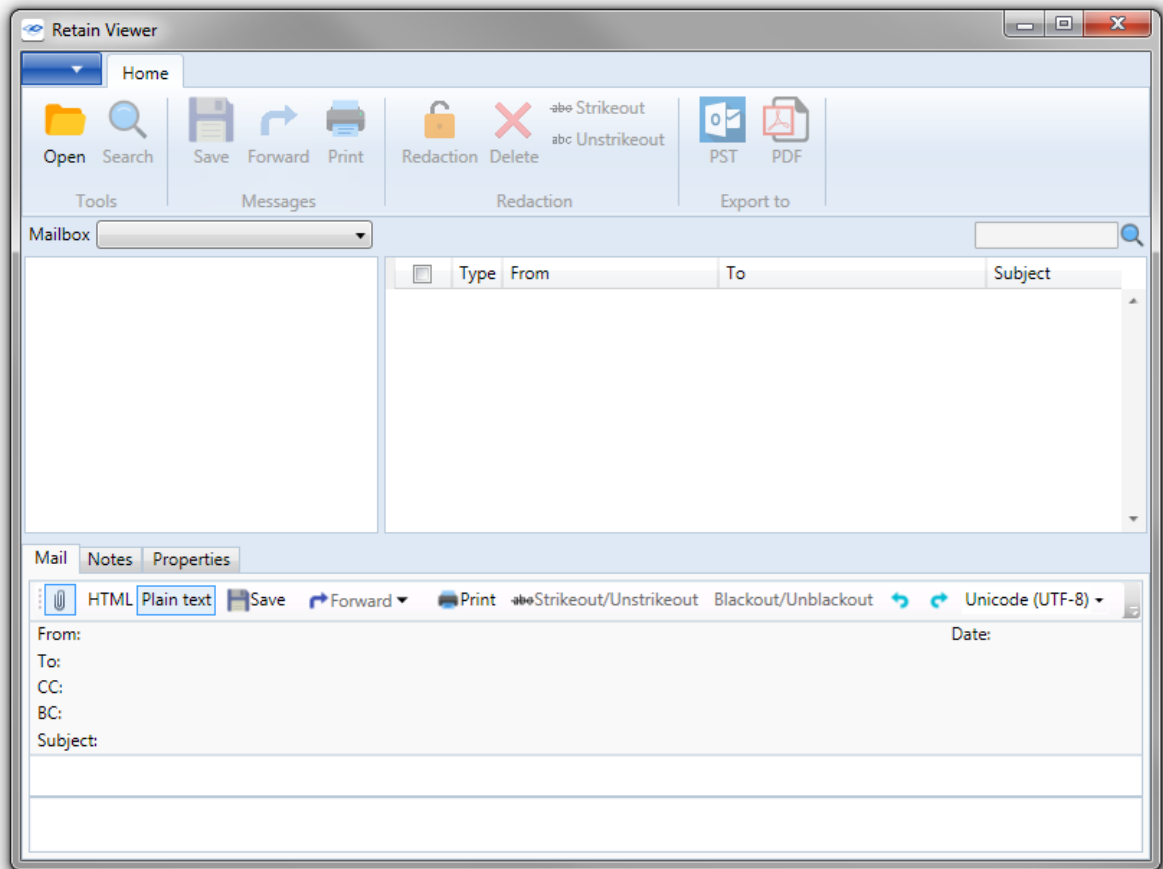
Delete location will remove the archive from the display but not the disk.

Add location will allow you to add an archive location.

Check filters shows installed indexing filters and can be enabled or disabled.

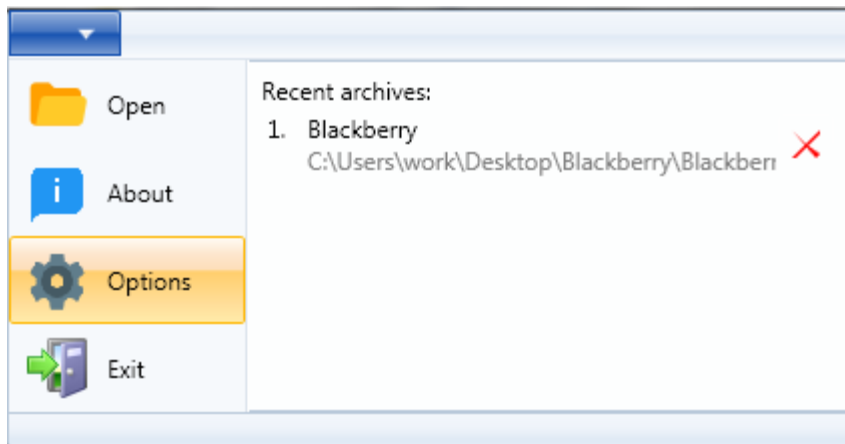
Retain Viewer

To connect to the published archive, locate the shortcut to the installed Retain Viewer and start the Viewer.

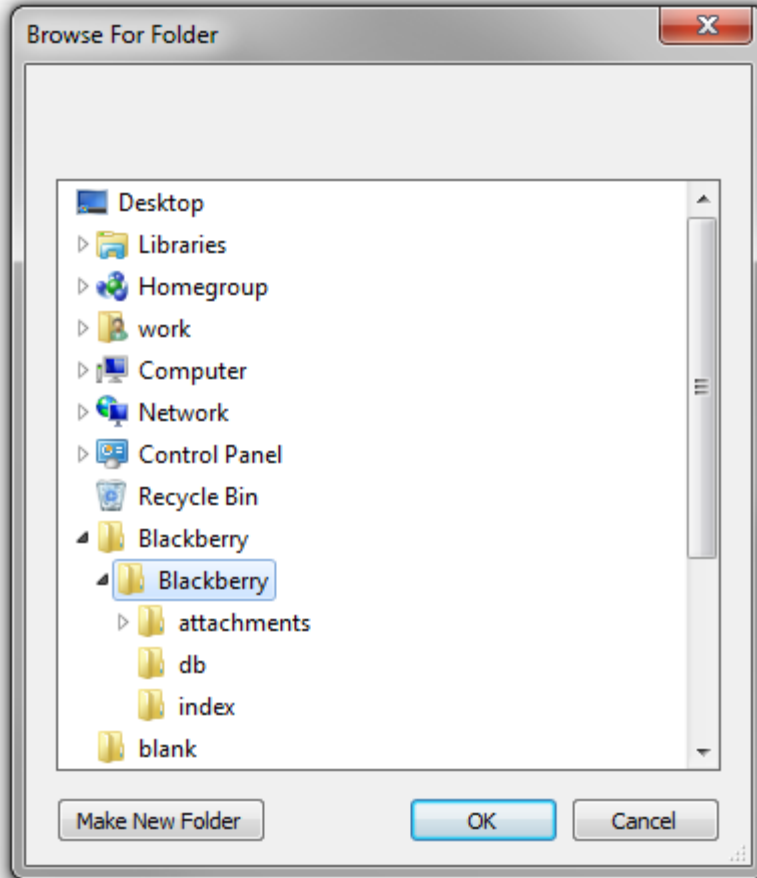


The viewer must be pointed to a valid database on initial startup. If the viewer does not prompt for the location to a published database, or if a new database is desired, select the 'Open' button and browse to and select the containing folder. If the Viewer has been previously opened, it will remember the last database opened.

The viewer is setup similar to an email client, with the mailbox and account on the left, the selected account's contents fill the space on the top right, and any selected message's contents are displayed along the bottom. Tabs allow access to the message properties or text, and highlighted buttons below the tabs determine what is shown and how, (Attachments, HTML, Plain Text). The Viewer also has the ability to forward the selected message out of the portable archive to any specified address.



To access an archive, select the 'open' button from the top toolbar, or select the 'Open' option from the 'File' dropdown menu.

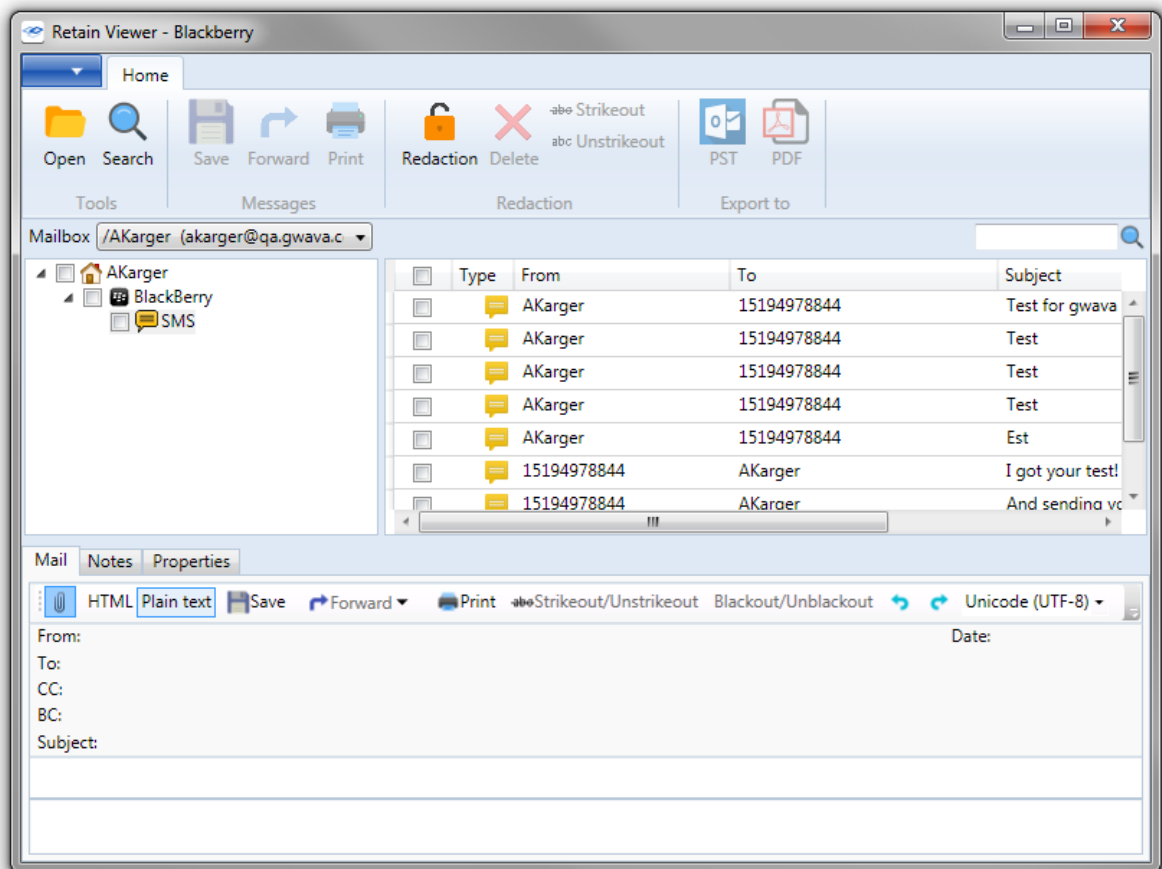


The Viewer only needs to know the base location of the archive, or the folder selected in the Publisher as the archive location. The 'Open' menu starts a browse window.

Browse to the location where the portable archive is located, select it, and click 'OK'.

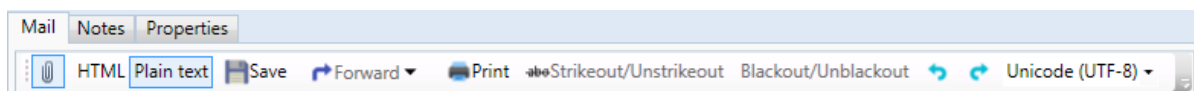
If the archive was password protected, the correct password must be entered before the Viewer can gain access.

Once the Archive has opened, all mailboxes contained in the archive are displayed. Select a mailbox to access the mail in the archive.



It is important to note that while the Publisher stores time in UTC, the time displayed in the viewer, located in the 'Date' column for each message, is relative to the viewer's installed time zone, it is not in UTC. Messages published in PDF also display according local time zone. PST is exported in UTC, but Outlook rounds to the nearest minute, and displays the UTC time stamp in local time.

The text of the selected message will be displayed in the bottom viewer pane. The viewer contains options to show or hide the attachments, forward the message, as well as whether to view the message in plain text, or in HTML when available.



HTML: Select the HTML version of the item, if available.

Plain text: Select the text version of the item, if available.

Save: Save the current item to disk.

Forward: Forward the current item to an email address.

Print: Print the current item.

Strikeout/Unstrikeout: Toggle the strikeout feature of the current highlighted section.

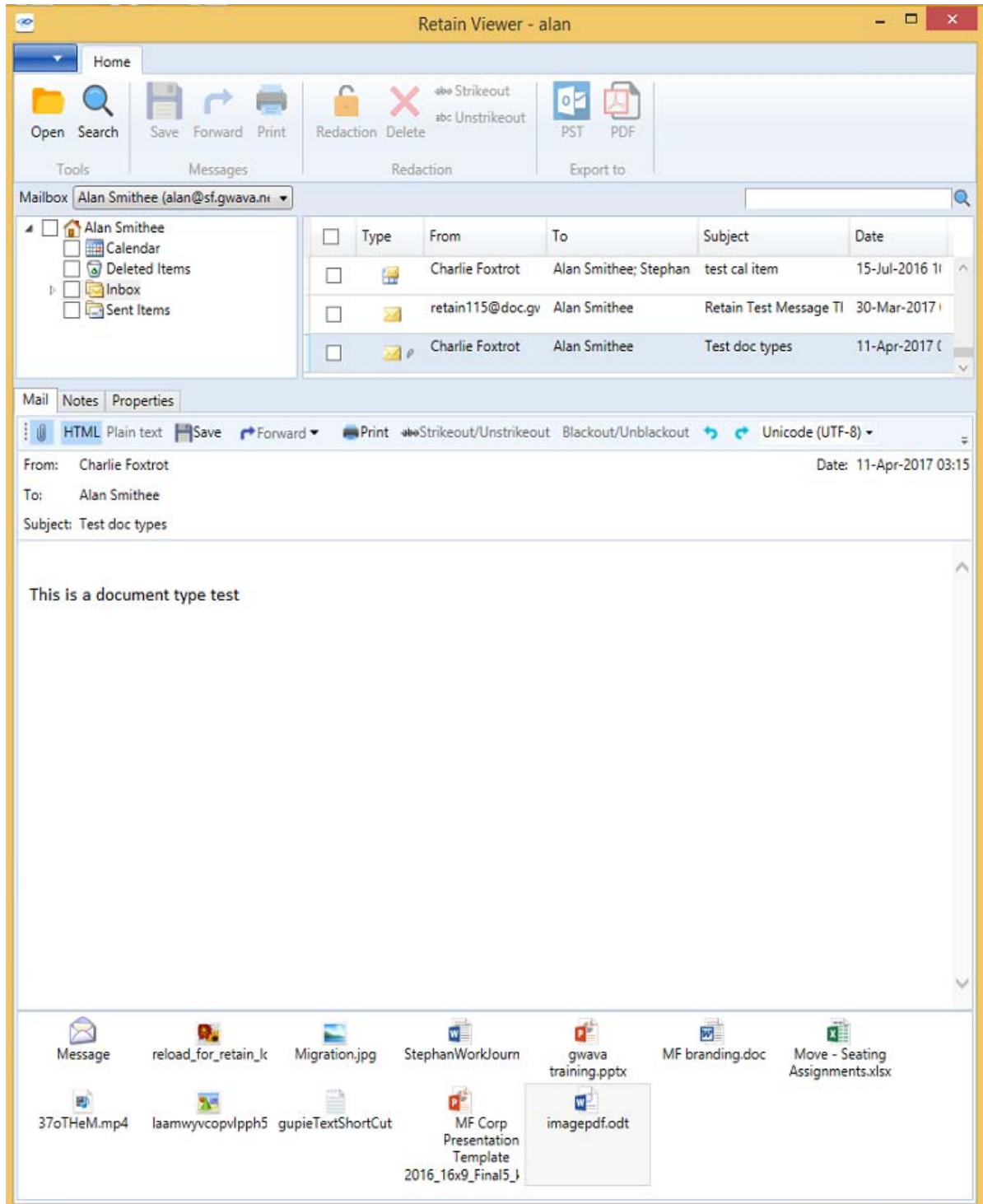
Blackout/Unblackout: Toggle the blackout feature of the current highlighted section.

Undo redaction: A green reverse arrow that undos the last action.

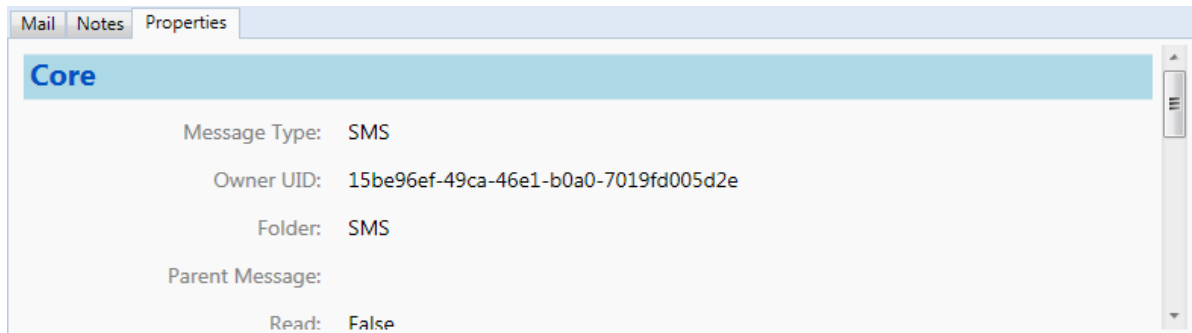
Redo redaction: A green forward arrow that redos the last action.

Encoding drop down menu: Change the item encoding, depending on the encoding schemes installed to the OS. Default, Unicode (UTF-8).

Attachments are shown along the bottom of the message window. Double-clicking on an attachment will send it to the operating system to open in the appropriate program.

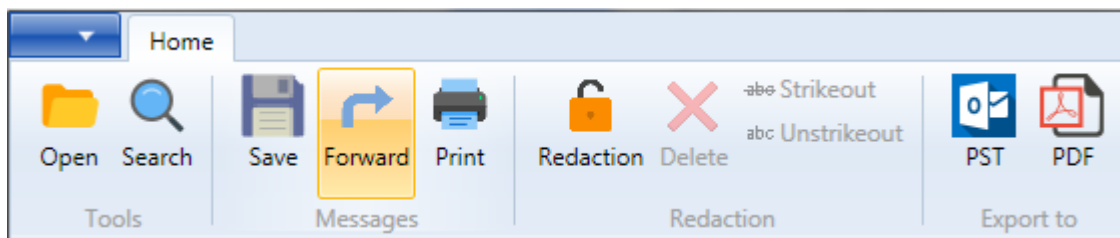


The properties tab displays the essential information on the mail item in question. The created, delivered, read status, and store date are displayed along with the identification number, message source, etc.

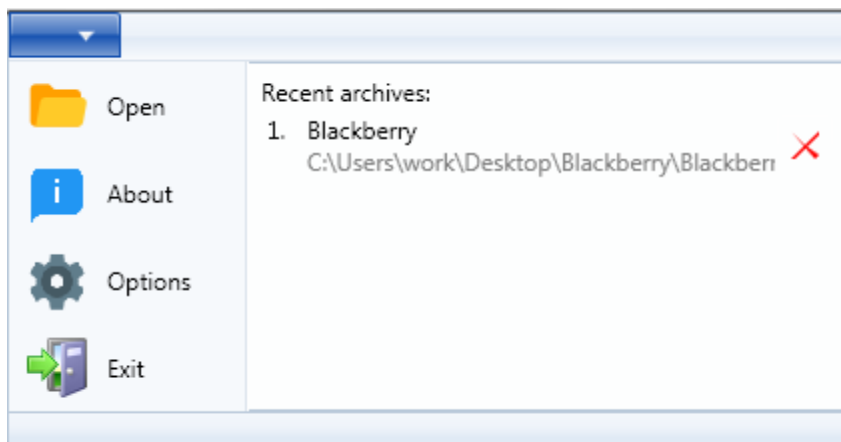


Forward

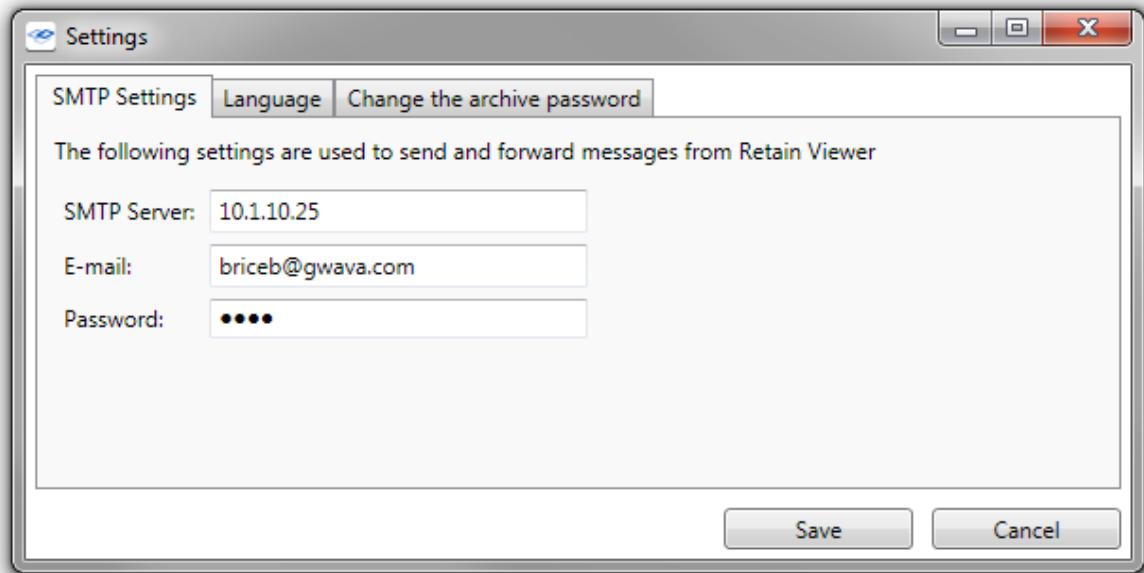
The Forward, and forward as attachment options, (found both on the main toolbar, as well as a drop down menu in the toolbar in the view window), allow the Retain Viewer to send the selected message from the archive to a destination account. 'Forward' functions exactly as the forward function in an email client. The 'Forward as attachment' creates an attachment from the selected email and attaches it to a message sent.



In order to utilize the 'Forward' option in the viewer pane, the Viewer must be configured with a mail server. To tell the Viewer which SMTP server and account to use to send messages, select 'Options' from the drop-down menu.

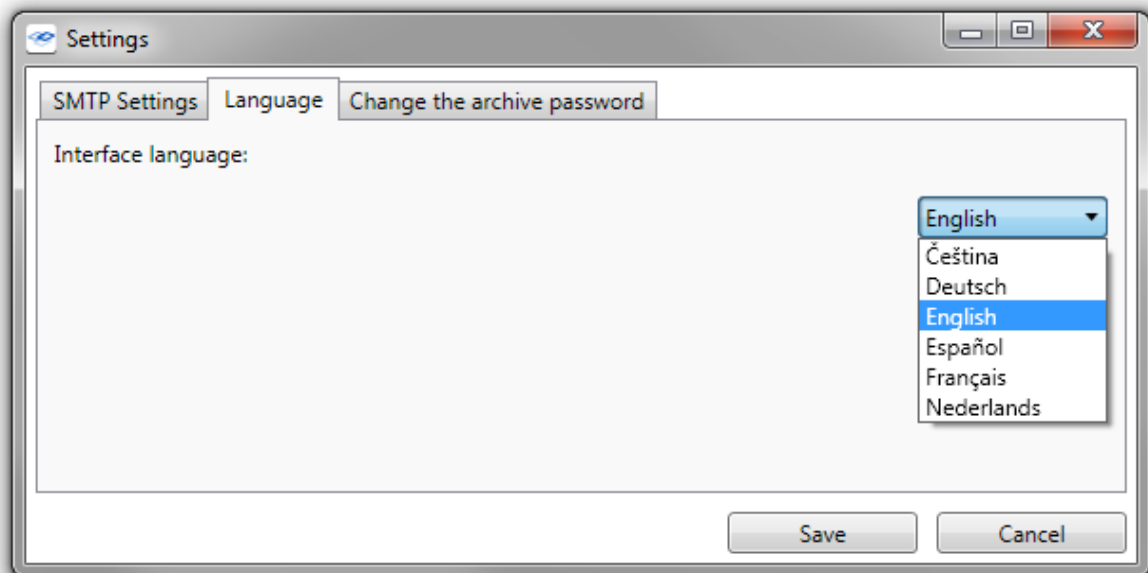


Settings

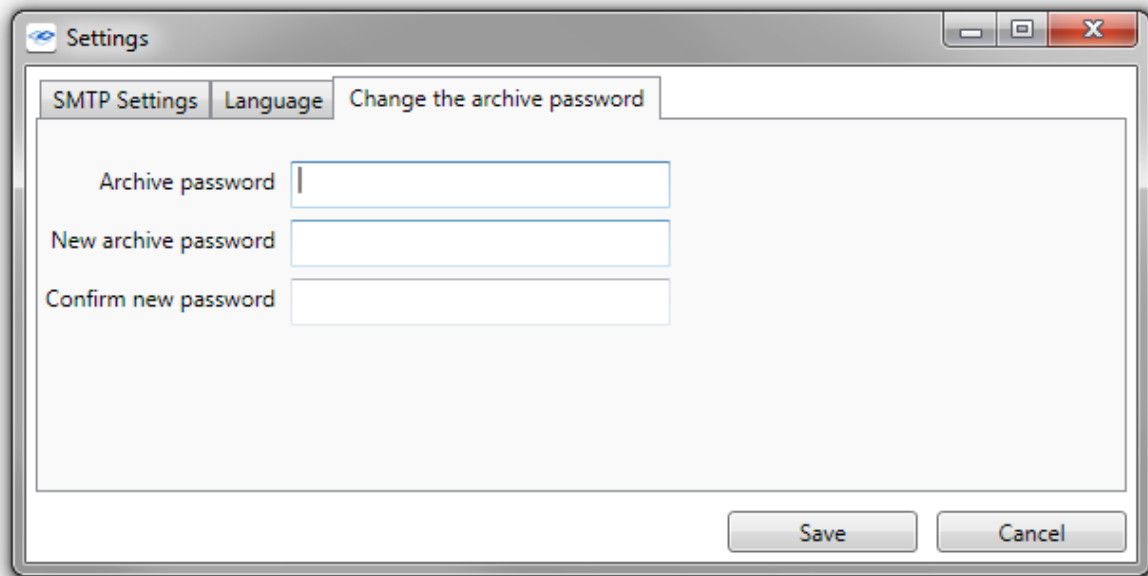


The 'Settings' configuration menu will appear. Enter the DNS or address of the SMTP Server desired to use for the Viewer system, and an appropriate account, (Username is required, password is optional), to connect and send messages.

Language and displayed document format settings may be changed as well for the specific viewer.



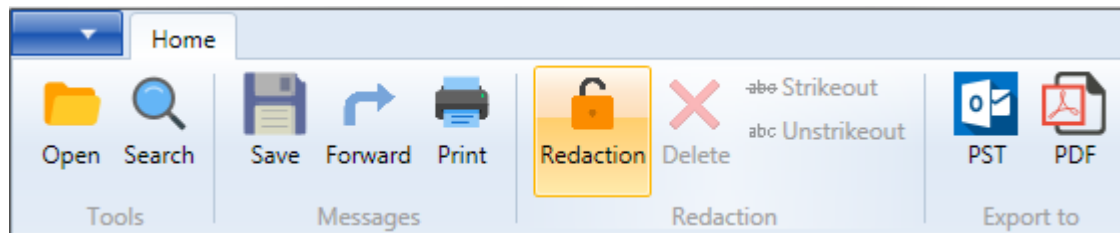
The 'Change the archive password' tab allows access to modify the password of the current archive. In order to change a password on an archive, the original password must be supplied first. If there is no password on an archive, a new password may be created; simply leave the current password field blank and input the desired password in the provided fields. While passwords may be changed, or created, the requirement for a password may not be removed.



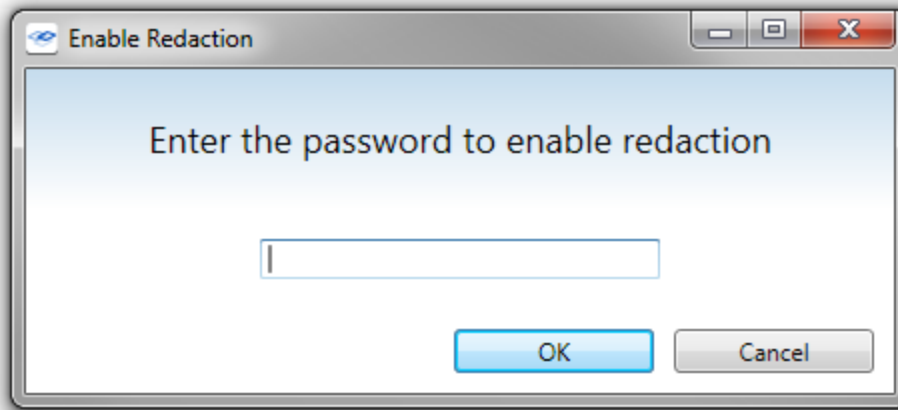
Redaction

Redaction allows the viewing auditor to compile notes on the archive.

NOTE: Attachments cannot be redacted directly because they require third-party software to open. However, the archive can be exported as PDF and a [third-party plugin \(http://blogs.adobe.com/acrolaw/2010/05/extracting-and-printing-attachments-from-email-portfolios/\)](http://blogs.adobe.com/acrolaw/2010/05/extracting-and-printing-attachments-from-email-portfolios/) can be used to redact the PDF portfolio.



The notes are appended to the entire archive, and not any individual messages, which makes Redaction extremely useful to compile messages and identify messages of interest.

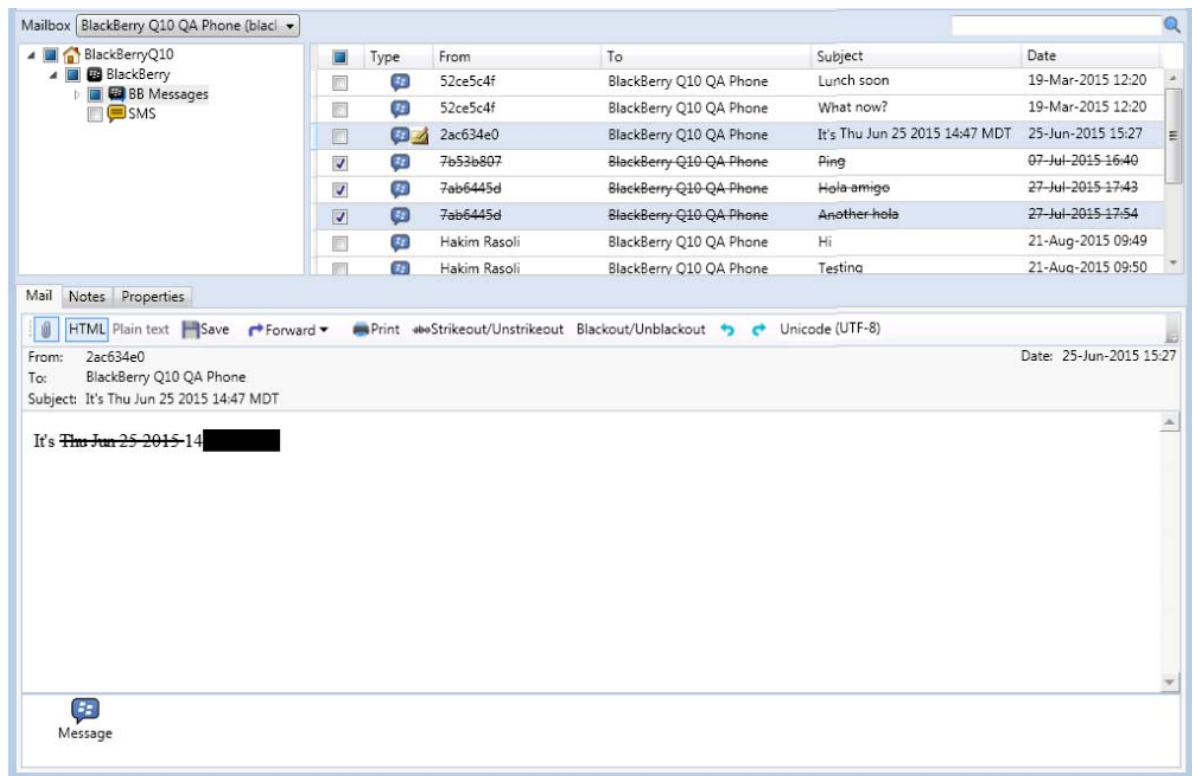


To enable redaction, the archive must first be exported with the redaction option enabled in the publisher, (if the archive was not published with Redaction enabled, the option will appear grayed out), and a redaction password must be entered.

On a redaction-enabled archive, to access the feature, it must be 'enabled' in the viewer. This option is found on the toolbar. Select 'Redaction' and enter the redaction password.

When Redaction is enabled, the 'Strikeout/Unstrikeout', 'Black out' options, and 'Notes' tab become active. The Notes tab works much like a notepad that is always connected to the archive. Items of interest or whole messages' texts can be copied and compiled in the redaction notes. Messages with notes on them are marked in the archive viewer with a notepad icon in the message list.

Redaction notes are attached to the message. Notes are only accessible for the messages which have notes, indicated by the note icon.



Strikeout/Unstrikeout and Blackout

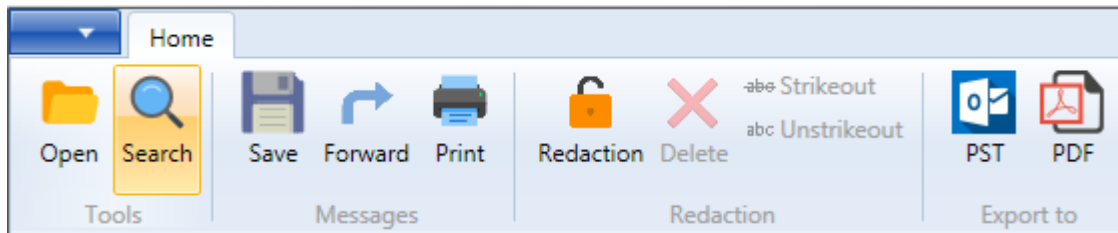
The Strikeout option enables a review of the archive before handing it over to legal scrutiny. This allows the user to denote items and messages which do not apply, or are unnecessary for the published goal. For example, if an investigation is being performed on specific activity, or internally on the account and all correspondence with a customer, the strikeout will allow messages or even sections of messages which do not apply, to be marked out.

To use the Strikeout, first Redaction must be enabled. After redaction is enabled, the options become active. To Strikeout or Unstrikeout messages in the message list, select the messages by placing a check in the checkbox and then select the 'Strikeout', or 'Unstrikeout' button from the top bar. To strikeout sections in the body of the message, highlight the desired section and select the 'Strikeout/Unstrikeout' button from the view message bar.

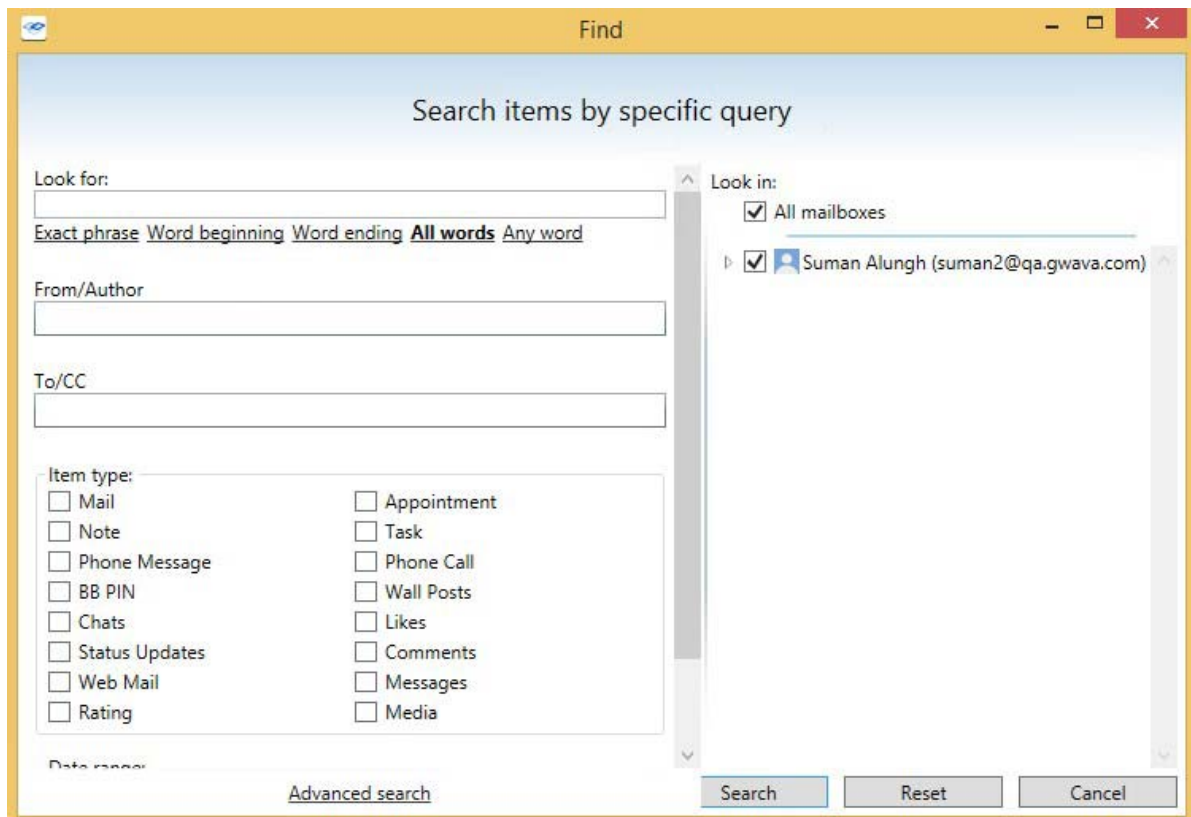
The Blackout option allows a reviewer to remove sensitive information, such as social security numbers, from published messages. To use the Blackout option, highlight the desired text and select the 'Blackout' button. Blackout cannot be removed from text.

Searching the Archive

The Retain Viewer provides full search functionality.



The search function is accessed through either the shortcut 'Ctrl+F' or by selecting 'Search' from the toolbar.



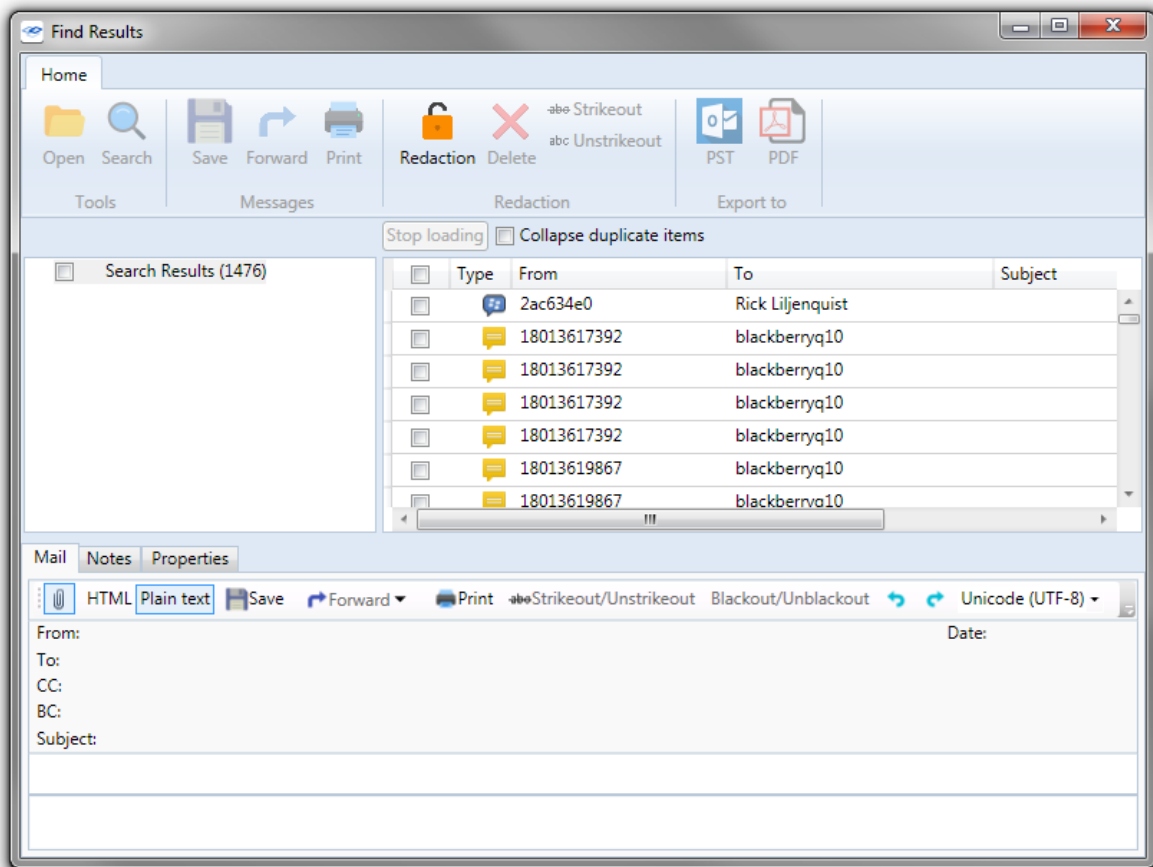
The different options for the search are shown with the criteria input below the options. Any text string or value can be searched for in the full text of the mail, or simply in the subject line. The following options are functional for both the search messages option included here, as well as the publisher search criteria. In the search 'look for' line:

- ◆ && represents 'and'
- ◆ || represents 'or'
- ◆ No operators work as an exact match search.
- ◆ For example:
- ◆ Boy girl = exact search for "Boy girl"
- ◆ Boy && girl = Boy and girl search
- ◆ Boy || Girl = Boy OR girl search
- ◆ Boy && girl || dog && cat = Boy and girl OR dog and cat search.

NOTE: These search operators DO NOT work with the search option 'starts with', but can be utilized with all of the other base modes of the search.

The search engine does not recognize the following English 'stop words' or articles of speech:

a, an, and, are, as, at, be, but, by, for, if, in, into, is, it, no, not, of, on, or, such, that, the, their, then, there, these, they, this, to, was, will, with



These words are not indexed, and thus are not taken into account if they appear in the list of words specified for the search. This may result in some unanticipated results in “exact” searches.

In addition to the operators and text, the sending Author or the destination and carbon copy recipients of a message as well as item type and the date range can specify or restrict a search. Selection of the date range is done through an interactive calendar.

Be sure to select the desired mailbox or mailboxes to apply the search through. (The depicted example archive only contains one mailbox.) Select ‘Search’ to begin.

When the search is finished, the results will be displayed in a separate results window, identical to the main viewer interface.

PDF and PST Export

Retain Viewer can export selected files and messages from a mailbox or archive to a PDF or PST archive file.

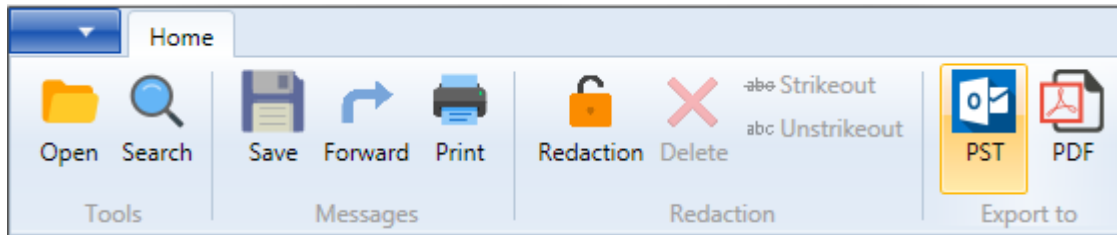
PST

Prerequisites:

- ◆ Outlook

PST export requires Outlook, or the associated plugin. The viewer will prompt for plugin installation if necessary. It is highly recommended to have Outlook installed.

To migrate to PST, select desired files in the view window then select 'PST' from the toolbar.



A window confirming the location and file will open. When the 'Save' button is selected the PST file is created and available for use.

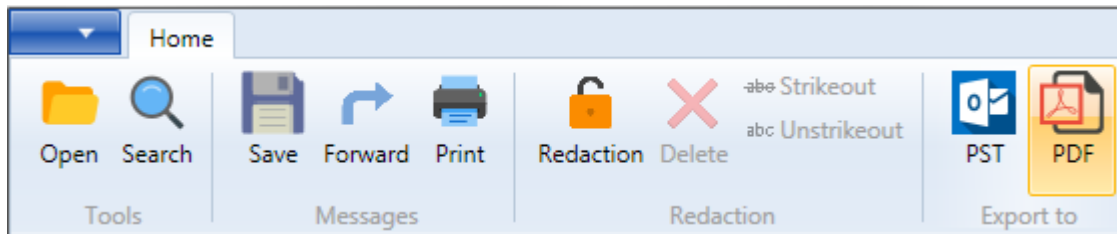
PDF

Prerequisites:

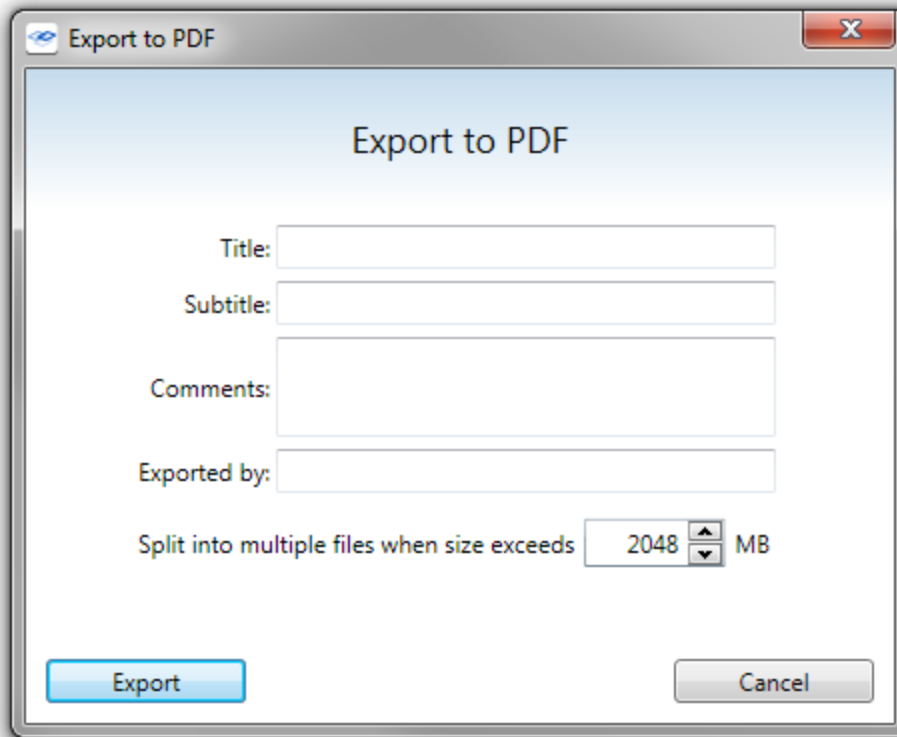
- ◆ Adobe Acrobat or Adobe Acrobat Reader
- ◆ Adobe Flash

The export PDF is a PDF Portfolio and requires Adobe Flash to be installed on the workstation to properly display the message selector header. Adobe Acrobat Reader DC appears to have Flash integrated and does not need a separate install.

The Retain Viewer can also save selected messages as PDF. Select the desired messages and click 'PDF' in the toolbar.



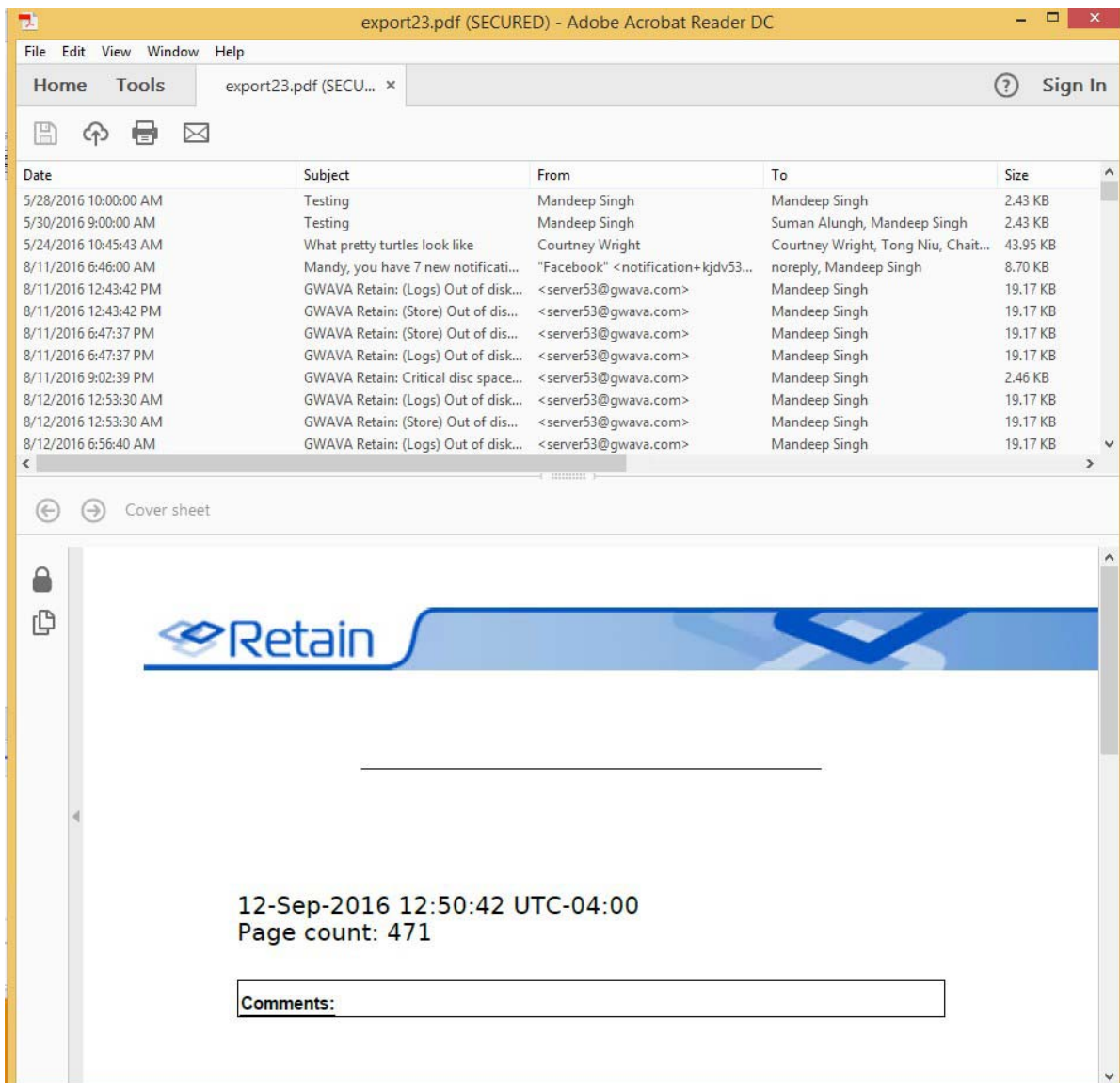
The selected messages are then published in a single PDF. This is an Adobe PDF Portfolio, this requires Adobe Flash to be installed on the workstation for full functionality, or you will only see the title page.



In addition to the standard file name and location, the PDF has title, exported by, and comment sections that the user is prompted to specify before the viewer publishes the PDF.

The finished PDF contains all the information displayed in the viewer, as well as an option to save individual text or message sources. (This information includes redactions, litigation tags, confidential tags, strikeouts etc. from the Retain Server archive as well as the Viewer.)

The published PDF displays the separate emails along the top in a list and displays the message information in a lower pane, as shown below. Flash must be installed on the workstation viewing the PDF Portfolio file.



Enabling Debug Logging

On occasion, extra logging will be needed for troubleshooting purposes.

The Publisher and Viewer logs are found in the `%APPDATA%/Gwava/Retain Publisher` folder

To enable debug level logging:

1. Close Publisher, if open
2. Open File Explorer and enter `%APPDATA%` into the address bar
3. Enter the *Gwava* folder
4. Enter the *Retain Publisher* folder
5. Edit *Publisher.settings.xml*
6. Find the line `<LogLevel>INFO,WARN,ERROR,FATAL</LogLevel>`
7. Add the DEBUG level `<LogLevel>INFO,WARN,ERROR,FATAL,DEBUG</LogLevel>`

```
<?xml version="1.0" encoding="utf-8"?>
<PublisherSettings xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <LogLevel>INFO,WARN,ERROR,FATAL,DEBUG</LogLevel>
  <StartIndexer>true</StartIndexer>
</PublisherSettings>
```

8. Save and exit
9. Run Publisher

M+ and Netmail to Retain Migrator

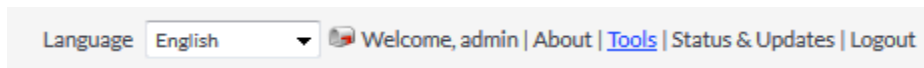
The M+ and Netmail to Retain Migrator allows the migration of M+ and Netmail archives into Retain for easier storage and eDiscovery searching.

System Requirements

- ◆ Windows 7.x (64-bit), 10
- ◆ Java JRE 8 required
- ◆ 4 GB RAM recommended
- ◆ Dual-core processor or better recommended
- ◆ Retain 4.0 or higher

All archives must be local to the Migrator, or located on an active mapped drive. The migrator requires direct file access.

The M+ and Netmail to Retain Migrator is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



Directories and Logs

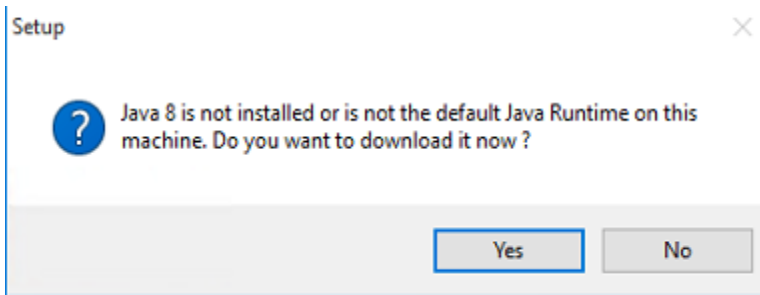
Logs are created, one for each day, in the following location by default:
"C:\Users\Administrator\AppData\Roaming\GWAVA\M+ and Netmail to Retain Migrator\logs.

Logs contain all errors as well as migration info for all users. After setting up the Migration Context, a .conf file can be saved anywhere and will be loaded automatically the next time the migration tool is loaded.

Installation

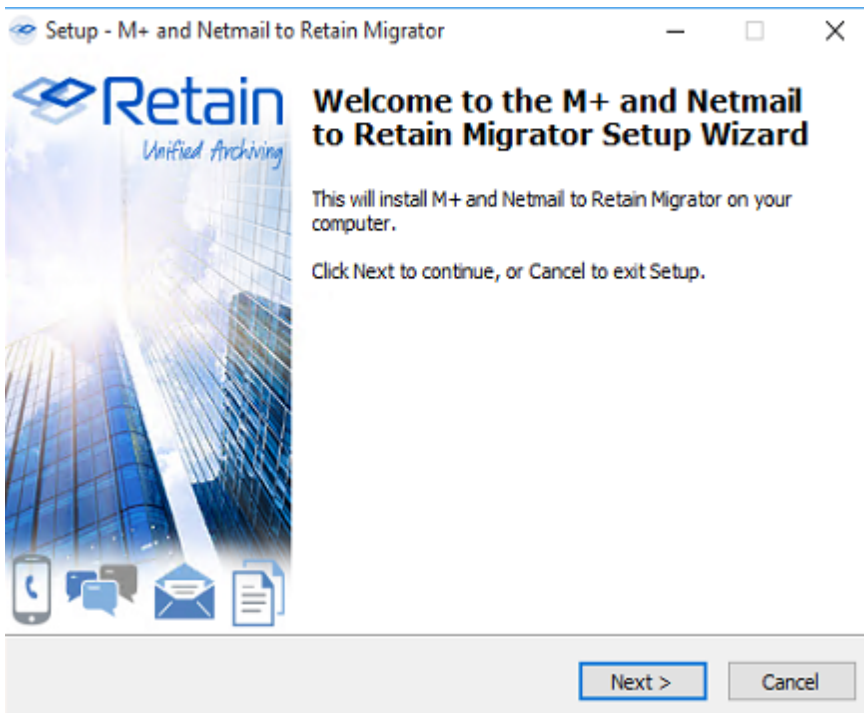
The install is straightforward. Simply execute the installation file and follow the prompts.

If Java 8 is not installed, the installer will prompt you to download it.

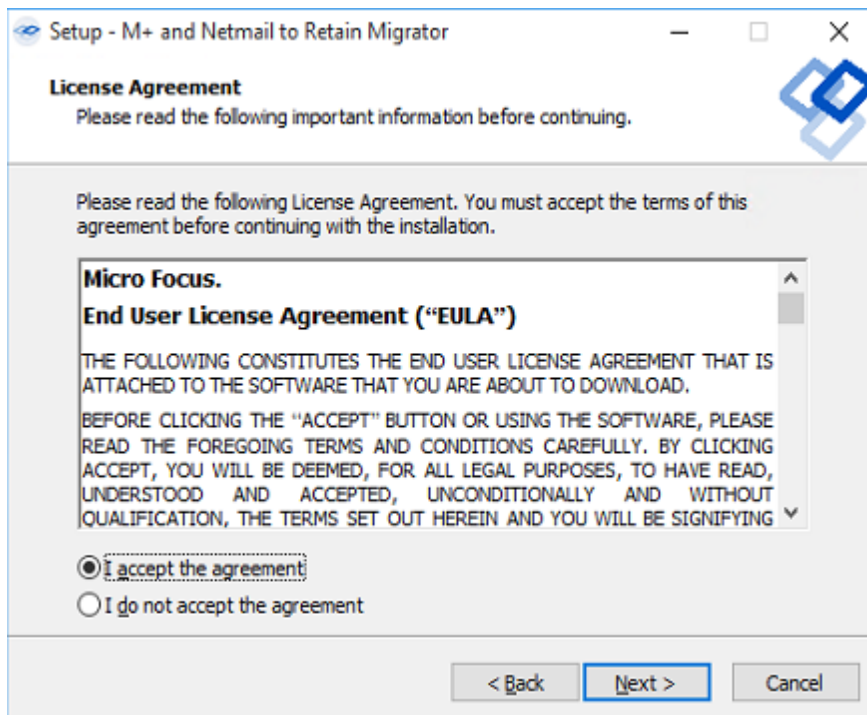


Press *Yes* to be taken to the Java 8 download page, please choose the appropriate version for your system and install it, then press *Retry*.

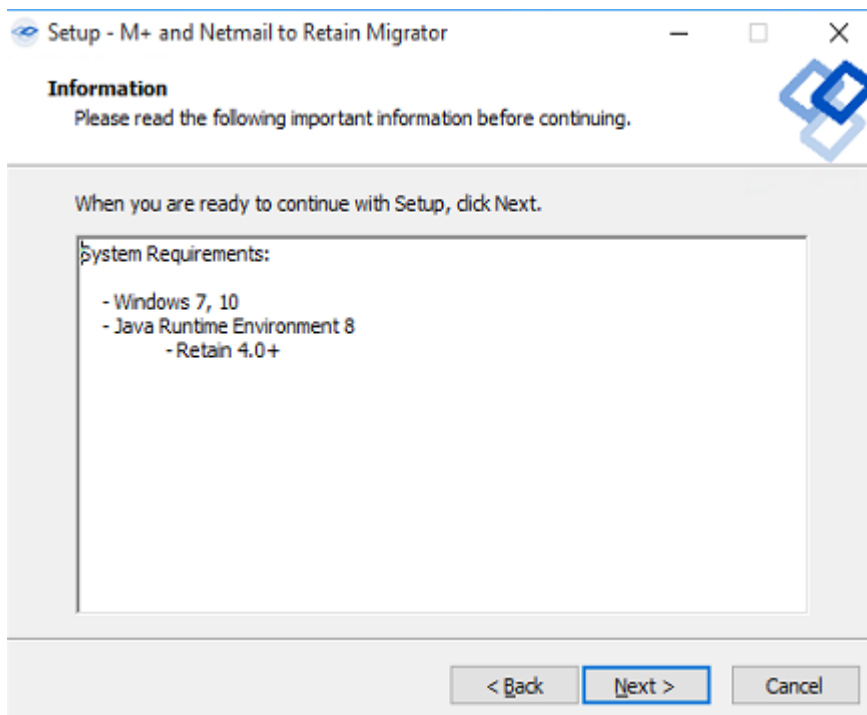
The install will welcome you.



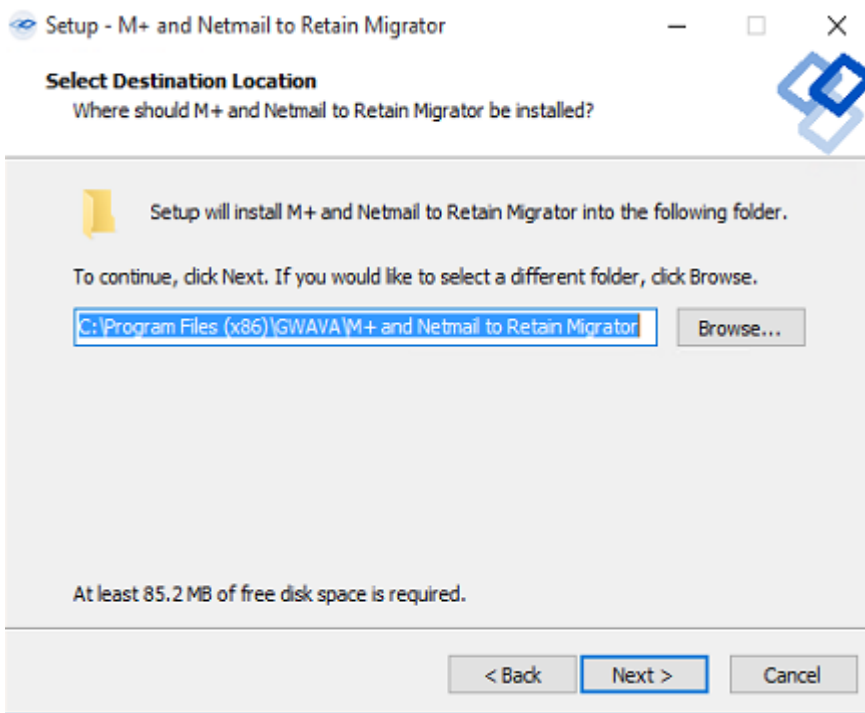
You will need to agree to the license.



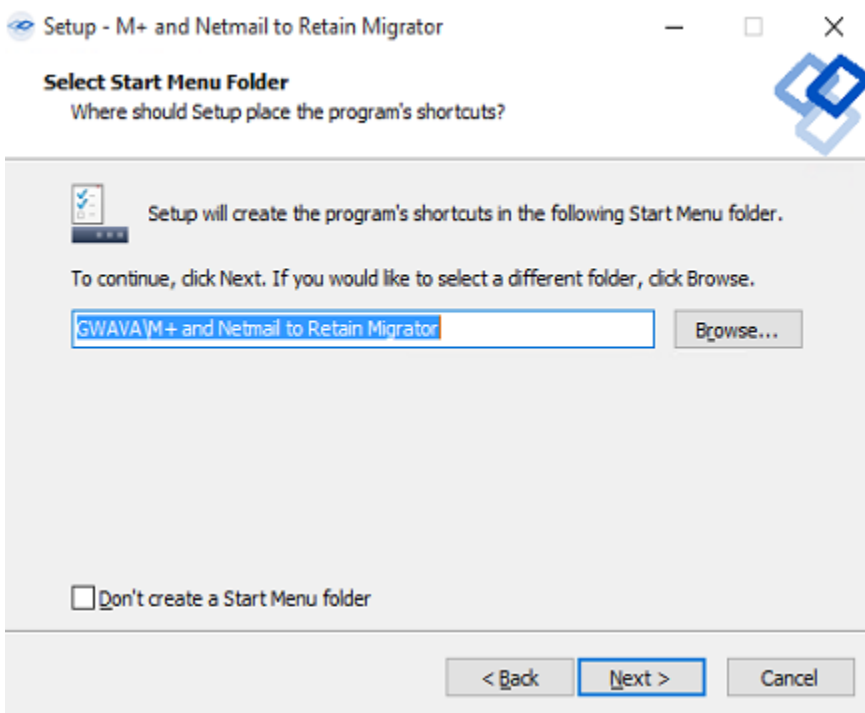
The System Requirements will be listed.



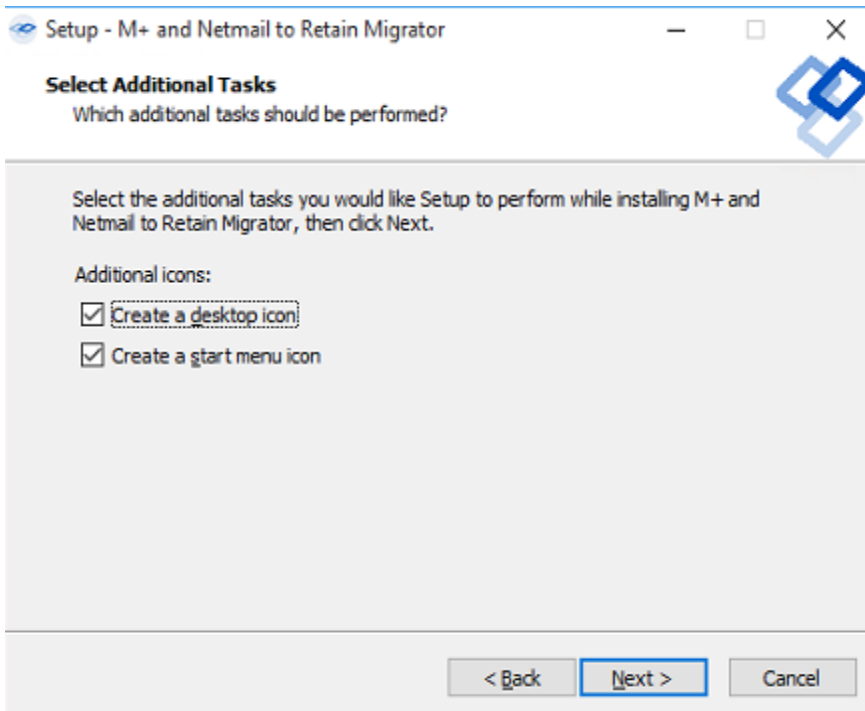
If you desire to change the installation directory, the migrator may be installed to any location on the local machine.



A start menu folder will be created unless specified otherwise. The location may be modified.

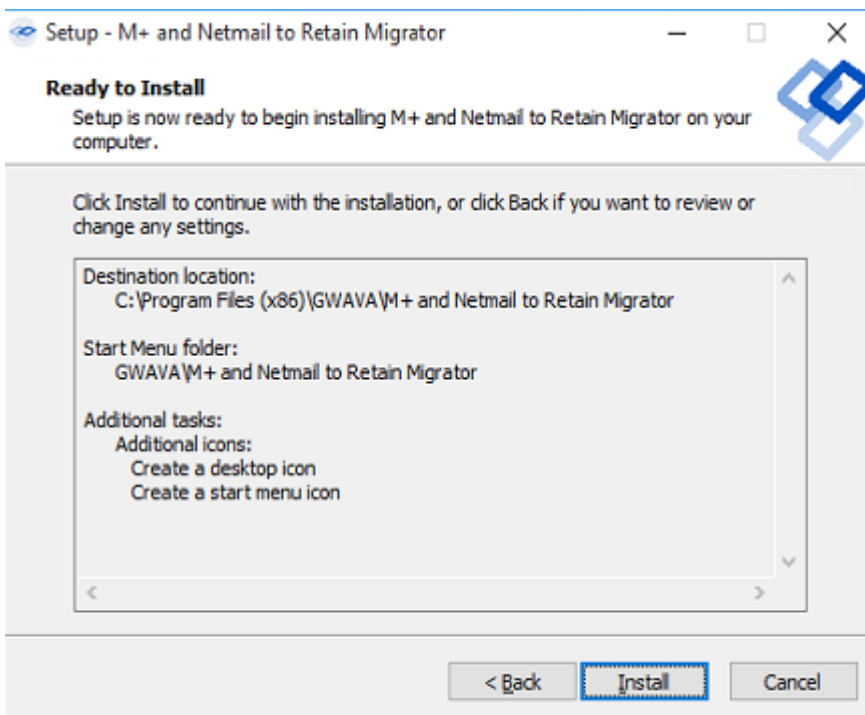


Desktop and start menu shortcuts may be created, or not, as desired. The default is shown.

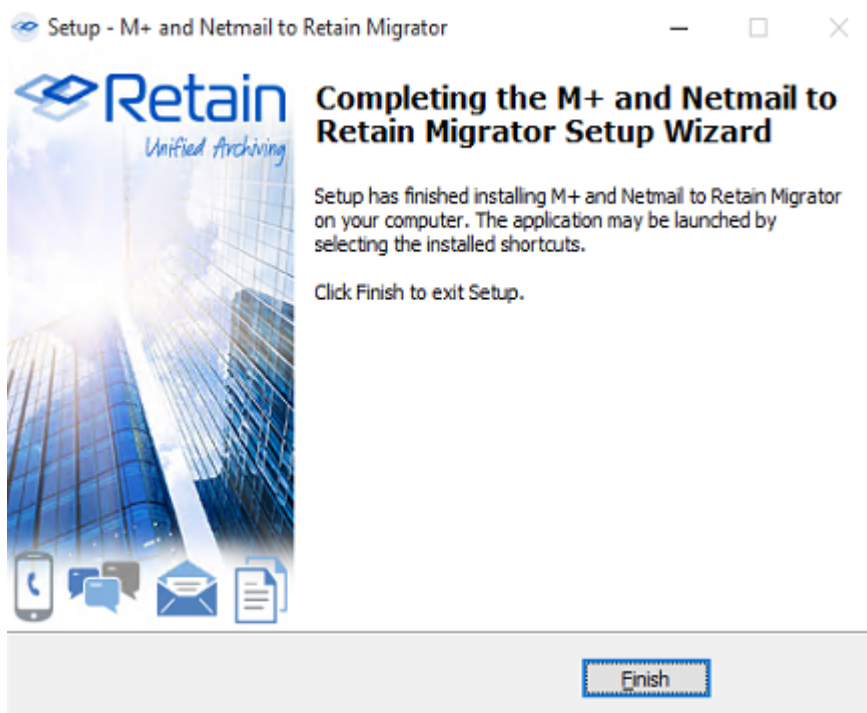


All installation settings are displayed for confirmation. To confirm the settings and begin the install, click 'Next'. Use the 'Back' button to change any settings before continuing.

Once the 'Next' button has been selected, the installation will commence.



Once the installation has completed successfully, this window will be displayed. Select 'Finish' to exit the installer.



The Migrator is now ready to be run and configured on the local machine.

Prerequisites

Retain 4.0 or higher

Download Your License

You will get an email with your validation keys, there generally be more than one, including one for server access and another for the module used for archiving from your email system.

- ◆ Browse to the License Portal <https://licenses.gwava.com/> (<https://licenses.gwava.com/>)
- ◆ Select the proper Product
- ◆ Enter the Validation Key and click Next
- ◆ Fill out the contact information and click Next
- ◆ Download the PEM file

If using Retain 4.1 or higher:

Install the REST license

Browse to the *Retain Server Web Console | Server Configuration | REST API*

Browse to the M+ and Netmail Retain Migrator license PEM file



You should see it appear on the license list:

REST API

The Retain REST API allows external applications to interact with the archive. In order to enable the API, a base API license is required. Additionally, an application license is required for each application that requires access to the API.

License Summary

Global Settings

✖ API Enabled	True
License begins	Mon Dec 28 12:02:10 MST 2015
License expires	Mon Feb 21 10:59:59 MST 2033
Maximum read requests per minute	100000
Maximum write requests per minute	60000
Maximum read requests per application per minute	10000
Maximum write requests per application per minute	6000
Maximum read requests per user per minute	10000

Application Settings

Application	M+ and NetMail Migrator to Retain
Application Key	3EB396B2-6CB8-4F5D-BE93-7B2385E7D768
Enabled	True
License begins	Tue Jan 24 09:31:04 MST 2017
License expires	Sun Mar 17 10:59:59 MDT 2019
Maximum read requests per minute	10000
Maximum write requests per minute	6000
Capabilities	Insert, Manage, Read, Search

Create a REST Collector

Create a REST Collector by providing a name and press the Add collector button.

Click the Export button and save the file to disk.

REST Collectors

REST Collectors are given rights to push data inside of Retain using the REST API.

Collector Name

Collector Name	Key	Secret	
Migrator	6bc541d7-ddff-4920-aedf-77a974ae6022	0145df09-d32b-4eeb-968b-d03b4722fee3	<input type="button" value="Delete"/> <input type="button" value="Export"/>

If using Retain 4.0-4.0.3.1:

Download a worker bootstrap [“Workers Overview”](#) on page 305 file.

Quick Start Guide

The migrator is fairly straight-forward in presentation and function. In general, the migrator must be able to have access to the archives and the host mail system.

Once configured, the migrator will connect to the host system to gather information, the local archives to gather data, and the Retain Server to migrate the data into the Retain archive. Multiple archives may be migrated at the same time. Archive size is not an issue, as the migrator only loads a single message at a time. However, due to the operations required, migrating extensive archives may take some time.

Interface

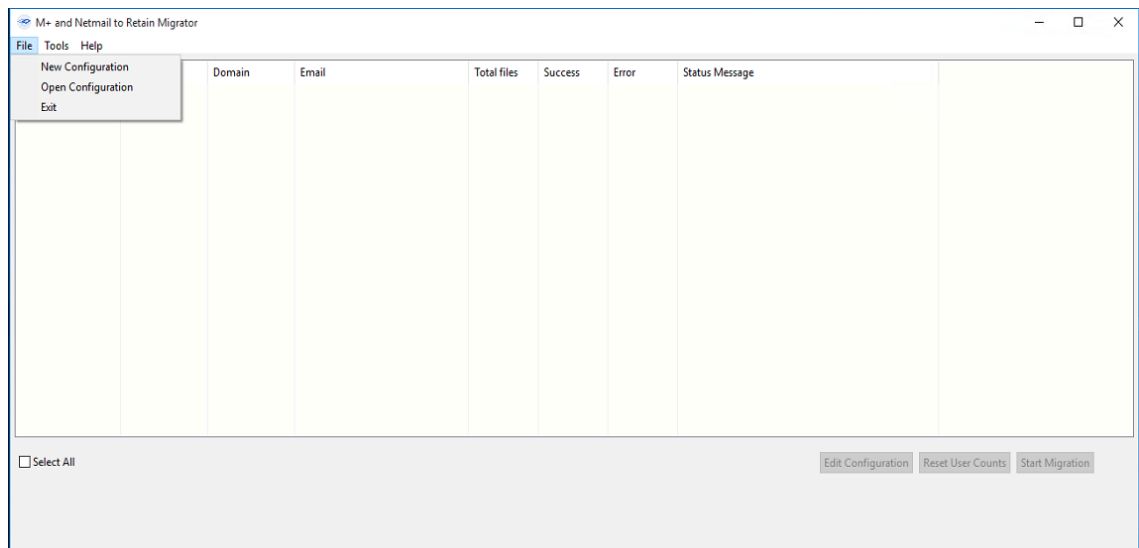
The interface has a few features, all accessed through the right-click menu. Users must be selected in the interface in order to be migrated. **ONLY** selected users will be migrated.

- ◆ Reset - right-click on a user to reset status and errors. This will allow re-migration of problem accounts.
- ◆ Select All - right-click anywhere on the user panel of the migration tool to display the 'Select All' feature, to select all users listed.

Configure Migrator

Start the tool by running the executable file from the shortcut.

- ◆ **File | New Configuration Select**



- ◆ Select the Email System: Exchange or GroupWise

Exchange

Migration Configuration

Email System: Exchange

Retain Configuration File: C:\Users\admin\Downloads\restcollector.xml

Data Folder: C:\Users\admin\Desktop\MpNetmailArchive

Audit Folder: C:\Users\admin\Desktop\MpNetmailArchive

Attachment Folder: C:\Users\admin\Desktop\MpNetmailArchive

Ignore Missing Attachments:

Create Root Folder

Migrate Retention Periods:

Override Expire Dates: 4/19/2017

Only Process Messages: Within 4/19/2017 And 4/19/2017

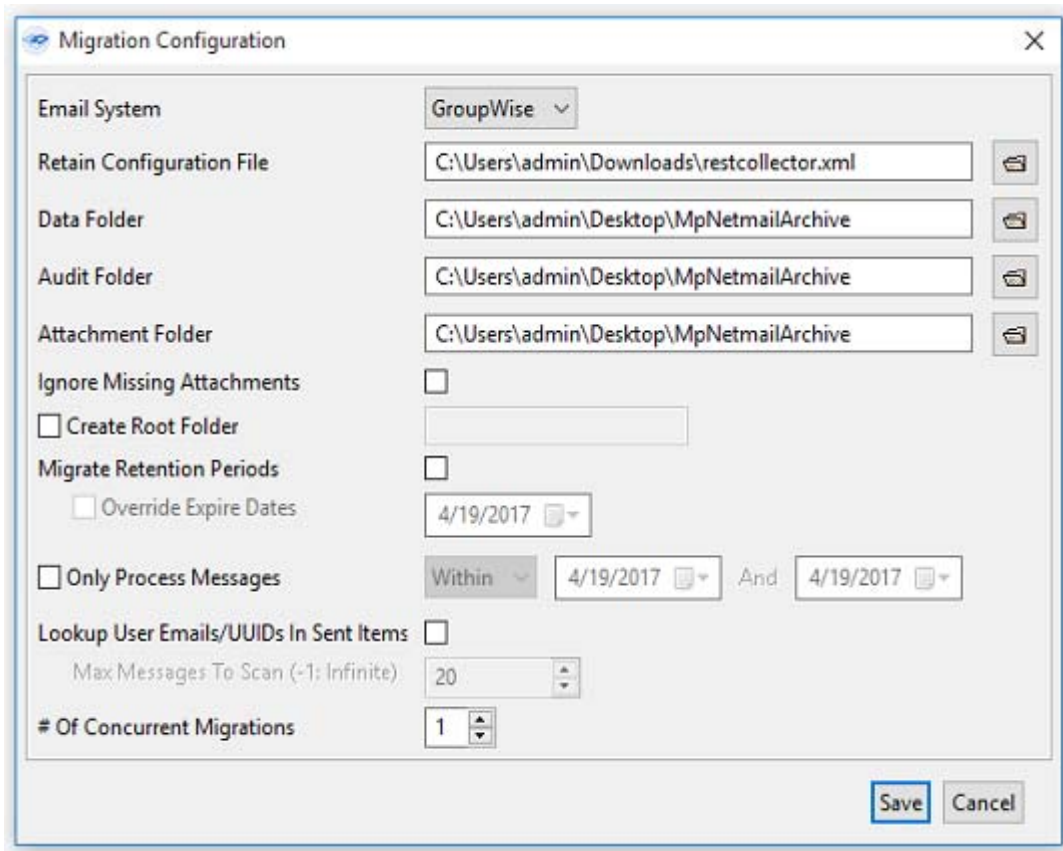
Lookup User Emails/UIDs In Sent Items:

Max Messages To Scan (-1: Infinite): 20

Of Concurrent Migrations: 1

Save Cancel

GroupWise



- ◆ Browse to the REST Configuration XML or Worker Bootstrap CFG file exported from Retain.
- ◆ Point the migrator to the *parent folder* of the Data, Audit and Attachments folders.
- ◆ Ignore Missing Attachments: Attachments that are not present will be skipped and the remaining messages will be processed, instead of erroring out.
- ◆ Create Root Folder: Enabling this option will allow you to specify the name of the root folder for the destination of the migrated messages and folder structure in each user's Retain mailbox. If this option is not enabled, the messages and folder structure will be placed directly under the user's Retain mailbox.
- ◆ Migrate Retention Periods: This option will migrate the expiration date of the migrated messages into Retain.
- ◆ Override Expiry Dates: This option is dependant on "Migrate Retention Periods" and will override the existing expiration date with one of your choosing.
- ◆ Only Process Messages: Enabling this option allows you to limit the migration by date in one of three ways:
 1. Falling between 2 dates (inclusive).
 2. Before a certain date (exclusive).
 3. After a certain date (exclusive).

Inclusive means that messages on the dates will be included.

Exclusive means that messages on that date will be excluded. For example, if you want all messages before 21 Oct 2015 (exclusive) it will only migrate message until midnight 20 Oct 2015.

- ◆ Lookup User Emails/UUID in Sent Items: Enabling this option will cause the migration tool to lookup the user email or UUID that may exist in the user's M+ or Netmail Sent Items.
- ◆ Select the # of Concurrent Migration threads to run:

NOTE: The number of concurrent migrations may be as high as 10, or as low as 1. Performance will be determined by the processor of the local machine; a multi-core or multi-threaded processor will perform fine with multiple concurrent migrations, while machines with lower resources will be taxed by higher numbers of concurrent migrations.

- ◆ Click Save to File and select a name and location for your configuration file. The next time you run the migrator you can load the configuration from file to save time.
- ◆ Click Save to exit the Migration Context

Migration Process

To migrate an archive or set of archives:

Users File Generation

When a user list is generated, the migration tool will attempt to locate the GUID based on the connection information in the Migration Context.

If the GUID isn't found in the mail system, the archive data will be used to determine the correct ID.

If both methods fail, you have the option to generate a unique ID by right-clicking on the user. Generating a random ID should always be the last option.

WARNING: If an ID is generated for a user that has already been archived in Retain under another ID, duplicate accounts may be created.

Once the tool is configured it will attempt to load the users. To create the list manually:

- ◆ Click **Tools / Generate Users File / Generate Users File**: The tool will connect to the selected mail system and create a CSV file of all users.

Migrate User	Post Office	Domain	Email	Total files	Success	Error	Status Message
<input type="checkbox"/> User 1	PMPO	PMGWMail	Test1@gw2012.support.gwava.com	0	0	0	Email not found in Retain
<input type="checkbox"/> User 2	PMPO	PMGWMail	Test2@gw2012.support.gwava.com	0	0	0	Email not found in Retain
<input type="checkbox"/> User 3	PMPO	PMGWMail	Test3@gw2012.support.gwava.com	0	0	0	Email not found in Retain
<input type="checkbox"/> User 4	PMPO	PMGWMail	Test4@gw2012.support.gwava.com	0	0	0	Email not found in Retain
<input type="checkbox"/> user n	PMPO	PMGWMail	usern@gw2012.support.gwava.co...	0	0	0	Email not found in Retain
<input type="checkbox"/> user x	PMPO	PMGWMail	userx@gw2012.support.gwava.com	0	0	0	Email not found in Retain

The tool will generate a list of users and request a file save location.

Green means that the user's email address was found in Retain.

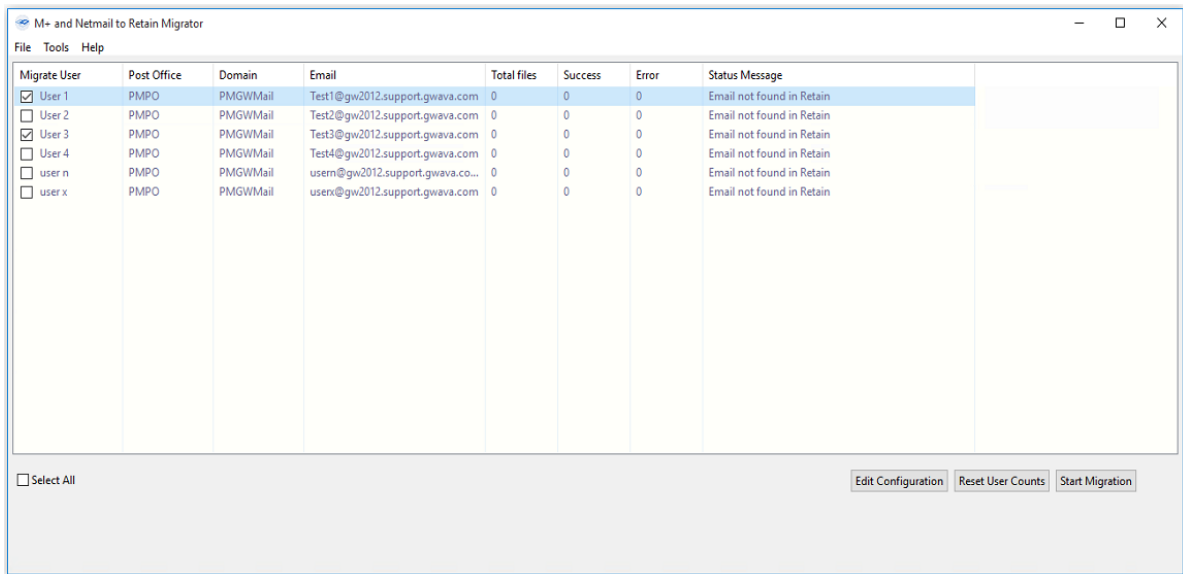
Purple means that the user's email address was not found in Retain.

The file will contain the following information:

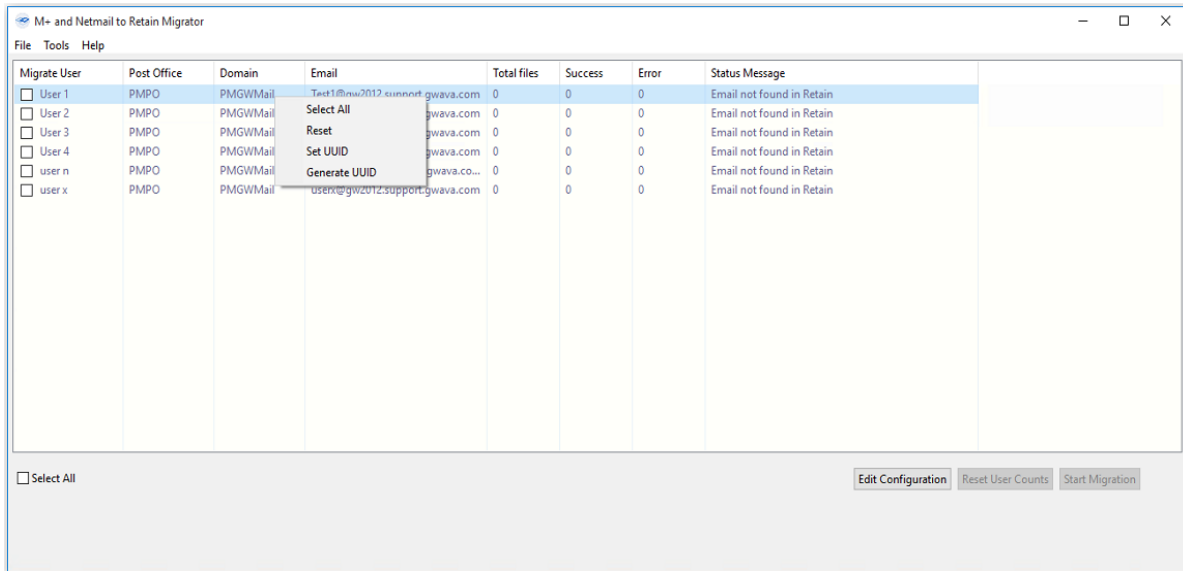
- ◆ "userID";"userPostOffice";"userDomain";"userEmail";"userDisplayName";"userType";"uuid";"user FolderPath";"status"

Select Users to Migrate

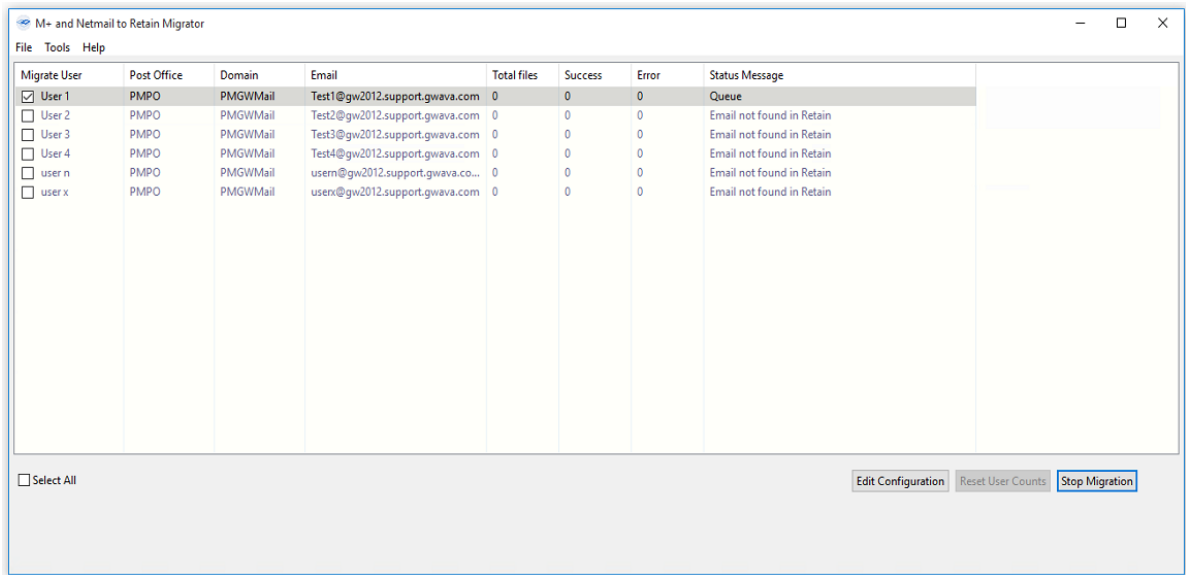
Click on the checkbox to select individual users or Select all for all users.



You may also use the contextual menu by right-clicking



Start the migration: Click the *Start Migration* button at the bottom of the tool



The migration tool will display statistics on the number of successfully archived messages, number of errors, users being migrated, the status of each user (done, migrating, queued, etc.) and how long the migration for that user took.

If a Running migration is stopped, (by pressing the 'stop' button), it may be resumed simply by migrating the user again. The tool maintains a record of progress of users. If a user needs to be completely re-migrated, select the user and then select 'Reset' from the right-click menu to reset the migration status. The user will then be completely re-migrated.

Migration Complete

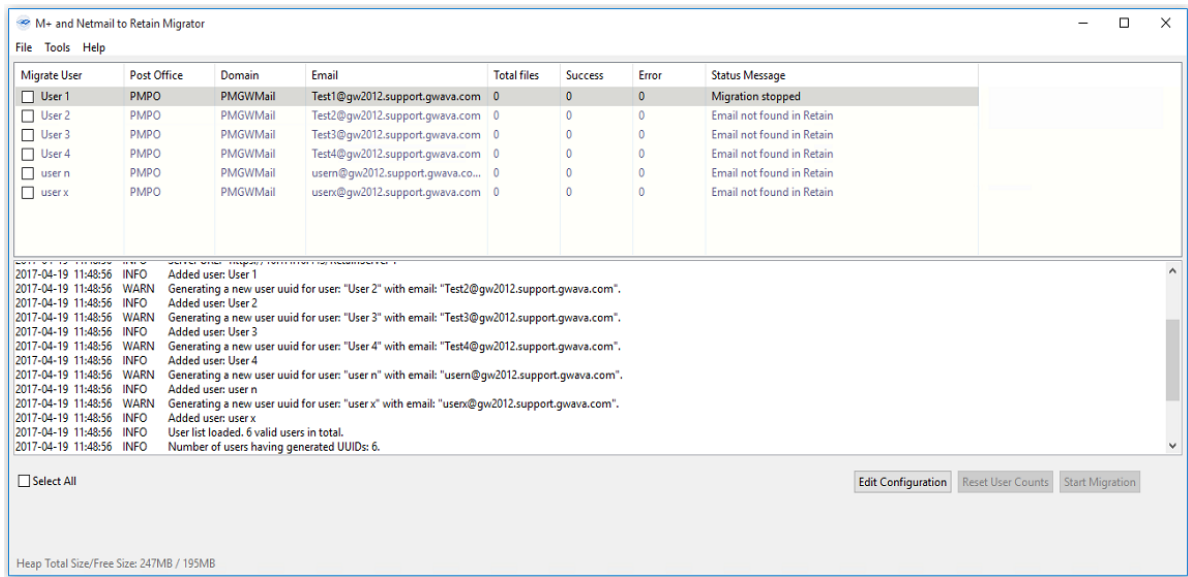
When the migration is complete the status for each user will be Done, with a number of Successful items and Errors.

Console

You can view the detailed progress of the migration by enabling the Console from the Tools menu.

Disable Console Screen for best performance (recommended). The console exacts a performance hit, it is not recommended to leave the console open during the migration.

Click *Tools / Show Console* to toggle setting

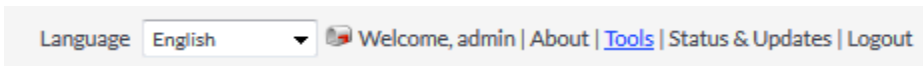


Outlook Plugin Administrators Guide

Overview

The Outlook Plugin integrated the Retain storage directly into the Outlook client. Users will have a new tab and ribbon added to the Outlook client offering connection to their Retain storage. Messages may be retrieved and added to the user's local machine and administered through the Outlook client. Message data may be searched in both the Retain storage, and the locally restored messages. The client will not modify Retain administration nor will anything done through the Outlook Plugin modify the Retain Server or the Retain Storage. The Outlook Plugin is provided for both individual and distribution installations.

The Outlook Plugin is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



System Requirements

- ◆ Windows 7 SP1, Windows 8.1 or Windows 10, fully updated
- ◆ Retain 4.3 or higher
- ◆ Visual Studio Tools for Office v. 4
- ◆ .Net 4 or higher
- ◆ Outlook 2010, 2013, 2016 32-Bit and 64-Bit, October 2017 update or later.

NOTE: Whether the 64-Bit or 32-Bit version should be used is determined by the bit version of Outlook installed, not the version of the OS. To check the version of Outlook being used;

2010: The information on the system is located under File | Help | About Microsoft Office

2013: The information on the system is located under File | Office Account | About Outlook

2016: The information on the system is located under File | Office Account | About Outlook

Proxy Access

The Retain Outlook plugin does not return mailbox data from other users the primary user has proxy access to but only the messages from the primary user's Retain mailbox.

If the user has access rights to other mailboxes on the Retain system, Outlook will error because it doesn't know how to handle multiple users.

Installation

Prerequisites

On the Retain Server: Under Server Configuration | Communications | Retain Server Connection, set the Server Protocol (http or https), Retain Server Host (IP or hostname of the Retain server), Retain Server Port (default: 48080), and Retain Server Path (default: /RetainServer).

Retain Server Connection

The Router and REST applications will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Router or REST application contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Router or Server.

Server Protocol	http ▼
Retain Server Host	151.155.183.140
Retain Server Port	48080
Retain Server Path	/RetainServer

On the Workstation: Install:

- ◆ Visual Studio Tools for Office v. 4
- ◆ .Net 4 or higher

Retain Outlook Plugin Installation

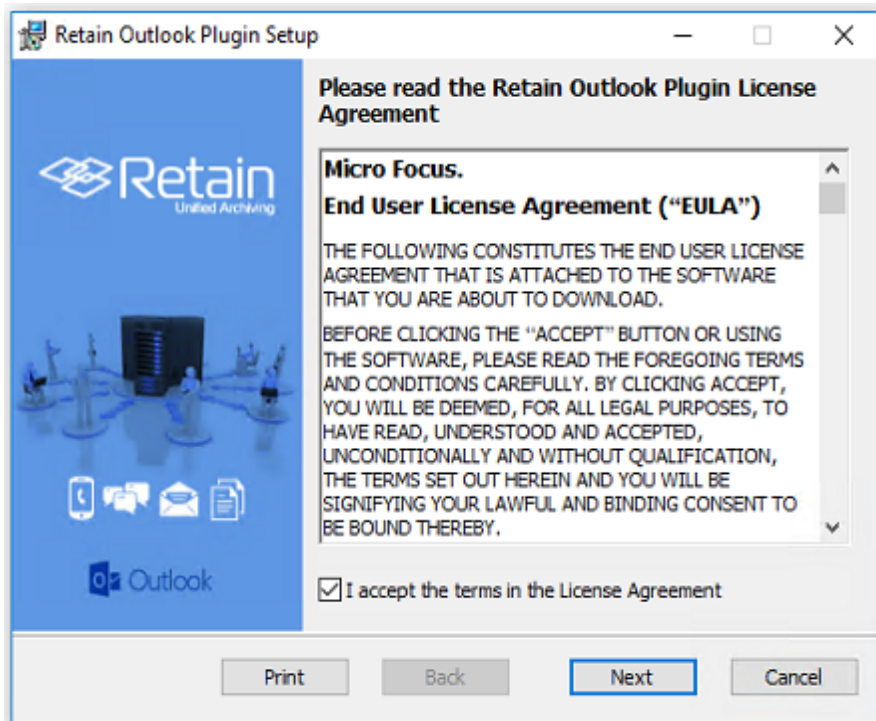
If deploying to an individual user on a workstation, the Outlook plugin needs to be installed by the user account that will be using it (HKEY_CURRENT_USER), and administrator credentials will be required to be entered during the installation process.

If deploying to multiple users on a single workstation a group policy will need to be created to set the registry keys needed by the Outlook plugin across all users. The October 2017 updates of Office and Windows have caused some [issues \(https://support.office.com/en-us/article/Fixes-or-workarounds-for-recent-issues-in-Outlook-for-Windows-ecf61305-f84f-4e13-bb73-95a214ac1230\)](https://support.office.com/en-us/article/Fixes-or-workarounds-for-recent-issues-in-Outlook-for-Windows-ecf61305-f84f-4e13-bb73-95a214ac1230) that may need [workarounds \(https://www.slipstick.com/problems/folder-home-pages-arent-available/\)](https://www.slipstick.com/problems/folder-home-pages-arent-available/).

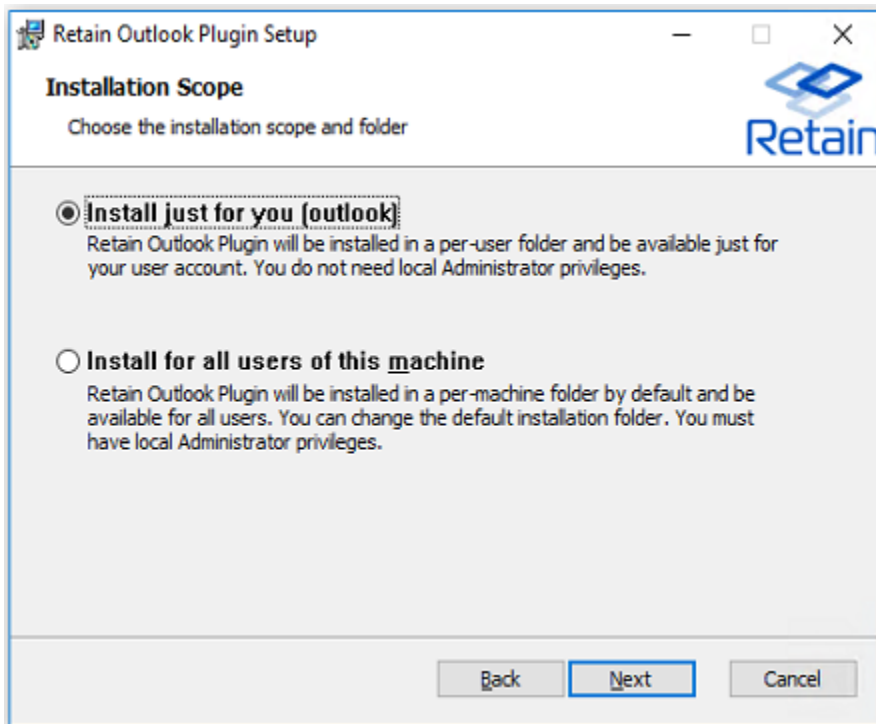
If deploying from a distribution server, utilize the MSI installer package. In addition, silent install commands are provided. A full list of silent install commands can be found in the Silent Install section below.

Make sure to utilize the correct version of the installer to match the bitness (32-Bit or 64-Bit) of the version of Outlook, not the operating system, the workstation has installed.

Begin the installation, accept the license agreement, and click 'Next'.



Select whether the installation will be system wide or restricted.



The Retain Outlook Plugin may be customized during installation, to only allow certain functions once installed.

Retain server URL: this is the connection address for the Retain Server. Do not put the ‘/ RetainServer/’ suffix on the end of the URL. Use the following syntax:

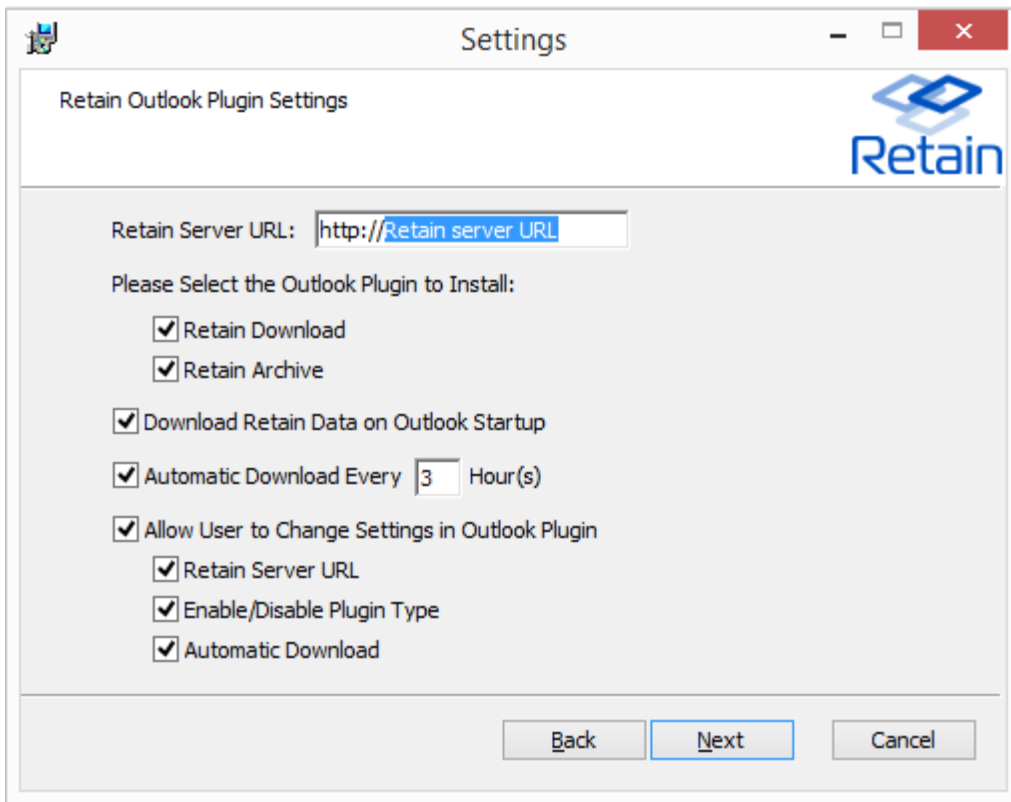
`https://<Retain_Server_URL>`

Please Select the Outlook Plugin to Install: There are two options for the plugin. Retain Download allows the user to download data from the Retain server to their workstation. Retain Archive opens the Retain interface in the Outlook window

Download Retain Data on Outlook Startup: This tells the Retain plugin to match the local data with what is in the Retain Server. This does not push any data from the plugin to the Server. The plugin may be configured to download at start, or on an automatic time period. The setting is designated in hours.

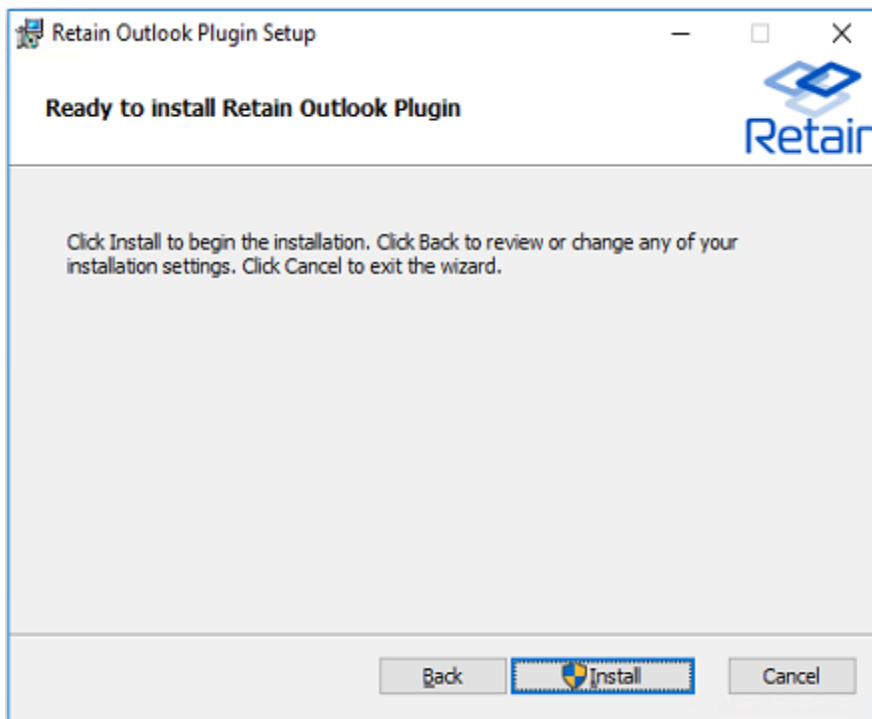
Allow users to change settings: If checked, the following selected options are available to be changed by the user in the plugin. If this option is not checked, the options will be grayed-out in the settings section of the plugin, and cannot be modified.

Configure as desired and select ‘Next’.

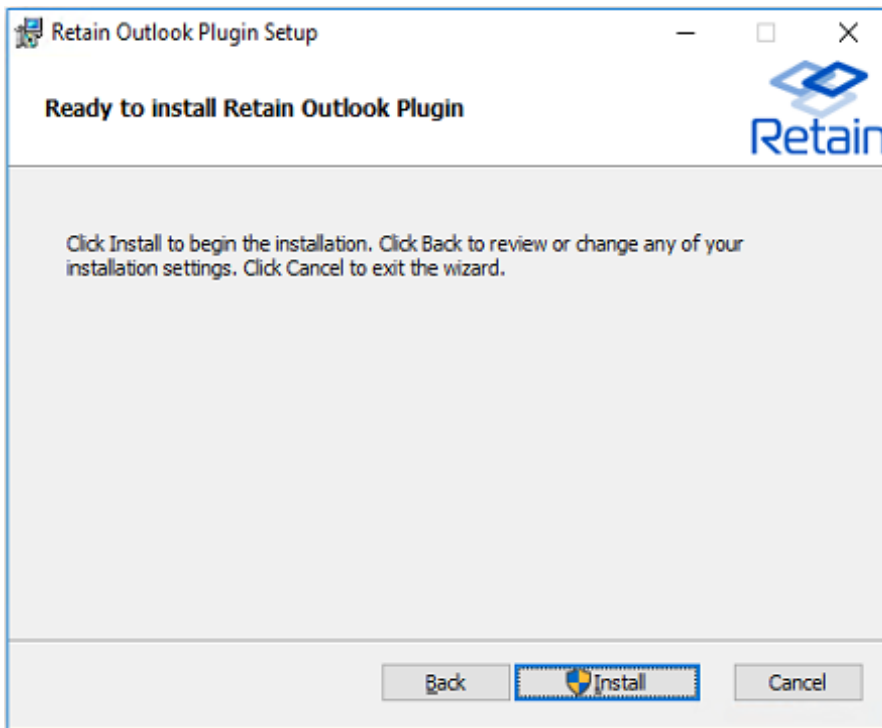


If any settings need to be changed, use the 'back' button and change then.

Select the 'Install' button to begin the plugin installation. (Installation will require admin rights.)



Wait for the plugin to install.

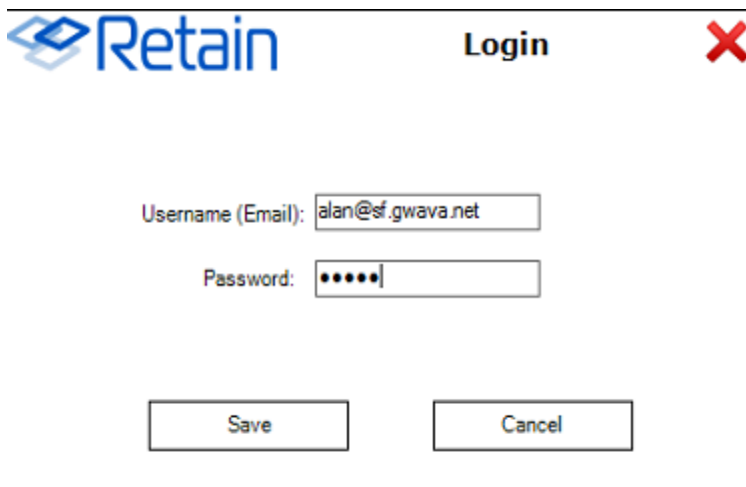


Once the install has completed, select 'Finish' to exit the installer.

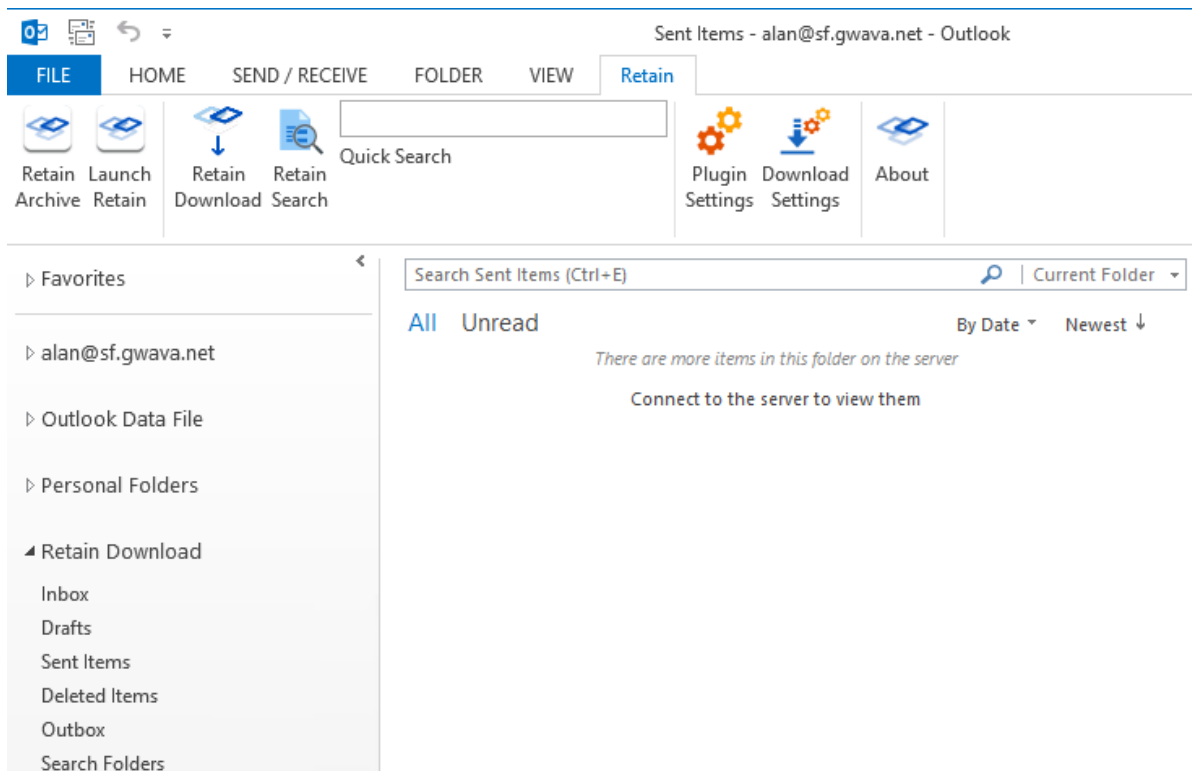
Features and Use

To access the Retain Outlook plugin, open the Outlook client.

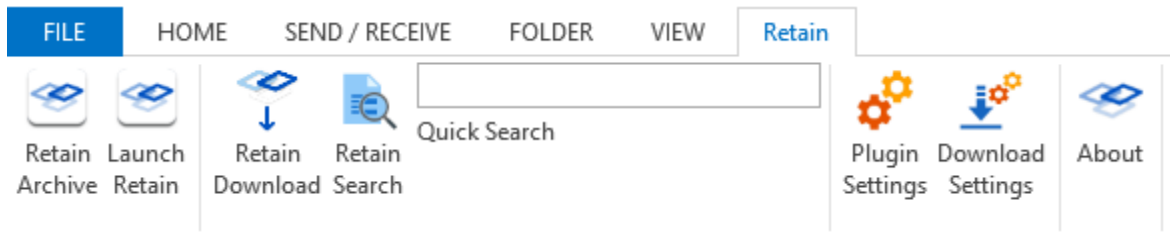
A dialog will appear asking for Retain login credentials. Users will then need to log into Retain with their Active Directory/Azure Logon.



Once installed and initialized, the Retain tab, ribbon, and folder structure are available. A new folder called *Retain Download* will appear.

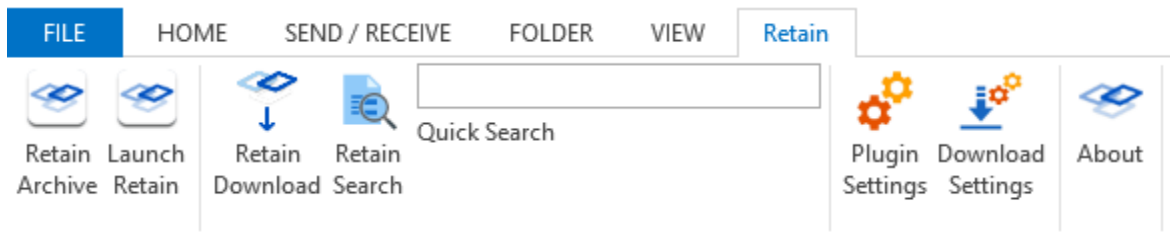


To access the folder structure, simply select it as you would the normal folder structure in Outlook. Individual settings of the plugin can be changed from the ribbon.

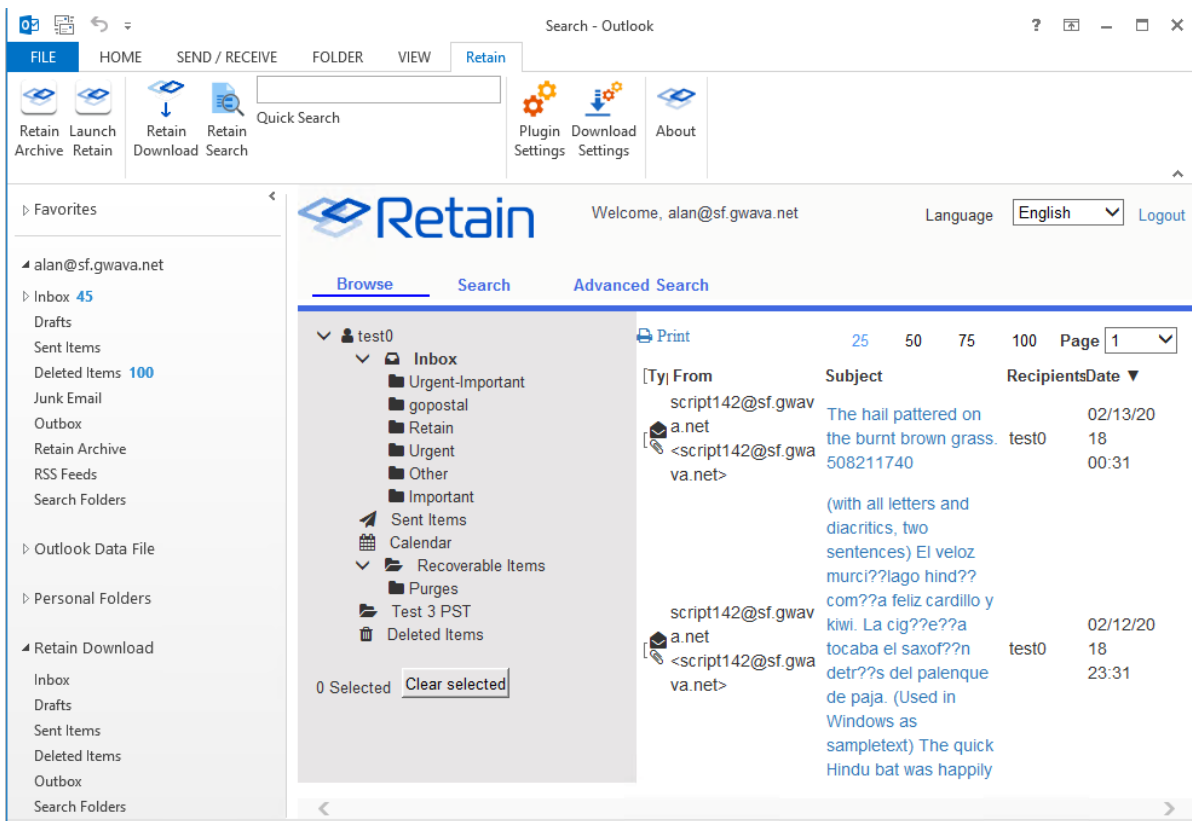


Retain Archive

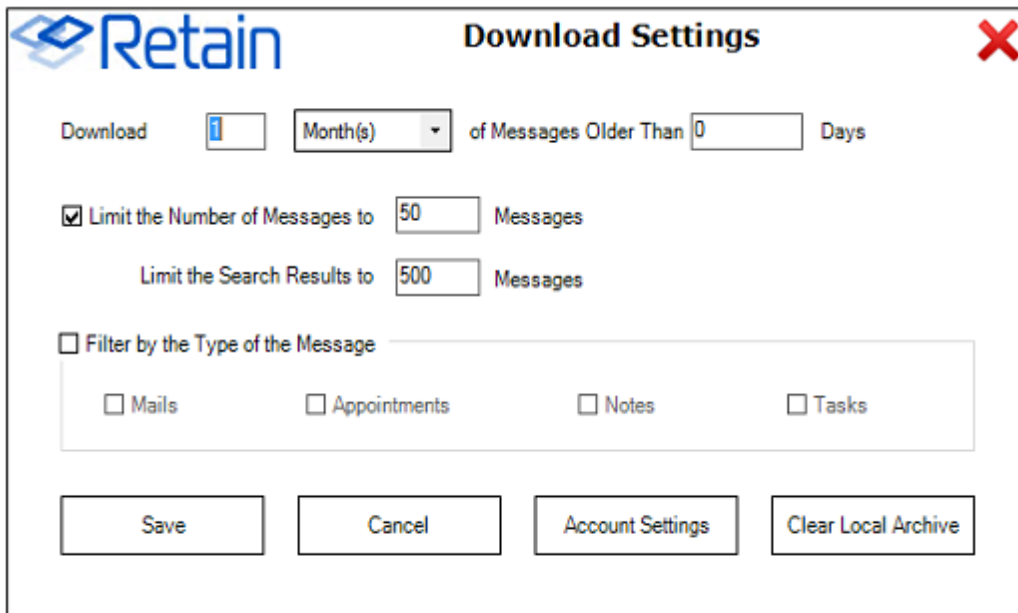
The Retain Archive button is simply a portal to the Retain web interface for users.



A new folder called Retain Archive will also be created at the Inbox level of the user's local folder. This will allow the user to Browse or Search their Retain archive mailbox. Click on Launch Retain or the Retain Archive folder to log into Retain and the Retain web interface will appear in the Outlook window.



Download Settings



The Download Settings contains the criteria which dictates what message data will be added into the local storage and made available in the Outlook client. It is recommended to keep the download size small because Outlook has difficulty serving very large amounts of data.

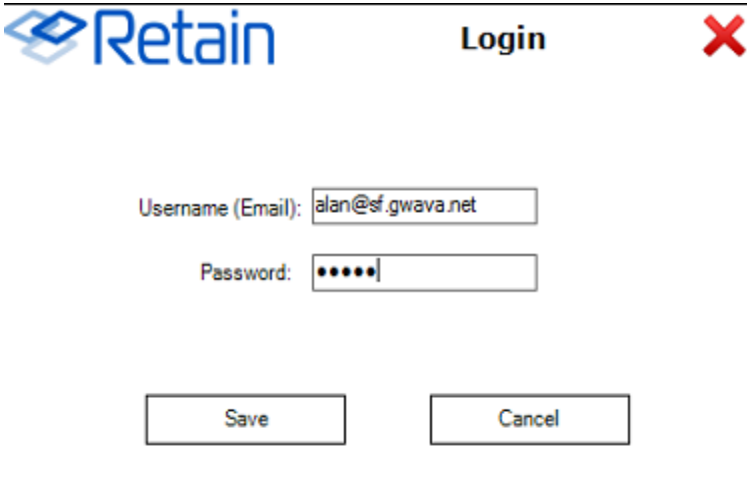
The download time limit dictates the time frame of messages which will be displayed in the Outlook client. This can download a large amount of data which may overwhelm the resources available to Outlook, so it is best to limit this to 90 days or less.

Messages may be limited by total number, as may the search results. (Search results limit the number of results by default to only display 500 messages.)

In addition, the type of data may be limited to only the types selected, or all types.

What data is added to local storage can be limited by age, number of messages, or item type. 'Save' saves your settings. However, before the download can be performed, the login information must be provided. Select the 'Account Settings' button.

Account Settings



The screenshot shows a 'Login' dialog box for the 'Retain' application. The dialog box has a title bar with the 'Retain' logo on the left, the word 'Login' in the center, and a red 'X' close button on the right. Inside the dialog, there are two input fields. The first is labeled 'Username (Email):' and contains the text 'alan@sf.gwava.net'. The second is labeled 'Password:' and contains five dots. Below these fields are two buttons: 'Save' and 'Cancel'.

The account settings are simply the login credentials of the account which is to be used for the download. Input the email and password. GroupWise usernames must not be the full address. If inputting an Exchange username, enter the entire email address. Save settings.

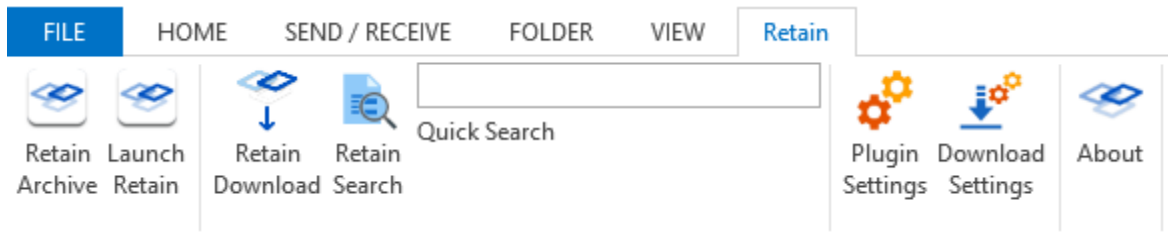
Clear Local Archive

The Clear local archive button does exactly as it sounds, it will empty the local archive, Retain, folder tree of all message data items. Any folders which were part of the Retain archive, and not part of the default folder set of Outlook will also be removed. The default set of folders and the Retain folder tree will still be present. To completely remove the Retain outlook plugin, please uninstall the plugin from the system's Control Panel.

Launch Retain

The Launch Retain button will cause the default browser to open to the Retain Server URL.

Retain Download



The Retain Download button initiates a download of the users Retain archive according to the download settings. Download settings and the user credentials must be configured before the download will complete.

Retain Search

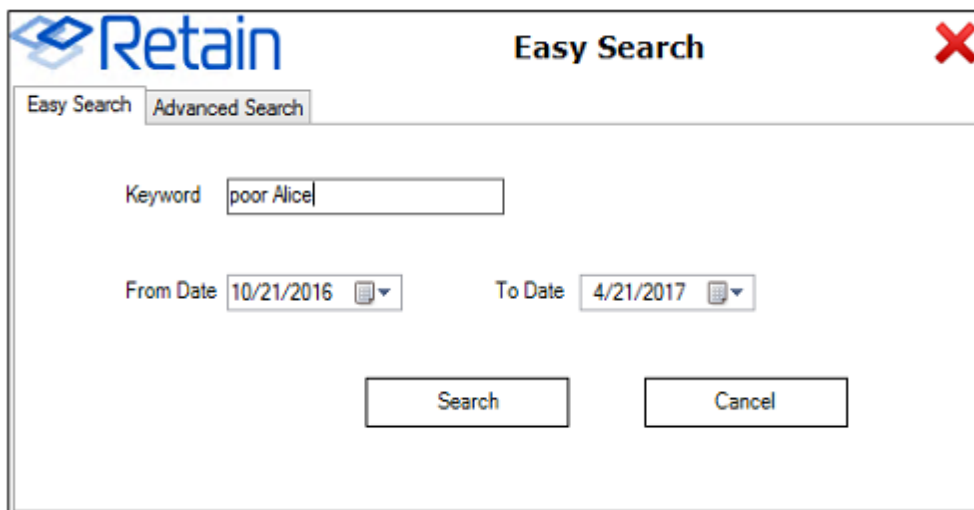
The user's downloaded Retain archive can be searched with the search functions of the ribbon. To search the entire archive click on the Retain Archive button and use the search tab.

Searching the downloaded Retain Archive with the Retain Plugin is simple. Select the 'Retain Search' button from the Retain ribbon.

The search interface has two different screens: Easy and Advanced search.

Easy Search

With the Easy search, the plugin only offers a simple keyword and date range.



The search keywords are subject to the same restrictions and abilities as the Retain web interface. Easy search supports wildcards and quotes for search criteria. Without quotes, the search text will be searched as each word is an individual search term. With quotes, the search phrase is the criteria.

For example: Searching for ping pong will result in messages with the term 'ping', with the term 'pong', and with both, 'ping pong'.

While searching for “ping pong” will only result in messages with the term ‘ping pong’.

Searching with wildcards: Searching for gwava.* will produce results of ‘gwava.com, gwava.org, gwava.edu’, and ‘gwava.’.

In general, if multiple search terms are desired, move to the advanced search option. After search terms and a date range has been applied, select the ‘Search’ button.

Advanced Search

Search In	Condition	Keyword	Connector

From Date: 10/21/2016 To Date: 4/21/2017 Date Type: Created

Message Types:
 All Message Types Mail Note
 Appointment Task

Specify the Date Range for Appointments, Tasks or Notes

Start Date Range:
Starting between 4/21/2017 and 4/21/2017

End Date Range:
Ending between 4/21/2017 and 4/21/2017

Status:
Opened: Doesn't matter Read: Doesn't matter
Private: Doesn't matter

Search Cancel

The advanced search allows for more control in the search process.

The ‘Search in’ drop-down menu allows for customization of the limiting function of the keyword.

Content
Sender email
Sender name
Recipients
Subject
File name

- ◆ Content
- ◆ Sender email
- ◆ Sender name
- ◆ Recipients
- ◆ Subject
- ◆ File name

The condition field restricts the condition of the data items in the Retain Message Store.

Contains (exact)
Contains (fuzzy)
Starts with
Ends with
Does not contain

- ◆ Contains (exact)
- ◆ Contains (fuzzy)
- ◆ Starts with
- ◆ Ends with
- ◆ Does not contain

Finally, the Connector setting allows for the logical connection between criteria.

AND
OR

And

Or

The “+ and -” buttons to the right of the window allow the user to add multiple search term lines. There is no limit to the amount of lines, or criteria, which may be added.

The Message type option allows the search to be limited to the specific selected type or types. (Note, Appointment, Task, or Mail)

The Date Range is designed with appointments, tasks, and notes. If the date range is used, the range for the desired date applies. This is essentially a date range for the date ranges. This is a good way to look for tasks and appointments which were placed into the system before, but not removed later.

Created
Created
Stored

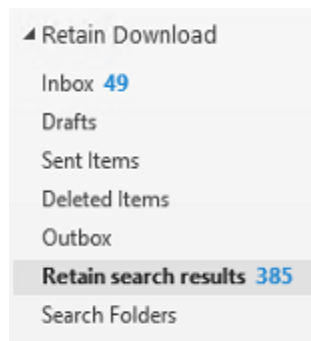
Created

Stored

The Status restriction allows the user to search for messages with a specific message state; opened, read, and private.

Once the search terms are satisfactory, select the 'Search' button to begin the search. Once the search has completed, the resulting group of messages is added to the Retain local archive, under the 'Retain search results' folder.

NOTE: It is important to note that the number outside the folders represents the 'unread' message count, not the total message count. To view the total message count, see the 'Items:' count at the bottom left of the Outlook window.



Quick Search

The Retain ribbon contains a quick search field, which performs a simple search of last six months of the user's downloaded archive right from the ribbon without opening any additional windows. Simply place the desired criteria in the field and click on the 'Quick Search' button. Results will be displayed the same way they are for the Easy and Advanced search. In addition, the Quick Search supports the same wild-cards.

Retain Outlook Plugin Settings

The Plugin settings button opens the plugin settings window. This is where the user can modify the basic plugin settings.

Retain Server URL:

Plugin Type

- Retain Download
- Retain Archive
- Launch Retain

Outlook Integration Settings

- Synchronize on Startup
- Auto-Synchronize Every Hour(s)

Language

This window contains all connection and plugin settings. If the entries here are grayed-out, then the ability to change the settings has been disabled during install, and the setting information is display-only.

The connection URL should be specified with just the hostname or IP address. If a port number is required, it may also be specified, but is not necessary if Apache or IIS is handling requests for the Retain Server.

Whether the Retain Download section or the Retain Archive section is visible is controlled here. The plugin may be set to automatically download messages from the archive on startup, or at a set time interval, to ensure that the plugin shows what is present in the Retain Archive.

The Launch Retain button will cause the default browser to open to the Retain Server URL.

The Language set in the Plugin Settings will change the displayed language for all Retain plugin displays.

Data File

The Retain Outlook plugin stores the downloaded data in the user's folder. You can find this location by right-clicking on the Retain Download folder and selecting *Data File Properties*.

It will be generally found in C:\Users\[userName]\Documents\GWAVA\Retain.nst

Log File Location

The plugin will create a log file if the folder C:\temp exists.

For example: C:\temp\WrapPST.txt

Outlook Plugin Silent Install

The Retain Outlook plugin can be deployed across your network with a Windows policy.

Command Line Install

Prerequisites: To install the MSI, two packages must be installed. These packages are included in the bundle which is an EXE, not an MSI. If either of these are missing the install will fail.

- ◆ **Microsoft .NET Framework 4 Extended**
- ◆ **Microsoft Visual Studio 2010 Tools for Office Runtime.**

If you open a non-admin command prompt, you will be asked to provide Administrator level credentials to proceed with the install.

The plugin is designed to be installed via command line silently. To do this, open a Command Prompt and run the .msi file and add a /q then enter the settings desired from the following:

RETAINURL: The Retain server URL http://<Retain_Server_Address> no trailing slash. For example: http://retain.company.com. Default http://RetainURL

MAXSYNC: Maximum integer number of items to be synced in every synchronization. Default 50.

MAXSEARCHRESULTS: If using the Retain search feature, the maximum integer number of items that will appear in the results. Default 500.

USERNAME: The username of the user (generally the user's email address).

MESSAGESYSTEM: The type of messaging system. Values:

0-> Exchange

1-> GroupWise

FILTERTYPE: Filter messages based on the type during the synchronization.

It uses bit pattern to store the values:

0-> 0000-> No filter (All types)

1-> 0001-> Mail

2-> 0010-> Appointment

4-> 0100-> Note

8-> 1000-> Task

COMBINE THE BIT NUMBERS TO HAVE MULTIPLE VALUES SET

3-> 0011 -> MAIL & APPOINTMENT

6-> 0110-> APPOINTMENT & NOTE

15-> 1111-> ALL FILTERS

ARCHIVEFILEPATH: The path and the file name of the desired local NST file. The path should exist but **not** the NST file itself.

ISWEBUI: Use the new Retain login within Outlook. Boolean value. Default true.

ISNATIVE: Download Retain files into Outlook, original plugin style. Boolean value. Default true.

HASAUTOSYNC: Enable auto synchronization to Retain. Boolean value. Default true.

SYNCINTERVAL: How often to automatically download new items, in hours. Default 3.

SYNCSTARTUP: Enable Synchronize on startup. Boolean value. Default true.

DAYSAGOARCHIVED: Synchronize messages older than x days ago

CANCHANGESSETTINGS: Enable the right for the user to change settings. Boolean value. Default true.

SCOPE: Install just for one or all users on the machine. perUser or perMachine. Default perMachine.

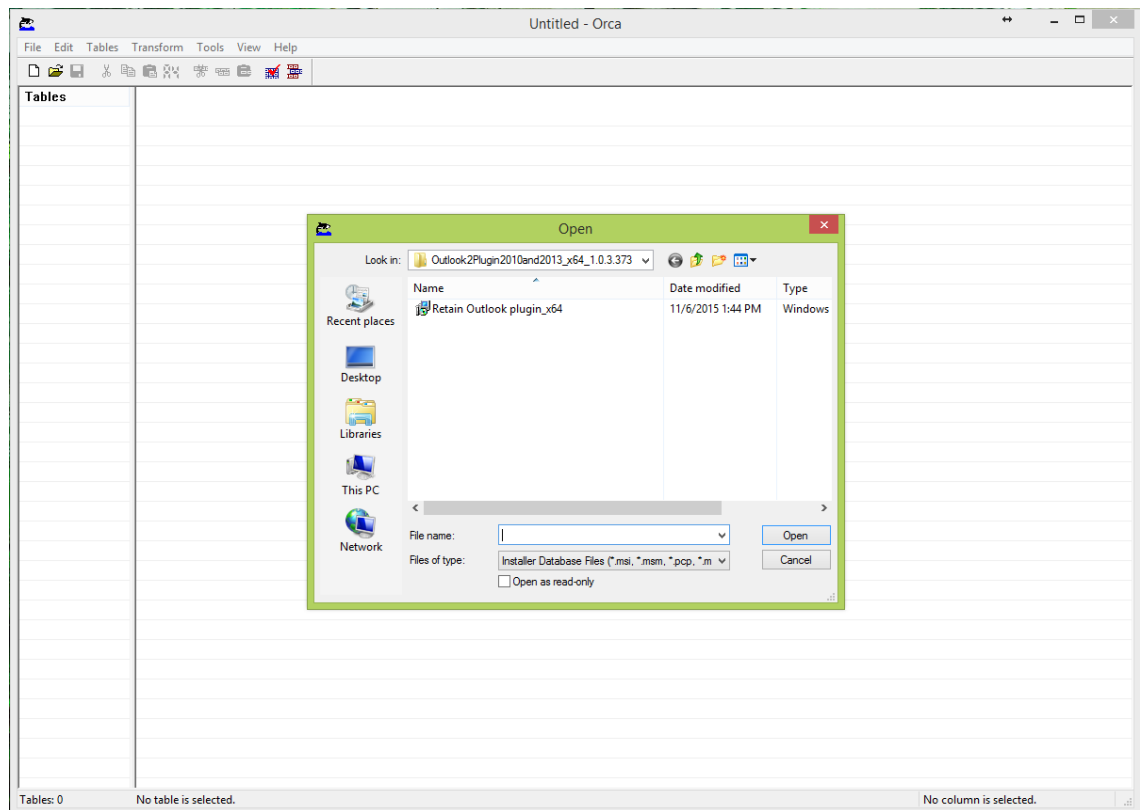
Here is an example of the command line that could be used. Using the /qb option will present a progress prompt, but is not required. Adding the /l* will output a log for troubleshooting.

```
msiexec /qb /l* plugin.log /i "Retain Outlook plugin_x86.msi" /norestart  
ARCHIVEFILEPATH="C:\Users\UserName\My Documents\RetainLocalStore.NST"  
RETAINURL=http://10.1.43.17/ MAXSYNC=200 DAYSAGOARCHIVED=0 DURATION=7  
RANGE=2 USERNAME=UserName@company.com MESSAGESYSTEM=0 FILTERTYPE=6
```

Group Policy Install

You can use an AD Group Policy to install the Outlook Plugin. You may use [MS System Center Configuration Manager \(https://www.microsoft.com/en-us/cloud-platform/system-center-configuration-manager\)](https://www.microsoft.com/en-us/cloud-platform/system-center-configuration-manager) using this as a template (<https://support.office.com/en-us/article/Deploy-Office-365-ProPlus-with-System-Center-Configuration-Manager-4dd6a023-0a5d-4dc9-9bad-ff70e01840b8>) or a third-party program such as [Orca \(http://www.klaus-hartnegg.de/gpo/orca.html\)](http://www.klaus-hartnegg.de/gpo/orca.html) to adjust the settings in the MSI file for your organization. Orca is a third-party program that allows you to set parameters within an MSI file.

1. Download the correct Outlook plugin MSI file that you need for your installation from the Tools menu. Make sure you get the 32bit or 64bit version that corresponds to your version of Outlook, *not* your operating system. If using Outlook 32-bit on Windows 64-bit, use the 32-bit plugin installer.
2. If using Orca, download [Orca \(http://www.klaus-hartnegg.de/gpo/orca.html\)](http://www.klaus-hartnegg.de/gpo/orca.html) and install it on the computer where you have your newly downloaded MSI file.
3. Run Orca and open the MSI file that you wish to make the changes to.



4. After you open the MSI file you will need to go down to the table called "property" and select this table which will show you all the properties and switches of the MSI file. Here is where you will set your switches to true or false depending on what you would like your final settings to be after the silent install.

Property	Value
UpgradeCode	{A130D56E-CE5C-405D-A154-DB5A8CE1098B}
RETAINURL	http://Retain server URL
MAXSYNC	50
DAYSAGOARCHIVED	0
RANGE	2
MESSAGESYSTEM	0
FILTERTYPE	0
ARCHIVEFILEPATH	path
ISWEBUI	true
ISNATIVE	true
HASAUTOSYNC	true
SYNINTERVAL	3
SYNCSHORTCUT	true
CANCHANGESETTINGS	true
CANCHANGEURL	true
CANCHANGEPLUGINTYPE	true
CANCHANGEAUTOSYNC	true
LANGUAGE	2
DURATION	1
WixURMOption	UseRM
SCOPE	perMachine
ALLUSERS	1
ARPNOMODIFY	1
USERNAME	username
WIXUI_INSTALLDIR	INSTALLDIR
Manufacturer	GWAVA Inc.
ProductCode	{62A54E23-15B5-4710-917F-5418076EAE98}
ProductLanguage	1033
ProductName	Retain Outlook Plugin
ProductVersion	1.0.3.373
DefaultUIFont	WixUI_Font_Normal
WixUI_Mode	Minimal
ErrorDialog	ErrorDlg
SecureCustomProperties	NETFRAMEWORK40FULL;WIX_DOWNGRADE_DETECTED;WIX_UPGRADE_DETECTED

- After you have made the changes, save the amended file and close Orca. Now you are ready to deploy the MSI file in your group policies across your network.
- Make sure that the prerequisites: October 2017 Office and Windows updates, Visual Studio Tools for Office v. 4. and Net 4 or higher are installed on the workstations.
- Setup the [Group Policy \(https://support.microsoft.com/en-us/help/816102/how-to-use-group-policy-to-remotely-install-software-in-windows-server\)](https://support.microsoft.com/en-us/help/816102/how-to-use-group-policy-to-remotely-install-software-in-windows-server) in Active Directory.

Retain Outlook Plugin Single Sign-On

The Retain Outlook Plug-in can be enabled to use Single Sign-On (SSO) so users can connect to Retain from within Outlook without being prompted to log into Retain separately.

NOTE: These instructions require the Retain Server to be hosted on a Windows server.

You are expected to have some knowledge about setting up a user with OpenSSO (<https://docs.oracle.com/cd/E19681-01/820-3885/gimmi/index.html>) and Keytab (https://docs.oracle.com/cd/E41633_01/pt853pbh1/eng/pt/tsec/task_GeneratingtheKeytabFileandMappingtheServicePrincipalName-8371d4.html) files.

You will need to create an Active Directory Retain Single Sign-On user (retainsso) that will handle the single sign on, generate a keytab file, update Retain's kerberos.properties file and configure the client workstation, the steps will be shown below.

To enable the Retain Outlook Plugin with Single Sign-On you will need to follow these steps:

Prerequisites

Complete these prerequisites before beginning.

- ◆ Retain Server must be hosted on Windows.
- ◆ The Retain server must be connected to the same domain as the Single Sign-On user you will be creating.
- ◆ The workstations running Outlook with the Retain plug-in must be connected to the same domain as the Single Sign-On user you will be creating.
- ◆ You will need to know the realm or FQDN of your Exchange server, for this example “exchange2013.qa.gwava.com”.

Create the Single Sign-On User

Create the SSO user:

1. On the Active Directory Domain Controller server, logged in as a domain admin, open “Active Directory Users and Computers”.
2. Create a new user, (Actions menu | New | Users) with the following attributes, with your domain information filled in instead of the sample information:
 - ◆ First name: `retainssso`
 - ◆ User login name: `HTTP/retainssso.exchangeserver.example.com`. For Example: `HTTP/retainssso.exchange2013.qa.gwava.com`
 - ◆ Pre-windows logon name: `retainssso`
 - ◆ Set password: Specify an appropriate password
 - ◆ Enable: Password never expires
 - ◆ Disable: User must change password at next logon
 - ◆ Disable: Use Kerberos DES encryption types for this account
 - ◆ Disable: This account supports Kerberos AES 128 bit encryption
 - ◆ Disable: This account supports Kerberos AES 256 bit encryption
 - ◆ Disable: Do not require Kerberos preauthentication

Associate the Single Sign-On User With the Service Principal Name

Associate the Single Sign-On User with the Service Principal Name (SPN) (<https://technet.microsoft.com/en-us/library/dd632778.aspx>)

1. On the Active Directory Domain Controller server, logged in as a domain administrator, open a command shell.
2. Enter the following command, with your domain information filled in instead of the sample information: `setspn -A HTTP/retainssso.exchange2013.qa.gwava.com@EXCHANGE2013.QA.GWAVA.COM retainssso`

3. View the SPN registration (<https://social.technet.microsoft.com/wiki/contents/articles/717.service-principal-names-spns-setspn-syntax-setspn-exe.aspx>) by entering the following command on the command line: `setspn -L retainsso`
4. If these steps have completed without error, then the SPN has been successfully setup.

Create the Keytab File

Create the keytab file. For more information see: (<https://blogs.technet.microsoft.com/pie/2018/01/03/all-you-need-to-know-about-keytab-files/>):

1. On the Active Directory Domain Controller server, at the command line prompt, enter the following updated with your domain information filled in instead of the sample information:


```
ktpass /out retainsso.keytab /princ HTTP/
retainsso.exchange2013.qa.gwava.com@EXCHANGE2013.QA.GWAVA.COM /mapuser
retainsso /mapop set /pass Password1 /crypto ALL /ptype
KRB5_NT_PRINCIPAL
```
2. That command will generate a file with the name `retainsso.keytab` at the location of command line prompt's current working directory.
3. Store the keytab file in a secure location that the Retain Server has full access to or the keytab may be copied to the Retain Server
4. Verify that the SSO user has been successfully configured by logging onto any machine on the domain with that user.

Create the krb5.ini File

1. On the Retain Server, create a new file and name it `krb5.ini`.
2. Add the following details to the `krb5.ini` file, with your domain and server information filled in instead of the example domain and server information:

```
[libdefaults]
    default_realm = QA.GWAVA.COM
    kdc_timesync = 0
    forwardable = true
    proxiable = false
[realms]
    EXAMPLE.COM = {
        kdc = exchange2013.qa.gwava.com
        admin_server = exchange2013.qa.gwava.com
    }
[domain_realm]
    .qa.gwava.com = QA.GWAVA.COM
    qa.gwava.com = QA.GWAVA.COM
```

NOTE: The file is case sensitive, so make sure you use the same case as the example above.

3. Save `krb5.ini` in the same location as the “.keytab” file.
4. Provide full File Permissions to the `krb5.ini` file to the Retain Server.

Configure Retain Server for Single Sign-On

The Retain Server needs to be configured properly for Single Sign-On:

1. On the Retain Server, Confirm that the Retain Server is in the same Domain from which the Kerberos authentication is done.
2. The computer name of the Retain Server must match the SPN username. In this example, “retainso”
3. Place the keytab and “krb5.ini” files created previously in C:\Windows on the Retain server.
4. On the Retain server, browse to the kerberos.properties file. By default, the file is found in C:\Program Files\Beginfinite\Retain\RetainWebUI\src\main\webapp\WEB-INF\cfg\kerberos.properties
5. Edit the file: kerberos.properties.
6. Set `kerberos.Server.Principal.Name` to the retainso User Logon Name from above. For example: HTTP/retainso.exchange2013.qa.gwava.com
7. Set `kerberos.Keytab.Filepath` to the location of the retainso.keytab file from above. The path should use forward slashes (/) instead of back slashes (\).
8. Confirm there are no trailing spaces on any line in the kerberos.properties file. Especially at the end of the SPN name.
9. Save the kerberos.properties file.
10. Confirm that the Retain Server has access to the directory where “.keytab” and “krb5.ini” are mentioned in the kerberos.properties file.
11. Restart the Retain Tomcat service. [“Starting and Stopping the Retain Server” on page 113](#)

Configure the Client

Each client workstation needs to have Integrated Windows Authentication configured. Outlook and the Retain Outlook Plugin should already be installed.

NOTE: You must perform this procedure for each end-user computer where you want to provide single sign-on access to Retain Web UI.

On the workstation users will be using Single Sign-On:

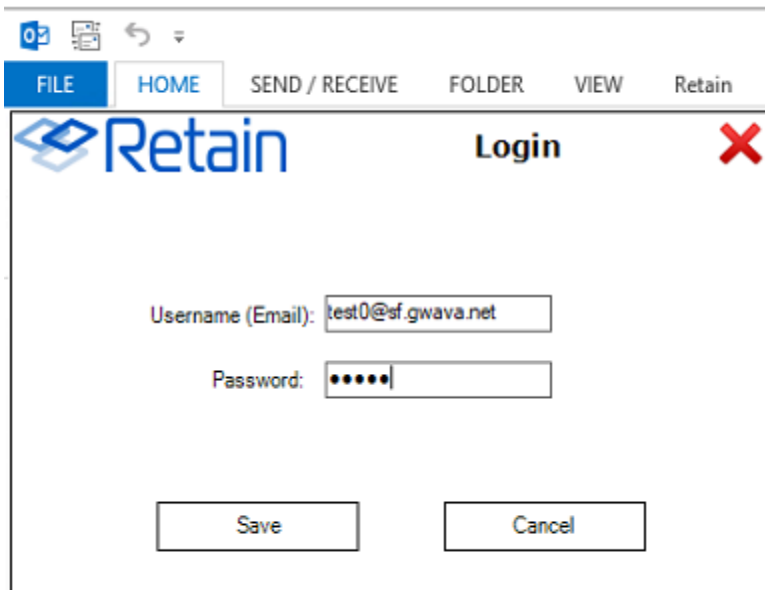
1. Open the Internet options control panel.
2. Click Security
3. Click Trusted Sites > Sites.
4. Add the DNS name of the identity applications server. For example: retainso.exchange2013.qa.gwava.com
5. Click Add, then click Close.
6. Click Custom level...
7. Under User Authentication, select Automatic logon with current user name and password.
8. Click OK.
9. In Internet Options, click Advanced.

10. Under Security, select Enable Integrated Windows Authentication.
11. Verify that Single Sign-On is working by opening Outlook, connecting to the Retain archive, selecting a local Outlook folder and then back to the Retain archive.

Outlook Plugin

Open Outlook and a new tab will appear on the ribbon called: Retain.

The first time you start Outlook after the installation of the plugin there will be a dialog box that appears asking for your login credentials.



Outlook Account Setup

If necessary, you may need to set your account information in the Download Settings | Account Settings section of the ribbon.

To enter your log-in credentials:

1. Go to the Retain tab
2. Select "Download settings"
3. Then click the "Account settings" button
 - a. Enter your Username which is your logon name from Active Directory (AD) for Exchange including the domain (George@gwava.com) or your username from GroupWise (George).
 - b. Enter your password.
 - c. Select the messaging system you wish to connect to.
4. Then click Save.

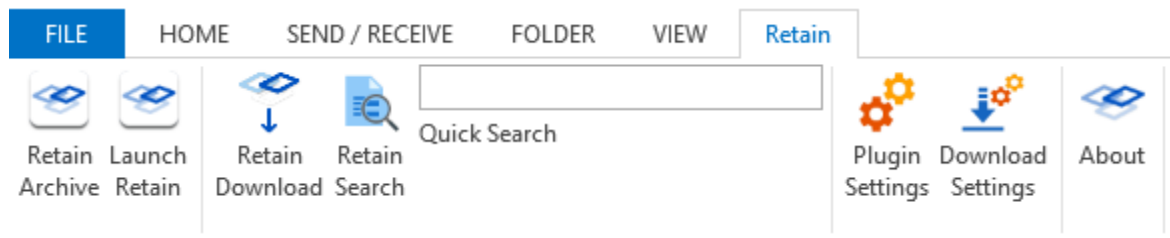
The screenshot shows the Outlook Today interface with the Retain ribbon selected. The ribbon includes buttons for Retain Archive, Launch Retain, Retain Download, Retain Search, Quick Search, Plugin Settings, Download Settings (highlighted with a red box), and About. Two dialog boxes are open:

- Download Settings:** Features a Retain logo, a close button (X), and the following options:
 - Download Month(s) of Messages Older Than Days
 - Limit the Number of Messages to Messages
 - Limit the Search Results to Messages
 - Filter by the Type of the Message
 - Mails
 - Appointments
 - Notes
 - Tasks
 - Buttons: Save, Cancel, Account Settings (highlighted with a red box), Clear Local Archive
- Login:** Features a Retain logo, a close button (X), and the following options:
 - Username (Email):
 - Password:
 - Buttons: Save, Cancel

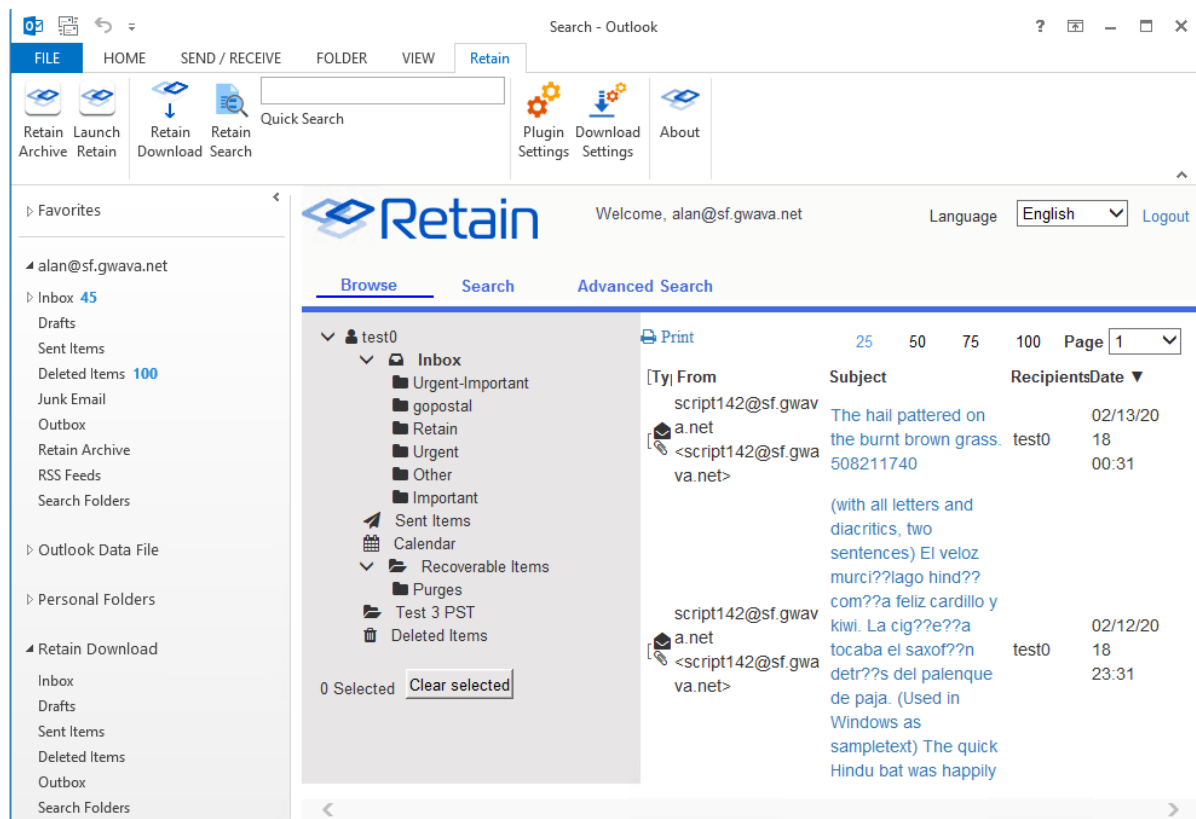
NOTE: It is not recommended to exceed 3 months or 5000 messages, because the file becomes too large for Outlook to serve.

Retain Archive

The Retain Archive button is simply a portal to the Retain web interface.

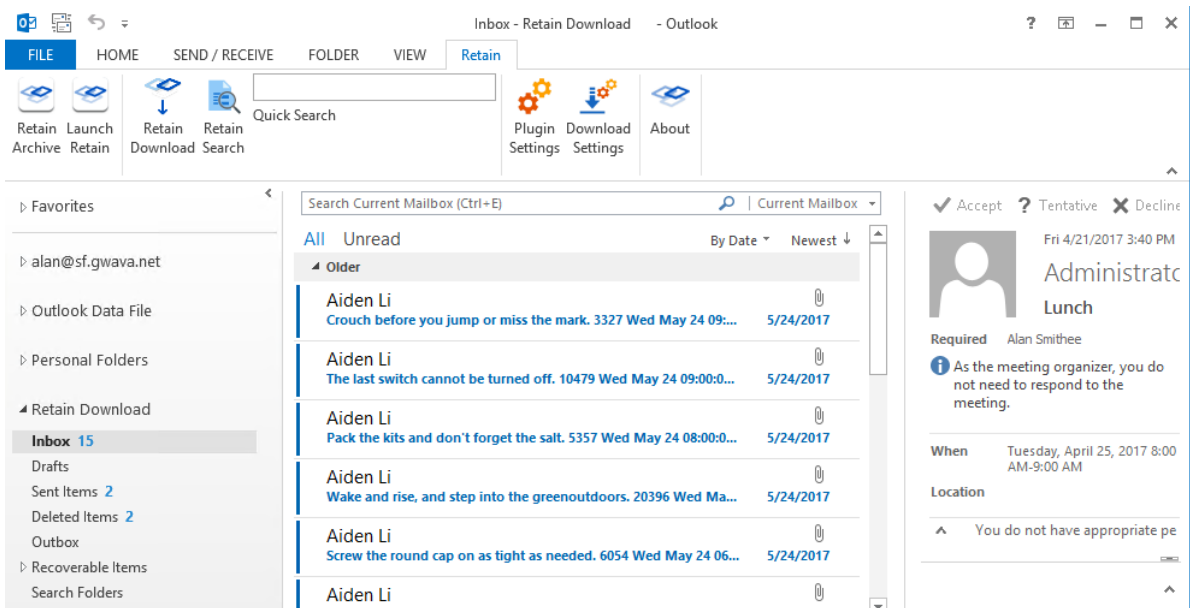


A new folder called Retain Archive will also be created at the Inbox level of your local folder. This will allow you to Browse or Search your Retain archive mailbox.



Retain Download

Once the connection is made a new folder will show up in your left sidebar. It will be labeled "Retain Download" which gives you access to your Retain archive mailbox.



Outlook will download a copy your archived messages to your local drive, just like a normal Exchange archive mailbox. Depending on the settings you chose in the Download Settings (see Figure 1).

This can be very useful after a migration (for example, from GroupWise to Exchange). You can choose to download the messages Retain archived from the GroupWise system so you can see them in Outlook.

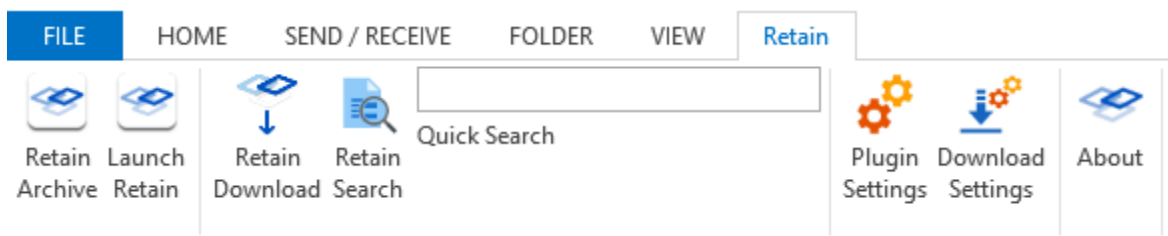
The Retain Download folder does not allow you to move messages between folders, an error dialog box will appear. Retain is not a email management system, it is only archiving.

Automatic download is useful for having easy access to past emails you have removed from Exchange to keep your inbox clean.

Retain Search

This is the main function of the Retain Outlook Plug-In, and what you use most often.

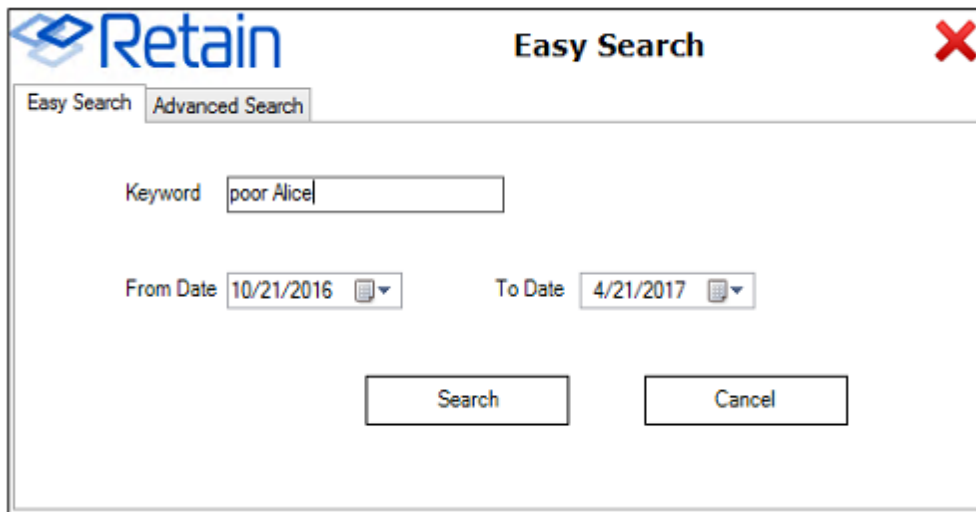
There are two ways to do a Retain search: Quick Search and the Retain Search button.



Quick Search

Quick Search will perform a search on the last 6 months of messages in your Retain Download Folder on your workstation. The results will be shown in the Retain search results folder. This is different from Outlook's search which only applies to messages that are on your local computer.

Retain Search Button Easy Search



The image shows a screenshot of the 'Retain Easy Search' dialog box. The window title is 'Retain Easy Search' with a red 'X' close button in the top right corner. The 'Retain' logo is in the top left. There are two tabs: 'Easy Search' (selected) and 'Advanced Search'. The 'Keyword' field contains the text 'poor Alice'. Below it, there are two date fields: 'From Date' with the value '10/21/2016' and 'To Date' with the value '4/21/2017'. Each date field has a small calendar icon to its right. At the bottom of the dialog, there are two buttons: 'Search' and 'Cancel'.

With the Retain Search button the Easy search is as simple as it gets, you give it a keyword and a date range and it will search To:, From:, Subject:, and message contents fields for the keyword. By default "To date" will be today's date and the "From date" will be 6 months ago. Clicking on the calendar icon will allow you change the dates.

Retain Search Button Advanced Search

The screenshot shows the 'Advanced Search' dialog box in the Retain application. The dialog has a title bar with the Retain logo, the text 'Advanced Search', and a red close button. Below the title bar are two tabs: 'Easy Search' and 'Advanced Search', with 'Advanced Search' being the active tab. The main area contains a table for building search criteria:

Search In	Condition	Keyword	Connector
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Below the table are several filter sections:

- From Date:** 10/21/2016
- To Date:** 4/21/2017
- Date Type:** Created
- Message Types:** All Message Types, Mail, Note, Appointment, Task
- Specify the Date Range for Appointments, Tasks or Notes
 - Start Date Range:** Starting between 4/21/2017 and 4/21/2017
 - End Date Range:** Ending between 4/21/2017 and 4/21/2017
- Status:** Opened: Doesn't matter, Read: Doesn't matter, Private: Doesn't matter

At the bottom are 'Search' and 'Cancel' buttons.

With the Retain Search button the Advanced search allows for more precision in how you search for a message. This is very useful if you know who it came from or where a particular keyword is or when it was sent.

You can use the various fields to narrow the search focus.

Search In

- ◆ Content
- ◆ Sender email
- ◆ Sender name
- ◆ Recipients

- ◆ Subject
- ◆ File name

Condition

- ◆ Contains (exact)
- ◆ Contains (fuzzy) (not recommended for use)
- ◆ Starts with
- ◆ Ends with
- ◆ Does not contain

Keyword

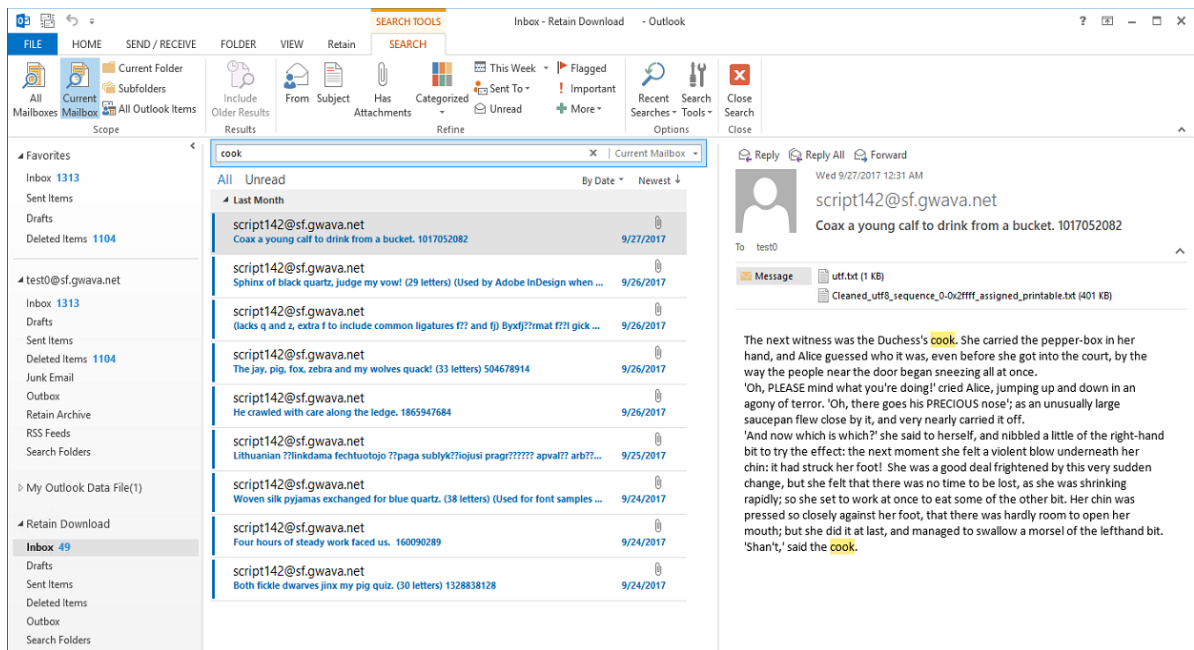
- ◆ This is the word you are looking for.

Connector

- ◆ AND (returns messages that contain all of the keywords)
- ◆ OR (returns messages that contain any of the keywords)
- ◆ By default, the "To date" is be today's date and the "From date" will be 6 months ago. Clicking on the calendar icon will allow you change the dates.

Outlook Search

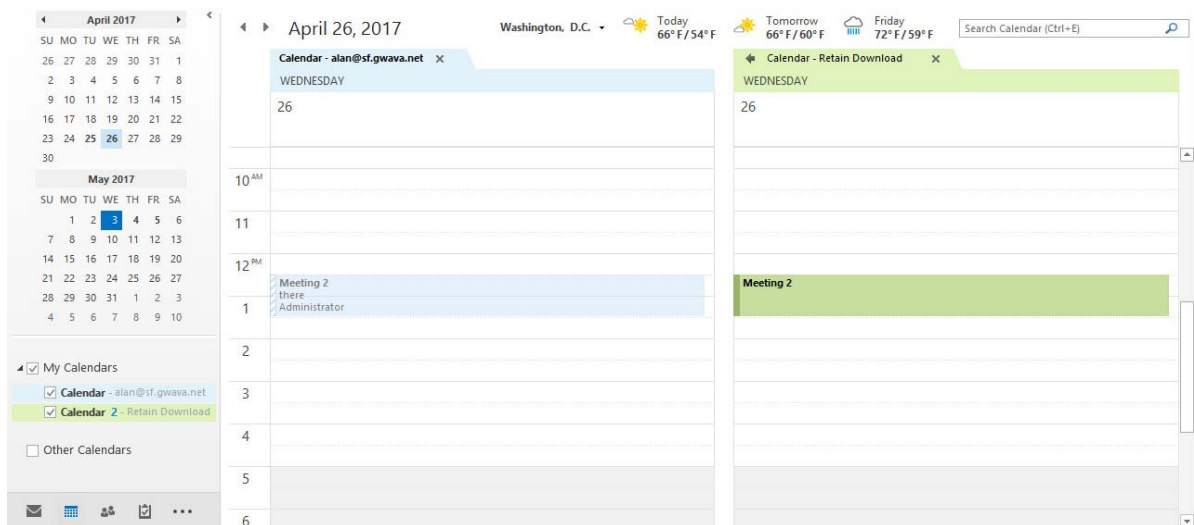
If you have used Retain Download and had your archived messages downloaded into Outlook. You can then use Outlook's search to further refine your search. For example, if you remembered you received a spreadsheet at the end of last quarter, you could download items from the archive from that time period and then use Outlook's built-in search capability to find the word "cook" because you remember that was part of the message.



Outlook Calendar

Retain archives calendar items and it can be shown side-by-side to your Exchange calendar.

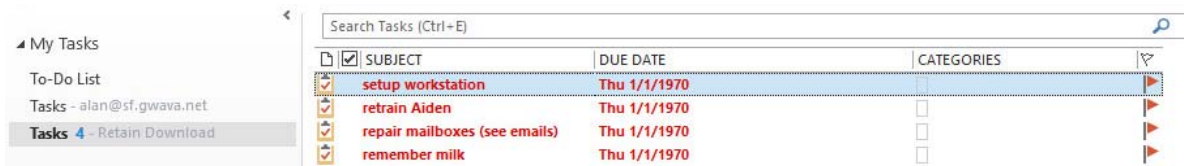
Click the checkbox to enable the *Retain Download* calendar.



Outlook Tasks

Retain archives Tasks

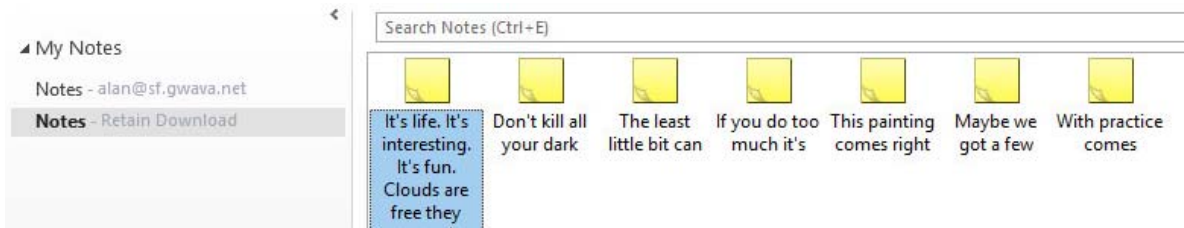
Select the *Retain Download* Task list to see items stored in Retain.



Outlook Notes

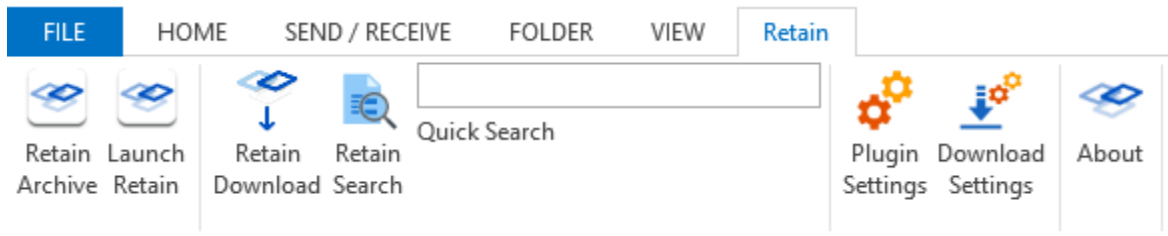
Retain archives Notes.

Select the *Retain Download* Notes list to see items stored in Retain.



Other buttons under the Retain tab

The Retain ribbon has a number of available functions. These may be restricted by your System Administrator.



The other buttons under the Retain tab:

- ◆ *Retain Archive* will open your Retain archive mailbox in your browser.
- ◆ *Retain download* will manually download messages from Retain if you want to update right now.
- ◆ *Quick search* will perform a search of the last 6 months of your downloaded messages.
- ◆ *Plugin settings* is where you set the URL to the Retain Server and other settings like Language. Generally, only your system Administrator will need to change these settings.
- ◆ *Download settings* allows you to customize how many and how often messages are downloaded.
- ◆ *About* tells you which version of the plugin is installed.

Download Settings

From this dialog box you can set certain behaviors for the Retain Outlook Plugin.



Download of Messages Older Than Days

Limit the Number of Messages to Messages

Limit the Search Results to Messages

Filter by the Type of the Message

Mails Appointments Notes Tasks

Download: The number of Days, Weeks, Months, or Years of data to download can be set. Default, 5 Months

Messages Older than: How many days back that can be ignored can be set as well. For example, you might want to look back into the archive for 3 months of items but you don't need the last 30 days. Default, 0 Days.

Limit the Number of Messages to: How many messages to download to you workstation. Outlook does not like to deal with very large local storage files so it is best to keep this number small. Default, 50 messages.

Limit the Search Results to: This will limit the number of messages downloaded after a search. Default, 500 messages

Filter by the Type of the Message: You can restrict the plugin to Mail, Appointments, Notes, and/or Tasks. With this option checked, you will have to check which items are to be downloaded. Default, all unchecked, so all items will be downloaded.

Clear Local Archive: This will empty the local archive folder on your workstation of all items, and folders except the default set of folders. To remove all folders the plugin will need to be uninstalled.

Plugin Settings

This dialog box allows more general changes to the Retain Plugin.

Retain Server URL:

Plugin Type

- Retain Download
- Retain Archive
- Launch Retain

Outlook Integration Settings

- Synchronize on Startup
- Auto-Synchronize Every Hour(s)

Language

Retain Server URL: This is the IP address or Host name of the Retain Server where the archive is stored. Your system administrator will provide or set this for you.

Retain Download: This allows the plugin to add the Retain Download folders to Outlook.

Retain archive: This enables the *Retain Archive* button that opens your Retain archive mailbox.

If Outlook Integration is enabled:

Synchronize on Startup: When Outlook starts up, the plugin will check for new items in the Retain Archive.

Auto-Synchronize Every "3" Hours: The plugin will check for new items in the Retain archive every 3 hours by default.

Language

You can select the following languages for display in the Outlook interface:

Language

- Čeština
- Deutsch
- English
- Español
- Français
- Nederlands

Czech

German

English

Spanish

French

Dutch

Uninstall Retain Outlook client Plugin

To uninstall the plugin

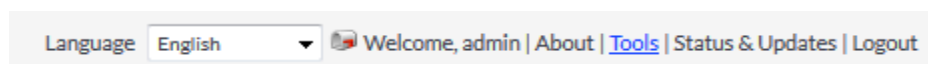
1. Go to right-click (Win7/8) *Start | Control Panel | Programs | Uninstall a program* or (Win10) *Start | Apps and Features*
2. Select the Retain Outlook Plugin
3. Choose Uninstall.

Outlook Web App Plugin

The Outlook Web App plugin utility adds a Retain Archive auto-logout button to user's Outlook Web App window.

NOTE: Outlook Web App was called Outlook Web Access in versions of Microsoft Exchange earlier than Exchange 2010.

The OWA Plugins are found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



System Requirements

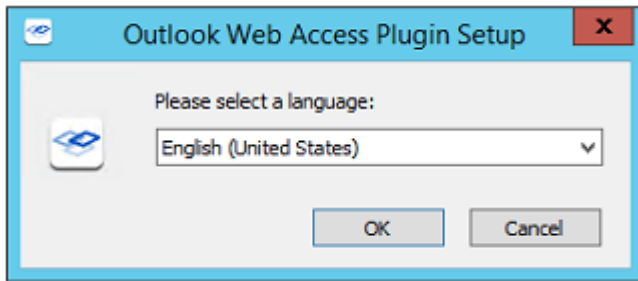
Exchange 2007, 2010, 2013, or 2016

There are two versions of the Outlook Web App plugin: the Outlook Web Access plugin for Outlook versions 2007 and 2010, and the Outlook Web App plugin for Outlook versions 2013 and 2016. Make sure to download the correct plugin as dictated by the Outlook Web App version.

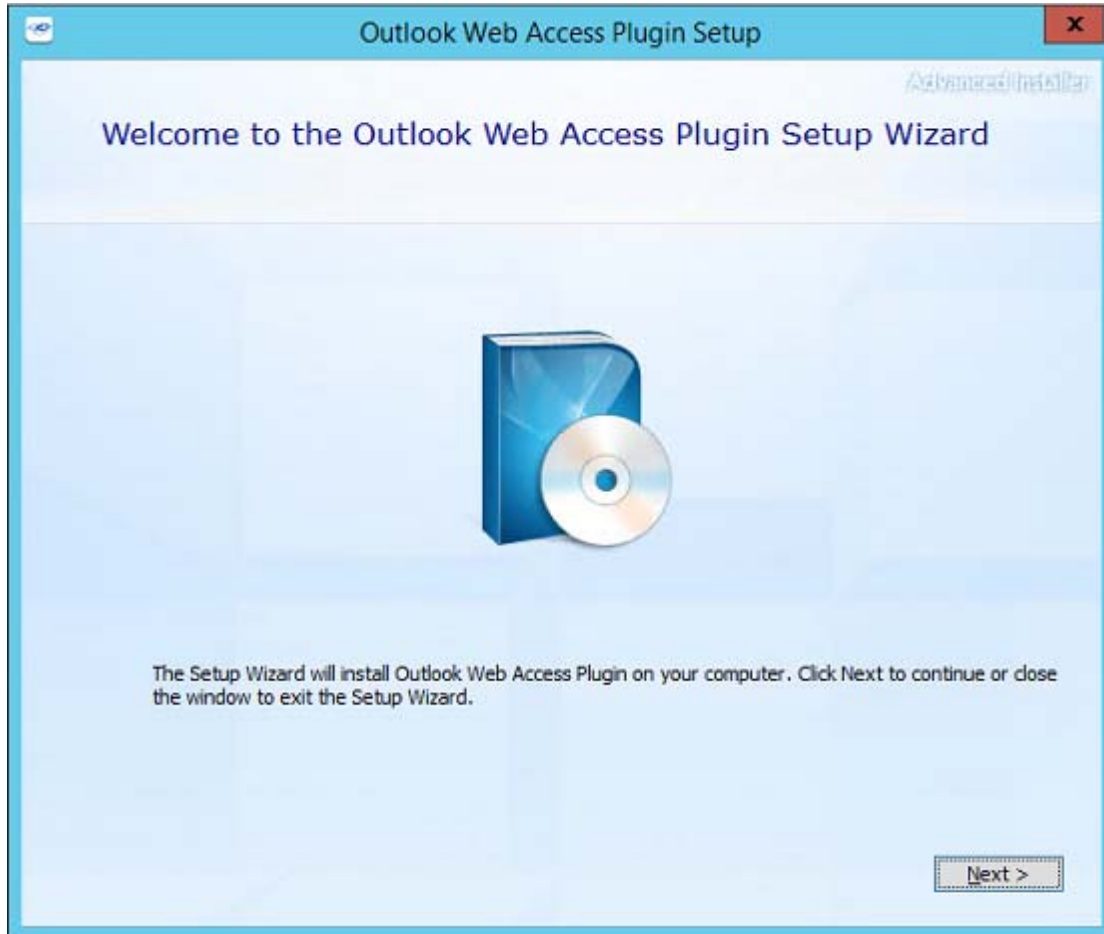
Installation

To install the plugin, download and run the appropriate plugin installation files on the Outlook Web App server.

On initialization, the installation allows language selection.

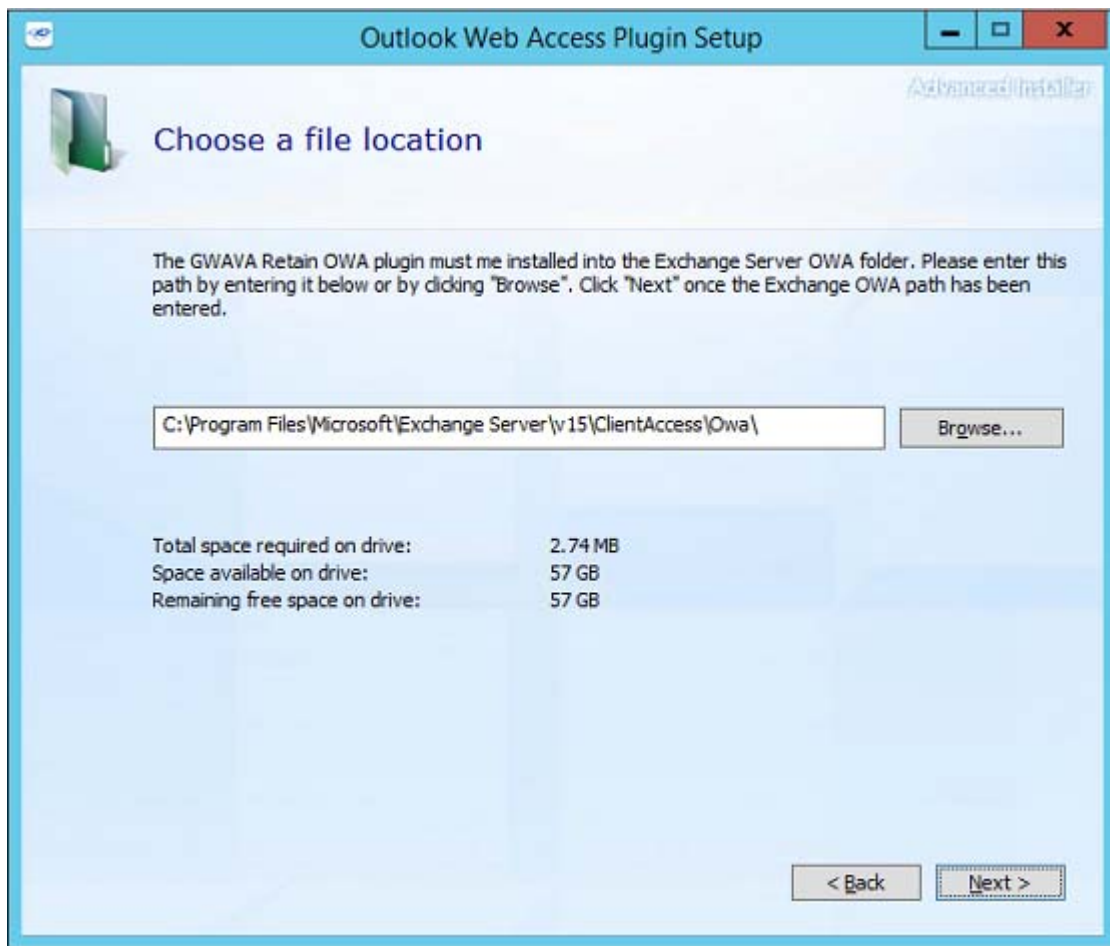


The installation then begins. Select 'Next' to continue.

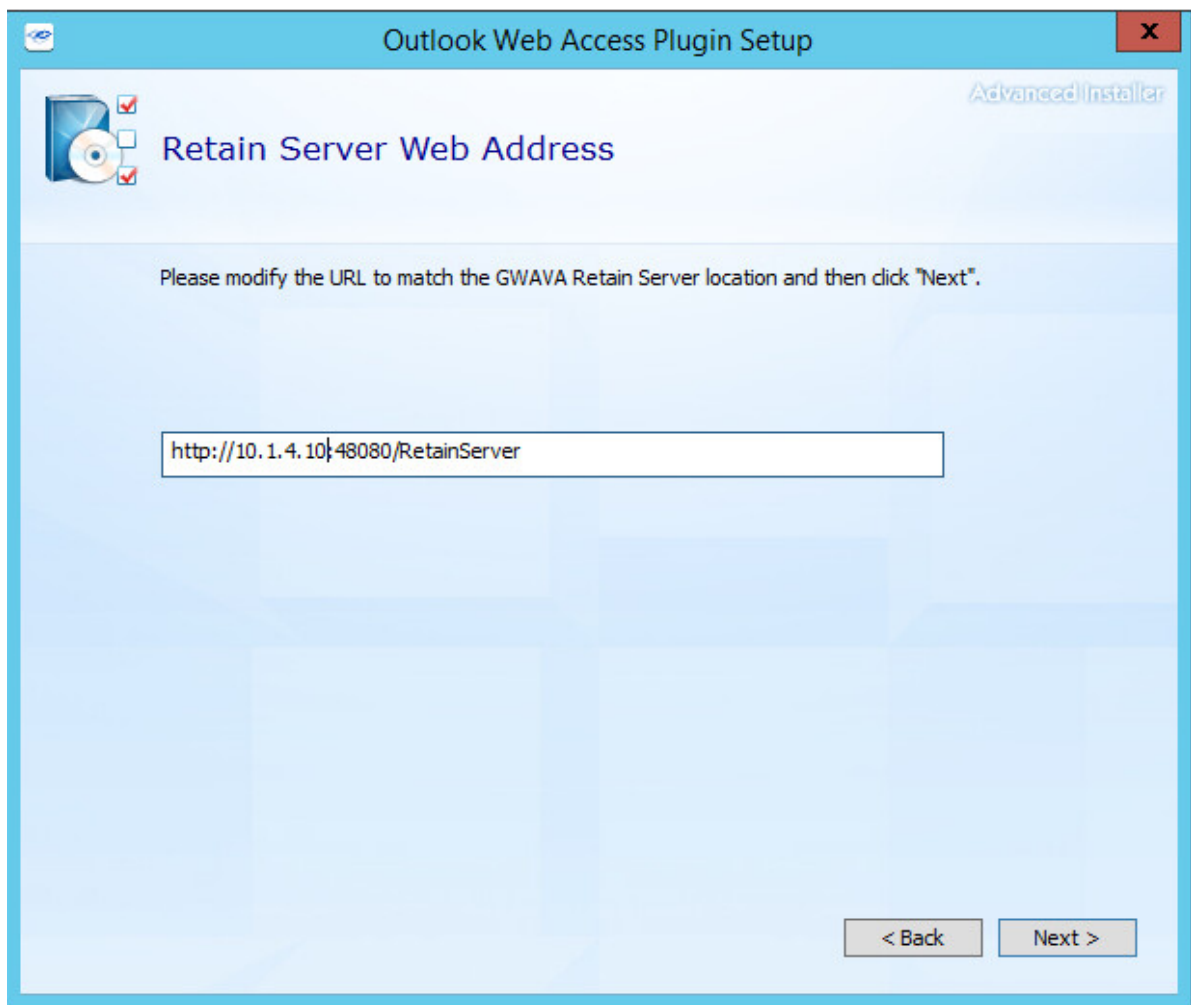


System space requirements and installation path are displayed. The installation path needs to be the location of the OWA folder. Default path for Exchange 2013 is displayed.

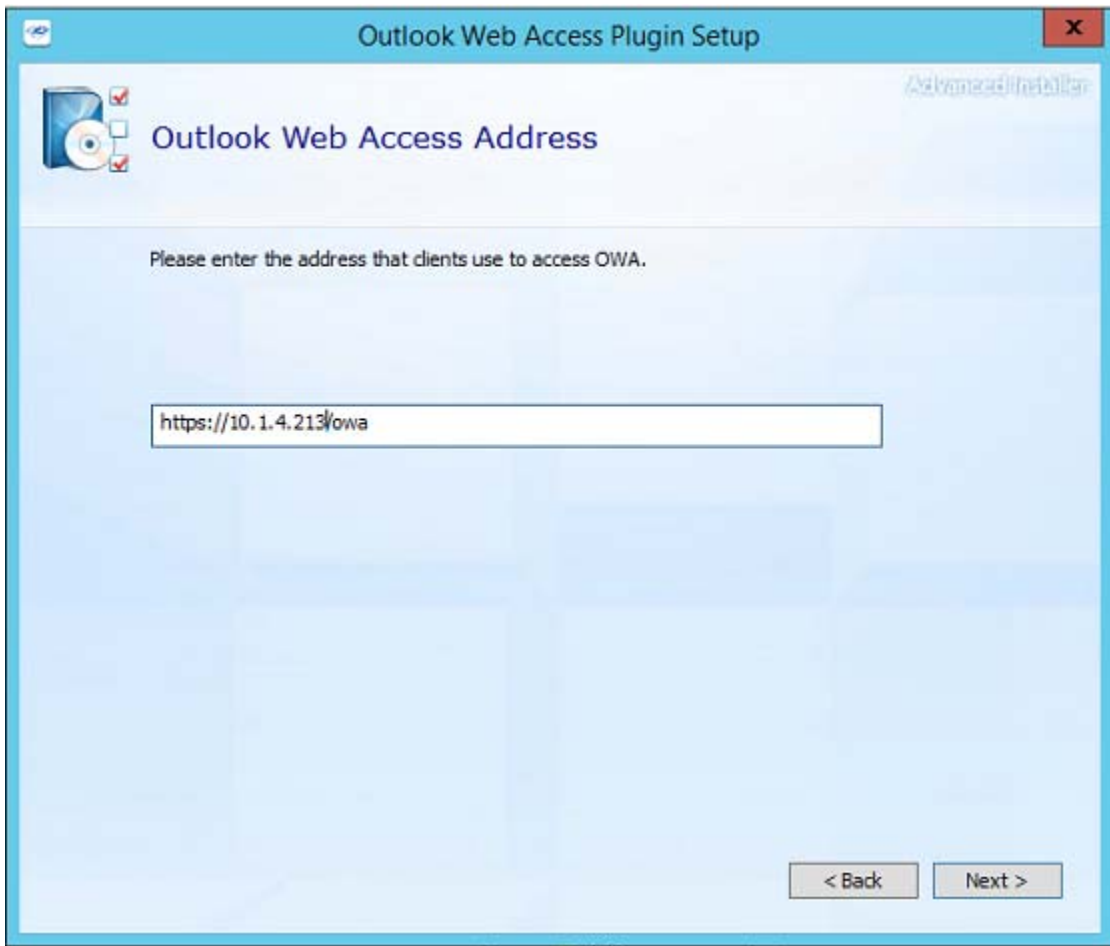
C:\Program Files\Microsoft\Exchange Server\v15\ClientAccess\OWA



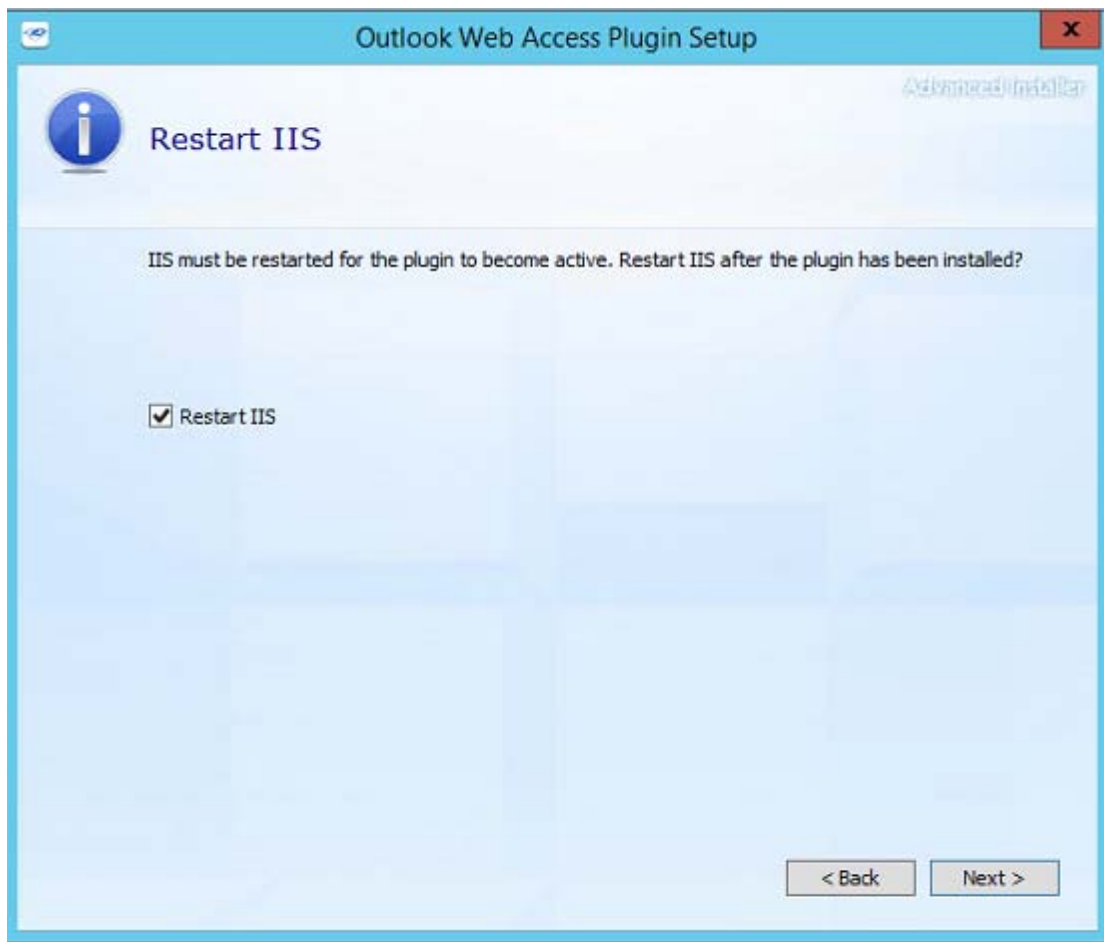
Enter the URL for the Retain Server that has data for the users. This is the address which will be used to access the Retain Server. Ensure that the address functions. This address should include the port used by tomcat, default 48080.



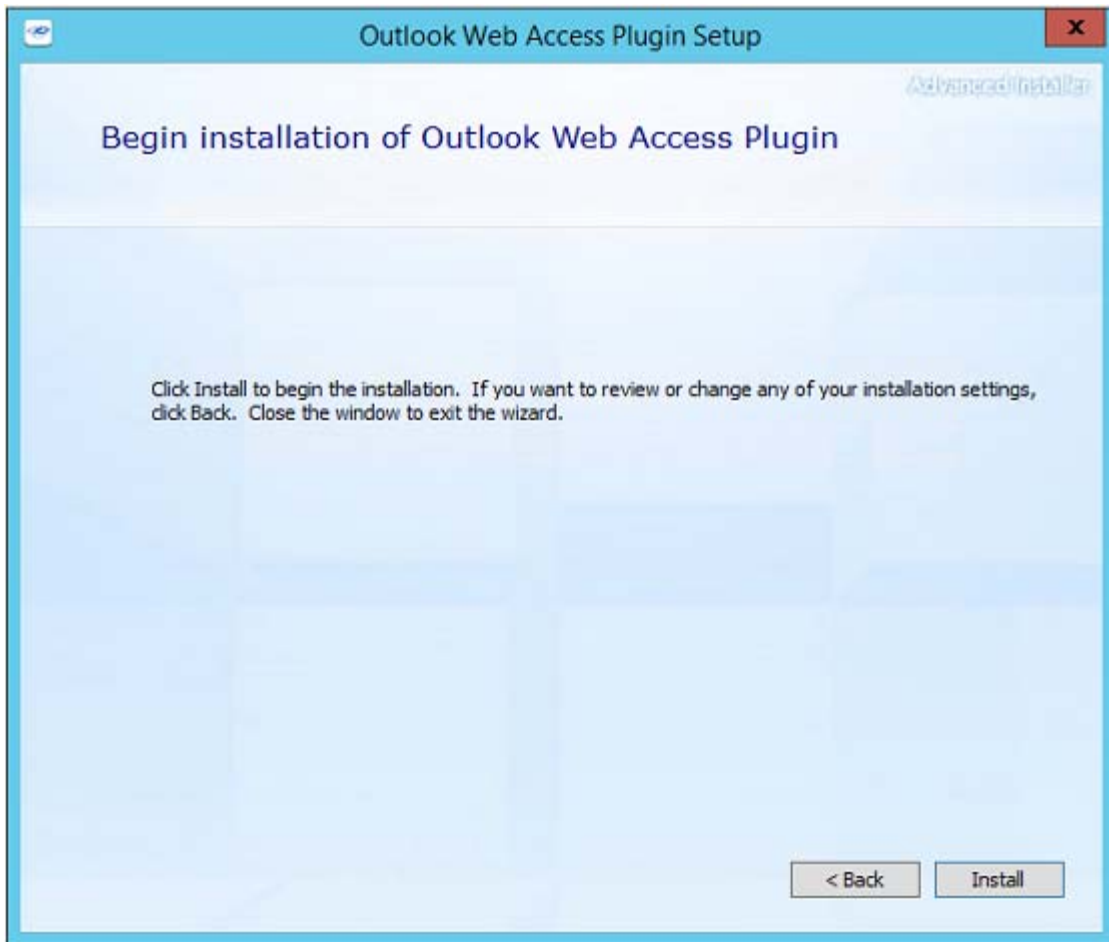
Enter the Outlook Web App client access URL. This address is the connection used by clients to access the Outlook Web App, usually this is an Exchange server. (This step is not included in or required by the 2007/2010 version install)



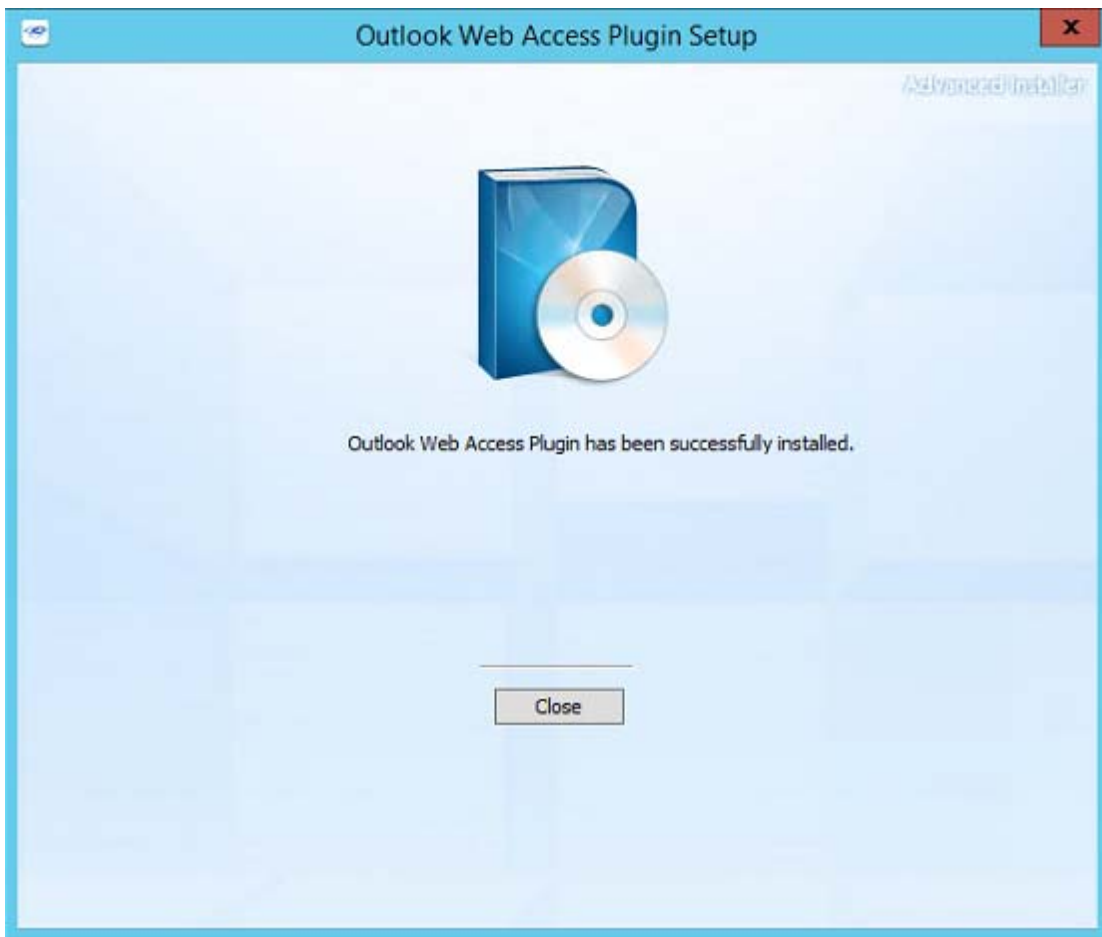
IIS must be restarted to load the plugin into Outlook Web App. The installation has the ability to automatically restart IIS to complete the installation. If checked, IIS will be restarted as part of the install.



If any settings need to be changed, this is the opportunity to change them. Once the 'Install' button is pressed, the installation will begin.

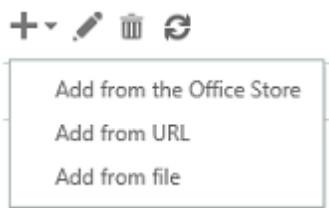


Once the installation has completed, select the 'Close' button.



Enable Plugin for the Organization

- ◆ After IIS is restarted, log into the Exchange Admin Center.
- ◆ Browse to Organization | Apps and select "Add from file" from the Add plus sign menu.



- ◆ Browse to the install location. Example from Exchange 2013
C:\Program Files\Microsoft\Exchange Server\v15\ClientAccess\Owa\Retain

- ◆ Select *manifest.xml* and Open.

Exchange admin center

recipients
permissions
compliance management
organization
protection
mail flow
mobile
public folders
unified messaging
servers
hybrid
tools

sharing **apps** address lists

Apps let your users do and see more without leaving their mailbox. The following list shows apps that have been installed for the or

+ - ✎ 🗑️ ↻

NAME	PROVIDER	USER DEFAULT	PROVIDED TO
Action Items	Microsoft	Enabled	Everyone
Bing Maps	Microsoft	Enabled	Everyone
My Templates	Microsoft	Enabled	Everyone
Retain	GWAVA	Disabled	Nobody
Suggested Meetings	Microsoft	Enabled	Everyone
Unsubscribe	Microsoft	Enabled	Everyone

Double click to edit

- ◆ Enable "Make this app available to users in your organization"
- ◆ Select "Mandatory, always enabled. Users can't disable the app"

Retain

Make this app available to users in your organization

Specify user defaults:

Optional, enabled by default

Optional, disabled by default

Mandatory, always enabled. Users can't disable this app

save cancel

The Plugin in the Outlook Web App

If you did not make the plugin mandatory, the plugin may not be active:

- ◆ Click the gear icon near the top right next to your users name and select "Manage apps...".

- ◆ A list of apps available to the users will be listed. Notice that Retain App is available but disabled. Select the Retain app and in the right sidebar, click the Enable link.
- ◆ Navigate back to your inbox with the right arrow or by clicking on your username and choosing My Mail.

Using the plugin:

- ◆ Browse to any message. Within the Viewer pane on the right or if you open the message in its own window, you will see a Retain link inside a grey bar.
- ◆ Clicking the link will reveal a Retain logo image and clicking on that will open a new window to the Retain archive.

The sense of smell is better than that of touch. 1597598642 ⤴

← REPLY
←← REPLY ALL
→ FORWARD
⋮

[mark as read](#)

script50@sf.gwava.net

Tue 9/27/2016 1:52 PM

To: test11;

📎 3 attachments ⏪ ⏩

shuffled.csv

utf.txt

Go-Postal.ps
1

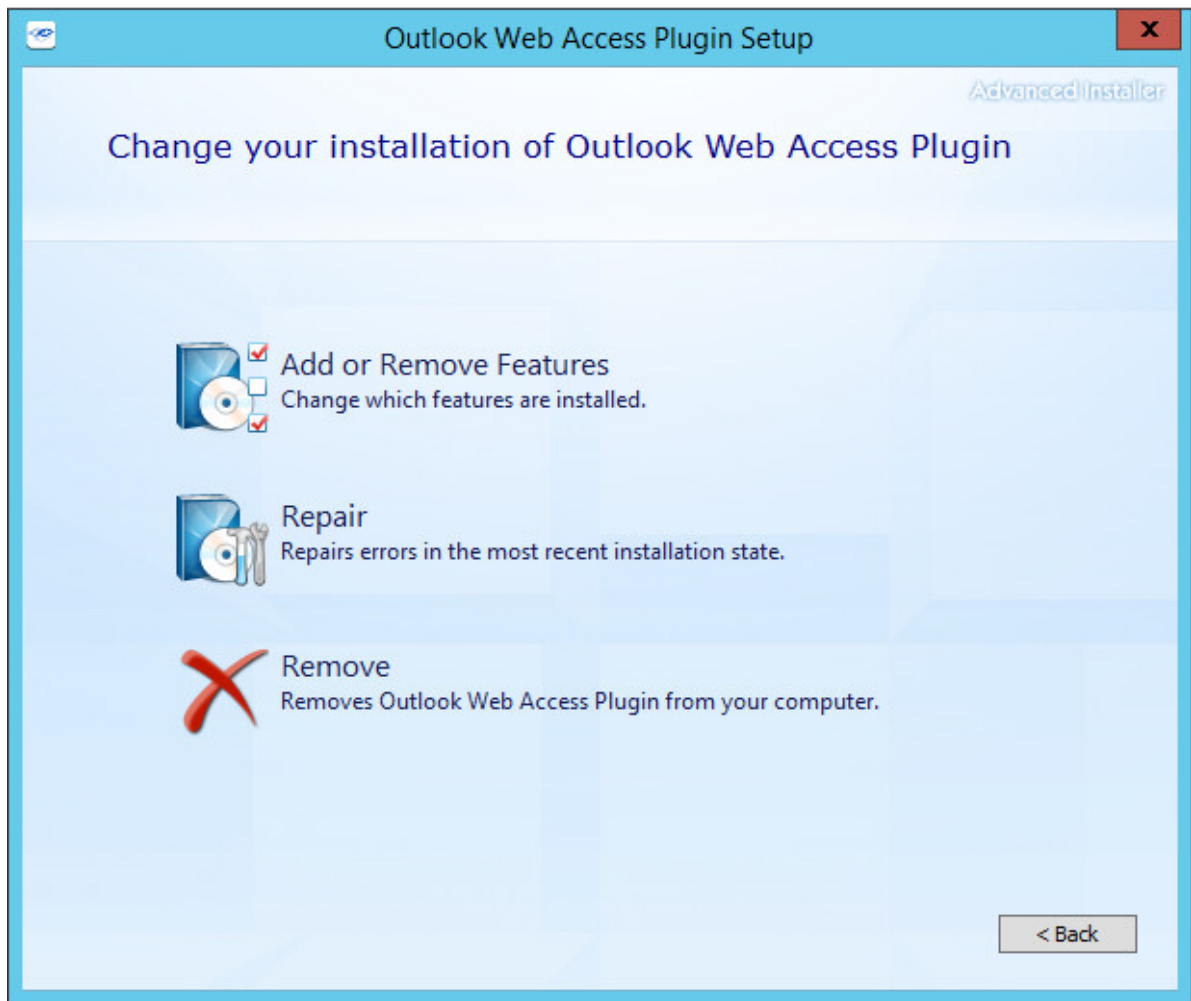
Retain
+ [Get more apps](#)

'No, I give it up,' Alice replied: 'what's the answer?' 'I haven't the slightest idea,' said the Hatter.

Change Features, Repair or Remove the Plugin

To add or remove features, repair or remove the plugin, run the installer on the Outlook Web App server again. The plugin will detect that it is currently installed and give you these options:

- ◆ Add or Remove features will allow you to adjust the features installed to the plugin.
- ◆ Repair will refresh the installation of the plugin.
- ◆ Remove will delete the plugin.

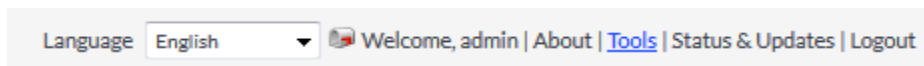


If you entered incorrect data or changed the location of the Retain server, you will need to uninstall the plugin and then re-install to enter the correct data.

Retain PST Importer

The Retain PST Importer is a tool which inputs mail from PST archives into the Retain system. The PST Importer is a utility which is installed on a Windows machine, local to the PST archive and works in coordination with the Retain Server.

The Retain PST Importer is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



System Requirements

- ◆ Windows 7x, 8x, 10x
- ◆ Open and direct network connection to the Retain Server

- ♦ Java Runtime Environment 8 (No other Java can be present on the system.)

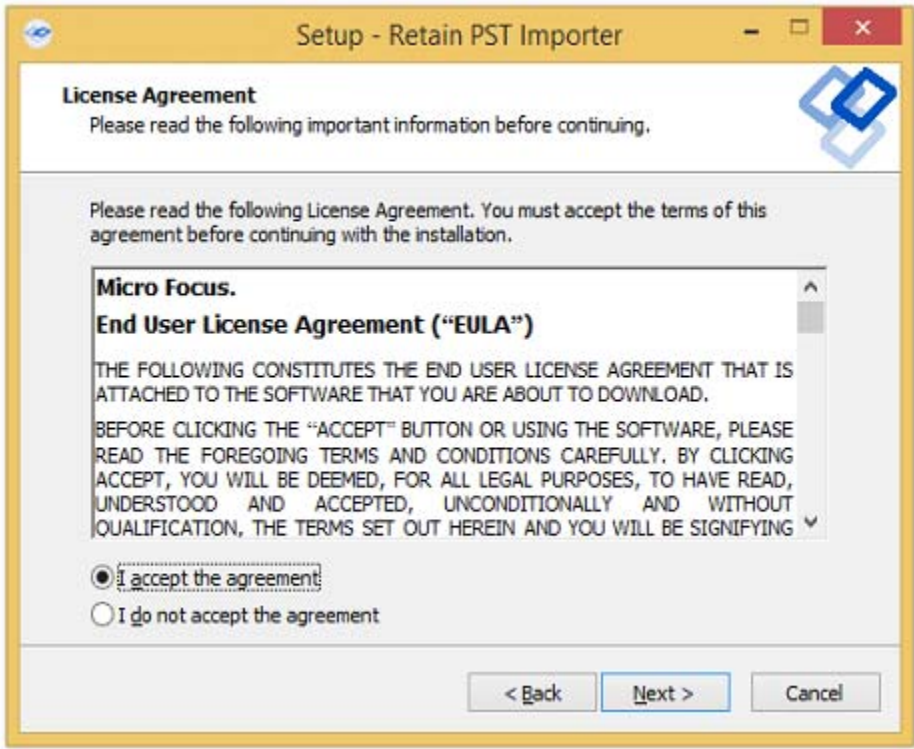
NOTE: If the correct Java is not present in the system, the Importer install will not start, but will provide a link to the download of the appropriate JDK. Select the correct version, (32 or 64-bit), download and install it. Due to the way Windows interacts with Java, there can be no other version of Java on the host machine. Uninstall any other version.

Installation

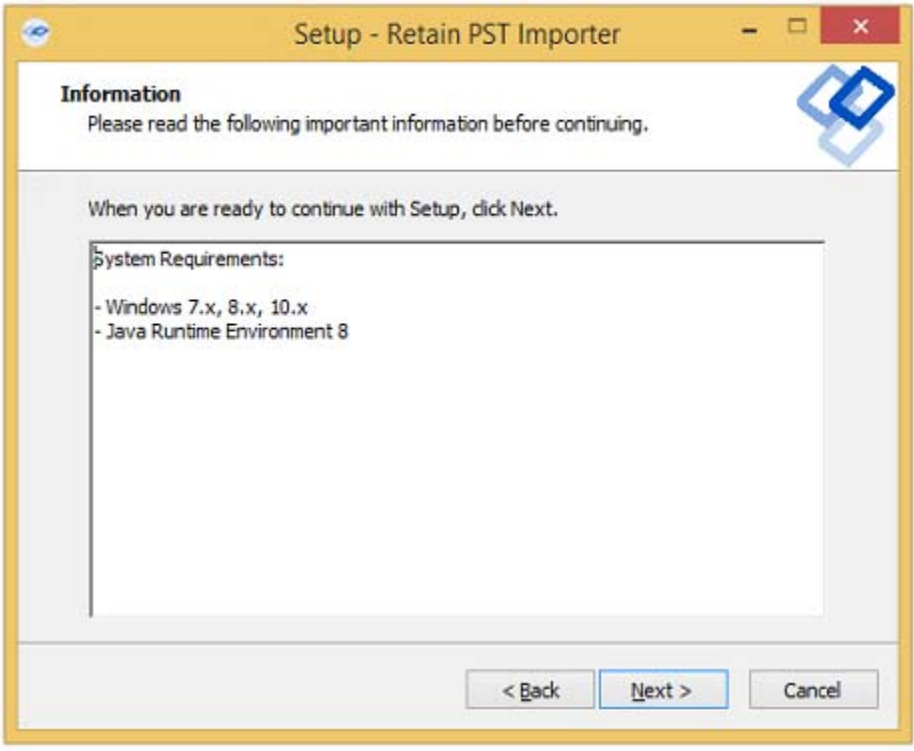
Installation of the PST Importer is simple. Locate the 'Retain PST Importer Install.exe' file and run it. Once initialized, the installation will display this page. Select 'Next' to continue.



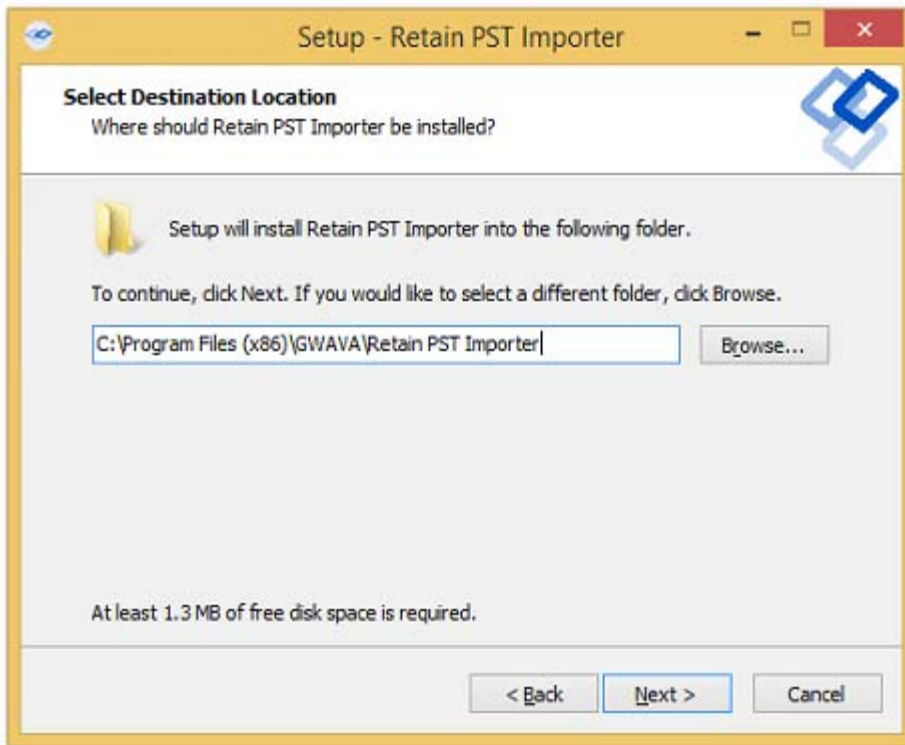
Accept the License agreement and select 'Next' to continue.



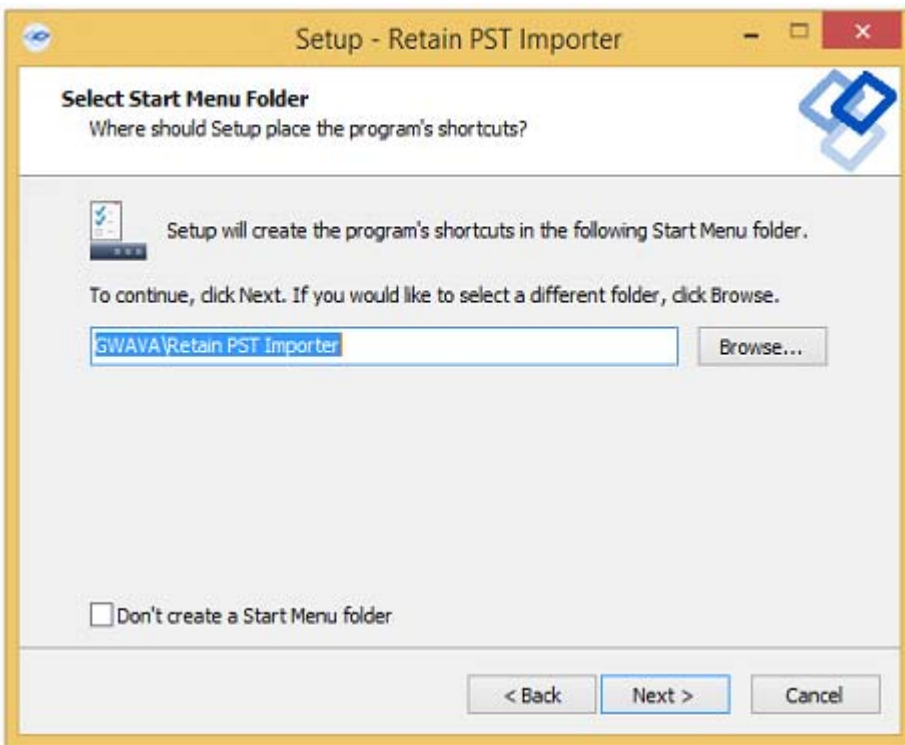
The System Requirements are listed. Select 'Next' to continue.



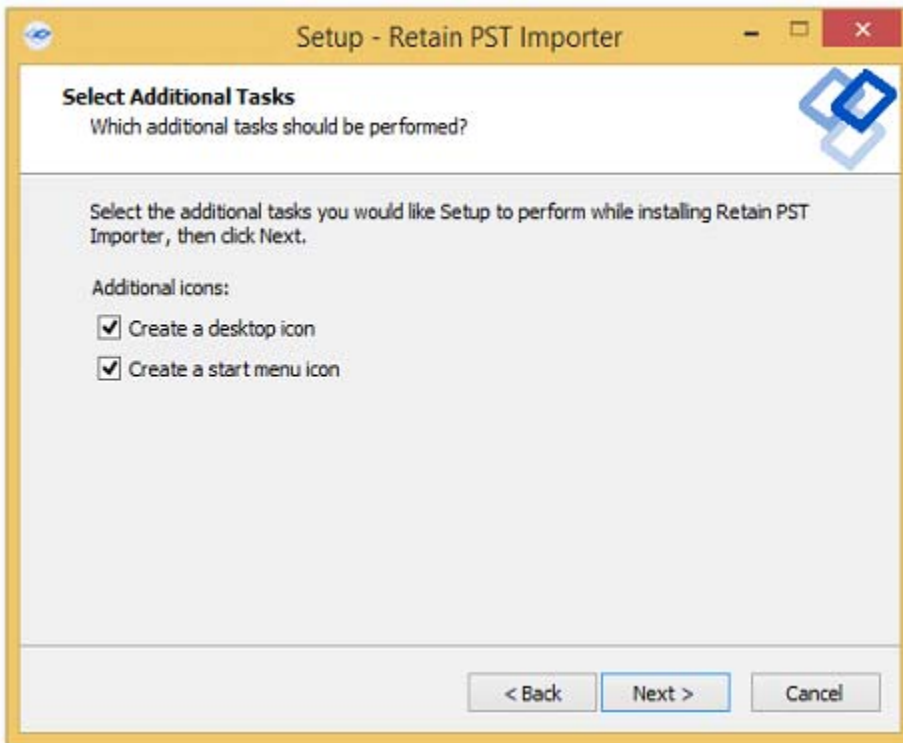
The installation folder is displayed. Change it as desired and select 'Next' to continue.



The PST Importer may be installed with a shortcut in any desired start menu folder. The default folder is displayed. Change as desired and select 'Next' to continue.

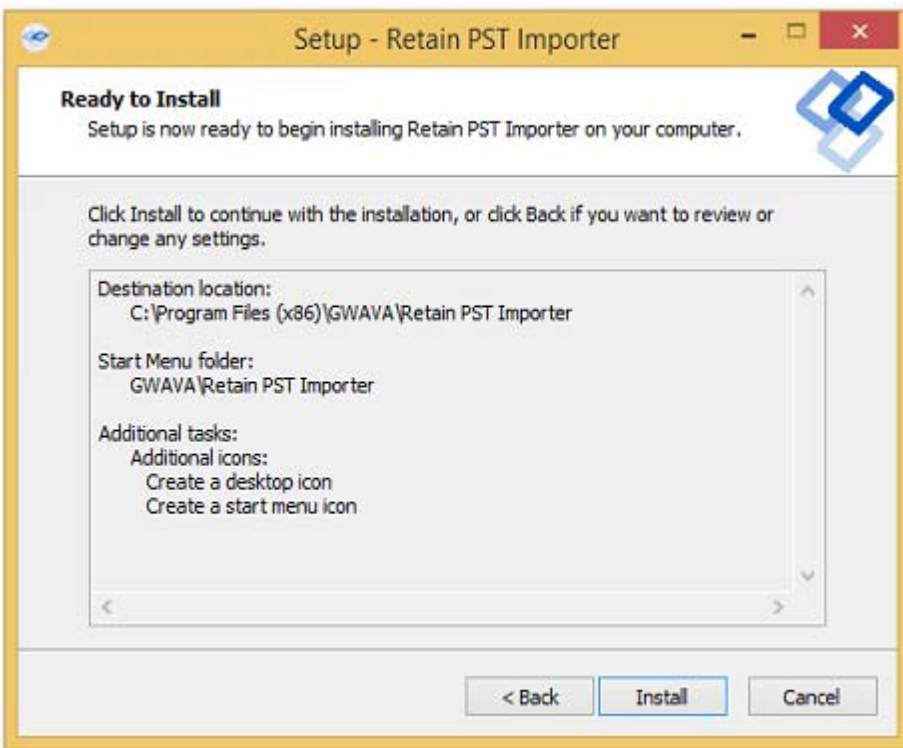


Select which icons are going to be installed in the system and select 'Next' to continue.



Review the installation settings. If any settings need to be changed or revised, use the 'Back' button to return to the appropriate pages and change them.

When correct, select 'Install' to install the program.



Once the installation is completed successfully, select the 'Finish' button.



Configuration and Use

The PST Importer requires a Worker configuration and a bootstrap file to know where and how to communicate with the Retain Server. A new worker must be created, configured, and the configuration file loaded into the PST Importer. Follow the steps below.

1. In the Retain Server administration console, create a new Worker. It would be appropriate to name it 'Importer' or 'pst importer' for ease of remembrance, but any name desired will do. Remember that this worker should never be configured with any jobs in the Retain Server. A general configuration is all that is required; no specific settings need to be changed from default, except the connection information if it needs to be modified in accordance to the needs of the local network. It is imperative that the PST Importer has an open connection to the Retain server. When the settings are correct, save the new Worker.

Worker: PST importer

Polling | Logging | Connection | Module specific | Status | Bootstrap

Server Connection

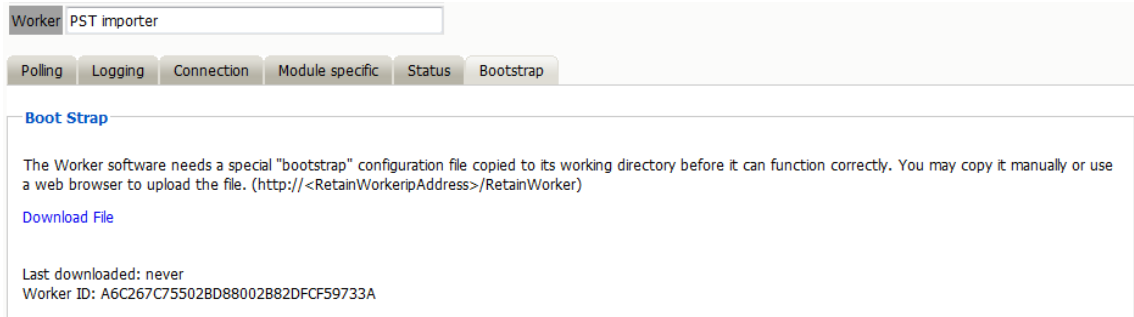
The worker will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Worker contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Worker or Server.

For administrators using the Reload interface, note the worker password assigned must be the same for each worker that contacts the Reload Server. As part of setting of the Reload Server, you must know this password.

Server Protocol	http
Server Host Name	10.1.10.20
Server Port	48080
Server Path	/RetainServer
Worker Password	•••••••• (Password is default)

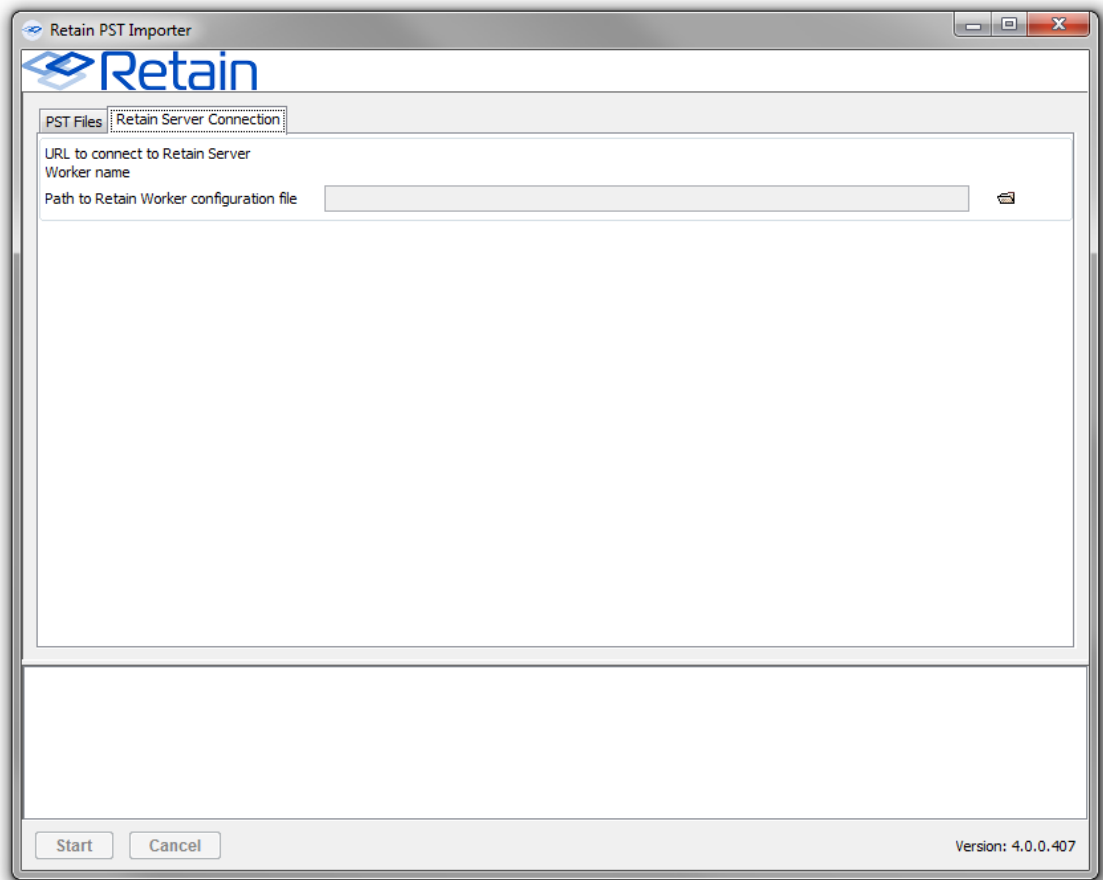
Note: Changing any of these parameters will require recopying the worker bootstrap file!

2. Download the bootstrap file.



3. Run the PST Importer utility. Locate the Retain PST Importer icon or start menu item and run the program.

On initial startup, the Retain PST Importer opens to the configuration page. The worker configuration file contains all the connection information for the Retain Server. (If the location changes, the worker configuration file will need to be re-downloaded.)



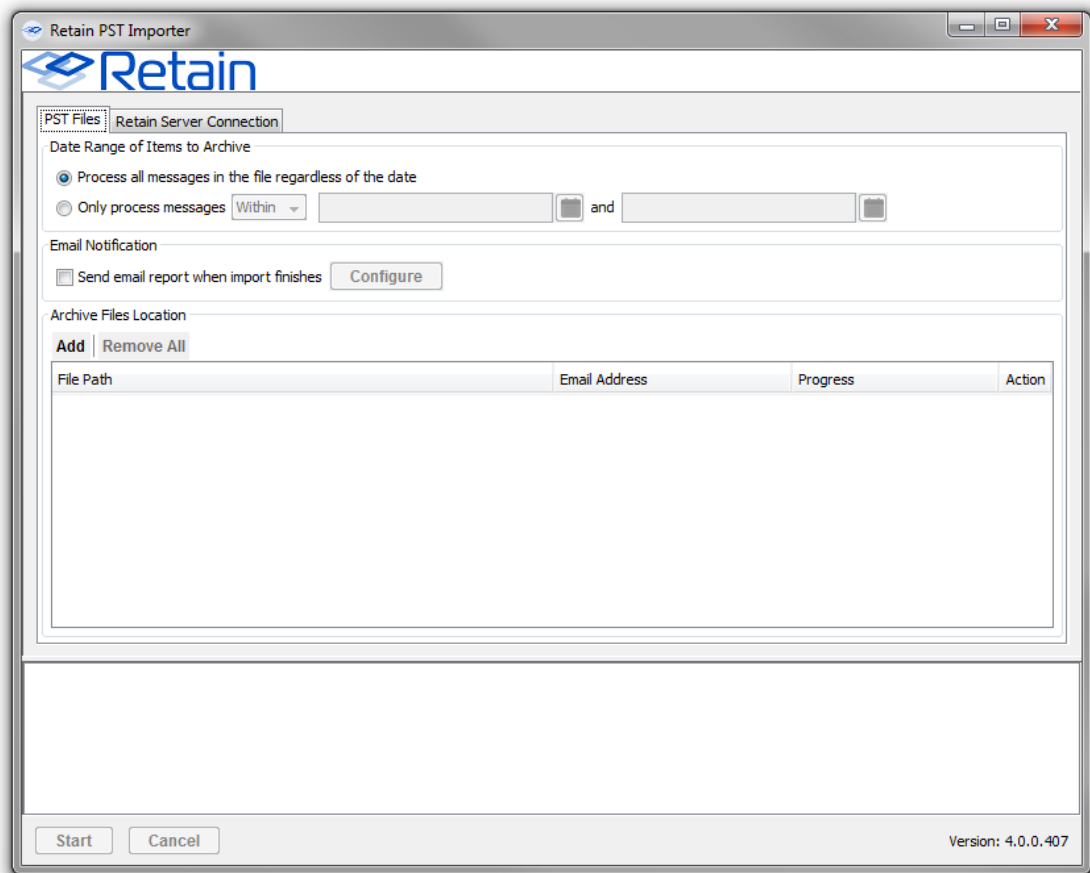
4. Upload the Worker Configuration file to the PST Importer.

Select the Retain Server Connection tab, where the bootstrap file is specified and select the 'folder' to browse to the file location. Select the appropriate worker configuration file and load it into the Import tool.

Use

Use of the PST Importer is very simple. The PST Importer tool may be restricted to import only messages in the archive which fall into a specified date range or it will attempt to import the entire archive. The PST Importer may be restricted to import only messages which meet selected criteria:

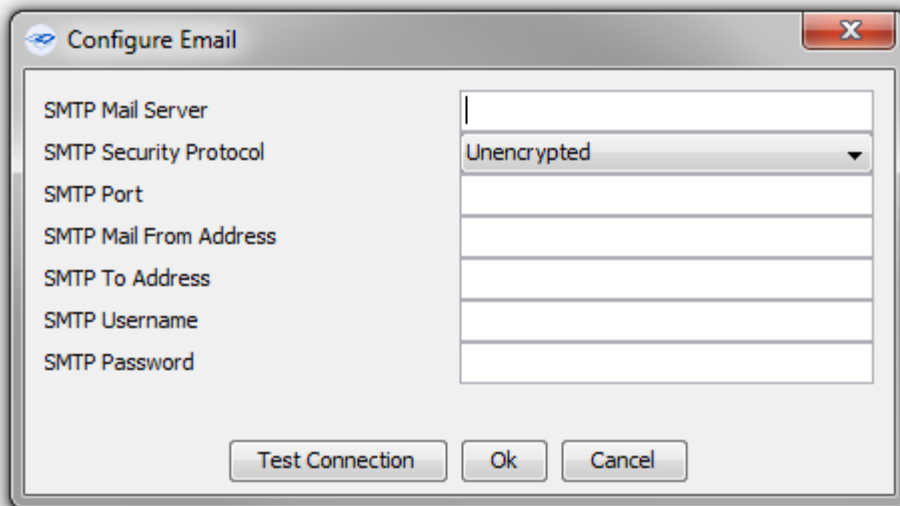
- ◆ A specified date range (inclusive)
- ◆ Before a specified date (exclusive)
- ◆ After a specified date (exclusive)



If desired, the PST Importer may send a notification message when the job is complete. The email will contain a job summary including:

- ◆ The total number of messages selected for import
- ◆ Number of successfully process messages

- ◆ Number of messages not processed



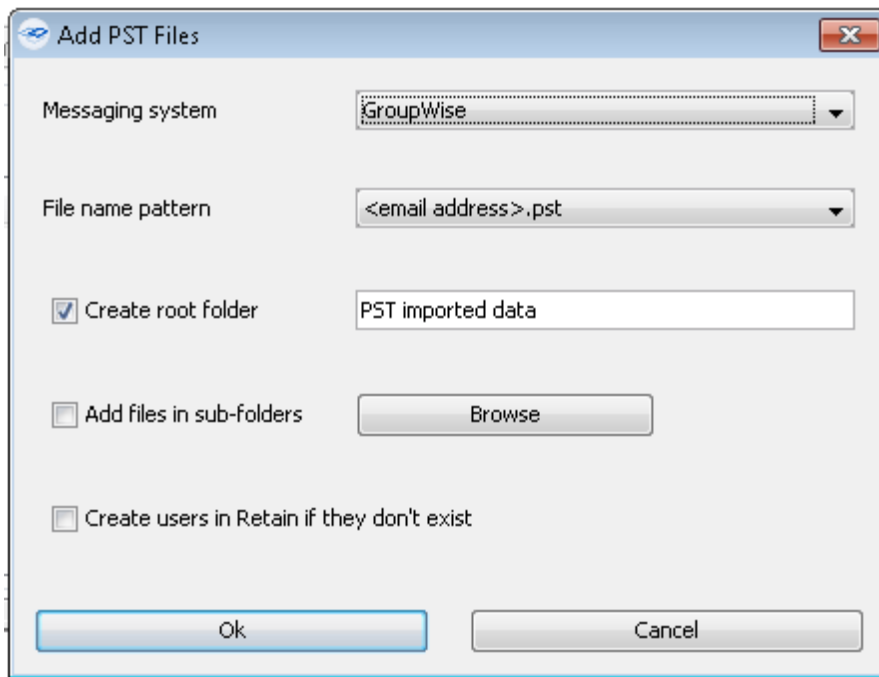
To receive a notification email, an SMTP connector needs to be specified and settings provided. Security protocol options are: 'Unencrypted, TLS, and SSL'. Test the connection to ensure the settings are correct.

When the desired archive or archive have been added and settings have been configured, select the 'Start' button to begin importing the archive. Rolling information is displayed in the information window at the bottom of the screen.

To add or remove an archive to or from the PST Importer tool, use the 'add' and 'remove all' buttons at the top of the archive window.

Adding an archive opens a browse window to allow selection of the archive. Adding an archive requires the selection of the desired messaging system, (select the system the user will be using so messages will be added to their archive). The user can select the file name pattern corresponding to the PST archives and whether to import the archive into existing root folders or to have the tool import the archive in to automatically created subfolders.

Users can import messages from the PST archive for either existing users in Retain, or if the user does not currently exist in Retain, it will be automatically created.



When complete, select 'Browse' button to browse to and select the archive. Hovering over the path will show the complete path.

To remove all the archives from the list, select 'remove all'.

Logs

Log files are generated and placed in the following default location:

C:/Users/<username>/AppData/Roaming/GWAVA/Retain PST Importer

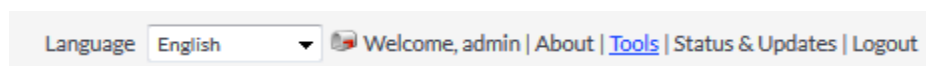
This can be reached by typing %APPDATA% in the File Explorer address bar.

GroupWise WebAccess Plugin

Overview

The Retain for GroupWise WebAccess Plugin is a quick and effective way to integrate access to the Retain archive into WebAccess for users. The Plugin adds a button which will automatically take users to their personal archive. The archive interface will be displayed inside the WebAccess window, and provides all the same access and management of the archive which users can experience by directly logging in to Retain.

The GroupWise WebAccess Plugin is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



System Requirements

The plugin servlet is installed and run on the GroupWise WebAccess server.

- ◆ GroupWise WebAccess 8.x, 2012, 2014, 2014 R2, 18
- ◆ Functioning Retain Server, with configured GroupWise module
- ◆ Open network connection to the Retain Server
- ◆ If SSL is to be used on the web server, either IIS or Apache, then SSL must be enabled on the Retain server as well.

Installation

To install the plugin, execute the installation file.

Linux:

Linux requires root access to install the plugin. Change the files to executable and run the files.

- ◆ `chmod +x *.sh`
- ◆ `./installgui.sh` (if a graphical install is desired)

or

- ◆ `./installtext.sh` (if a text install is desired)

Windows:

On Windows, double click and run the .bat file.

- ◆ `install.bat`

Graphical install shown

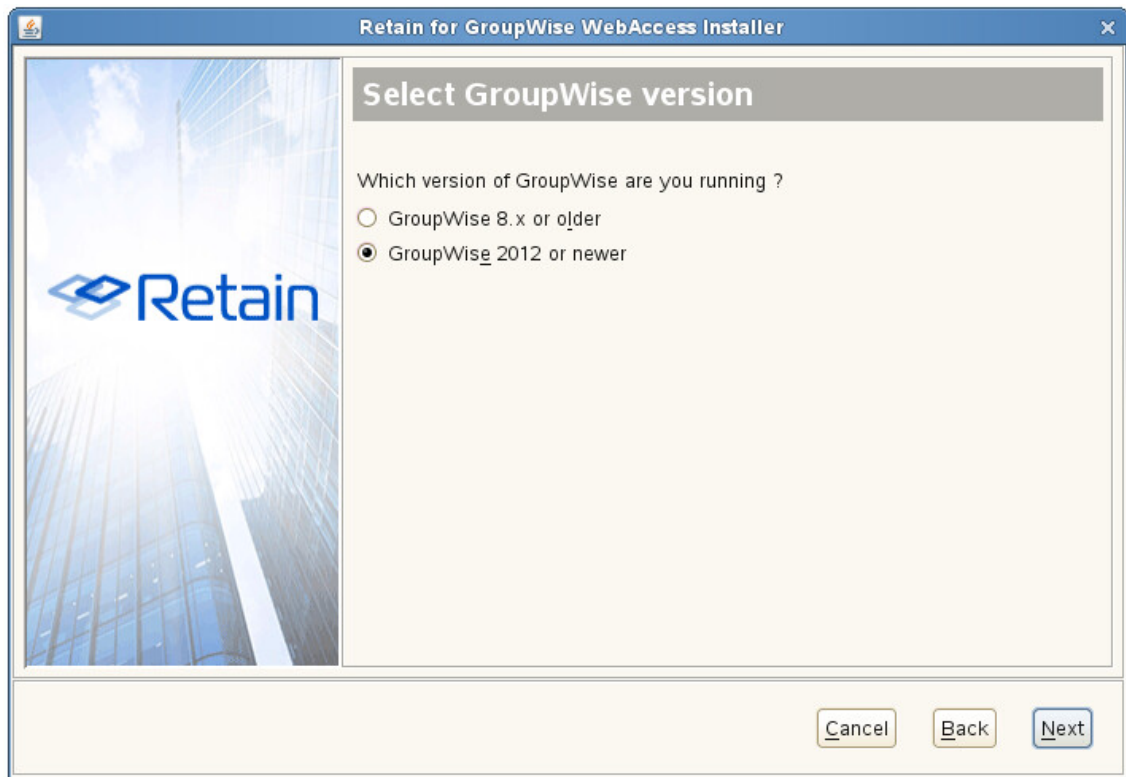
1. Click 'Next' to begin the installation



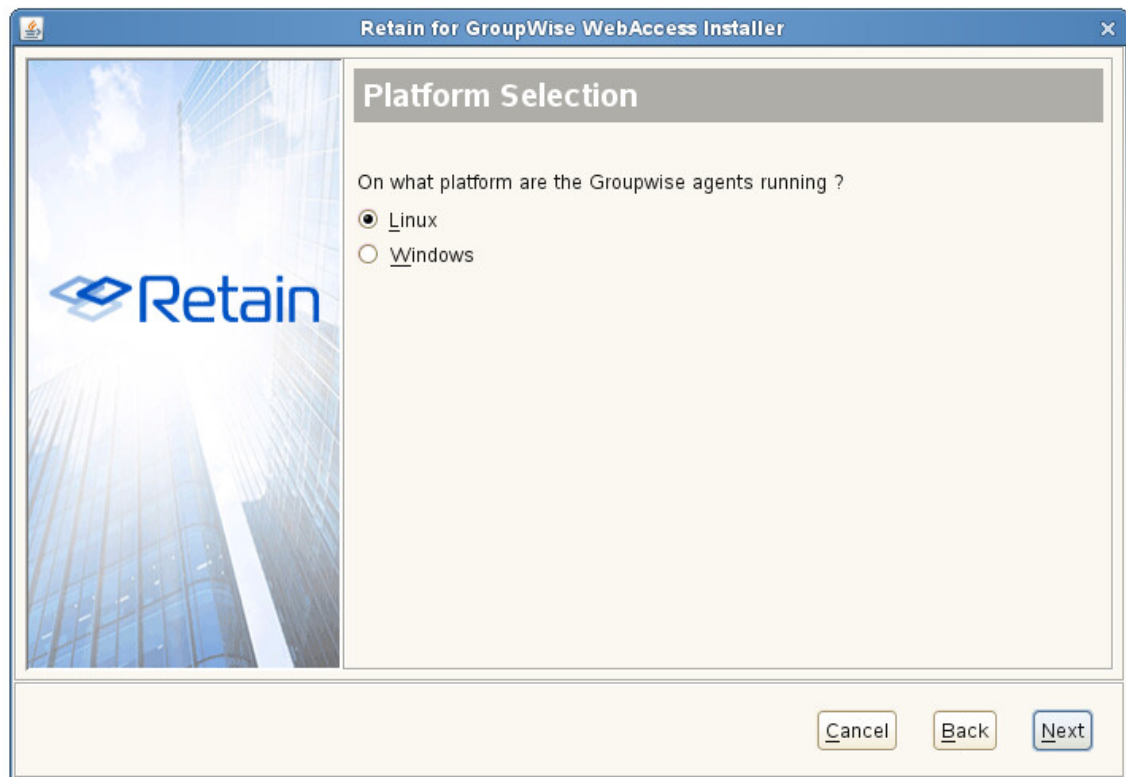
2. Accept the license agreement.



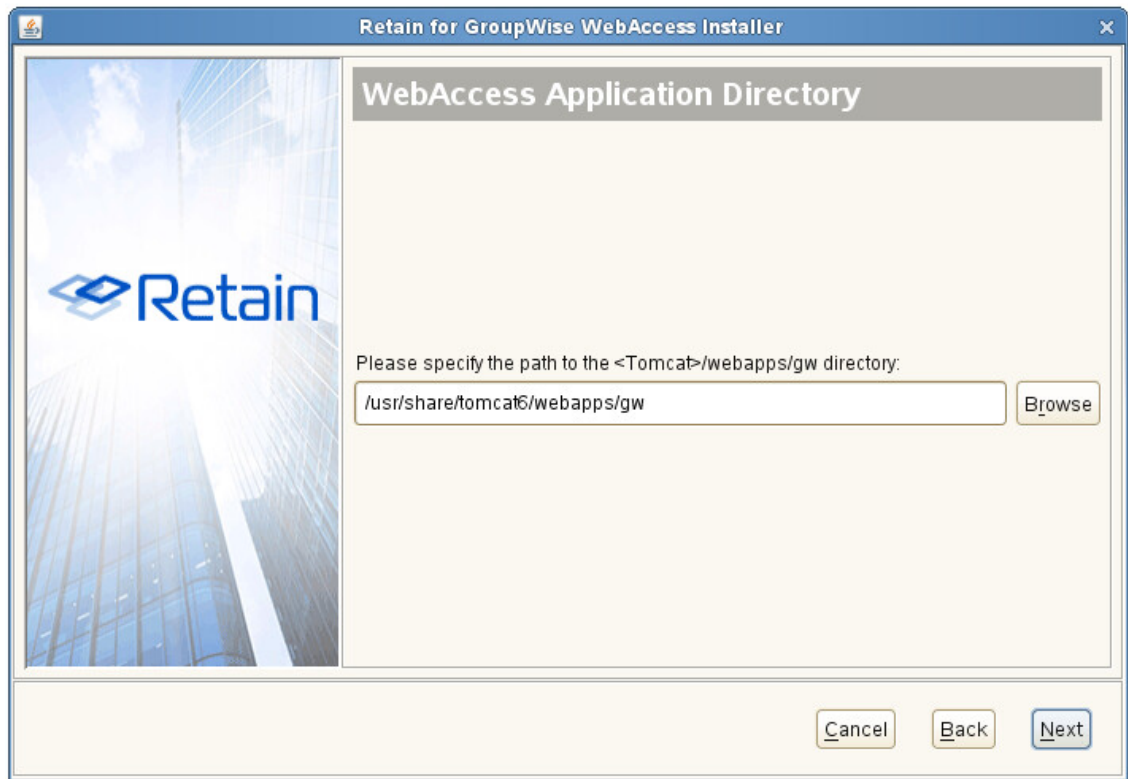
3. Select the GroupWise WebAccess version. GroupWise 8 or older, or GroupWise 2012 or newer.



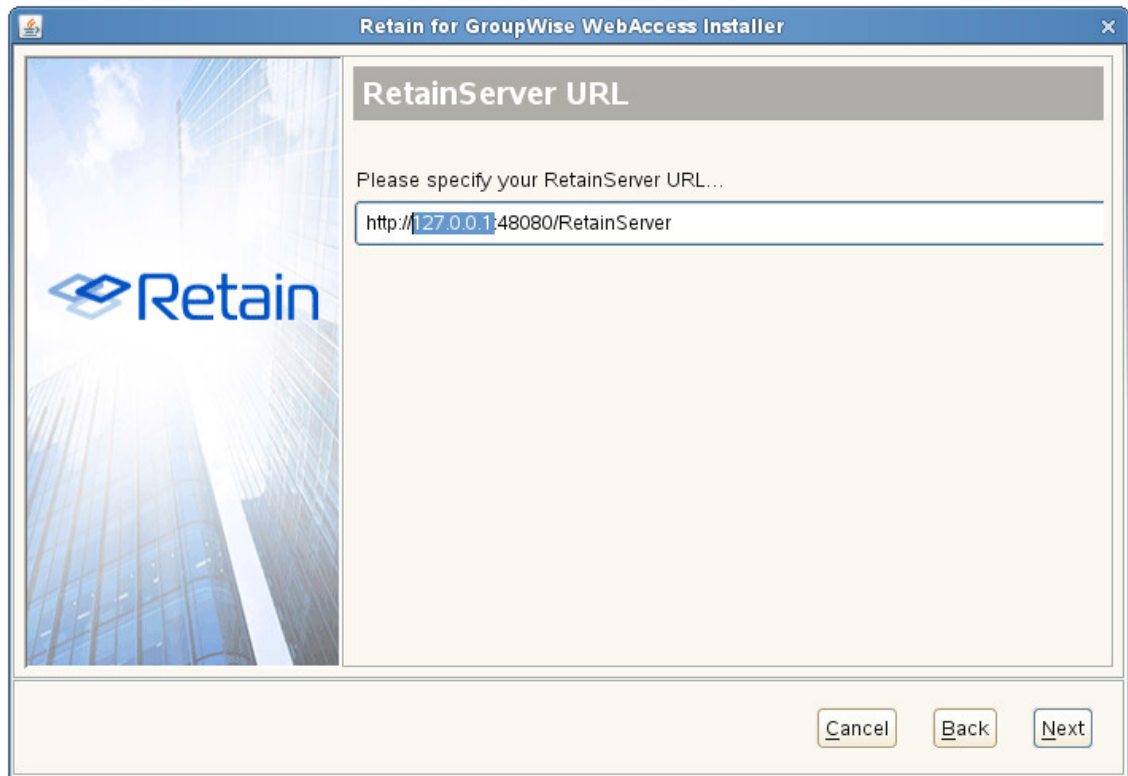
4. Select the platform the WebAccess is being installed to. Linux or Windows.



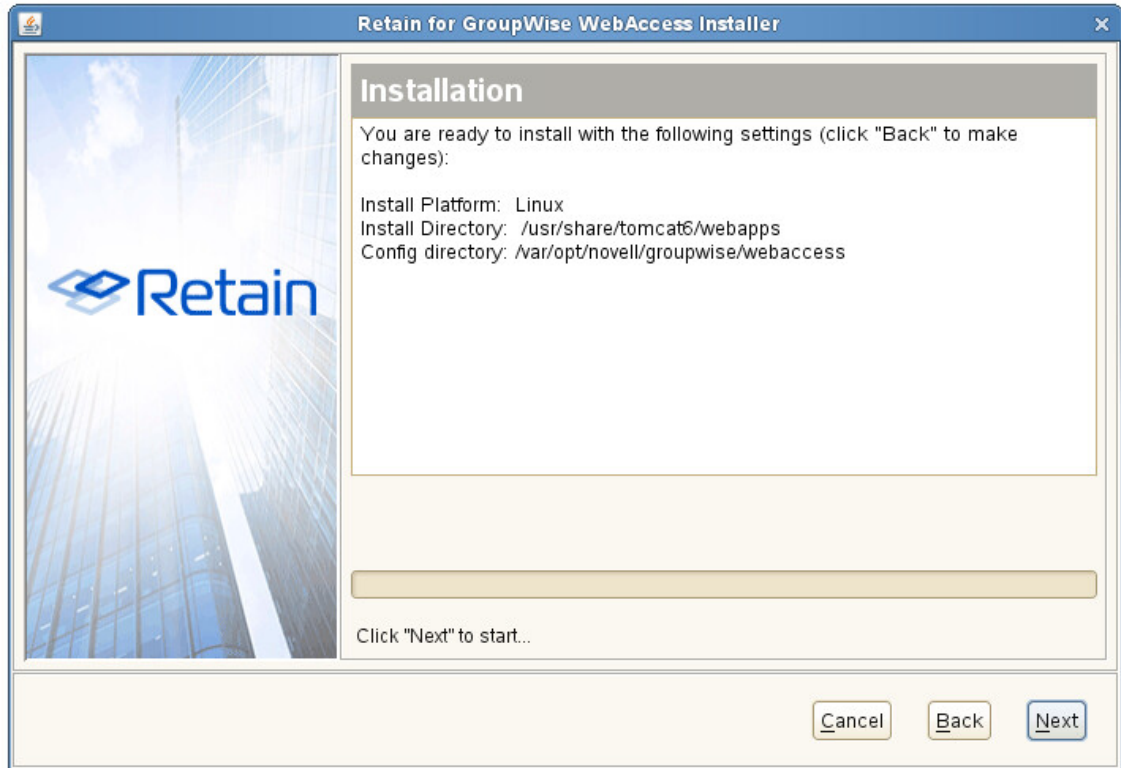
5. Specify the active ...webapps/gw directory, or browse to it.



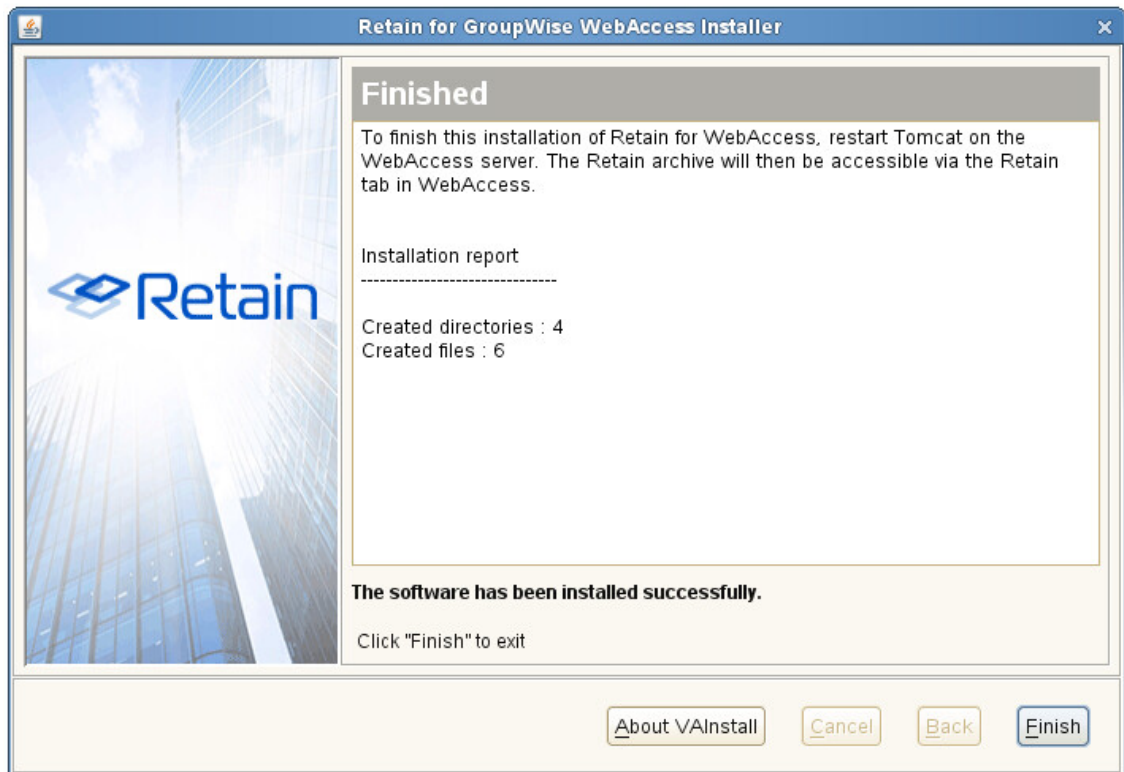
6. Specify the Retain Server URL. An open connection to the Retain Server is required for the plugin to work.



7. Confirm the settings. Click 'Next' to begin the install, or 'Back' to change the settings.



8. Once finished, click 'Finish' to exit the installer.



Post Install Tasks

Once the plugin is installed the final step to install the WebAccess plugin is to create two folders in the Novell folder structure.

Retain cannot create folders or set permissions on the host system, but requires the folders to be created in the Novell directory structure to function.

Linux

Retain requires two folders to be created, as well as the permissions set to match, on the GroupWise server.

Browse to:

```
/var/opt/novell/groupwise/webaccess/retain/templates/webacc
```

- ◆ Create two new folders here: 'mobile' and 'simple'

```
mkdir mobile
```

```
mkdir simple
```

- ◆ Note the file permissions and owner of the 'css' folder, and change the permissions of the two new folders to match.

Windows

Two folders need to be created on the GroupWise server. From where GroupWise was installed, browse to the webacc folder. For example,

```
C:\GroupWise\webaccess\retain\templates\webacc
```

- ◆ Create two new folders here: 'mobile' and 'simple'

```
mobile
```

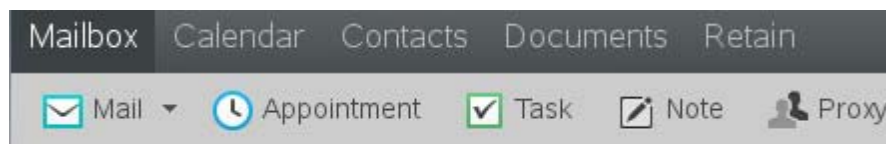
```
simple
```

- ◆ Restart Tomcat and the plugin installation is complete

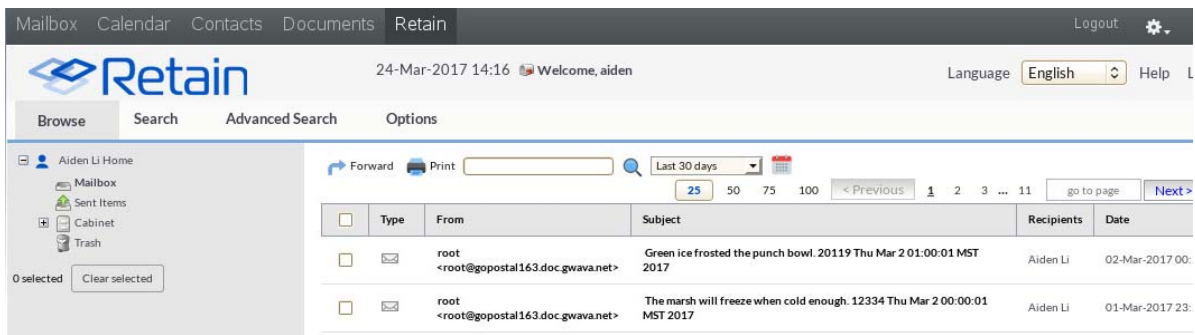
Confirmation

The plugin is now installed. Once WebAccess has been restarted, simply login as usual.

After logging in, users will see the interface they usually see, with an additional 'Retain' tab on the end of the top ribbon.



For users to access their own archive, all they need to do is click on the 'Retain' button and their archive will automatically open. Choose a folder to see the contents.



Uninstalling the GroupWise WebAccess Plugin

1. Stop Tomcat for the WebAccess Application
2. Navigate to the WebAccess directory
3. Rename or remove the retain/ directory
4. Navigate to \srv\tomcat\4\webapps\gw\WEB-INF\classes\templates\webacc\css
5. Edit the caption.htm file
6. At the end of the file look for the line that says:

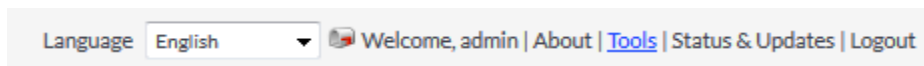

```
{INCLUDE retain.inc}
```
7. Comment out or remove this line
8. Save the file.
9. Start tomcat

GroupWise Client Plugin

The GroupWise Client Plugin provides access to the logged-in user's Retain Archive from the GroupWise Client interface. The plugin adds a Retain Menu item as well as a Retain button along the top ribbon for easy web access to the archive. These buttons will open a new browser window and log the user into Retain automatically. Additionally, the plugin may hide the native GroupWise Archive option if selected during the install.

To enable the GroupWise client to search the Retain archive from within the GroupWise client itself, the administrator would need to enable Stubbing "[Performing Retain Searches Within The GroupWise Client](#)" on page 393.

The GroupWise Client Plugin is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



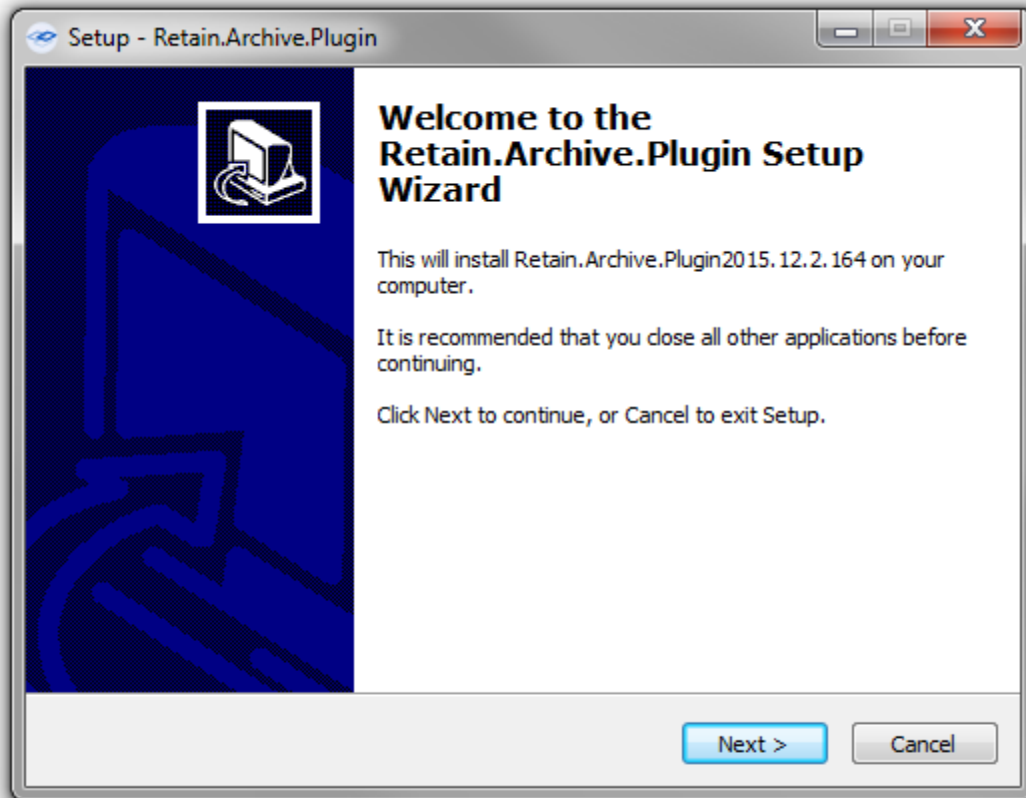
System Requirements

- ◆ GroupWise Win 32 Client
- ◆ Retain Server 4+

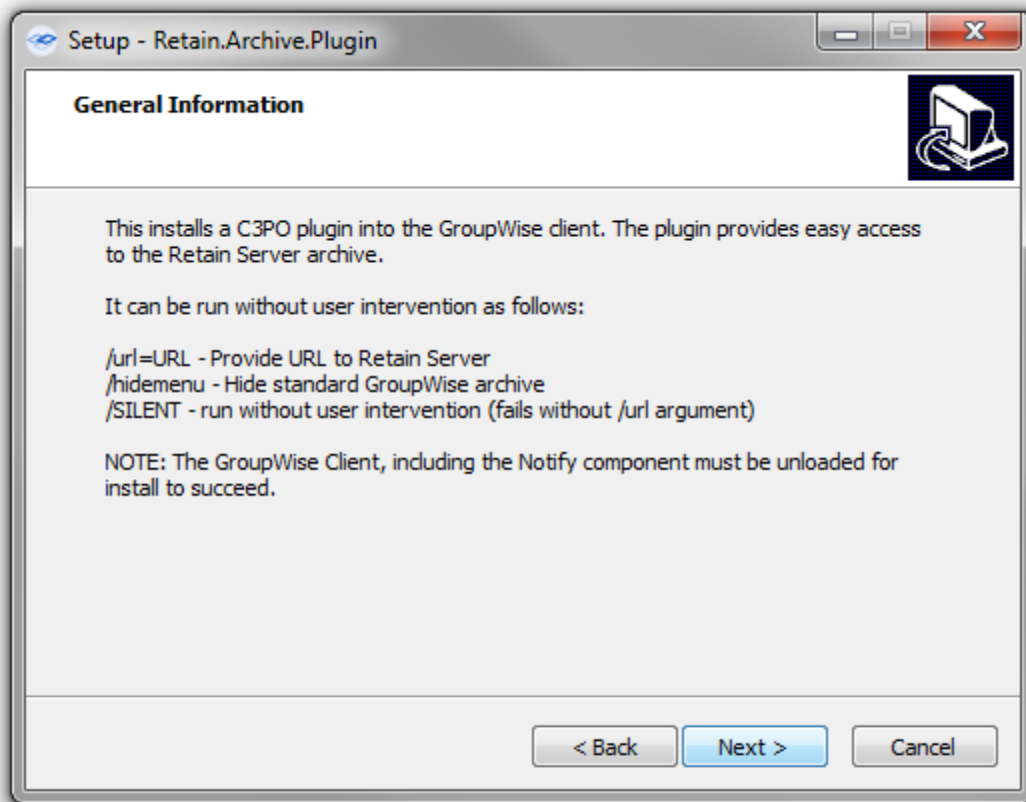
NOTE: Because the plugin provides transparent single sign-on features, installing the client may introduce some security concerns on a public workstation. It is not recommended for installation on any public workstation.

Installation

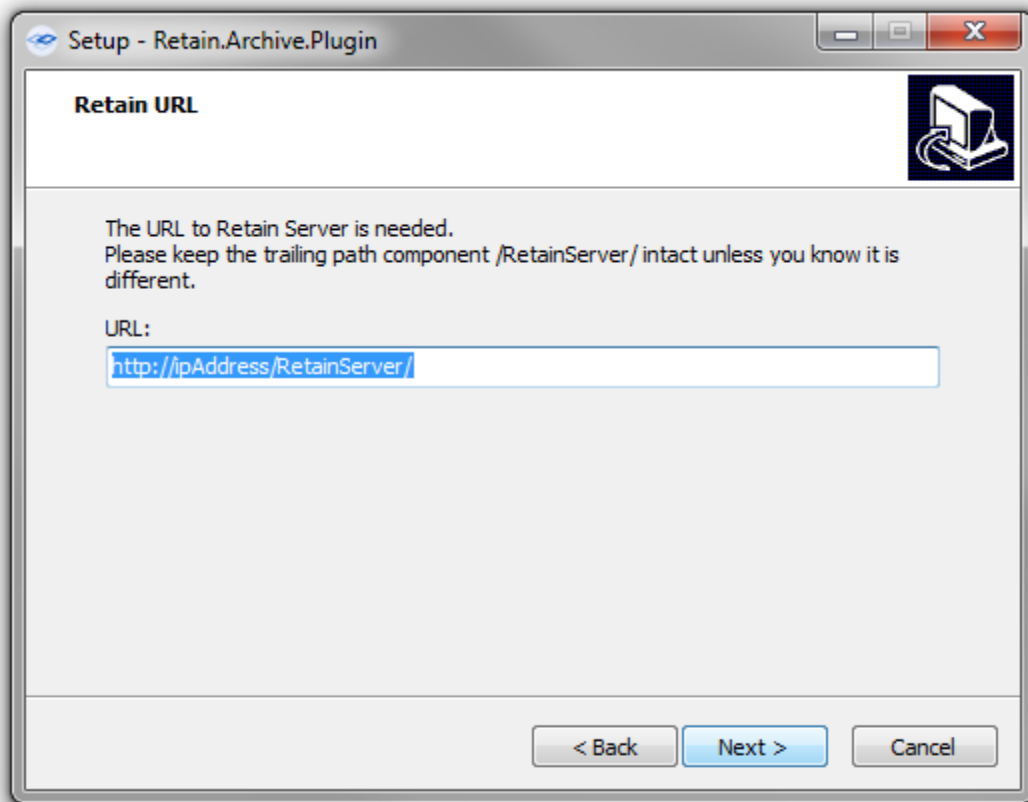
To install the plugin, download the plugin to the desired workstation and run the executable file.



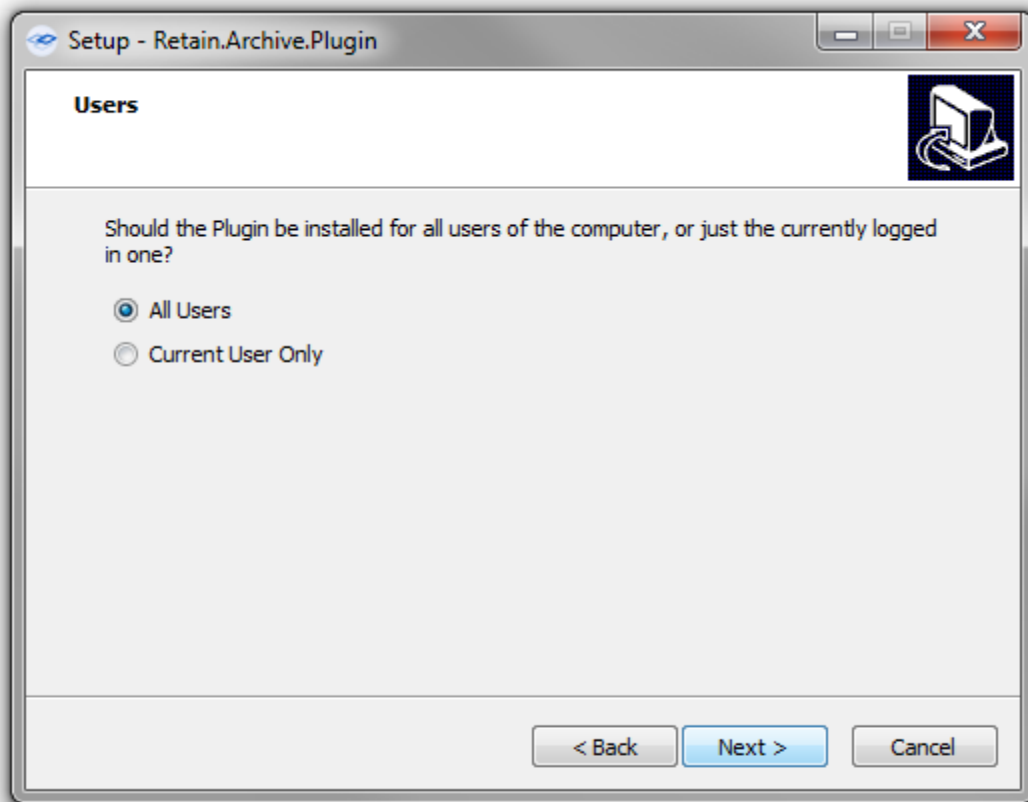
The installation gives an opening summary. Click 'Next' to continue.



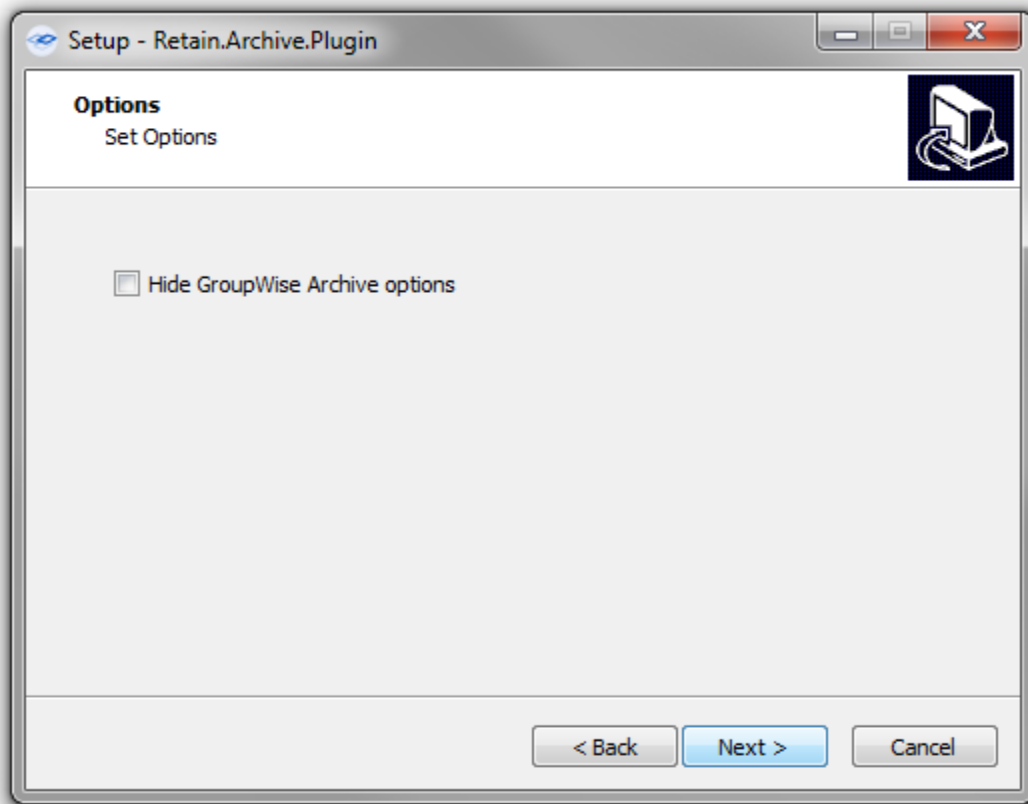
An installation summary is displayed. If a silent install is desired, the install may be performed with the following commands.



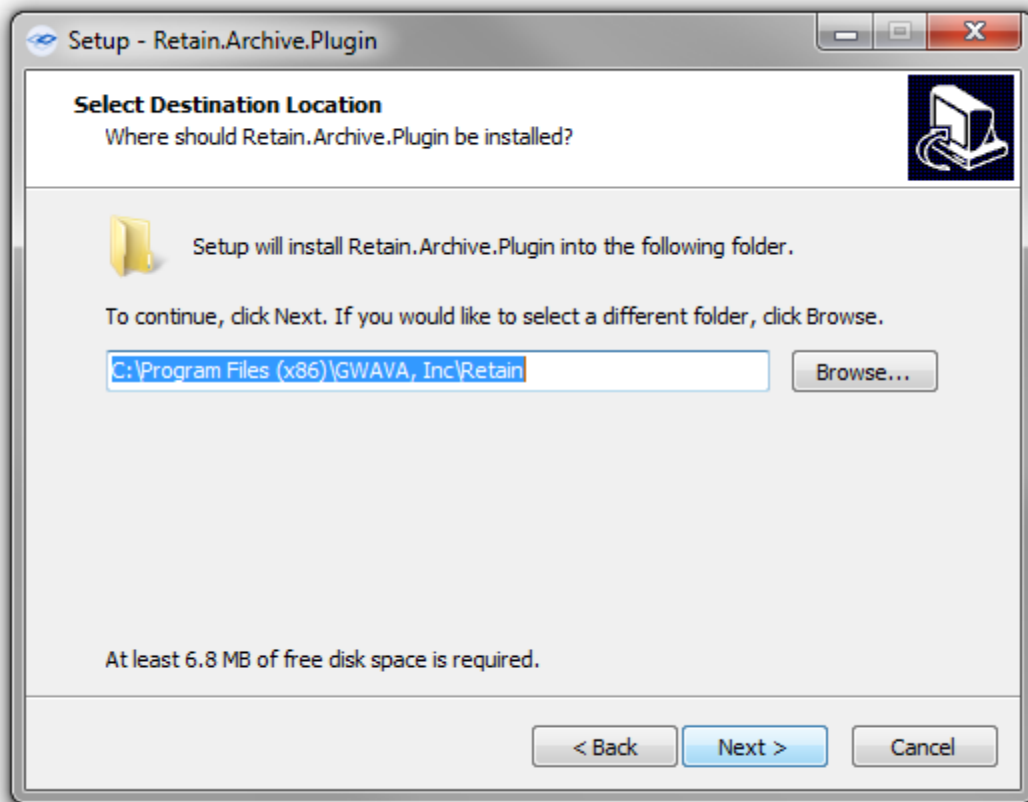
The Retain URL is the connection URL for the Retain Server. Check the URL to make sure the URL works before continuing. If the URL is incorrect the plugin will not function correctly.



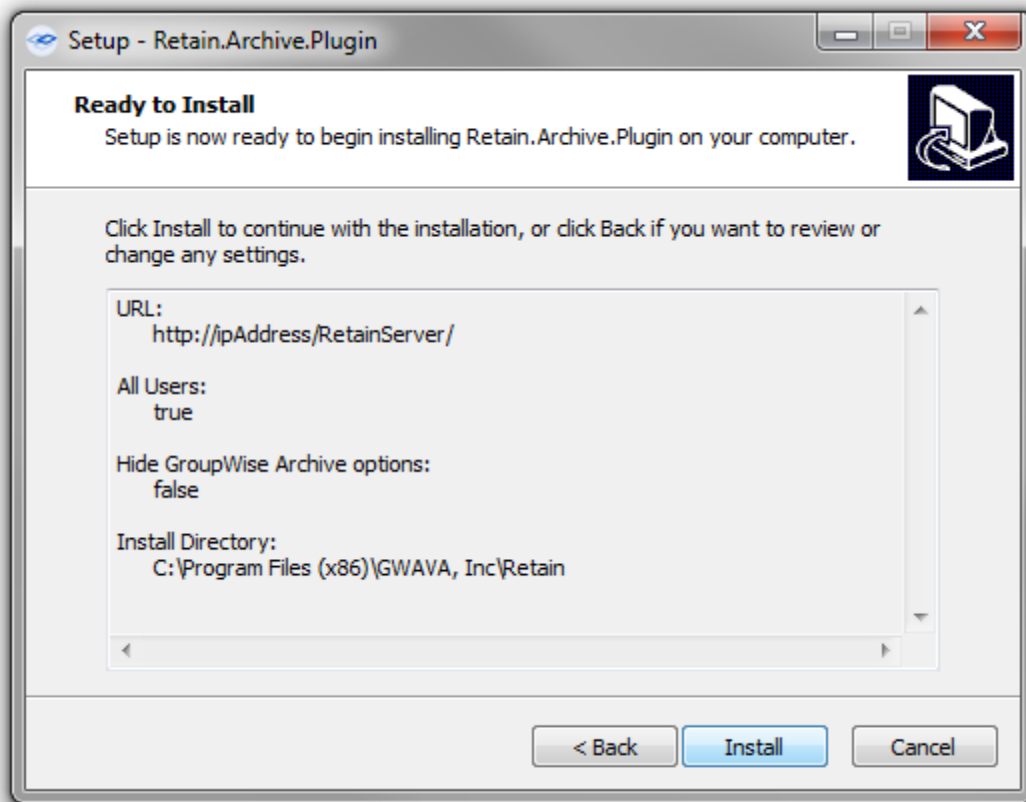
Select whether to install for only current, or all users on the system.



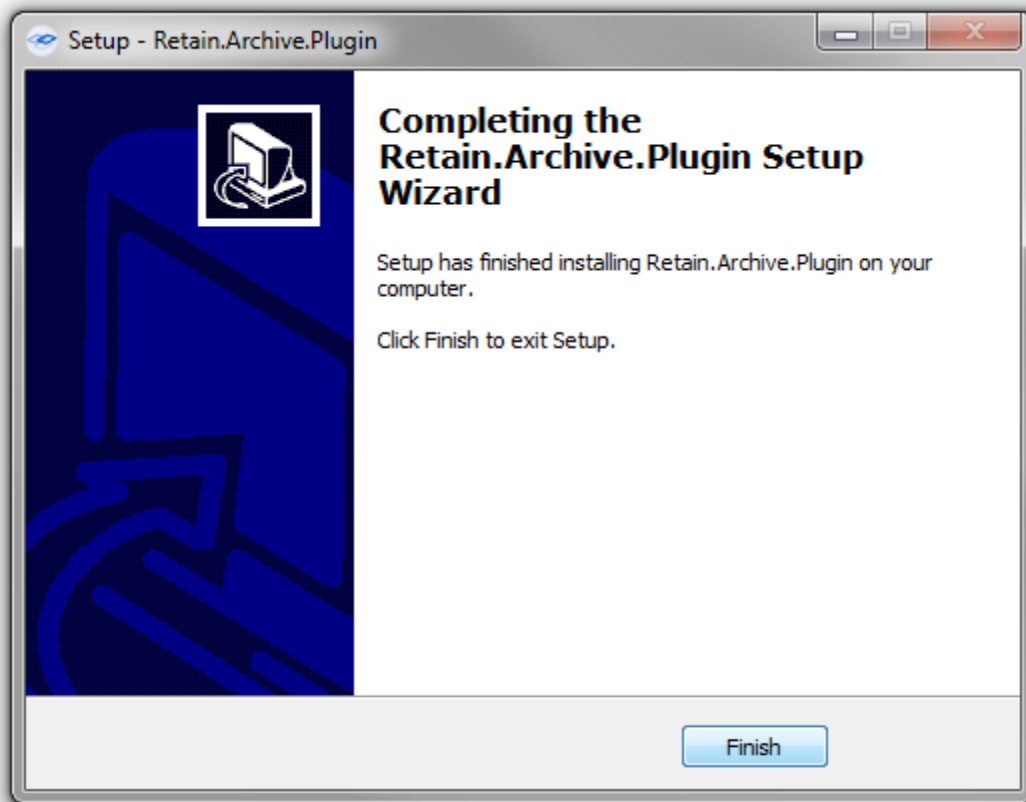
The Retain plugin may be used instead of the GroupWise Archive. To hide the GroupWise Archive in favor of the Retain Archive, select the box and click 'Next' to continue.



The install location for the plugin is displayed. The location may be changed. Default is shown.



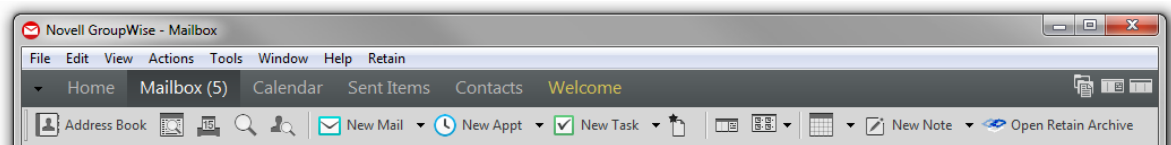
A final summary of the selected settings is displayed. To change any setting, utilize the 'Back' button. Otherwise, select 'Install' to continue.



Once the install has been completed, the GroupWise Client needs to be started, or restarted, to load the plugin.

Appearance

Once started/restarted, login to the Client as usual.



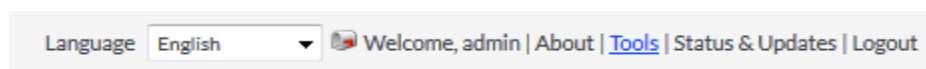
The Retain plugin will have a Retain menu item as well as a Retain Archive button on the top ribbon. To access the Retain Archive, a user simply selects the 'Open Retain Archive' button from the ribbon, or the same item from the Retain menu from the top bar. Once selected the user's Retain Archive will open in a new browser window.

GroupWise Archive Migration Tool

GroupWise Personal Archive Migration Tool

This migration tool is designed to import native GroupWise archives directly into Retain. Also known as the PAM tool.

The GroupWise Archive Migration Tool is found on the tools page. To access the tools page, select the 'tools' link from the top right of the Retain Server administration page.



System Requirements

- ◆ A Windows workstation running GroupWise client 7.0.1 or up. GW 2014 and up use a slightly different file structure so there may be errors.
- ◆ Access to the archives you want to migrate.
- ◆ An HTTP connection to Retain.

Overview; Modes of Operation

There are two modes:

1. Run at all workstations mode.

From a command line, you'll run this and it will log into the users mailbox, and then open the local archive. It will then feed messages directly to Retain.

2. Centralized run.

This only works if you have all archives stored at a central point.

In this case, one can conveniently run all of the migrations from a single workstation, and not involve the users at all.

The migration tool uses the GroupWise client to access the archives you want to migrate.

- ◆ In single-user mode, the migration tool will access the mailbox of the logged-in GroupWise user and it will read the archives available to the GroupWise client and send them to the Retain Server you specify.
- ◆ In multi-user mode, it uses the trusted application key to log in to the mailboxes of the users specified in a chosen GroupWise distribution list, attempt to access the archives defined in their mailbox and will send them to the Retain Server you specify.

How it Works

The migration tool does not access the archive files directly. Due to the way GroupWise stores its archives, you need the GroupWise client to read the archives and to hand the data to the migration tool. The migration tool then sends the archives to a Retain Server, much like a worker would.

In normal operation, a Retain Worker reads data from the live GroupWise system and sends it to a Retain Server. With the migration tool, the tool itself is a worker that reads the archived data from the GroupWise client and sends it to a Retain Server.

The migration tool reads the path to the archives as defined in the GroupWise mailbox that you're accessing. That path must be accessible by the workstation you're on. It will then ask GroupWise to open the archives and it will read the items in the archive and send them to the Retain Server you have specified.

If you run in single-user mode, the migration tool will access the mailbox currently logged into by the GroupWise client. If none is logged in, GroupWise will be opened and you will be asked to log in.

If you run in multi-user mode, the migration tool will open GroupWise, you can be logged in as any valid user, and it uses the trusted application key to log in to each user specified in a GroupWise distribution list, one at a time.

Prerequisites

The GroupWise client on the workstation you're using must be able to open the archives you wish to migrate. The process depends on GroupWise being able to access these archives. If you're migrating the archives of another user, as you would be doing in multi-user mode, you must be able to access that user's archives from the workstation you're on.

It is not enough that the archives are on a network-accessible volume. GroupWise must be aware of the path to these archives and that path must be available from the workstation you're going to use for migration. Refer to the error handling section for important configuration.

Setting It All Up

In multi-user mode, you can use one workstation to migrate the archives of multiple users. In so doing, you can migrate the data without affecting the users in question. In single-user mode, you will run the migration tool on a workstation that has access to the archives you want to migrate (typically the workstation of the user whose archives you're migrating) and you'll migrate just one mailbox.

1. Copy the migration tool files to any directory accessible to your workstation
2. Log in to the Retain Server you want to migrate the archives to Create a new worker. You're not actually installing a new Retain Worker anywhere; you're creating a new bootstrap file for the use of the migration tool so it knows which Retain Server to send the archives to. Be sure the settings listed are accessible and usable by the workstation where you will be running the migration tool. The migration tool uses these settings to log into the Retain Server

Poling Logging **Connection** Module specific Status Bootstrap

Server Connection

The worker will need to know how to connect to the Server. It is highly recommended that you use a DNS host name for the Host Name. It's important to note that you are specifying the URL from the point of view of the **Worker contacting the Server**, which may or may not match the URL you'd use from your browser to reach the Worker or Server.

For administrators using the Reload interface, note the worker password assigned must be the same for each worker that contacts the Reload Server. As part of setting of the Reload Server, you must know this password.

Server Protocol	http
Server Host Name	10.1.12.62
Server Port	48080
Server Path	/RetainServer
Worker Password (Password is default)

Note: Changing any of these parameters will require recopying the worker bootstrap file!

- Once you've saved changes, you will be able to save the bootstrap file. Save it in the directory of the migration tool.

Worker Local Worker

Poling Logging Connection **Module specific** Status Bootstrap

Boot Strap

The Worker software needs a special "bootstrap" configuration file copied to its working directory before it can function correctly. You may copy it manually or use a web browser to upload the file. (<http://<RetainWorkeripAddress>/RetainWorker>)

[Download File](#)

Last downloaded: Tue Dec 01 23:51:43 MST 2015
Worker ID: 4F4642A0CEFCDBC31702C0C20E0E5E27

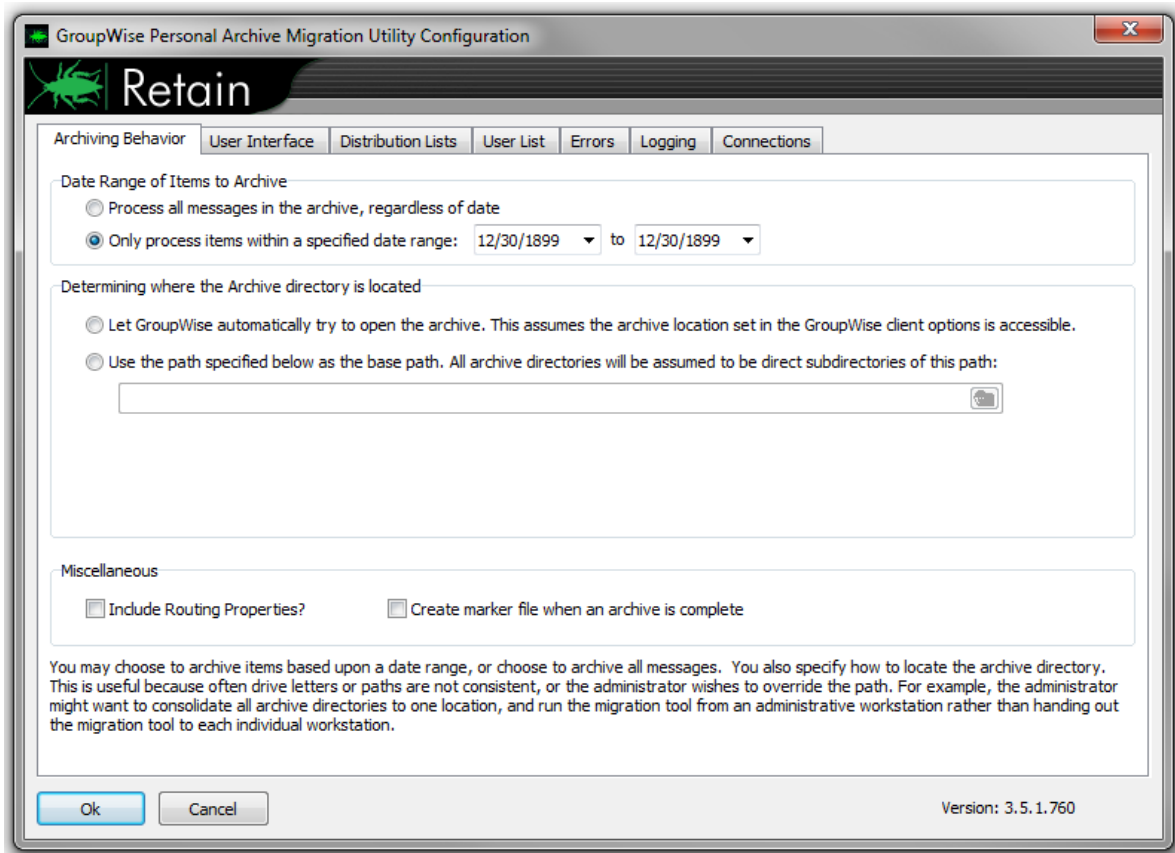
- Now start up the migration tool configuration utility. A window will open on top of the configuration utility requiring the location to find the bootstrap file you have just saved.

Root Include subfolders

(This window will also accept saved configurations from previous sessions.)

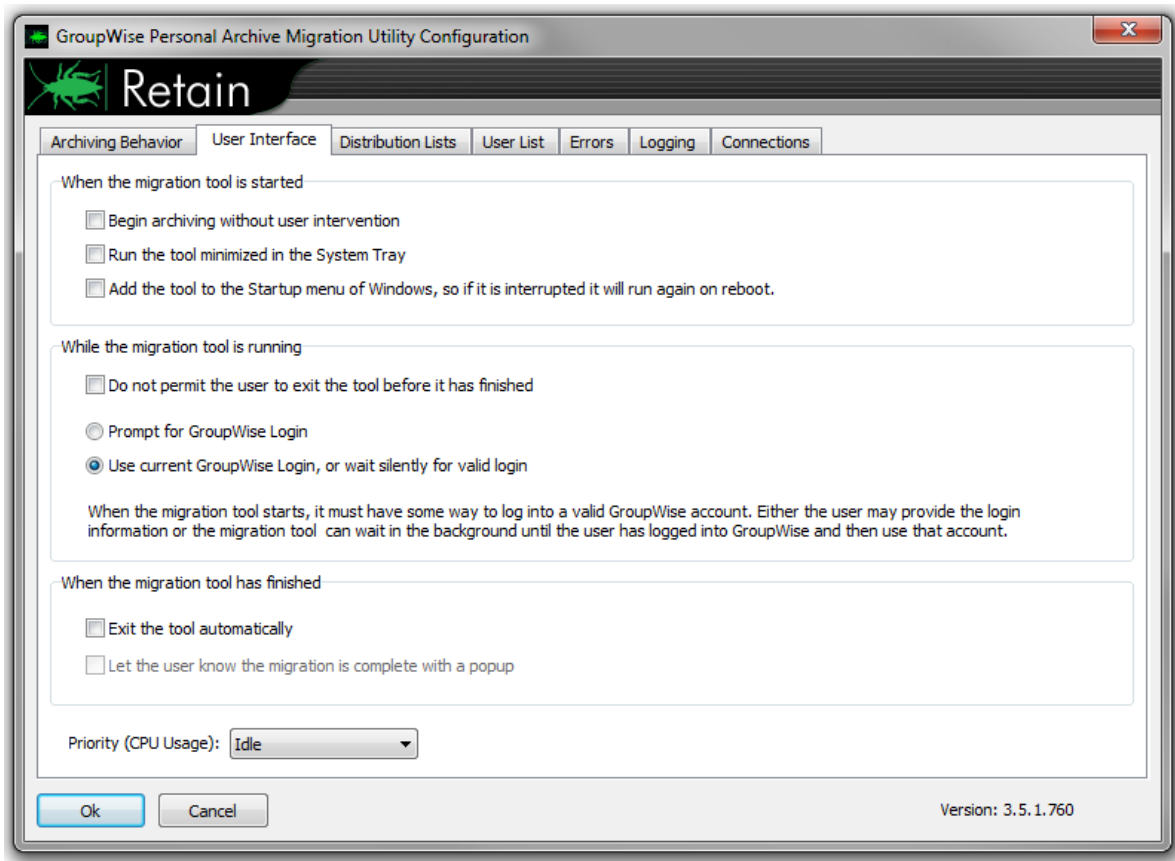
Archiving Behavior

- ◆ Date Range – limits or specifies specific mail to process based on a date range.
- ◆ Archive Directory – The location of the archive or archives to be migrated. The default path is assumed unless selected to be specified.
- ◆ Miscellaneous – contains the options to preserve the routing properties in the archive or to add a marker file when the migration is complete.



User Interface

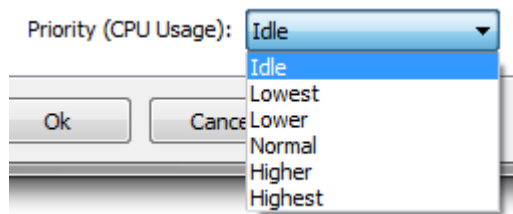
When the Migration Tool is Started - Begin without user intervention the archive process immediately begins without any prompts. Run minimized sets the migration utility to run the migration in the background while the workstation completes other work. The tool may also be set to run automatically on system boot, in case something interrupts the archive job.



When Migration Tool is Running - Contains options to prohibit the user exiting the program before the archive migration is complete and GroupWise login settings. The tool must be able to login and gain access to the archives.

When the Migration Tool has Finished – Contains the behavior of the migration utility on completion; automatic exit, notification, or neither.

CPU priority usage is also set here.



Idle

Lowest

Lower

Normal

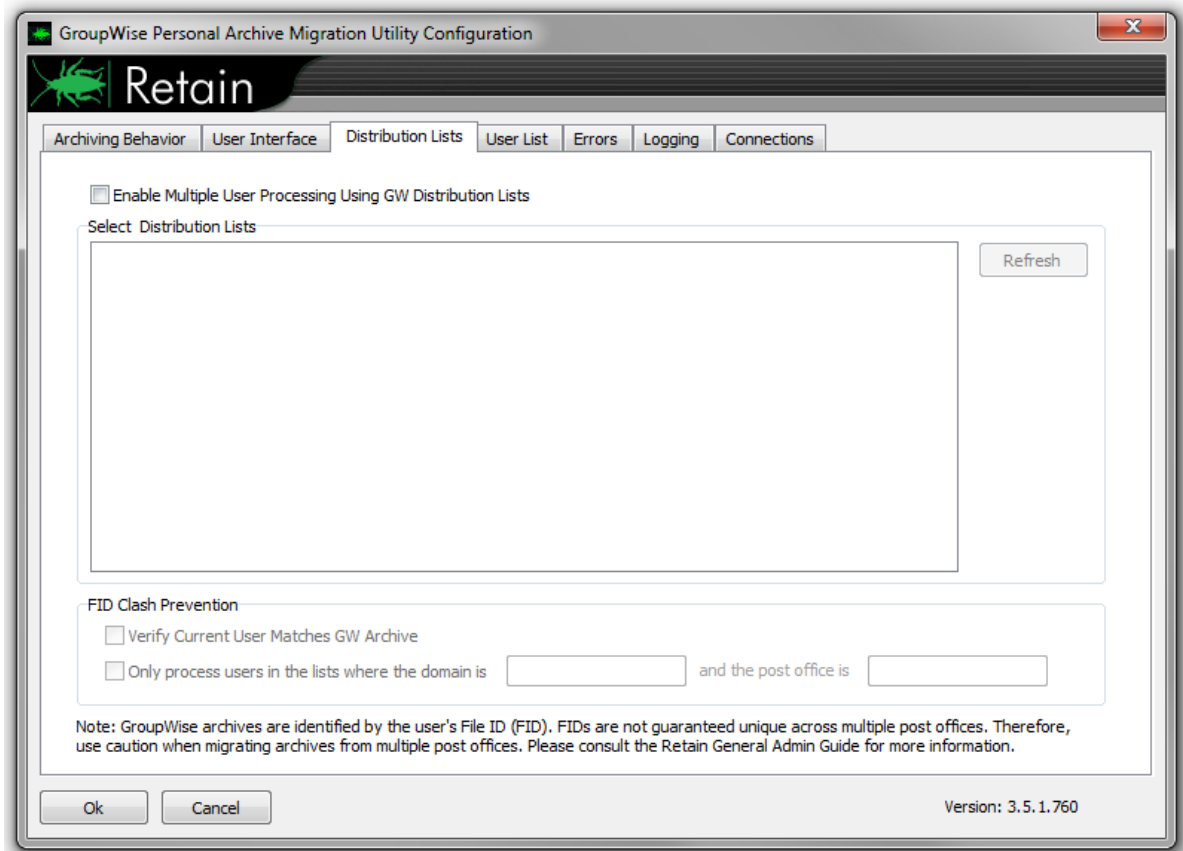
Higher

Highest

Distribution Lists

In order to process more than one user archive the option must be enabled at the top of this page and the users must be verified against the GroupWise system.

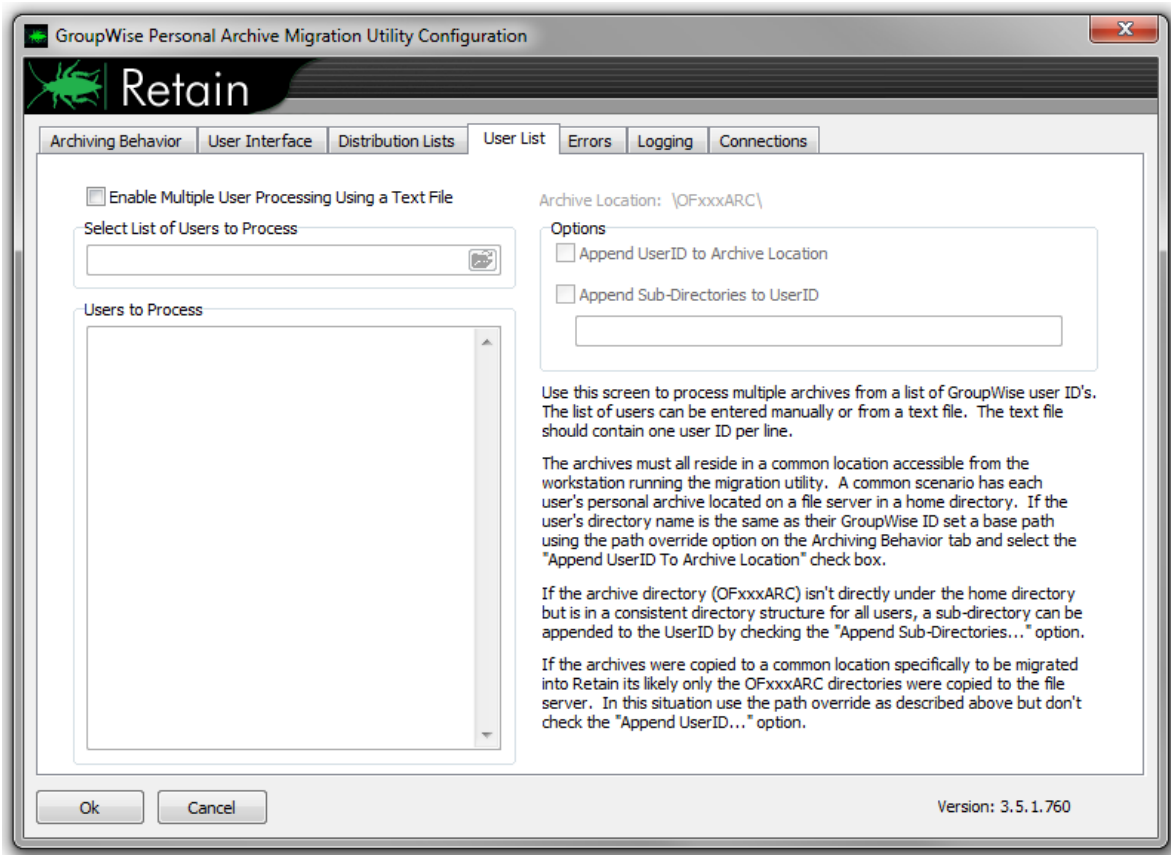
It is recommended to only process multiple archives from the same post office.



The Distribution Lists will only be populated if it is enabled and if the 'Refresh' button is selected. It displays the available distribution lists. To have the connection work correctly, the GroupWise Client Parameters on the 'Connections' tab must be filled-out with the GroupWise Server IP and port. Displayed lists can be selected. The archives belonging to the users in the selected distribution lists will be migrated. If users from multiple Post Offices are to be migrated, employ some kind of FID clash protection by verifying archives or only processing users which can be verified by a specified Domain and Post Office, (specified in DNS:port or IP address:port).

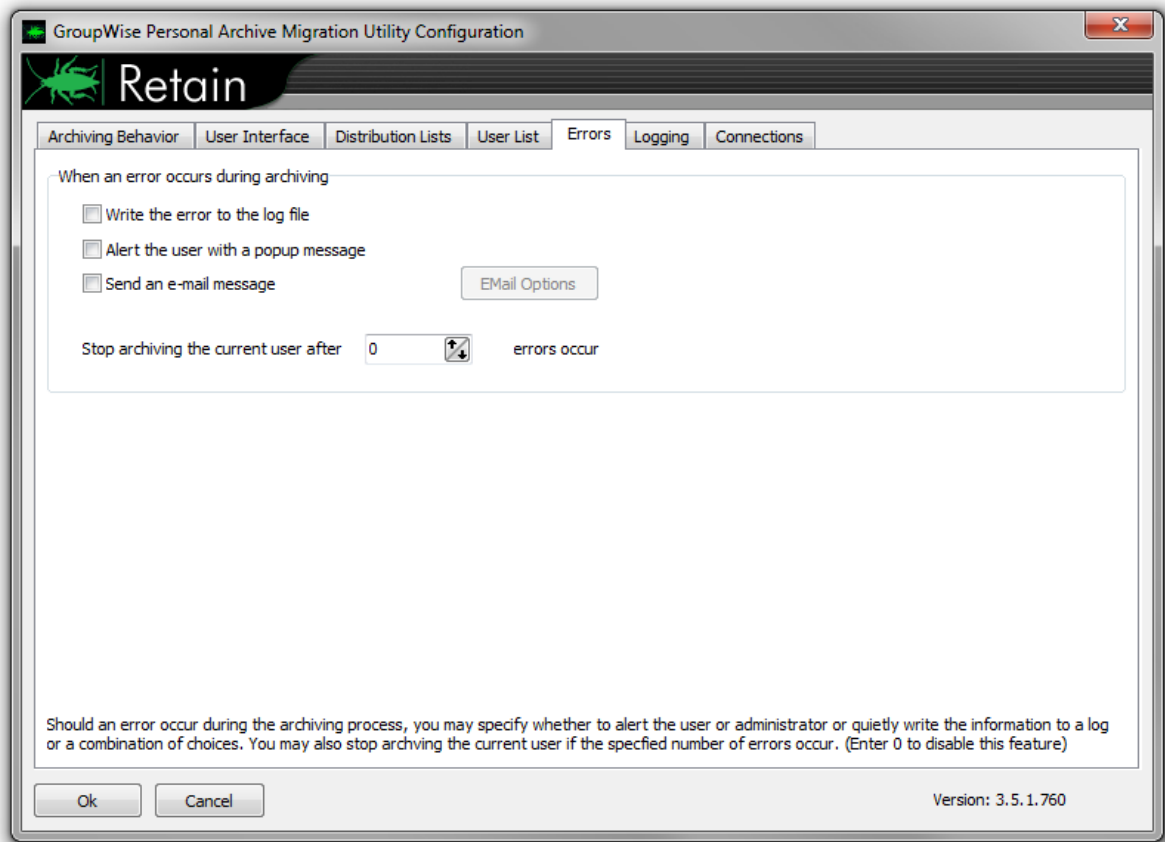
User List

The User List screen allows the migration of multiple users specified by a user list. The user list is a plain text file with one user ID per line. To enable the process, select the 'Enable Multiple User Processing Using a Text File' checkbox, then browse to and select the desired text file.

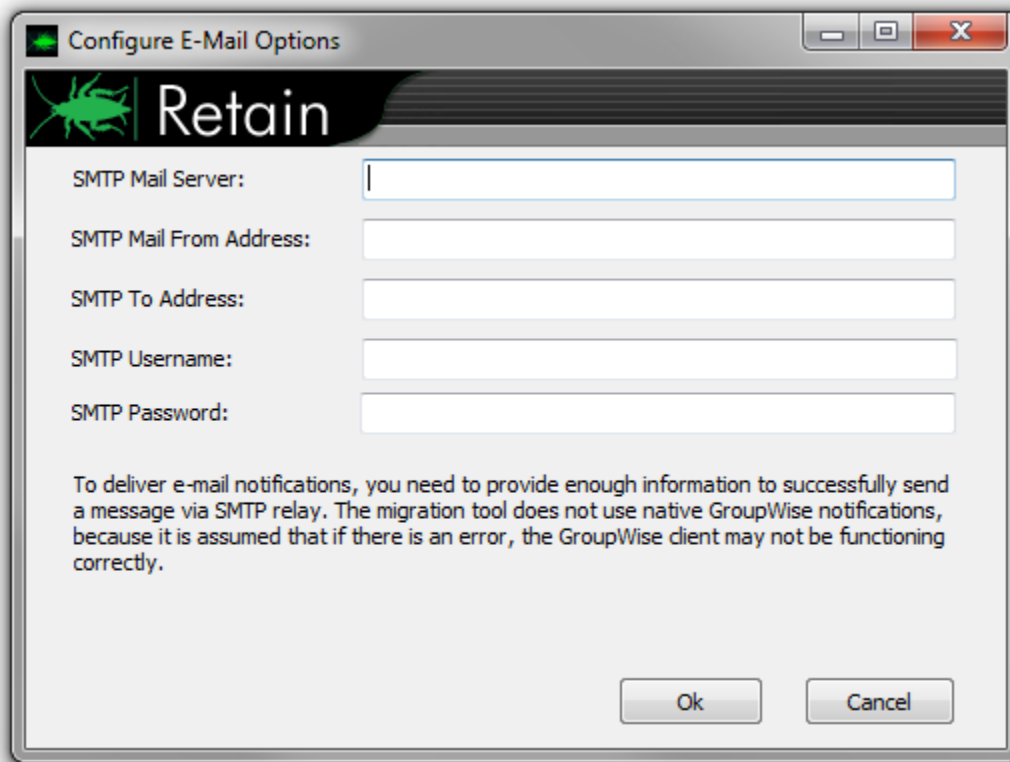


Errors

The error limit and actions taken when an error is encountered are specified on this tab.



Errors may be written to the log file, (specified in the next tab), sent in a pop-up message to the user, or sent as an email to the specified address.



The limit of how many errors may be encountered before the migration utility quits the current user is specified. A setting of '0' sets the limit to infinite.

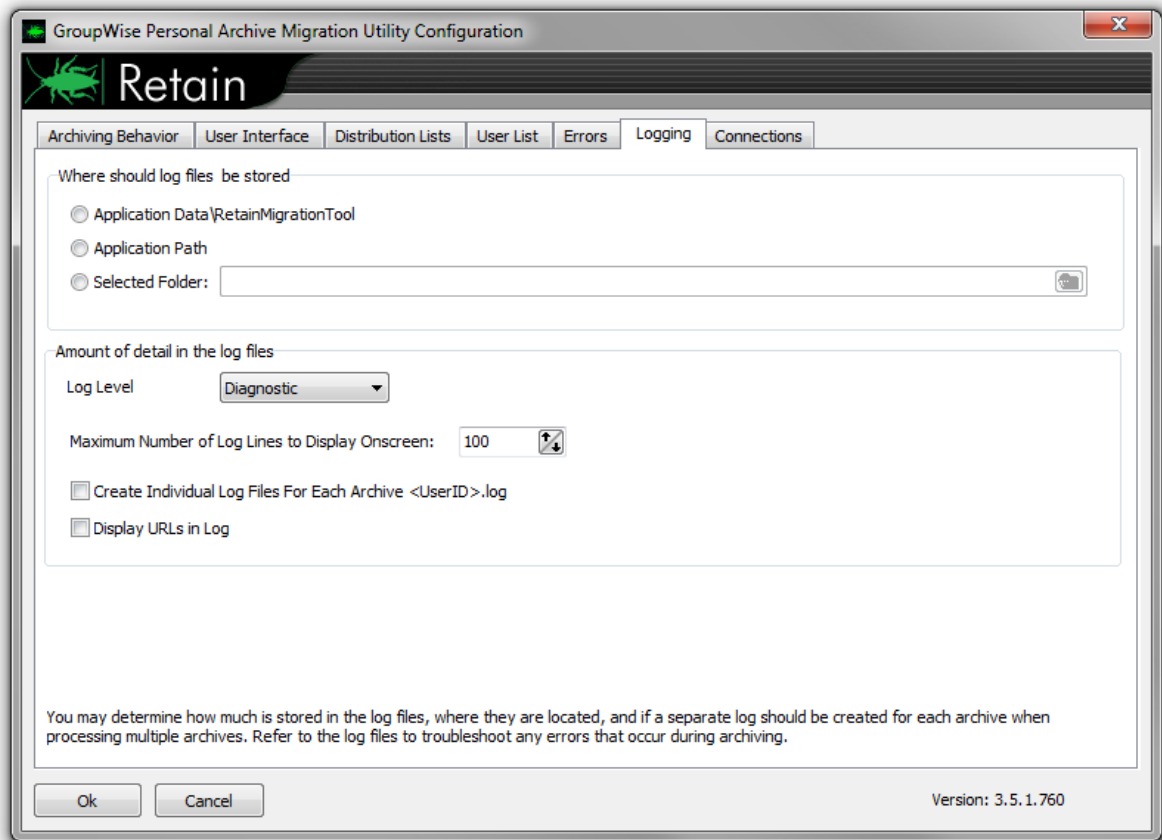
Important: By default, the current user will be skipped after 20 errors by default.

If an email is desired for each error encountered, email settings must be configured. Select 'Email Options' and input the connection information, source address, destination address, and user login information for the SMTP Mail Server.

Logging

The location, logging levels, and buffer of the logging screen are all configured on this tab.

Where Should Log Files be Stored - A specified path, the path to the current location of the application, or a specified path must be selected.



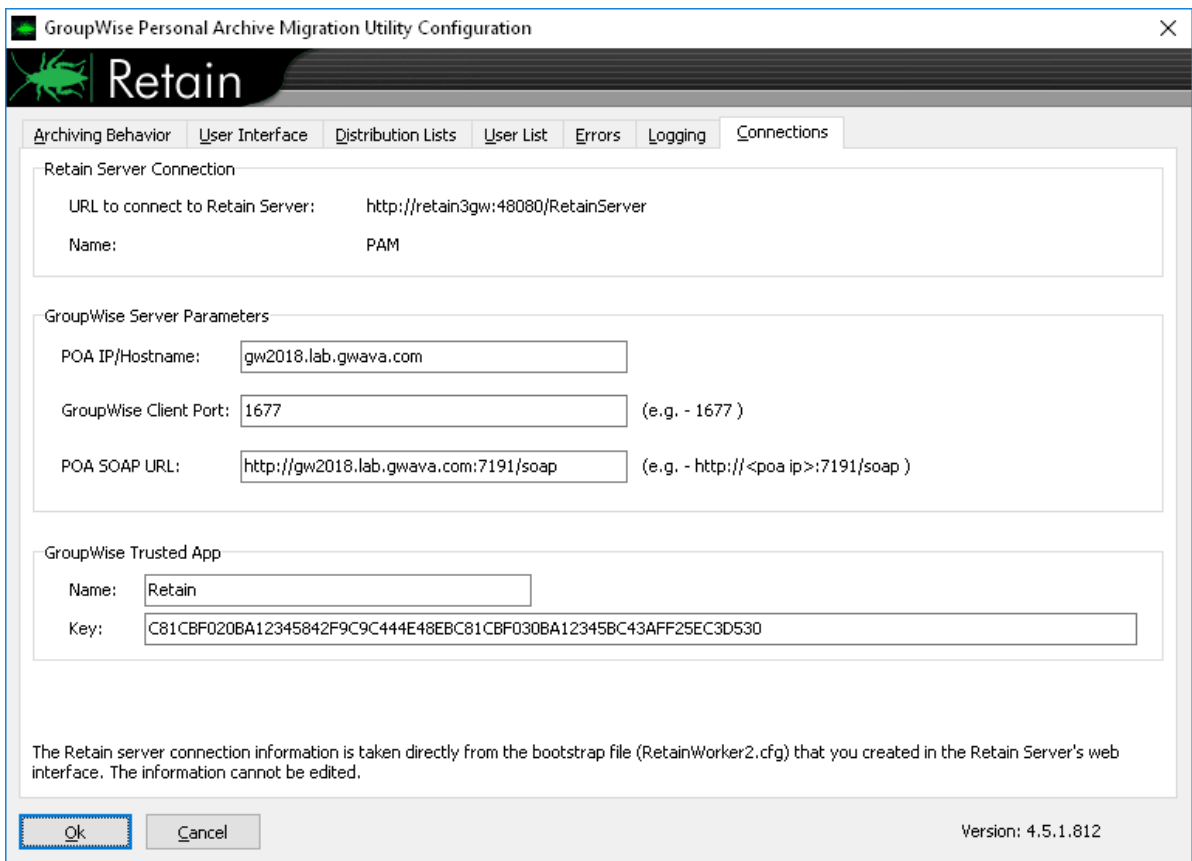
Amount of Detail in the Log Files – The logging level determines how much information is provided in the log files. Unless troubleshooting, log levels of ‘normal’ and ‘errors only’ are sufficient. The buffer size for the logging screen determines how much history the running log screen of the migration tool contains.

Connections

This is an informational page showing the connection settings from the RetainWorker.cfg created in the Retain Server. If this information is incorrect, the Retain Server Connection settings must be modified under the worker configuration in the Retain Server, and a new bootstrap file downloaded for use.

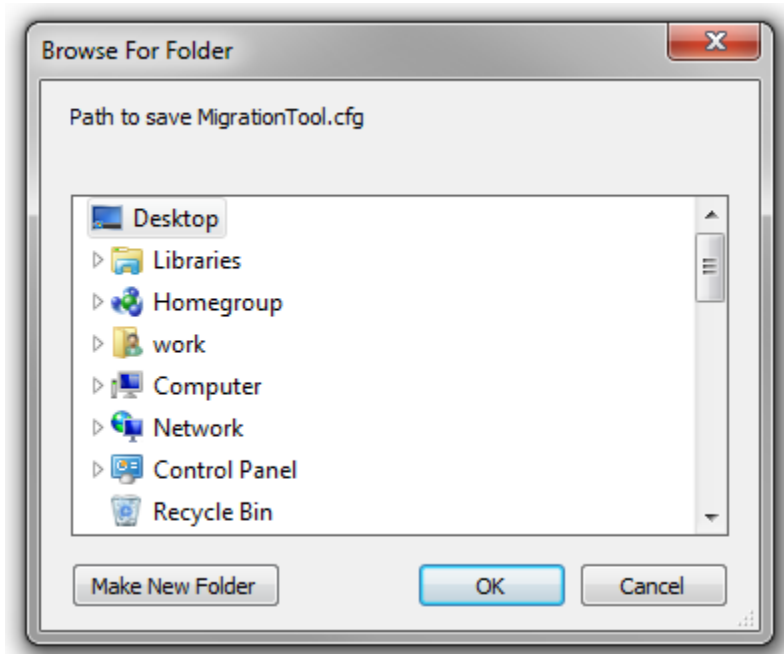
The GroupWise Client Parameters contains the connection information used by the Distribution Lists configuration to allow the Migrator to connect to the GroupWise system.

Provide the POA IP or Hostname, GW Client Port (default: 1677), and the POA SOAP URL. (default: `http://<POA>:7191/soap`)



Save Configuration

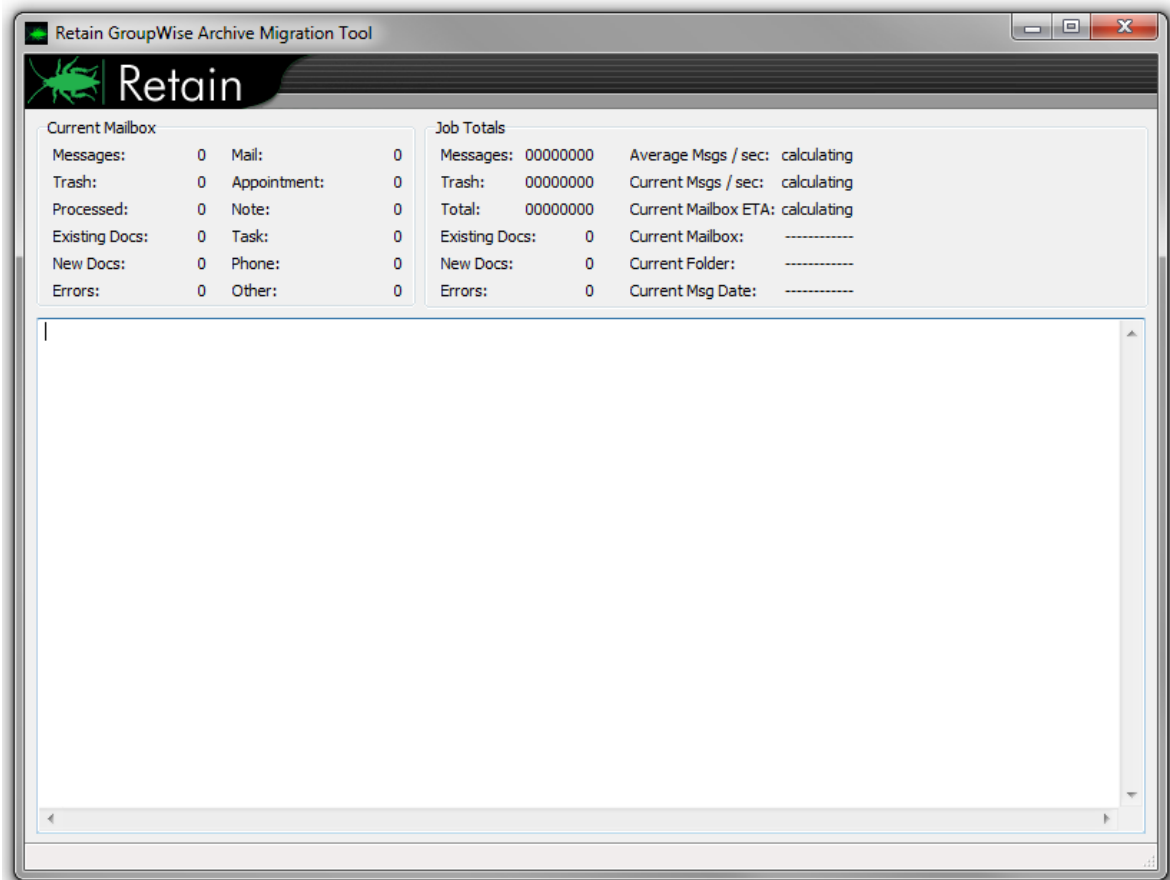
Once the configuration has been setup as desired, click 'Ok' and select the location to save the changes into a 'MigrationTool.cfg' file.



Running the Migration

The migration tool uses the configuration file to run the job as you have specified in the configuration tool. You may run the configuration tool as often as you need to set up the migration job to your liking.

When run, the tool will prompt for the configuration file, or automatically load the configuration file if the configuration is found in the same directory, and immediately begin the migration. When the tool runs, you will see a screen like this:



You will see any errors in this screen and it will display a notification when the job is complete.

For each user in a multi-user job, it will read the location of the archives from GroupWise and then it will attempt to open the archives. It is critically important that the workstation used for the migration can access the archive files.

Limit of 5 Concurrent Migrations

There is a maximum of 5 migrations permitted at any given time. For instance, if you're running the migration tool from the workstations of your users, only 5 at a time can be migrated, the others will wait their turn. This is to prevent all the migration requests from overwhelming the server.

Other Notes

The migration tool may be deployed using management tools such as Novell ZENworks. This is one method to collect archives which have been stored on users' workstations. Users may run the tool manually or it can be run automatically.

UUID errors

[ERROR] Exception: Error getting UUID.

There are a various reasons for a UUID error:

- ◆ The User does not exist in the GroupWise system.

If the user does not exist in GroupWise anymore but the personal archive needs to be moved into Retain, Retain will create the user mailbox and assign it a Retain UUID (unique user ID). Thus, this is also why the address book needs to be refreshed prior to using the PAM tool. If the user exists in the GroupWise system, you would get two different user mailboxes in Retain if you archived with the PAM tool first and then refreshed the address book in the Retain system.

- ◆ The Users's visibility is set too low in GroupWise.

In GroupWise, edit the account of the user and set the visibility to *System*.

- ◆ Apache has been configured to redirect traffic to a secure HTTPS connection.

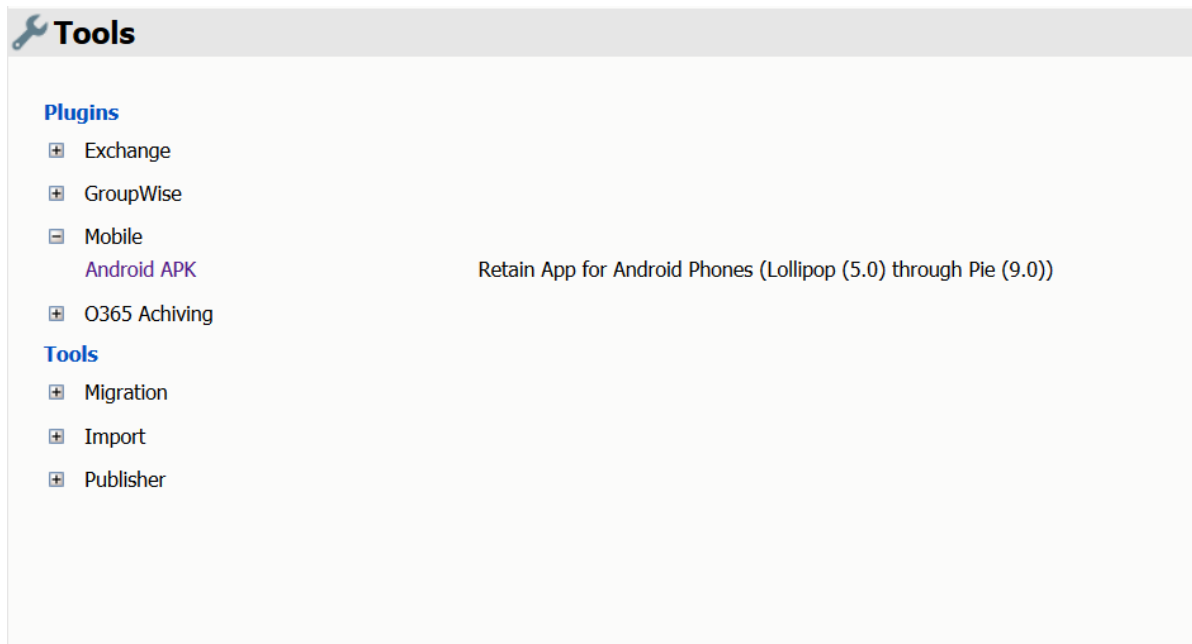
Edit the bootstrap file to connect to `http://[Retain Server IP address or hostname]:48080` to connect directly to tomcat and bypass the apache redirect.

Mobile Tools

Retain can archive messages from a mobile device.

RetainService Android App

The RetainService Android App is available under the Tools menu as Android APK Retain App for Android Phones



System Requirements

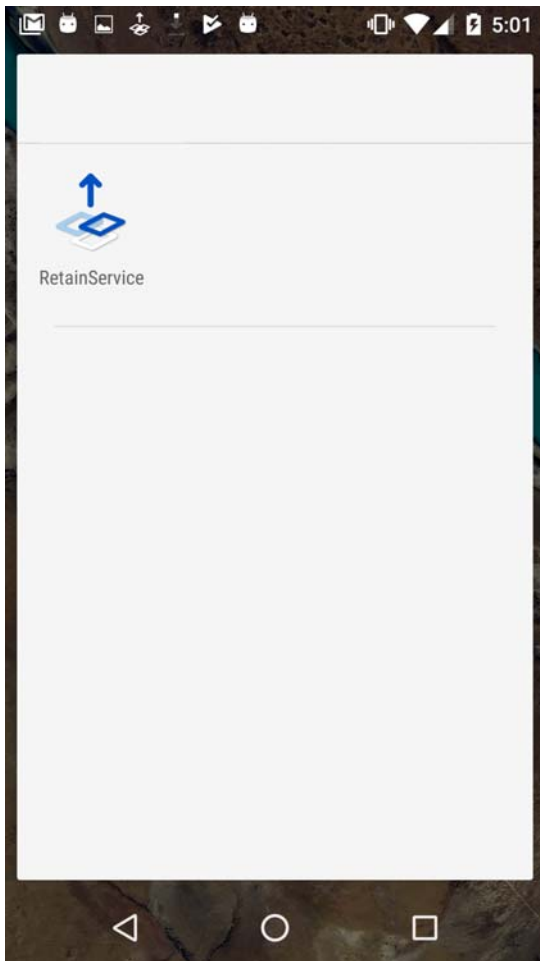
- ◆ Lollipop (5.0) or higher.
- ◆ If the user will travel internationally it is important to set the device to connect with port 80 as port 48080 is blocked by telecom companies across borders.

Installation

Download to the mobile device manually or with an MDM [“Mobile Module \(Android\)”](#) on page 243.

Use

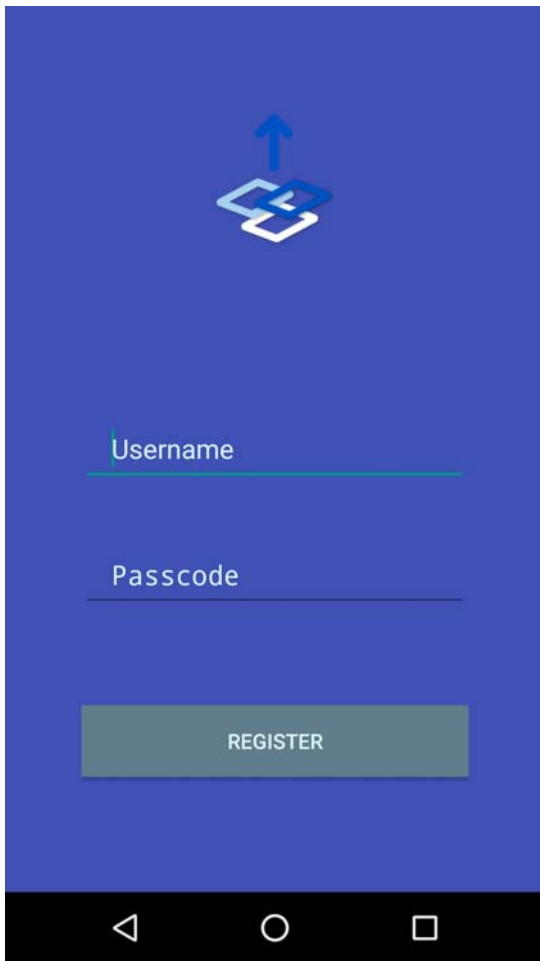
Once installed the RetainService app appears.



After the RetainService app has been installed the Retain Administrator may send a registration email. This will include a JSON file with registration details.

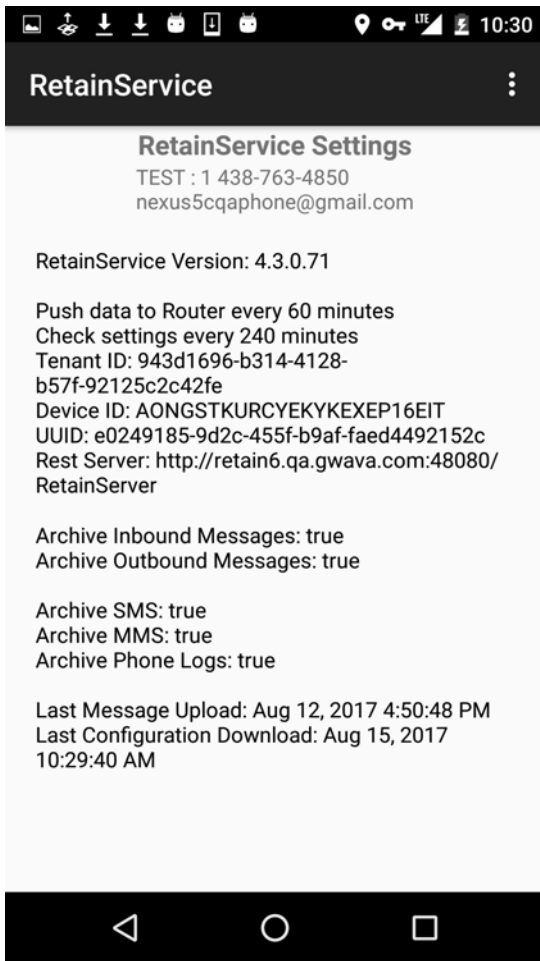
You may be asked to log into the app the first time. This will be your email address for the user name and the Registration ID for the password.

If the administrator has the IMEI of the device, a message can be sent to register the device remotely.



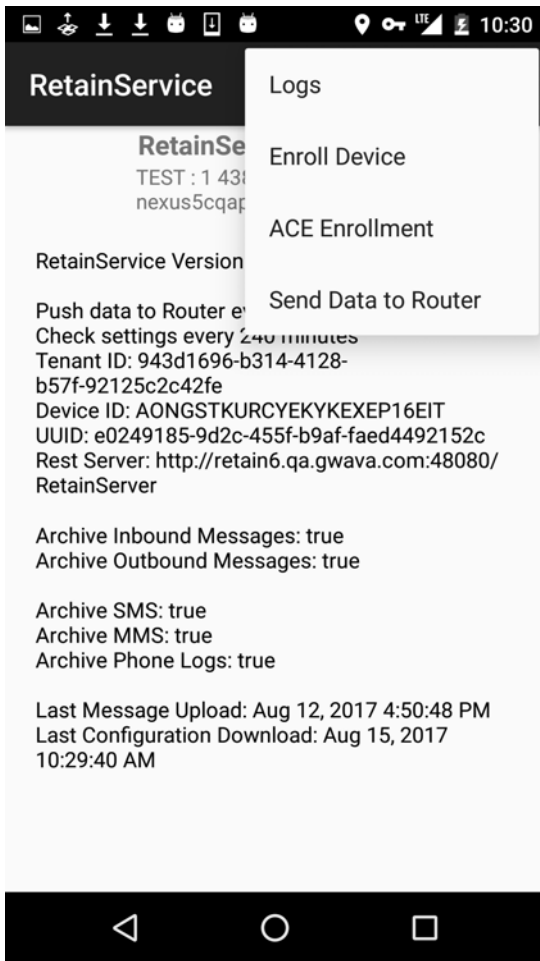
Main Page

Once logged in the main page shows the settings for the app.



Options menu

The options menu is available under the three vertical dots. This provides Logs, Enroll Device, ACE Enrollment and Send Data to Router.

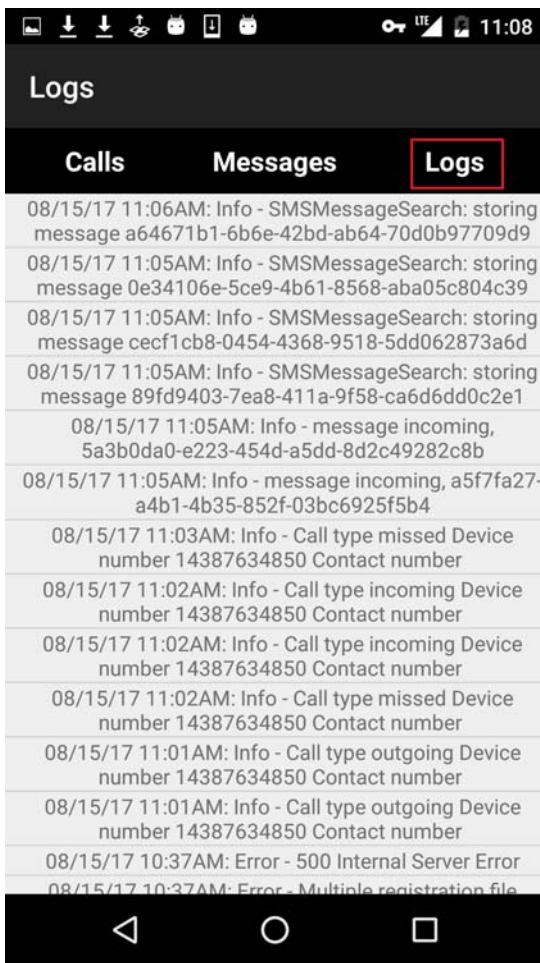


Logs

The logs option will show the logs.

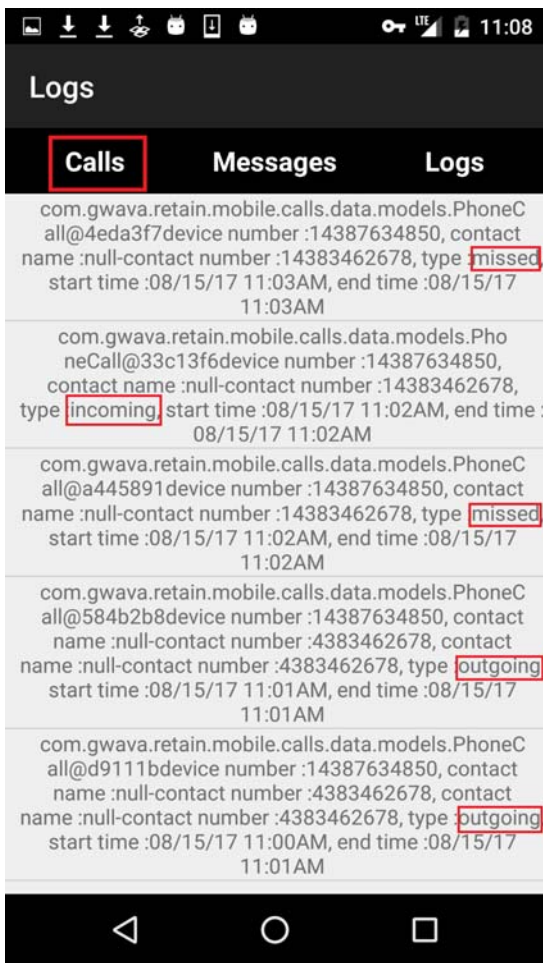
Logs Tab

The Logs tab will show all activity.



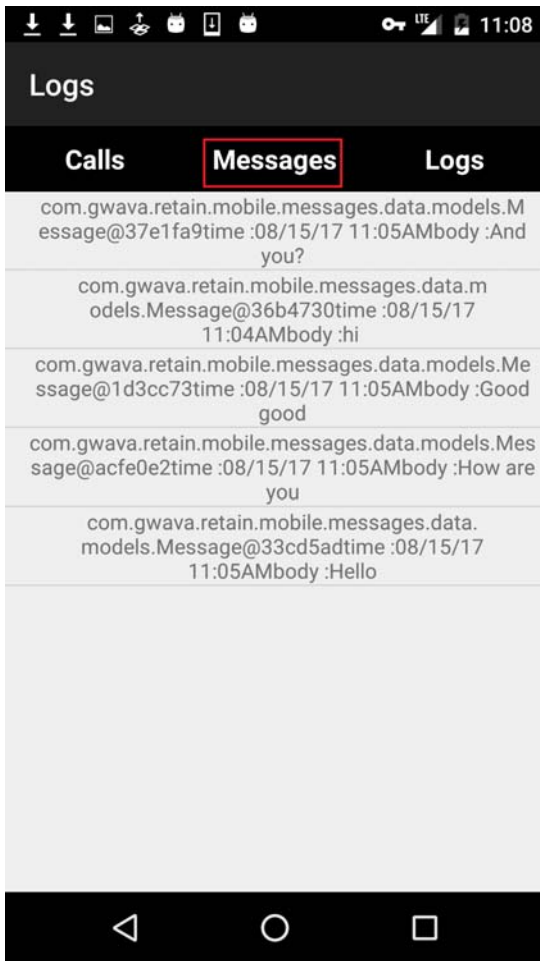
Calls Tab

The Calls tab will show only the calls made.



Messages Tab

The Messages tab will show only the messages made.



Enroll Device

If the device cannot be enrolled with an MDM an email can be sent with an enrollment link, which is placed here.

ACE Enrollment

For use with Retain SaaS only. This provides the IEMI ID to be used with Retain Device Management.

Send Data to Router

This option will send data to the router immediately rather than by the default schedule.

Retain App

The Retain App is available on the Apple App store and Google Play store.

After installing the app, enter the location of the Retain Server and the user credentials.

Options can be changed under the hamburger (three horizontal stripes) menu.

Once connected to Retain the user will be able to access their Retain mailbox archive.

For more information see the Search User Guide “[Retain Mobile Apps](#)” on page 560

Swagger UI

Swagger is a developer user interface for Retain’s REST API.

This documentation assumes you are a developer and are familiar with REST API.

This allows the developer to get to know the API and experiment with Retain data. See [Swagger.io](https://swagger.io/) (<https://swagger.io/>) for more details.

NOTE: It is recommended to use Swagger in a development environment.

Prerequisites

The administrator will have access to this but it is recommended to grant a developer more limited rights even to a development environment.

- ◆ The developer must be granted the *Assign Rights* right, before Swagger will be visible under the Tools Menu.



- ◆ Create a REST Collector “[Create a REST Collector](#)” on page 616.

Using Swagger

To begin using Swagger, go to the Tools menu, open the REST API section and click on the Swagger link.

The Swagger interface will open in a new tab.


Retain REST APIs ^{1.0}

[Base URL: 151.155.183.140:48080/RetainServer/swagger]
<http://151.155.183.140:48080/RetainServer/swagger/v2/api-docs>

Please use the following namespaces for XML POST/PUT type requests: (please prefix the appropriate tns to the xml root element accordingly)

xmlns:tns="http://www.gwava.com/retain/rest/v1/insertion" xmlns:tns1="http://www.gwava.com/retain/rest/v1/Common" xmlns:tns2="http://www.gwava.com/retain/rest/v1/Retrieval" xmlns:tns3="http://www.gwava.com/retain/rest/v1/Search" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.gwava.com/retain/rest/v1/insertion Insertion.xsd"

An issue has been observed in the Swagger library, as a workaround user needs to edit POST requests if it consists of domains, postOffices, jobs, profiles, schedules, workers, devices, messages, attachments, messageRecipients.
User needs to remove the extra 's' from the nested tags only for the request consists of the above models. For example, inside the domain post request, the second (nested) domains should be changed to domain.

Authorize 

api-information-controller Api Information Controller	>
attachment-controller Attachment Controller	>
check-if-doc-exists-controller Check If Doc Exists Controller	>

There will be a long list of available calls. Click on a reveal arrow to open a call for more information.

api-information-controller Api Information Controller

GET /api getApiInformation Try it out

Name	Description
appKey * required string (query)	Application key
appSecret * required string (query)	Application secret

Responses Response content type: application/xml


Code	Description
200	<p>OK</p> <p>Example Value Model</p> <pre><?xml version="1.0" encoding="UTF-8"?> <ApiInformation> <readRequestsPerMinute>0</readRequestsPerMinute> <uploadSizeLimit>0</uploadSizeLimit> <writeRequestsPerMinute>0</writeRequestsPerMinute> </ApiInformation></pre>

GET /api/foldertypes getFolderTypeInfo Try it out

GET /api/itemtypes getItemTypeInfo Try it out

GET /api/versions getMajorMinorVersion Try it out

To use an API call press the “Try it out” button.

[Authorize](#) 

api-information-controller Api Information Controller ▼

GET /api/getApiInformation 🔒

Parameters [Cancel](#)

Name	Description
appKey * required string (query)	Application key <input type="text" value="appKey - Application key"/>
appSecret * required string (query)	Application secret <input type="text" value="appSecret - Application secret"/>

[Execute](#)

You will first need to press *Authorize* and enter a user name and password.

You will then need to provide a REST appKey and appSecret. These can be exported from a REST collector under *Server Configuration | REST API*.

Then press *Execute* to run the call.

api-information-controller Api Information Controller

GET /api/getApiInformation

Parameters Cancel

Name	Description
appKey * required string (query)	Application key 570f1f80-2442-41ee-ba27-5fa00ce6b3ca
appSecret * required string (query)	Application secret 49e93380-c650-4bf4-a400-d8446993ab1f

Execute Clear

Responses Response content type: application/xml

Curl

```
curl -X GET "http://151.155.183.140:48080/RetainServer/swagger/api?appKey=570f1f80-2442-41ee-ba27-5fa00ce6b3ca&appSecret=49e93380-c650-4bf4-a400-d8446993ab1f" -H "accept: application/xml"
```

Request URL

```
http://151.155.183.140:48080/RetainServer/swagger/api?appKey=570f1f80-2442-41ee-ba27-5fa00ce6b3ca&appSecret=49e93380-c650-4bf4-a400-d8446993ab1f
```

Server response

Code	Details
401 <i>Undocumented</i>	<p>Error: Unauthorized</p> <p>Response headers</p> <pre>cache-control: no-cache, no-store, max-age=0, must-revalidate content-length: 0 date: Fri, 10 Aug 2018 19:38:36 GMT expires: 0 pragma: no-cache server: Apache-Coyote/1.1 x-content-type-options: nosniff x-frame-options: DENY x-xss-protection: 1; mode=block</pre>
200	<p>OK</p> <p>Example Value Model</p> <pre><?xml version="1.0" encoding="UTF-8"?> <ApiInformation> <readRequestsPerMinute>0</readRequestsPerMinute> <uploadSizeLimit>0</uploadSizeLimit> <writeRequestsPerMinute>0</writeRequestsPerMinute> </ApiInformation></pre>

The result will appear below the curl and Request URL.

Enabling Swagger

Swagger is intended for use by developers. To prevent user access you must first enable swagger in the misc.properties file.

Linux: /opt/beginfinite/retain/RetainServer/WEB-INF/classes/config

Windows: C:\Program Files\Beginfinite\Retain\RetainServer\WEB-INF\classes\config

To enable swagger change its visibility to 1:

```
tools.swagger.visible=0
```

Managing Retain Language Support

Retain is translated into 14 languages and matches these to browser settings when possible.

Users can also select any of the other 13 languages in various drop-down lists within the Retain web UI.

As a Retain Administrator, you can control which languages are listed by using the Language Editor.

- 1 Using your administrative browser, sign in to Retain as the Admin user.
- 2 Open a new tab and access the following URL:

```
http://retain-server-ip-or-dns/RetainServer/Util/languageEdit.jsp
```

The Language Editor opens, displaying a list of 18 languages (shown below). The 14 languages that have corresponding localized strings on the Retain server, are enabled for selection by Retain users in the **Expose to User?** column.

ISO LangID	Description	Expose to User?	Delete Entry?
en	English	Yes ▾	No ▾
de	German	Yes ▾	No ▾
es	Spanish	Yes ▾	No ▾
fr	French	Yes ▾	No ▾
nl	Dutch	Yes ▾	No ▾
pt	Portugese	No ▾	No ▾
ru	Russian	No ▾	No ▾
ch	Chinese	Yes ▾	No ▾
ja	Japanese	Yes ▾	No ▾
cs	Czech	Yes ▾	No ▾
sk	Slovak	No ▾	No ▾
no	Norwegian	No ▾	No ▾
it	Italian	Yes ▾	No ▾
hu	Hungarian	Yes ▾	No ▾
pt_B	Portuguese(Brazil)	Yes ▾	No ▾
pt_P	Portuguese(Portugal)	Yes ▾	No ▾
pl_PI	Polish	Yes ▾	No ▾
ko_K	Korean	Yes ▾	No ▾

Add new language LangID (should be 2 char IANA code): Description:

- To change which languages users can choose in drop-down lists, change the **Expose to User** option.

NOTE: Although Portugese, Russian, Slovak, and Norwegian are included in the list, Retain has no localized strings for these languages.

- To remove a language from this list, change the **Delete Entry** choice to **Yes** and save your changes.

NOTE: Localized strings are not removed from the Retain server; only the list is affected. You can add back any languages previously removed by entering their 2-character IANA codes and appropriate descriptions.

- Be sure to save any changes that you make in this editor. Otherwise, your changes are lost.
- To see your changes, you must restart Retain as explained in [“Starting and Stopping the Retain Server” on page 113](#).

15 About Retain

- ◆ [“About and Diagnostics Page” on page 719](#)
- ◆ [“Retain Component Licensing” on page 724](#)
- ◆ [“LGPL – GNU Lesser General Public License” on page 727](#)
- ◆ [“BSD License – Individual Component Licenses” on page 730](#)

About and Diagnostics Page

To get this page from anywhere in the administrative console of Retain, click on the Retain logo in the top left corner, or the ‘about’ link in the top right.

* About

Micro Focus Retain 4.2.0.0

uptime 0d : 1h : 35m
currentTime Tue Mar 21 11:41:41 MDT 2017
timezone Mountain Standard Time
retainName Retain10
jvmVersion 25.121-b13
jreVersion 1.8.0_121-b13
javaHome C:\Program Files\Beginfinite\Retain\Java8\jdk1.8.0_121\jre
tomcatHome C:\Program Files\Beginfinite\Retain\Tomcat 8.0
indexDoc 0
logHome C:\Program Files\Beginfinite\Retain\Tomcat 8.0\logs
osArchitecture amd64
osName Windows Server 2012 R2
userName RETAIN10\$\
tmpDir C:\Program Files\Beginfinite\Retain\Tomcat 8.0\work\Catalina\localhost\RetainServer
tomcatVersion Apache Tomcat/8.0.41
tomcatFreeMemory 2718704
tomcatMaxMemory 8354560
tomcatTotalMemory 4160256
indexEngine High Performance Index
indexHost
indexPort 10000
indexProtocol http
retainHome C:\Program Files\Beginfinite\Retain\RetainServer\
retainEdition Standard
retainBuild 172
retainAvailability dev
configSchema 34
messageStoreSchema 5
indexingSchema 1
derbyVersion 10.5.3.0
indexingType High Performance Index
hibernateVersion 4.3.11.Final

Core Info

JAR List

Jobs

Schedules

Profiles

Workers

Quartz

Retention Date Utility

Indexer Status

Exchange Test

GW to Exchange Migrator

GW to Exchange Scope

Mailbox Merger/Splitter

Indexer Test

System Properties

Generate License Report

This page displays statistics and general program information as well as linking to valuable diagnostics. When tuning the memory usage of the Retain components, it is useful to refer to these diagnostics and statistics.

Operational statistics are listed such as uptime, component version numbers, directory paths and memory statistics.

Below that, the buttons will give you more detailed diagnostic information. Generally, you will only use these at the request of technical support.

Please pay particular attention to the Tomcat memory statistics. This information is needed to fine tune Tomcat.

Diagnostic Buttons

In usual operation, none of these buttons will be used without instruction of support. The diagnostic buttons found on the diagnostics page are used in conjunction with support and can be dangerous for the system if used without understanding or instruction. The utilities contained here display or modify core settings and functions of the Retain Server. Mismanagement of these functions may render the Retain Server unmanageable and in a non-functioning state.

Core info, JAR List, Jobs, Schedules, Profiles, Workers

The Core info, JAR List, Jobs, Schedules, Profiles, and Workers buttons initiate a download of the configuration .xml for each of those categories. All configuration tied to those items which have been configured in the Retain Server will be contained in the downloaded .xml and can be used to examine recorded configuration.

Quartz

The Quartz button displays a page containing all information and configuration for the Quartz scheduler. These settings determine when jobs start, when maintenance is, and time in the system.

Retention Date Utility

The Retention Date Utility tests the retention and purge flags in the mail systems. It is set in UNIX time stamp format, and should not be used without express guidance from Support.

Indexer Status

The Indexer Status displays the current health of the indexer engine along with the total un-indexed items and associated memory load. There is also an option to shut off or to turn on the indexer. As the indexer should be alive at 'on' at all times during normal operation, only use this utility under instruction from Support.

Exchange Test

The *Exchange Test* utility attempts to connect to and login to the specified mailbox in the Exchange mail system, utilizing current configuration from the Exchange module, if configured. This is used to ensure that sufficient rights and access is open to Retain in the Exchange system. A target mailbox different from the Retain 'service' account must be specified.

Mailbox Merger / Splitter

Mailboxes may be automatically merged by the Retain system if configured correctly under the Module Configuration | Mailbox Mapping options screen, but it must be done in correct order or the system will not recognize that a change has occurred and the merge will fail. Automatic merge can only be performed once.

This utility enables you to assign a mailbox to the virtual mailbox of another entity. It should be used with care by a knowledgeable individual. Reliable backups are recommended.

Merge	
Source Mailbox: <input type="text"/>	Destination Mailbox Group: <input type="text"/>
sorchard@gwava.com (BlackBerry.BlackBerry) samsunggalaxysiii@qa.gwava.com (BlackBerry.BlackBerry) neema@gwava.com (BlackBerry.BlackBerry) Administrator (Exchange2013.ExchangeQA) ajay@qa.gwava.com (BlackBerry.BlackBerry) blackberryz10@qa.gwava.com (BlackBerry.BlackBerry) user3@org.com (BlackBerry.BlackBerry) user@org.com (BlackBerry.BlackBerry) sorchard@gwava.com (BlackBerry.BlackBerry) retain (Exchange2013.ExchangeQA) This uid doesn't have ANYTHING associated with it!	New Entity sorchard@gwava.com (BlackBerry.BlackBerry) samsunggalaxysiii@qa.gwava.com (BlackBerry.BlackBerry) neema@gwava.com (BlackBerry.BlackBerry) Administrator (Exchange2013.ExchangeQA) ajay@qa.gwava.com (BlackBerry.BlackBerry) blackberryz10@qa.gwava.com (BlackBerry.BlackBerry) user3@org.com (BlackBerry.BlackBerry) user@org.com (BlackBerry.BlackBerry) sorchard@gwava.com (BlackBerry.BlackBerry)

Remove the original entity container if it is orphaned after the merge

Merge

Batch Load from a File

Refer to [mergesample.xml](#) for the format.

XML File: No file selected.

Merge

Manually merging and splitting mailboxes is repeatable and is also the only way to undo a merge, automatic or otherwise. A batch load may be created and processed, but requires specific formatting, see the 'mergesample.xml' for format information.

Merging accounts creates a connection between two existing entities in the Retain database by merging their UID's in Retain, and allows a user with two differing email accounts, or one account repeated on two different systems, to manage their mail from within the same interface without having to search for and select a different account, or separately logging-in to two different systems.

Merge

Merge

Source Mailbox:

- user6 (sfgw14po.sfgw14)
- user17 (legionpo.sfgw14)
- user7 (legionpo.sfgw14)
- user2 (sfgw14po.sfgw14)
- user14 (legionpo.sfgw14)
- user4 (legionpo.sfgw14)
- user8 (sfgw14po.sfgw14)
- user19 (legionpo.sfgw14)
- user9 (legionpo.sfgw14)
- user11 (legionpo.sfgw14)

The virtual mailbox associated with this item has the following mailboxes connected to it:

- user6 (sfgw14po.sfgw14), which has these mailbox types connected:
 - gw (3573BE80-0761-0000-A473-666733343035)

Destination Mailbox Group:

New Entity

- user6 (sfgw14po.sfgw14)
- user17 (legionpo.sfgw14)
- user7 (legionpo.sfgw14)
- user2 (sfgw14po.sfgw14)
- user14 (legionpo.sfgw14)
- user4 (legionpo.sfgw14)
- user8 (sfgw14po.sfgw14)
- user19 (legionpo.sfgw14)
- user9 (legionpo.sfgw14)

The virtual mailbox associated with this item has the following mailboxes connected to it:

- user6 (sfgw14po.sfgw14), which has these mailbox types connected:
 - gw (3573BE80-0761-0000-A473-666733343035)

To merge two addresses, first select the source mailbox and then select the destination mailbox. After the desired mailboxes have been selected, click the 'Merge' button. A successful merge will show two entries under the source mailbox.

This utility enables you to assign a mailbox to the virtual mailbox of another entity. It should be used with care by a knowledgeable individual. Reliable backups are recommended.

Merge

Source Mailbox:

- user9 (sfgw14po.sfgw14)
- user16 (legionpo.sfgw14)
- user8 (legionpo.sfgw14)
- user6 (sfgw14po.sfgw14)
- user13 (legionpo.sfgw14)
- user5 (legionpo.sfgw14)
- user3 (sfgw14po.sfgw14)
- user10 (legionpo.sfgw14)
- user18 (legionpo.sfgw14)
- user0 (sfgw14po.sfgw14)

The virtual mailbox associated with this item has the following mailboxes connected to it:

- user8 (legionpo.sfgw14), which has these mailbox types connected:
 - gw (D5EBC900-11CC-0000-A473-666733343035)
- user8 (SFEX13SRV.sf.gwava.net), which has these mailbox types connected:
 - exchange (c0adcb08b1910a4eb7a087cb397f4962)

Destination Mailbox Group:

New Entity

- user9 (sfgw14po.sfgw14)
- user16 (legionpo.sfgw14)
- user8 (legionpo.sfgw14)
- user6 (sfgw14po.sfgw14)
- user13 (legionpo.sfgw14)
- user5 (legionpo.sfgw14)
- user3 (sfgw14po.sfgw14)
- user10 (legionpo.sfgw14)
- user18 (legionpo.sfgw14)

This uid doesn't have ANYTHING associated with it!

Split

Merge

Source Mailbox:

- user6 (sfgw14po.sfgw14)
- user17 (legionpo.sfgw14)
- user7 (legionpo.sfgw14)
- user2 (sfgw14po.sfgw14)
- user14 (legionpo.sfgw14)
- user4 (legionpo.sfgw14)
- user8 (sfgw14po.sfgw14)
- user19 (legionpo.sfgw14)
- user9 (legionpo.sfgw14)
- user11 (legionpo.sfgw14)

The virtual mailbox associated with this item has the following mailboxes connected to it:

- user7 (legionpo.sfgw14), which has these mailbox types connected:
 - gw (D4220500-11CC-0000-A473-666733343035)
- user7 (SFEX13SRV.sf.gwava.net), which has these mailbox types connected:
 - exchange (9d0c456db062664ebf5fd19417d5d113)

Destination Mailbox Group:

New Entity

- user6 (sfgw14po.sfgw14)
- user17 (legionpo.sfgw14)
- user7 (legionpo.sfgw14)
- user2 (sfgw14po.sfgw14)
- user14 (legionpo.sfgw14)
- user4 (legionpo.sfgw14)
- user8 (sfgw14po.sfgw14)
- user19 (legionpo.sfgw14)
- user9 (legionpo.sfgw14)

This uid doesn't have ANYTHING associated with it!

Remove the original entity container if it is orphaned after the merge

Merge

To remove currently merged accounts, select the account you wish to sever as the source mailbox and merge it to a 'new entity'. Because the merge utility relies on tying entities to accounts in the database, the 'new entity' simply unties the account from any other connections. Tying a user to a new entity does not create any new, floating entities or make any changes in the mail systems; it only severs the selected account from previously merged accounts.

Indexer Test

The indexer test utility provides a simply and quick query to the index engine and database. This is used as a low-level diagnostic tool for Support and is best used in conjunction with Support. Normal operation does not require any use of this tool.

System Properties

The System Properties utility displays basic system information and settings about the Retain Server, host environment, and functioning parts.

Retain Component Licensing

Copyright 2018 © Micro Focus International plc. All rights reserved.

Retain uses many components covered under the following licenses. The licenses follow the listing below.

License	Components
Apache 2.0 License	Apache, Open Symphony Quartz, Apache Log4j & Log4j Additions, Apache Derby, Apache XML-RPC, Apache TagLib, Apache Commons, CGLib, Apache Tika, Jet 53 Toolkit, SPring Framework
LGPL	EDS, Hibernate, C3PO Connection Pooling, Jericho HTML Parser, Textmining, 7-zip
BSD License	XStream, JDOM, MetaStuff DOM4J, Object Web ASM, ANTLR
BOuncy Castle APIS	Special license included below
PDFBox	Special license included below
Open Software License v.3.0	openXML Indexer
Mozilla Public License	iText
GNU GPL V. 2	VAInstall
Bitstream Vera Fonts Copyright	DejaVuSans Fonts
ICU Licence	Java Utilities

Apache 2.0 License

Apache License - Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4.Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

a)You must give any other recipients of the Work or Derivative Works a copy of this License; and

b)You must cause any modified files to carry prominent notices stating that You changed the files; and

c)You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

d)If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5.Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6.Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7.Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8.Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9.Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

LGPL – GNU Lesser General Public License

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

10. Additional Definitions.

As used herein, “this License” refers to version 3 of the GNU Lesser General Public License, and the “GNU GPL” refers to version 3 of the GNU General Public License.

“The Library” refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An “Application” is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A “Combined Work” is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the “Linked Version”.

The “Minimal Corresponding Source” for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The “Corresponding Application Code” for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

11. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

12. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a) under this License, provided that you make a good faith effort to ensure that, in the event an application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or
- b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

13. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

- a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the object code with a copy of the GNU GPL and this license document.

14. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 14d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 14d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

15. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

16. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License “or any later version” applies to it, you have the option of following the terms and conditions either of that published version or of

any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

BSD License – Individual Component Licenses

ANTLR 3 License

[The BSD License] Copyright (c) 2003-2007, Terence Parr All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- 1.Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- 2.Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- 3.Neither the name of the author nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

ASM

Copyright (c) Object Web, ASM project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- 1.Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- 2.Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- 3.Neither the name of the ASM Project nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

DOM4J

Redistribution and use of this software and associated documentation ("Software"), with or without modification, are permitted provided that the following conditions are met:

- 1.Redistributions of source code must retain copyright statements and notices. Redistributions must also contain a copy of this document.
- 2.Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- 3.The name "DOM4J" must not be used to endorse or promote products derived from this Software without prior written permission of MetaStuff, Ltd. For written permission, please contact dom4j-info@metastuff.com.
- 4.Products derived from this Software may not be called "DOM4J" nor may "DOM4J" appear in their names without prior written permission of MetaStuff, Ltd. DOM4J is a registered trademark of MetaStuff, Ltd.

Due credit should be given to the DOM4J Project - <http://www.dom4j.org>

THIS SOFTWARE IS PROVIDED BY METASTUFF, LTD. AND CONTRIBUTORS ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL METASTUFF, LTD. OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright 2001-2005 (C) MetaStuff, Ltd. All Rights Reserved.

JDOM

Copyright (C) 2000-2004 Jason Hunter & Brett McLaughlin.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1.Redistributions of source code must retain the above copyright notice, this list of conditions, and the following disclaimer.

2.Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the disclaimer that follows these conditions in the documentation and/or other materials provided with the distribution.

3.The name "JDOM" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact request@jdom.org.

Products derived from this software may not be called "JDOM", nor may "JDOM" appear in their name, without prior written permission from the JDOM Project Management request@jdom.org.

In addition, we request (but do not require) that you include in the end-user documentation provided with the redistribution and/or in the software itself an acknowledgement equivalent to the following:

"This product includes software developed by the JDOM Project (<http://www.jdom.org/>)."

Alternatively, the acknowledgment may be graphical using the logos available at <http://www.jdom.org/images/logos>.

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE JDOM AUTHORS OR THE PROJECT CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software consists of voluntary contributions made by many individuals on behalf of the JDOM Project and was originally created by Jason Hunter <jhunter@jdom.org> and Brett McLaughlin <brett@jdom.org>. For more information on the JDOM Project, please see <<http://www.jdom.org/>>.

XStream

Copyright (c) 2003-2006, Joe Walnes

Copyright (c) 2006-2007, XStream Committers

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of XStream nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

PAL Artistic License

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications.

"Package" refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection of files created through textual modification.

"Standard Version" refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder.

"Copyright Holder" is whoever is named in the copyright or copyrights for the package.

"You" is you, if you're thinking about copying or distributing this Package.

"Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)

"Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1.You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2.You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3.You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

a)place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

b)use the modified Package only within your corporation or organization.

c)rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

d)make other distribution arrangements with the Copyright Holder.

4.You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a)distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b)accompany the distribution with the machine-readable source of the Package with your modifications.

c)accompany any non-standard executables with their corresponding Standard Version executables, giving the non-standard executables non-standard names, and clearly documenting the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.

d)make other distribution arrangements with the Copyright Holder.

5.You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own.

6.The scripts and library files supplied as input to or produced as output from the programs of this package do not automatically fall under the copyright of this Package, but belong to whomever generated them, and may be sold commercially, and may be aggregated with this Package.

7.C or perl subroutines supplied by you and linked into this Package shall not be considered part of this Package.

8.The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

9.THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Bouncy Castle APIs

Bouncy Castle

Copyright (c) 2000 - 2006 The Legion Of The Bouncy Castle (<http://www.bouncycastle.org>)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

PDF Box

PDFBOX

Copyright (c) 2003-2005, www.pdfbox.org

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- 1.Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- 2.Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- 3.Neither the name of pdfbox; nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

XFire

Copyright (c) 2005 Envoi Solutions LLC

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Jaxen

\$Id: LICENSE.txt,v 1.5 2006/02/05 21:49:04 elharo Exp \$

Copyright 2003-2006 The Werken Company. All Rights Reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

- * Neither the name of the Jaxen Project nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

WSDL4J

Common Public License v1.0

03 Mar 2005

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS COMMON PUBLIC LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.

DEFINITIONS

"Contribution" means:

in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and

in the case of each subsequent Contributor:

changes to the Program, and

additions to the Program; where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone acting on such Contributor's behalf. Contributions do not include additions to the Program which: (i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and (ii) are not derivative works of the Program.

"Contributor" means any person or entity that distributes the Program.

"Licensed Patents " mean patent claims licensable by a Contributor which are necessarily infringed by the use or sale of its Contribution alone or when combined with the Program.

"Program" means the Contributions distributed in accordance with this Agreement.

"Recipient" means anyone who receives the Program under this Agreement, including all Contributors.

GRANT OF RIGHTS

Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free copyright license to reproduce, prepare derivative works of, publicly display, publicly perform, distribute and sublicense the Contribution of such Contributor, if any, and such derivative works, in source code and object code form.

Subject to the terms of this Agreement, each Contributor hereby grants Recipient a non-exclusive, worldwide, royalty-free patent license under Licensed Patents to make, use, sell, offer to sell, import and otherwise transfer the Contribution of such Contributor, if any, in source code and object code form. This patent license shall apply to the combination of the Contribution and the Program if, at the time the Contribution is added by the Contributor, such addition of the Contribution causes such combination to be covered by the Licensed Patents. The patent license shall not apply to any other combinations which include the Contribution. No hardware per se is licensed hereunder.

Recipient understands that although each Contributor grants the licenses to its Contributions set forth herein, no assurances are provided by any Contributor that the Program does not infringe the patent or other intellectual property rights of any other entity. Each Contributor disclaims any liability to Recipient for claims brought by any other entity based on infringement of intellectual property rights or otherwise. As a condition to exercising the rights and licenses granted hereunder, each Recipient hereby assumes sole responsibility to secure any other intellectual property rights needed, if any. For example, if a third party patent license is required to allow Recipient to distribute the Program, it is Recipient's responsibility to acquire that license before distributing the Program.

Each Contributor represents that to its knowledge it has sufficient copyright rights in its Contribution, if any, to grant the copyright license set forth in this Agreement.

REQUIREMENTS

A Contributor may choose to distribute the Program in object code form under its own license agreement, provided that:

it complies with the terms and conditions of this Agreement; and

its license agreement:

effectively disclaims on behalf of all Contributors all warranties and conditions, express and implied, including warranties or conditions of title and non-infringement, and implied warranties or conditions of merchantability and fitness for a particular purpose;

effectively excludes on behalf of all Contributors all liability for damages, including direct, indirect, special, incidental and consequential damages, such as lost profits;

states that any provisions which differ from this Agreement are offered by that Contributor alone and not by any other party; and

states that source code for the Program is available from such Contributor, and informs licensees how to obtain it in a reasonable manner on or through a medium customarily used for software exchange.

When the Program is made available in source code form:

it must be made available under this Agreement; and

a copy of this Agreement must be included with each copy of the Program.

Contributors may not remove or alter any copyright notices contained within the Program.

Each Contributor must identify itself as the originator of its Contribution, if any, in a manner that reasonably allows subsequent Recipients to identify the originator of the Contribution.

COMMERCIAL DISTRIBUTION

Commercial distributors of software may accept certain responsibilities with respect to end users, business partners and the like. While this license is intended to facilitate the commercial use of the Program, the Contributor who includes the Program in a commercial product offering should do so in a manner which does not create potential liability for other Contributors. Therefore, if a Contributor includes the Program in a commercial product offering, such Contributor ("Commercial Contributor") hereby agrees to defend and indemnify every other Contributor ("Indemnified Contributor") against any losses, damages and costs (collectively "Losses") arising from claims, lawsuits and other legal actions brought by a third party against the Indemnified Contributor to the extent caused by the acts or omissions of such Commercial Contributor in connection with its distribution of the Program in a commercial product offering. The obligations in this section do not apply to any claims or Losses relating to any actual or alleged intellectual property infringement. In order to qualify, an Indemnified Contributor must: a) promptly notify the Commercial Contributor in writing of such claim, and b) allow the Commercial Contributor to control, and cooperate with the Commercial Contributor in, the defense and any related settlement negotiations. The Indemnified Contributor may participate in any such claim at its own expense.

For example, a Contributor might include the Program in a commercial product offering, Product X. That Contributor is then a Commercial Contributor. If that Commercial Contributor then makes performance claims, or offers warranties related to Product X, those performance claims and warranties are such Commercial Contributor's responsibility alone. Under this section, the

Commercial Contributor would have to defend claims against the other Contributors related to those performance claims and warranties, and if a court requires any other Contributor to pay any damages as a result, the Commercial Contributor must pay those damages.

NO WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE PROGRAM IS PROVIDED ON AN "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each Recipient is solely responsible for determining the appropriateness of using and distributing the Program and assumes all risks associated with its exercise of rights under this Agreement, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

DISCLAIMER OF LIABILITY

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, NEITHER RECIPIENT NOR ANY CONTRIBUTORS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE PROGRAM OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

GENERAL

If any provision of this Agreement is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this Agreement, and without further action by the parties hereto, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

If Recipient institutes patent litigation against a Contributor with respect to a patent applicable to software (including a cross-claim or counterclaim in a lawsuit), then any patent licenses granted by that Contributor to such Recipient under this Agreement shall terminate as of the date such litigation is filed. In addition, if Recipient institutes patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Program itself (excluding combinations of the Program with other software or hardware) infringes such Recipient's patent(s), then such Recipient's rights granted under Section 2(b) shall terminate as of the date such litigation is filed.

All Recipient's rights under this Agreement shall terminate if it fails to comply with any of the material terms or conditions of this Agreement and does not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If all Recipient's rights under this Agreement terminate, Recipient agrees to cease use and distribution of the Program as soon as reasonably practicable. However, Recipient's obligations under this Agreement and any licenses granted by Recipient relating to the Program shall continue and survive.

Everyone is permitted to copy and distribute copies of this Agreement, but in order to avoid inconsistency the Agreement is copyrighted and may only be modified in the following manner. The Agreement Steward reserves the right to publish new versions (including revisions) of this Agreement from time to time. No one other than the Agreement Steward has the right to modify this Agreement. IBM is the initial Agreement Steward. IBM may assign the responsibility to serve as the Agreement Steward to a suitable separate entity. Each new version of the Agreement will be given a distinguishing version number. The Program (including Contributions) may always be

distributed subject to the version of the Agreement under which it was received. In addition, after a new version of the Agreement is published, Contributor may elect to distribute the Program (including its Contributions) under the new version. Except as expressly stated in Sections 2(a) and 2(b) above, Recipient receives no rights or licenses to the intellectual property of any Contributor under this Agreement, whether expressly, by implication, estoppel or otherwise. All rights in the Program not expressly granted under this Agreement are reserved.

This Agreement is governed by the laws of the State of New York and the intellectual property laws of the United States of America. No party to this Agreement will bring a legal action under this Agreement more than one year after the cause of action arose. Each party waives its rights to a jury trial in any resulting litigation.

BSD License

The PostgreSQL JDBC driver is distributed under the BSD license, same as the server. The simplest explanation of the licensing terms is that you can do whatever you want with the product and source code as long as you don't claim you wrote it or sue us. You should give it a read though, it's only half a page.

Copyright (c) 1997-2008, PostgreSQL Global Development Group

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the PostgreSQL Global Development Group nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Open Software License v. 3.0

This Open Software License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following licensing notice adjacent to the copyright notice for the Original Work:

Licensed under the Open Software License version 3.0

1) *Grant of Copyright License.* Licensor grants You a worldwide, royalty-free, non-exclusive, sublicensable license, for the duration of the copyright, to do the following:

- a) to reproduce the Original Work in copies, either alone or as part of a collective work;
- b) to translate, adapt, alter, transform, modify, or arrange the Original Work, thereby creating derivative works ("Derivative Works") based upon the Original Work;
- c) to distribute or communicate copies of the Original Work and Derivative Works to the public, with the proviso that copies of Original Work or Derivative Works that You distribute or communicate shall be licensed under this Open Software License;
- d) to perform the Original Work publicly; and
- e) to display the Original Work publicly.

2) *Grant of Patent License.* Licensor grants You a worldwide, royalty-free, non-exclusive, sublicensable license, under patent claims owned or controlled by the Licensor that are embodied in the Original Work as furnished by the Licensor, for the duration of the patents, to make, use, sell, offer for sale, have made, and import the Original Work and Derivative Works.

3) *Grant of Source Code License.* The term "Source Code" means the preferred form of the Original Work for making modifications to it and all available documentation describing how to modify the Original Work. Licensor agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves the right to satisfy this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work.

4) *Exclusions From License Grant.* Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior permission of the Licensor. Except as expressly stated herein, nothing in this License grants any license to Licensor's trademarks, copyrights, patents, trade secrets or any other intellectual property. No patent license is granted to make, use, sell, offer for sale, have made, or import embodiments of any patent claims other than the licensed claims defined in Section 2. No license is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under terms different from this License any Original Work that Licensor otherwise would have a right to license.

5) *External Deployment.* The term "External Deployment" means the use, distribution, or communication of the Original Work or Derivative Works in any way such that the Original Work or Derivative Works may be used by anyone other than You, whether those works are distributed or communicated to those persons or made available as an application intended for use over a network. As an express condition for the grants of license hereunder, You must treat any External Deployment by You of the Original Work or a Derivative Work as a distribution under section 1(c).

6) *Attribution Rights*. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent, or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) *Warranty of Provenance and Disclaimer of Warranty*. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately preceding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of non-infringement, merchantability or fitness for a particular purpose. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to the Original Work is granted by this License except under this disclaimer.

8) *Limitation of Liability*. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to anyone for any indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to the extent applicable law prohibits such limitation.

9) *Acceptance and Termination*. If, at any time, You expressly assented to this License, that assent indicates your clear and irrevocable acceptance of this License and all of its terms and conditions. If You distribute or communicate copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. This License conditions your rights to undertake the activities listed in Section 1, including your right to create Derivative Works based upon the Original Work, and doing so without honoring these terms and conditions is prohibited by copyright law and international treaty. Nothing in this License is intended to affect copyright exceptions and limitations (including $\frac{1}{2}$ fair use or $\frac{1}{2}$ fair dealing). This License shall terminate immediately and You may no longer exercise any of the rights granted to You by this License upon your failure to honor the conditions in Section 1(c).

10) *Termination for Patent Action*. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) *Jurisdiction, Venue and Governing Law*. Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of copyright or patent law in the appropriate jurisdiction. This section shall survive the termination of this License.

12) *Attorneys' Fees*. In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section shall survive the termination of this License.

13) *Miscellaneous*. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) *Definition of "You" in This License*. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

15) *Right to Use*. You may use the Original Work in all ways not otherwise restricted or conditioned by this License or by law, and Licensor promises not to interfere with or be responsible for such uses by You.

16) *Modification of This License*. This License is Copyright © 2005 Lawrence Rosen. Permission is granted to copy, distribute, or communicate this License without modification. Nothing in this License permits You to modify this License as applied to the Original Work or to Derivative Works. However, You may modify the text of this License and copy, distribute or communicate your modified version (the "Modified License") and apply it to other original works of authorship subject to the following conditions: (i) You may not indicate in any way that your Modified License is the "Open Software License" or "OSL" and you may not use those names in the name of your Modified License; (ii) You must replace the notice specified in the first paragraph above with the notice "Licensed under <insert your license name here>" or with a notice of your own that is not confusingly similar to the notice in this License; and (iii) You may not claim that your original works are open source software unless your Modified License has been approved by Open Source Initiative (OSI) and You comply with its license review and certification process.

Mozilla Public License Version 1.1

1. Definitions.

1.0.1. "Commercial Use"

means distribution or otherwise making the Covered Code available to a third party.

1.1. "Contributor"

means each entity that creates or contributes to the creation of Modifications.

1.2. "Contributor Version"

means the combination of the Original Code, prior Modifications used by a Contributor, and the Modifications made by that particular Contributor.

1.3. "Covered Code"

means the Original Code or Modifications or the combination of the Original Code and Modifications, in each case including portions thereof.

1.4. "Electronic Distribution Mechanism"

means a mechanism generally accepted in the software development community for the electronic transfer of data.

1.5. "Executable"

means Covered Code in any form other than Source Code.

1.6. "Initial Developer"

means the individual or entity identified as the Initial Developer in the Source Code notice required by Exhibit A.

1.7. "Larger Work"

means a work which combines Covered Code or portions thereof with code not governed by the terms of this License.

1.8. "License"

means this document.

1.8.1. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.

1.9. "Modifications"

means any addition to or deletion from the substance or structure of either the Original Code or any previous Modifications. When Covered Code is released as a series of files, a Modification is:

Any addition to or deletion from the contents of a file containing Original Code or previous Modifications.

Any new file that contains any part of the Original Code or previous Modifications.

1.10. "Original Code"

means Source Code of computer software code which is described in the Source Code notice required by Exhibit A as Original Code, and which, at the time of its release under this License is not already Covered Code governed by this License.

1.10.1. "Patent Claims"

means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process, and apparatus claims, in any patent Licensable by grantor.

1.11. "Source Code"

means the preferred form of the Covered Code for making modifications to it, including all modules it contains, plus any associated interface definition files, scripts used to control compilation and installation of an Executable, or source code differential comparisons against either the Original Code or another well known, available Covered Code of the Contributor's choice. The Source Code can be in a compressed or archival form, provided the appropriate decompression or de-archiving software is widely available for no charge.

1.12. "You" (or "Your")

means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License or a future version of this License issued under Section 6.1. For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. Source Code License.

2.1. The Initial Developer Grant.

The Initial Developer hereby grants You a world-wide, royalty-free, non-exclusive license, subject to third party intellectual property claims:

under intellectual property rights (other than patent or trademark) Licensable by Initial Developer to use, reproduce, modify, display, perform, sublicense and distribute the Original Code (or portions thereof) with or without Modifications, and/or as part of a Larger Work; and under Patents Claims infringed by the making, using or selling of Original Code, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the Original Code (or portions thereof).

the licenses granted in this Section 2.1 (a) and (b) are effective on the date Initial Developer first distributes Original Code under the terms of this License.

Notwithstanding Section 2.1 (b) above, no patent license is granted: 1) for code that You delete from the Original Code; 2) separate from the Original Code; or 3) for infringements caused by: i) the modification of the Original Code or ii) the combination of the Original Code with other software or devices.

2.2. Contributor Grant.

Subject to third party intellectual property claims, each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license

under intellectual property rights (other than patent or trademark) Licensable by Contributor, to use, reproduce, modify, display, perform, sublicense and distribute the Modifications created by such Contributor (or portions thereof) either on an unmodified basis, with other Modifications, as Covered Code and/or as part of a Larger Work; and

under Patent Claims infringed by the making, using, or selling of Modifications made by that Contributor either alone and/or in combination with its Contributor Version (or portions of such combination), to make, use, sell, offer for sale, have made, and/or otherwise dispose of: 1) Modifications made by that Contributor (or portions thereof); and 2) the combination of Modifications made by that Contributor with its Contributor Version (or portions of such combination).

the licenses granted in Sections 2.2 (a) and 2.2 (b) are effective on the date Contributor first makes Commercial Use of the Covered Code.

Notwithstanding Section 2.2 (b) above, no patent license is granted: 1) for any code that Contributor has deleted from the Contributor Version; 2) separate from the Contributor Version; 3) for infringements caused by: i) third party modifications of Contributor Version or ii) the combination of Modifications made by that Contributor with other software (except as part of the Contributor Version) or other devices; or 4) under Patent Claims infringed by Covered Code in the absence of Modifications made by that Contributor.

3. Distribution Obligations.

3.1. Application of License.

The Modifications which You create or to which You contribute are governed by the terms of this License, including without limitation Section 2.2. The Source Code version of Covered Code may be distributed only under the terms of this License or a future version of this License released under Section 6.1, and You must include a copy of this License with every copy of the Source Code You

distribute. You may not offer or impose any terms on any Source Code version that alters or restricts the applicable version of this License or the recipients' rights hereunder. However, You may include an additional document offering the additional rights described in Section 3.5.

3.2. Availability of Source Code.

Any Modification which You create or to which You contribute must be made available in Source Code form under the terms of this License either on the same media as an Executable version or via an accepted Electronic Distribution Mechanism to anyone to whom you made an Executable version available; and if made available via Electronic Distribution Mechanism, must remain available for at least twelve (12) months after the date it initially became available, or at least six (6) months after a subsequent version of that particular Modification has been made available to such recipients. You are responsible for ensuring that the Source Code version remains available even if the Electronic Distribution Mechanism is maintained by a third party.

3.3. Description of Modifications.

You must cause all Covered Code to which You contribute to contain a file documenting the changes You made to create that Covered Code and the date of any change. You must include a prominent statement that the Modification is derived, directly or indirectly, from Original Code provided by the Initial Developer and including the name of the Initial Developer in (a) the Source Code, and (b) in any notice in an Executable version or related documentation in which You describe the origin or ownership of the Covered Code.

3.4. Intellectual Property Matters

(a) Third Party Claims

If Contributor has knowledge that a license under a third party's intellectual property rights is required to exercise the rights granted by such Contributor under Sections 2.1 or 2.2, Contributor must include a text file with the Source Code distribution titled "LEGAL" which describes the claim and the party making the claim in sufficient detail that a recipient will know whom to contact. If Contributor obtains such knowledge after the Modification is made available as described in Section 3.2, Contributor shall promptly modify the LEGAL file in all copies Contributor makes available thereafter and shall take other steps (such as notifying appropriate mailing lists or newsgroups) reasonably calculated to inform those who received the Covered Code that new knowledge has been obtained.

(b) Contributor APIs

If Contributor's Modifications include an application programming interface and Contributor has knowledge of patent licenses which are reasonably necessary to implement that API, Contributor must also include this information in the *legal* file.

(c) Representations.

Contributor represents that, except as disclosed pursuant to Section 3.4 (a) above, Contributor believes that Contributor's Modifications are Contributor's original creation(s) and/or Contributor has sufficient rights to grant the rights conveyed by this License.

3.5. Required Notices.

You must duplicate the notice in Exhibit A in each file of the Source Code. If it is not possible to put such notice in a particular Source Code file due to its structure, then You must include such notice in a location (such as a relevant directory) where a user would be likely to look for such a notice. If You created one or more Modification(s) You may add your name as a Contributor to the notice

described in Exhibit A. You must also duplicate this License in any documentation for the Source Code where You describe recipients' rights or ownership rights relating to Covered Code. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Code. However, You may do so only on Your own behalf, and not on behalf of the Initial Developer or any Contributor. You must make it absolutely clear than any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of warranty, support, indemnity or liability terms You offer.

3.6. Distribution of Executable Versions.

You may distribute Covered Code in Executable form only if the requirements of Sections 3.1, 3.2, 3.3, 3.4 and 3.5 have been met for that Covered Code, and if You include a notice stating that the Source Code version of the Covered Code is available under the terms of this License, including a description of how and where You have fulfilled the obligations of Section 3.2. The notice must be conspicuously included in any notice in an Executable version, related documentation or collateral in which You describe recipients' rights relating to the Covered Code. You may distribute the Executable version of Covered Code or ownership rights under a license of Your choice, which may contain terms different from this License, provided that You are in compliance with the terms of this License and that the license for the Executable version does not attempt to limit or alter the recipient's rights in the Source Code version from the rights set forth in this License. If You distribute the Executable version under a different license You must make it absolutely clear that any terms which differ from this License are offered by You alone, not by the Initial Developer or any Contributor. You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of any such terms You offer.

3.7. Larger Works.

You may create a Larger Work by combining Covered Code with other code not governed by the terms of this License and distribute the Larger Work as a single product. In such a case, You must make sure the requirements of this License are fulfilled for the Covered Code.

4. Inability to Comply Due to Statute or Regulation.

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Code due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be included in the *legal* file described in Section 3.4 and must be included with all distributions of the Source Code. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Application of this License.

This License applies to code to which the Initial Developer has attached the notice in Exhibit A and to related Covered Code.

6. Versions of the License.

6.1. New Versions

Netscape Communications Corporation ("Netscape") may publish revised and/or new versions of the License from time to time. Each version will be given a distinguishing version number.

6.2. Effect of New Versions

Once Covered Code has been published under a particular version of the License, You may always continue to use it under the terms of that version. You may also choose to use such Covered Code under the terms of any subsequent version of the License published by Netscape. No one other than Netscape has the right to modify the terms applicable to Covered Code created under this License.

6.3. Derivative Works

If You create or use a modified version of this License (which you may only do in order to apply it to code which is not already Covered Code governed by this License), You must (a) rename Your license so that the phrases "Mozilla", "MOZILLAPL", "MOZPL", "Netscape", "MPL", "NPL" or any confusingly similar phrase do not appear in your license (except to note that your license differs from this License) and (b) otherwise make it clear that Your version of the license contains terms which differ from the Mozilla Public License and Netscape Public License. (Filling in the name of the Initial Developer, Original Code or Contributor in the notice described in Exhibit A shall not of themselves be deemed to be modifications of this License.)

7. Disclaimer of warranty

Covered code is provided under this license on an "as is" basis, without warranty of any kind, either expressed or implied, including, without limitation, warranties that the covered code is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the covered code is with you. Should any covered code prove defective in any respect, you (not the initial developer or any other contributor) assume the cost of any necessary servicing, repair or correction. This disclaimer of warranty constitutes an essential part of this license. No use of any covered code is authorized hereunder except under this disclaimer.

8. Termination

8.1. This License and the rights granted hereunder will terminate automatically if You fail to comply with terms herein and fail to cure such breach within 30 days of becoming aware of the breach. All sublicenses to the Covered Code which are properly granted shall survive any termination of this License. Provisions which, by their nature, must remain in effect beyond the termination of this License shall survive.

8.2. If You initiate litigation by asserting a patent infringement claim (excluding declaratory judgment actions) against Initial Developer or a Contributor (the Initial Developer or Contributor against whom You file such action is referred to as "Participant") alleging that:

such Participant's Contributor Version directly or indirectly infringes any patent, then any and all rights granted by such Participant to You under Sections 2.1 and/or 2.2 of this License shall, upon 60 days notice from Participant terminate prospectively, unless if within 60 days after receipt of notice You either: (i) agree in writing to pay Participant a mutually agreeable reasonable royalty for Your past and future use of Modifications made by such Participant, or (ii) withdraw Your litigation claim with respect to the Contributor Version against such Participant. If within 60 days of notice, a reasonable royalty and payment arrangement are not mutually agreed upon in writing by the parties or the litigation claim is not withdrawn, the rights granted by Participant to You under Sections 2.1 and/or 2.2 automatically terminate at the expiration of the 60 day notice period specified above.

any software, hardware, or device, other than such Participant's Contributor Version, directly or indirectly infringes any patent, then any rights granted to You by such Participant under Sections 2.1(b) and 2.2(b) are revoked effective as of the date You first made, used, sold, distributed, or had made, Modifications made by that Participant.

8.3. If You assert a patent infringement claim against Participant alleging that such Participant's Contributor Version directly or indirectly infringes any patent where such claim is resolved (such as by license or settlement) prior to the initiation of patent infringement litigation, then the reasonable value of the licenses granted by such Participant under Sections 2.1 or 2.2 shall be taken into account in determining the amount or value of any payment or license.

8.4. In the event of termination under Sections 8.1 or 8.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or any distributor hereunder prior to termination shall survive termination.

9. Limitation of liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall you, the initial developer, any other contributor, or any distributor of covered code, or any supplier of any of such parties, be liable to any person for any indirect, special, incidental, or consequential damages of any character including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to you.

10. U.S. government end users

The Covered Code is a "commercial item," as that term is defined in 48 C.F.R. 2.101 (Oct. 1995), consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 C.F.R. 12.212 (Sept. 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire Covered Code with only those rights set forth herein.

11. Miscellaneous

This License represents the complete agreement concerning subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by California law provisions (except to the extent applicable law, if any, provides otherwise), excluding its conflict-of-law provisions. With respect to disputes in which at least one party is a citizen of, or an entity chartered or registered to do business in the United States of America, any litigation relating to this License shall be subject to the jurisdiction of the Federal Courts of the Northern District of California, with venue lying in Santa Clara County, California, with the losing party responsible for costs, including without limitation, court costs and reasonable attorneys' fees and expenses. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not apply to this License.

12. Responsibility for claims

As between Initial Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and You agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.

13. Multiple-licensed code

Initial Developer may designate portions of the Covered Code as "Multiple-Licensed". "Multiple-Licensed" means that the Initial Developer permits you to utilize portions of the Covered Code under Your choice of the MPL or the alternative licenses, if any, specified by the Initial Developer in the file described in Exhibit A.

Exhibit A - Mozilla Public License.

"The contents of this file are subject to the Mozilla Public License Version 1.1 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.mozilla.org/MPL/>

Software distributed under the License is distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations

under the License.

The Original Code is _____.

The Initial Developer of the Original Code is _____.

Portions created by _____ are Copyright (C) _____
_____. All Rights Reserved.

Contributor(s): _____.

Alternatively, the contents of this file may be used under the terms of the _____ license (the "[] License"), in which case the provisions of [] License are applicable instead of those above. If you wish to allow use of your version of this file only under the terms of the [] License and not to allow others to use your version of this file under the MPL, indicate your decision by deleting the provisions above and replace them with the notice and other provisions required by the [] License. If you do not delete the provisions above, a recipient may use your version of this file under either the MPL or the [] License."

NOTE: The text of this Exhibit A may differ slightly from the text of the notices in the Source Code files of the Original Code. You should use the text of this Exhibit A rather than the text found in the Original Code Source Code for Your Modifications.

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to

this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED

INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>

Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or

(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program. You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program

`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

Fonts are (c) Bitstream (see below). DejaVu changes are in public domain. Glyphs imported from Arev fonts are (c) Tavmjong Bah (see below)

Bitstream Vera Fonts Copyright

Copyright (c) 2003 by Bitstream, Inc. All Rights Reserved. Bitstream Vera is a trademark of Bitstream, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of the fonts accompanying this license ("Fonts") and associated documentation files (the "Font Software"), to reproduce and distribute the Font Software, including without limitation the rights to use, copy, merge, publish, distribute, and/or sell copies of the Font Software, and to permit persons to whom the Font Software is furnished to do so, subject to the following conditions:

The above copyright and trademark notices and this permission notice shall be included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular the designs of glyphs or characters in the Fonts may be modified and additional glyphs or characters may be added to the Fonts, only if the fonts are renamed to names not containing either the words "Bitstream" or the word "Vera".

This License becomes null and void to the extent applicable to Fonts or Font Software that has been modified and is distributed under the "Bitstream Vera" names.

The Font Software may be sold as part of a larger software package but no copy of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL BITSTREAM OR THE GNOME FOUNDATION BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the names of Gnome, the Gnome Foundation, and Bitstream Inc., shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Font Software without prior written authorization from the Gnome Foundation or Bitstream Inc., respectively. For further information, contact: fonts at gnome dot org.

Arev Fonts Copyright

Copyright (c) 2006 by Tavmjong Bah. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of the fonts accompanying this license ("Fonts") and associated documentation files (the "Font Software"), to reproduce and distribute the modifications to the Bitstream Vera Font Software, including without limitation the rights to use, copy, merge, publish, distribute, and/or sell copies of the Font Software, and to permit persons to whom the Font Software is furnished to do so, subject to the following conditions:

The above copyright and trademark notices and this permission notice shall be included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular the designs of glyphs or characters in the Fonts may be modified and additional glyphs or characters may be added to the Fonts, only if the fonts are renamed to names not containing either the words "Tavmjong Bah" or the word "Arev".

This License becomes null and void to the extent applicable to Fonts or Font Software that has been modified and is distributed under the "Tavmjong Bah Arev" names.

The Font Software may be sold as part of a larger software package but no copy of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL TAVMJONG BAH BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the name of Tavmjong Bah shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Font Software without prior written authorization from Tavmjong Bah. For further information, contact: [tavmjong @ free. fr](mailto:tavmjong@free.fr).

Ⓢid: LICENSE 2133 2007-11-28 02:46:28Z lechimp Ⓢ

Java Util Concurrent Public Domain

ICU (license below)

ICU License - ICU 1.8.1 and later

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1995-2011 International Business Machines Corporation and others

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

iText	LGPL
JavaAssist	LGPL
JSoup	Apache 2.0
JMDNS	Apache 2.0
Password Complexity Validator	(Fork of Apache 2.0 Product)
Snowtide, Oracle JDBC, NetApp, Centera	(Commercial License)
Apache POI	Apache 2.0
PostGres JDBC	BSD
Aperture	(WP Extractor) (Special License, below)

Aperture License (for releases from 1.3.0 onward)

The Aperture Framework itself is distributed under a BSD-style license. The copyright holder for each particular source file is given within the file itself.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution

Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR

BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Third party libs

Licenses for third party libraries used in Aperture can be found in `./lib/`

The use of BSD in the core framework allows developers to license implementations of Aperture APIs under any license they see fit, including proprietary and commercial licenses.

Rationale

The aperture framework is free to use and to extend. Through use of BSD, we experience that the framework is more useful and users are willing to contribute to the project.

SLF4J MIT License, below

Copyright (c) 2004-2008 QOS.ch All rights reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software. THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Spring Framework Apache 2.0

MS SQL JDBC (Commercial License)

Metro JAXWS (CDDL License, below)

COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL)Version 1.1

1. Definitions.

1.1. "Contributor" means each individual or entity that creates or contributes to the creation of Modifications.

1.2. "Contributor Version" means the combination of the Original Software, prior Modifications used by a Contributor (if any), and the Modifications made by that particular Contributor.

1.3. "Covered Software" means (a) the Original Software, or (b) Modifications, or (c) the combination of files containing Original Software with files containing Modifications, in each case including portions thereof.

1.4. "Executable" means the Covered Software in any form other than Source Code.

1.5. "Initial Developer" means the individual or entity that first makes Original Software available under this License.

1.6. "Larger Work" means a work which combines Covered Software or portions thereof with code not governed by the terms of this License.

1.7. "License" means this document.

1.8. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.

1.9. "Modifications" means the Source Code and Executable form of any of the following:

A. Any file that results from an addition to, deletion from or modification of the contents of a file containing Original Software or previous Modifications;

B. Any new file that contains any part of the Original Software or previous Modification; or

C. Any new file that is contributed or otherwise made available under the terms of this License.

1.10. "Original Software" means the Source Code and Executable form of computer software code that is originally released under this License.

1.11. "Patent Claims" means any patent claim(s), now owned or hereafter acquired, including without limitation, method, process, and apparatus claims, in any patent Licensable by grantor.

1.12. "Source Code" means (a) the common form of computer software code in which modifications are made and (b) associated documentation included in or with such code.

1.13. "You" (or "Your") means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants.

2.1. The Initial Developer Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, the Initial Developer hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Initial Developer, to use, reproduce, modify, display, perform, sublicense and distribute the Original Software (or portions thereof), with or without Modifications, and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using or selling of Original Software, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the Original Software (or portions thereof).

(c) The licenses granted in Sections 2.1(a) and (b) are effective on the date Initial Developer first distributes or otherwise makes the Original Software available to a third party under the terms of this License.

(d) Notwithstanding Section 2.1(b) above, no patent license is granted: (1) for code that You delete from the Original Software, or (2) for infringements caused by: (i) the modification of the Original Software, or (ii) the combination of the Original Software with other software or devices.

2.2. Contributor Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Contributor to use, reproduce, modify, display, perform, sublicense and distribute the Modifications created by such Contributor (or portions thereof), either on an unmodified basis, with other Modifications, as Covered Software and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using, or selling of Modifications made by that Contributor either alone and/or in combination with its Contributor Version (or portions of such combination), to make, use, sell, offer for sale, have made, and/or otherwise dispose of: (1) Modifications made by that Contributor (or portions thereof); and (2) the combination of Modifications made by that Contributor with its Contributor Version (or portions of such combination).

(c) The licenses granted in Sections 2.2(a) and 2.2(b) are effective on the date Contributor first distributes or otherwise makes the Modifications available to a third party.

(d) Notwithstanding Section 2.2(b) above, no patent license is granted: (1) for any code that Contributor has deleted from the Contributor Version; (2) for infringements caused by: (i) third party modifications of Contributor Version, or (ii) the combination of Modifications made by that Contributor with other software (except as part of the Contributor Version) or other devices; or (3) under Patent Claims infringed by Covered Software in the absence of Modifications made by that Contributor.

3. Distribution Obligations.

3.1. Availability of Source Code.

Any Covered Software that You distribute or otherwise make available in Executable form must also be made available in Source Code form and that Source Code form must be distributed only under the terms of this License. You must include a copy of this License with every copy of the Source Code form of the Covered Software You distribute or otherwise make available. You must inform recipients of any such Covered Software in Executable form as to how they can obtain such Covered Software in Source Code form in a reasonable manner on or through a medium customarily used for software exchange.

3.2. Modifications.

The Modifications that You create or to which You contribute are governed by the terms of this License. You represent that You believe Your Modifications are Your original creation(s) and/or You have sufficient rights to grant the rights conveyed by this License.

3.3. Required Notices.

You must include a notice in each of Your Modifications that identifies You as the Contributor of the Modification. You may not remove or alter any copyright, patent or trademark notices contained within the Covered Software, or any notices of licensing or any descriptive text giving attribution to any Contributor or the Initial Developer.

3.4. Application of Additional Terms.

You may not offer or impose any terms on any Covered Software in Source Code form that alters or restricts the applicable version of this License or the recipients' rights hereunder. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more

recipients of Covered Software. However, you may do so only on Your own behalf, and not on behalf of the Initial Developer or any Contributor. You must make it absolutely clear that any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of warranty, support, indemnity or liability terms You offer.

3.5. Distribution of Executable Versions.

You may distribute the Executable form of the Covered Software under the terms of this License or under the terms of a license of Your choice, which may contain terms different from this License, provided that You are in compliance with the terms of this License and that the license for the Executable form does not attempt to limit or alter the recipient's rights in the Source Code form from the rights set forth in this License. If You distribute the Covered Software in Executable form under a different license, You must make it absolutely clear that any terms which differ from this License are offered by You alone, not by the Initial Developer or Contributor. You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of any such terms You offer.

3.6. Larger Works.

You may create a Larger Work by combining Covered Software with other code not governed by the terms of this License and distribute the Larger Work as a single product. In such a case, You must make sure the requirements of this License are fulfilled for the Covered Software.

4. Versions of the License.

4.1. New Versions.

Oracle is the initial license steward and may publish revised and/or new versions of this License from time to time. Each version will be given a distinguishing version number. Except as provided in Section 4.3, no one other than the license steward has the right to modify this License.

4.2. Effect of New Versions.

You may always continue to use, distribute or otherwise make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. If the Initial Developer includes a notice in the Original Software prohibiting it from being distributed or otherwise made available under any subsequent version of the License, You must distribute and make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. Otherwise, You may also choose to use, distribute or otherwise make the Covered Software available under the terms of any subsequent version of the License published by the license steward.

4.3. Modified Versions.

When You are an Initial Developer and You want to create a new license for Your Original Software, You may create and use a modified version of this License if You: (a) rename the license and remove any references to the name of the license steward (except to note that the license differs from this License); and (b) otherwise make it clear that the license contains terms which differ from this License.

5. DISCLAIMER OF WARRANTY.

COVERED SOFTWARE IS PROVIDED UNDER THIS LICENSE ON AN "AS IS" BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES THAT THE COVERED SOFTWARE IS FREE OF DEFECTS, MERCHANTABLE, FIT FOR A PARTICULAR

PURPOSE OR NON-INFRINGEMENT. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE COVERED SOFTWARE IS WITH YOU. SHOULD ANY COVERED SOFTWARE PROVE DEFECTIVE IN ANY RESPECT, YOU (NOT THE INITIAL DEVELOPER OR ANY OTHER CONTRIBUTOR) ASSUME THE COST OF ANY NECESSARY SERVICING, REPAIR OR CORRECTION. THIS DISCLAIMER OF WARRANTY CONSTITUTES AN ESSENTIAL PART OF THIS LICENSE. NO USE OF ANY COVERED SOFTWARE IS AUTHORIZED HEREUNDER EXCEPT UNDER THIS DISCLAIMER.

6. TERMINATION.

6.1. This License and the rights granted hereunder will terminate automatically if You fail to comply with terms herein and fail to cure such breach within 30 days of becoming aware of the breach. Provisions which, by their nature, must remain in effect beyond the termination of this License shall survive.

6.2. If You assert a patent infringement claim (excluding declaratory judgment actions) against Initial Developer or a Contributor (the Initial Developer or Contributor against whom You assert such claim is referred to as "Participant") alleging that the Participant Software (meaning the Contributor Version where the Participant is a Contributor or the Original Software where the Participant is the Initial Developer) directly or indirectly infringes any patent, then any and all rights granted directly or indirectly to You by such Participant, the Initial Developer (if the Initial Developer is not the Participant) and all Contributors under Sections 2.1 and/or 2.2 of this License shall, upon 60 days notice from Participant terminate prospectively and automatically at the expiration of such 60 day notice period, unless if within such 60 day period You withdraw Your claim with respect to the Participant Software against such Participant either unilaterally or pursuant to a written agreement with Participant.

6.3. If You assert a patent infringement claim against Participant alleging that the Participant Software directly or indirectly infringes any patent where such claim is resolved (such as by license or settlement) prior to the initiation of patent infringement litigation, then the reasonable value of the licenses granted by such Participant under Sections 2.1 or 2.2 shall be taken into account in determining the amount or value of any payment or license.

6.4. In the event of termination under Sections 6.1 or 6.2 above, all end user licenses that have been validly granted by You or any distributor hereunder prior to termination (excluding licenses granted to You by any distributor) shall survive termination.

7. LIMITATION OF LIABILITY.

UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, WHETHER TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL YOU, THE INITIAL DEVELOPER, ANY OTHER CONTRIBUTOR, OR ANY DISTRIBUTOR OF COVERED SOFTWARE, OR ANY SUPPLIER OF ANY OF SUCH PARTIES, BE LIABLE TO ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF SUCH PARTY SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY RESULTING FROM SUCH PARTY'S NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS EXCLUSION AND LIMITATION MAY NOT APPLY TO YOU.

8. U.S. GOVERNMENT END USERS.

The Covered Software is a “commercial item,” as that term is defined in 48 C.F.R. 2.101 (Oct. 1995), consisting of “commercial computer software” (as that term is defined at 48 C.F.R. § 252.227-7014(a)(1)) and “commercial computer software documentation” as such terms are used in 48 C.F.R. 12.212 (Sept. 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire Covered Software with only those rights set forth herein. This U.S. Government Rights clause is in lieu of, and supersedes, any other FAR, DFAR, or other clause or provision that addresses Government rights in computer software under this License.

9. MISCELLANEOUS.

This License represents the complete agreement concerning subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by the law of the jurisdiction specified in a notice contained within the Original Software (except to the extent applicable law, if any, provides otherwise), excluding such jurisdiction's conflict-of-law provisions. Any litigation relating to this License shall be subject to the jurisdiction of the courts located in the jurisdiction and venue specified in a notice contained within the Original Software, with the losing party responsible for costs, including, without limitation, court costs and reasonable attorneys' fees and expenses. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not apply to this License. You agree that You alone are responsible for compliance with the United States export administration regulations (and the export control laws and regulation of any other countries) when You use, distribute or otherwise make available any Covered Software.

10. RESPONSIBILITY FOR CLAIMS.

As between Initial Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and You agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.

NOTICE PURSUANT TO SECTION 9 OF THE COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL)

The code released under the CDDL shall be governed by the laws of the State of California (excluding conflict-of-law provisions). Any litigation relating to this License shall be subject to the jurisdiction of the Federal Courts of the Northern District of California and the state courts of the State of California, with venue lying in Santa Clara County, California.