

Installation and Configuration Guide

Novell Filr 1.0.1

February 2014

Novell.



Legal Notices

Novell, Inc., makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc., makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. See the [Novell International Trade Services Web page \(http://www.novell.com/info/exports/\)](http://www.novell.com/info/exports/) for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2013-2014 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell, Inc.
1800 South Novell Place
Provo, UT 84606
U.S.A.
www.novell.com

Online Documentation: To access the latest online documentation for this and other Novell products, see the [Novell Documentation Web page \(http://www.novell.com/documentation/\)](http://www.novell.com/documentation/).

Novell Trademarks

For Novell trademarks, see [the Novell Trademark and Service Mark list \(http://www.novell.com/company/legal/trademarks/tmlist.html\)](http://www.novell.com/company/legal/trademarks/tmlist.html).

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Contents

About This Guide	7
1 Overview and Planning	9
1.1 What Is Novell Filr?	9
1.1.1 Filr Applications and Appliances	9
1.1.2 Filr Components.	10
1.1.3 Filr Storage	11
1.1.4 Using Novell Filr.	12
1.2 What's New in Novell Filr 1.x	13
1.2.1 Filr 1.x User Enhancements.	13
1.2.2 Filr 1.x Installation Enhancements.	13
1.2.3 Filr 1.x Administration Enhancements	13
1.3 Filr System Requirements	13
1.3.1 Filr Server Requirements.	14
1.3.2 Filr Storage Requirements	16
1.3.3 Filr User Requirements	20
1.3.4 Mobile App Requirements	20
1.3.5 Desktop Application Requirements	20
1.3.6 File Viewer Information	20
1.3.7 Linux File System	21
1.4 Planning a Multi-Server (Clustered) Filr Configuration.	21
1.4.1 Components of a Clustered Environment	21
1.4.2 Filr Clustering.	21
1.4.3 Setting Aside a Filr Appliance for Re-Indexing and Net Folder Synchronization in a Clustered Environment	23
1.4.4 Clustering Limitations.	23
1.5 Planning the File Repository	23
1.5.1 Distributing Different Data Types to Different Locations	23
1.6 Planning Net Folders	24
1.7 Planning the Filr Desktop Application	24
1.8 Recommended Hardware Configurations Based on System Performance	24
1.8.1 Net Folder Indexing and Synchronization Settings	24
1.8.2 Resource Allocations for the Appliance	25
1.8.3 Small Installation Vs. Large Installation	25
2 Installing the Filr Appliance and Configuring the Operating System	27
2.1 Installing the Filr Appliance	27
2.1.1 Downloading the Filr Appliance and Configuring the Virtual Environment.	28
2.1.2 Installing the Filr Appliance	33
2.2 Installing Separate Appliances for a Large Installation	37
2.2.1 Installing the Search Index Appliance	37
2.2.2 Installing the MySQL Database Appliance.	44
2.2.3 Configuring an Existing MySQL Database.	51
3 Configuring Filr for the First Time	53
3.1 Small Deployment Configuration	53
3.2 Large Deployment Configuration	54

4	Configuring and Maintaining the Filr Appliance	57
4.1	Changing Configuration Options for the Filr Appliance	57
4.2	Network Configuration	59
4.2.1	Changing the Network Configuration Settings	59
4.2.2	Port Numbers	60
4.3	Database Configuration	62
4.3.1	Understanding Database Configuration	62
4.3.2	Changing Database Configuration Settings	62
4.3.3	Database Type	63
4.3.4	Database Location	63
4.3.5	Database Credentials	63
4.4	Language	63
4.5	Changing Your Search Index Configuration	64
4.5.1	Understanding Indexing	64
4.5.2	Changing Search Index Configuration Settings	64
4.5.3	Running the Search Index As Its Own Appliance	65
4.5.4	Running Multiple Search Indexes	65
4.6	Changing Clustering Configuration Settings	66
4.7	Changing Reverse Proxy Configuration Settings	66
4.7.1	Understanding Reverse Proxy and NetIQ Access Manager	67
4.7.2	Understanding How Port Redirection Affects Reverse Proxy Settings	67
4.7.3	Changing Reverse Proxy Configuration Settings	67
4.8	Changing Outbound Email Configuration Settings	68
4.8.1	Understanding Outbound Email	69
4.8.2	Changing Outbound Email Configuration Settings	69
4.8.3	Outbound Email Protocol	70
4.8.4	Outbound Email Host	70
4.8.5	Outbound Email Authentication	71
4.9	Changing Configuration Settings for Requests and Connections	72
4.10	Changing the Java JDK Configuration Settings	72
4.11	Changing WebDAV Authentication Configuration Settings	72
4.11.1	Understanding WebDAV	73
4.11.2	Changing the WebDAV Authentication Configuration Settings	73
4.11.3	Choosing the WebDAV Authentication Method	73
4.12	Viewing and Updating the Filr License	74
5	Configuring and Maintaining the Search Index Appliance	75
6	Configuring and Maintaining the MySQL Database Appliance	77
6.1	Configuring the MySQL Database Appliance	77
6.2	Maintaining the MySQL Database Appliance	80
7	Configuring and Maintaining the Novell Appliance	81
7.1	Changing Administrative Passwords	81
7.2	Changing Network Settings	81
7.3	Changing Time Configuration	82
7.4	Replacing the Self-Signed Digital Certificate for an Official Certificate	82
7.4.1	Using the Digital Certificate Tool	83
7.4.2	Using an Existing Certificate and Key Pair	84
7.4.3	Activating the Certificate	84
7.5	Managing Certificates	84
7.6	Changing the Ganglia Configuration	85

7.7	Changing System Services Configuration (SSH, Filr, Jetty, Postfix, and the Novell File Access Middle Tier (FAMT))	85
7.7.1	Starting, Stopping, or Restarting System Services	86
7.7.2	Making System Services Automatic or Manual	86
7.7.3	Downloading Log Files for System Services	86
7.8	Viewing the Firewall Configuration	87
7.9	Shutting Down and Restarting the Novell Appliance	87
8	Setting Up the Filr Site	89
9	Updating Filr	91
9.1	Prerequisites	91
9.2	Updating the Filr, Search, or Database Appliances	91
9.2.1	VMware	92
9.2.2	Xen	96
9.2.3	Hyper-V	100
9.3	Rebuilding the Search Index	104
Part I	Appendixes	105
A	Configuring Apache as a Load Balancer	107
B	Setting Up Remote NFS for the Filr Data Storage Location	109
C	Increasing the Disk Space of the Filr Boot Partition	111
C.1	Increasing Disk Space on VMWare	111
C.2	Increasing Disk Space on Hyper-V	111
D	Troubleshooting the Filr System	113
D.1	Using VACONFIG to Modify Network Information	113
D.2	Accessing Filr Log Files	113
E	Documentation Updates	115
F	Third-Party Materials	117
F.1	Growl License	117
F.2	Oracle Outside In Technology	118
F.3	ANTLR 3 License	118
F.4	Colt License Agreement	119
F.5	Dom4j License	119
F.6	iCal4j License	120
F.7	ICU4J license (ICU4J 1.3.1 and later)	120
F.8	JAXEN License	121
F.9	Jung	121
F.10	ASM	122
F.11	Firebug Lite	123

About This Guide

The *Novell Filr 1.0.1 Installation Guide* covers the installation and configuration of Novell Filr. The guide is divided into the following sections:

- ♦ Chapter 1, “Overview and Planning,” on page 9
- ♦ Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,” on page 27
- ♦ Chapter 3, “Configuring Filr for the First Time,” on page 53
- ♦ Chapter 4, “Configuring and Maintaining the Filr Appliance,” on page 57
- ♦ Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75
- ♦ Chapter 6, “Configuring and Maintaining the MySQL Database Appliance,” on page 77
- ♦ Chapter 7, “Configuring and Maintaining the Novell Appliance,” on page 81
- ♦ Chapter 8, “Setting Up the Filr Site,” on page 89
- ♦ Chapter 9, “Updating Filr,” on page 91
- ♦ Part I, “Appendixes,” on page 105

Audience

This guide is intended for Novell Filr administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this manual, visit the [Novell Filr 1.0 Documentation Web site \(http://www.novell.com/documentation/novell-filr1\)](http://www.novell.com/documentation/novell-filr1).

Additional Documentation

You can find more information in the Novell Filr documentation, which is accessible from the [Novell Filr 1.0 Documentation Web site \(http://www.novell.com/documentation/novell-filr1\)](http://www.novell.com/documentation/novell-filr1).

To access the *Novell Filr User Guide* from within Filr, click the *Help* icon (question mark).

1 Overview and Planning

This section provides overview information that is useful to you as you install Novell Filr. For more in-depth overview material, see “[Filr Overview](#)” in the *How Filr Works—Overview Guide*.

- ◆ [Section 1.1, “What Is Novell Filr?”](#), on page 9
- ◆ [Section 1.2, “What’s New in Novell Filr 1.x,”](#) on page 13
- ◆ [Section 1.3, “Filr System Requirements,”](#) on page 13
- ◆ [Section 1.4, “Planning a Multi-Server \(Clustered\) Filr Configuration,”](#) on page 21
- ◆ [Section 1.5, “Planning the File Repository,”](#) on page 23
- ◆ [Section 1.6, “Planning Net Folders,”](#) on page 24
- ◆ [Section 1.7, “Planning the Filr Desktop Application,”](#) on page 24
- ◆ [Section 1.8, “Recommended Hardware Configurations Based on System Performance,”](#) on page 24

1.1 What Is Novell Filr?

Novell Filr is an enterprise file management tool designed to share files by leveraging your security infrastructure, both internally as well as externally. Filr gives you access to corporate files (including files that are located on mapped drives) and lets you access them from a mobile app on a mobile device, from a desktop application on your workstation, or from a Web browser.

- ◆ [Section 1.1.1, “Filr Applications and Appliances,”](#) on page 9
- ◆ [Section 1.1.2, “Filr Components,”](#) on page 10
- ◆ [Section 1.1.3, “Filr Storage,”](#) on page 11
- ◆ [Section 1.1.4, “Using Novell Filr,”](#) on page 12

1.1.1 Filr Applications and Appliances

It is important to distinguish between Filr applications and appliances.

- ◆ [“Applications”](#) on page 9
- ◆ [“Appliances”](#) on page 10

Applications

Filr applications are client interfaces that allow users to access the Filr software. There are three Filr applications:

- ◆ Web application

See the *Filr Web Application User Guide* (http://www.novell.com/documentation/novell-filr1/filr1_user/data/bookinfo.html) for information about how to use the Filr Web application.

After installing Filr, you can log in to the Web application. Review the information in “[Site Setup](#)” in the *Novell Filr 1.0.1 Administration Guide* for information about how you can configure your Filr site.

- ◆ Desktop application

See the [Filr Desktop for Windows Quick Start](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktop/data/filr1_qs_desktop.html) (http://www.novell.com/documentation/novell-filr1/filr1_qs_desktop/data/filr1_qs_desktop.html) and the [Filr Desktop for Mac Quick Start](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktopmac/data/filr1_qs_desktop.html) (http://www.novell.com/documentation/novell-filr1/filr1_qs_desktopmac/data/filr1_qs_desktop.html) for information about how to use the desktop application.

Before the desktop application can be available to users, you need to configure it for your Filr site, as described in “[Configuring the Filr Desktop Application to Access Files](#)” in the *Novell Filr 1.0.1 Administration Guide*.

- ◆ Mobile app

See the [Filr Mobile Quick Start](http://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html) (http://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html) for information about how to download and use the mobile app.

Appliances

Appliances are prepackaged software bundles designed to reduce installation and configuration overhead. Components that make up a Filr site can be deployed either as a single appliance for small installations or as multiple appliances for larger installations. Filr appliances run as virtual machines within a VMware, Hyper-V, or Xen environment. For more information about the individual Filr components, see [Section 1.1.2, “Filr Components,” on page 10](#).

1.1.2 Filr Components

A Novell Filr site consists of three major components. In very small deployments, each of these components is part of the Filr appliance. In large deployments, the software, the database, and the search index run as separate appliances.

- ◆ “[Filr Software](#)” on page 10
- ◆ “[Filr Database](#)” on page 10
- ◆ “[Search Index](#)” on page 11

Filr Software

The Filr software is a customized version of Apache Tomcat. This software provides the Web-based functionality you use as you access the Filr site through your Web browser.

This component is either part of a single Filr appliance along with all other components (Small installation), or it is the stand-alone Filr appliance, with the Filr database and Filr search index also running as separate appliances (Large or Clustered installation). For more information, see [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,” on page 27](#).

Filr Database

The Filr database is a MySQL database that is used for storing information about the Filr site and its users:

- ◆ Structural information about folders and files

- ◆ Identification information about folders and files (for example, titles, descriptions, dates of creation/modification, and users associated with creation/modification)
- ◆ User profile information (for example, full name, phone number, and email address)

The Filr database disk space requirements are relatively modest, because the database is not used for storing files.

This component can either be installed as part of the Filr appliance or it can be installed as a separate appliance to enhance performance. You can also use an existing MySQL database as the Filr database, but you must make certain changes on the database to configure it to work with Filr. For more information, see [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,”](#) on page 27.

Search Index

The search index is a high-performance Java search engine built with Lucene technology. The search index contains pointers to the actual data stored in the Filr file repository. The index enables the search engine to perform very fast searches through large quantities of Filr data.

This component can either be installed as part of the Filr appliance or it can be installed as a separate appliance to enhance performance. For more information, see [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,”](#) on page 27.

1.1.3 Filr Storage

Data for the Filr system is stored in the following three areas:

- ◆ [“MySQL Database”](#) on page 11
- ◆ [“Data Storage for the Appliance”](#) on page 11
- ◆ [“Configuration Data for the Appliance”](#) on page 12

MySQL Database

The MySQL database is used to store MySQL data files, including tablespace data files, tablespace log files, and binary log files. It is also used to store comments on files and folders.

The MySQL database can be part of the all-in-one appliance (small installation), can be configured as a separate appliance (large installation), or you can leverage an existing MySQL database.

Data Storage for the Appliance

When you set up Filr (either as a single appliance in a small installation or as separate appliances for a large installation), you configure data to reside either on a hard disk or on a remote NFS.

The following kinds of data are stored for each appliance on the hard disk or remote NFS:

All appliances: Web application certificates for Jetty and Tomcat and the Ganglia RRD database.

Filr appliance: Data for the Filr appliance (located in the `/Cachefilestore` and `/conf`, `/extension`, `/filrepository`, `/temp` directories).

Search index appliance: Data for the Lucene search index appliance.

MySQL database appliance: Data for the MySQL database appliance.

For more detailed storage information, see [Table 1-1, “Filtr Appliance Storage,”](#) on page 17.

Configuration Data for the Appliance

Configuration information for each appliance is stored on the appliance itself, and can be exported during and update process and then re-imported.

For more information, see [Chapter 9, “Updating Filr,”](#) on page 91.

1.1.4 Using Novell Filr

Novell Filr lets you work with files in important ways:

- ♦ **Access:** Access the files you need in multiple ways, including from a Web browser, from your desktop, or from a mobile device.

For more information, see [“Accessing Novell Filr”](#) in the *Novell Filr 1.0.1 Web Application User Guide*.

- ♦ **Share:** Share files with your co-workers and grant them specific rights to the files. For example, you can share a file with User A with Read-Only access, then share the same file with User B with Edit access.

You can easily see what has been shared with you and what you have shared.

For more information, see [“Sharing Files and Folders”](#) in the *Novell Filr 1.0.1 Web Application User Guide*.

- ♦ **Collaborate:** Make comments on a file, then all users with access can see your comments and make comments of their own.

For more information, see [“Commenting on a File”](#) in the *Novell Filr 1.0.1 Web Application User Guide*.

Filtr allows you to access, share, and collaborate on files that are in two key locations:

- ♦ [“Files in Net Folders”](#) on page 12
- ♦ [“My Files”](#) on page 12

Files in Net Folders

Novell Filr gives you easy access to folders and files on your corporate file system. Corporate files can be files on your home drive, files on a mapped drive, or files on a remote server. Filr gives you seamless access to these files, regardless of their location. The corporate files that you have access to are defined by your Filr administrator.

In Filr, you access these corporate files by clicking *Net Folders* in the masthead. For more information about Net Folders, see the *Novell Filr 1.0.1 Web Application User Guide*.

My Files

Users can upload files directly to the Filr site for personal use or to promote collaboration. Users can create folders to better organize files. For more information about how to upload files, see [“Adding Files to a Folder”](#) in the *Novell Filr 1.0.1 Web Application User Guide*.

Files and folders that are located in a user’s My Files area are visible only to that user by default. Users can make files and folders available to others by sharing them, as described in [“Sharing Files and Folders”](#) in the *Novell Filr 1.0.1 Web Application User Guide*.

Unlike files in the Net Folders area, files in My Files do not exist on an external server, but rather on the Filr server itself. Users can access these files by clicking *My Files* in the masthead.

1.2 What's New in Novell Filr 1.x

This section describes new features and enhancements that have been added to Novell Filr 1.x.

- ♦ [Section 1.2.1, “Filr 1.x User Enhancements,” on page 13](#)
- ♦ [Section 1.2.2, “Filr 1.x Installation Enhancements,” on page 13](#)
- ♦ [Section 1.2.3, “Filr 1.x Administration Enhancements,” on page 13](#)

1.2.1 Filr 1.x User Enhancements

For a list of Novell Filr enhancements and instructions for use, see “[What's New in Novell Filr 1.x](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.

1.2.2 Filr 1.x Installation Enhancements

- ♦ **Enhanced hypervisor support for Xen (v1.0.1):** Now you can install and run Filr with Xen. For more information, see [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,” on page 27](#).
- ♦ **Enhanced hypervisor support for Hyper-V (v1.0.1):** Now you can install and run Filr with Hyper-V. For more information, see [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,” on page 27](#).

1.2.3 Filr 1.x Administration Enhancements

- ♦ **Improved Net Folder Sync Performance (v1.0.1):** Net Folder synchronization is more efficient, saving you time and resources when synchronizing files from your file system to Filr.
- ♦ **Support for Sharing in 1.0.2 Mobile App (v1.0.1):** Filr 1.0.1 provides support for sharing from mobile devices when users use the Filr 1.0.2 Mobile App.
For more information about sharing within the mobile app, see the [Filr Mobile App Quick Start \(https://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html\)](https://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html).
- ♦ **Support for MobileIron (v1.0.1):** Filr 1.0.1 provides support for managing the Filr mobile applications with MobileIron when using the Filr 1.0.2 Mobile Apps.
For more information about using MobileIron with the Filr 1.0.2 Mobile Apps, see “[Configuring MobileIron to Manage the Filr App](#)” in the *Novell Filr 1.0.1 Administration Guide*.

1.3 Filr System Requirements

As a Novell Filr site administrator, ensure that your system meets Filr system requirements, so that your Filr site can be set up successfully. After your Filr site is set up, you must also ensure that users' browsers and office applications meet Filr user requirements, so that they can access the Filr site successfully.

- ♦ [Section 1.3.1, “Filr Server Requirements,” on page 14](#)
- ♦ [Section 1.3.2, “Filr Storage Requirements,” on page 16](#)
- ♦ [Section 1.3.3, “Filr User Requirements,” on page 20](#)

- ◆ Section 1.3.4, “Mobile App Requirements,” on page 20
- ◆ Section 1.3.5, “Desktop Application Requirements,” on page 20
- ◆ Section 1.3.6, “File Viewer Information,” on page 20
- ◆ Section 1.3.7, “Linux File System,” on page 21

For the latest system requirements details, see the [Novell Filr 1.0 Readme \(http://www.novell.com/documentation/novell-filr1/filr1_readme_novell/data/filr1_readme_novell.html\)](http://www.novell.com/documentation/novell-filr1/filr1_readme_novell/data/filr1_readme_novell.html).

1.3.1 Filr Server Requirements

- ◆ One of the following software virtualization platforms:
 - ◆ VMware

NOTE: The following recommendations can improve the performance of your VMware environment:

- ◆ Install VMware Tools on the host server
 - ◆ Upgrade the virtual machine version to the latest that your infrastructure can support
-

- ◆ One of the following VMware host servers for hosting the Filr appliance:
 - ◆ ESXi 5.5.x with the latest update
 - ◆ ESXi 5.1.x with the latest update
 - ◆ ESXi 5.0 with the latest update
 - ◆ ESX 4.1.x and ESXi 4.1.x with the latest update

For the most up-to-date compatibility matrix of supported VMware host servers, refer to the [VMware Compatibility Guide \(http://www.vmware.com/resources/compatibility/search.php?deviceCategory=software&testConfig=16\)](http://www.vmware.com/resources/compatibility/search.php?deviceCategory=software&testConfig=16) that is provided by VMware.

To generate the correct chart from the VMware Compatibility Guide:

1. Ensure that *Guest OS* is selected in the *What are you looking for* field.
2. In the *OS Vendor* field, select *SUSE*, then in the *OS Family Name* field, select *SUSE Linux Enterprise 11*.
3. Click *Update and View Results*, then look at the *SUSE Linux Enterprise Server 11 Service Pack 2 64-bit* line of the provided table.

The versions of ESX and ESXi that are listed in the Supported Releases column of this row are compatible with Filr 1.0.

- ◆ A VMware vSphere client 4.x or VMware vSphere client 5.x for accessing the host server and appliance for initial configuration.

Not all versions of the vSphere client are compatible with versions of VMware ESX and ESXi. For a complete matrix of compatibility, refer to the [VMware Product Interoperability Matrixes \(http://partnerweb.vmware.com/comp_guide2/sim/interop_matrix.php\)](http://partnerweb.vmware.com/comp_guide2/sim/interop_matrix.php) that are provided by VMware.

- ◆ VMware vMotion is supported when running Filr on VMware ESXi 5.1.x or 5.5.x with the latest updates.

- ◆ Xen
 - ◆ SLES 11 SP2, 64-bit
 - ◆ SLES 11 SP3, 64-bit

- ◆ Hyper-V
 - ◆ Windows 2012 Server (as a Role)
 - ◆ Windows 2008 R2 Server (as a Role)
 - ◆ Hyper-V Server 2012 (standalone)
 - ◆ Hyper-V Server 2008 R2 (standalone)
- ◆ Memory Requirements:

Small Installation (Filtr Appliance): 12 GB of memory and 4 CPUs. 8 GB of memory should be dedicated to the Java heap.

A small installation requires more resources than a large installation for the Filtr appliance, because in a small installation the database and the search index are also running on the Filtr appliance.

Large Installation:

 - ◆ **Filtr Appliance:** 8 GB of memory and 2 CPUs. At least half of the memory should be dedicated to the Java heap.
 - ◆ **Database Appliance:** 4 GB of memory and 2 CPUs. (More memory is required if there are more than 1,000 users on the system.)
 - ◆ **Search Index Appliance:** 4 GB of memory and 2 CPUs. (More memory is required if there are more than 1,000 users on the system.) About three quarters of the memory should be dedicated to the Java heap.
- ◆ (Conditional) When configuring Filtr to use an existing MySQL database rather than the database appliance (as described in [Section 2.2.3, “Configuring an Existing MySQL Database,”](#) on [page 51](#)), Filtr supports MySQL 5.0.96 through 5.5.x.

IMPORTANT: Filtr cannot be used with MySQL 5.6 and later.

- ◆ Storage requirements. For a list of storage requirements for each appliance, as well as information about the types of content in each storage location, see [Section 1.3.2, “Filtr Storage Requirements,”](#) on [page 16](#).
- ◆ A workstation (Windows, Mac, or Linux) capable of running one of the supported browsers.
- ◆ Mozilla Firefox 9, Mozilla Firefox 10, Microsoft Internet Explorer 8, or Microsoft Internet Explorer 9 for configuring and managing the appliance after the initial setup.
- ◆ IP address information for assigning to the Filtr appliance, including:
 - ◆ Static IP address
 - ◆ Network mask
 - ◆ Gateway IP address
 - ◆ DNS host name associated with the IP address
 - ◆ IP address of a DNS server
 - ◆ IP address or DNS name of the same NTP server that your target OES servers use (optional)

If using VMware, Novell recommends setting up NTP in accordance with the [VMware best practices guidelines](#) (http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427).

- ♦ Any combination of the following file servers (You can configure Net Folders in Filr to access files on these file servers. File servers are not required when you use Filr for files in the My Files area):
 - ♦ One or more Windows 2003 R2 or Windows 2008 R2 file servers with one or more Windows Shares as data targets for the Filr virtual appliance
 - ♦ One or more OES 2 SP3 or OES 11 or later file servers with one or more NSS volumes as data targets for the Filr virtual appliance
 - ♦ One or more NetWare 6.5.8 and later file servers with one or more NSS volumes as data targets for the Filr virtual appliance (must be using eDirectory 8.8 as the directory service)
- ♦ File Storage (Net Folders can access files that are being stored through any of the following storage methods):
 - ♦ Network Attached Storage (NAS) with NetApp, EMC, and other Microsoft Active Directory joined NAS devices that support the CIFS and SMB version 1 protocols.
 - ♦ Storage Area Network (SAN)
- ♦ A directory service: (Not mandatory for simple testing)
 - ♦ Linux: Novell eDirectory 8.8 or later, plus the latest Support Pack
For information about eDirectory, see the [Novell eDirectory 8.8 Documentation Web site \(http://www.novell.com/documentation/edir88\)](http://www.novell.com/documentation/edir88).
 - ♦ Windows: Microsoft Active Directory, plus the latest Service Pack, or Novell eDirectory 8.8 or later, plus the latest Support Pack
For information about Active Directory, see [Windows Server 2003 Active Directory \(http://www.microsoft.com/windowsserver2003/technologies/directory/activedirectory\)](http://www.microsoft.com/windowsserver2003/technologies/directory/activedirectory) or [Windows Server 2008 Active Directory \(http://www.microsoft.com/windowsserver2008/en/us/active-directory.aspx\)](http://www.microsoft.com/windowsserver2008/en/us/active-directory.aspx).

NOTE: eDirectory running on a Windows file server that contains Windows file shares is not supported.

1.3.2 Filr Storage Requirements

The tables in this section outline the storage requirements for the various appliances, as well as the kinds of information that is stored. The storage requirements vary depending on the size of your Filr installation:

Clustered Installation: All information in the following tables apply to a clustered installation.

Large Installation: All information in the following tables apply to a large installation except:

- ♦ All storage recommendations and functions listed under Shared Storage (`/vashare`) apply instead to Hard Disk 2 (`/vastorage`), in [Table 1-1](#).

Small Installation: Only [Table 1-1](#) applies to a small installation. All information in [Table 1-1](#) applies to a small installation except:

- ♦ All storage recommendations and functions listed under Shared Storage (`/vashare`) apply instead to Hard Disk 2 (`/vastorage`).
- ♦ [Table 1-1, "Filr Appliance Storage," on page 17](#)
- ♦ [Table 1-2, "Search Index Appliance Storage," on page 19](#)
- ♦ [Table 1-3, "MySQL Database Appliance Storage," on page 19](#)

Table 1-1 Filr Appliance Storage

Boot Partition (Hard Disk 1)	VMware/Xen/Hyper-V Hard Disk (Hard Disk 2 - /vastorage)	Shared Storage (/vashare)
<p>Recommended Storage: 40 GB of disk space</p> <p>This is the default amount of disk space. If your Filr appliance is running out of disk space, you can increase the disk space by following the steps in Appendix C, "Increasing the Disk Space of the Filr Boot Partition," on page 111. You cannot increase the amount of disk space when using Xen.</p> <p>Function: Stores log files</p> <p>Because log files are continually growing and can consume large amounts of disk space, the Filr administrator should regularly delete old log files.</p>	<p>In a non-clustered installation (includes a small installation, where all components are running as a single appliance, and a large installation with only one Filr appliance) all storage recommendations and functions listed under Shared Storage (/vashare) are included in Hard Disk 2 (/vastorage).</p> <p>Recommended Storage: 25 GB of disk space</p> <p>Function: Stores the following types of files:</p> <ul style="list-style-type: none"> ◆ Configuration files that are used for appliance upgrades ◆ Ganglia files that are used to store monitoring information 	<p>Shared storage is used only in a clustered environment where you have deployed multiple Filr appliances.</p> <p>In a non-clustered installation (includes a small installation, where all components are running as a single appliance, and a large installation with only one Filr appliance) all storage recommendations and functions listed under Shared Storage (/vashare) are included in Hard Disk 2 (/vastorage).</p> <p>Recommended Storage: Disk space must be equal to the size of all files that you anticipate users will add to their Personal Storage (My Files area), plus adequate space to account for the storing of HTML renderings and text extractions.</p> <p>IMPORTANT: HTML renderings and text extractions have a significant impact on the amount of storage required for a file. For more information about how these factors affect storage, see the IMPORTANT note following this table.</p> <p>Function: Stores the following types of files:</p> <ul style="list-style-type: none"> ◆ Configuration files that are used for appliance upgrades ◆ Personal Storage files (files that are located in users' My Files area) ◆ Temporary files (uploads and conversions that are in progress) ◆ Cached files that have been previously rendered as HTML <p>Because cached files are not automatically deleted, the Filr administrator should clean up cached files in the /vashare/cachefilestore area on a regular basis. For more information about the amount of space required for HTML renderings, see the IMPORTANT note following this table.</p>

IMPORTANT: HTML renderings and text extractions have a significant impact on the amount of storage required per file for the Filr appliance. In a small installation, index files and database files also have an impact on the amount of storage required per file for the Filr appliance.

- ◆ **HTML Renderings:** Each time a user renders a file as HTML (either by clicking *View Details* on the file from the Web interface, by clicking *View as HTML* from the Web interface, or by tapping on a file from the mobile app), that rendering occupies additional disk space.

HTML renderings for files in both Personal Storage and files in Net Folders are stored in the `/vashare` directory in a clustered environment and in the `/vastorage` directory in a non-clustered environment.

Only one HTML rendering can exist for a single document. If a user views a file as HTML and a rendering already exists, a second rendering is not created.

The amount of space the HTML rendering occupies differs depending on the type of file that is rendered:

- ◆ Office file renderings (such as Microsoft Office and OpenOffice) require the same amount of disk space as the original file (For example, a 1 MB file requires an additional 1 MB of disk space for the HTML rendering).
- ◆ PDF renderings require approximately 10 times the amount of disk space as the original file (For example, a 1 MB file requires an additional 10 MB of disk space for the HTML rendering).
- ◆ PowerPoint renderings require approximately 3 times the amount of disk space as the original file (For example, a 1 MB file requires an additional 3 MB of disk space for the HTML rendering).

If HTML renderings are consuming more than 10 GB of disk space on your system, you can delete all HTML renderings by restarting the Filr appliance. (For information about how to restart the Filr appliance, change any configuration option, then click *Reconfigure Filr Server*, as described in [Chapter 4, "Configuring and Maintaining the Filr Appliance,"](#) on page 57.)

- ◆ **Text Extractions:** When a file is added to Filr (either to Personal Storage or to a Net Folder), text from the file is extracted and added to the search index to be used for searching. By default, each text-extracted file is truncated to 1.1 MB.
- ◆ **Index Files:** (Applies only to a small installation) In a large or clustered installation, index files are stored in the Lucene search index appliance.
- ◆ **Database Files:** (Applies only to a small installation) In a large installation or clustered installation, database files are stored in the MySQL database appliance.

IMPORTANT: When using NFS Unix mount-points or NAS mount-points for the VMware hard disk (Hard Disk 2 - `/vastorage`), be aware of the way in which Linux-based systems consume inodes. To learn more about inodes and proper allocation based on the potential number of files that are created on the file system, see section [The File System in Reality](http://www.tldp.org/LDP/intro-linux/html/sect_03_01.html#sect_03_01_0) (http://www.tldp.org/LDP/intro-linux/html/sect_03_01.html#sect_03_01_0), in the [The Linux Documentation Project](http://www.tldp.org) (<http://www.tldp.org>).

Table 1-2 Search Index Appliance Storage

Boot Partition (Hard Disk 1)	VMware/Xen/Hyper-V Hard Disk (Hard Disk 2 - / vastorage)
Recommended Storage: 25 GB of disk space	Recommended Storage:
Function: Stores log files	10 GB of disk space, plus:
Because log files are continually growing and can consume large amounts of disk space, the Filr administrator should regularly delete old log files.	Allocate 11 KB of disk space per file when indexing is enabled for Net Folders. Lucene optimizes and reclaims unneeded disk space after initial synchronization.
	Allocate 5 KB of disk space per file if indexing is not enabled for Net Folders.
	For more information about file indexing, see “Searchability of Data” in “Planning the Synchronization Method” in the <i>Novell Filr 1.0.1 Administration Guide</i> .
	Function: Stores the following types of files:
	<ul style="list-style-type: none"> ◆ Configuration files that are used for appliance upgrades ◆ Ganglia files that are used to store monitoring information ◆ Search indexes

Table 1-3 MySQL Database Appliance Storage

Boot Partition (Hard Disk 1)	VMware/Xen/Hyper-V Hard Disk (Hard Disk 2 - / vastorage)
Recommended Storage: 25 GB of disk space	Recommended Storage:
Function: Stores log files	25 GB of disk space, plus:
Log files are automatically deleted after they consume 1GB of disk space.	Allocate 30 KB per file when indexing is enabled for Net Folders.
You can delete log files before they reach the 1 GB threshold, as described in Section 6.2, “Maintaining the MySQL Database Appliance,” on page 80.	Allocate 20 KB per file when indexing is not enabled for Net Folders.
	For more information about file indexing, see “Searchability of Data” in “Planning the Synchronization Method” in the <i>Novell Filr 1.0.1 Administration Guide</i> .
	Allocate 10 KB per user.
	Function: Stores the following types of files:
	<ul style="list-style-type: none"> ◆ Configuration files that are used for appliance upgrades ◆ Ganglia files that are used to store monitoring information ◆ MySQL database files

1.3.3 Filr User Requirements

- ♦ Web browser (for accessing Filr through a browser on your user workstation):
 - ♦ Linux: Mozilla Firefox 3 or later; Google Chrome (latest version)
 - ♦ Windows: Microsoft Internet Explorer 7 or later (must not have the Google Chrome Frame plug-in installed); Mozilla Firefox 3 or later; Google Chrome (latest version)
 - ♦ Mac: Safari 4 or later; Mozilla Firefox 3 or later
- ♦ Office applications (for editing documents on your workstation, as described in “[Editing Files with Edit-in-Place](#)” in the *Novell Filr 1.0.1 Web Application User Guide*):
 - ♦ Linux: OpenOffice.org/LibreOffice 3.1.1 or later
 - ♦ Windows: Microsoft Office 2007 or later; OpenOffice.org/LibreOffice 3.1.1 or later
 - ♦ Mac: OpenOffice.org/LibreOffice 3.1.1 or later

NOTE: OpenOffice and LibreOffice are used synonymously throughout the Novell Filr documentation. Functionality and issues that apply to OpenOffice also apply to LibreOffice.

1.3.4 Mobile App Requirements

The Novell Filr mobile app is supported on the following mobile devices:

- ♦ iOS (the native application is available in the Apple App Store)
- ♦ Android (the native application is available in the Google Play App Store and in the Amazon Appstore for Android)
- ♦ BlackBerry PlayBook and Z10 (the native application is available in the BlackBerry World app store)

For more information about the Filr mobile app, see the [Novell Filr Mobile App Quick Start \(http://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html\)](http://www.novell.com/documentation/novell-filr1/filr1_qs_mobile/data/filr1_qs_mobile.html).

1.3.5 Desktop Application Requirements

The Filr desktop application is supported on the following client operating systems:

- ♦ Windows XP and later.
- ♦ Mac OS X 10.7 and later.

For more information about the Filr desktop application, see the [Novell Filr Desktop Application for Windows Quick Start \(http://www.novell.com/documentation/novell-filr1/filr1_qs_desktop/data/filr1_qs_desktop.html\)](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktop/data/filr1_qs_desktop.html) or [Novell Filr Desktop Application for Mac Quick Start \(http://www.novell.com/documentation/novell-filr1/filr1_qs_desktopmac/data/filr1_qs_desktop.html\)](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktopmac/data/filr1_qs_desktop.html).

1.3.6 File Viewer Information

In Novell Filr, file viewing capabilities are provided by Oracle Outside In viewer technology. See “[Oracle Outside In Technology 8.3 Supported Formats](http://www.oracle.com/us/026956.pdf)” (<http://www.oracle.com/us/026956.pdf>) for a list of the supported file formats. See “[Oracle Outside In Technology](http://www.oracle.com/technologies/embedded/outside-in.html)” (<http://www.oracle.com/technologies/embedded/outside-in.html>) for background information about the Oracle viewer technology included in Filr.

The file viewers also support data indexing by the search index.

1.3.7 Linux File System

Filr supports the following file systems on Linux: ext3, btrfs, and xfs.

1.4 Planning a Multi-Server (Clustered) Filr Configuration

- ♦ [Section 1.4.1, “Components of a Clustered Environment,” on page 21](#)
- ♦ [Section 1.4.2, “Filr Clustering,” on page 21](#)
- ♦ [Section 1.4.3, “Setting Aside a Filr Appliance for Re-Indexing and Net Folder Synchronization in a Clustered Environment,” on page 23](#)
- ♦ [Section 1.4.4, “Clustering Limitations,” on page 23](#)

1.4.1 Components of a Clustered Environment

In a large installation, the Filr components separately. Following are the minimum requirements:

Exported Directory on NFS File Server: You must export a directory on an NFS file server (SLES or OES; Windows is not supported) and configure each clustered Filr appliance to mount it as shared storage (`/vashare`). For more information, see [Section 2.1, “Installing the Filr Appliance,” on page 27](#).

Filr Appliance: You can run multiple instances of the Filr appliance, which allows the Filr system to handle more users. For information about installing multiple Filr appliances, see [Section 2.1, “Installing the Filr Appliance,” on page 27](#).

Lucene Index Server Appliance: Novell recommends running two instances of the Lucene index server appliance, which provides fault tolerance or backup in the event that one index server fails. Load balancing is not supported between index servers. For information about installing multiple Lucene index server appliances, see [Section 2.2.1, “Installing the Search Index Appliance,” on page 37](#).

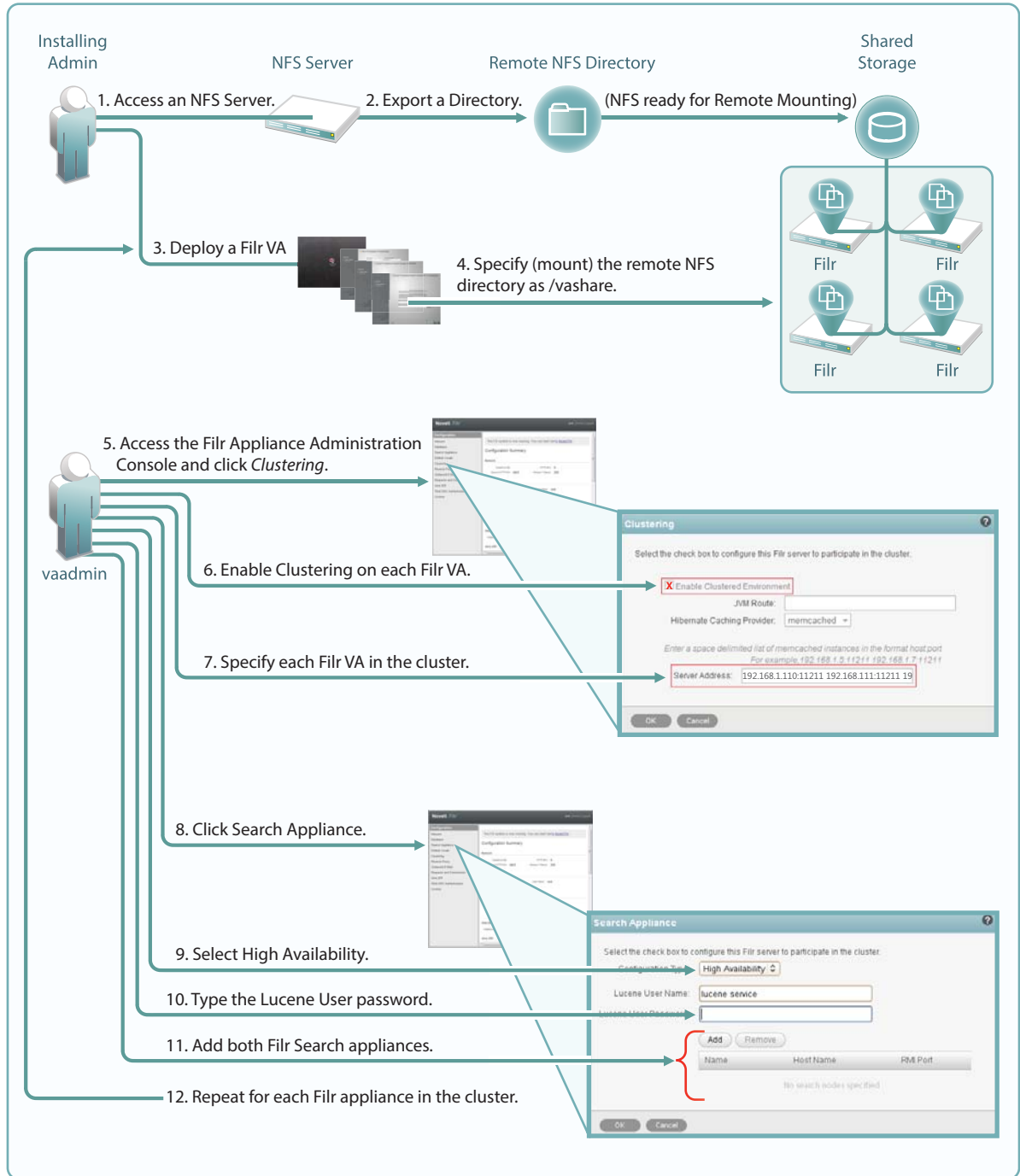
MySQL Database Appliance: You can run only one instance of the MySQL database appliance. For information about installing a MySQL database appliance, see [Section 2.2.2, “Installing the MySQL Database Appliance,” on page 44](#).

For information about possible configuration setups and how many users are appropriate for each setup, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,” on page 24](#).

1.4.2 Filr Clustering

Filr clustering involves two or more Filr VAs sharing the same NFS data storage location (`/vashare`). Basic steps for setting up Filr clustering are included in [Figure 1-1](#).

Figure 1-1 Clustered Filr VAs



For more information about clustering, see [Changing Clustering Configuration Settings in the Novell Filr Installation and Configuration Guide](#).

1.4.3 Setting Aside a Filr Appliance for Re-Indexing and Net Folder Synchronization in a Clustered Environment

In a clustered environment, it is a good idea to set aside a single Filr appliance to perform specific resource-intensive tasks.

You can use the standalone Filr appliance to **manually** perform each of the following tasks:

- ♦ Synchronizing a Net Folder
- ♦ Re-indexing the search index

To set aside a Filr appliance and to use it to perform resource-intensive tasks:

- 1 Configure the load balancer to load balance between all the Filr appliances in the cluster except for the Filr appliance that you want to set aside for indexing or Net Folder synchronization.

For more information about load balancing in Filr, see [Appendix A, “Configuring Apache as a Load Balancer,” on page 107](#).

- 2 Access the standalone Filr appliance from a web browser by navigating to the URL of that particular Filr appliance.

Because the standalone appliance is separate from the load balancer, you must access it directly in order to use it for re-indexing or for Net Folder synchronization. By accessing the appliance directly, you force the process to originate from this particular appliance.

- 3 Rebuild the search index as described in “[Rebuilding the Search Index with Multiple Index Servers](#)” in the *Novell Filr 1.0.1 Administration Guide*.

or

Manually synchronize a Net Folder, as described in “[Synchronizing a Net Folder](#)” in the *Novell Filr 1.0.1 Administration Guide*.

1.4.4 Clustering Limitations

In a clustered environment, Filr appliances are not tolerant to latency, and should exist in the same subnet or near-subnet.

1.5 Planning the File Repository

- ♦ [Section 1.5.1, “Distributing Different Data Types to Different Locations,” on page 23](#)

1.5.1 Distributing Different Data Types to Different Locations

The location for the Novell Filr file repository is `/vastorage/filr`.

The data files not stored in the Filr database are divided into several functional areas:

- ♦ **Simple file repository:** A large consumer of disk space.

All attachment files are stored in the file repository.

- ♦ **Cache store:** Consumes less disk space than the file repository.

Information derived from the attachments, such as thumbnails, HTML renderings, scaled images, and word lists for indexing are stored in the cache store.

- ♦ **Lucene index:** Takes only a fraction of the space consumed by the file repository.
The Lucene index contains only pointers to the actual data stored in the file repository. The index enables the Lucene search engine to perform very fast searches through large quantities of data.

1.6 Planning Net Folders

Net Folders in Filr provide access to files on your corporate OES, Windows, or NetWare file servers. In essence, a Net Folder is simply a pointer or a reference to a specific folder on a specific file server.

For information about planning Net Folders, see “[Planning Net Folder Creation](#)” in the *Novell Filr 1.0.1 Administration Guide*.

1.7 Planning the Filr Desktop Application

Depending on your environment and the settings that you choose for the Filr desktop application, the Filr desktop application can put significant load on your Filr system. Before enabling the Filr desktop application for all users on your system, see “[Planning Filr Desktop Application Usage for Your Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.

1.8 Recommended Hardware Configurations Based on System Performance

Because of the wide variety of content you can store in Filr and the load any given user might put on the system, the recommendations given in this section are only guidelines.

The following sections represent configuration changes that you can make to your Filr installation that affect the amount of users and data that the system can support.

- ♦ [Section 1.8.1, “Net Folder Indexing and Synchronization Settings,” on page 24](#)
- ♦ [Section 1.8.2, “Resource Allocations for the Appliance,” on page 25](#)
- ♦ [Section 1.8.3, “Small Installation Vs. Large Installation,” on page 25](#)

1.8.1 Net Folder Indexing and Synchronization Settings

How you plan to index and synchronize data in Net Folders can affect how much data the Filr system can support.

Performing a full synchronization every hour puts more load on the system than performing an initial full synchronization, then using only Just-in-Time synchronization. (For more information, see “[Planning the Synchronization Method](#)” in the *Novell Filr 1.0.1 Administration Guide*.)

Whether you want to index file content also affects the amount of load that is placed on the system.

If you plan to perform a full synchronization and index for Net Folders in your Filr system, ensure that these processes have taken place before users attempt to access the system.

1.8.2 Resource Allocations for the Appliance

Increasing memory and CPU resources for an appliance can sometimes be more favorable than adding another appliance. You might need to adjust CPU and Memory settings for each appliance before you can determine the optimal setting for your environment.

1.8.3 Small Installation Vs. Large Installation

IMPORTANT: You cannot upgrade your Filr system from a small installation to a large installation. Likewise, you cannot upgrade from a large installation to a clustered installation if shared storage has not already been configured. If your Filr system has the potential to grow, you should install Filr in a large installation and create shared storage (as described in [Step 9](#) in [Section 2.1, “Installing the Filr Appliance,”](#) on page 27). Doing so ensures that you can scale your system in the future if the need arises by adding additional Filr appliances.

The following sections describe guidelines for deploying either a small or large Filr installation.

- ◆ [“Small Installation”](#) on page 25
- ◆ [“Large Installation”](#) on page 25

Small Installation

A small installation, where all Filr components are running on a single Filr appliance, is suitable for systems with no more than:

- ◆ 100 concurrent users
Concurrent users are simultaneous connections to the Filr system, from any of the Filr clients.
- ◆ 50 total Net Folders
- ◆ 30,000 files per Net Folder
- ◆ 500 subdirectories per Net Folder
- ◆ 500,000 total files spread across all Net Folders in the Filr system (including user Home folders).

IMPORTANT: Ensure that you distribute files across multiple Net Folder Servers, rather than using a single Net Folder server to synchronize all files in the Filr system.



Tomcat (Filr)
Lucene Index
SQL Database

Large Installation

A large installation, where each Filr component is running separately, is recommended for systems with no more than:

- ◆ 500 concurrent users per Filr appliance

Concurrent users are simultaneous connections to the Filr system, from any of the Filr clients.

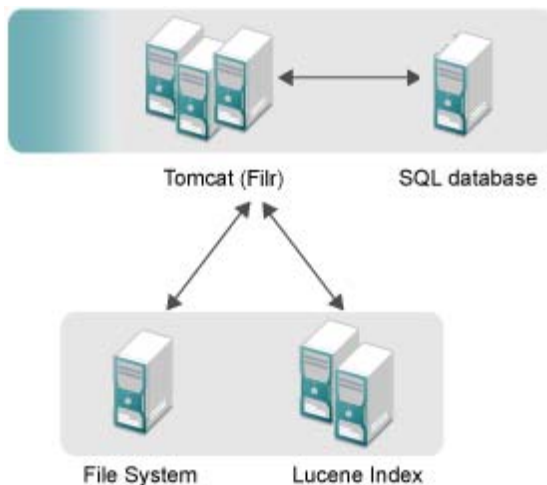
- ◆ 100,000 files per Net Folder
- ◆ 2,000 subdirectories per Net Folder
- ◆ 5,000,000 total file spread across all Net Folders in the Filr system (including user Home folders).

IMPORTANT: Ensure that you distribute files across multiple Net Folder Servers, rather than using a single Net Folder server to synchronize all files in the Filr system.

A basic large installation consists of a Filr appliance, a Lucene index appliance, and a MySQL database. (The MySQL database can be the MySQL appliance that ships with Filr, or your organization's existing MySQL database. In an enterprise installation, it is recommended that you configure Filr to use your organization's existing database.)

When you set up a large installation, ensure that you create a shared storage location (as described in [Step 9](#) in [Section 2.1, "Installing the Filr Appliance,"](#) on page 27). Doing so makes it possible to move to a clustered installation in the future, where there are multiple Filr appliances and Lucene index search appliances.

A clustered installation consists of multiple Filr appliances, multiple Lucene index server appliances, and a single MySQL database appliance or an existing MySQL database.



Advantages of a Clustered Installation

In a clustered installation, you can have multiple Filr appliances and multiple Lucene search index appliances.

- ◆ Provides scalability

As more users begin using the system and more data is added, you can add more Filr appliances to accommodate the load. You can also add a second Lucene search index appliance, which can help improve scalability.

- ◆ Provides fault tolerance

In the event that one Filr appliance goes down, other Filr appliances are there to maintain the system. This is also true with the Lucene search index appliance. It is optimal for your Filr system to have two Lucene search index appliances.

2 Installing the Filr Appliance and Configuring the Operating System

The following sections describe how to download and install the Filr software, the search index software, and the MySQL database, either as a single appliance for a small installation, or as separate appliances for a large installation. (If your organization has an existing MySQL database, it is recommended that you configure Filr to use your organization's existing database.)

NOTE: Before you begin the installation, ensure that:

- ♦ The server requirements in [Section 1.3.1, “Filr Server Requirements,”](#) on page 14 have been met.
- ♦ You have read and understand [Chapter 1, “Overview and Planning,”](#) on page 9.

-
- ♦ [Section 2.1, “Installing the Filr Appliance,”](#) on page 27
 - ♦ [Section 2.2, “Installing Separate Appliances for a Large Installation,”](#) on page 37

2.1 Installing the Filr Appliance

IMPORTANT: Whether you are doing a small, large, or clustered installation, you must install the Filr appliance as described in this section.

For a small installation with limited system resources, you install only the Filr appliance. The Filr appliance includes the Filr software, the MySQL database, and the search index.

For a large or clustered installation, you need to:

1. Install one or more Filr appliances as described in this section.
2. Install at least one search index appliance (two search index appliances is recommended to provide fault tolerance or backup in the event that one index server fails).
3. Install either the MySQL database appliance or configure Filr to use your organization's existing MySQL database. (Using your organization's existing MySQL database is recommended for enterprise installations.)

The process for installing a large or clustered Filr system is described in [Section 2.2, “Installing Separate Appliances for a Large Installation,”](#) on page 37.

-
- ♦ [Section 2.1.1, “Downloading the Filr Appliance and Configuring the Virtual Environment,”](#) on page 28
 - ♦ [Section 2.1.2, “Installing the Filr Appliance,”](#) on page 33

2.1.1 Downloading the Filr Appliance and Configuring the Virtual Environment

You need to download the Filr appliance and configure the virtual environment where you plan to run the appliance. This includes configuring system resources and so forth.

The process of downloading the Filr appliance and configuring the virtual environment differs, depending on which virtual environment you plan to use to run the Filr appliance.

- ♦ “VMware Configuration” on page 28
- ♦ “Xen Configuration” on page 29
- ♦ “Hyper-V Configuration” on page 31

VMware Configuration

- 1 Download the Filr software (`Filr.x86_64-version.ovf.zip`) to your management workstation. You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A-) (<http://download.novell.com/Download?buildid=9xcn1vXns5A->) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).
- 2 Extract the `Filr.x86_64-version.ovf.zip` file on your management workstation so that the `Filr-version` file folder appears.
- 3 In the vSphere client, click *File > Deploy OVF Template*.
- 4 Browse to and select the `.ovf` file in the `Filr-version` file folder.
- 5 Click *Next*.
- 6 Click *Next* again.
- 7 In the *Name* field, rename the Filr appliance to a name of your choosing, then click *Next*.
- 8 Click *Next* to accept the default for the disk format.
- 9 Click *Finish*.
- 10 Create a separate VMware hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate VMware hard disk as described here, you cannot update to a new version of Filr.
 - 10a In the vSphere client, right-click the virtual machine that you just created, and for which you want to create secondary storage, then click *Edit Settings*.

The Virtual Machine Properties page is displayed.
 - 10b On the *Hardware* tab, click *Add*.

The Add Hardware dialog box is displayed.
 - 10c Select *Hard Disk*, then click *Next*.
 - 10d Leave *Create a new virtual disk* selected, then click *Next*.
 - 10e In the *Disk Size* field, specify the amount of hard disk space that you want to allocate. The recommended minimum is 25 GB.

For more detailed information about the type of information that is stored here, see [Table 1-1, “Filr Appliance Storage,”](#) on page 17.
 - 10f In the *Disk Provisioning* section, select either *Thick Provision Eager Zeroed* or *Support clustering features such as Fault Tolerance*, depending on the VMware version that you are running.

- 10g** In the *Location* section, select *Specify a datastore or datastore cluster*, then click *Browse*.
- 10h** Select a datastore, then click *OK*.
- 10i** Click *Next*.
- 10j** In the *Virtual Device Node* section, select *SCSI (1:0)* from the drop-down list.
- 10k** In the *Mode* section, select *Independent*, select *Persistent*, then click *Next*.
- 10l** Click *Finish*.
- 11** Increase the amount of memory that VMware allocates for the Filr appliance.
- The default of 8 GB is the recommended minimum amount of memory for a large deployment. Novell also recommends 2 CPUs.
- For an all-in-one deployment, you should increase the default to at least 12 GB of memory and 4 CPUs.
- Small deployments require more CPUs and memory because in a small deployment, all components are running on a single virtual machine.
-
- IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).
- At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.
-
- 11a** In the Virtual Machine Properties window, select *Memory*, then increase the setting to a suitable size for your environment.
- 11b** Click *OK* to exit the Virtual Machine Properties window.
- 12** (Optional) Upgrade the virtual machine hardware version to the latest that your infrastructure can support. To do so, in the vSphere client, right-click the virtual machine that you just created, and for which you want to upgrade the hardware, then click *Upgrade Virtual Hardware*.
- 13** Power on the appliance (virtual machine).
-
- IMPORTANT:** Do not power on the appliance until you have created a separate VMware hard disk for the appliance, as described in [Step 10](#).
-
- 14** (Optional) Install VMware Tools on the host server.
- 15** Continue with [Section 2.1.2, “Installing the Filr Appliance,” on page 33](#).

Xen Configuration

- 1** Log in to the host server either locally or from a remote workstation.
- You can use the following command to log in to the host server from a remote workstation on Linux:
- ```
ssh -X root@host_ip_address
```
- You must use the -X in the command in order to display the GUI installation program. The steps in this section use the GUI installation program to configure the server.
- 2** Navigate to the `/var/lib/xen/images` directory on the host server.
- 3** Create a new directory inside the images directory where you can download the Filr software.

The name of this directory must be the same as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `Filr1`, the name of this new directory must also be `Filr1`.

- 4 Change to the directory that you just created. For example, `/var/lib/xen/images/Filr1`.
- 5 Download the Filr software (`Filr.x86_64-version.xen.tar.gz`) to the current directory on the host server. For example: `/var/lib/xen/images/Filr1`

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 6 Untar the `Filr.x86_64-version.xen.tar.gz` file in the directory where you downloaded it.

You can use the following command to untar the file:

```
tar -Sxvzf Filr.x86_64-version.xen.tar.gz
```

A `filr-version` directory is created, which contains a `.raw` file that you will use to run the virtual image. This process can take a few minutes.

- 7 From the host server, run the following command to launch the GUI configuration menu:

```
vm-install
```

The Create a Virtual Machine wizard is displayed.

- 8 Click *Forward*.
- 9 Select *I have a disk or disk image with an installed operating system*, then click *Forward*.
- 10 Leave *SUSE Linux Enterprise Server 11* selected, then click *Forward*.
- 11 Rename the virtual machine by clicking *Name of Virtual Machine*, then specifying a new name in the *Name* field. Then click *Apply*. For example, `Filr1`.
- 12 Configure the amount of memory and number of CPUs that Xen allocates for the Filr appliance.
  - 12a On the Summary page, click *Hardware*, then specify the following information:

**Available Memory:** Displays the amount of available memory that is available on the host server.

**Initial Memory:** 8 GB is the recommended minimum amount of memory for a large deployment.

For an all-in-one deployment, you should increase the default to at least 12 GB of memory.

Small deployments require more memory because in a small deployment, all components are running on a single virtual machine.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, "Changing the Java JDK Configuration Settings," on page 72](#) and [Chapter 5, "Configuring and Maintaining the Search Index Appliance," on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**Maximum Memory:** Set this to the same value that you set for Initial Memory.

**Available Processors:** Displays the number of available processors on the host server.

**Virtual Processors:** Specify 2 CPUs for a large deployment and 4 CPUs for a small deployment. At least half of the memory should be dedicated to the Java heap. (Java heap is set in the Filr configuration.)

Small deployments require more CPUs because in a small deployment, all components are running on a single virtual machine.

- 12b** Click *Apply*.
- 13** Configure the bootable disk image:
  - 13a** On the Summary page, click *Disks*.
  - 13b** Click *Harddisk*.
  - 13c** On the Virtual Disk page, specify the following information:
    - Source:** Click *Browse*, then browse to the `.raw` file that you untared in [Step 6](#).
    - Protocol:** Select *file*.
    - Size (GB):** The default size is 40.1 GB. This cannot be changed.
    - Create Sparse Image File:** This option is not available.
    - Read-Only Access:** Do not select this option.
  - 13d** Click *OK*.
- 14** Create a separate Xen hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Xen hard disk as described here, you cannot update to a new version of Filr.
  - 14a** On the Disks page, click *Harddisk*.
  - 14b** On the Virtual Disk page, specify the following information:
    - Source:** This field should already contain the path to the `.raw` file that will be created when the virtual machine is created. If desired, you can rename the disk in the source field from `disk0` to a name of your choosing.
    - Protocol:** Select *file*.
    - Size (GB):** Specify the amount of hard disk space that you want to allocate. The recommended minimum is 25 GB.  
  
For more detailed information about the type of information that is stored here, see [Table 1-1, "Filr Appliance Storage," on page 17](#).
    - Create Sparse Image File:** Select this option.
    - Read-Only Access:** Do not select this option.
- 15** Click *OK > Apply*.
- 16** Click *OK* to save your changes and to create and power on the virtual machine.

---

**IMPORTANT:** Do not power on the appliance until you have created a separate Xen hard disk for the appliance, as described in [Step 14](#).

---

- 17** Continue with [Section 2.1.2, "Installing the Filr Appliance," on page 33](#).

## Hyper-V Configuration

- 1** Log in to the host server either locally or from a remote workstation.  
You can use Windows Remote Desktop to log in to the host server from a remote workstation.
- 2** Create a new directory in the location where you want each virtual machine to reside (for example, `C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks`). In a later step, you will download the Filr software to this directory.



As a best practice, give this directory the same name as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `Filr1`, the name of this new directory should also be `Filr1`.

- 3 Download the Filr software (`Filr.x86_64-version.vhd.zip`) to the directory on the host server that you created in [Step 2](#).

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 4 Extract the `Filr.x86_64-version.vhd.zip` file to the directory on the host server that you created in [Step 2](#).
- 5 Open the Hyper-V Manager.
- 6 In Hyper-V Manager, right-click the disk name in the Action Pane in the left-hand column of the Hyper-V Manager window. This is the disk where you want to create the new virtual machine. Then click *New > Virtual Machine*.

The New Virtual Machine Wizard is displayed.

- 7 Review the Before You Begin page, then click *Next*.
- 8 In the *Name* field, specify a name for the new virtual machine. For example, `Filr1`.
- 9 Click *Next*.
- 10 In the *Startup memory* field, specify the amount of memory (in MB) to allocate to the virtual machine. 8 GB (8192 MB) is the recommended minimum for a large deployment of Filr.

For an all-in-one (small) deployment, you should increase the default to at least 12 GB (12288 MB) of memory.

Small deployments require more memory because in a small deployment, all components are running on a single virtual machine.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,”](#) on page 72 and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,”](#) on page 75.

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

- 11 Click *Next*.
- 12 On the Configure Networking page, select the networking card of your choice, then click *Next*.
- 13 Configure the bootable disk image:
  - 13a On the Connect Virtual Hard Disk page, select *Use an existing virtual hard disk*, then browse to the `.vhd` file that was in the downloaded `.zip` file that you extracted in [Step 4](#).
  - 13b Click *Open* to select the file, then click *Next*.
- 14 Click *Finish*.
- 15 Create a separate Hyper-V hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Hyper-V hard disk as described here, you cannot update to a new version of Filr.
  - 15a In Hyper-V Manager, right-click the disk that you just created, then click *Settings*.
  - 15b In the Hardware section, select *IDE Controller 1*, select *Hard Drive*, then click *Add*.
  - 15c Select *Virtual hard disk*, then click *New*.
  - 15d Review the Before You Begin page, then click *Next*.



- 15e On the Choose Disk Format page, select *VHD*, then click *Next*.
- 15f On the Choose Disk Type page, select *Fixed size*, then click *Next*.
- 15g On the Specify Name and Location page, specify the following information, then click *Next*:
  - Name:** Specify a name for the hard disk. For example, `FilrDisk2`.
  - Location:** Specify the location where you want the hard drive to be located.
- 16 On the Configure Disk page, select *Create a new blank virtual hard disk*, then specify a size for the hard disk. The recommended minimum is 25 GB.  
For more detailed information about the type of information that is stored here, see [Table 1-1, "Filr Appliance Storage,"](#) on page 17.
- 17 Click *Next*.
- 18 Review the summary information, then click *Finish*.
- 19 Click *Apply > OK*.
- 20 Right-click the virtual machine, then click *Start*.

---

**IMPORTANT:** Do not start the appliance until you have created a separate Hyper-V hard disk for the appliance, as described in [Step 15](#).

---

- 21 Right-click the virtual machine, then click *Connect*.
- 22 Continue with [Section 2.1.2, "Installing the Filr Appliance,"](#) on page 33.

## 2.1.2 Installing the Filr Appliance

- 1 After you have downloaded the Filr appliance, configured the virtual environment, and powered on the appliance, click the *Console* tab.
- 2 After the appliance starts, select your preferred keyboard layout in the *Keyboard Language* drop-down, then accept the license agreement. You can change the language the license agreement is displayed in from the *License Language* drop-down.

The Filr Appliance Configuration page appears.

3 On the configuration page, specify the following network information:

**Root password and confirmation:** The root password for your Filr appliance. The root username is case-sensitive and should not be capitalized.

**Vaadmin password and confirmation:** The preferred user to use when logging in to the appliance. The username is case-sensitive and should not be capitalized.

**Hostname:** The fully qualified DNS host name associated with the appliance's IP address. For example, myFilr.mynetwork.example.com.

**IP Address:** The static IP address for the appliance. For example, 172.17.2.3.

**Network Mask:** The network mask associated with the appliance's IP address. For example, 255.255.255.0.

**Gateway:** The IP address of the gateway on the subnet where your Filr virtual appliance is located. For example, 172.17.2.254.

In a clustered environment, Filr appliances must exist in the same subnet.

**DNS Servers:** The IP address of a primary DNS server for your network. For example, 172.17.1.1.

**NTP Server:** The IP address or DNS name of the reliable external Network Time Protocol (NTP) server your OES server uses. For example, time.example.com.

For the best results, set up NTP in accordance with the [VMware best practices guidelines \(http://kb.vmware.com/selfservice/microsites/search.do?language=en\\_US&cmd=displayKC&externalId=1006427\)](http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427).

**Region:** Your local region.

**Time Zone:** Your local time zone.

The time zone of your Filr server should match the time zone of all file servers that Filr will point to via Net Folders.

---

**NOTE:** After installation, if you are not able to access the appliance and you need to change any of these settings, you can use the VACONFIG utility from the Filr command prompt. For more information, see [Section D.1, “Using VACONFIG to Modify Network Information,”](#) on page 113.

---

- 4 Click *Next*.
- 5 Select the data storage location. This is the location (`/vastorage`) where information specific to the appliance is stored and is used when the appliance is upgraded. Each appliance has its own `/vastorage` location.
  - ♦ **Hard Disk (recommended):** This option is recommended for both small and large deployment scenarios. You must assign a hard disk to the virtual machine before you choose this option. If you have not already assigned a hard disk, click *Power Off Virtual Machine*, modify the virtual machine settings to add a hard disk, then power on the virtual machine. If you created a secondary VMware hard disk for this appliance as described in [Step 10](#) in “[VMware Configuration](#)” on page 28, select this option.
  - ♦ **Remote NFS:** Use a remote NFS location only in a large deployment scenario, where you plan to configure all Filr servers (Filr, Filr Search, and MySQL) as separate virtual machines.

---

**IMPORTANT:** Before you choose this option, you must configure NFS on the remote linux server by setting the `rw` and `no_root_squash` options on the remote directory.

For detailed information about how to configure NFS on the remote Linux server, see [Appendix B, “Setting Up Remote NFS for the Filr Data Storage Location,”](#) on page 109.

---

For more information about the type of data that is stored here, see “[Data Storage for the Appliance](#)” on page 11.

- 6 Click *Next*.
- 7 (Conditional) If you selected *Hard Disk* in [Step 5](#), specify the following options, then click *Next*:
  - Hard Drive:** Select the hard drive you are using.If you created a secondary VMware hard disk for this appliance as described in [Step 10](#), it is automatically detected and `sdb` is displayed as the hard drive. Accept the defaults for the other options on this page and skip to [Step 9](#).
  - Use an existing partition:** Select this option to use an existing partition.
  - Create a new partition:** Select this option to create a new partition.
  - Partition size:** Specify the partition size.
  - Filesystem type:** Specify the type of file system.
- 8 (Conditional) If you selected *Remote NFS* in [Step 5](#), specify the following options:
  - NFS Server Hostname:** Specify the host name of the NFS server.
  - Remote Directory:** Specify the path to the remote directory.As a best practice, use `vastorage` as the name for the directory on the remote NFS server. For a clustered environment (where you have a separate mount point on the NFS server for each Filr appliance), you must give each `vastorage` directory a unique name that represents each Filr appliance. For example, `vastorageA`, `vastorageB`.
- 9 Select whether you want to configure shared storage for a clustered environment. This storage (`/vashare`) is shared storage among all of the Filr appliances in the cluster. There is only one `/vashare` storage location that is used by all Filr appliances in the cluster.

If your Filr system has the potential to grow, you should configure shared storage with your initial Filr installation. Doing so ensures that you can scale your system in the future if the need arises by adding additional Filr appliances.

- ♦ **Do Not Configure Shared Storage:** Select this option if you do not plan to run Filr in a clustered environment. This is suitable for a small installation where you plan to install all components as a single appliance. This is also suitable for a large installation where you plan to install only one Filr appliance. However, if you plan to grow your Filr system in the future, you should not select this option. Skip to [Step 11](#).
- ♦ **Remote NFS:** (Recommended) Select this option if you plan to set up a clustered environment with multiple Filr appliances.

---

**IMPORTANT:** Before you choose this option, you must configure NFS on the remote linux server (SLES or OES) by setting the `rw` and `no_root_squash` options on the remote directory.

For detailed information about how to configure NFS on the remote Linux server, see [Appendix B, “Setting Up Remote NFS for the Filr Data Storage Location,” on page 109](#).

---

For more information about possible configurations when running Filr in a clustered environment, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,” on page 24](#).

**10** (Conditional) If you are configuring Filr for a clustered environment:

**10a** Click *Next*.

**10b** Specify the following options:

**NFS Server Hostname:** Specify the host name of the NFS server.

Windows servers are not supported.

**Remote Directory:** Specify the path to the remote directory. As a best practice, use `vashare` as the name for this directory on the remote NFS server.

**11** Click *Configure*.

A message indicating that the installation was successful is displayed.

**12** **If you are performing a small installation** with all components running on a single appliance, continue with the configuration of the appliance, as described in [Chapter 3, “Configuring Filr for the First Time,” on page 53](#).

or

**If you are performing a large installation**, continue with [Section 2.2, “Installing Separate Appliances for a Large Installation,” on page 37](#).

or

**If you are performing a clustered installation**, install another Filr appliance as described in this section ([Section 2.1, “Installing the Filr Appliance,” on page 27](#)) until you have installed your desired number of Filr appliances. Then continue with [Section 2.2, “Installing Separate Appliances for a Large Installation,” on page 37](#).

## 2.2 Installing Separate Appliances for a Large Installation

In a large installation, the Filr software, the MySQL database, and the search index each run as a separate appliance.

Running the Filr software, the MySQL database, and the search index as separate appliances allows each component to have access to more server memory, disk space, and CPU resources. There can be multiple Filr appliances and multiple search index appliances. There can be only one database appliance.

You should have already installed the Filr appliance, as described in [Section 2.1, “Installing the Filr Appliance,” on page 27](#). The following sections describe how to install the search index appliance and the MySQL database appliance. If you have an existing MySQL database that you want to use as the Filr database, you must make certain changes on the database to configure it to work with Filr.

You must configure the MySQL database appliance to change the database administrator password before you configure the Filr appliance for the first time.

- ♦ [Section 2.2.1, “Installing the Search Index Appliance,” on page 37](#)
- ♦ [Section 2.2.2, “Installing the MySQL Database Appliance,” on page 44](#)
- ♦ [Section 2.2.3, “Configuring an Existing MySQL Database,” on page 51](#)

### 2.2.1 Installing the Search Index Appliance

- ♦ [“Downloading the Search Index Appliance and Configuring the Virtual Environment” on page 37](#)
- ♦ [“Installing the Search Index Appliance” on page 42](#)

#### Downloading the Search Index Appliance and Configuring the Virtual Environment

You need to download the search index appliance and configure the virtual environment where you plan to run the appliance. This includes configuring system resources and so forth.

The process of downloading the search index appliance and configuring the virtual environment differs depending on which virtual environment you plan to use to run the search index appliance.

- ♦ [“VMware Configuration” on page 37](#)
- ♦ [“Xen Configuration” on page 39](#)
- ♦ [“Hyper-V Configuration” on page 41](#)

#### VMware Configuration

- 1 Download the Lucene search index software (`Filrsearch-version.ovf.zip`) to your management workstation.

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 2 Extract the `Filrsearch-version.ovf.zip` file on your management workstation until the `Filrsearch-version` file folder appears.

- 3 In the vSphere client, click *File > Deploy OVF Template*.
- 4 Browse to and select the `.ovf` file in the `Filrsearch-version` file folder.
- 5 Click *Next*.
- 6 Click *Next* again.
- 7 In the *Name* field, rename the Filr appliance to a name of your choosing, then click *Next*.
- 8 Click *Next* to accept the default for the disk format.
- 9 Click *Finish*.
- 10 Create a separate VMware hard disk (Hard Disk 2) for the appliance. If you do not create a separate VMware hard disk as described here, you cannot update to a new version of the appliance.
  - 10a In the vSphere client, right-click the virtual machine that you just created, and for which you want to create secondary storage, then click *Edit Settings*.

The Virtual Machine Properties page is displayed.
  - 10b On the *Hardware* tab, click *Add*.

The Add Hardware dialog box is displayed.
  - 10c Select *Hard Disk*, then click *Next*.
  - 10d Leave *Create a new virtual disk* selected, then click *Next*.
  - 10e Specify the amount of hard disk space that you want to allocate. The recommended minimum differs depending on the nature of your Filr environment.

To see a formula to calculate the storage requirement for your environment, see [Table 1-2, "Search Index Appliance Storage,"](#) on page 19.
  - 10f In the *Disk Provisioning* section, select either *Thick Provision Eager Zeroed* or *Support clustering features such as Fault Tolerance*, depending on the VMware version that you are running.
  - 10g In the *Location* section, select *Specify a datastore or datastore cluster*, then click *Browse*.
  - 10h Select a datastore, then click *OK*.
  - 10i Click *Next*.
  - 10j In the *Virtual Device Node* section, select *SCSI (1:0)* from the drop-down list.
  - 10k In the *Mode* section, select *Independent*, select *Persistent*, then click *Next*.
  - 10l Click *Finish*.
- 11 Increase the amount of memory that VMware allocates for the appliance.

The default is 4 GB. This default is appropriate for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000. Novell also recommends 2 CPUs.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, "Changing the Java JDK Configuration Settings,"](#) on page 72 and [Chapter 5, "Configuring and Maintaining the Search Index Appliance,"](#) on page 75.

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

- 11a In the Virtual Machine Properties window, select *Memory*, then increase the setting to a suitable size for your environment.
- 11b Click *OK* to exit the Virtual Machine Properties window.

- 12 Power on the appliance.

---

**IMPORTANT:** If you are planning to use a separate VMware hard disk to store your Filr files, do not power on the appliance until you have created the hard disk, as described in [Step 10](#).

---

- 13 Continue with “[Installing the Search Index Appliance](#)” on page 42.

## Xen Configuration

- 1 Log in to the host server either locally or from a remote workstation.

You can use the following command to log in to the host server from a remote workstation on Linux:

```
ssh -X root@host_ip_address
```

You must use the `-X` in the command in order to display the GUI installation program. The steps in this section use the GUI installation program to configure the server.

- 2 Navigate to the `/var/lib/xen/images` directory on the host server.

- 3 Create a new directory inside the images directory where you can download the Filr software.

The name of this directory must be the same as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `FilrSearch1`, the name of this new directory must also be `FilrSearch1`.

- 4 Change to the directory that you just created. For example, `/var/lib/xen/images/FilrSearch1`.

- 5 Download the Filr software (`Filrsearch-version.xen.tar.gz`) to the following directory on the host server:

```
/var/lib/xen/images
```

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 6 Untar the `Filrsearch-version.xen.tar.gz` file in the directory where you downloaded the file, as described in [Step 5](#).

You can use the following command to untar the file:

```
tar -Sxvzf Filrsearch-version.xen.tar.gz
```

A `filr -version` directory is created, which contains a `.raw` file that you will use to run the virtual image.

- 7 From the host server, run the following command to launch the GUI configuration menu:

```
vm-install
```

The Create a Virtual Machine wizard is displayed.

- 8 Click *Forward*.

- 9 Select *I have a disk or disk image with an installed operating system*, then click *Forward*.

- 10 Leave *SUSE Linux Enterprise Server 11* selected, then click *Forward*.

- 11 Rename the virtual machine by clicking *Name of Virtual Machine*, then specifying a new name in the *Name* field. Then click *Apply*. For example, `FilrSearch1`.

- 12 Configure the amount of memory that Xen allocates for the Filr appliance.

- 12a On the Summary page, click *Hardware*, then specify the following information:

**Available Memory:** Displays the amount of memory that is available on the host server.



**Maximum Memory:** 4 GB is the recommended minimum for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**Virtual Processors:** Specify 2 CPUs. At least half of the memory should be dedicated to the Java heap.

- 12b Click *Apply*.
- 13 Configure the bootable disk image:
  - 13a On the Summary page, click *Disks*.
  - 13b Click *Harddisk*.
  - 13c On the Virtual Disk page, specify the following information:
    - Source:** Click *Browse*, then browse to the `.raw` file that you untared in [Step 6](#).
    - Protocol:** Select *file*.
    - Size (GB):** The default size is 40.1 GB. This cannot be changed.
    - Create Sparse Image File:** This option is not available.
    - Read-Only Access:** Do not select this option.
  - 13d Click *OK*.
- 14 Create a separate Xen hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Xen hard disk as described here, you cannot update to a new version of Filr.
  - 14a On the Summary page, click *Disks*.
  - 14b Click *Harddisk*.
  - 14c On the Virtual Disk page, specify the following information:
    - Source:** Click *Browse*, then browse to the location of a datastore where you want Filr files to be stored.
    - Protocol:** Select *file*.
    - Size (GB):** Specify the amount of hard disk space that you want to allocate. The recommended minimum differs depending on the nature of your Filr environment.  
To see a formula to calculate the storage requirement for your environment, see [Table 1-2, “Search Index Appliance Storage,” on page 19](#).  
For more detailed information about the type of information that is stored here, see [Table 1-2, “Search Index Appliance Storage,” on page 19](#).
    - Create Sparse Image File:** Select this option.
    - Read-Only Access:** Do not select this option.
- 15 Click *OK > Apply*.
- 16 Click *OK* to save your changes and to create the virtual machine.
- 17 Power on the appliance (virtual machine).



---

**IMPORTANT:** Do not power on the appliance until you have created a separate Xen hard disk for the appliance, as described in [Step 14](#).

---

- 18 Continue with “[Installing the Search Index Appliance](#)” on page 42.

## Hyper-V Configuration

- 1 Log in to the host server either locally or from a remote workstation.

You can use Windows Remote Desktop to log in to the host server from a remote workstation.

- 2 Create a new directory in the location where you want each virtual machine to reside (for example, `C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks`). In a later step, you will download the Filr software to this directory.

As a best practice, give this directory the same name as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `FilrSearch1`, the name of this new directory should also be `FilrSearch1`.

- 3 Download the Filr software (`Filrsearch-version.vhd.zip`) to the directory on the host server that you created in [Step 2](#).

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 4 Extract the `Filrsearch-version.vhd.zip` file to the directory on the host server that you created in [Step 2](#).
- 5 Open the Hyper-V Manager.
- 6 In Hyper-V Manager, right-click the disk name in the Action Pane where you want to create the new virtual machine, then click *New > Virtual Machine*.  
The New Virtual Machine Wizard is displayed.
- 7 Click *Next* after you have reviewed the Before You Begin page.
- 8 In the *Name* field, specify a name for the new virtual machine. For example, `FilrSearch1`.
- 9 Click *Next*.
- 10 In the *Startup memory* field, specify the amount of memory (in MB) to allocate to the virtual machine. 4 GB is the recommended minimum for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000. Novell also recommends 2 CPUs.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,”](#) on page 72 and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,”](#) on page 75.

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

- 11 Click *Next*.
- 12 On the Configure Networking page, select the networking card of your choice, then click *Next*.
- 13 Configure the bootable disk image:
  - 13a On the Connect Virtual Hard Disk page, select *Use an existing virtual hard disk*, then browse to the `.vhd` file that was in the downloaded `.zip` file that you extracted in [Step 4](#).
  - 13b Click *Open* to select the file, then click *Next*.

- 14 Click *Finish*.
- 15 Create a separate Hyper-V hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Hyper-V hard disk as described here, you cannot update to a new version of Filr.
  - 15a In Hyper-V Manager, right-click the disk that you just created, then click *Settings*.
  - 15b In the Hardware section, select *IDE Controller 1*, select *Hard Drive*, then click *Add*.
  - 15c Select *Virtual hard disk*, then click *New*.
  - 15d Review the Before You Begin page, then click *Next*.
  - 15e On the Choose Disk Format page, select *VHD*, then click *Next*.
  - 15f On the Choose Disk Type page, select *Fixed size*, then click *Next*.
  - 15g On the Specify Name and Location page, specify the following information, then click *Next*:
    - Name:** Specify a name for the hard disk. For example, `FilrDisk2`.
    - Location:** Specify the location where you want the hard drive to be located.
- 16 On the Configure Disk page, select *Create a new blank virtual hard disk*, then specify the amount of hard disk space that you want to allocate. The recommended minimum differs depending on the nature of your Filr environment.

To see a formula to calculate the storage requirement for your environment, see [Table 1-2, "Search Index Appliance Storage,"](#) on page 19.
- 17 Click *Next*.
- 18 Review the summary information, then click *Finish*.
- 19 Click *Apply > OK*.
- 20 Right-click the virtual machine, then click *Start*.

---

**IMPORTANT:** Do not start the appliance until you have created a separate Hyper-V hard disk for the appliance, as described in [Step 15](#).

---

- 21 Right-click the virtual machine, then click *Connect*.
- 22 Continue with ["Installing the Search Index Appliance"](#) on page 42.

## Installing the Search Index Appliance

- 1 After you have downloaded the search index appliance, configured the virtual environment, and powered on the appliance, click the *Console* tab.
- 2 After the appliance starts, select your preferred keyboard layout in the *Keyboard Language* drop-down, then accept the license agreement. (You can change the language the license agreement is displayed in from the *License Language* drop-down.)
- 3 Specify the following network information:
  - Root password and confirmation:** The root password for your Search Index appliance. The root username is case-sensitive and should not be capitalized.
  - Vaadmin password and confirmation:** The preferred user to use when logging in to the appliance. The username is case-sensitive and should not be capitalized.
  - Hostname:** The fully qualified DNS host name associated with the appliance's IP address. For example, `myFilr.mynetwork.example.com`.
  - IP Address:** The static IP address for the appliance. For example, `172.17.2.3`.
  - Network Mask:** The network mask associated with the appliance's IP address. For example, `255.255.255.0`.

**Gateway:** The IP address of the gateway on the subnet where your Filr virtual appliance is located. For example, 172.17.2.254.

**DNS Servers:** The IP address of a primary DNS server for your network. For example, 172.17.1.1.

**NTP Server:** The IP address or DNS name of the reliable external Network Time Protocol (NTP) server your OES server uses. For example, time.example.com.

**Region:** Your local region.

**Time Zone:** Your local time zone.

---

**NOTE:** After installation, if you are not able to access the appliance and you need to change any of these settings, you can use the VACONFIG utility from the command prompt. For more information, see [Section D.1, “Using VACONFIG to Modify Network Information,” on page 113.](#)

---

4 Click *Next*.

5 Select the data storage location. This is the location (`/vastorage`) where information specific to the appliance is stored and is used when the appliance is upgraded. Each appliance has its own `/vastorage` location.

- ◆ **Hard Disk (recommended):** This option is recommended for both small and large deployment scenarios. You should have already assigned a hard disk to the virtual machine before you choose this option, as described in [Step 10](#). If you have not already assigned a hard disk, click *Power Off Virtual Machine*, modify the virtual machine settings to add a hard disk, then power on the virtual machine.
- ◆ **Remote NFS:** *Do not* select this option when installing the search index appliance. The search index appliance is not supported with Remote NFS. If you plan to have multiple Lucene index servers, be aware that load balancing is not supported between index servers. Rather, the purpose of having multiple Lucene index servers is to provide fault tolerance or backup in the event that one index server fails.

For more information about the type of data that is stored here, see [“Data Storage for the Appliance” on page 11.](#)

6 Click *Next*.

7 Specify the following options for hard disk data storage location:

**Hard Drive:** Select the hard drive you are using.

If you created a secondary VMware hard disk for this appliance as described in [Step 10](#), it is automatically detected and `sdh` is displayed as the hard drive. Accept the defaults for the other options on this page and skip to [Step 8](#).

**Use an existing partition:** Select this option to use an existing partition.

**Create a new partition:** Select this option to create a new partition.

**Partition size:** Specify the partition size.

**Filesystem type:** Specify the type of file system.

8 Click *Configure*.

The appliance might take a few minutes to install. When the installation is complete, you see a message telling you that the appliance is now ready to configure.

- 9 (Recommended) Create a cluster of Lucene index server appliances (no more than two is recommended). Having multiple Lucene index server appliances provides fault tolerance or backup in the event that one index server fails.
  - 9a Install another Lucene index server appliance, as described in this section ([Section 2.2.1, “Installing the Search Index Appliance,” on page 37](#)).
  - 9b Log in to the Filr appliance administration and configure Lucene for High Availability, as described in [Section 4.5, “Changing Your Search Index Configuration,” on page 64](#).
- 10 Set a password for the search index appliance. You can also change other configuration options for the search index appliance.

For information about how to change the search index appliance password and other configuration options, see [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).
- 11 Continue with installing the database appliance, as described in [Section 2.2.2, “Installing the MySQL Database Appliance,” on page 44](#).

## 2.2.2 Installing the MySQL Database Appliance

---

**NOTE:** The MySQL database appliance is not intended for enterprise installations. If your organization has an existing MySQL database, it is recommended that you configure Filr to use the existing database.

If you already have a MySQL database server that you want Filr to use, you can skip this section and continue with [Section 2.2.3, “Configuring an Existing MySQL Database,” on page 51](#).

Filr cannot be used with MySQL 5.6 and later.

---

- ♦ [“Downloading the MySQL Database Appliance and Configuring the Virtual Environment” on page 44](#)
- ♦ [“Installing the MySQL Database Appliance” on page 49](#)

### Downloading the MySQL Database Appliance and Configuring the Virtual Environment

You need to download the MySQL database appliance and configure the virtual environment where you plan to run the appliance. This includes configuring system resources and so forth.

The process of downloading the MySQL database appliance and configuring the virtual environment differs depending on which virtual environment you plan to use to run the MySQL database appliance.

- ♦ [“VMware Configuration” on page 44](#)
- ♦ [“Xen Configuration” on page 46](#)
- ♦ [“Hyper-V Configuration” on page 48](#)

#### VMware Configuration

- 1 Download the MySQL database software (`MySQL.x86_64-version.ovf.zip`) to your management workstation.

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A-) (<http://download.novell.com/Download?buildid=9xcn1vXns5A->) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 2 Extract the `MySQL.x86_64-version.ovf.zip` file on your management workstation until the `MySQL-version` file folder appears.
- 3 In the vSphere client, click *File > Deploy OVF Template*.
- 4 Browse to and select the `.ovf` file in the `MySQL-version` file folder.
- 5 Click *Next*.
- 6 Click *Next* again.
- 7 In the *Name* field, rename the Filr appliance to a name of your choosing, then click *Next*.
- 8 Click *Next* to accept the default for the disk format.
- 9 Click *Finish*.
- 10 Identify the location where you want to store your Filr files. This can be an NFS mount point or a VMware hard disk.
  - ♦ If you choose to have a VMware hard disk, continue with [Step 11](#). (Recommended)
  - ♦ If you choose to have an NFS mount point, continue with [Step 12](#). You will make this selection during the initial configuration of the appliance.
- 11 Create a separate VMware hard disk (Hard Disk 2) for the appliance:
  - 11a In the vSphere client, right-click the virtual machine that you just created, and for which you want to create secondary storage, then click *Edit Settings*.  
The Virtual Machine Properties page is displayed.
  - 11b On the *Hardware* tab, click *Add*.  
The Add Hardware dialog box is displayed.
  - 11c Select *Hard Disk*, then click *Next*.
  - 11d Specify the amount of hard disk space that you want to allocate. A minimum of 100 GB is recommended, but this might be more for your environment.  
To see a formula to calculate the storage requirement for your environment, see [Table 1-3, "MySQL Database Appliance Storage,"](#) on page 19.
  - 11e Leave *Create a new virtual disk* selected, then click *Next*.
  - 11f In the *Disk Provisioning* section, select either *Thick Provision Eager Zeroed* or *Support clustering features such as Fault Tolerance*, depending on the VMware version that you are running.
  - 11g In the *Location* section, select *Specify a datastore or datastore cluster*, then click *Browse*.
  - 11h Select a datastore, then click *OK*.
  - 11i Click *Next*.
  - 11j In the *Virtual Device Node* section, select *SCSI (1:0)* from the drop-down list.
  - 11k In the *Mode* section, select *Independent*, select *Persistent*, then click *Next*.
  - 11l Click *Finish*.
- 12 Increase the amount of memory that VMware allocates for the appliance.  
The default is 4 GB. This default is appropriate for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000. Novell also recommends 2 CPUs.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**12a** In the Virtual Machine Properties window, select *Memory*, then increase this setting to a suitable size for your environment.

**12b** Click *OK* to exit the Virtual Machine Properties window.

**13** Power on the appliance.

---

**IMPORTANT:** If you are planning to use a separate VMware hard disk to store your Filr files, do not power on the appliance until you have created the hard disk, as described in [Step 11](#).

---

**14** Continue with [“Installing the MySQL Database Appliance” on page 49](#).

## Xen Configuration

**1** Log in to the host server either locally or from a remote workstation.

You can use the following command to log in to the host server from a remote workstation on Linux:

```
ssh -X root@host_ip_address
```

You must use the `-X` in the command in order to display the GUI installation program. The steps in this section use the GUI installation program to configure the server.

**2** Navigate to the `/var/lib/xen/images` directory on the host server.

**3** Create a new directory inside the images directory where you can download the Filr software. The name of this directory must be the same name as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `FilrDatabase1`, the name of this new directory must also be `FilrDatabase1`.

**4** Change to the directory that you just created. For example, `/var/lib/xen/images/FilrDatabase1`.

**5** Download the Filr software (`MySQL.x86_64-version.xen.tar.gz`) to the following directory on the host server:

```
/var/lib/xen/images
```

You can access the software from the [Novell Customer Center \(NCC\) \(https://www.novell.com/center\)](https://www.novell.com/center). Or, you can access an evaluation version of the software from [this location \(http://download.novell.com/Download?buildid=9xcn1vXns5A~\)](http://download.novell.com/Download?buildid=9xcn1vXns5A~) on the [Novell Downloads page \(http://download.novell.com\)](http://download.novell.com).

**6** Untar the `MySQL.x86_64-version.xen.tar.gz` file in the directory where you downloaded the file, as described in [Step 5](#).

You can use the following command to untar the file:

```
tar -Sxvzf MySQL.x86_64-version.xen.tar.gz
```

A `filr-version` directory is created, which contains a `.raw` file that you will use to run the virtual image.

**7** From the host server, run the following command to launch the GUI configuration menu:

```
vm-install
```

The Create a Virtual Machine wizard is displayed.

- 8 Click *Forward*.
  - 9 Select *I have a disk or disk image with an installed operating system*, then click *Forward*.
  - 10 Leave *SUSE Linux Enterprise Server 11* selected, then click *Forward*.
  - 11 Rename the virtual machine by clicking *Name of Virtual Machine*, then specifying a new name in the *Name* field. Then click *Apply*. For example, `FilrDatabase1`.
  - 12 Configure the amount of memory that Xen allocates for the Filr appliance.
    - 12a On the Summary page, click *Hardware*, then specify the following information:
      - Available Memory:** Displays the amount of memory that is available on the host server.
      - Maximum Memory:** 4 GB is the recommended minimum for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**Virtual Processors:** Specify 2 CPUs. At least half of the memory should be dedicated to the Java heap.

  - 12b Click *Apply*.
- 13 Configure the bootable disk image:
  - 13a On the Summary page, click *Disks*.
  - 13b Click *Harddisk*.
  - 13c On the Virtual Disk page, specify the following information:
    - Source:** Click *Browse*, then browse to the `.raw` file that you untared in [Step 6](#).
    - Protocol:** Select *file*.
    - Size (GB):** The default size is 40.1 GB. This cannot be changed.
    - Create Sparse Image File:** This option is not available.
    - Read-Only Access:** Do not select this option.
  - 13d Click *OK*.
- 14 Create a separate Xen hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Xen hard disk as described here, you cannot update to a new version of Filr.
  - 14a On the Summary page, click *Disks*.
  - 14b Click *Harddisk*.
  - 14c On the Virtual Disk page, specify the following information:
    - Source:** Click *Browse*, then browse to the location of a datastore where you want Filr files to be stored.
    - Protocol:** Select *file*.
    - Size (GB):** Specify the amount of hard disk space that you want to allocate. A minimum of 100 GB is recommended, but this might be more for your environment.

To see a formula to calculate the storage requirement for your environment, see [Table 1-3, “MySQL Database Appliance Storage,” on page 19](#).

  - Create Sparse Image File:** Select this option.



**Read-Only Access:** Do not select this option.

- 15 Click *OK* > *Apply*.
- 16 Click *OK* to save your changes and to create the virtual machine.
- 17 Power on the appliance (virtual machine).

---

**IMPORTANT:** Do not power on the appliance until you have created a separate Xen hard disk for the appliance, as described in [Step 14](#).

---

- 18 Continue with “[Installing the MySQL Database Appliance](#)” on page 49.

## Hyper-V Configuration

- 1 Log in to the host server either locally or from a remote workstation.  
You can use Windows Remote Desktop to log in to the host server from a remote workstation.
- 2 Create a new directory in the location where you want the virtual machine to reside (for example, C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks). In a later step, you will download the Filr software to this directory.  
  
As a best practice, give this directory the same name as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `FilrDatabase1`, the name of this new directory should also be `FilrDatabase1`.
- 3 Download the Filr software (`MySQL.x86_64-version.vhd.zip`) to the directory on the host server that you created in [Step 2](#).  
  
You can access the software from the [Novell Customer Center \(NCC\) \(https://www.novell.com/center\)](https://www.novell.com/center). Or, you can access an evaluation version of the software from [this location \(http://download.novell.com/Download?buildid=9xcn1vXns5A~\)](http://download.novell.com/Download?buildid=9xcn1vXns5A~) on the [Novell Downloads page \(http://download.novell.com\)](http://download.novell.com).
- 4 Extract the `MySQL.x86_64-version.vhd.zip` file to the directory on the host server that you created in [Step 2](#).
- 5 Open the Hyper-V Manager.
- 6 In Hyper-V Manager, right-click the disk name in the Action Pane where you want to create the new virtual machine, then click *New* > *Virtual Machine*.  
The New Virtual Machine Wizard is displayed.
- 7 Review the Before You Begin page, then click *Next*.
- 8 In the *Name* field, specify a name for the new virtual machine. For example, `FilrDatabase1`.
- 9 Click *Next*.
- 10 In the *Startup memory* field, specify the amount of memory (in MB) to allocate to the virtual machine. 4 GB is the recommended minimum for a system that has a few hundred to 1,000 users. You should increase this if your user count exceeds 1,000. Novell also recommends 2 CPUs.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

- 11 Click *Next*.



- 12 On the Configure Networking page, select the networking card of your choice, then click *Next*.
- 13 Configure the bootable disk image:
  - 13a On the Connect Virtual Hard Disk page, select *Use an existing virtual hard disk*, then browse to the `.vhd` file that was in the downloaded `.zip` file that you extracted in [Step 4](#).
  - 13b Click *Open* to select the file, then click *Next*.
- 14 Click *Finish*.
- 15 Create a separate Hyper-V hard disk (Hard Disk 2) for the appliance. This is the location where you will store your Filr files (files that are located in users' [My Files](#) area). If you do not create a separate Hyper-V hard disk as described here, you cannot update to a new version of Filr.
  - 15a In Hyper-V Manager, right-click the disk that you just created, then click *Settings*.
  - 15b In the Hardware section, select *IDE Controller 1*, select *Hard Drive*, then click *Add*.
  - 15c Select *Virtual hard disk*, then click *New*.
  - 15d Review the Before You Begin page, then click *Next*.
  - 15e On the Choose Disk Format page, select *VHD*, then click *Next*.
  - 15f On the Choose Disk Type page, select *Fixed size*, then click *Next*.
  - 15g On the Specify Name and Location page, specify the following information, then click *Next*:
    - Name:** Specify a name for the hard disk. For example, `FilrDisk2`.
    - Location:** Specify the location where you want the hard drive to be located.
- 16 On the Configure Disk page, select *Create a new blank virtual hard disk*, then specify a size for the hard disk. The recommended minimum is 100 GB. A minimum of 100 GB is recommended, but this might be more for your environment.

To see a formula to calculate the storage requirement for your environment, see [Table 1-3, "MySQL Database Appliance Storage,"](#) on page 19.
- 17 Click *Next*.
- 18 Review the summary information, then click *Finish*.
- 19 Click *Apply > OK*.
- 20 Right-click the virtual machine, then click *Start*.

---

**IMPORTANT:** Do not start the appliance until you have created a separate Hyper-V hard disk for the appliance, as described in [Step 15](#).

---

- 21 Right-click the virtual machine, then click *Connect*.
- 22 Continue with ["Installing the MySQL Database Appliance"](#) on page 49.

## Installing the MySQL Database Appliance

- 1 After you have downloaded the MySQL database appliance, configured the virtual environment, and powered on the appliance, click the *Console* tab.
- 2 After the appliance starts, select your preferred keyboard layout in the *Keyboard Language* drop-down, then accept the license agreement. You can change the language the license agreement is displayed in from the *License Language* drop-down.
- 3 On the Configuration page, specify the following network information:
  - Root password and confirmation:** The root password for your database appliance. The root username is case-sensitive and should not be capitalized.

**Vadmin password and confirmation:** The preferred user to use when logging in to the appliance. The username is case-sensitive and should not be capitalized.

**Hostname:** The fully qualified DNS host name associated with the appliance's IP address. For example, myFiltr.mynetwork.example.com.

**IP Address:** The static IP address for the appliance. For example, 172.17.2.3.

**Network Mask:** The network mask associated with the appliance's IP address. For example, 255.255.255.0.

**Gateway:** The IP address of the gateway on the subnet where your database appliance is located. For example, 172.17.2.254.

**DNS Servers:** The IP address of a primary DNS server for your network. For example, 172.17.1.1.

**NTP Server:** The IP address or DNS name of the reliable external Network Time Protocol (NTP) server your OES server uses. For example, time.example.com.

**Region:** Your local region.

**Time Zone:** Your local time zone.

---

**NOTE:** After installation, if you are not able to access the appliance and you need to change any of these settings, you can use the VACONFIG utility from the Filr command prompt. For more information, see [Section D.1, "Using VACONFIG to Modify Network Information," on page 113](#).

---

4 Click *Next*.

5 Select the data storage location. This is the location (`/vastorage`) where information specific to the appliance is stored and is used when the appliance is upgraded. Each appliance has its own `/vastorage` location.

- ◆ **Hard Disk (recommended):** This option is recommended for both small and large deployment scenarios. You should have already assigned a hard disk to the virtual machine before you choose this option, as described in [Step 11 in "VMware Configuration" on page 44](#). If you didn't, power off this virtual machine, modify the virtual machine settings to add a hard disk, then power on the virtual machine.
- ◆ **Remote NFS:** Use a remote NFS location only in a large deployment scenario, where you plan to configure all Filr servers (Filr, Filr Search, and MySQL) as separate virtual machines.

---

**IMPORTANT:** Before you choose this option, you must configure NFS on the remote linux server by setting the `rw` and `no_root_squash` options on the remote directory.

For detailed information about how to configure NFS on the remote Linux server, see [Appendix B, "Setting Up Remote NFS for the Filr Data Storage Location," on page 109](#).

---

For more information about the type of data that is stored here, see ["Data Storage for the Appliance" on page 11](#).

6 Click *Next*.

7 (Conditional) If you selected *Hard Disk* in [Step 5](#), specify the following options:

**Hard Drive:** Select the hard drive you are using.

If you created a secondary VMware hard disk for this appliance as described in [Step 11 in "VMware Configuration" on page 44](#), it is automatically detected and `sdb` is displayed as the hard drive. Accept the defaults for the other options on this page and skip to [Step 9](#).

**Use an existing partition:** Select this option to use an existing partition.

**Create a new partition:** Select this option to create a new partition.

**Partition size:** Specify the partition size.

**Filesystem type:** Specify the type of file system.

- 8 (Conditional) If you selected *Remote NFS* in [Step 5](#), specify the following options:

**NFS Server Hostname:** Specify the hostname of the NFS server.

Windows servers are not supported.

**Remote Directory:** Specify the path to the remote directory.

The directory path for the remote directory that you specify here cannot be the same as the path that you specify when configuring the path for the Filr or search index appliances.

- 9 Click *Configure*.

The appliance might take a few minutes to install. When the installation is complete, you see a message indicating that the appliance is now ready to configure.

- 10 Configure the MySQL database appliance to change the database administrator password, as described in [Section 6.1, “Configuring the MySQL Database Appliance,” on page 77](#).

---

**IMPORTANT:** You must do this before you configure the Filr appliance for the first time.

---

- 11 Continue with [Chapter 3, “Configuring Filr for the First Time,” on page 53](#).

## 2.2.3 Configuring an Existing MySQL Database

When configuring Filr to use an existing MySQL database rather than the database appliance, Filr supports MySQL 5.0.96 through 5.5.x.

---

**IMPORTANT:** Filr cannot be used with MySQL 5.6 and later.

---

If you want to use an existing MySQL database as the Filr database, you must make some changes on the database to configure it to work with Filr.

- 1 Make the following changes on the MySQL server:

```
[client]
default-character-set = utf8

[mysqld]
character-set-server = utf8
max_connections = 900
transaction-isolation = READ-COMMITTED
expire_logs_days = 7
```

The `expire_logs_days` setting is optional, but is recommended. It is used to clean up `mysql-bin-*` files. If these files are not cleaned up on a regular basis, they can begin to consume a significant amount of disk space in the `vastorage` directory.

- 2 Uncomment the InnoDB tables section.
- 3 Increase the buffer pool size to approximately 60 percent of the amount of RAM that has been allocated to the dedicated MySQL server.

For example, a dedicated MySQL server with 4 GB of RAM should have a buffer pool size of 2560 MB, as follows:

```
innodb_buffer_pool_size = 2560M
```

- 4 Continue with [Chapter 3, “Configuring Filr for the First Time,” on page 53](#).



# 3 Configuring Filr for the First Time

After you install the Novell Filr appliance and configure the network settings as described in [Part 2, “Installing the Filr Appliance and Configuring the Operating System,”](#) on page 27, you are ready to configure the Filr appliance for the first time. This configuration process uses a quick wizard that gets your Filr system up and running. You can then make further configuration decisions, as described in [Chapter 4, “Configuring and Maintaining the Filr Appliance,”](#) on page 57.

During initial configuration, you can configure Filr for a small or large organization. The configuration you choose depends on the number of users that access the system. You should have already chosen your type of deployment during installation. For more information, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,”](#) on page 24.

In a small deployment, the Filr application, MySQL database, and search index all run within the same virtual appliance. In a large deployment, the Filr application, MySQL database, and search index run as separate virtual appliances.

- ♦ [Section 3.1, “Small Deployment Configuration,”](#) on page 53
- ♦ [Section 3.2, “Large Deployment Configuration,”](#) on page 54

## 3.1 Small Deployment Configuration

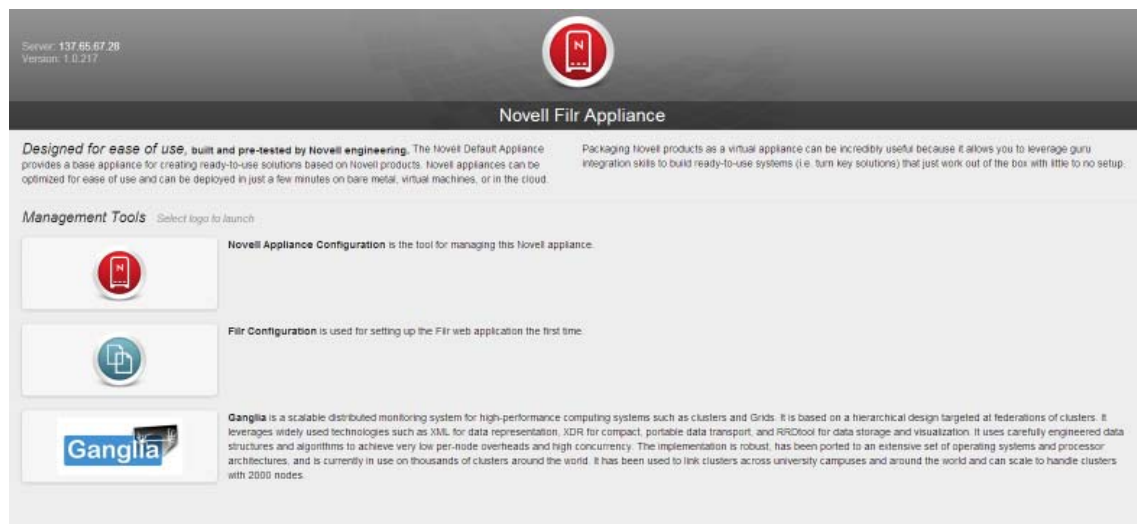
To configure the Filr appliance for a small organization:

- 1 After you have installed the Novell Filr appliance, as described in [Section 2.1, “Installing the Filr Appliance,”](#) on page 27, navigate to the following URL:

```
https://ip_address:9443
```

Use the IP address or DNS name of the server that you specified during the appliance installation.

- 2 Log in to the appliance using the `vaadmin` user and the password that you set. The Novell Filr Appliance landing page is displayed.



- 3 Click the *Filr Server Configuration* icon.



The Filr Server Configuration Wizard is displayed.

- 4 Select *Small Deployment*, then click *Next*.
- 5 On the Database page, specify and confirm the password for the MySQL administrator.  
If you need to change this password at a later time, you must use the native MySQL tools to do so.
- 6 Click *Next*.
- 7 In the *Default Locale* field, select the default locale for your Filr site. This is the language and locale that Filr uses when users first log in to the Filr site.

Users can change the individual locale after they log in by modifying the user profile, as described in “[Modifying Your Profile](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.

Some aspects of the Filr interface, such as group names and the login page, are always displayed in the default language, regardless of individual user settings. For more information, see “[Understanding the Filr Site Default Language](#)” in the *Novell Filr 1.0.1 Administration Guide*.

- 8 Click *Finish*.

After the configuration is complete, a summary is displayed.

This configuration summary contains information such as network, database, and so forth. You can modify these configuration settings at any time from the *Configuration* column on the left side of this page.

For information about each configuration option, see [Chapter 4, “Configuring and Maintaining the Filr Appliance,”](#) on page 57.

- 9 Continue with [Chapter 8, “Setting Up the Filr Site,”](#) on page 89 to make your site ready for user access.

## 3.2 Large Deployment Configuration

When you configure Filr for the first time for a large organization, you configure the Filr appliance to point to the MySQL database appliance and the search index appliance that you previously installed (see [Section 2.2, “Installing Separate Appliances for a Large Installation,”](#) on page 37 for installation information).

---

**IMPORTANT:** Ensure that you have installed the search index appliance and the MySQL database appliance before configuring the Filr appliance. The search index appliance and the MySQL database appliance must be running when you configure the Filr appliance.

---

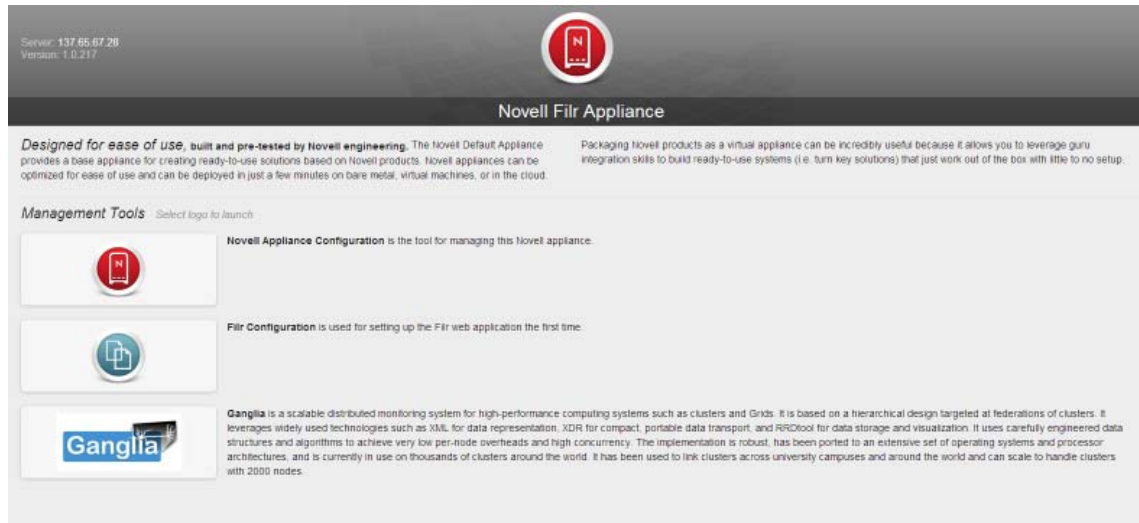
- 1 After you have installed the Novell Filr appliance, as described in [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,”](#) on page 27, navigate to the following URL:

`https://ip_address:9443`

Use the IP address or DNS name of the server that you specified during the appliance installation.

- 2 Log in to the appliance using the `root` user and the password that you set.

The Novell Filr Appliance landing page is displayed.



- 3 Click the *Filr Server Configuration* icon.



The Filr Server Configuration Wizard is displayed.

- 4 Select *Large Deployment*, then click *Next*.
- 5 Specify the following configuration options for the MySQL database:

**Database Type:** This is a MySQL database. No other database type can be used.

**Host Name:** The host name or IP address of the appliance where the MySQL database is running.

**Port:** The port that is used to access the appliance where the MySQL database is running.

**Database Name:** The name of the MySQL database.

**User Name:** The administrative username used to access the MySQL database. The default username is `filr`.

**Password:** The administrative password used to access the MySQL database. This is the password that you set when configuring the MySQL appliance, as described in [Chapter 6, "Configuring and Maintaining the MySQL Database Appliance,"](#) on page 77.

This is separate from the root password that you set for appliance access in [Step 3 of Section 2.2.2, "Installing the MySQL Database Appliance,"](#) on page 44.

- 6 Click *Next*
- 7 Specify the following configuration options for the search index:

**Host Name:** The host name of the appliance where the search index is running. You must specify the host name; the IP address cannot be used.

**RMI Port:** The port that is used to access the appliance where the Lucene search index server is running.

Do not change this setting unless your network uses a different RMI port number.

**Lucene User Name:** The username for your Lucene search index. By default, the username is `lucene_service`. You can keep this name or change it to a name that you choose.

**Lucene User Password:** Specify a password for your Lucene search index. This can be any password that you choose.

---

**NOTE:** If you have multiple search index appliances, specify the information for one of the search index appliances on this page, then after the configuration is complete, you must modify the search index settings to *High Availability*, as described in [Section 4.5.2, “Changing Search Index Configuration Settings,”](#) on page 64.

---

8 Click *Next*.

9 In the *Default Locale* field, select the default locale for your Filr site. This is the language and locale that Filr uses when users first log in to the Filr site.

Users can change the individual locale after they log in by modifying the user profile, as described in “[Modifying Your Profile](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.

Some aspects of the Filr interface, such as group names and the login page, are always displayed in the default language, regardless of individual user settings. For more information, see “[Understanding the Filr Site Default Language](#)” in the *Novell Filr 1.0.1 Administration Guide*.

10 Click *Finish*.

After the configuration is complete, a summary is displayed.

This configuration summary contains information such as network, database, and so forth. You can modify these configuration settings at any time from the *Configuration* column on the left side of this page.

For information about each configuration option, see [Chapter 4, “Configuring and Maintaining the Filr Appliance,”](#) on page 57.

11 Continue with [Chapter 8, “Setting Up the Filr Site,”](#) on page 89 to make your site ready for user access.



---

# 4 Configuring and Maintaining the Filr Appliance

Before you perform any of the procedures in this section, you must do the initial configuration of the Filr appliance, as described in [Chapter 3, “Configuring Filr for the First Time,”](#) on page 53.

If you chose a small deployment, all vital configuration options to get the Filr system up and running were chosen for you during the initial configuration. You can change those options as discussed in this section.

If you chose a large deployment, most configuration options were chosen for you. You chose other configuration options during the initial configuration. You can change those options as discussed in this section. However, configuration options that are specific to the MySQL database appliance and the search index appliance must be reconfigured as described in [Chapter 5, “Configuring and Maintaining the Search Index Appliance,”](#) on page 75 and [Chapter 6, “Configuring and Maintaining the MySQL Database Appliance,”](#) on page 77.

[Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on page 57 in this chapter describes how to modify configuration options for the Filr appliance. Other sections in this chapter provide additional information for each configuration option.

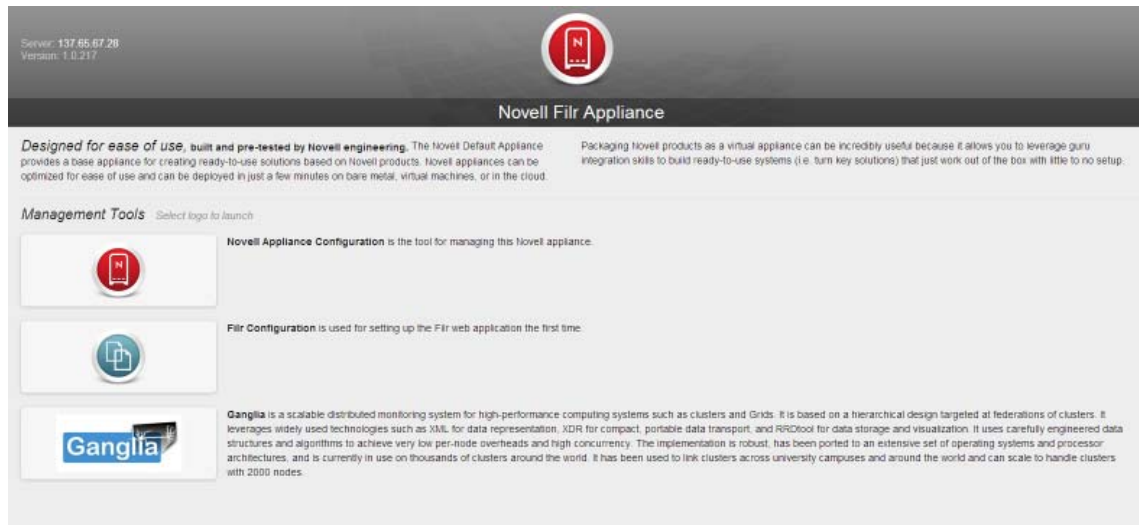
- ◆ [Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on page 57
- ◆ [Section 4.2, “Network Configuration,”](#) on page 59
- ◆ [Section 4.3, “Database Configuration,”](#) on page 62
- ◆ [Section 4.4, “Language,”](#) on page 63
- ◆ [Section 4.5, “Changing Your Search Index Configuration,”](#) on page 64
- ◆ [Section 4.6, “Changing Clustering Configuration Settings,”](#) on page 66
- ◆ [Section 4.7, “Changing Reverse Proxy Configuration Settings,”](#) on page 66
- ◆ [Section 4.8, “Changing Outbound Email Configuration Settings,”](#) on page 68
- ◆ [Section 4.9, “Changing Configuration Settings for Requests and Connections,”](#) on page 72
- ◆ [Section 4.10, “Changing the Java JDK Configuration Settings,”](#) on page 72
- ◆ [Section 4.11, “Changing WebDAV Authentication Configuration Settings,”](#) on page 72
- ◆ [Section 4.12, “Viewing and Updating the Filr License,”](#) on page 74

## 4.1 Changing Configuration Options for the Filr Appliance

- 1 Ensure that you have deployed the Novell Filr Appliance, as described in [Chapter 3, “Configuring Filr for the First Time,”](#) on page 53.
- 2 Navigate to the following URL:  
`https://ip_address:9443`  
Replace *ip\_address* with the IP address of your Filr appliance.

- 3 Sign in to the Filr appliance using the `root` user and the default password that you specified during the appliance installation.

The Novell Filr Appliance landing page is displayed.



- 4 Click the Filr Server Configuration icon.



The Configuration page is displayed.

- 5 In the *Configuration* column on the left side of the page, select the setting that you want to configure.

The following configuration options are available. Click each option below for detailed information.

- ◆ [Network](#)
- ◆ [Database](#)
- ◆ [Search Appliance](#)
- ◆ [Clustering](#)
- ◆ [Reverse Proxy](#)
- ◆ [Outbound Email](#)
- ◆ [Requests and Connections](#)
- ◆ [Java JDK](#)
- ◆ [WebDAV Authentication](#)
- ◆ [License](#)

- 6 Make any configuration changes, then click *OK*.

- 7 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.2 Network Configuration

- [Section 4.2.1, “Changing the Network Configuration Settings,” on page 59](#)
- [Section 4.2.2, “Port Numbers,” on page 60](#)

### 4.2.1 Changing the Network Configuration Settings

The default port that is configured when you install the Filr appliance is 8443. After the initial configuration of the Filr appliance (as described in [Chapter 3, “Configuring Filr for the First Time,” on page 53](#)) you can make any necessary network changes.

To modify network configuration options:

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57](#).

You can modify the following configuration options:

**Port Redirection:** Select this option to have Filr automatically redirect from ports 80 or 443 (which are the standard ports for Web browsers) to ports 8080 and 8443 (which are the default ports that Filr listens on). Enabling port redirection in this way allows users to specify the Filr site URL without including the port number. If port redirection is not enabled, users must include the port number in the site URL when accessing the Filr site.

---

**IMPORTANT:** When port redirection is enabled, ensure that the reverse proxy ports are set to 80 for the HTTP port and to 443 for the secure HTTP port. If they are not, URLs that are sent with Filr email notifications will continue to have the default port (8443) in them.

For information about how to change the reverse proxy ports, see [Section 4.7, “Changing Reverse Proxy Configuration Settings,” on page 66](#).

---

**HTTP Port:** The default HTTP port is 8080. As a best practice, do not change this from the default port.

Select *Enabled* if you want to enable the HTTP port. By default, only the Secure HTTP port is enabled.

Select *Force Secure Connection* to force users to connect to Filr over a secure connection (HTTPS).

See [Section 4.2.2, “Port Numbers,” on page 60](#) for more information about port numbers in Filr.

**Secure HTTP Port:** The default secure HTTP port for Filr is 8443. As a best practice, do not change this from the default.

See [Section 4.2.2, “Port Numbers,” on page 60](#) for more information about port numbers in Filr.

**Session Timeout:** By default, if a user’s Novell Filr session is idle for four hours (240 minutes), Filr logs the idle user out. For increased convenience to Filr users, you can make the session timeout interval longer. For increased security for your Filr site, you can make the session timeout shorter.

**Keystore File:** Leave this field blank.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.2.2 Port Numbers

Table 4-1 lists the ports that you need to take into consideration when setting up Filr. Figure 4-1 is a graphical representation of how the ports are used in a Filr deployment.

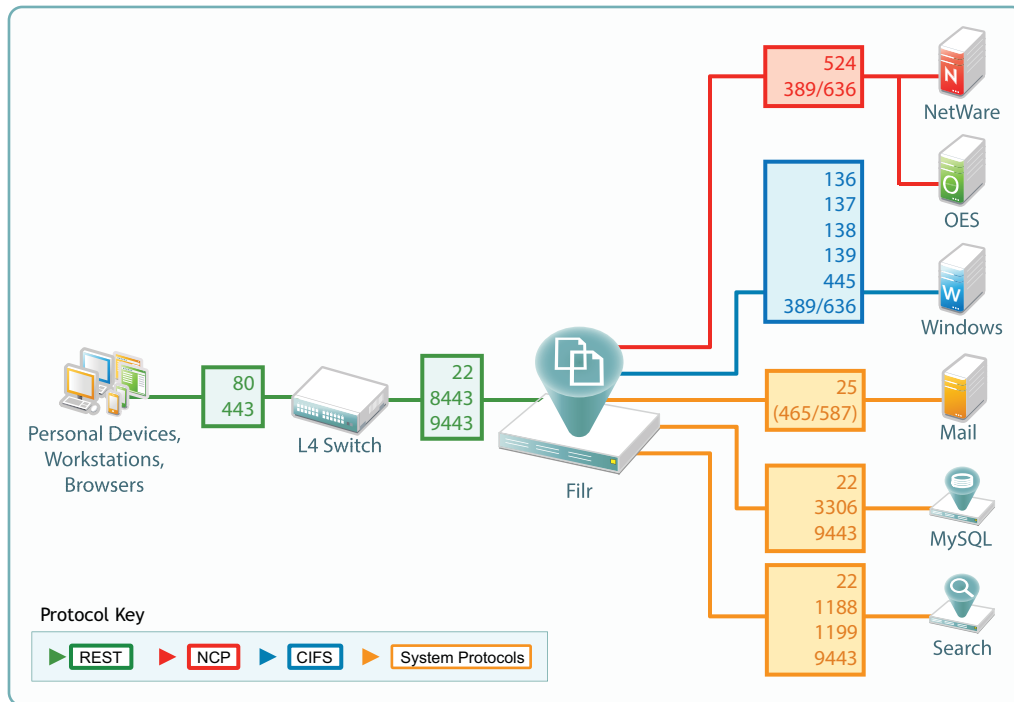
As a best practice, do not change any port numbers from the default ports.

*Table 4-1 Filr Port Numbers*

| Port Numbers                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80, 443                                     | Standard Web server ports<br><br>For more information, see “HTTP Port:” on page 59, “Secure HTTP Port:” on page 59 and “HTTP/HTTPS Ports When You Use NetIQ Access Manager with Filr” on page 61.                                                                                                                                                                                                                                                                                                                                               |
| 8080, 8443                                  | Default Tomcat ports for the Filr appliance<br><br>When you install Filr, Tomcat is installed along with the Filr software. Filr uses Tomcat as a stand-alone Web server for delivering data to Filr users in their Web browsers. For more information about Tomcat, see the <a href="http://tomcat.apache.org">Apache Tomcat Web site (http://tomcat.apache.org)</a> .<br><br>For more information, see “HTTP Port:” on page 59, “Secure HTTP Port:” on page 59 and “HTTP/HTTPS Ports When You Use NetIQ Access Manager with Filr” on page 61. |
| 8005                                        | Default shutdown port<br><br>For an explanation of the shutdown port, see <a href="http://www.wellho.net/mouth/837_Tomcat-Shutdown-port.html">Tomcat - Shutdown Port (http://www.wellho.net/mouth/837_Tomcat-Shutdown-port.html)</a> .                                                                                                                                                                                                                                                                                                          |
| 8009                                        | Default AJP port<br><br>For an explanation of the Apache JServ Protocol port, see <a href="http://tomcat.apache.org/tomcat-6.0-doc/config/ajp.html">The AJP Connector (http://tomcat.apache.org/tomcat-6.0-doc/config/ajp.html)</a> .                                                                                                                                                                                                                                                                                                           |
| 22                                          | SSH port for the appliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 9443                                        | Jetty port for the appliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1199                                        | Lucene RMI registry port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1188                                        | Lucene server port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3306                                        | MySQL outbound port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 25, 465                                     | SMTP and SMTPS outbound ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 524/tcp                                     | Access OES server over NCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 137/tcp, 137/udp, 138/udp, 139/tcp, 445/tcp | Access OES server over CIFS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Port Numbers | Description                                        |
|--------------|----------------------------------------------------|
| 11211        | Used for memcached caching in an appliance cluster |
| 636          | Secure LDAP port                                   |
| 389          | Non-secure LDAP port                               |

**Figure 4-1** Filr Port Usage



## HTTP/HTTPS Ports When You Use NetIQ Access Manager with Filr

If you are fronting Filr with NetIQ Access Manager, ensure that you have configured the HTTP/HTTPS ports.

Configuring Filr in this way configures NetIQ Access Manager to access Filr over port 80, which is the standard port.

### Port Configuration

Use the following port configuration when NetIQ Access Manager is fronting your Filr system on Linux:

HTTP Port: 80

Secure HTTP Port: 443

You need to make these configuration settings in the *Reverse Proxy* section. For more information, see [Section 4.7, “Changing Reverse Proxy Configuration Settings,”](#) on page 66.

## 4.3 Database Configuration

- ♦ [Section 4.3.1, “Understanding Database Configuration,” on page 62](#)
- ♦ [Section 4.3.2, “Changing Database Configuration Settings,” on page 62](#)
- ♦ [Section 4.3.3, “Database Type,” on page 63](#)
- ♦ [Section 4.3.4, “Database Location,” on page 63](#)
- ♦ [Section 4.3.5, “Database Credentials,” on page 63](#)

### 4.3.1 Understanding Database Configuration

Novell Filr database disk space requirements are relatively modest. Files that are imported into Filr are saved in the Filr file repository.

The Filr database is primarily used for storing the following information:

- ♦ Structural information about folders and files
- ♦ Identification information about folders and files (for example, titles, descriptions, dates of creation/modification, and users associated with creation/modification)
- ♦ User profile information (for example, full name, phone number, and email address)

### 4.3.2 Changing Database Configuration Settings

- ♦ [“Changing the Database Configuration Settings for a Small Installation” on page 62](#)
- ♦ [“Changing the Database Configuration Settings for a Large Installation” on page 63](#)

#### Changing the Database Configuration Settings for a Small Installation

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57](#).

You can modify the following configuration options:

**Database Type:** Filr uses a MySQL database. You cannot use another type of database.

**Host Name or IP Address:** Host name or IP address of the MySQL appliance if MySQL is not running on the Filr appliance.

**Port:** The JDBC URL also includes the port number on which Filr can communicate with the database server. The default port number for MySQL is 3306. Use this port number unless it is already in use by another process on the database server.

**Username:** The username for your MySQL database. For more information, see [Section 4.3.5, “Database Credentials,” on page 63](#).

**Password:** The password for your MySQL database. For more information, see [Section 4.3.5, “Database Credentials,” on page 63](#).

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## Changing the Database Configuration Settings for a Large Installation

If your Filr site is configured for a large installation (your MySQL database is a stand-alone appliance), you modify the configuration settings as described in [Chapter 6, “Configuring and Maintaining the MySQL Database Appliance,”](#) on page 77.

### 4.3.3 Database Type

Filr uses a MySQL database. This is the only supported database for Filr 1.0.

### 4.3.4 Database Location

When you install a single virtual appliance for a small installation, all components are on the same appliance. This is the preferable location for a small installation. The default database name is `filr`.

| Database Server | Default Location              |
|-----------------|-------------------------------|
| MySQL           | <code>/vastorage/mysql</code> |

### 4.3.5 Database Credentials

The MySQL database defaults to `root` for the administrative username.

---

**IMPORTANT:** The MySQL `root` username is not the same as the Linux `root` user on a Linux appliance.

---


## 4.4 Language

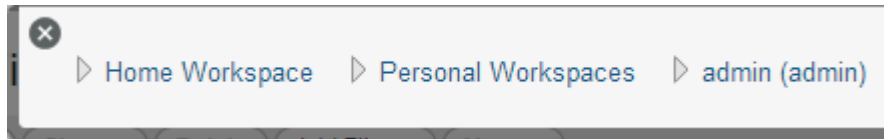
The Novell Filr installation program runs in English only. When you install the Filr software, you can choose to have the primary language of the Filr site to be any of the following languages:

- ♦ Chinese-Simplified
- ♦ Chinese Traditional
- ♦ Czech
- ♦ Danish
- ♦ Dutch
- ♦ English
- ♦ French
- ♦ German
- ♦ Hungarian
- ♦ Italian
- ♦ Japanese
- ♦ Polish
- ♦ Portuguese

- ♦ Russian
- ♦ Spanish
- ♦ Swedish

Some languages have an additional distinction by locale (the country where the language is spoken).

The language you select during installation establishes the language of the global text that displays in locations where all Filr users see it, such as in the Workspace tree when you click the Workspace tree icon :



The language you select also establishes the default interface language and locale for creating new user profiles.

## 4.5 Changing Your Search Index Configuration

- ♦ [Section 4.5.1, “Understanding Indexing,” on page 64](#)
- ♦ [Section 4.5.2, “Changing Search Index Configuration Settings,” on page 64](#)
- ♦ [Section 4.5.3, “Running the Search Index As Its Own Appliance,” on page 65](#)
- ♦ [Section 4.5.4, “Running Multiple Search Indexes,” on page 65](#)

### 4.5.1 Understanding Indexing

The search index is responsible for indexing all data on the Filr site so that Filr users can easily use the Search feature to retrieve the information that they need. Text posted in file metadata (such as a file description) is easy to index, because the formatting is simple. However, text within a file itself arrives in many different file formats, many of which require conversion before the text in the files can be indexed. Therefore, the search index is dependent on the available file conversion technology in order to perform its indexing function. For information about the file viewers that Filr uses, see [Section 1.3.6, “File Viewer Information,” on page 20](#).

The search index provides additional services on your Filr site in addition to indexing. In fact, you cannot access your Filr site if the search index is not running. For this reason, Novell Filr provides multi-server configuration options.

### 4.5.2 Changing Search Index Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57](#).

You can modify the following configuration options:

- ♦ **Configuration Type:** For a small installation, the default is *Local*.  
For a large installation with only one separate Lucene index server appliance, the default is *Server*.



For a large installation with multiple Lucene index server appliances, you must change the configuration type from the default of *Server* to *High Availability*, then click *Add* to add the information for each Lucene index appliance.

1. Change the configuration type from the default of *Server* to *High Availability*.
  2. Click *Add*, specify the information for the first Lucene index appliance, then click *OK*.
  3. Click *Add*, specify the information for the second Lucene index appliance, then click *OK*.
- ◆ **Description:** (This option is visible only when *Configuration Type* is set to *High Availability*.) Specify a short description for the Lucene appliance.
  - ◆ **Host Name or IP Address:** This is `localhost` if your *Configuration Type* is *Local*. If your *Configuration Type* is *Server* or *High Availability*, use this field to specify the host name or IP address of the appliance where the search indexes are running. (If your *Configuration Type* is *High Availability*, click *Add* to configure multiple search indexes.)
  - ◆ **RMI Port:** When the search index is running as its own appliance, it communicates with Filr by using the RMI ([Remote Method Invocation \(http://java.sun.com/javase/technologies/core/basic/rmi/index.jsp\)](http://java.sun.com/javase/technologies/core/basic/rmi/index.jsp)) port. (Default 1199). In a clustered environment where you are running multiple search index servers, ensure that each Lucene index server is running on the same ports. Novell recommends that you do not change this port from the default of 1199.
  - ◆ **Lucene User Name:** This option must be set under the Server configuration for both server and high availability Lucene configurations. In the *Configuration Type* field, select *Server*, then specify the password in the *Lucene User Password* field. Specify `Lucene Service` in the *User Name* field.
  - ◆ **Lucene User Password:** This option must be set under the Server configuration for both server and high availability Lucene configurations. In the *Configuration Type* field, select *Server*, then specify the password in the *Lucene User Password* field.
- 2 Click *OK*.
  - 3 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

If your Filr site is configured for a large installation (your search index is a stand-alone appliance), you can make additional configuration settings for your Lucene search index appliance as described in [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

### 4.5.3 Running the Search Index As Its Own Appliance

If the search index requires more memory, disk space, or CPU resources than are available on the Novell Filr appliance, you can move it to a remote appliance. For instructions, see [Section 2.2, “Installing Separate Appliances for a Large Installation,” on page 37](#).

### 4.5.4 Running Multiple Search Indexes

Because the availability of the index is critical to the functioning of the Novell Filr site, you can install multiple search indexes as multiple appliances to provide high availability. For instructions, see [Section 2.2.1, “Installing the Search Index Appliance,” on page 37](#).

## 4.6 Changing Clustering Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on page 57.

You can modify the following configuration options:

**Enable Clustered Environment:** Select this option to enable clustering.

**JVM Route:** If you plan to use Apache as the reverse proxy, add a JVM route for each Filr Appliance in the Cluster. Otherwise, you can leave the JVM Route field empty. The purpose of this field is to uniquely identify each Filr Appliance to Apache.

In the *JVM Route* field, specify `worker1`. On the second Filr node, in the *JVM Route* field, specify `worker2`, and so forth for each Filr node, incrementing the JVM Route setting. Each Tomcat instance should have a unique JVM Route setting.

`worker1`, `worker2`, and so forth are the default names for the matching values used for the reverse proxy configuration. For example, if you have set up Apache or IIS as a reverse proxy, these are the default values. The *JVM Route* setting in the Filr installer must match these values.

For information about how to configure Apache as a load balancer, see [Appendix A, “Configuring Apache as a Load Balancer,”](#) on page 107.

**Hibernate Caching Provider:** *memcache* is the only option available when configuring Filr in a clustered environment.

For more information about Memcache caching, see [Memcached \(http://memcached.org/\)](http://memcached.org/).

**Server Addresses:** Each Filr server in the cluster must list all of the Filr servers in the cluster, with each server separated by a space. The default port for memcached is 11211. For example, `ipaddress1:11211 ipaddress2:11211 ipaddress3:11211`

The server addresses listed here are all nodes within the Filr cluster. Changes made to one Filr node are immediately visible in other Filr nodes. Ensure that all Filr appliances in the cluster are pointing to the same NTP time source. Failure to do so can significantly degrade overall system performance.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. As this results in server downtime, you should restart the server at off-peak hours.

---

## 4.7 Changing Reverse Proxy Configuration Settings

- ♦ [Section 4.7.1, “Understanding Reverse Proxy and NetIQ Access Manager,”](#) on page 67
- ♦ [Section 4.7.2, “Understanding How Port Redirection Affects Reverse Proxy Settings,”](#) on page 67
- ♦ [Section 4.7.3, “Changing Reverse Proxy Configuration Settings,”](#) on page 67

You might need to modify the reverse proxy configuration settings for your Filr appliance for either of the following reasons:

- ♦ When you configure a reverse proxy server, such as NetIQ Access Manager

For more information about this scenario, see [Section 4.7.1, “Understanding Reverse Proxy and NetIQ Access Manager,”](#) on page 67.

- ♦ If you have enabled port redirection in your network settings page (as described in [Section 4.2.1, “Changing the Network Configuration Settings,”](#) on page 59)

For more information about this scenario, see [Section 4.7.2, “Understanding How Port Redirection Affects Reverse Proxy Settings,”](#) on page 67.

## 4.7.1 Understanding Reverse Proxy and NetIQ Access Manager

NetIQ Access Manager can provide secure single sign-on access to your Novell Filr site by functioning as a reverse proxy server. When using Access Manager with Novell Filr, Access Manager 3.1 SP1 IR1 is required and is an additional add-on product. You can download the required version of Access Manager from [Novell Downloads \(http://download.novell.com\)](http://download.novell.com).

For background information about setting up NetIQ Access Manager 3.1, see the [Access Manager 3.1 Documentation Web site \(http://www.novell.com/documentation/novellaccessmanager31\)](http://www.novell.com/documentation/novellaccessmanager31). For instructions specific to Filr, see “[Configuring a Protected Resource for a Novell Filr Server](#)” in the [Novell Filr 1.0.1 Administration Guide](#).

After you have configured NetIQ Access Manager, you must configure your Filr site with the IP address of one or more Access Gateway servers and with the logout URL. When you configure the Filr site to use the Access Gateway, the IP addresses that you specify are the only locations from which the Filr site accepts logins. The logout URL is the location where users find themselves when they log out of the Filr site.

When you enable the Access Gateway for use with your Filr site, all Filr users must log in through the Access Gateway. It is not possible to set up the Filr site so that some users log in through the Access Gateway and some do not.

## 4.7.2 Understanding How Port Redirection Affects Reverse Proxy Settings

If you have enabled the reverse proxy settings in Filr (as described in [Section 4.2.1, “Changing the Network Configuration Settings,”](#) on page 59) and you have an additional reverse web proxy such as NetIQ Access Manager that is servicing Filr requests, you must ensure that the ports that the additional proxy connects to are the same as the ports that are configured in the Filr reverse proxy settings. (This is the *Reverse Proxy HTTP port* and the *Reverse Proxy Secure HTTP Port*.)

The reverse proxy HTTP port should be set to 80, and the reverse proxy secure HTTP port should be set to 443. If the reverse proxy ports are not correct, links that are sent from Filr in email notifications are incorrect, and users are not able to access Filr.

This issue is described in “[Email Notification URLs Are Not Working](#)” in “[Troubleshooting the Filr System](#)” in the [Novell Filr 1.0.1 Administration Guide](#).

## 4.7.3 Changing Reverse Proxy Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on page 57.

You can modify the following configuration options:

**Host:** The host name is used to build some of the URLs that are sent in notifications. It should reflect the host used to access the Filr system from any user (either an internal or external user). It is common across all the Filr Virtual Appliances, and represents the reverse proxy or L4 device that fronts the Filr Virtual Appliance.

If Access Manager is being used to front Filr, specify the NetIQ Access Manager published DNS name for Filr application in the *Host* field.

**Reverse Proxy HTTP Port:** Select *Enabled* if you want to use a non-secure port for the reverse proxy. Specify the port number that you want to use. You must use port 80 if you have enabled port redirection in your network settings page.

**Reverse Proxy Secure HTTP Port:** Specify the port number that you want to use for the secure reverse proxy HTTP port. You must use port 443 if you have enabled port redirection in your network settings page. (Port redirection allows users to access the Filr site without specifying the port number in the URL. For information about port redirection, see [Section 4.2, “Network Configuration,”](#) on page 59.)

**Enable Access Gateway:** Select this option to enable the reverse proxy Access Gateway.

**Access Gateway address(es):** Specify the IP address of the Access Gateway that is used for the connection to the Filr server. You must specify the IP address; host names are not supported.

If the Access Gateway is part of a cluster, add the IP address for each cluster member. Wildcards such as 164.99.\*.\* are allowed.

---

**IMPORTANT:** When you specify specific IP addresses in this option, Filr access is allowed only from the specified addresses. Also, if Authorization header credentials are not present or are incorrect, the user is prompted for login using Basic Authentication.

---

**Logout URL:** Specify the URL of the published DNS name of the reverse proxy that you have specified for the ESP, plus */AGLogout*.

You can find the domain used for the ESP by editing the LAG/MAG cluster configuration, then clicking *Reverse Proxy / Authentication*.

For example, if the published DNS name of the proxy service that you have specified for the ESP is *esp.yoursite.com*, specify the following URL:

`https://esp.yoursite.com/AGLogout`

- 2 Click *OK*, then click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.8 Changing Outbound Email Configuration Settings

- ♦ [Section 4.8.1, “Understanding Outbound Email,”](#) on page 69
- ♦ [Section 4.8.2, “Changing Outbound Email Configuration Settings,”](#) on page 69
- ♦ [Section 4.8.3, “Outbound Email Protocol,”](#) on page 70
- ♦ [Section 4.8.4, “Outbound Email Host,”](#) on page 70
- ♦ [Section 4.8.5, “Outbound Email Authentication,”](#) on page 71

## 4.8.1 Understanding Outbound Email

Your Novell Filr site can be configured to send outbound email through an existing email system or through the included Postfix SMTP outbound mail server. Email from the Filr site is useful for the following activities:

- ♦ Filr users can subscribe to email notifications, so that they automatically receive a message whenever content of interest changes. For more information, see “[Subscribing to a Folder or File](#)” in “[Getting Informed](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.
- ♦ Filr users can configure folders that they own to send email notifications to other users. For more information, see “[Configuring Folders to Send Email Notifications to Other Users](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.
- ♦ Filr users can send email messages to folder contributors, as described in “[Sending an Email to Folder Contributors](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.
- ♦ Filr users can send notifications when a folder of file is shared, as described in “[Sharing Files and Folders](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.

After installation, outbound email can be disabled and enabled again on the Filr site, as described in “[Configuring Email Integration](#)” in “[Site Setup](#)” in the *Novell Filr 1.0.1 Administration Guide*. However, you must configure outbound email in the Filr appliance.

## 4.8.2 Changing Outbound Email Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57](#).

You can modify the following configuration options:

**Use Local Postfix Mail Server:** Select this option to use the Postfix mail server, which is the default mail system included with Filr. To use another mail system (such as GroupWise), deselect this option, then specify the appropriate information for the protocol, host, and port of the mail system that you want to use.

**Protocol:** Select the type of protocol your email system uses. For more information, see [Section 4.8.3, “Outbound Email Protocol,” on page 70](#).

**Host:** Specify the hostname of your SMTP mail server. For more information, see [Section 4.8.4, “Outbound Email Host,” on page 70](#).

**Port:** The port through which Filr can connect to the SMTP mail server. The default SMTP port of 25 is typically appropriate, unless the SMTP mail server requires port 465 or 587 for SMTPS connections.

**Time Zone:** Select the time zone that you want Filr to use when sending email messages. When the Filr site sends email notifications for scheduled events, the messages are time-stamped according to the time zone you specify here during installation. This setting allows you to use a time zone for email notifications that is different from the time zone where the server is located. For more information, see [Section 4.8.4, “Outbound Email Host,” on page 70](#).

**Username:** Specify an email address to be used when sending outbound email. Many SMTP mail hosts require a valid email address before they establish the SMTP connection. For more information, see [Section 4.8.5, “Outbound Email Authentication,” on page 71](#).

**Password:** Specify a password for the username. Some email systems also require a password. Some do not. If authentication is required, you should also provide a password. For more information, see [Section 4.8.5, “Outbound Email Authentication,” on page 71](#).

**Authentication required:** Select this option to require authentication.

**Allow sending email to all users:** Deselect this option to prevent users from sending email to the All Users group.

By default, the Filr site allows Filr users to send messages to all Filr users by using the All Users group on the Filr site. On a very large Filr site, this generates a very large number of email messages. If desired, you can prevent messages from being sent to the All Users group.

**Connection Timeout (in seconds):** Specify the amount of time before the connection times out.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. As this results in server downtime, you should restart the server at off-peak hours.

---

### 4.8.3 Outbound Email Protocol

Email systems communicate by using SMTP (Simple Mail Transfer Protocol). You need to determine whether the email system that you want your Filr site to communicate with is using SMTP or SMTPS (secure SMTP).

For GroupWise, you can check how the Internet Agent is configured:

- 1 In ConsoleOne, browse to and right-click the Internet Agent object, then click *Properties*.
- 2 Click *GroupWise > Network Address*.

In the *SMTP* field, if the *SSL* column displays *Disabled*, GroupWise is using SMTP. If the *SSL* column displays *Enabled*, GroupWise is using SMTPS.

- 3 Click *Cancel* to close the Network Address page.

If the email system requires SMTPS, see “[Securing Email Transfer](#)” in “[Site Security](#)” in the *Novell Filr 1.0.1 Administration Guide*.

### 4.8.4 Outbound Email Host

In order to send messages to your email system, Filr needs to know the host name of your SMTP mail server.

The default SMTP port of 25 is typically appropriate, unless the SMTP mail server requires port 465 or 587 for SMTPS connections.

If you are using GroupWise, this is the host name of a server where the Internet Agent is running. GroupWise always uses port 25, even when SSL is enabled.

When the Filr site sends email notifications for scheduled events, the messages are time-stamped according to the time zone you specify here during installation. This setting allows you to use a time zone for email notifications that is different from the time zone where the server is located. The time zone list is grouped first by continent or region, optionally by country or state, and lastly by city. Some common selections for United States time zones are:

---

| Time Zone     | Continent/City      |
|---------------|---------------------|
| Pacific Time  | America/Los Angeles |
| Mountain Time | America/Denver      |
| Central Time  | America/Chicago     |
| Eastern Time  | America/New York    |

---

## 4.8.5 Outbound Email Authentication

Many SMTP mail hosts require a valid email address before they establish the SMTP connection. Some email systems can construct a valid email address if you specify only a valid username; other email systems require that you specify the full email address for successful authentication. You should provide a username (email address) to ensure a successful connection. Email notifications from the Filr system are sent using this email address in the *From* field.

Some email systems also require a password. If authentication is required, you should also provide a password.

Consider the following tips when using GroupWise or Exchange:

- ♦ [“GroupWise” on page 71](#)
- ♦ [“Exchange” on page 71](#)

### GroupWise

If you are using Novell GroupWise, the GroupWise Internet Agent does not require authentication in order to receive inbound messages. However, the `/forceinboundauth` startup switch is available for use in the Internet Agent startup file (`gwia.cfg`) to configure the Internet Agent to refuse SMTP connections where a valid email username and password are not provided. The Internet Agent can accept just the username or the full email address.

### Exchange

If you are using Microsoft Exchange and you set up the outbound email server to require authentication (by selecting the option *Authentication Required*), Exchange must be configured to allow the *From* address to be different from the user who is configured for Exchange authentication. The Exchange permission that you need to add is `ms-Exch-SMTP-Accept-Any-Sender`.

This is required because Exchange, by default, enforces that the *From* address of outbound emails match the exchange user who you configured for authentication, and many emails that are sent from Filr use the *From* address of the Filr user who is performing an action.



## 4.9 Changing Configuration Settings for Requests and Connections

You can configure the number of client requests and database connections that Filr is able to support.

If you have an extremely large Filr site and you need to make numerous client requests and database connections, you might see improved performance by increasing these settings.

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57.](#)

You can modify the following configuration options:

**Max Threads:** The maximum number of simultaneous client request threads that Filr is able to support. The default is 200 threads.

**Max Active:** The maximum number of database connections that can be allocated from this pool at the same time.

**Max Idle:** The maximum number of database connections that can be idle in this pool at the same time. The default is 20 connections.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.10 Changing the Java JDK Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,” on page 57.](#)

You can modify the following configuration options:

**Java Home:** Displays the path to the JavaHome variable. This cannot be changed.

**JVM Heap Size:** The default JVM heap size is 4 GB. You can increase or decrease this value as needed.

The JVM heap size must end with `g` or `m`, and it cannot contain fractional values. For example, if you want your JVM heap size to be 1.5 GB, you must specify `1536m`.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.11 Changing WebDAV Authentication Configuration Settings

- ♦ [Section 4.11.1, “Understanding WebDAV,” on page 73](#)
- ♦ [Section 4.11.2, “Changing the WebDAV Authentication Configuration Settings,” on page 73](#)
- ♦ [Section 4.11.3, “Choosing the WebDAV Authentication Method,” on page 73](#)



## 4.11.1 Understanding WebDAV

WebDAV is a standard collaborative editing and file management protocol. Novell Filr relies on the WebDAV protocol for Edit-in-Place to use tools such as OpenOffice and Microsoft Office to edit documents on the Filr site.

---

**IMPORTANT:** When Filr users are running Windows 7 as the client operating system, various issues can be introduced because of WebDAV limitations in Windows 7. If your Filr users are using the Windows 7 operating system, see “[Configuring Filr to Support WebDAV on Windows 7](#)” in the *Novell Filr 1.0.1 Administration Guide*.

---

## 4.11.2 Changing the WebDAV Authentication Configuration Settings

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on page 57.

You can modify the following configuration options:

**WebDAV authentication method:** Select either *Basic* or *Digest*. The WebDAV authentication method determines how user credentials are passed from Filr to the WebDAV server. For more information, see [Section 4.11.3, “Choosing the WebDAV Authentication Method,”](#) on page 73.

- 2 Click *Reconfigure Filr Server* for your changes to take effect.

---

**NOTE:** This stops and restarts your Filr server. Because this results in server downtime, you should restart the server at off-peak hours.

---

## 4.11.3 Choosing the WebDAV Authentication Method

The WebDAV authentication method determines how user credentials are passed from Filr to the WebDAV server. Filr supports two types of WebDAV authentication methods:

- ♦ “[Choosing Basic Authentication](#)” on page 73
- ♦ “[Choosing Digest Authentication](#)” on page 73

### Choosing Basic Authentication

Basic authentication encodes the username and password with the Base64 algorithm. The Base64-encoded string is unsafe if transmitted over HTTP, and therefore should be combined with SSL/TLC (HTTPS).

Digest authentication is the default. Do not select Basic authentication unless there is a specific reason for doing so.

### Choosing Digest Authentication

Digest authentication applies MD5 cryptographic, one-way hashing with nonce values to a password before sending it over the network. This option is safer than Basic authentication when used over HTTP.

Select this type of authentication when client users are using Windows 7 as their operating system and Microsoft Office as their text editor.

## 4.12 Viewing and Updating the Filr License

You can view information about your current Filr license, as well as update your Filr license.

Filr ships with a 90-day evaluation license. You need to update this license to a full product license.

---

**IMPORTANT:** If you are running Filr in a clustered environment, you must update the license for each Filr appliance in the cluster.

The database and search index appliances do not require a license.

---

- 1 Follow the steps in [Section 4.1, “Changing Configuration Options for the Filr Appliance,”](#) on [page 57](#).

On the License page, the *Current License Information* section displays information about your current Filr license, including the date it was issued and the number of days from the issue date that the license is valid.

- 2 To update your Filr license:

- 2a In the *Update License* section, browse to and select a new valid `license-key.xml` file that you have previously downloaded to your workstation.

You can obtain a new valid license key from the [Novell Customer Center \(NCC\)](http://www.novell.com/customercenter/) (<http://www.novell.com/customercenter/>).

- 2b Reconfigure the Filr server by clicking the *Reconfigure Filr Server* button that appears in the *Configuration* column.

# 5 Configuring and Maintaining the Search Index Appliance

This section describes how to change additional configuration options for the search index appliance for a large deployment. If your search index is configured on the same appliance as your Filr application, you make configuration changes on the Filr appliance, as described in [Chapter 4, “Configuring and Maintaining the Filr Appliance,”](#) on page 57.

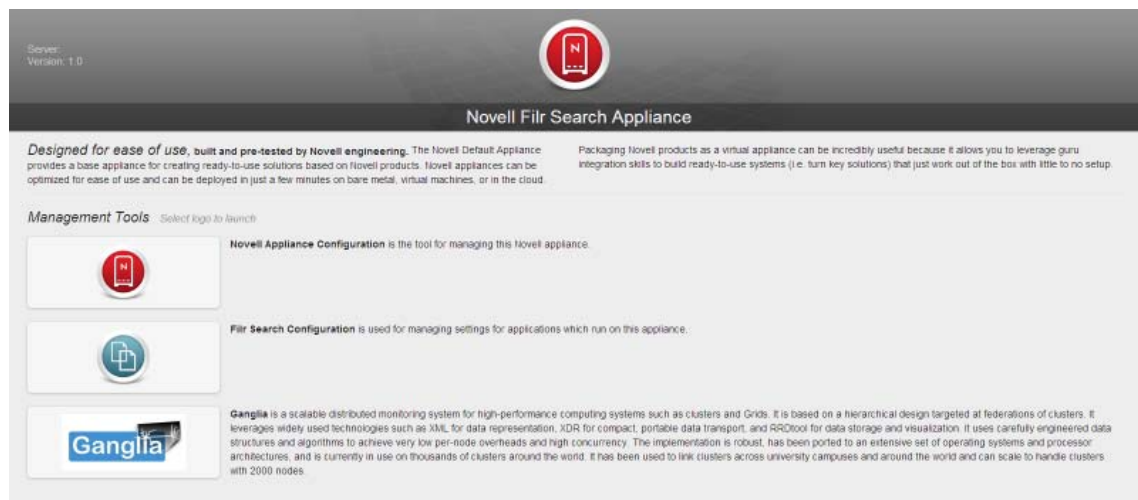
- 1 After installing the search index appliance, as described in [Section 2.2.1, “Installing the Search Index Appliance,”](#) on page 37, navigate to the following URL:

`https://ip_address:9443`

Replace *ip\_address* with the IP address of your Filr appliance.

- 2 Sign in to the Filr appliance. The default username is `root`, and the default password is the password that you specified during installation.

The Novell Filr Search Appliance landing page is displayed.



- 3 Click the *Filr Search Configuration* icon.



The Filr Search Configuration Wizard is displayed.

- 4 (Conditional) If this is the first time you have accessed the Filr search appliance, you must:
  - 4a Select *New* or *Upgrade*, depending on whether this is a new installation or an upgrade from a previous installation.
  - 4b Specify a password for the default Lucene service user, then click *Finish*.

---

**IMPORTANT:** In a clustered environment where you are running multiple search index servers, ensure that the password is the same for each search index server.

---

The password for the Lucene service user is now set.

The Search Settings page is displayed.

- 5 On the Search Settings page, refer to the on-screen instructions for information about the fields that you can modify.
- 6 Click *Submit* after you have made the desired modifications for your search settings.
- 7 (Conditional) If this is the first time you have configured the Search Index appliance:
  - 7a Ensure that you have configured the MySQL database appliance, as described in [Chapter 6, "Configuring and Maintaining the MySQL Database Appliance,"](#) on page 77.
  - 7b Configure the Filr appliance, as described in [Chapter 3, "Configuring Filr for the First Time,"](#) on page 53.

The MySQL database appliance and the Search Index appliance must already be installed and configured before you can configure the Filr appliance for the first time.

---

# 6 Configuring and Maintaining the MySQL Database Appliance

- [Section 6.1, “Configuring the MySQL Database Appliance,” on page 77](#)
- [Section 6.2, “Maintaining the MySQL Database Appliance,” on page 80](#)

## 6.1 Configuring the MySQL Database Appliance

This section describes how to change configuration options for the MySQL database appliance for a large deployment, including how to change the credentials for the MySQL database.

If you already have a MySQL database server that you want the Filr appliance to use, you can skip this section and update the configuration as described in [Section 2.2.3, “Configuring an Existing MySQL Database,” on page 51](#).

---

**IMPORTANT:** In a production environment, it is a best practice to change the credentials for the MySQL database when the MySQL database is running as a separate appliance. If you do not change the credentials, you at least need to change the root password for the MySQL database.

---

If your MySQL database is configured on the same appliance as your Filr application, you make configuration changes on the Filr appliance, as described in [Chapter 4, “Configuring and Maintaining the Filr Appliance,” on page 57](#).

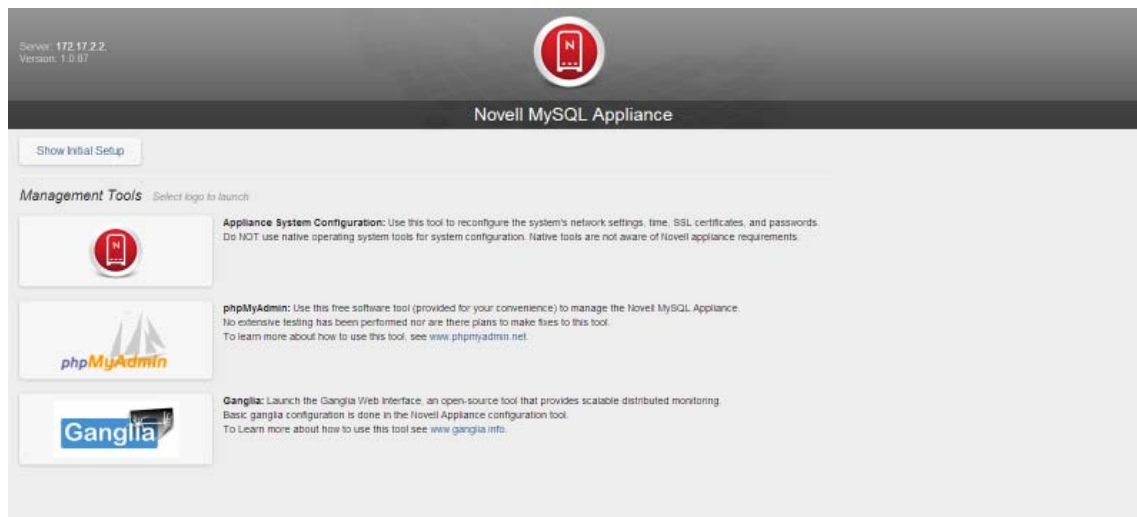
- 1 After installing the database appliance, as described in [Section 2.2.2, “Installing the MySQL Database Appliance,” on page 44](#), navigate to the following URL:

```
https://ip_address:9443
```

Replace *ip\_address* with the IP address of your database appliance.

- 2 Sign in to the database appliance. The default username is `root`, and the default password is the password that you specified during installation.

The Novell MySQL Appliance landing page is displayed.



- 3 Click the *phpMyAdmin* icon, then click *Go* to log in to phpMyAdmin.



- 4 Log in to the phpMyAdmin tool as the `root` user. (The default password for the `root` user is `root`. You will be instructed to change the default password in a future step.)
- 5 (Recommended) Create a new Filr user to administer the MySQL database:
  - 5a At the top of the page, click *Users*.
  - 5b Click *Add user*.
  - 5c In the *User name* field, specify `filr` as the new user.
  - 5d In the *Host* field, select *Use text field* in the drop-down list, then specify the IP address or host name of the Filr application server.
  - 5e In the *Password* field, specify a new password for the user, then confirm it in the *Re-type* field.
  - 5f In the *Database for user* section, select *Create database with same name and grant all privileges*.
  - 5g Click *Add user*. Note the username and password of this user. This is the user you will use to access the MySQL database when you configure the Filr appliance.  
You can now administer the Filr MySQL database by using this new user.
- 6 (Conditional) If you have a clustered Filr system with multiple Filr appliances, edit the privileges of the Filr user that you created in [Step 5](#) so that each of the Filr appliances is granted remote access to the database.
  - 6a On the *Users overview* page, click *Edit Privileges* next to the user that you created in [Step 5](#).
  - 6b Scroll to the *Login Information* section, and in the *Host* field, specify the IP address or host name of the next Filr appliance in the cluster.

- 6c In the *Create a new user with the same privileges and...* section, ensure that *...keep the old one* is selected, then click *Go*.
- 6d Repeat [Step 6a](#) through [Step 6c](#) for each Filr appliance in the cluster.
- 7 (Recommended) Change your MySQL root password if you have not done so already:
  - 7a At the top of the page, click *Users*.
  - 7b In the Users Overview table, locate the root user with *localhost* in the *Host* column, then click *Edit Privileges* for that user in the *Action* column.

Users overview

The screenshot shows the phpMyAdmin interface. On the left, the 'Users overview' table lists several users. The 'root' user with host 'localhost' is selected. A modal dialog titled 'Edit Privileges: User 'root'@'%' is open, showing a 'Global privileges (Check All / Uncheck All)' section. This section is divided into three columns: 'Data', 'Structure', and 'Administration'. Each column contains a list of MySQL privileges with checkboxes, all of which are currently checked. Below these columns is a 'Resource limits' section. A 'Cancel' button is visible at the bottom right of the dialog.

| User                             | Host      | Password | Global privileges | Grant | Action                                                 |
|----------------------------------|-----------|----------|-------------------|-------|--------------------------------------------------------|
| <input type="checkbox"/> Any     | %         | --       | USAGE             | No    | <a href="#">Edit Privileges</a> <a href="#">Export</a> |
| <input type="checkbox"/> Any     | 7int251   | No       | USAGE             | No    | <a href="#">Edit Privileges</a> <a href="#">Export</a> |
| <input type="checkbox"/> Any     | localhost | No       | USAGE             | No    | <a href="#">Edit Privileges</a> <a href="#">Export</a> |
| <input type="checkbox"/> ganglia | localhost | Yes      | ALL P             |       |                                                        |
| <input type="checkbox"/> root    | %         | Yes      | ALL P             |       |                                                        |
| <input type="checkbox"/> root    | 127.0.0.1 | No       | ALL P             |       |                                                        |
| <input type="checkbox"/> root    | 7int251   | No       | ALL P             |       |                                                        |
| <input type="checkbox"/> root    | localhost | Yes      | ALL P             |       |                                                        |

- 7c Scroll to the *Change password* section. In the *Password* field, specify your password, then confirm it in the *Re-type* field.
- 7d Click *Go*.
- 8 Make any other configuration changes.
- 9 (Conditional) If this is the first time you have configured the MySQL database appliance:
  - 9a Ensure that you have configured the search index appliance, as described in [Chapter 5](#), “[Configuring and Maintaining the Search Index Appliance](#),” on page 75.
  - 9b Configure the Filr appliance, as described in [Chapter 3](#), “[Configuring Filr for the First Time](#),” on page 53.

The MySQL database appliance and the Search Index appliance must already be installed and configured before you can configure the Filr appliance for the first time.

## 6.2 Maintaining the MySQL Database Appliance

The size of the MySQL log files (`mysql-bin-*`) are checked every 7 days. If the log files consume more than 1 GB of total disk space at the time they are checked, the files are deleted.

If you want to delete the log files before the automatic check runs on day 7 or before the files reach the 1 GB threshold, you can manually trigger the log files to be deleted:

- 1 Restart the MySQL database appliance (as described in [Section 7.9, “Shutting Down and Restarting the Novell Appliance,”](#) on page 87.)

or

Run the flush logs command from the MySQL appliance (`mysqladmin flush-logs`).



---

# 7 Configuring and Maintaining the Novell Appliance

The Novell Appliance is the operating system that the Filr application runs on. You might need to change certain configuration settings for the Novell Appliance, such as administrative passwords to the appliance, network settings, and certificate settings.

- ♦ Section 7.1, “Changing Administrative Passwords,” on page 81
- ♦ Section 7.2, “Changing Network Settings,” on page 81
- ♦ Section 7.3, “Changing Time Configuration,” on page 82
- ♦ Section 7.4, “Replacing the Self-Signed Digital Certificate for an Official Certificate,” on page 82
- ♦ Section 7.5, “Managing Certificates,” on page 84
- ♦ Section 7.6, “Changing the Ganglia Configuration,” on page 85
- ♦ Section 7.7, “Changing System Services Configuration (SSH, Filr, Jetty, Postfix, and the Novell File Access Middle Tier (FAMT)),” on page 85
- ♦ Section 7.8, “Viewing the Firewall Configuration,” on page 87
- ♦ Section 7.9, “Shutting Down and Restarting the Novell Appliance,” on page 87

## 7.1 Changing Administrative Passwords

- 1 Log in to the Novell appliance at [https://server\\_url:9443](https://server_url:9443), then click the Appliance Configuration icon.



- 2 Click *Administrative Passwords*.
- 3 Specify new passwords for the root and vaadmin administrators.  
If you are changing the root password, you must first specify the current root password.
- 4 Click *Save*.

## 7.2 Changing Network Settings

- 1 Log in to the Novell appliance at [https://server\\_url:9443](https://server_url:9443), then click the Appliance Configuration icon.



- 2 Click *Network*.
- 3 As necessary, change the IP and DNS configuration settings for your Novell appliance.
- 4 Click *Save*.

## 7.3 Changing Time Configuration

- 1 Log in to the Novell appliance at `https://server_url:9443`, then click the Appliance Configuration icon.



- 2 Click *Time*.
- 3 As necessary, change the following time configuration options:
  - NTP Server:** Specify the NTP server that you want to use for time synchronization.
  - Region:** Select the region where your Novell Appliance is located.
  - Time Zone:** Select the time zone where your Novell Appliance is located.
- 4 Click *Save*.

## 7.4 Replacing the Self-Signed Digital Certificate for an Official Certificate

The Novell Appliance ships with a self-signed digital certificate. Instead of using this self-signed certificate, you should use a trusted server certificate that is signed by a trusted certificate authority (CA) such as VeriSign or Equifax.

The certificate works for both the Novell Appliance and the Filr software (ports 9443 and 8443). You do not need to update your certificate when you update the Filr software.

Complete the following sections to change the digital certificate for your Novell Appliance. You can use the digital certificate tool to create your own certificate and then have it signed by a CA, or you can use an existing certificate and key pair if you have one that you want to use.

- ♦ [Section 7.4.1, “Using the Digital Certificate Tool,” on page 83](#)
- ♦ [Section 7.4.2, “Using an Existing Certificate and Key Pair,” on page 84](#)
- ♦ [Section 7.4.3, “Activating the Certificate,” on page 84](#)

## 7.4.1 Using the Digital Certificate Tool

- ♦ “Creating a New Self-Signed Certificate” on page 83
- ♦ “Getting Your Certificate Officially Signed” on page 83

### Creating a New Self-Signed Certificate

- 1 Log in to the Novell appliance at `https://server_url:9443`, then click the Appliance Configuration icon.



- 2 Click *Digital Certificates*.
- 3 In the *Key Store* drop-down list, ensure that *Web Application Certificates* is selected.
- 4 Click *File > New Certificate (Key Pair)*, then specify the following information:
  - Alias:** Specify a name that you want to use to identify and manage this certificate.
  - Validity (days):** Specify how long you want the certificate to remain valid.
  - Key Algorithm:** Select either *RSA* or *DSA*.
  - Key Size:** Select the desired key size.
  - Signature Algorithm:** Select the desired signature algorithm.
  - Common Name (CN):** This must match the server name in the URL in order for browsers to accept the certificate for SSL communication.
  - Organizational Unit (OU):** (Optional) Small organization name, such as a department or division. For example, Purchasing.
  - Organization (O):** (Optional) Large organization name. For example, Novell, Inc.
  - City or Locality (L):** (Optional) City name. For example, Provo.
  - State or Province (ST):** (Optional) State or province name. For example, Utah.
  - Two-letter Country Code (C):** (Optional) Two-letter country code. For example, US
- 5 Click *OK* to create the certificate.

After the certificate is created, it is self-signed.
- 6 Make the certificate official, as described in “Getting Your Certificate Officially Signed” on page 83.

### Getting Your Certificate Officially Signed

- 1 On the Digital Certificates page, select the certificate that you just created, then click *File > Certificate Requests > Generate CSR*.
- 2 Complete the process of emailing your digital certificate to a certificate authority (CA), such as Verisign.

The CA takes your Certificate Signing Request (CSR) and generates an official certificate based on the information in the CSR. The CA then mails the new certificate and certificate chain back to you.

- 3 After you have received the official certificate and certificate chain from the CA:
  - 3a Revisit the Digital Certificates page by clicking *Digital Certificates* from the Novell Appliance.
  - 3b Click *File > Import > Trusted Certificate*. Browse to the trusted certificate chain that you received from the CA, then click *OK*.
  - 3c Select the self-signed certificate, then click *File > Certification Request > Import CA Reply*.
  - 3d Browse to and upload the official certificate to be used to update the certificate information.  
On the Digital Certificates page, the name in the *Issuer* column for your certificate changes to the name of the CA that stamped your certificate.
- 4 Activate the certificate, as described in [Section 7.4.3, “Activating the Certificate,” on page 84](#).

## 7.4.2 Using an Existing Certificate and Key Pair

When you use an existing certificate and key pair, use a .P12 key pair format.

- 1 If your certificate is not yet in .P12 key pair format, you can use openssl to convert it. For example, run the following command from a Linux command prompt:

```
openssl pkcs12 -export in mycert.pem -inkey mykey.pem -out mycert.p12
```
- 2 Go to the Digital Certificates page by clicking *Digital Certificates* from the Novell Appliance.
- 3 In the *Key Store* drop-down list, select *Web Application Certificates*.
- 4 Click *File > Import > Trusted Certificate*. Browse to and select your existing certificate, then click *OK*.
- 5 Click *File > Import > Trusted Certificate*. Browse to your existing certificate chain for the certificate that you selected in [Step 4](#), then click *OK*.
- 6 Click *File > Import > Key Pair*, then browse to and select your .P12 key pair file, specify your password if needed, then click *OK*.
- 7 Continue with [Section 7.4.3, “Activating the Certificate,” on page 84](#).

## 7.4.3 Activating the Certificate

- 1 On the Digital Certificates page, in the *Key Store* drop-down list, select *Web Application Certificates*.
- 2 Select the certificate that you want to make active, then click *Set as Active*, then click *Yes*.
- 3 Verify that the certificate and the certificate chain were created correctly by selecting the certificate, then clicking *View Info*.

## 7.5 Managing Certificates

All certificates that are included with the IBM Java package that is bundled with the version of SLES that Filr ships with are installed when you install Filr.

Filr uses only the certificates that relate to LDAP and SMTP.

You can use the Digital Certificates tool on the Filr appliance to remove certificates that are not used by your organization if you are concerned about keeping them.

Also, you can use the Digital Certificates tool on the Filr appliance to maintain the certificate store by removing certificates that have expired and then installing new certificates as needed, according to your organization's security policies.

To access the Digital Certificates tool:

- 1 Click *Digital Certificates* from the Novell Appliance.

## 7.6 Changing the Ganglia Configuration

Ganglia is a scalable, distributed monitoring system that allows you to gather important information about your Filr system.

- 1 Log in to the Novell appliance at `https://server_url:9443`, then click the Appliance Configuration icon.



- 2 Click *Ganglia Configuration*.

- 3 As necessary, change the following Ganglia configuration options:

**Enable the Web interface to run on this machine:** Select this option to allow the Ganglia Web Interface to run on the same machine as the Filr appliance.

If you already have a monitoring system that you plan to use for Filr, you can disable Ganglia monitoring by deselecting this option and the following option.

**Enable Ganglia Monitoring:** Select this option to enable Ganglia to monitor the Novell Appliance.

**Multicast Mode:** Select this option to send monitoring information to multiple destinations.

**Unicast Mode:** Select this option to send monitoring information to a single destination.

Unicast mode is recommended for improving performance of the Filr system.

**Publish to:** Specify the URL where Ganglia sends monitoring information when it is running in Unicast mode.

---

**NOTE:** You must use the IP address rather than the DNS name when specifying the URL in the *Publish to* field.

---

- 4 Click *Save*.

For more information about how to use Ganglia monitoring with Filr, see “[Monitoring Filr Performance with Ganglia](#)” in the *Novell Filr 1.0.1 Administration Guide*.

## 7.7 Changing System Services Configuration (SSH, Filr, Jetty, Postfix, and the Novell File Access Middle Tier (FAMT))

System services include: SSH, Novell Filr, Jetty, Postfix, and Novell FAMT. This section describes the kinds of actions you can perform in regards to these services.

- 1 Log in to the Novell appliance at `https://server_url:9443`, then click the Appliance Configuration icon.



- 2 Click *System Services*.
- 3 You can perform various actions for system services.
  - ♦ [Section 7.7.1, “Starting, Stopping, or Restarting System Services,”](#) on page 86
  - ♦ [Section 7.7.2, “Making System Services Automatic or Manual,”](#) on page 86
  - ♦ [Section 7.7.3, “Downloading Log Files for System Services,”](#) on page 86

## 7.7.1 Starting, Stopping, or Restarting System Services

You might want to start, stop, or restart a service. For example, you can start SSH so that you can remote into the appliance without using a VMware client.

- 1 Select the service that you want to start, stop, or restart.
- 2 Click *Action*, then click *Start*, *Stop*, or *Restart*.
- 3 Click *Close* to exit System Services.

## 7.7.2 Making System Services Automatic or Manual

- 1 Select the service that you want to make automatic or manual.
- 2 Click *Action*, then click *Set as Automatic*, or *Set as Manual*.

## 7.7.3 Downloading Log Files for System Services

- 1 In the *Log Files* column of the table, click the *download* link for the service for which you want to view log files.

The following files are available for each service:

**SSH:** N/A

**Novell Filr:** `catalina.out`, `ssf.log`, `ssr.log` (Filr appliance)

The `catalina.out` file reports all timestamps in UTC/GMT.

**Jetty:** `jetty.stderrout.log` (Filr, Search, and MySQL database appliances)

**Postfix:** `mail` (Filr appliance)

**Novell FAMT:** `famtd.log` (Filr appliance)

**Search:** `indexserver.out` (Search appliance)

**MySQL:** `mysqld.log` (MySQL database appliance)

- 2 Click *Close* to exit System Services.

## 7.8 Viewing the Firewall Configuration

You can view your current firewall configuration directly from the Filr appliance:

- 1 Log in to the Novell appliance at [https://server\\_url:9443](https://server_url:9443), then click the Appliance Configuration icon.



- 2 Click *Firewall*.

Port numbers are listed with the current status of each port number. This page is not editable, but is for informational purposes.

For more information about port numbers in Filr, see [Section 4.2.2, "Port Numbers," on page 60](#).

## 7.9 Shutting Down and Restarting the Novell Appliance

You might need to shut down or restart the Novell appliance for maintenance.

- 1 Log in to the Novell appliance at [https://server\\_url:9443](https://server_url:9443), then click the Appliance Configuration icon.



- 2 Click *Reboot* or *Shutdown*.





---

# 8 Setting Up the Filr Site

After you have installed and started Novell Filr, you will need to perform certain administrative tasks before your Filr site is ready for users to log in and start using Filr efficiently.

Filr ships with most settings disabled by default, so you must enable each piece of functionality. This ensures that your data is not unknowingly exposed to users who do not usually have access to certain information. For example, users cannot share files until you give them the ability to do so.

Some pieces of functionality, such as configuring Net Folders, must be enabled in the correct way in order to avoid unnecessary issues.

Complete the following steps to make your Filr site ready and available for users:

- 1 Add users and groups to your Filr site, either through an LDAP synchronization process or by manually creating users.

If the search context of your LDAP synchronization contains an OES or Windows server that has a Home folder attribute associated with at least one user, a Net Folder Server is ready to be configured immediately after running the LDAP synchronization process. You need to consider the amount of data in users' Home folder directories when performing an LDAP synchronization. For information about the amount of time it takes to perform a full synchronization on a Net Folder, see [“Planning the Amount of Data to Synchronize”](#) in the *Novell Filr 1.0.1 Administration Guide*.

For more information about LDAP synchronization, see [“Synchronizing Users and Groups from an LDAP Directory”](#) or [“Creating a New Local User”](#) in the *Novell Filr 1.0.1 Administration Guide*.

- 2 Configure email integration for the Filr site, as described in [“Configuring Email Integration”](#) in the *Novell Filr 1.0.1 Administration Guide*.
- 3 Set up sharing for the Filr site. You can enable users to share files and folders with internal users only, or with both internal and external users.

For more information about allowing users to share documents within Filr, see [“Setting Up Sharing”](#) in the *Novell Filr 1.0.1 Administration Guide*.

- 4 Enable personal storage for the Filr site. This allows users to upload files directly to the Filr site for their own personal use. These files are available in users' My Files area.

For more information about personal storage, as well as how personal storage relates to users' Home folders, see [“Setting Up Personal Storage”](#) in the *Novell Filr 1.0.1 Administration Guide*.

- 5 Configure Net Folders for your Filr site. Net Folders in Filr provide access to files on your corporate OES, Windows, or NetWare file servers by synchronizing file metadata. In essence, a Net Folder is simply a pointer or a reference to a specific folder on a specific file server.

Filr can be configured to index the content of Net Folders to make the content searchable.

For more information about Net Folders, see [“Setting Up Net Folders”](#) in the *Novell Filr 1.0.1 Administration Guide*.

---

**IMPORTANT:** Configuring Net Folders in a sub-optimal way can result in unsatisfactory performance of your Filr system. The ideal Net Folder configuration can vary greatly depending on the number of files that you want to synchronize to Filr, the frequency in which files are

modified, and so forth. Before configuring Net Folders, become familiar with the various subtleties related to Net Folders, as described in “[Planning Net Folder Creation](#)” in the *Novell Filr 1.0.1 Administration Guide*.

---

**6** (Optional) Allow access to the Filr site through NetIQ Access Manager.

For more information about using NetIQ Access Manager with Filr, see “[Allowing Access to the Filr Site through NetIQ Access Manager](#)” in the *Novell Filr 1.0.1 Administration Guide*.

---

**IMPORTANT:** When you use NetIQ Access Manager with Filr, external users cannot access your Filr site. This means that the following features are not functional:

- ◆ Users are not able to share with external users, as described in “[Sharing with People Outside Your Organization](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.
- ◆ Users cannot make items accessible to the public, as described in “[Making Files Accessible to the Public](#)” in the *Novell Filr 1.0.1 Web Application User Guide*.

This means that public users cannot access the Filr site as the Guest user. For more information about the Guest user, see “[Allowing Guest Access to Your Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.

For more information about external users in Filr, see “[Allowing External Users Access to Your Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.

---

**7** Configure mobile device access to the Filr site, as described in “[Configuring Mobile Device Access to the Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.

**8** Configure the Filr desktop application to access files from the Filr site.

For more information about configuring the Filr desktop application, see “[Configuring the Filr Desktop Application to Access Files](#)” in the *Novell Filr 1.0.1 Administration Guide*.

---

**IMPORTANT:** For optimal performance of the Filr system when using the Filr desktop application, consider the following:

- ◆ Users should not configure the Filr desktop application to synchronize more than 1,000 total files, or to synchronize individual files that are larger than 1 GB to their workstations. For information about how users can configure the Filr desktop application to synchronize files to their workstations, see the *Novell Filr 1.0 Desktop Application for Windows Quick Start* ([http://www.novell.com/documentation/novell-filr1/filr1\\_qs\\_desktop/data/filr1\\_qs\\_desktop.html](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktop/data/filr1_qs_desktop.html)) and the *Novell Filr 1.0 Desktop Application for Mac Quick Start* ([http://www.novell.com/documentation/novell-filr1/filr1\\_qs\\_desktopmac/data/filr1\\_qs\\_desktop.html](http://www.novell.com/documentation/novell-filr1/filr1_qs_desktopmac/data/filr1_qs_desktop.html)).
  - ◆ Depending on your environment and the settings that you choose for the Filr desktop application, the Filr desktop application can put a significant load on your Filr system. For information about the factors that affect load, see “[Planning Filr Desktop Application Usage for Your Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.
- 

**9** Configure Filr to support WebDAV on a Windows 7 environment, as described in “[Configuring Filr to Support WebDAV on Windows 7](#)” in the *Novell Filr 1.0.1 Administration Guide*.

**10** If your Filr site needs to support multiple languages, configure the site as described in “[Managing a Multiple-Language Filr Site](#)” in the *Novell Filr 1.0.1 Administration Guide*.

**11** Before your site is ready for use, ensure that you have reviewed all other topics discussed in “[Site Setup](#)” in the *Novell Filr 1.0.1 Administration Guide*.

**12** After you have completed all of the topics that are relevant to your Filr environment, as discussed in the *Novell Filr 1.0.1 Administration Guide*, you can invite users to use the Filr site. For information about how to use the Filr site, see *Novell Filr 1.0.1 Web Application User Guide*.

---

# 9 Updating Filr

This section describes how to update the Filr, search index, and database appliances.

---

**NOTE:** You cannot update from a small installation (Filr software, database, and search index running as a single appliance) to a large installation (Filr software, database, and search index running as separate appliances). You must install a new large installation instead.

---

**IMPORTANT:** If your Filr database is 25 GB or larger, contact Novell Technical Support to assist you through the update process.

---

After you update your Filr system, ensure that you check the Filr download site where you downloaded the Filr software for any hot patches that might be available.

To see a short video that demonstrates the update process for updating Filr 1.0 to Filr 1.0.1, see [Updating Novell Filr \(http://youtu.be/RcoWrHa4THA\)](http://youtu.be/RcoWrHa4THA).

 <http://www.youtube.com/watch?v=<iframe wid>

- ♦ [Section 9.1, “Prerequisites,” on page 91](#)
- ♦ [Section 9.2, “Updating the Filr, Search, or Database Appliances,” on page 91](#)
- ♦ [Section 9.3, “Rebuilding the Search Index,” on page 104](#)

## 9.1 Prerequisites

In order to successfully update the Filr or search appliance, the data storage location must be on a data disk, not the system disk. This is the VMware, Xen, or Hyper-V hard disk that you created in [Chapter 2, “Installing the Filr Appliance and Configuring the Operating System,” on page 27](#). (For more information about the type of data that is stored in the data storage location, see [Section 1.1.3, “Filr Storage,” on page 11](#).)

When you point the new appliance to the previous appliance data storage location, the new appliance detects that you intend to do an update. The Filr appliance carries forward the appropriate configuration data from the old appliance.

## 9.2 Updating the Filr, Search, or Database Appliances

The method of updating is the same for the Filr appliance, search appliance, and the database appliance.

Though it is possible to install a new search index appliance and subsequently re-index your data, Novell recommends that in a production environment you update your existing search index appliances rather than install new appliances and re-index your data. However, because of changes made to the search index since the previous release, you should re-index your Filr site after updating from Filr 1.0.

The data location for the original appliance that you are updating from must be independent of the appliance on a separate VMware, Xen, or Hyper-V hard disk, as described in [Section 9.1, “Prerequisites,”](#) on page 91.

The update process differs depending on your virtual platform.

---

**IMPORTANT:** You can update only to the same virtual platform as the platform where you deployed your original Filr system. For example, if your original Filr system was deployed on VMware, you can update only to VMware.

Because Filr 1.0 was available only on VMware, the update process to Filr 1.0.1 is available only in a VMware environment. Updating from version 1.0 to version 1.0.1 in a Xen or Hyper-V environment is not possible.

---

- ◆ [Section 9.2.1, “VMware,”](#) on page 92
- ◆ [Section 9.2.2, “Xen,”](#) on page 96
- ◆ [Section 9.2.3, “Hyper-V,”](#) on page 100

## 9.2.1 VMware

- 1 Download the software to your management workstation.
  - ◆ **Filr Appliance:** `Filr.x86_64-version.ovf.zip`
  - ◆ **Search Appliance:** `Filrsearch-version.ovf.zip`
  - ◆ **Database Appliance:** `MySQL.x86_64-version.ovf.zip`

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A-) (<http://download.novell.com/Download?buildid=9xcn1vXns5A->) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 2 Extract the file that you downloaded in [Step 1](#) on your management workstation until one of the following folders appears, depending on which appliance you are updating:
  - ◆ `Filr-version`
  - ◆ `Filrsearch-version`
  - ◆ `MySQL-version`
- 3 In the vSphere client, click *File > Deploy OVF Template*.
- 4 Browse to and select the `.ovf` file in the `Filr-version` file folder.
- 5 Click *Next*.
- 6 Click *Next* again.
- 7 In the *Name* field, rename the Filr appliance to a name of your choosing, then click *Next*.
- 8 Click *Next* to accept the default for the disk format.
- 9 Click *Finish*.
- 10 Shut down the appliance you are updating.

---

**IMPORTANT:** When shutting down the appliance, be aware of the following limitations:

- ◆ In a large deployment, always bring down Filr first before you bring down the search appliance or database appliance. When restarting, start the Filr appliance last.

- ♦ In a clustered deployment, all instances of the previous Filr or search index appliance must be shut down before a single instance of the updated Filr or search index appliance is started.  
Rolling upgrades (updating one Filr or search index server while another continues to serve clients) are not supported when updating from Filr 1.0 to Filr 1.0.1 in a clustered environment. This issue does not affect small or non-clustered large installations.
- ♦ When you shut down the appliance, use the *Shutdown* button from the Novell Appliance Configuration screen (as described in [Section 7.9, “Shutting Down and Restarting the Novell Appliance,” on page 87](#)), or use the `init 0` command from the appliance console when you are logged in as `root`.

- 11 Before you power on the new appliance, point it to the VMware data disk that your previous appliance used. For example, for ESX 5.x:
  - 11a In the vSphere client, right-click the virtual machine that you just created, and for which you want to create secondary storage, then click *Edit Settings*.  
The Virtual Machine Properties page is displayed.
  - 11b On the *Hardware* tab, click *Add*.  
The Add Hardware dialog box is displayed.
  - 11c Select *Hard Disk*, then click *Next*.
  - 11d Select *Use an existing virtual disk*, then click *Next*.
  - 11e Next to the *Disk File Path* field, click *Browse*, then browse to and select the datastore or datastore cluster that you selected for the appliance that you are updating from.
  - 11f Click *Open*.
  - 11g Click *Next*.
  - 11h In the *Virtual Device Node* section, select *SCSI (1:0)* from the drop-down list.
  - 11i In the *Mode* section, select *Independent*, select *Persistent*, then click *Next*.
  - 11j Click *Finish*.
  - 11k Click *OK*.

**WARNING:** If for any reason you need to delete the new or the previous appliance, you *must* unlink (remove) the disk. Otherwise, the disk is deleted. Having the disk linked to the original or to the new appliance does not provide the expected safeguard. In other words, if the disk is linked to multiple appliances and you delete one of them, the disk is deleted despite the remaining link.

- 12 Increase the amount of memory that VMware allocates for the Filr appliance.  
The default of 8 GB is the recommended minimum amount of memory for a large deployment. Novell also recommends 2 CPUs.  
For an all-in-one deployment, you should increase the default to at least 12 GB of memory and 4 CPUs.  
Small deployments require more CPUs and memory because in a small deployment, all components are running on a single virtual machine.

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**12a** In the Virtual Machine Properties window, select *Memory*, then increase the setting to a suitable size for your environment.

**12b** Click *OK* to exit the Virtual Machine Properties window.

**13** Power on the appliance (virtual machine).

---

**IMPORTANT:** In a large installation, you must power on the search index and database appliances before you power on the Filr appliance. These appliances must be running at the time you power on the Filr appliance.

---

**14** Click the *Console* tab. After the appliance starts, accept the license agreement.

**15** Specify the same configuration information that you did when installing the original appliance.

If you entered incorrect configuration information, you can log in as `root` and use the `VACONFIG` utility. For more information, see [Section D.1, “Using VACONFIG to Modify Network Information,”](#) on page 113.

**16** Click *Next*.

**17** The data storage location that you used when installing the original appliance should already be selected. If it is not, select it.

For more information about the type of data that is stored here, see [“Data Storage for the Appliance”](#) on page 11.

**18** Click *Next*.

**19** (Filr appliance only) If you configured Filr for a clustered environment, you must select *Remote NFS*. Then click *Next*.

For more information about possible configurations when running Filr in a clustered environment, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,”](#) on page 24.

**20** Click *Configure*.

A message indicating that the installation was successful is displayed.

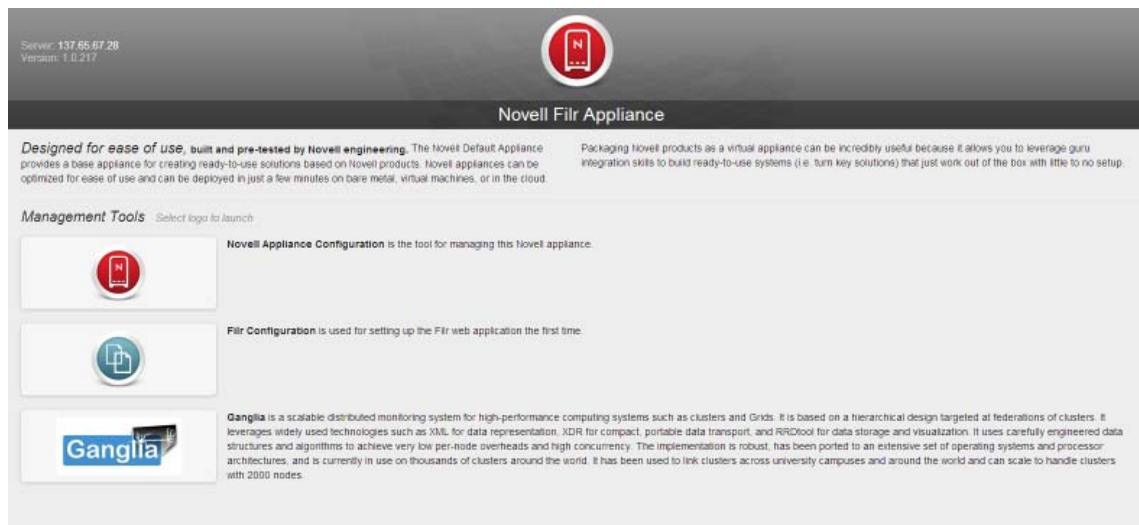
**21** In a browser, navigate to the following URL:

```
https://ip_address:9443
```

Use the IP address or DNS name of the server that you specified during the appliance installation.

**22** Log in to the appliance using the `vaadmin` user and the password that you set.

The Novell Filr Appliance, Novell MySQL Appliance, or Novell Filr Search Appliance landing page is displayed, depending on which appliance you are updating.



23 (Conditional) If you are updating the **search appliance**:

23a Click the *Filr Search Appliance Configuration* icon.



The Search Settings page is displayed.

23b Ensure that all of the settings are set to your desired specifications.

24 (Conditional) If you are updating the **database appliance**:

24a Click the *phpMyAdmin* icon.



24b Verify that the database is populated.

25 (Conditional) If you are updating the **Filr appliance**:

25a Click the *Filr Server Configuration* icon.



The Filr Configuration Wizard is displayed.



**25b** Click *Finish* to update the appliance.

Depending on the size of your database, the update process can take over an hour to complete. For example, a 14 GB database might take 30 minutes to complete, and a 30 GB database might take an hour or more.

**26** Continue with [Section 9.3, “Rebuilding the Search Index,” on page 104.](#)

## 9.2.2 Xen

---

**IMPORTANT:** You can update only to the same virtual platform as the platform where you deployed your original Filr system. For example, if your original Filr system was deployed on VMware, you can update only to VMware.

Because Filr 1.0 was available only on VMware, the update process to Filr 1.0.1 is available only in a VMware environment. Updating from version 1.0 to version 1.0.1 in a Xen or Hyper-V environment is not possible.

The following steps are provided for future reference, when updating from Filr 1.0.1 to a future version.

---

**1** Log in to the host server either locally or from a remote workstation.

You can use the following command to log in to the host server from a remote workstation on Linux:

```
ssh -X root@host_ip_address
```

You must use the `-X` in the command in order to display the GUI installation program. The steps in this section use the GUI installation program to configure the server.

**2** Navigate to the `/var/lib/xen/images` directory on the host server.

**3** Create a new directory inside the images directory where you can download the Filr software. The name of this directory must be the same as the name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `Filr1`, the name of this new directory must also be `Filr1`.

**4** Change to the directory that you just created. For example, `/var/lib/xen/images/Filr1`.

**5** Download the software to the current directory on the host server. For example:

```
/var/lib/xen/images/Filr1
```

- ◆ **Filr Appliance:** `Filr.x86_64-version.xen.tar.gz`
- ◆ **Search Appliance:** `Filrsearch-version.xen.tar.gz`
- ◆ **Database Appliance:** `MySQL.x86_64-version.xen.tar.gz`

You can access the software from the [Novell Customer Center \(NCC\) \(https://www.novell.com/center\)](https://www.novell.com/center). Or, you can access an evaluation version of the software from [this location \(http://download.novell.com/Download?buildid=9xcn1vXns5A~\)](http://download.novell.com/Download?buildid=9xcn1vXns5A~) on the [Novell Downloads page \(http://download.novell.com\)](http://download.novell.com).

**6** Untar the file that you downloaded in [Step 5](#) in the directory where you downloaded it.

You can use the following command to untar the file:

```
tar -Sxvzf Filr.x86_64-version.xen.tar.gz
```

A `filr-version` directory is created, which contains a `.raw` file that you will use to run the virtual image. This process can take a few minutes.

**7** From the host server, run the following command to launch the GUI configuration menu:

```
vm-install
```



The Create a Virtual Machine wizard is displayed.

- 8 Click *Forward*.
- 9 Select *I have a disk or disk image with an installed operating system*, then click *Forward*.
- 10 Leave *SUSE Linux Enterprise Server 11* selected, then click *Forward*.
- 11 Rename the virtual machine by clicking *Name of Virtual Machine*, and specifying a new name in the *Name* field. Then click *Apply*. For example, `Filr1`.
- 12 Configure the amount of memory and number of CPUs that Xen allocates for the Filr appliance.

12a On the Summary page, click *Hardware*, then specify the following information:

**Available Memory:** Displays the amount of available memory that is available on the host server.

**Initial Memory:** 8 GB is the recommended minimum for a large deployment.

For an all-in-one deployment, you should increase the default to at least 12 GB of memory.

Small deployments require more memory because in a small deployment, all components are running on a single virtual machine.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

**Maximum Memory:** Set this to the same value as you set for Initial Memory.

**Available Processors:** Displays the number of available processors on the host server.

**Virtual Processors:** Specify 2 CPUs for a large deployment and 4 CPUs for a small deployment. At least half of the memory should be dedicated to the Java heap. (Java heap is set in the Filr configuration.)

Small deployments require more CPUs because in a small deployment, all components are running on a single virtual machine.

12b Click *Apply*.

13 Configure the bootable disk image:

13a On the Summary page, click *Disks*.

13b Click *Harddisk*.

13c On the Virtual Disk page, specify the following information:

**Source:** Click *Browse*, then browse to the `.raw` file that you untared in [Step 6](#).

**Protocol:** Select *file*.

**Size (GB):** The default size is 40.1 GB. This cannot be changed.

**Create Sparse Image File:** This option is not available.

**Read-Only Access:** Do not select this option.

13d Click *OK*.

14 Shut down the appliance that you are updating.

---

**IMPORTANT:** When shutting down the appliance, be aware of the following limitations:

- ◆ In a large deployment, always bring down Filr first before you bring down the search appliance or database appliance. When restarting, start the Filr appliance last.

- ◆ In a clustered deployment, all instances of the previous Filr or search index appliance must be shut down before a single instance of the updated Filr or search index appliance is started.

Rolling upgrades (updating one Filr or search index server while another continues to serve clients) are not supported when updating from Filr 1.0 to Filr 1.0.1 in a clustered environment. This issue does not affect small or non-clustered large installations.

- ◆ When you shut down the appliance, use the *Shutdown* button from the Novell Appliance Configuration screen (as described in [Section 7.9, “Shutting Down and Restarting the Novell Appliance,” on page 87](#)), or use the `init 0` command from the appliance console when you are logged in as `root`.

- 
- 15 Before you power on the new appliance, point it to the Xen data disk that your previous appliance used:

15a On the Disks page, click *Harddisk*.

15b On the Virtual Disk page, specify the following information:

**Source:** This field should already contain the path to the `.raw` file that will be created when the virtual machine is created. If desired, you can rename the disk in the source field from `disk0` to a name of your choosing.

**Protocol:** Select *file*.

**Size (GB):** Specify the amount of hard disk space that you want to allocate. The recommended minimum is 100 GB.

**Create Sparse Image File:** Select this option.

**Read-Only Access:** Do not select this option.

---

**WARNING:** If for any reason you need to delete the new or the previous appliance, you *must* unlink (remove) the disk. Otherwise, the disk is deleted. Having the disk linked to the original or to the new appliance does not provide the expected safeguard. In other words, if the disk is linked to multiple appliances and you delete one of them, the disk is deleted despite the remaining link.

---

- 16 Power on the appliance (virtual machine).

---

**IMPORTANT:** In a large installation, you must power on the search index and database appliances before you power on the Filr appliance. These appliances must be running at the time you power on the Filr appliance.

---

- 17 Click the *Console* tab. After the appliance starts, accept the license agreement.

- 18 Specify the same configuration information that you did when installing the original appliance.

If you entered incorrect configuration information, you can log in as `root` and use the `VACONFIG` utility. For more information, see [Section D.1, “Using VACONFIG to Modify Network Information,” on page 113](#).

- 19 Click *Next*.

- 20 The data storage location that you used when installing the original appliance should already be selected. If it is not, select it.

For more information about the type of data that is stored here, see [“Data Storage for the Appliance” on page 11](#).

- 21 Click *Next*.

- 22 (Filr appliance only) If you configured Filr for a clustered environment, you must select *Remote NFS*. Then click *Next*.

For more information about possible configurations when running Filr in a clustered environment, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,”](#) on page 24.

**23** Click *Configure*.

A message indicating that the installation was successful is displayed.

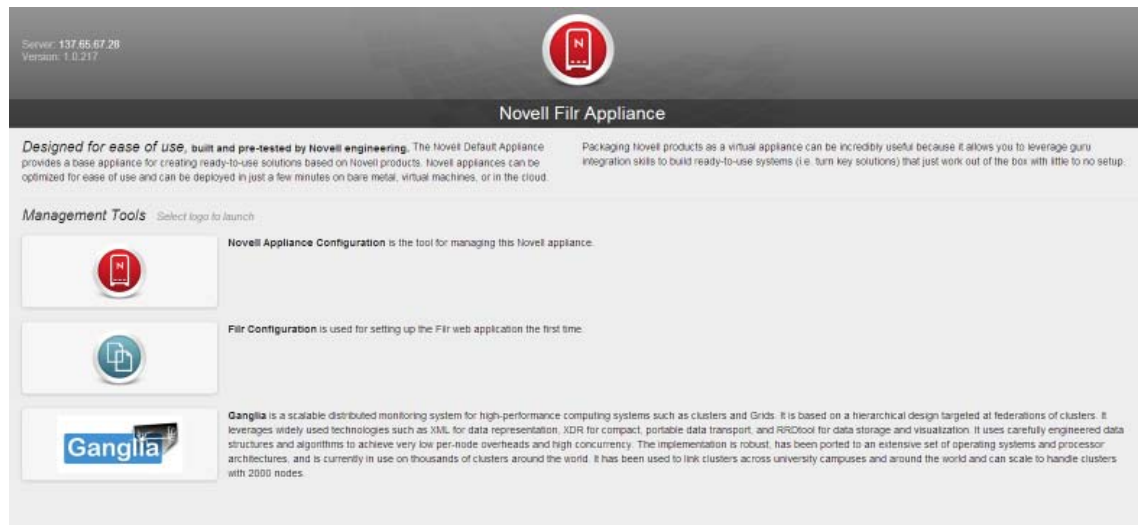
**24** In a browser, navigate to the following URL:

`https://ip_address:9443`

Use the IP address or DNS name of the server that you specified during the appliance installation.

**25** Log in to the appliance using the `vaadmin` user and the password that you set.

The Novell Filr Appliance, Novell MySQL Appliance, or Novell Filr Search Appliance landing page is displayed, depending on which appliance you are updating.



**26** (Conditional) If you are updating the **Filr appliance**:

**26a** Click the *Filr Server Configuration* icon.



The Filr Configuration Wizard is displayed.

**26b** Click *Finish* to update the appliance.

**27** (Conditional) If you are updating the **search appliance**:

**27a** Click the *Filr Search Appliance Configuration* icon.



The Search Settings page is displayed.

- 27b** Ensure that all of the settings are set to your desired specifications.
- 28** (Conditional) If you are updating the **database appliance**:
  - 28a** Click the *phpMyAdmin* icon.



- 28b** Verify that the database is populated.
- 29** Continue with [Section 9.3, "Rebuilding the Search Index,"](#) on page 104.

## 9.2.3 Hyper-V

---

**IMPORTANT:** You can update only to the same virtual platform as the platform where you deployed your original Filr system. For example, if your original Filr system was deployed on VMware, you can update only to VMware.

Because Filr 1.0 was available only on VMware, the update process to Filr 1.0.1 is available only in a VMware environment. Updating from version 1.0 to version 1.0.1 in a Xen or Hyper-V environment is not possible.

The following steps are provided for future reference, when updating from Filr 1.0.1 to a future version.

---

- 1** Log in to the host server either locally or from a remote workstation.
  - You can use Windows Remote Desktop to log in to the host server from a remote workstation.
- 2** Create a new directory in the location where you want each virtual machine to reside (for example, `C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks`). In a later step, you will download the Filr software to this directory.
  - As a best practice, give this directory the same name that you plan to use for your Filr virtual appliance. For example, if you plan to name the Filr appliance `Filr1`, the name of this new directory should also be `Filr1`.
- 3** Download the software to your management workstation.
  - ♦ **Filr Appliance:** `Filr.x86_64-version.ovf.zip`
  - ♦ **Search Appliance:** `Filrsearch-version.ovf.zip`
  - ♦ **Database Appliance:** `MySQL.x86_64-version.ovf.zip`

You can access the software from the [Novell Customer Center \(NCC\)](https://www.novell.com/center) (<https://www.novell.com/center>). Or, you can access an evaluation version of the software from [this location](http://download.novell.com/Download?buildid=9xcn1vXns5A~) (<http://download.novell.com/Download?buildid=9xcn1vXns5A~>) on the [Novell Downloads page](http://download.novell.com) (<http://download.novell.com>).

- 4 Extract the file that you downloaded in [Step 3](#) to a the directory on the host server that you created in [Step 2](#).
- 5 Open the Hyper-V Manager.
- 6 In Hyper-V Manager, right-click the disk name in the Action Pane where you want to create the new virtual machine, then click *New > Virtual Machine*.  
The New Virtual Machine Wizard is displayed.
- 7 Review the Before You Begin page, then click *Next*.
- 8 In the *Name* field, specify a name for the new virtual machine. For example, `Filr1`.
- 9 Click *Next*.
- 10 In the *Startup memory* field, specify the amount of memory (in MB) to allocate to the virtual machine. 8 GB (8192 MB) is the recommended minimum for a large deployment of Filr.  
For an all-in-one (small) deployment, you should increase the default to at least 12 GB (12288 MB) of memory. Small deployments require more memory because in a small deployment, all components are running on a single virtual machine.

---

**IMPORTANT:** When you increase or decrease server memory for the Filr appliance or the search index appliance, you should also modify the Java heap size, as described in [Section 4.10, “Changing the Java JDK Configuration Settings,” on page 72](#) and [Chapter 5, “Configuring and Maintaining the Search Index Appliance,” on page 75](#).

At least half of the memory should be dedicated to the Java heap. You cannot adjust the Java heap until after the appliance is installed.

---

- 11 Click *Next*.
- 12 On the Configure Networking page, select the networking card of your choice, then click *Next*.
- 13 Configure the bootable disk image:
  - 13a On the Connect Virtual Hard Disk page, select *Use an existing virtual hard disk*, then browse to the `.vhd` file that was in the downloaded `.zip` file that you extracted in [Step 4](#).
  - 13b Click *Open* to select the file, then click *Next*.
- 14 Click *Finish*.

---

**WARNING:** If for any reason you need to delete the new or the previous appliance, you *must* unlink (remove) the disk. Otherwise, the disk is deleted. Having the disk linked to the original or to the new appliance does not provide the expected safeguard. In other words, if the disk is linked to multiple appliances and you delete one of them, the disk is deleted despite the remaining link.

---

- 15 Shut down the appliance that you are updating.

---

**IMPORTANT:** When shutting down the appliance, be aware of the following limitations:

- ◆ In a large deployment, always bring down Filr first before you bring down the search appliance or database appliance. When restarting, start the Filr appliance last.
- ◆ In a clustered deployment, all instances of the previous Filr or search index appliance must be shut down before a single instance of the updated Filr or search index appliance is started.

Rolling upgrades (updating one Filr or search index server while another continues to serve clients) are not supported when updating from Filr 1.0 to Filr 1.0.1 in a clustered environment. This issue does not affect small or non-clustered large installations.

- ◆ When you shut down the appliance, use the *Shutdown* button from the Novell Appliance Configuration screen (as described in [Section 7.9, “Shutting Down and Restarting the Novell Appliance,” on page 87](#)), or use the `init 0` command from the appliance console when you are logged in as `root`.

---

16 Power on the appliance (virtual machine).

---

**IMPORTANT:** In a large installation, you must power on the search index and database appliances before you power on the Filr appliance. These appliances must be running at the time you power on the Filr appliance.

---

17 Click the *Console* tab. After the appliance starts, accept the license agreement.

18 Specify the same configuration information that you did when installing the original appliance.

If you entered incorrect configuration information, you can log in as `root` and use the `VACONFIG` utility. For more information, see [Section D.1, “Using VACONFIG to Modify Network Information,” on page 113](#).

19 Click *Next*.

20 The data storage location that you used when installing the original appliance should already be selected. If it is not, select it.

For more information about the type of data that is stored here, see [“Data Storage for the Appliance” on page 11](#).

21 Click *Next*.

22 (Filr appliance only) If you configured Filr for a clustered environment, you must select *Remote NFS*. Then click *Next*.

For more information about possible configurations when running Filr in a clustered environment, see [Section 1.8, “Recommended Hardware Configurations Based on System Performance,” on page 24](#).

23 Click *Configure*.

A message indicating that the installation was successful is displayed.

24 In a browser, navigate to the following URL:


```
https://ip_address:9443
```

Use the IP address or DNS name of the server that you specified during the appliance installation.

25 Log in to the appliance using the `vaadmin` user and the password that you set.

The Novell Filr Appliance, Novell MySQL Appliance, or Novell Filr Search Appliance landing page is displayed, depending on which appliance you are updating.

Server: 137.65.67.28  
Version: 1.0.217




## Novell Filr Appliance


**Designed for ease of use, built and pre-tested by Novell engineering.** The Novell Default Appliance provides a base appliance for creating ready-to-use solutions based on Novell products. Novell appliances can be optimized for ease of use and can be deployed in just a few minutes on bare metal, virtual machines, or in the cloud.

Packaging Novell products as a virtual appliance can be incredibly useful because it allows you to leverage guru integration skills to build ready-to-use systems (i.e. turn key solutions) that just work out of the box with little to no setup.


**Management Tools** Select logo to launch



**Novell Appliance Configuration** is the tool for managing this Novell appliance.



**Filr Configuration** is used for setting up the Filr web application the first time.



**Ganglia** is a scalable distributed monitoring system for high-performance computing systems such as clusters and Grids. It is based on a hierarchical design targeted at federations of clusters. It leverages widely used technologies such as XML for data representation, XDR for compact, portable data transport, and RRDtool for data storage and visualization. It uses carefully engineered data structures and algorithms to achieve very low per-node overheads and high concurrency. The implementation is robust, has been ported to an extensive set of operating systems and processor architectures, and is currently in use on thousands of clusters around the world. It has been used to link clusters across university campuses and around the world and can scale to handle clusters with 2000 nodes.

**26** (Conditional) If you are updating the **Filr appliance**:

**26a** Click the *Filr Server Configuration* icon.



The Filr Configuration Wizard is displayed.

**26b** Click *Finish* to update the appliance.

**27** (Conditional) If you are updating the **search appliance**:

**27a** Click the *Filr Search Appliance Configuration* icon.



The Search Settings page is displayed.

**27b** Ensure that all of the settings are set to your desired specifications.

**28** (Conditional) If you are updating the **database appliance**:

**28a** Click the *phpMyAdmin* icon.



- 28b** Verify that the database is populated.
- 29** Continue with [Section 9.3, "Rebuilding the Search Index,"](#) on page 104.

## 9.3 Rebuilding the Search Index

Because of changes made to the search index since the previous release, you should re-index your Filr site.

For information about how to re-index the Filr site, see ["Rebuilding the Lucene Index"](#) in the *Novell Filr 1.0.1 Administration Guide*.



---

# Appendixes

- ◆ [Appendix A, “Configuring Apache as a Load Balancer,” on page 107](#)
- ◆ [Appendix B, “Setting Up Remote NFS for the Filr Data Storage Location,” on page 109](#)
- ◆ [Appendix C, “Increasing the Disk Space of the Filr Boot Partition,” on page 111](#)
- ◆ [Appendix D, “Troubleshooting the Filr System,” on page 113](#)
- ◆ [Appendix E, “Documentation Updates,” on page 115](#)
- ◆ [Appendix F, “Third-Party Materials,” on page 117](#)



---

# A Configuring Apache as a Load Balancer

The following example configuration uses the balancer module built into the newer Apache (version 2.2.4 and later) Web server. It is based on a widely used sticky session technique. Novell Filr does not support session sharing/replication among Tomcat instances.

If you are using NetIQ Access Manager as described in [Section 4.7, “Changing Reverse Proxy Configuration Settings,” on page 66](#), you do not need to configure Apache to load balance as described in this section, because Access Manager provides this service.

---

**NOTE:** When you update your Filr system, these settings are not preserved. You must redefine these settings each time you update your Filr system.

---

To configure Apache to load balance:

- 1 Install the [Apache Web server \(http://httpd.apache.org\)](http://httpd.apache.org) on a separate server.
- 2 Edit the `/etc/sysconfig/apache2` file:

**2a** Locate the following line:

```
APACHE_MODULES=
```

Then add the following lines:

```
proxy
proxy_ajp
proxy_balancer
```

The end result should look similar to the following:

```
APACHE_MODULES="actions alias auth_basic authn_file authz_host
authz_groupfile authz_default authz_user authn_dbm autoindex cgi dir env
expires include log_config mime negotiation setenvif ssl suexec userdir
php5 reqtimeout proxy proxy_ajp proxy_balancer"
```

**2b** Create the following new configuration file:

```
/etc/apache2/httpd.conf.filr
```

**2c** Add the following section to the `/etc/apache2/httpd.conf.filr` file, providing a `BalancerMember` line for each `jvmRoute` value in a Tomcat `server.xml` file.

```
<Location /balancer-manager>
 SetHandler balancer-manager
 Order deny,allow
 Deny from all
 Allow from 127.0.0.1
</Location>
<Proxy balancer://cluster_name>
 BalancerMember ajp://filr_server_1:8009 route=worker1
 BalancerMember ajp://filr_server_2:8009 route=worker2
</Proxy>
<Location />
 ProxyPass balancer://cluster_name/ stickysession=JSESSIONID
</Location>
```

The values that you specify for the `route` setting (for example, `worker1`, `worker2`, etc.) must exactly match the values that you specify as the JVM Route setting when configuring clustering, as described in [Section 4.6, “Changing Clustering Configuration Settings,” on page 66](#).

**2d** Save the `httpd.conf.filr` file.

- 3** Reconfigure each Filr appliance in the cluster so that each appliance has the same hostname as the Apache Web server.

For information about how to rename each Filr appliance in the cluster, see [Section 4.6, “Changing Clustering Configuration Settings,” on page 66](#).

- 4** Open port 8009 on each Filr appliance in the cluster.

For information about port numbers in Filr, see [Section 4.2.2, “Port Numbers,” on page 60](#).

For information about configuring the firewall with YaST, see the [SuSE Firewall Documentation \(https://www.suse.com/documentation/sles11/singlehtml/book\\_security/book\\_security.html#sec.fire.SuSE\)](https://www.suse.com/documentation/sles11/singlehtml/book_security/book_security.html#sec.fire.SuSE).

- 5** Restart Apache.

---

# B Setting Up Remote NFS for the Filr Data Storage Location

You can configure an NFS location on a remote Linux server as the Filr data storage location. This is the location (`/vastorage`) where information specific to the appliance is stored and is used when the appliance is upgraded.

---

**IMPORTANT:** Filr does not support remote NFS in the following environments:

- ♦ With Novell Storage Services (NSS)
  - ♦ On Windows
- 

To configure remote NFS on a Linux server:

- 1 On the Linux server where you want to configure remote NFS to work with Filr, launch YaST2.
- 2 In the *Network Services* section, click *NFS Server*.  
The NFS Server Configuration dialog box is displayed.
- 3 Click *Next*.
- 4 Click *Add Directory*.
- 5 In the *Directory to Export* field, specify the directory that you want to create, then click *OK*.  
For example,
- 6 Click *Yes* to confirm creating the directory.
- 7 In the *Host Wild Card* field, specify the host name for the Filr appliance.  
For example, `filr1.novell.com`.  
If you have a clustered Filr system with multiple Filr appliances, you will repeat this process for each Filr appliance in the cluster.
- 8 In the *Options* field, change `ro` to `rw` (read-only to read-write), then change `root_squash` to `no_root_squash`.
- 9 Click *OK*.
- 10 (Conditional) If you have a clustered Filr system with multiple Filr appliances, repeat [Step 4](#) through [Step 9](#) for each Filr appliance in the cluster.
- 11 Click *Finish*.



---

# C Increasing the Disk Space of the Filr Boot Partition

If the boot partition (Hard Disk 1) of your Filr appliance is running out of disk space, you can increase the amount.

You need to increase the disk space for:

- ♦ The virtual environment
- ♦ The Filr Linux server

The following sections describe how to increase the disk space of the virtual environment on VMware and Hyper-V. You cannot increase the disk space when using Xen.

- ♦ [Section C.1, “Increasing Disk Space on VMWare,” on page 111](#)
- ♦ [Section C.2, “Increasing Disk Space on Hyper-V,” on page 111](#)

## C.1 Increasing Disk Space on VMWare

- 1 In the vSphere client, right-click the virtual machine for which you want to increase the storage, then click *Edit Settings*.

The Virtual Machine Properties page is displayed.

- 2 On the hardware tab, select *Hard disk 1*.
- 3 In the *Provisioned Size* field, increase the amount to a suitable amount, such as 100 GB.
- 4 Click *OK*.

## C.2 Increasing Disk Space on Hyper-V

- 1 In Hyper-V Manager, in the *Virtual Machines* section, right-click the virtual machine that you just created, then click *Settings*.

The Settings dialog box is displayed.

- 2 In the *Hardware* section, select the hard drive that you configured in [Step 13](#), then click *Edit*.

The Edit Virtual Hard Disk Wizard is displayed.

- 3 Select *Expand*, then click *Next*.
- 4 In the *New size* field, increase the amount to, such as 100 GB, then click *Finish*.





---

# D Troubleshooting the Filr System

- ◆ [Section D.1, “Using VACONFIG to Modify Network Information,” on page 113](#)
- ◆ [Section D.2, “Accessing Filr Log Files,” on page 113](#)

## D.1 Using VACONFIG to Modify Network Information

The easiest way to update the configuration information for the appliance (such as the IP address, hostname, and so forth) after Filr is already installed is to use the VACONFIG utility from the appliance command prompt:

- 1 In the vSphere client, select the Filr appliance, then click the *Console* tab.
- 2 From the command prompt, log in to the appliance.
- 3 Type `vaconfig`, then press Enter.
- 4 In the VACONFIG utility, select *Configure*, then press Enter.
- 5 Press the Tab key until the IP address is selected, then modify the IP address as desired.
- 6 Select *Next*, then press Enter.

## D.2 Accessing Filr Log Files

You can access log files for: Filr, Jetty, Postfix, and Novell FAMT.

- 1 Log in to the Novell appliance at `https://server_url:9443`, then click the Appliance Configuration icon.



- 2 Click *System Services*.
- 3 In the *Log Files* column of the table, click the *download* link for the service for which you want to view log files.

The following files are available for each service:

**Novell Filr:** `catalina.out`, `ssf.log`, `ssr.log` (Filr appliance)

The `catalina.out` file reports all timestamps in UTC/GMT.

**Jetty:** `jetty.stderrout.log` (Filr, Search, and MySQL database appliances)

**Postfix:** `mail` (Filr appliance)

**Novell FAMT:** `famtd.log` (Filr appliance)

**Search:** `indexserver.log` (Search appliance)

**MySQL:** `mysqld.log` (MySQL database appliance)

4 Click *Close* to exit System Services.

---

# E Documentation Updates

This section summarizes the changes made to the guide since the initial release of Novell Filr 1.0.

## February 2014

---

| Location                                                                                            | Update                                                                                                       |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <a href="#">Section 2.1, "Installing the Filr Appliance," on page 27.</a>                           | Removed the requirement of increasing the boot partition (Hard Disk 1) to 100 GB during installation.        |
| <a href="#">Appendix B, "Setting Up Remote NFS for the Filr Data Storage Location," on page 109</a> | Provided more detailed instructions for how to set up remote NFS as the Filr data storage location on Linux. |
| <a href="#">Section 1.3.1, "Filr Server Requirements," on page 14</a>                               | Added support for VMware vMotion.                                                                            |

---

## December 2013

---

| Location                                                                 | Update                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Section 2.1, "Installing the Filr Appliance," on page 27</a> | Added information about how to increase the amount of storage for the appliance's boot partition (Hard Disk 1) when running Filr on VMware and Hyper-V.<br><br>Increasing the amount of storage for the boot partition on Xen is not possible. |

---

## November 2013

---

| Location                                                              | Update                                                                            |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <a href="#">Section 7.5, "Managing Certificates," on page 84</a>      | Added information about general certificate management.                           |
| <a href="#">Section 1.3.1, "Filr Server Requirements," on page 14</a> | Added a statement recommending the use of VMware tools on the VMware host server. |

---

## October 2013

| Location                                                                                                                                              | Update                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Section 1.3.1, "Filtr Server Requirements," on page 14</a>                                                                                | Added support for VMware ESXi 5.5.x with the latest update                                                                                                                                                                                                                           |
| <a href="#">Table 1-2, "Search Index Appliance Storage," on page 19</a> and <a href="#">Table 1-3, "MySQL Database Appliance Storage," on page 19</a> | Updated recommended storage requirements for the search index and database appliances to include a minimum storage of 10 GB for the search index appliance and 25 GB for the database appliance (in addition to the recommended disk space per file that was previously documented). |
| <a href="#">Section 1.4.3, "Setting Aside a Filr Appliance for Re-Indexing and Net Folder Synchronization in a Clustered Environment," on page 23</a> | Added a section that describes how to set aside a Filr appliance to perform resource-intensive tasks, such as Net Folder synchronization and database re-indexing.                                                                                                                   |

## September 2013

| Location                                               | Update                                                                                                                                                                            |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Chapter 9, "Updating Filr," on page 91</a> | Added a reference to an instructional video that demonstrates the update process. The video is embedded in the HTML view of this document, and appears as a link in the PDF view. |

---

# F Third-Party Materials

- ◆ [Section F.1, “Growl License,” on page 117](#)
- ◆ [Section F.2, “Oracle Outside In Technology,” on page 118](#)
- ◆ [Section F.3, “ANTLR 3 License,” on page 118](#)
- ◆ [Section F.4, “Colt License Agreement,” on page 119](#)
- ◆ [Section F.5, “Dom4j License,” on page 119](#)
- ◆ [Section F.6, “iCal4j License,” on page 120](#)
- ◆ [Section F.7, “ICU4J license \(ICU4J 1.3.1 and later\),” on page 120](#)
- ◆ [Section F.8, “JAXEN License,” on page 121](#)
- ◆ [Section F.9, “Jung,” on page 121](#)
- ◆ [Section F.10, “ASM,” on page 122](#)
- ◆ [Section F.11, “Firebug Lite,” on page 123](#)

## F.1 Growl License

Copyright (c) The Growl Project, 2004-2011

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 Growl 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.

## F.2 Oracle Outside In Technology

Oracle shall inform you of any notices and other instructions that are related to third party components (including open source software) that are included in a program and/or hardware and that Oracle is required to distribute with such programs and/or hardware. These notices and other instructions shall be provided to you in at least one of the following ways, at Oracle's sole discretion: (a) automatically installed with the programs or in the installation details; (b) in the program documentation; (c) in the readme files or notice files; or (d) via a supplemental list. You shall comply with all instructions related to third party software components (including open source software). If you reproduce the programs, operating system and/or integrated software, you shall reproduce all third party notices in an appropriate location in the reproduction and/or in its related documentation and include any associated source code (to the extent such source code is provided by Oracle), as required by the applicable notices or as otherwise directed by Oracle.

PDF documents with complete information about the use of Oracle technology in Filr are located in the following directory on the Filr server:

```
/opt/novell/filr/stellent-converter
```

## F.3 ANTLR 3 License

Copyright (c) 2003-2008, 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

- ♦ 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 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.

## F.4 Colt License Agreement

### Packages `cern.colc*`, `cern.jet*`, `cern.clhep`

Copyright (c) 1999 CERN - European Organization for Nuclear Research.

Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. CERN makes no representations about the suitability of this software for any purpose. It is provided "as is" without expressed or implied warranty.

### Packages `hep.aida.*`

Written by Pavel Binko, Dino Ferrero Merlino, Wolfgang Hoschek, Tony Johnson, Andreas Pfeiffer, and others. Check the FreeHEP home page for more info. Permission to use and/or redistribute this work is granted under the terms of the LGPL License, with the exception that any usage related to military applications is expressly forbidden. The software and documentation made available under the terms of this license are provided with no warranty.

## F.5 Dom4j License

Copyright 2001-2005 (C) MetaStuff, Ltd. All Rights Reserved.

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](mailto:dom4j-info@metastuff.com).
4. 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](mailto:dom4j-info@metastuff.com).
5. 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.
6. 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.

## F.6 iCal4j License

Copyright (c) 2008, Ben Fortuna

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 Ben Fortuna nor the names of any other 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.

## F.7 ICU4J license (ICU4J 1.3.1 and later)

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1995-2001 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.

## F.8 JAXEN License

Copyright (C) 2000-2002 Bob McWhirter & James Strachan.

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 “Jaxen” must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact [license@jaxen.org](mailto:license@jaxen.org).
4. Products derived from this software may not be called “Jaxen,” nor may “Jaxen” appear in their name, without prior written permission from the Jaxen Project Management ([pm@jaxen.org](mailto:pm@jaxen.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 Jaxen Project (<http://www.jaxen.org>).”

Alternatively, the acknowledgment may be graphical using the logos available at <http://www.jaxen.org>.

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 Jaxen 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 Jaxen Project and was originally created by bob mcwhirter ([bob@werken.com](mailto:bob@werken.com)) and James Strachan ([jstrachan@apache.org](mailto:jstrachan@apache.org)). For more information on the Jaxen Project, please see <http://www.jaxen.org>.

## F.9 Jung

THE JUNG LICENSE

Copyright (c) 2003-2004, Regents of the University of California and the JUNG 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:

- ♦ 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 University of California 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, 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.

## F.10 ASM

Copyright (c) 2000-2005, INRIA, France Telecom

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 copyright holders 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, 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.

## F.11 Firebug Lite

Copyright (c) 2006-2007, Joe Hewitt

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 copyright holders 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, 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.

