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GroupWise
Interoperability Guide

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Contents

About This Guide

This *GroupWise Interoperability Guide* helps you use GroupWise in the context of other software products.

The following resources provide additional information about using GroupWise:

◆ OpenText Support and Knowledge Base

To search the GroupWise documentation from the OpenText Support website, click **Advanced Search**, select **Documentation** in the **Search In** drop-down list, select **GroupWise** in the **Products** drop-down list, type the search string, and then click **Search**.

◆ GroupWise Support Community

Audience

This guide is intended for network administrators who install and administer GroupWise.

Feedback

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

Additional Documentation

For additional GroupWise documentation, see the GroupWise Documentation website.

Setting up a GroupWise Cluster

Setting up your GroupWise system using a server cluster is the preferred method for providing high availability access to your GroupWise clients by ensuring you have failover redundancy and load balancing of available server assets. GroupWise uses OES Cluster Services (NCS) for clustering.

Your cluster needs to be set up before you create a GroupWise system, so you can configure GroupWise administration and agents to use the cluster as you install GroupWise. Before you begin with the instructions contained in the sections below, review the content in "Overview of OES Cluster Services" in the *OES Cluster Services for Linux Administration Guide*.

- Chapter 1, "OES Cluster Services (NCS) on Linux," on page 11
- Chapter 2, "Using Windows Server Failover Clustering with GroupWise," on page 49

1 OES Cluster Services (NCS) on Linux

These sections provide information for how to set up your GroupWise system using OES Cluster Services on Linux.

Introduction to GroupWise and OES Cluster Services on Linux

Before implementing GroupWise with OES Cluster Services on Linux, make sure you have a solid understanding of OES Cluster Services by reviewing the OES Linux Clustering documentation for your version of Open Enterprise Server (OES) on Linux. When you review this information, you discover that clustering employs very specialized terminology. The following brief glossary provides basic definitions of clustering terms and relates them to your GroupWise system:

cluster: A grouping of from two to 32 servers configured using OES Cluster Services so that data storage locations and applications can transfer from one server to another without interrupting their availability to users.

node: A clustered server; in other words, a single server that is part of a cluster.

shared disk system: The hardware housing the physical disks that are shared among the cluster nodes.

shared partition: A disk partition in a shared disk system that can be accessed from any cluster node that needs the data stored on it. On Linux, OES Cluster Services supports shared partitions (Linux traditional file system disk partitions), shared NSS volumes (Novell Storage Services volumes), and shared pools (virtual servers).

NOTE: For simplicity, this section uses the term "shared partition" to represent any of these three storage configuration alternatives. For more information, see the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

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cluster-enabled shared partition: A shared partition for which a Cluster Resource object has been created in NetIQ eDirectory. The properties of the Cluster Resource object provide load and unload scripts for applications and services installed on the partition, failover/failback/migration policies for the applications and services, and the failover list for the partition.

IMPORTANT: Cluster-enabling is required for GroupWise. For more information, see the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

GroupWise partition: As used in this section, a cluster-enabled shared partition that is used for GroupWise, such as for housing a domain, a post office, or a software distribution directory.

Messenger partition: As used in this section, a cluster-enabled shared partition that is used for Messenger, such as for storing conversation files, log files, temporary files, queue directories, and so on.

cluster resource: A shared partition, secondary IP address, application, service, Web server, and so on, that can function successfully anywhere in the cluster. Cluster resources include the GroupWise agents and the Messenger agents.

failover: The process of moving cluster resources from a failed node to a functional node so that availability to users is uninterrupted. For example, if the node where the POA is running goes down, the POA and its post office fail-over to a secondary node so that users can continue to use GroupWise. When you set up cluster resources, you must consider what components need to fail-over together in order to continue functioning.

fan-out-failover: The configuration where cluster resources from a single failed node fail-over to several different nodes in order to distribute the load from the failed node across multiple nodes. For example, if a node runs a cluster resource consisting of a domain and its MTA, another cluster resource consisting of a post office and its POA, and a third cluster resource for the GWIA, each cluster resource can be configured to fail-over separately to different secondary nodes.

failback: The process of returning cluster resources to their preferred node after the situation causing the failover has been resolved. For example, if a POA and its post office fail-over to a secondary node, that cluster resource can be configured to fail back to its preferred node when the problem is resolved.

migration: The process of manually moving a cluster resource from its preferred node to a secondary node for the purpose of performing maintenance on the preferred node, temporarily lightening the load on the preferred node, and so on.

Planning GroupWise in a Linux Cluster

The majority of this part of the *GroupWise Interoperability Guide* (Planning GroupWise in a Linux Cluster through Implementing the GroupWise Web Applications in a Cluster) is designed for those who are creating a new GroupWise system, or at least new domains and post offices, in the context of OES Cluster Services (NCS) on Linux.

If you already have an existing GroupWise system on OES Linux and need to configure it to work in a newly installed cluster, see Moving an Existing Linux GroupWise System into a Linux Cluster.

When you implement a new GroupWise system or a new domain or post office in a clustering environment, overall GroupWise system design does not need to change substantially. For a review, see "Planning Your GroupWise System" in the *GroupWise Installation Guide*. However, the configuration of individual components of your GroupWise system will be significantly different. This section helps you plan the following GroupWise components in a cluster:

- A new GroupWise system consisting of the primary domain and the initial post office
- A new secondary domain
- A new post office
- The GroupWise agents: Message Transfer Agent (MTA), Post Office Agent (POA), and Document Viewer Agent (DVA)

During the planning process, component configuration alternatives are explained. For example, you might want the domain and post office together on the same shared partition or on different shared partitions.

The System Clustering Worksheet and the Agent Clustering Worksheet list the information you need as you set up GroupWise in a clustering environment. You should print these worksheets and fill them out as you complete the tasks listed below:

- "Installing OES Cluster Services (NCS) on Linux" on page 13
- "Planning a New Clustered Domain" on page 15
- "Planning a New Clustered Post Office" on page 16
- "Planning a New Library for a Clustered Post Office" on page 16
- "Configuring the Linux Agents in a Cluster" on page 17
- "GroupWise Clustering Worksheets" on page 19

After you have completed the tasks and filled out the System Clustering Worksheet and the Agent Clustering Worksheet, you are ready to continue with Installing OES Cluster Services (NCS) on Linux.

Installing OES Cluster Services (NCS) on Linux

Install OES Cluster Services (NCS) on OES Linux by following the instructions provided in the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

The cluster installation process includes:

- Meeting hardware and software requirements
- Setting up a shared disk system
- Creating a new Cluster object to represent the cluster in NetIQ eDirectory
- Adding nodes to the cluster
- Installing the OES Cluster Services software on all nodes in the cluster
- Creating shared partitions, shared NSS volumes, or shared pools as needed for your cluster, as described in the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

> **NOTE:** For simplicity in this section, the term "shared partition" is intended to include any of these shared storage alternatives.

- Cluster-enabling any of these shared storage alternatives, as described in the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

IMPORTANT: Cluster-enabling is required for GroupWise.

- Mounting the shared partitions where you want to set up GroupWise domains and post offices.

As you install OES Cluster Services on Linux, record key information about the cluster on the System Clustering Worksheet:

SYSTEM CLUSTERING WORKSHEET

Under Item 1: eDirectory Tree for Cluster, record the name of the eDirectory tree where the new Cluster object has been created.

Under Item 2: Cluster Name, record the name of the Cluster object that you created for your GroupWise system.

Under Item 3: Cluster Context, record the full context of the Cluster object.

Under Item 4: Nodes in Cluster, list the nodes that you have added to the cluster. Include the file system information about each partition, including file system type (`nss`, `reiserfs`, `ext3`, and so on), device name (`sda2`, `hda1`, and so on), and mount point directory (`/media/nss`, `/mnt`, `/mail`, and so on). You need this information when you set up the load and unload scripts for the GroupWise cluster resources.

Under Item 5: Shared Partitions, list the volume names and volume IDs for the shared partitions that are available for use in your GroupWise system. You need this information when you set up the load and unload scripts for the GroupWise cluster resources.

The number of nodes and shared partitions that are available in the cluster strongly influences where you can place GroupWise domains and post offices. You have several alternatives:

- Your whole GroupWise system can run in a single cluster.
- Parts of your GroupWise system can run in one cluster while other parts of it run in one or more other clusters.
- Parts of your GroupWise system can run in a cluster while other parts run outside of the cluster, on non-clustered servers.

If you do not have the system resources to run all of your GroupWise system in a clustering environment, you must decide which parts have the most urgent need for the high availability provided by clustering. Here are some suggestions:

- Post offices and their POAs must be available in order for users to access their GroupWise mailboxes. Therefore, post offices and their POAs are excellent candidates for the high availability provided by clustering.
- Domains and their MTAs are less noticeable to users when they are unavailable (unless users in different post offices happen to be actively engaged in an email discussion when the MTA goes down). On the other hand, domains and their MTAs are critical to GroupWise administrators, although administrators might be more tolerant of a down server than end users are. Critical domains in your system are the primary domain and, if you have one, a hub or routing domain. These domains should be in the cluster, even if other domains are not.

- The GWIA might or might not require high availability in your GroupWise system, depending on the importance of immediate messaging across the Internet and the use of POP3 or IMAP4 clients by GroupWise users.

- The Monitor Agent is a vital partner with the GroupWise High Availability service, described in "Installing the GroupWise Monitor Software" in the *GroupWise Installation Guide*. The GroupWise High Availability service automatically restarts agents that go down under circumstances that do not cause the entire server to go down. If you want this protection for your GroupWise agents, you can run the Monitor Agent in your cluster.

  See also, "Monitor and the GroupWise High Availability Service on Linux" in the *GroupWise Installation Guide*.

There is no right or wrong way to implement GroupWise in a clustering environment. It all depends on the specific needs of your particular GroupWise system and its users.

Planning a New Clustered Domain

The considerations involved in planning a new domain in a clustering environment are essentially the same as for any other environment.

- **Primary Domain:** If you are setting up a new GroupWise system in a clustering environment, you are creating the primary domain as you complete the tasks in this section. To prepare, review "Planning Your GroupWise System" and "Installing the GroupWise Server Software" in the *GroupWise Installation Guide*, which includes links to the Simple GroupWise System Worksheet and the Primary Domain Worksheet. These cover planning the primary domain and an initial post office in the primary domain.

- **Secondary Domain:** If your GroupWise system already exists, you are creating a new secondary domain. To prepare, review "Creating a New Domain" in the *GroupWise Administration Guide*, which includes a link to the Secondary Domain Worksheet.

Regardless of the type of domain you are creating, keep in mind the following cluster-specific details as you fill out the worksheet you need:

- When you specify the location for the domain directory (and for a new GroupWise system, the post office directory) on the worksheet, remember that it will be on a GroupWise partition, not on the node where you will be running the GroupWise Installation program.

  IMPORTANT: Configuring a domain or post office directly at the root of a cluster volume is not supported. An example of a root path on an NSS volume is `/media/nss/GW`. In this example, you need a sub-directory under `GW` when configuring your domain in order to avoid issues with GroupWise certificates.

  A working example can be found in the Sample Cluster Load Script where `DOM` is the volume root with a sub-directory of `utah`.

- Do not concern yourself with the GroupWise agent information on the worksheet. You will plan the agent installation later.

When you have completed the worksheet, transfer the key information from the "Primary Domain Worksheet" or the "Secondary Domain Worksheet" in the *GroupWise Installation Guide* to the System Clustering Worksheet.

Under Item 9: Domain Name, transfer the domain name and database directory to the System Clustering Worksheet.

Under Item 7: GroupWise Partition for Domain, transfer the domain location to the System Clustering Worksheet. Also specify the secondary IP address of the shared partition where you plan to create the domain.

IMPORTANT: Do not create the new domain until you are instructed to do so in Creating a New GroupWise System to Work with OES Cluster Services.

Planning a New Clustered Post Office

The considerations involved in planning a new post office in a clustering environment are essentially the same as for any other environment. The initial post office in a new GroupWise system on Linux is planned on the Post Office Worksheet. To plan additional new post offices, review "Creating a New Post Office" in the *GroupWise Administration Guide*, which includes a link to the Post Office Worksheet. When you specify the location for the post office directory, remember that it will be on a GroupWise partition, not on the node where you will be running the GroupWise Installation program.

When you have completed the worksheet, transfer key information from the Post Office Worksheet to the System Clustering Worksheet.

Under Item 10: Post Office Name, transfer the post office name and database location to the System Clustering Worksheet. Also specify the secondary IP address of the shared partition where you plan to create the domain.

If you will create the post office on a different GroupWise partition from where the domain is located, under Item 8: Shared Partition for Post Office, transfer the post office location to the System Clustering Worksheet. Also specify the secondary IP address of the shared partition where you plan to create the post office.

IMPORTANT: Do not create the new post office until you are instructed to do so in Creating a New GroupWise System to Work with OES Cluster Services.

Planning a New Library for a Clustered Post Office

The considerations involved in planning a new library in a clustering environment are essentially the same as for any other environment. However, in a Linux cluster, you should not plan to locate a document storage area on a remote storage area. If you choose to place it outside the post office directory structure, it should still be located on the same server with the post office.

You can plan a library for a clustered post office by following the standard instructions provided in "Creating and Managing Libraries" in the *GroupWise Administration Guide* and filling out the "Library Worksheet". Then provide the library information on the System Clustering Worksheet.

Under Item 11: Document Storage Area Location, mark where you want to create the library's document storage area.

IMPORTANT: Do not create the new library until you are instructed to do so in Creating a New GroupWise System to Work with OES Cluster Services.

Configuring the Linux Agents in a Cluster

There are several cluster-specific issues to consider as you plan to configure the Linux MTA, POA, and DVA in your clustered GroupWise system:

- "Recording Secondary IP Addresses for the Linux Agents" on page 17
- "Determining Appropriate Failover Lists for the Linux Agents" on page 18
- "Determining Cluster Resource Information for the Linux Agents" on page 18
- "Planning for Linux GroupWise Agents" on page 18

Recording Secondary IP Addresses for the Linux Agents

By default, the GroupWise agents listen on all IP addresses, both primary and secondary, that are bound to the server. This means that any time there is a possibility of two of the same type of agents loading on the same node, it is important that each agent use the appropriate secondary IP address of the GroupWise partition. The secondary IP address moves with each agent when it fails-over, so that, in the case of the POA, GroupWise clients do not lose their connections to the POA.

If you are planning to set up a GroupWise name server to help GroupWise clients locate their post offices, make sure that the default POA port number of 1677 is used somewhere in the cluster. For more information, see "Simplifying Client Access with a GroupWise Name Server" in the *GroupWise Administration Guide*.

Clustering is not necessary in order to provide high availability for the DVA. As an alternative to clustering, you can install the DVA on multiple servers outside the cluster, as described in "Scaling Your DVA Installation" in the *GroupWise Administration Guide*.

Under Item 3: MTA Network Information, transfer the domain secondary IP address from the System Clustering Worksheet to the Agent Clustering Worksheet.

Under Item 6: POA Network Information, transfer the post office secondary IP address from the System Clustering Worksheet to the Agent Clustering Worksheet.

Under Item 7: DVA Network Information, transfer the post office secondary IP address from the System Clustering Worksheet to the Agent Clustering Worksheet.

Determining Appropriate Failover Lists for the Linux Agents

By default, a GroupWise partition is configured to have all nodes in the cluster in its failover list, organized in ascending alphanumeric order. Only one node at a time can have a particular GroupWise partition mounted and active. If a GroupWise partition's preferred node fails, the partition fails-over to the next node in the failover list. You should customize the failover list for each GroupWise partition based on the fan-out-failover principle.

When a node fails, its partitions should not all fail-over together to the same secondary node. Instead, the partitions should be distributed across multiple nodes in the cluster. This prevents any one node from shouldering the entire processing load typically carried by another node. In addition, some partitions should never have the potential of being mounted on the same node during a failover situation. For example, a post office and POA that service a large number of very active GroupWise client users should never fail-over to a node where another very large post office and heavily loaded POA reside. If they did, users on both post offices would notice a decrease in responsiveness of the GroupWise client.

AGENT CLUSTERING WORKSHEET

Under Item 2: Domain Failover List, list the nodes that you want to have in the domain partition failover list. The MTA might need to run on any node that the domain partition fails over to. Therefore, you will install the agent software on all of the nodes in the domain failover list.

If you are planning the post office on a different GroupWise partition from where the domain is located, under Item 5: Post Office Failover List, list the nodes that you want to have in the post office partition failover list. The POA (and the DVA if you installed along with the POA) might need to run on any node that the post office partition fails over to. Therefore, you will install the agent software on all of the nodes in the post office failover list.

Determining Cluster Resource Information for the Linux Agents

A cluster resource is a shared partition, secondary IP address, application, service, Web server, and so on, that can function successfully anywhere in the cluster. Cluster resources include the GroupWise agents and the Messenger agents. For example, you might create a `/mnt/gwsystem` mount point, or you might create `/mnt/dom1` and `/mnt/po1` mount points.

AGENT CLUSTERING WORKSHEET

Under Item 8: Cluster Resource Information, list the mount point and secondary IP address for the GroupWise partition where the domain and post office will be located.

Planning for Linux GroupWise Agents

Aside from the cluster-specific issues discussed in the preceding sections, the considerations involved in planning for the GroupWise Linux agents are the same in a clustering environment as for any other environment. Review "Working with the GroupWise Agents" and "Linux: Managing the GroupWise Agents" in the *GroupWise Installation Guide*.

IMPORTANT: Do not install the Linux agent software until you are instructed to do so in Creating a New GroupWise System to Work with OES Cluster Services.

GroupWise Clustering Worksheets

- "System Clustering Worksheet" on page 19
- "Agent Clustering Worksheet" on page 20

System Clustering Worksheet

Item	Explanation
1) eDirectory Tree for Cluster:	Record the eDirectory tree where you created the new Cluster object when you installed OES Cluster Services for Linux.
	For more information, see Installing OES Cluster Services (NCS) on Linux
2) Cluster Name: Master IP Address:	Record the name of the new Cluster object that you created for your GroupWise system. Also record the virtual IP address of the cluster that will remain constant regardless of which node is currently active.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
3) Cluster Context:	Record the full context where you created the new Cluster object.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
4) Nodes in Cluster: - File system type - Device name - Mount point directory	List the nodes that are part of the cluster that you set up for your GroupWise system. Also list the file system type (`reiserfs`, `ext3`, and so on), device name (`sda2`, `hda1`, and so on), and mount point directory (`/mnt`, `/mail`, and so on) for each. You need this information as you create load and unload scripts for GroupWise agents.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
5) Shared Partitions in Cluster: - Volume name - Volume ID	List the volume name and volume ID for each shared partition that is available for use in your GroupWise system.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
6) GroupWise Partition for Software Distribution Directory: Secondary IP Address: Directory:	If desired, specify the name of the shared partition where the GroupWise software distribution directory will reside and the full path to its location. For more information, see Introduction to GroupWise and OES Cluster Services on Linux.

Item	Explanation
7) GroupWise Partition for Domain: Secondary IP Address: Post Office on Same Partition as Domain? ◆ Yes ◆ No	Specify the name of the shared partition where the GroupWise domain will reside and its secondary IP address. For more information, see Planning a New Clustered Domain.
8) GroupWise Partition for Post Office: Secondary IP Address:	Specify the name of the shared partition where the GroupWise post office will reside and its secondary IP address. For more information, see Planning a New Clustered Post Office.
9) Domain Name: Domain Directory:	Specify a unique name for the domain. Specify the directory on the GroupWise partition where you want to create the new domain. For more information, see Planning a New Clustered Domain.
10) Post Office Name: Post Office Directory:	Specify a unique name for the post office. Specify the directory on the GroupWise partition where you want to create the post office. For more information, see Planning a New Clustered Post Office.
11) Document Storage Area Location: ◆ At the post office ◆ Outside the post office ◆ Separate post office	If you need a library for a clustered post office, mark where you want to create its document storage area and provide a directory if necessary. For more information, see Planning a New Library for a Clustered Post Office.

Agent Clustering Worksheet

Item	Explanation
1) Domain Name: Domain Location:	Transfer this information from the System Clustering Worksheet (item 9).
2) Domain Failover List:	List other nodes in the cluster where the GroupWise domain and its MTA can fail-over. For more information, see Determining Appropriate Failover Lists for the Linux Agents.

Item	Explanation

3) MTA Network Information:
 	
    ◆ MTA IP address
    ◆ MTA message transfer port
    ◆ MTA HTTP port
	Record the MTA network address information for the server where the MTA will run. The MTA IP address is the same as the domain secondary IP address in the cluster.
	
	See Recording Secondary IP Addresses for the Linux Agents.

4) Post Office Name: Post Office Location:	Transfer this information from the System Clustering Worksheet (item 10).
5) Post Office Failover List:	List other nodes in the cluster where the GroupWise post office and its POA can fail-over. For more information, see Determining Appropriate Failover Lists for the Linux Agents.

6) POA Network Information:
 	
    ◆ POA IP address
    ◆ POA client/server port
    ◆ POA message transfer port
    ◆ POA HTTP port
	Record the POA network address information for the server where the POA will run. The POA IP address is the same as the post office secondary IP address in the cluster.
	
	See Recording Secondary IP Addresses for the Linux Agents.

7) DVA Network Information:
 	
    ◆ DVA IP address
    ◆ DVA HTTP port
	If you are configuring the DVA along with the POA so that it can participate in the cluster, record the DVA network address information for the server where the DVA will run. When you install the DVA along with the POA, the DVA IP address is the same as the post office secondary IP address in the cluster.
	
	See Recording Secondary IP Addresses for the Linux Agents.

8) Cluster Resource Information
 	
    ◆ Path to the cluster resource mount point
    ◆ IP address of the cluster resource
	List the cluster resource information for the GroupWise partition where the domain and post office serviced by the agents are located.
	
	For more information, see Determining Cluster Resource Information for the Linux Agents.

Creating a New GroupWise System to Work with OES Cluster Services

Before proceeding with the instructions in these sections to create a new GroupWise system with OES Cluster Services, you should already have reviewed the previous sections in OES Cluster Services (NCS) on Linux to set up your cluster on Linux. If your cluster is now ready for the GroupWise installation, reference the sections below to do so.

    ◆ "GroupWise Installation Wizard" on page 22
    ◆ "GroupWise Administration Console" on page 22

GroupWise Installation Wizard

Install the GroupWise Server component on each cluster node where a GroupWise agent will run for a domain or a post office.

Follow the instructions in Step 1 through Step 9 in "Linux: Installing the GroupWise Server Software" in the *GroupWise Installation Guide*.

IMPORTANT: Install the GroupWise Server component on *all* cluster nodes before setting up any domains or post offices. Do not start the GroupWise Installation Console at the end of the installation process.

GroupWise Administration Console

For more information about using the GroupWise Administration Console, see the following references:

- *GroupWise Installation Guide*, "Working with the GroupWise Administration Console"
- *GroupWise Administration Guide*, "GroupWise Administration Console"

GroupWise Administration Service

You must configure the GroupWise Administration Service to function in a cluster so that it keeps track of which cluster resources are available to it at each point in time. Configuring the GroupWise Administration Service for clustering ensures that files associated with domains and post offices are created on cluster volumes, rather than on individual cluster nodes.

File	Standard Location	Clustered location
Domain SSL Certificate, MTA SSL Certificate, GWIA SSL Certificate	`/opt/novell/groupwise/certificates`	`/groupwise/certificates` (a peer to the domain folder)
Post Office SSL Certificate, POA SSL Certificate	`/opt/novell/groupwise/certificates`	`/groupwise/certificates` (a peer to the post office folder)
MTA Log Files	`/var/log/novell/groupwise/`*`domain`*`.mta`	`/groupwise/agents/logs` (a peer to the domain folder)
GWIA Log Files	`/var/log/novell/groupwise/` `gwia.`*`domain`*	`/groupwise/agents/logs` (a peer to the domain folder)
POA Log Files	`/var/log/novell/groupwise/`*`post_office`*`.poa`	`/groupwise/agents/logs` (a peer to the post office folder)

On each cluster node:

1 Run the following command to enable the GroupWise Admin Service to run in a clustering environment:

```
gwadminutil config -cluster enable
```

You should receive the following response:

```
Cluster: enabled
Default Port: 9710
```

2 Use the following command to restart the GroupWise Admin Service.

```
rcgrpwise restart gwadminservice
```

Your GroupWise system is now ready to function in a cluster.

GroupWise Installation Console

In the Installation console, when you are creating domains and post offices in a cluster, a few fields require cluster-specific information.

Domain Fields

When you follow the instructions in "Creating the Primary Domain" in the *GroupWise Installation Guide*, pay special attention to the following fields:

- In the **Host** field, specify the secondary IP address of the shared resource where you want to create the domain.
- In the **Domain Folder** field, specify a folder on the shared resource where you want to create the domain.

Post Office Fields

When you follow the instructions in Step 2 through Step 8 in "Adding a Post Office" in the *GroupWise Installation Guide*, pay special attention to the following fields:

- In the **Owning Domain Host** field, specify the secondary IP address of the shared resource where the owning domain is located.
- In the **Owning Domain Admin Port** field, specify the port on the shared resource for the domain.
- In the **Host** field, specify the secondary IP address of the shared resource where you want to create the post office.
- In the **Post Office Folder** field, specify a folder on the shared resource where you want to create the post office.

GroupWise Load and Unload Scripts

Samples of load and unload scripts are provided below.

- "Sample Cluster Load Script" on page 24
- "Sample Cluster Unload Script" on page 25

Sample Cluster Load Script

This sample cluster load script performs the following actions:

- Establishes what to do for certain error conditions.
- Creates the GroupWise agent services (if they do not already exist).
- Starts the GroupWise Admin Service listeners with clustering enabled for the MTA.
- Starts the MTA, POA, and GWIA (in that order, if all are present)

```
#!/bin/bash
./opt/novell/ncs/lib/ncsfuncs
exit_on_error nss /poolact=DOM
exit_on_error ncpcon mount DOM=254
exit_on_error add_secondary_ipaddress 151.155.136.248
exit_on_error ncpcon bind --ncpservername=DOM --ipaddress=151.155.136.248
exit_on_error novcifs --add '--
vserver=".cn=DOM.ou=servers.o=novell.t=GW14-TREE."'
                    --ip-addr=151.155.136.248
```

```
# Start gwadmin service
exit_on_error /etc/init.d/grpwise start gwadminservice
#create agent services
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                          -i /media/nss/DOM/utah
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                          -i /media/nss/DOM/utah/
wpgate/gwia
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                          -i /media/nss/DOM/provo/

#start admin service listeners
exit_on_error /opt/novell/groupwise/admin/gwadmin-ipc start utah cluster
exit_on_error /opt/novell/groupwise/admin/gwadmin-ipc start provo.utah
cluster

#start GroupWise agents
exit_on_error /etc/init.d/grpwise start utah
exit_on_error /etc/init.d/grpwise start gwia.utah
exit_on_error /etc/init.d/grpwise start provo.utah
exit 0
```

Sample Cluster Unload Script

This sample cluster unload script performs the following actions:

- Stops the GroupWise Admin Service listeners for the MTA and POA
- Stops the MTA, GWIA, and POA (in that order if all are present)
- Lists error conditions that can be ignored

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs
# Stop admin service listeners
ignore_error /opt/novell/groupwise/admin/gwadmin-ipc stop utah
ignore_error /opt/novell/groupwise/admin/gwadmin-ipc stop provo.utah

# Stop GroupWise agents
ignore_error /etc/init.d/grpwise stop utah
ignore_error /etc/init.d/grpwise stop gwia.utah
ignore_error /etc/init.d/grpwise stop provo.utah

ignore_error novcifs
          --remove '--vserver=".cn=DOM.ou=servers.o=novell.t=GW14-
TREE."'
          --ip-addr=151.155.136.248
ignore_error ncpcon unbind --ncpservername=DOM --ipaddress=151.155.136.248
ignore_error del_secondary_ipaddress 151.155.136.248
ignore_error nss /pooldeact=DOM
exit 0
```

GroupWise Cluster Test

Follow the instructions in Testing Your Clustered GroupWise System on Linux to verify that the GroupWise Admin console keeps track of the cluster resources that are currently available to it.

Creating a New Secondary Domain in a Linux Cluster

After you have set up the primary domain and initial post office, as described in Creating a New GroupWise System to Work with OES Cluster Services, you can create additional secondary domains in your GroupWise system as needed.

To create a new secondary domain in a clustering environment:

1 Mount the GroupWise partition where the new secondary domain will be created.

2 Connect to the primary domain in your GroupWise system. For information see, "Connecting to a Domain" in the *GroupWise Administration Guide*.

3 Create the new domain, following the steps provided in "Creating a New Domain" in the *GroupWise Administration Guide*.

Use the Domain Worksheet you filled out in Planning a New Clustered Domain to fill in the fields in the New Domain dialog box.

4 In the **Link to Domain** field, link the new domain to the primary domain of your GroupWise system.

5 Use the Link Configuration tool to change the links from the new domain to all other domains in the cluster to direct TCP/IP links. For information, see "Managing the Links between Domains and Post Offices" in the *GroupWise Administration Guide*.

Although a complete mesh link configuration is the most efficient, it might not be feasible in all situations. Set up as many direct TCP/IP links as possible for best MTA performance in the cluster.

6 Make sure you are still connected to the primary domain.

7 Rebuild the domain database for the new domain, following the steps provided in "Rebuilding Domain or Post Office Databases" in the *GroupWise Administration Guide*.

The database rebuild is necessary in order to transfer the MTA configuration information and the domain link information into the secondary domain database, because the MTA for the new domain is not yet running.

Testing Your Clustered GroupWise System on Linux

After you have configured the GroupWise cluster resources, you can test the load and unload scripts by bringing the GroupWise cluster resource online and taking it offline again.

1 In iManager, expand **Clusters**, and then click **Cluster Manager**.

2 Browse to the Cluster object to display the current cluster state.

3 (Conditional) If the new GroupWise cluster resource shows **Offline** in the **State** column, select the new GroupWise cluster resource, and then click **Online**.

After a moment, the GroupWise cluster resource displays **Running** in the **State** column.

4 At the server where the MTA and/or POA are starting, use the following command to see if they are running:

```
rcgrpwise status domain
rcgrpwise status post_office.domain
```

5 Select the new GroupWise cluster resource, and then click **Offline**.

The **State** column for the GroupWise cluster resource displays **Offline**.

6 Use the same command you used in Step 4 to verify if they have stopped.

7 Repeat Step 3 whenever you are ready to bring the new GroupWise cluster resource online permanently.

8 Continue with Managing Your Clustered GroupWise System on Linux.

Managing Your Clustered GroupWise System on Linux

After you have set up a basic clustered GroupWise system, you should consider some long-term management issues.

- "Updating GroupWise Objects with Cluster-Specific Descriptions" on page 27
- "Knowing What to Expect in MTA, POA, and DVA Failover Situations" on page 28

Updating GroupWise Objects with Cluster-Specific Descriptions

After setting up your clustered GroupWise system, while the cluster-specific information is fresh in your mind, you should record the cluster-specific information as part of the GroupWise objects in the GroupWise Administration Console so that you can easily refer to it later. Be sure to update the information in the GroupWise objects if the configuration of your system changes.

- "Recording Cluster-Specific Information for a Domain and Its MTA" on page 27
- "Recording Cluster-Specific Information for a Post Office and Its POA" on page 28

Recording Cluster-Specific Information for a Domain and Its MTA

To permanently record important cluster-specific information for the domain:

1 Browse to and click the Domain object in the Administration Console.

2 In the **Description** field of the General tab, provide a cluster-specific description of the domain, including the secondary IP address of its GroupWise partition.

3 Click **Save** to save the domain description.

4 Select the **Objects** tab > **Message Transfer Agents**, and click the MTA object.

5 In the **Description** field of the MTA General tab, record the secondary IP address of the domain's GroupWise partition.

   This information appears on the MTA server console, no matter which node in the cluster it is currently running on.

6 Click **Save** to apply the changes.

7 Select the **Agents Settings** tab of the MTA object.

8 In the **Host Name** field under Network Address, provide the host name address that you provided in the GroupWise Installation program.

9 Select **Bind Exclusively to Host Name**.

   This records this vital information in eDirectory as well as in the MTA startup file.

10 Click **Save** to save the MTA description and host name address.

11 Continue with Recording Cluster-Specific Information for a Post Office and Its POA.

Recording Cluster-Specific Information for a Post Office and Its POA

To permanently record important cluster-specific information for a post office:

1 Browse to and click the Post Office object in the Administration Console.

2 In the **Description** field of the General tab:

    2a Provide a cluster-specific description of the post office, including the secondary IP address of its GroupWise partition.

    2b (Conditional) If you installed and clustered the DVA along with the POA, make a note of that configuration choice.

3 Click **Save** to save the post office description.

4 Select the **Objects** tab > **Post Office Agents**, and click the Post Office Agent object.

5 In the **Description** field of the POA General tab, record the secondary IP address of the post office's GroupWise partition.

    This information appears on the POA server console, no matter which node in the cluster it is currently running on.

6 Click **Save** to save the description.

7 Select the **Agents Settings** tab of the POA object.

8 In the **Host Name** field under Network Address, provide the host name address that you provided in the GroupWise Installation program.

9 Select **Bind exclusively to Host Name**.

    This records this vital information in eDirectory as well as in the POA startup file.

10 Click **Save** to save the POA description and secondary IP address.

Knowing What to Expect in MTA, POA, and DVA Failover Situations

In a failover situation, the MTA and the POA might need to perform some database repair as they start on the new node. The time required depends on the size of the databases involved.

Typically, the POA returns to full functionality faster than the MTA. This benefits GroupWise client users, who can reconnect to their mailboxes very quickly and probably do not notice if messages to users in other post offices are not delivered immediately. The only time a user needs to restart the GroupWise client is if he or she was actually in the process of sending a message when the POA went down. Notify can continue running even if the connection to the POA becomes unavailable because it reconnects automatically when the POA is again available.

The MTA typically takes some time reestablishing the links to its post offices, other domains, and gateways, but this situation usually resolves itself in a few minutes without administrator intervention. If it does not, you can manually restart the MTA to speed up the process.

The DVA must reestablish its HTTP connections with one or more POAs and WebAccess Applications. Typically, this occurs quite quickly.

In comparison to failover, migration typically takes longer because the POA and the MTA methodically terminate their threads and close their databases as part of their normal shutdown procedure. However, as a result, no database repair is required when these agents start up again in their new location.

Continue with What's Next.

What's Next

Now that you have at least one GroupWise domain and post office up and running in a clustering environment, you are ready to proceed with the rest of your GroupWise system setup by:

- Adding users to post offices.

  See "Users" in the GroupWise Administration Guide.
- Setting up the GroupWise Windows client software and helping users to get started using it.

  See "Client" in the *GroupWise Administration Guide*. Also see the *GroupWise Client User Guide*.
- Connecting your clustered GroupWise system to the Internet.

  See Implementing the Internet Agent in a Linux Cluster.

GroupWise System Quick Checklist

Use this checklist when setting up clustering in your GroupWise system.

❒ Plan your new clustered GroupWise system.

  See Planning GroupWise in a Linux Cluster.

❒ Create the primary domain and initial post office in your new clustered GroupWise system.

  See Creating a New GroupWise System to Work with OES Cluster Services.

❒ Create a new secondary domain in the Linux cluster.

  See Creating a New Secondary Domain in a Linux Cluster.

❒ Test your new clustered GroupWise system.

  See Testing Your Clustered GroupWise System on Linux.

❒ Record cluster-specific information in the properties pages of the GroupWise objects that the information pertains to.

  See Managing Your Clustered GroupWise System on Linux.

Upgrading a Clustered Linux GroupWise System to GroupWise 18

Reference the content in these sections if you already have GroupWise running on a cluster and you need to upgrade to a newer version of GroupWise.

- "Installing the GroupWise Software" on page 30
- "Configuring the GroupWise Admin Service to Function in a Cluster" on page 30
- "Upgrading Domains and Post Offices" on page 31
- "Finishing the GroupWise Software Upgrade" on page 32
- "Providing New Load and Unload Scripts" on page 32
- "Testing the Upgraded Cluster" on page 34

Installing the GroupWise Software

As with any upgrade, you must upgrade the primary domain first.

1 Stop all GroupWise agents that are running on the node that you want to upgrade first.

2 Install the GroupWise Server component on the first node.

Follow the instructions in Step 1 through Step 9 in "Linux: Installing the GroupWise Server Software" in the *GroupWise Installation Guide*.

IMPORTANT: Do not start the GroupWise Admin console after installing the GroupWise software.

---

3 Continue with Configuring the GroupWise Admin Service to Function in a Cluster.

Configuring the GroupWise Admin Service to Function in a Cluster

You must configure the GroupWise Admin Service to function in a cluster, so that it keeps track of which cluster resources are available to it at each point in time. Configuring the GroupWise Admin Service for clustering ensures that files associated with domains and post offices are created on cluster volumes, rather than on individual cluster nodes.

File	Standard Location	Clustered location
Domain SSL Certificate, MTA SSL Certificate, GWIA SSL Certificate	`/opt/novell/groupwise/certificates`	`/groupwise/certificates` (a peer to the domain folder)
Post Office SSL Certificate, POA SSL Certificate	`/opt/novell/groupwise/certificates`	`/groupwise/certificates` (a peer to the post office folder)
MTA Log Files	`/var/log/novell/groupwise/` `domain.mta`	`/groupwise/agents/logs` (a peer to the domain folder)
GWIA Log Files	`/var/log/novell/groupwise/` `gwia.domain`	`/groupwise/agents/logs` (a peer to the domain folder)
POA Log Files	`/var/log/novell/groupwise/` `post_office.poa`	`/groupwise/agents/logs` (a peer to the post office folder)

1 Run the following command to enable the GroupWise Admin Service to run in a clustering environment:

```
gwadminutil config -cluster enable
```

You should receive the following response:

```
Cluster: enabled
Default Port: 9710
```

2 Use the following command to restart the GroupWise Admin Service.

```
rcgrpwise restart gwadminservice
```

Your GroupWise system is now ready to function in a cluster.

3 For convenience, configure the GroupWise Installation console to use an authentication mode of a user name and password, rather than the default token-based authentication mode:

```
gwadminutil installcfg -m user -u user_name -p password
```

4 Continue with Upgrading Domains and Post Offices.

Upgrading Domains and Post Offices

For background information about upgrading your GroupWise system, see "GroupWise System Upgrade" in the *GroupWise Installation Guide*.

1 In a web browser, start the GroupWise Installation console:

```
https://domain_server_secondary_ip_address:9710/gwadmin-console/
install
```

2 Provide the user name as password that you established in Step 3 in Configuring the GroupWise Admin Service to Function in a Cluster.

3 In the GroupWise Installation console, click **Upgrade an Existing Domain or Post Office GroupWise 18**.

The Installation console provides a list of agents on the current node. The list is built from the `gwha.conf` file.

4 (Conditional) If there are any domains or post offices that are not currently online to this node, select them, and then click **Remove** to remove them from the list.

5 For each domain and post office, verify that the IP address in the list is the secondary IP address of the cluster resource.

6 For each domain and post office, verify that there are no port conflicts for the Admin port.

7 (Conditional) If you need to change the IP address or Admin port for a domain or post office, click the name of the domain or post office, update the information, and then click **OK**.

8 Click **Next** to continue with the upgrade.

9 On the Credentials page:

    9a (Conditional) If the primary domain is being upgraded, specify the user name for the GroupWise Super Admin, and type the password twice for confirmation.

       or

       Specify the IP address, Admin port, and Admin credentials of the owning domain.

10 Click **Next** to display the Summary page.

11 Review the summary, and then click **Finish**.

12 Continue with Finishing the GroupWise Software Upgrade.

Finishing the GroupWise Software Upgrade

To finish the GroupWise Software Upgrade, you need to repeat the same tasks above on each cluster node:

1   On each cluster node, repeat the steps in the following sections:

- ◆ Installing the GroupWise Software
- ◆ Configuring the GroupWise Admin Service to Function in a Cluster
- ◆ Upgrading Domains and Post Offices

    Remember that you cannot upgrade a post office until its owning domain has been upgraded.

2   Continue with Providing New Load and Unload Scripts.

Providing New Load and Unload Scripts

After upgrade, you need to replace the existing "load" and "unload" scripts as shown in the example steps below:

1   In iManager, replace the existing load script for each cluster resource with a new load script that is similar to the following example:

```
#!/bin/bash
./opt/novell/ncs/lib/ncsfuncs
exit_on_error nss /poolact=DOM
exit_on_error ncpcon mount DOM=254
exit_on_error add_secondary_ipaddress 151.155.136.248
exit_on_error ncpcon bind --ncpservername=DOM --
ipaddress=151.155.136.248
exit_on_error novcifs --add '--
vserver=".cn=DOM.ou=servers.o=novell.t=GW14-TREE."'
                      --ip-addr=151.155.136.248

# Start gwadmin service
exit_on_error /etc/init.d/grpwise start gwadminservice
#create agent services
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                    -i /media/nss/DOM/utah
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                    -i /media/nss/DOM/utah/
wpgate/gwia
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                    -i /media/nss/DOM/provo/

#start admin service listeners
exit_on_error /opt/novell/groupwise/admin/gwadmin-ipc start utah
cluster
exit_on_error /opt/novell/groupwise/admin/gwadmin-ipc start provo.utah
cluster
```

```
#start GroupWise agents
exit_on_error /etc/init.d/grpwise start utah
exit_on_error /etc/init.d/grpwise start gwia.utah
exit_on_error /etc/init.d/grpwise start provo.utah
exit 0
```

This sample cluster load script performs the following actions:

- Establishes what to do for certain error conditions.

- Creates the GroupWise agent services (if they do not already exist).

- Starts the GroupWise Admin Service listeners with clustering enabled for the MTA and POA.

- Starts the POA, MTA, and GWIA (in that order if all are present)

2 Replace the existing unload script for each cluster resource with a new unload script that is similar to the following example:

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs
# Stop admin service listeners
ignore_error /opt/novell/groupwise/admin/gwadmin-ipc stop utah
ignore_error /opt/novell/groupwise/admin/gwadmin-ipc stop provo.utah

# Stop GroupWise agents
ignore_error /etc/init.d/grpwise stop utah
ignore_error /etc/init.d/grpwise stop gwia.utah
ignore_error /etc/init.d/grpwise stop provo.utah

ignore_error novcifs
            --remove '--vserver=".cn=DOM.ou=servers.o=novell.t=GW14-
TREE."'
            --ip-addr=151.155.136.248
ignore_error ncpcon unbind --ncpservername=DOM --
ipaddress=151.155.136.248
ignore_error del_secondary_ipaddress 151.155.136.248
ignore_error nss /pooldeact=DOM
exit 0
```

This sample cluster unload script performs the following actions:

- Stops the GroupWise Admin Service listeners for the MTA and POA

- Stops the MTA, GWIA, and POA (in that order if all are present)

- Lists error conditions that can be ignored

NOTE: The `pkill` command used in earlier versions of the GroupWise unload script is no longer needed. In GroupWise 18, the `grpwise` script terminates GroupWise agent processes according to the `wait` setting specified in the `gwha.conf` file. The default is 60 seconds. If that amount of time is not sufficient to ensure a clean shutdown of the agents in your GroupWise system, increase the `wait` setting as needed.

---

3 Continue with Testing the Upgraded Cluster.

Testing the Upgraded Cluster

Follow the instructions in Testing Your Clustered GroupWise System on Linux to verify that the GroupWise Administration Console keeps track of the cluster resources that are currently available to it.

Implementing the Document Viewer Agent in a Linux Cluster

Clustering is not necessary in order to provide high availability for the DVA, because the DVA does not require the database access that is required by the MTA and POA. As an alternative to clustering the DVA, you can install the DVA on multiple servers outside the cluster, as described in "Scaling Your DVA Installation" in the GroupWise Administration Guide.

However, if you want to include the DVA in the Linux cluster, follow these instructions:

1. Edit the DVA startup file by adding the `--ip` switch with the secondary IP address.

   For information, see "Changing the DVA IP Address or Port Number" in the *GroupWise Administration Guide*.

2. Add the following lines to the load and unload scripts following the procedure in Providing New Load and Unload Scripts:

   Load script:

   - In the `# Start gwadmin service` section, add:

     `exit_on_error /opt/novell/groupwise/admin/gwadminutil services -i -dva /media/nss/`*cluster/ volume*`/groupwise/agents/share/`*dva startup file*

   - In the `# Start GroupWise agents` section, add:

     `exit_on_error /etc/init.d/grpwise start` *gwdva.poname*

   Unload script: In the `# Stop GroupWise agents` section, add:

   `ignore_error /etc/init.d/grpwise stop` *gwdva.poname*

Implementing the Internet Agent in a Linux Cluster

You should already have set up at least a simple GroupWise system, as described in Planning GroupWise in a Linux Cluster and Creating a New GroupWise System to Work with OES Cluster Services. As part of this process, you filled out the System Clustering Worksheet. If you do not have access to the filled-out worksheet, print the worksheet now and fill in the clustering information as it currently exists on your system. You need this information as you implement the Internet Agent (GWIA) in a cluster.

- "Planning the Internet Agent in a Linux Cluster" on page 35
- "Setting Up the GWIA in a Linux Cluster" on page 38
- "Testing the Internet Agent in a Linux Cluster" on page 43
- "Managing the Internet Agent in a Linux Cluster" on page 44

Planning the Internet Agent in a Linux Cluster

A major system configuration difference between the GWIA in a clustering environment and the GWIA in a regular environment is that you need to create a separate domain to house the GWIA in the clustering environment.

The Internet Agent Clustering Worksheet lists the information you need as you set up the GWIA in a clustering environment. You should print the worksheet and fill it out as you complete the tasks listed below:

- "Planning a Domain for the GWIA" on page 35
- "Selecting the GWIA Partition and Secondary IP Address" on page 36
- "Determining an Appropriate Failover List for the Linux GWIA" on page 36
- "Cluster Resource Information for the Linux GWIA" on page 36
- "Preparing DNS for the Clustered Linux GWIA" on page 37
- "Preparing Your Firewall for the Clustered Linux GWIA" on page 37
- "Planning the Linux GWIA Installation" on page 37

Planning a Domain for the GWIA

The considerations involved in planning a domain for the GWIA are much the same as planning any other domain. In preparation, review "Planning a Domain"; then, print and fill out the "Primary Domain Worksheet" in the *GroupWise Installation Guide*.

Keep in mind the following cluster-specific details:

- When you specify the location for the domain directory on the Domain Worksheet, remember that it is on a GroupWise partition, not on the node where you running the GroupWise Installation program. This location is referred to as the GWIA partition because it is where the GWIA message queues are located.
- Do not concern yourself with the GroupWise agent information on the Domain Worksheet. You can stop at "MTA Settings". MTA planning will be discussed later.

When you have completed the Domain Worksheet, transfer the key information from the Domain Worksheet to the Internet Agent Clustering Worksheet.

INTERNET AGENT CLUSTERING WORKSHEET

Under Item 1: GroupWise Partition for the GWIA, transfer the domain location to the Internet Agent Clustering Worksheet.

Under Item 2: GWIA Domain Name, transfer the domain name and database directory to the Internet Agent Clustering Worksheet.

IMPORTANT: Do not create the new domain until you are instructed to do so in Creating a Domain for the GWIA.

Selecting the GWIA Partition and Secondary IP Address

As with the MTA, the POA, and the DVA, the GWIA needs a secondary IP address that remains the same no matter which node in the cluster it is running on. You can place the GWIA and its domain on a GroupWise partition where a domain or post office already reside, which means that the GWIA shares the same secondary IP address as that domain or post office and fails over along with that domain or post office. Or you can place the GWIA and its domain on its own GroupWise partition, which means that it has its own secondary IP address and fails over independently.

INTERNET AGENT CLUSTERING WORKSHEET

Under Item 1: GroupWise Partition for GWIA, specify the secondary IP address for the GWIA partition.

Under Item 5: MTA Network Information, copy the same secondary IP address.

Under Item 6: GWIA Network Information, copy the same secondary IP address.

IMPORTANT: You must configure the GWIA to bind exclusively to the secondary IP address. OES Cluster Services uses Postfix to send cluster email alerts using the primary IP address. Postfix and the GWIA both default to port 25. A conflict results unless you configure the GWIA so that it does not use the primary IP address. Instructions are provided in Forcing Use of the GWIA Secondary IP Address.

Determining an Appropriate Failover List for the Linux GWIA

By default, a GroupWise partition is configured to have all nodes in the cluster in its failover list, organized in ascending alphanumeric order. Only one node at a time can have a particular GroupWise partition mounted and active. If a GroupWise partition's preferred node fails, the partition fails over to the next node in the failover list. You should customize the failover list for each GroupWise partition based on the fan-out-failover principle.

As with the MTA, the POA, and the DVA, you need to decide which nodes in the cluster are appropriate locations for the GWIA partition to fail-over to. You must install the GWIA software on all of the nodes where you want the GWIA to be able to fail-over. For a review of failover lists, see Determining Appropriate Failover Lists for the Linux Agents, which describes the issues in the context of planning installations for the other GroupWise agents.

INTERNET AGENT CLUSTERING WORKSHEET

Under Item 3: GWIA Failover List, list the nodes that you want in the GWIA partition failover list.

Cluster Resource Information for the Linux GWIA

A cluster resource is a shared partition, secondary IP address, application, service, Web server, and so on, that can function successfully anywhere in the cluster. Cluster resources include the GroupWise agents and the Messenger agents.

Under Item 4: Cluster Resource Mount Point, list the mount point for the GroupWise partition where the GWIA domain is located.

Preparing DNS for the Clustered Linux GWIA

In order for the GWIA partition to be recognized on your network, DNS must have an MX record that includes the hostname corresponding to the secondary IP address of the GWIA partition. A DNS A record associates the secondary IP address with the hostname.

Preparing Your Firewall for the Clustered Linux GWIA

The GWIA receives incoming messages on the secondary IP address of the GWIA partition. Your firewall configuration must be modified to allow inbound TCP/IP traffic from the Internet to the GWIA secondary IP address on the following standard ports:

Protocol	Standard Port
IMAP4	143
LDAP	389
POP3	110
SMTP	25

By default, the GWIA sends outgoing messages on the primary IP address of the server where it is running. If you decide to use this default configuration, your firewall must be configured to allow outbound TCP/IP traffic from all nodes in the GWIA partition failover list. However, because Postfix uses the primary IP address for sending cluster email alerts, the default GWIA configuration is not recommended. To avoid a port conflict, configure the GWIA to bind to the secondary IP address, as described in Forcing Use of the GWIA Secondary IP Address.

If the GWIA has a large number of nodes on its failover list, you can configure the GWIA to send outgoing messages to a relay host, which then sends them out through the firewall using its own IP address rather than the address of the particular node where the GWIA was running. This reduces the amount of modification to your firewall required to set up the GWIA. However, if the relay host goes down, outgoing messages are delayed.

In preparation for installing the GWIA, configure your firewall as needed to handle the GWIA's use of primary and secondary IP addresses when sending and receiving messages.

Planning the Linux GWIA Installation

IMPORTANT: Do not install the GWIA software until you are instructed to do so in Setting Up the GWIA in a Linux Cluster.

Setting Up the GWIA in a Linux Cluster

You should already have reviewed Planning the Internet Agent in a Linux Cluster and filled out the Internet Agent Clustering Worksheet. You are now ready to complete the following tasks to set up the GWIA in a clustering environment:

- "Creating a Domain for the GWIA" on page 38
- "Configuring the Linux GWIA in a Cluster" on page 38

Creating a Domain for the GWIA

The GWIA domain will be a secondary domain. To create it, follow the instructions in Creating a New Secondary Domain in a Linux Cluster, taking your information from the GWIA Clustering Worksheet, rather than the System Clustering Worksheet, and then return to this point.

Do not create any post offices in the GWIA domain.

After you have created the domain, continue with Configuring the Linux GWIA in a Cluster.

Configuring the Linux GWIA in a Cluster

After you have created a domain for the GWIA , you are ready to configure the GWIA.

- "Configuring the Clustered Linux GWIA for SSL" on page 38
- "Configuring the Linux GWIA Cluster Resource to Load and Unload the GWIA and Its MTA" on page 39
- "Enabling Internet Addressing for Your Clustered GroupWise System" on page 42
- "Forcing Use of the GWIA Secondary IP Address" on page 42
- "Verifying GWIA Object Settings" on page 42

Configuring the Clustered Linux GWIA for SSL

If you plan to enable SSL, as described in "Securing Internet Access with TLS Connections to the GWIA" in the *GroupWise Administration Guide*, you must make the SSL certificate file and key file available to the GWIA in the cluster. The default locations for the SSL certificate file and key file are on the cluster nodes along with the GroupWise software, rather than being located with the domain and post office on one or more GroupWise partitions. To avoid having multiple copies of these files in multiple locations, you should set the locations in the Administration Console.

1 On the GWIA partition, create the directory where you want to store the certificate and key file required for SSL.

2 Copy the certificate file and key file into the new directory.

   If you need assistance obtaining these files, see "Encryption and Certificates" in the *GroupWise Administration Guide*.

3 Continue by following the instructions in "Securing Internet Access with TLS Connections to the GWIA" in the *GroupWise Administration Guide*.

4 Continue with Configuring the Linux GWIA Cluster Resource to Load and Unload the GWIA and Its MTA.

Configuring the Linux GWIA Cluster Resource to Load and Unload the GWIA and Its MTA

The properties of the Cluster Resource object define how the GWIA partition functions within the cluster, how the GWIA is loaded and unloaded, and how failover and failback situations are handled. Complete the following tasks for the GWIA cluster resource:

- "Modifying the Cluster Resource Load Script for the Linux GWIA and Its MTA" on page 39
- "Modifying the Cluster Resource Unload Script for the Linux GWIA and Its MTA" on page 40
- "Setting the Failover List and Policies for the Linux GWIA and Its MTA" on page 41

Modifying the Cluster Resource Load Script for the Linux GWIA and Its MTA

The cluster resource load script executes whenever the GWIA cluster resource comes online.

To set up the load script in iManager:

1 Expand **Clusters**, and then click **Cluster Options**.

2 In the **Cluster** field, browse to the Cluster object where the GWIA cluster resource is located.

3 Click the Cluster object to display the cluster resources that belong to the cluster.

4 Select the GWIA cluster resource that you created when you set up the GWIA partition, and then click **Details**.

5 Click **Scripts** > **Load Script**.

6 (Conditional) If this is a traditional Linux volume, use a load script similar to the following example, depending on the configuration of your cluster and nodes. This sample cluster load script performs the following actions:

- Establishes what to do for certain error conditions
- Creates the GroupWise agent services (if they do not already exist)
- Starts the GroupWise Admin Service listeners with clustering enabled for the MTA

◆ Starts the MTA and GWIA (in that order)

```
#!/bin/bash
./opt/novell/ncs/lib/ncsfuncs
exit_on_error nss /poolact=DOM
exit_on_error ncpcon mount DOM=254
exit_on_error add_secondary_ipaddress 151.155.136.248
exit_on_error ncpcon bind --ncpservername=DOM --
ipaddress=151.155.136.248
exit_on_error novcifs --add '--
vserver=".cn=DOM.ou=servers.o=novell.t=GW14-TREE."'
                        --ip-addr=151.155.136.248
# Start gwadmin service
exit_on_error /etc/init.d/grpwise start gwadminservice
#create agent services
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                    -i /media/nss/DOM/utah
exit_on_error /opt/novell/groupwise/admin/gwadminutil services
                                    -i /media/nss/DOM/
utah/wpgate/gwia
#start admin service listeners
exit_on_error /opt/novell/groupwise/admin/gwadmin-ipc start utah
cluster
#start GroupWise agents
exit_on_error /etc/init.d/grpwise start utah
exit_on_error /etc/init.d/grpwise start gwia.utah
exit 0
```

6a In the `define IP address` section, specify the secondary IP address of the GWIA partition (Internet Agent Clustering Worksheet item 1).

6b In the `define filesystem type` section, specify the filesystem type that is in use in use on the nodes in the cluster (System Clustering Worksheet item 5).

6c In the `define mount point` section, specify the mount point directory in use for the nodes in the cluster (System Clustering Worksheet item 5).

6d In the `start service` section, provide the commands to start the MTA first, following by the GWIA.

7 Click **OK** to save the load script.

Modifying the Cluster Resource Unload Script for the Linux GWIA and Its MTA

The cluster resource unload script executes whenever the GWIA cluster resource goes offline. Programs should be unloaded in the reverse order of how they were loaded. This ensures that supporting programs are not unloaded before programs that rely on them in order to function properly.

1 On the iManager Cluster Resource Properties page of the GWIA cluster resource, click **Scripts** > **Unload Script**.

2 (Conditional) If this is a traditional Linux volume, use an unload script similar to the following example, depending on the configuration of your cluster and nodes. This sample cluster unload script performs the following actions:

◆ Stops the GroupWise Admin Service listeners for the MTA

- Stops the MTA and GWIA (in that order)
- Lists error conditions that can be ignored

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs
# Stop admin service listeners
ignore_error /opt/novell/groupwise/admin/gwadmin-ipc stop utah
# Stop GroupWise agents
ignore_error /etc/init.d/grpwise stop utah
ignore_error /etc/init.d/grpwise stop gwia.utah
ignore_error novcifs
         --remove '--vserver=".cn=DOM.ou=servers.o=novell.t=GW14-
TREE."'
         --ip-addr=151.155.136.248
ignore_error ncpcon unbind --ncpservername=DOM --
ipaddress=151.155.136.248
ignore_error del_secondary_ipaddress 151.155.136.248
ignore_error nss /pooldeact=DOM
exit 0
```

2a In the `request service stop` section, provide the commands to stop the GWIA first, followed by the MTA.

2b In the `stop service otherwise` section, adjust the `sleep` command as needed so that the agents can shut down normally on your system without being inadvertently killed by the `pkill` command the follows.

2c In the `define IP address` section, specify the secondary IP address of the GWIA partition.

2d In the `define mount point` section, specify the mount point directory in use for the nodes in the cluster.

2e (Conditional) If you are running the GroupWise High Availability (gwha) service, stop it before the script stops the agents, and then start it again at the end of the unload script.

This prevents the GroupWise High Availability service from trying to restart the agents while the script is trying to stop them.

Add the following section before the `request service stop` section:

```
# Temporarily disable the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha off
ignore_error kill -HUP `pidof xinetd`
```

Add the following section before the `return status` section:

```
# Restart the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha on
ignore_error kill -HUP `pidof xinetd`
```

3 Click **OK** to save the unload script.

Setting the Failover List and Policies for the Linux GWIA and Its MTA

1 On the iManager Cluster Resource Properties page of the GWIA cluster resource, click **General**.

The default policy settings are often appropriate. By default, a cluster resource:

- Fails over automatically if the node it is running on fails

- ◆ Starts automatically on the next node in its failover list
- ◆ Continues running at its failover location, even after its most preferred node is again available

    If you are considering changing these defaults, see the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

2 Under **Preferred Nodes**, arrange the nodes in the cluster into the desired failover list for the GWIA (Internet Agent Clustering Worksheet item 3).

3 Click **OK**.

Enabling Internet Addressing for Your Clustered GroupWise System

Setting up Internet addressing for a clustered GWIA is no different from setting it up for an GWIA in any other environment. Follow the instructions in "Configuring Internet Addressing" in the *GroupWise Administration Guide*, and then return to this point.

Forcing Use of the GWIA Secondary IP Address

OES Cluster Services uses Postfix to send cluster email alerts using the primary IP address. Postfix and the GWIA both default to using port 25. You must configure the GWIA to bind exclusively to the secondary IP address in order to avoid a port conflict between Postfix and the GWIA.

1 Click the GWIA object in the GroupWise Administration Console.

2 Navigate to **GroupWise** tab > **Agent Settings**.

3 In the **Host Name** field under Network Address, provide the secondary IP address (Internet Agent Clustering Worksheet item 1) for the GWIA to use for sending outgoing messages.

4 Select **Bind Exclusively to Host Name**.

5 Click **OK**.

6 Continue with Verifying GWIA Object Settings.

Verifying GWIA Object Settings

During installation of the GWIA, the GWIA object should have been configured correctly. However, it can be helpful to verify certain cluster-specific information in order to familiarize yourself with the configuration of a clustered GWIA.

- ◆ "Accessing GWIA Object Settings" on page 42
- ◆ "Verifying the Reference to the GWIA Cluster Resource" on page 43
- ◆ "Verifying the Reference to the Mount Point Directory" on page 43

Accessing GWIA Object Settings

To access GWIA object settings:

1 Browse to and select the GWIA object in the Administration Console in order to display its contents.

2 Continue with Verifying the Reference to the GWIA Cluster Resource.

Verifying the Reference to the GWIA Cluster Resource

In the GWIA object settings:

1. Click **SMTP/MIME** > **Settings**.

2. Verify the contents of the **Hostname/DNS "A Record" Name** field.

   This field displays the hostname as currently configured in DNS. It should display the hostname that corresponds to the secondary IP address of the GWIA cluster resource. For more information, see Preparing DNS for the Clustered Linux GWIA.

3. Make changes if necessary.

4. Continue with Verifying the Reference to the Mount Point Directory.

Verifying the Reference to the Mount Point Directory

In the GWIA object settings:

1. Select the **Server Directories** tab.

2. Verify that the displayed directories match the mount point directory and the domain directory.

3. Make changes if necessary.

Testing the Internet Agent in a Linux Cluster

After you have configured the GWIA cluster resource, you can test the load and unload scripts by bringing the cluster resource online and taking it offline again.

1. In iManager, expand **Clusters**, and then click **Cluster Manager**.

2. Browse to the Cluster object to display the current cluster state.

3. (Conditional) If the new GWIA cluster resource shows **Offline** in the **State** column, click the new GWIA cluster resource, and then click **Online**.

   After a moment, the GWIA cluster resource displays **Running** in the **State** column.

4. At the server where the GWIA is starting, use the following command to see that the GWIA has started:

   ```
   /etc/init.d/grpwise status domain.gwia
   ```

5. Select the new GWIA cluster resource, and then click **Offline**.

   The **State** column for the GWIA cluster resource returns to **Offline**.

6. Use the same command that you used in Step 4 to verify that the GWIA has stopped.

7. Repeat Step 3 whenever you are ready to bring the new GWIA cluster resource online permanently.

8. Continue with Managing Your Clustered GroupWise System on Linux.

Managing the Internet Agent in a Linux Cluster

After you have installed the GWIA in a cluster, you should consider some long-term management issues.

- "Updating GroupWise Objects with Cluster-Specific Descriptions" on page 44
- "Knowing What to Expect in an GWIA Failover Situation" on page 44

Updating GroupWise Objects with Cluster-Specific Descriptions

After installing the GWIA in your clustered GroupWise system, while the cluster-specific information is fresh in your mind, you should record the cluster-specific information as part of the GroupWise objects in the GroupWise Administration Console so that you can easily refer to it later. Be sure to update the information in the GroupWise objects if the configuration of your system changes.

Recording Cluster-Specific Information about the GWIA Domain and Its MTA

To permanently record important cluster-specific information for the GWIA domain:

1 Browse to and click the Domain object in the Administration Console.

2 Navigate to **Objects** tab > **Internet Agents**, and click the GWIA object.

3 In the **Description** field of the GWIA General tab, provide a cluster-specific description of the GWIA domain, including the secondary IP address of its GroupWise partition.

4 Click **Save** to save the GWIA domain description.

5 Browse to and click the MTA object.

6 In the **Description** field of the MTA General tab, record the secondary IP address of the GroupWise partition.

   This information appears on the MTA console, no matter which node in the cluster it is currently running on.

7 Click **Save** to save the MTA description.

Knowing What to Expect in an GWIA Failover Situation

The failover behavior of the MTA for the GWIA domain is the same as for an MTA in a regular domain. See Knowing What to Expect in MTA, POA, and DVA Failover Situations.

Failover of the GWIA itself is more complex. The various clients (POP3, IMAP4, and LDAP) receive an error message that the node is not available. Most of the clients do not attempt to reconnect automatically, so the user must exit the client and restart it to reestablish the connection after the failover process is complete. Fortunately, the GWIA restarts quickly in its failover location so users can reconnect quickly.

As with the MTA, the POA, and the DVA, migration of the GWIA takes longer than failover. In fact, the GWIA can seem especially slow to shut down properly as it finishes its normal processing and stops its threads. For a busy GWIA, you might need to wait several minutes for it to shut down properly.

Internet Agent Clustering Worksheet

Item	Explanation
1) GroupWise Partition for the GWIA: Secondary IP Address:	Specify the GroupWise partition where the GWIA domain will be created, along with its secondary IP address. For more information, see Selecting the GWIA Partition and Secondary IP Address.
2) GWIA Domain Name: Domain Database Location:	Specify a unique name for the GWIA domain. Specify the directory on the GroupWise partition where you want to create the new domain. For more information, see Planning a Domain for the GWIA.
3) GWIA Failover List:	List other nodes in the cluster where the GWIA and its MTA can fail-over. For more information, see Determining an Appropriate Failover List for the Linux GWIA.
4) Cluster Resource Mount Point:	Specify the mount point directory where the GWIA domain will be mounted. For more information, see Cluster Resource Information for the Linux GWIA.

Internet Agent Quick Checklist

❒ Plan the new clustered GWIA, including the new domain required to house the GWIA in a clustering environment.

   See Planning the Internet Agent in a Linux Cluster.

❒ Make sure DNS includes the secondary IP address of the GWIA partition

   See Preparing DNS for the Clustered Linux GWIA

❒ Make sure your firewall is configured to accommodate the GWIA.

   See Preparing Your Firewall for the Clustered Linux GWIA.

❒ Create the new GWIA domain.

   See Creating a Domain for the GWIA.

❒ Modify the GWIA cluster resource load script.

   See Modifying the Cluster Resource Load Script for the Linux GWIA and Its MTA.

❒ Modify the GWIA cluster resource unload script.

   See Modifying the Cluster Resource Unload Script for the Linux GWIA and Its MTA.

❒ Set up the GWIA failover list and policies.

   See Setting the Failover List and Policies for the Linux GWIA and Its MTA.

❒ Enable Internet Addressing for the clustered GWIA.

See Enabling Internet Addressing for Your Clustered GroupWise System.

❏ Double-check the cluster-specific GWIA object properties.

See Verifying GWIA Object Settings.

❏ Test the clustered GWIA.

See Testing the Internet Agent in a Linux Cluster.

❏ Record cluster-specific information in the properties pages of the GroupWise objects associated with the GWIA.

See Updating GroupWise Objects with Cluster-Specific Descriptions.

Implementing the GroupWise Web Applications in a Cluster

Clustering the GroupWise Web applications (WebAccess, Calendar Publishing Host, and Monitor) is not currently supported.

Because the GroupWise Web applications are installed into your Web server, clustering the GroupWise Web applications would entail clustering your entire Web server. If you are already successfully clustering your Web server, you should be able to install the GroupWise Web applications into that clustered Web server in the same way that you have installed other Web applications into your clustered Web server. However, you cannot receive support to set up this configuration of the GroupWise Web applications. For guidance, refer to the GroupWise Knowledgebase article, *Installing GW Web on an OES cluster* in the Support Portal.

Upgrading a GroupWise System in a Linux Cluster

In a Linux cluster, you must install the GroupWise software on each node in the cluster. Before you run the GroupWise Installation program to install updated software, make sure you know all the cluster nodes where the GroupWise software is already installed.

It is very important to update all nodes on the failover list of each domain and post office at the same time because each domain and post office should be serviced by only one version of the agent software. If you do not update all nodes on the failover list at once, there is the potential for a domain or post office to be serviced by a different version of the agent software during a failover situation. This can cause database problems.

Keep in mind these cluster-specific details as you follow the instructions in "GroupWise System Upgrade" in the *GroupWise Installation Guide* to upgrade your GroupWise system in a Linux cluster.

Moving an Existing Linux GroupWise System into a Linux Cluster

If you are adding the high availability benefits of OES Cluster Services to a GroupWise system that is already up and running, the first step is to install OES Cluster Services, following the instructions in *OES Cluster Services for Linux Administration Guide* for your version of OES Linux. You should also review Introduction to GroupWise and OES Cluster Services on Linux to help you apply clustering principles and practices to your GroupWise system.

You do not need to transfer your entire GroupWise system into the cluster all at once. You can transfer individual post offices where the needs for high availability are greatest. You can transfer a domain and all of its post offices at the same time. You might decide that you don't need to have all of your GroupWise system running in the cluster.

This section provides a checklist to help you get started with moving your GroupWise system into a clustering environment:

❒ Decide which shared partitions in your cluster you want to use for GroupWise domains and post offices.

❒ Decide which nodes in your storage area network you want have on failover lists for the GroupWise agents.

❒ Review Planning GroupWise in a Linux Cluster. Fill out the System Clustering Worksheet to help you decide which domains and post offices you want move to which shared partitions.

❒ Move a domain and/or post office onto the GroupWise partition, following the instructions in "Moving Your Primary Domain to Another Server" in the *GroupWise Administration Guide*.

❒ Review Configuring the Linux Agents in a Cluster, fill out the Agent Clustering Worksheet, and install the agents as needed for the first clustered domain and/or post office, following the instructions in Creating a New GroupWise System to Work with OES Cluster Services. This includes setting up the load and unload scripts for the GroupWise partition.

❒ Test the first component of your clustered GroupWise system, following the instructions in Introduction to GroupWise and OES Cluster Services on Linux.

❒ Take care of the cluster management details described in Managing Your Clustered GroupWise System on Linux.

❒ Move more domains and post offices into the cluster as needed. If you have GroupWise libraries, see Planning a New Library for a Clustered Post Office.

❒ Add other components to your clustered GroupWise system as needed, following the instructions in: Implementing the Internet Agent in a Linux Cluster.

2 Using Windows Server Failover Clustering with GroupWise

For Windows Server Failover Clustering, GroupWise uses the term "Cluster Role" to define the setup that you will go through to create a failover cluster.

Creating a New GroupWise System in a Windows Failover Cluster

The following sections assume a working knowledge of Windows Server Failover Clustering.

Preparing to Install GroupWise in the Cluster

This section includes instructions for creating a cluster role using the role type of "File Server". For each server that you configure with this role, you must have already installed File Server through Server Manager in order to configure it as described below.

1 Define at least one Cluster Role.

For a very simple GroupWise system with a primary domain and one post office, you could handle the domain and the post office as a single Cluster Role. For a typical GroupWise system with multiple domains and post offices, you might to have a Cluster Role for each domain and post office.

2 Configure each Cluster Role with the type of File Server.

3 Configure each File Server Cluster Role with a shared cluster disk and an IP address.

The following example shows two Cluster Roles, ProvoServer and UtahServer.
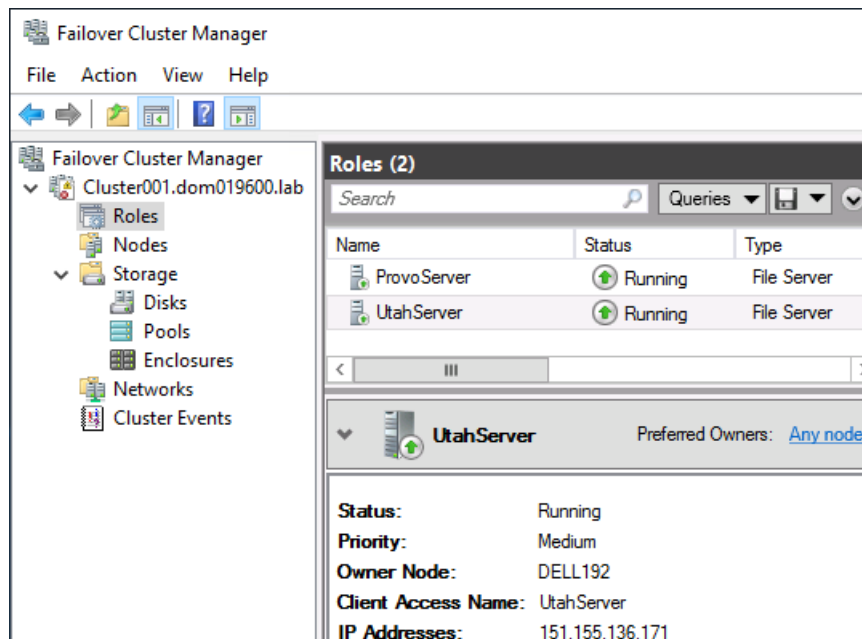
4 Continue with Installing the GroupWise Software.

Installing the GroupWise Software

To install the GroupWise software:

1 Install the GroupWise Server component on each cluster node where a GroupWise agent will run for a domain or a post office.

Follow the instructions in Step 1 through Step 11 in "Windows: Installing the GroupWise Server Software" in the *GroupWise Installation Guide*.

IMPORTANT: Install the GroupWise Server component on *all* cluster nodes before setting up any domains or post offices.

---

2 Continue with Configuring the GroupWise Admin Service for Clustering.

Configuring the GroupWise Admin Service for Clustering

Configuring the GroupWise Admin Service for clustering ensures that files associated with domains and post offices are created on cluster volumes, rather than on individual cluster nodes.

File	Standard Location	Clustered location

Domain SSL Certificate, MTA SSL Certificate, GWIA SSL Certificate	`C:\Program Files\Novell\`
	` GroupWise Server\`
	` certificates`
		`\groupwise\certificates`
		
		(a peer to the domain folder)

Post Office SSL Certificate, POA SSL Certificate	`C:\Program Files\Novell\`
	` GroupWise Server\`
	` certificates`
		`\groupwise\certificates`
		
		(a peer to the post office folder)

MTA Log Files	`\domain_folder\mslocal`	`\groupwise\agents\logs` (a peer to the domain folder)
GWIA Log Files	`\domain_folder\wpgate\000.prc`	`\groupwise\agents\logs` (a peer to the domain folder)
POA Log Files	`\post_office_folder\wpcsout\ofs`	`\groupwise\agents\logs` (a peer to the post office folder)

1 Run the following command to enable the GroupWise Admin Service to run in a clustering environment:

   `gwadminutil config -cluster enable`

   You should receive the following response:

   ```
   Cluster: enabled
   Default Port: 9710
   ```

2 Restart the GroupWise Admin Service.

   Use the Windows Services administrative tool.

   or

   Use the following commands at the Windows command prompt:

   ```
   sc stop gwadmin
   sc start gwadmin
   ```

3 Continue with Creating the Primary Domain.

Creating the Primary Domain

To create a primary domain:

1 Ensure that the primary domain Cluster Role is online on the cluster node where you want to create the primary domain.

2 Use the **GroupWise Install** icon on the Windows desktop to access the GroupWise Installation console.

3 (Conditional) If you receive a certificate error, continue past it.

4 Follow the instructions in "Creating the Primary Domain" in the *GroupWise Installation Guide*.

Pay special attention to the **Host** and **Domain Folder** fields on the System Settings page.

- In the **Host** field, specify the IP address of the domain Cluster Role.

- In the **Domain Folder** field, specify a folder on the domain Cluster Role volume.

    The clustering example used in this section sets up a GWIA in the primary domain but does not create any post offices on the primary domain server. The post office will be created later on a different Cluster Role.

5 Continue following the standard instructions to finish creating the primary domain.

NOTE: After you create the primary domain on its Cluster Role, the GroupWise Install and GroupWise Administration desktop icons no longer work. The Admin Service is now listening on the IP address of the primary domain Cluster Role, not the IP address of the physical node.

---

6 (Optional) Create new desktop shortcuts for the Installation console and the Administration console that use the proper IP address.

7 Continue with Creating a Post Office.

Creating a Post Office

Although you can create a post office on the same Cluster Role with a domain, it is not typical to do so. In this example, the post office is created on a separate Cluster Role.

1 Online the post office Cluster Role to a cluster node.

2 Use the **GroupWise Install** icon on the Windows desktop to access the GroupWise Installation console.

3 Follow the instructions in Step 2 through Step 8 in "Adding a Post Office" in the *GroupWise Installation Guide*.

As with the domain creation process, pay special attention to specific fields.

3a On the System Settings page:
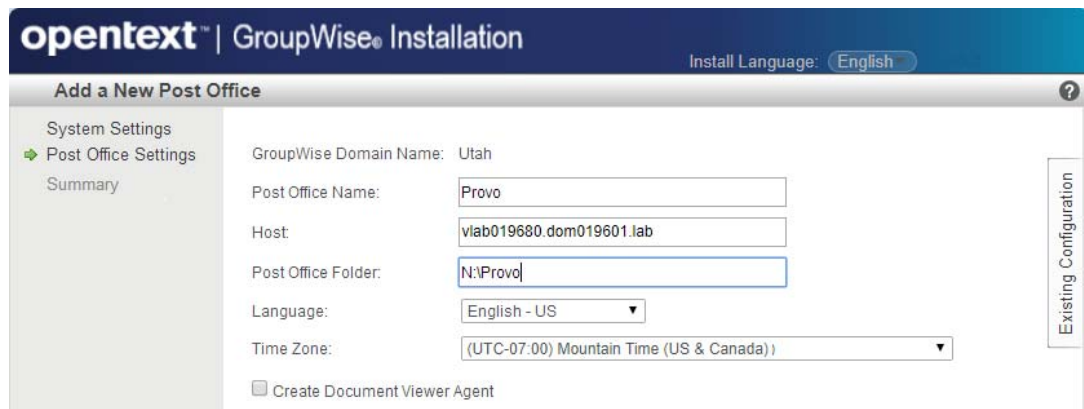
- In the **Owning Domain Host** field, specify the IP address of the primary domain Cluster Role that you set up in "Creating the Primary Domain" on page 51.

- In the **Owning Domain Admin Port** field, specify port on the primary domain Cluster Role.

3b On the Post Office Settings page:

- In the **Host** field, specify the IP address of the post office Cluster Role.

- In the **Post Office Folder** field, specify a folder on the post office Cluster Role volume.

The clustering example used in this section does not set up a DVA with the post office. For DVA clustering recommendations, see Clustering the DVA.

4 Continue following the standard instructions to finish creating the post office.

NOTE: As an alternative to creating the post office in the GroupWise Installation console, you can create the post office in the GroupWise Admin console. Online the post office Cluster Role to the same node where the owning domain Cluster Role is running. Then follow the instructions in "Creating a New Post Office on an Existing Domain or Post Office Server" in the *GroupWise Installation Guide*.

Creating a Script to Start and Stop the GroupWise Agents

When a domain or post office Cluster Role is started, stopped, or moved to a new cluster node, the accompanying GroupWise agents must also be started and stopped. The GroupWise Admin Service also needs to keep track of when domains and post office are added or removed from its cluster node. This is accomplished by adding a Windows cluster Generic Script resource to the domain or post office Cluster Role.

The Generic Script performs the following actions:

- Creates a Windows service for each GroupWise agent if the service does not already exist.
- Starts the GroupWise Admin Service for the domain or post office Cluster Role.
- Starts the MTA, and optionally the GWIA, for a domain Cluster Role.
- Starts the POA for a post office Cluster Role.

The Generic Script must be a Visual Basic script. A template is provided in the following location:

```
C:\Program Files\Novell\GroupWise Server\
                        agents\data\cluster\groupwise_cluster_template.vbs
```

The script file provides background information about how to edit the script.

1 Create a folder for the script on each cluster node, such as `c:\gwcluster`.

2 Copy the template script into the `gwcluster` folder on each cluster node.

3 Edit the template file for a specific Cluster Role.

   For a domain Cluster Role, the script would look similar to the following example, which enables the MTA and the GWIA for the Utah domain:

   ```
   gwAgents.Add "Utah MTA", "M:\Utah"
   gwAgents.Add "Utah GWIA", "M:\Utah\wpgate\gwia"
   ```

   For a post office Cluster Role, the script would look similar to the following example, which enables the POA for the Provo post office:

   ```
   gwAgents.Add "Provo POA", "M:\Provo"
   ```

4 Save the edited template file with a descriptive name that associates it with its Cluster Role.

5 Copy the customized script to each cluster node, ensuring that it is in the same location on all cluster nodes.

6 Continue with Adding the Script to the Cluster Role.

Adding the Script to the Cluster Role

To add a script to the cluster role:

1 In the Failover Cluster Manager, stop or offline the Cluster Role.

2 Highlight the Cluster Role.
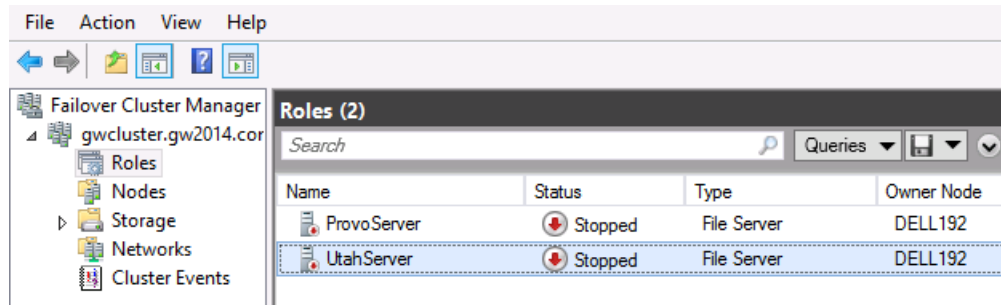
3 On the **Actions** menu in the right column, click **Add Resource** > **Generic Script**.

4 Select **Generic Script** as the resource type.
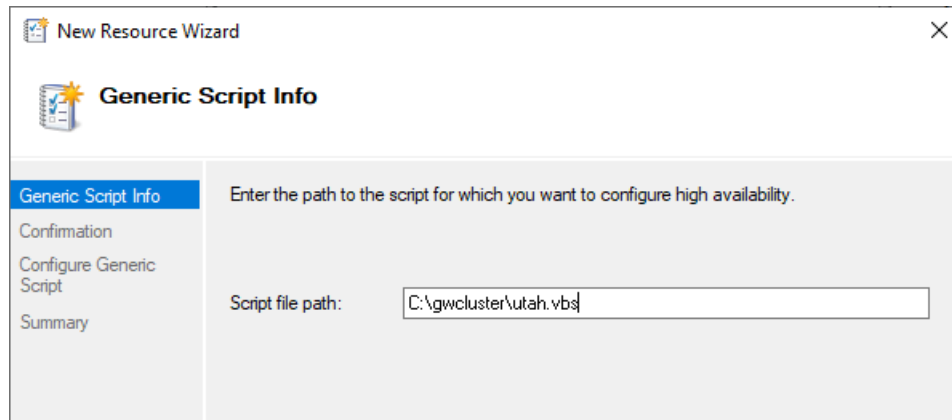
5 Specify the full path to the script.

6 Click **Next**, and then click **Finish**.

> **IMPORTANT:** If there are any errors in the script, or if the script is not available on all of the cluster nodes, the addition of the Generic Script resource fails.

7 Edit the properties of the script to add dependencies, so that the file system and IP address are enabled on the Cluster Role before the script is run.
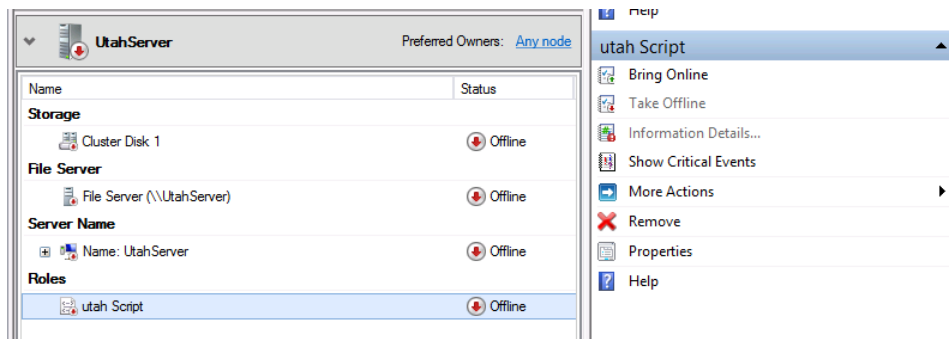
7a Highlight the Generic Script resource, and then click **Properties** on the Script menu on the right.
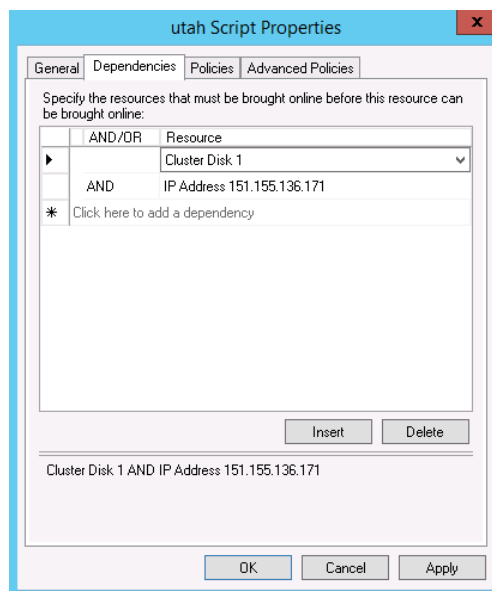
7b Click the **Dependencies** tab.

7c Click **Click here to add a dependency**, and then select the Cluster Disk as the first dependency.

7d Click **Click here to add a dependency** again, and then add the IP address.

7e Click **OK** to save your changes.

8 Continue with Testing the Cluster Role.

Testing the Cluster Role

To test the cluster role:

1 Bring the Cluster Role online.

2 Move the Cluster Role to a different node.

Clustering the DVA

Complete instructions for clustering the DVA are beyond the scope of this example. The following suggestions should help you cluster the DVA:

- ◆ Do not install the DVA as part of installing a post office. Instead, install it independently. Use the following command on the cluster disk where you want the DVA to run:

  ```
  gwadminutil services -i -dva
  ```

  For more instructions, see the following sections in the *GroupWise Installation Guide*:

  - ◆ "Windows: Installing and Starting a New DVA"
  - ◆ "Setting Up the DVA"

- ◆ Create a script and a Generic Script resource to control the DVA. The line for the DVA would look similar to the following example:

  ```
  gwAgents.Add "GWDVA", "M:\Provo"
  ```

  For instruction, see:

  - ◆ Creating a Script to Start and Stop the GroupWise Agents
  - ◆ Adding the Script to the Cluster Role

- ◆ Configure the DVA to function in the cluster.

  This requires editing the DVA startup file. For instructions, see "Configuring DVA Log Settings" in the *GroupWise Administration Guide*.

  Two aspects of the DVA must to customized:

  - ◆ Configure the DVA with the IP address of the Cluster Role.
  - ◆ Configure the DVA to create its log files in the following folder:

    ```
    \groupwise\agents\logs
    ```

    If you are setting up the DVA as part a post office Cluster Role, this folder has already been created when you configured the GroupWise Admin Service to run for the clustered post office. If not, you must manually create this folder. In either case, you must configure the DVA to have its log files created in this location.

Upgrading a Clustered Windows GroupWise System to GroupWise 18

If your existing GroupWise system is in a cluster, you must change the way it is configured in the cluster to enable the GroupWise 18 domains, post offices, and agents to function in the cluster.

1 Stop the GroupWise agents for the domain or post office.

2 Remove the cluster Resource Group for the domain or post office.

3 Upgrade each domain or post office.

   For instructions, see"GroupWise System Upgrade" in the *GroupWise Installation Guide*

4 Create a Cluster Role for each domain or post office.

   or

Create a Cluster Role for a domain and one or more post offices, as required by the existing architecture of your Windows Failover cluster.

For instructions, see Preparing to Install GroupWise in the Cluster.

5 Create a script to control the agents in the Cluster Role.

For instructions, see:

- ◆ Creating a Script to Start and Stop the GroupWise Agents
- ◆ Adding the Script to the Cluster Role

6 Test the new Cluster Role.

For instructions, see Testing the Cluster Role.

7 (Optional) Cluster the DVAs in your GroupWise system.

For instructions, see Clustering the DVA.

ⅠⅠ Messenger

Reference the content in the sections below to set up and manage Messenger in a Linux cluster.

3 Implementing Messenger in a Linux Cluster

GroupWise Messenger does not require the existence of a GroupWise system in the cluster, but presumably one has already been set up as described in Planning GroupWise in a Linux Cluster and Creating a New GroupWise System to Work with OES Cluster Services. As part of the process of setting up GroupWise in the cluster, you filled out the System Clustering Worksheet. Some of the information from that worksheet is helpful as you implement Messenger in your cluster.

- "Planning Your Messenger System in a Linux Cluster" on page 61
- "Setting Up Your Messenger System in a Linux Cluster" on page 63
- "Testing Your Messenger System in a Linux Cluster" on page 71
- "Managing Your Messenger System in a Linux Cluster" on page 72
- "Messenger Clustering Worksheet" on page 72
- "Messenger Clustering Quick Checklist" on page 74

Planning Your Messenger System in a Linux Cluster

Because the Messenger agents are not associated with GroupWise domains or post offices, the Messenger agents are easier to implement in a cluster than are the GroupWise agents. The Messenger Clustering Worksheet lists the information you need as you set up the Messenger agents in a clustering environment. You should print the worksheet and fill it out as you complete the tasks listed below:

- "Understanding Your Cluster" on page 61
- "Selecting the Messenger Partition and Secondary IP Address" on page 62
- "Determining an Appropriate Failover List for the Linux Messenger Agents" on page 62
- "Determining Cluster Resource Information for the Linux Messenger Agents" on page 62
- "Planning the Linux Messenger Agent Installation" on page 63

Understanding Your Cluster

As described in Installing OES Cluster Services (NCS) on Linux, you set up your cluster with a certain number of shared partitions and cluster resources.

MESSENGER CLUSTERING WORKSHEET

Under Items 1-5, record information about your cluster. This information corresponds to items 1-5 on the System Clustering Worksheet.

Selecting the Messenger Partition and Secondary IP Address

If you are not planning to enable archiving, or if you are not anticipating a large Messenger archive, you can use one Messenger partition for both the Messaging Agent and the Archive Agent. If you anticipate archiving a large number of messages so that the Messenger archive grows very large, you might want to have a separate Messenger partition for the Archive Agent and its archive database. The steps in this section focus on setting up the Messenger agents on a single Messenger partition.

MESSENGER CLUSTERING WORKSHEET

Under Item 6: Shared Partition for Messenger, record the name and secondary IP address of the Messenger partition in your cluster.

If you want a separate Messenger partition for archiving, under Item 7: Shared Partition for Archiving, record the name and secondary IP address of the archiving partition in your cluster.

Determining an Appropriate Failover List for the Linux Messenger Agents

By default, a Messenger partition is configured to have all nodes in the cluster in its failover list, organized in ascending alphanumeric order. Only one node at a time can have the Messenger partition mounted and active and the Messenger agents running. If a Messenger partition's preferred node fails, the partition fails over to the next node in the failover list. The Messenger agents might need to run on any node that the Messenger partition fails over to.

MESSENGER CLUSTERING WORKSHEET

Under Item 8: Failover List for Messenger Agents, list the nodes that you want to have in the Messenger agents' failover list.

Determining Cluster Resource Information for the Linux Messenger Agents

A cluster resource is a shared partition, secondary IP address, application, service, Web server, and so on, that can function successfully anywhere in the cluster. Cluster resources include the GroupWise agents and the Messenger agents. When you are installing the Messenger agents in a cluster, the Messenger Installation program needs to know the mount point for the Messenger partition where it can store agent startup files, log files, SSL certificate files, and the `uid.conf` file that enables the Messenger agents to run as a non-`root` user. By storing these files on a shared partition, the Messenger agents can access the files regardless of which node in the cluster the agents are currently running on.

MESSENGER AGENT CLUSTERING WORKSHEET

Under Item 9: Mount Point for Shared Storage, list the mount point directory for the Messenger partition where the Messenger startup and other files will be located.

Planning the Linux Messenger Agent Installation

Aside from the cluster-specific issues discussed in the preceding sections, the considerations involved in planning to install the Messenger agents are the same in a clustering environment as for any other environment. Review "Planning Your GroupWise Messenger System"; then, print and fill out the "GroupWise Messenger Worksheet" in the *GroupWise Messenger Installation Guide*. Messenger must be installed on each node in the failover list (Messenger Clustering Worksheet item 8)

Continue with Setting Up Your Messenger System in a Linux Cluster.

Setting Up Your Messenger System in a Linux Cluster

You should have already reviewed Planning Your Messenger System in a Linux Cluster and filled out the Messenger Clustering Worksheet and the "GroupWise Messenger Worksheet" in the *GroupWise Messenger Installation Guide*.

- ◆ "Creating Your Messenger System and Installing the Linux Messenger Agents" on page 63
- ◆ "Changing Messenger Paths to Locations on the Messenger Partition" on page 64
- ◆ "Configuring the Messenger Cluster Resource to Load and Unload the Linux Messenger Agents" on page 67

Creating Your Messenger System and Installing the Linux Messenger Agents

The Messenger Installation program walks you through setting up your Messenger system and installing the Messenger agents. The first time you run the Messenger Installation program, you create your Messenger system, which includes creating various Messenger objects in eDirectory and installing the Messenger software on the node where you run the Messenger Installation program. After that, you run the Messenger Installation program on each node in the Messenger failover list to install the Messenger software on each node, but you do not create any more objects in eDirectory.

- ◆ "Running the Linux Messenger Installation Program on the Preferred Node" on page 63
- ◆ "Running the Linux Messenger Installation Program on Subsequent Nodes" on page 64
- ◆ "Testing Your Linux Messenger Agent Installation on Each Node" on page 64

Running the Linux Messenger Installation Program on the Preferred Node

To run the Linux Messenger installation program on the preferred node:

1 Mount the Messenger partition (Messenger Clustering Worksheet item 6) on the mount point for shared storage (Messenger Clustering Worksheet item 9).

2 Run the Messenger Installation program, following the steps provided in "Starting the Messenger Installation Program" in the *GroupWise Messenger Installation Guide*.

3 When asked if you are installing to a cluster, enter y for **Yes**.

4 From the options list, enter 1 for **Create a new system**.

5 Specify the mount point for the shared storage.

6 Set up your Messenger system, following the steps provided in "Configuring Your Messenger System" in the *GroupWise Messenger Installation Guide*.

7 Continue with Running the Linux Messenger Installation Program on Subsequent Nodes.

Running the Linux Messenger Installation Program on Subsequent Nodes

1 On the next node in the Messenger failover list (Messenger Cluster Worksheet item 8), mount the Messenger partition on the mount point for shared storage.

2 Run the Messenger Installation program.

3 When asked if you are installing to a cluster, enter y for **Yes**.

4 From the options list, enter 2 for **Install a new server to an existing system**.

5 Specify the mount point for the shared storage.

   The Messenger Installation program then accesses the Messenger files that were created on the shared storage when the Messenger agents were installed on the preferred node. From these files, the Messenger Installation program lists the probable configuration for the Messenger agents you are installing on the current node.

6 Enter 1 for **Proceed with these settings**.

   or

   Enter 2 for **Change the settings**, and then modify the configuration for the Messenger agents as needed.

7 When asked if you want to start the agents, enter n for **No**.

8 Repeat Step 1 through Step 7 for each node on the Messenger failover list.

Testing Your Linux Messenger Agent Installation on Each Node

1 Test the Messenger agents by starting them as daemons, as described in "Starting the Messaging Agent" in the *GroupWise Messenger Administration Guide*.

2 Stop the Messenger agents.

3 Return to Running the Linux Messenger Installation Program on the Preferred Node for each node in the Messenger failover list (Messenger Clustering Worksheet item 8).

When you have installed the Messenger agents on all of the nodes in the Messenger failover list, continue with Changing Messenger Paths to Locations on the Messenger Partition.

Changing Messenger Paths to Locations on the Messenger Partition

During installation, various Messenger paths are set to locations on the node where the software is installed. After installation, you need to set these paths to locations on the Messenger partition, so that the files stored at these locations are available to the Messenger agents regardless of which node in the cluster the agents are running on:

- "Setting the Store Path" on page 65
- "Setting the Messaging Agent Queue Path" on page 65

After settings these directories, continue with Configuring the Messenger Cluster Resource to Load and Unload the Linux Messenger Agents.

Setting the Store Path

The store path is the location where you want the archive created. During installation, the default store path is created in `/var/opt/novell/messenger/aa/store` on each node, but you need the archive to be stored on the Messenger partition.

1 Choose a directory where you want to store the archive and create that directory on the Messenger partition.

2 In the GroupWise Administration Console, navigate to **Messenger** > **MessengerService** > **Objects** > **Archive Agents**.

3 Click the Archive Agent object, and select the **File Module** tab.

4 In the **Store Path** field, specify your archive store path, and then click **Save**.

Setting the Messaging Agent Queue Path

When archiving is enabled, the Messaging Agent passes conversations to the Archive Agent when the conversations are completed. If the Messaging Agent cannot communicate with the Archive Agent when it has a conversation to archive, it saves the conversation in its holding directory (queue) until it can communicate with the Archive Agent again. During installation, the default Messaging Agent queue path is created in `/var/opt/novell/messenger/ma/queue`, but you need the queue directory to be located on the Messenger partition.

1 Choose a directory for the Messaging Agent queue and create that directory on the Messenger partition.

2 In the GroupWise Administration Console, navigate to **Messenger** > **MessengerService** > **Objects** > **Messaging Agents**.

3 Click the Messaging Agent object, and select the **Agent Settings** tab.

4 Click **Agent** > **Messaging**.

5 In the **Messaging Preferences** > **Queue Path** field, specify the Messaging Agent queue path, and then click **Save**.

Setting the Archive Agent Queue Path

When the Archive Agent receives a conversation to archive, if it is already busy processing other conversations, it temporarily stores the conversation in its holding directory (queue). During installation, the default Archive Agent queue path is created in `/var/opt/novell/messenger/aa/queue`, but you need the queue directory to be located on the Messenger partition.

1 Choose a directory for the Archive Agent queue and create that directory on the Messenger partition.

2 In the GroupWise Administration Console, navigate to **Messenger** > **MessengerService** > **Objects** > **Archive Agents**.

3 Click the Archive Agent object, and select the **Agent Settings** tab.

4 In the **Archive Preferences** > **Queue Path** field, specify the Archive Agent queue path, and then click **Save**.

Setting the Messaging Agent Log Path

During installation, the default Messaging Agent log path is created in `/var/opt/novell/log/messenger/ma`, but you need the log file directory to be located on the Messenger partition.

1 Choose a directory for the Messaging Agent log files and create that directory on the Messenger partition.

2 In the GroupWise Administration Console, navigate to **Messenger** > **MessengerService** > **Objects** > **Messaging Agents**.

3 Click the Messaging Agent object, and select the **Log Settings** tab.

4 In the **Log File Path** field, specify the Messaging Agent log path, and then click **Save**.

Setting the Archive Agent Log Path

During installation, the default Archive Agent log path is created in `/var/opt/novell/log/messenger/aa`, but you need the log file directory to be located on the Messenger partition.

1 Choose a directory for the Archive Agent queue and create that directory on the Messenger partition.

2 In the GroupWise Administration Console, navigate to **Messenger** > **MessengerService** > **Objects** > **Archive Agents**.

3 Click the Archive Agent object, and select the **Log Settings** tab.

4 In the **Log File Path** field, specify the Archive Agent log path, and then click **Save**.

Configuring the Messenger Cluster Resource to Load and Unload the Linux Messenger Agents

The properties of the Messenger Cluster Resource object define how the Messenger partition functions within the cluster, how the Messenger agents are loaded and unloaded, and how failover and failback situations are handled.

- "Modifying the Cluster Load Script for the Linux Messenger Agents" on page 67
- "Modifying the Cluster Resource Unload Script for the Linux Messenger Agents" on page 69
- "Setting the Failover List and Policies for the Linux Messenger Agents" on page 71

Modifying the Cluster Load Script for the Linux Messenger Agents

To set up the load script in iManager:

1 Expand **Clusters**, and then click **Cluster Options**.

2 In the **Cluster** field, browse to the Cluster object where the Messenger cluster resource is located.

3 Click the Cluster object to display the cluster resources that belong to the cluster.

4 Select the Messenger cluster resource that you created when you set up the Messenger partition, and then click **Details**.

5 Click **Scripts** > **Load Script**.

6 (Conditional) If this is an NSS volume or a shared pool, use a load script similar to the following example, depending on the configuration of your cluster and nodes:

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs

# mount filesystem
exit_on_error ncpcon mount /opt="noatime,nodiratime"
volume_name=volume_ID

# add IP address
exit_on_error add_secondary_ipaddress messenger_partition_ip_address

# start service
exit_on_error /etc/init.d/novell-nmma start
exit_on_error /etc/init.d/novell-nmaa start

# return status
exit 0
```

6a In the `mount filesystem` section, specify the volume name and volume ID of the Messenger partition that you are clustering (System Clustering Worksheet item 5).

6b In the `add ip address` section, specify the secondary IP address of the Messenger partition (Messenger Clustering Worksheet item 6 or Messenger Clustering Worksheet item 7).

6c In the `start service` section, provide the commands to start the Messaging Agent first, following by the Archive Agent.

7 (Conditional) If this is a traditional Linux volume, use an unload script similar to the following example, depending on the configuration of your cluster and nodes:

```
#! /bin/bash
. /opt/novell/ncs/lib/ncsfunc

# define IP address
RESOURCE_IP=messenger_partition_ip_address

# define filesystem type
MOUNT_FS=filesystem

# define device (if using EVMS)
exit_on_error evms -f /var/opt/novell/ncs/ContainerActivate -rl
                                              Share 'uname -n'
MOUNT_DEV=/dev/evms/Share/dat

# define mount point
MOUNT_POINT=/mnt/mount_point_directory

# mount file system
exit_on_error mount -t $MOUNT_FS $MOUNT_DEV $MOUNT_POINT -o
noatime,nodiratime

# add IP address
exit_on_error add_secondary_ipaddress $RESOURCE_IP

# start service
exit_on_error /etc/init.d/novell-nmma start
exit_on_error /etc/init.d/novell-nmaa start

exit 0
```

7a In the `define IP address` section, specify the secondary IP address of the Messenger partition (Messenger Clustering Worksheet item 6 or Messenger Clustering Worksheet item 7)

7b In the `define filesystem type` section, specify the filesystem type that is in use on nodes in the cluster (System Clustering Worksheet item 5).

7c In the `define mount point` section, specify the mount point directory in use for the nodes in the cluster (System Clustering Worksheet item 5).

8 Click **Apply** to save the load script.

Modifying the Cluster Resource Unload Script for the Linux Messenger Agents

The cluster resource unload script executes whenever the Messenger cluster resource goes offline.

1 On the iManager Cluster Resource Properties page of the Monitor Agent cluster resource, click **Scripts** > **Unload Script**.

2 (Conditional) If this is an NSS volume or a shared pool, use an unload script similar to the following example, depending on the configuration of your cluster and nodes:

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs

# request service stop
ignore_error /etc/init.d/novell-nmma stop
ignore_error /etc/init.d/novell-nmaa stop

# stop service otherwise
sleep 8
ignore_error pkill -fx "'/etc/init.d/novell-nmma stop'"
ignore_error pkill -fx "'/etc/init.d/novell-nmaa stop'"

# delete IP address
ignore_error del_secondary_ipaddress messenger_partition_ip_address

# unmount filesystem
exit_on_error umount /mnt/mount_point_directory

# return status
exit 0
```

2a In the `stop service otherwise` section, adjust the `sleep` command as needed so that the Messenger agents can shut down normally on your system without being inadvertently killed by the `pkill` command that follows.

2b In the `delete IP address` section, specify the secondary IP address of the Messenger partition.

2c In the `unmount filesystem` section, specify the mount point directory in use for the nodes in the cluster.

2d (Conditional) If you are running the GroupWise High Availability service (gwha), stop it before the script stops the Messenger agents, and then start it again at the end of the unload script.

This prevents the GroupWise High Availability service from trying to restart the Messenger agents while the script is trying to stop them.

Add the following section before the `request service stop` section:

```
# Temporarily disable the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha off
ignore_error kill -HUP `pidof xinetd`
```

Add the following section before the `return status` section:

```
# Restart the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha on
ignore_error kill -HUP `pidof xinetd`
```

3 (Conditional) If this is a traditional Linux volume, use an unload script similar to the following example, depending on the configuration of your cluster and nodes:

```
#!/bin/bash
. /opt/novell/ncs/lib/ncsfuncs

# request service stop
ignore_error /etc/init.d/novell-nmma stop
ignore_error /etc/init.d/novell-nmaa stop

# stop service otherwise
sleep 8
ignore_error pkill -fx "'/etc/init.d/novell-nmma stop'"
ignore_error pkill -fx "'/etc/init.d/novell-nmaa stop'"

# define IP address
RESOURCE_IP=messenger_partition_ip_address

# define mount point
MOUNT_POINT=/mnt/mount_point_directory

# delete IP address
ignore_error del_secondary_ipaddress $RESOURCE_IP

# umount filesystem
exit_on_error umount $MOUNT_POINT

# return status
exit 0
```

3a In the `stop service otherwise` section, adjust the `sleep` command as needed so that the Messenger agents can shut down normally on your system without being inadvertently killed by the `pkill` command that follows.

3b In the `define IP address` section, specify the secondary IP address of the Messenger partition.

3c In the `define mount point` section, specify the mount point directory in use for the nodes in the cluster.

3d (Conditional) If you are running the GroupWise High Availability service (gwha), stop it before the script stops the Messenger agents, and then start it again at the end of the unload script.

This prevents the GroupWise High Availability service from trying to restart the Messenger agents while the script is trying to stop them.

Add the following section before the `request service stop` section:

```
# Temporarily disable the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha off
ignore_error kill -HUP `pidof xinetd`
```

Add the following section before the `return status` section:

```
# Restart the gwha service under xinetd
ignore_error /sbin/chkconfig -s gwha on
ignore_error kill -HUP `pidof xinetd`
```

4 Click **Apply** to save the unload script.

Setting the Failover List and Policies for the Linux Messenger Agents

1 On the iManager Cluster Resource Properties page of the Messenger cluster resource, click **General**.

The default policy settings are often appropriate. By default, a cluster resource:

* Fails over automatically if the node it is running on fails

* Starts automatically on the next node in its failover list

* Continues running at its failover location, even after its most preferred node is again available
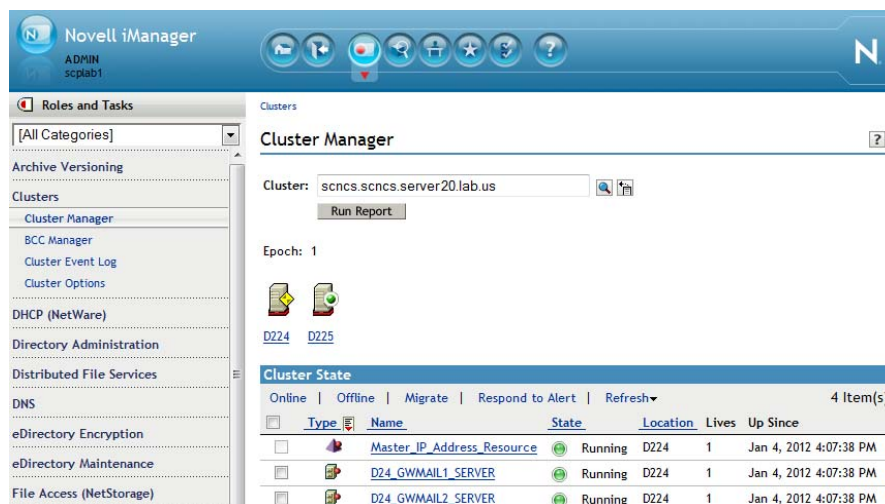
   If you are considering changing these defaults, see the *OES Cluster Services for Linux Administration Guide* for your version of OES Linux.

2 Under **Preferred Nodes**, arrange the nodes in the cluster into the desired failover list for the Messenger agents (under Messenger Clustering Worksheet item 3).

3 Click **OK**.

Testing Your Messenger System in a Linux Cluster

After you have configured the Messenger cluster resource, you can test the load and unload scripts by bringing the Messenger cluster resource online and taking it offline again.

1 In iManager, expand **Clusters**, and then click **Cluster Manager**.

2 Browse to the Cluster object to display the current cluster state.

3 (Conditional) If the new Messenger cluster resource shows **Offline** in the **State** column, click the new Messenger cluster resource, and then click **Online**.

After a moment, the Messenger cluster resource displays **Running** in the **State** column.

4 At the server where the Messenger agents are starting, use the following commands to see that the Messenger agents have started:

```
/etc/init.d/novell-nmma status
/etc/init.d/novell-nmaa status
```

5 Select the new Messenger cluster resource, and then click **Offline**.

   The **State** column for the Messenger cluster resource returns to **Offline**.

6 Use the same command that you used in Step 4 to verify that the Messenger agents have stopped.

7 Repeat Step 3 whenever you are ready to bring the new Messenger cluster resource online permanently.

8 Continue with Managing Your Messenger System in a Linux Cluster.

Managing Your Messenger System in a Linux Cluster

If the node where your Messenger system is running goes down, it fails over to the next node in its failover list. Messenger clients reconnect automatically as soon as the Messaging Agent restarts on the next node. Users who are actively carrying on conversations notice the interruption, but do not need to do anything to reestablish their conversation when the Messaging Agent is up and running again.

In comparison to failover, migration typically takes longer because the Messaging Agent methodically terminates its thread as part of its normal shutdown procedure.

Messenger Clustering Worksheet

Item	Explanation
1) eDirectory Tree for Cluster:	Record the eDirectory tree where you created the Cluster object when you installed OES Cluster Services.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
2) Cluster Name: Master IP Address:	Record the name of the name of the Cluster object where your Messenger system will be located. Also record the master IP address of the cluster.
	For more information, see Installing OES Cluster Services (NCS) on Linux.
3) Cluster Context:	Record the full context where you created the Cluster object.
	For more information, see Installing OES Cluster Services (NCS) on Linux.

Item	Explanation
4) Nodes in Cluster ◆ FIle system type ◆ Device name ◆ Mount point	List the nodes that are part of the cluster that will include Messenger. Also list technical information, including file system type (`reiserfs`, `ext3`, and so on), device name (`sda2`, `hda1`, and so on), and mount point directory (`/mnt`, `/mail`, and so on) in use on the nodes the cluster. You need this information as you create load and unload scripts for the Messenger agents. For more information, see Installing OES Cluster Services (NCS) on Linux.
5) Shared Partitions in Cluster:	List the shared partitions that are available for use in your Messenger system. For more information, see Installing OES Cluster Services (NCS) on Linux.
6) Messenger Partition for Messaging Agent: Secondary IP address: Use Same Partition for Archive Agent? ◆ Yes ◆ No	The Messaging Agent software is installed on each node in its failover list but it does use a shared partition to store its log files, temporary files, and queue directories. Specify the name of the shared partition in the your cluster that the Messaging Agent can use for these purposes. also specify the secondary IP address of that shared partition. For more information, see Selecting the Messenger Partition and Secondary IP Address.
7) Messenger Partition for Archive Agent? Secondary IP Address:	In addition to the data storage needs of the Messaging Agent, the Archive Agent can be configured to store all instant message conversations. It is possible that this might consume a large quantity of disk space. If so, you can choose to use a separate shared partition for the Archive Agent. For more information, see Planning the Linux Messenger Agent Installation.
8) Failover List for Messenger Agents:	List other nodes in the cluster where the Messenger agents can fail over. You might want to have the same nodes on the both agents' lists or have separate lists for each agent. It depends on the loads that each agent will be carrying. For more information, see Determining an Appropriate Failover List for the Linux Messenger Agents.

Item	Explanation
9) Mount Point for Shared Storage:	Specify the mount point directory where the shared resource is mounted to the cluster node where the Messenger Agents run. For more information, see Determining Cluster Resource Information for the Linux Messenger Agents.

Messenger Clustering Quick Checklist

❒ Plan your clustered Messenger system.

See Planning Your Messenger System in a Linux Cluster.

❒ Create your Messenger system and install the Messenger agents.

See Creating Your Messenger System and Installing the Linux Messenger Agents.

❒ In the GroupWise Administration Console, change the locations of various Messenger files from their default locations on local nodes to the Messenger partition that is always available no matter what node the Messenger agents are running on.

See Changing Messenger Paths to Locations on the Messenger Partition.

❒ Modify the Messenger agents cluster resource load script.

See Modifying the Cluster Load Script for the Linux Messenger Agents.

❒ Modify the Messenger agents cluster resource unload script.

See Modifying the Cluster Resource Unload Script for the Linux Messenger Agents.

❒ Set up the Messenger agents failover list and policies.

See Setting the Failover List and Policies for the Linux Messenger Agents.

❒ Test your clustered Messenger system.

See Testing Your Messenger System in a Linux Cluster.

4 Checking GroupWise and Messenger Interoperability

To show Messenger presence in GroupWise, one of the following must match between GroupWise and Messenger:

- GroupWise DN matches Messenger DN.
- GroupWise preferred email address matches the mail attribute stored in Messenger. You can store the mail attribute in Messenger by doing an LDAP sync.
- GroupWise preferred email address matches the `userid@defaulthostid` in Messenger that is constructed from the user settings and their assigned policy.

NOTE: Only the users in your contact list show their presence in GroupWise. If you do not see a user's presence in GroupWise, you must add them to your Messenger contact list and then restart the GroupWise client so that it picks up the new Messenger contact.

III OpenText Vibe

Before installing OpenText Vibe, you should thoroughly review the documentation provided at the Vibe documentation website. These guides provide detailed product installation and configuration instructions, but they do not include specific instructions for integrating OpenText Vibe with GroupWise. This section of the *GroupWise Interoperability Guide* supplies these product-specific instructions.

5 Configuring GroupWise for Use with OpenText Vibe

When you install OpenText Vibe with GroupWise, some configuration steps are required to integrate the applications.

- "Understanding How Vibe Interacts with an LDAP Directory and GroupWise" on page 79
- "Authenticating through the LDAP Directory" on page 79
- "Using GroupWise as the Vibe Email System" on page 79
- "Enabling GroupWise and Vibe Integration for GroupWise Client Users" on page 80

Understanding How Vibe Interacts with an LDAP Directory and GroupWise

When you install Vibe in an environment where GroupWise is already set up, the products interact in the following ways:

- Vibe can use an LDAP directory (NetIQ eDirectory or Microsoft Active Directory) to authenticate Vibe users. This means that you do not need to create Vibe users manually. Vibe can create its user accounts based on the users that already exist in the LDAP directory.
- Vibe can use GroupWise as its integrated email system. This means that email messages sent from the Vibe site are delivered to GroupWise mailboxes. It also means that GroupWise users can post items to Vibe folders by sending email messages to Vibe folders.
- Vibe information can be displayed in the GroupWise client. Starting in GroupWise 8.0.2, you can drag and drop GroupWise items into Vibe folders in the GroupWise Folder List to post items to the corresponding folders in your Vibe site. You can also use the GroupWise Find feature to search your Vibe site.

Authenticating through the LDAP Directory

For instructions, see the following sections of the *Vibe 4.0.8 Installation Guide*.

- "Gathering Directory Services Information"
- "Adding Users to Your Vibe Site"

Using GroupWise as the Vibe Email System

For setup instructions, see the following sections of the *Vibe 4.0.8 Installation Guide*:

- "Planning for Outbound Email"
- "Planning to Enable Inbound Email"

See also the "Configuring Email Integration" section of the *Vibe 4.0.8 Administration Guide*:

For basic email usage instructions, see the following sections of the *Vibe 4.0.8 User Guide*:

- "Sending Email to Team Members and Announcing the Workspace after Its Creation"
- "Subscribing to Email Notifications from a Folder", "Setting Up a Folder to Receive Entries Via Email" and "Adding Entries to a Folder Via Email"
- "Sending Email from within Vibe"

See also the following sections of the *Vibe 4.0.8 Advanced User Guide*:

- "Enabling Folders to Receive Entries through Email" and "Configuring Folders to Send Email Notifications to Other Users"
- "Sending Email Notifications"
- "Emailing Files and Attachments to the Vibe Site When You Are Over Your Quota"

Enabling GroupWise and Vibe Integration for GroupWise Client Users

Before you can integrate GroupWise and Vibe, your Vibe site must be set up, as described in the *Vibe 4.0.8 Installation Guide*.

1 In the GroupWise Admin console, click **Domains**, **Post Offices**, or **Users**, and then click the object where you want to make Vibe available to GroupWise client users.

2 Click **Client Options** > **Integrations** > **OpenText Vibe**.

3 Select **Enable OpenText Vibe**.

4 Provide the Vibe URL:

    4a Use the following format:

```
https://vibe_server/ssf/ws/TeamingServiceV1
```

    4b (Conditional) If you want to use HTTP instead of HTTPS, include it in the **OpenText Vibe URL** field, for example:

```
http://vibe.yourcompanyname.com
```

    4c (Conditional) If Vibe is not configured with the default HTTPS port, include the port number after the hostname, for example:

```
vibe.yourcompanyname.com:444
```

    4d (Conditional) If Vibe is not installed in the default location, include the path to `TeamingServiceV1`, for example:

```
vibe.yourcompanyname.com/Web/Vibe/TeamingServiceV1
```

5 Click **OK**.

IMPORTANT: In order for GroupWise users to take advantage of GroupWise/Vibe integration, they must provide their GroupWise email address in their Vibe profile.

---

6 Accessing Your Vibe Site from the GroupWise Client

Before you can access the Vibe site from the GroupWise client, you must add your GroupWise email address to your Vibe profile, as described in "Modifying Your Profile" in the *Vibe 4.0.8 User Guide*.

The *GroupWise and Vibe Quick Start* describes the Vibe functionality that becomes available in the GroupWise client as a result of the GroupWise/Vibe integration.

7 Streamlining Authentication to Vibe

You can implement single sign-on for use with OpenText Vibe, so that users do not need to log in separately to GroupWise and Vibe. See the following sections in "Planning an Advanced Vibe Installation" in the *Vibe 4.0.8 Installation Guide*:

- "Configuring Single Sign-On with Novell Access Manager"
- "Configuring Single Sign-On with Internet Information Services for Windows"

IV OpenText Filr

Using OpenText Filr with your GroupWise system allows you to store, search, and share attachments in Filr. Attachments sent this way take no space in the GroupWise mailbox and are automatically shared in Filr. This gives you better control over you attachments and the size of your mailboxes.

IMPORTANT: Attachments sent as Filr references are considered an external resource and are not part of the message. If you enable Filr, GroupWise attachments stored in Filr are not archived with OpenText Retain.

8 Enabling GroupWise for Use with OpenText Filr

To enable the Filr integration:

❐ In the GroupWise Admin console, select the **Domain**, **Post Office**, or user where you want the Filr integration enabled.

❐ Go to **Client Options** > **Integrations** > **OpenText Filr** and select **Enable OpenText Filr**.

❐ Enter the URL for your Filr server in the following format:

```
https://server_ip_or_dns:port
```

❐ (Optional) Select **Force storage of attachments in OpenText Filr** and choose **Store all attachments** or **Store attachments larger than *xx* MB**.

9 Using Filr to Manage Attachments

Once Filr is enabled in your system, you can use it to store attachments. Attachments send through Filr are stored in a **GW Attachments** folder. When you send an attachment using Filr, the items are automatically shared with the recipients. Use the following methods to manage your GroupWise attachments in Filr:

- When adding attachments to an item, select **Filr reference** in the bottom left corner. You can then select a file from Filr to attach to the item.

- When adding an attachment to an item, you can right click on the attachment and select **Upload to OpenText Filr** to automatically upload it to Filr.

- If your administrator has forced attachments to be sent through Filr, using a size limit or just having all attachments sent through Filr, you receive a warning option upon sending an attachment that is not in Filr and the attachment is automatically uploaded to Filr when the item is sent.

- Using Find, you can select OpenText Filr and the Find searches through your Filr files as well as your GroupWise items.

- You can save received attachments to Filr in the **File** > **Save** menu.

- To open a Filr reference in an item, right click on the reference and select **View in OpenText Filr**.

V De-Mail

De-Mail is an email security system available in Germany. It allows you to securely send confidential items electronically.

10 Enabling GroupWise for Use with De-Mail

To enable the De-Mail integration:

❐ In the GroupWise Admin console, select the **Domain**, **Post Office**, or user where you want the De-Mail integration enabled.

❐ Go to **Client Options** > **Integrations** > **DE Mail** and select **Enable DE Mail** integration.

❐ Select if you want to **Use Mentana filtering** or **Use TSystem filtering**.

With this enabled, users who send items to a De-Mail address are able to select additional De-Mail security options in the item header previous to sending the item.

VI GroupWise Identity Manager Driver for NetIQ Identity Manager

The GroupWise Identity Manager driver for use with NetIQ Identity Manager provides data integration between users in NetIQ eDirectory and GroupWise accounts in your GroupWise system. For example, the driver can create email accounts automatically when employees are hired. The driver can also disable an email account when a user is no longer active. This configurable solution gives you the ability to increase productivity and streamline business processes by integrating GroupWise and eDirectory.

This guide provides information about certain administrative actions in the GroupWise Admin console that require you to stop the GroupWise Identity Manager driver or disable a user's association.

For additional information, see:

- NetIQ Identity Manager
- Identity Manager Drivers

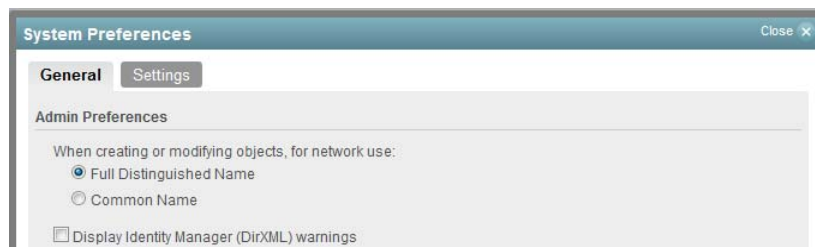# 11 Identity Manager Warnings in the GroupWise Admin Console

Some GroupWise administrative actions in the GroupWise Admin console require that you stop the GroupWise Identity Manager driver or disable a user's association with it before you perform the action. Most GroupWise administrative actions in the GroupWise Admin console require that you manually restart the GroupWise Identity Manager driver or re-enable the user's association when you have completed the action, but a few do not. By default, these activities generate a warning message in the GroupWise Admin console:

- "Enabling Identity Manager Warnings" on page 97
- "Associating a GroupWise Object with an eDirectory Object" on page 97
- "Disassociating a GroupWise Object's Attributes from an eDirectory Object" on page 98
- "Resolving an Invalid Association" on page 98

Enabling Identity Manager Warnings

Identity Manager warnings are disabled by default.

1 In the GroupWise Admin console, click **System** > **System Preferences**.

2 Select **Display Identity Manager (DirXML) Warnings**, and then click **OK**.

Associating a GroupWise Object with an eDirectory Object

Using the Identity Manager Management role in NetIQ iManager:

1 Stop the GroupWise Identity Manager driver.

2 Establish the association, as described in "Associating GroupWise Users with an LDAP Directory" in the *GroupWise Administration Guide*.

3 Restart the GroupWise Identity Manager driver.

Disassociating a GroupWise Object's Attributes from an eDirectory Object

In NetIQ iManager:

1 Go to the **Identity Manager** tab of the User object, and then disable the association with the GroupWise Identity Manager driver.

2 Disassociate the objects, as described in "Dissociating GroupWise Users from an LDAP Directory" in the *GroupWise Administration Guide*.

3 Go to the **Identity Manager** tab of the User object, and then enable the association with the GroupWise Identity Manager driver.

Resolving an Invalid Association

In NetIQ iManager:

1 Go to the **Identity Manager** tab of the User object, and then disable the association with the GroupWise Identity Manager driver.

2 Dissociate the user the reassociate the user, as described in "Directory Associations" in the *GroupWise Administration Guide*.

VII OpenText ZENworks

The following sections provide information about using OpenText ZENworks to distribute the GroupWise Client and to virtualize the GroupWise and GroupWise Messenger.

- ◆ Using ZENworks Configuration Management to Distribute the GroupWise Client
- ◆ Using ZENworks Application Virtualization for GroupWise and Messenger

12 Using ZENworks Configuration Management to Distribute the GroupWise Client

ZENworks Configuration Management deploys software as bundles that include all the files and instructions required to successfully install software on users' workstations. You can use the bundles to distribute the GroupWise client to workstations.

> **IMPORTANT:** For background information, or for help completing the ZENworks tasks outlined in the steps below, see "Software Distribution" in the ZENworks Configuration Management section on the OpenText ZENworks Documentation website.

- "Prerequisites" on page 101
- "Using ZENworks to Distribute the GroupWise Client Software" on page 102

Prerequisites

Before creating a bundle for the GroupWise client software in ZENworks, you must have the following:

❒ A copy of the following GroupWise client software on the machine where you are creating the ZENworks Bundle:

- `extract_setupip_packs.cmd`
- `setupip.fil`
- `setupip.`*xx* (where *xx* is a two-letter language code)

The GroupWise client software can be found on the GroupWise server in the following location:

```
Linux:     /opt/novell/groupwise/agents/data/client/setup/win32
Windows:   C:\Program Files\Novell\GroupWise
             Server\agents\data\client\setup\win32
```

You can also extract the GroupWise Server installation files on your workstation if you don't have access to the GroupWise server. To do this, follow the steps in "Extracting the GroupWise Software" in the *GroupWise Administration Guide*.

❒ A GroupWise MST file to customize the GroupWise install. For information on creating an MST file, see "Using GroupWise Client Custom Installation Options" in the *GroupWise Administration Guide*.

> **IMPORTANT:** If you want a shortcut created on the desktop for GroupWise, make sure that is selected in the MST file.

❐ (Optional) A copy of the GroupWise icon which can be found on your GroupWise server in the following location:

`\`*`groupwise_software_path`*`\client\win32\groupwise.ico`

Using ZENworks to Distribute the GroupWise Client Software

There are two bundles you can create to distribute the GroupWise client software. The first assumes that GroupWise is not installed on the target machines. The second lets the user know that GroupWise is being installed and prompts them to close it if it is open.

- "Creating a Bundle to Install the GroupWise Client" on page 102
- "Creating a Bundle to Install/Upgrade the GroupWise Client" on page 104

Creating a Bundle to Install the GroupWise Client

Use this bundle if your workstations do not have the GroupWise client installed.

1 In the ZENworks Control Center, on the Bundles tab, create a new Windows Empty Bundle with the following:

- Upload the GroupWise icon as the icon for the bundle. The icon can be found on the GroupWise server in the following location:

    `\`*`groupwise_software_path`*`\client\win32\groupwise.ico`

- Select **Create as Sandbox** and make sure **Define Additional Properties** is selected when you finish the bundle.

2 Create the following actions on the Install tab of the bundle:

2a An **Install Files** action called `Install GroupWise Installation Files` that does the following:

- Add the following three files:

    - `extract_setupip_packs.cmd`

    - `setupip.fil`

    - `setupip.`*`xx`* (where *xx* is a two-letter language code)

- Select **Do not compress or encrypt uploaded content** if it is available.

- Set the **Destination Directory** to a temporary location on the machine where all of the GroupWise install actions can be performed. For example:

    `C:\Windows\Temp\gwclient\`

- Under **Executable security level**, select **Run as secure system user (Don't allow system to interact with desktop).**

2b A **Launch Executable** action called `Run extract_setupip_packs.cmd` that does the following:

- In the **Command** field, specify the path to the `extract_setupip_packs.cmd` file which was placed on the device in Step 2a. For example:

    `C:\Windows\Temp\gwclient\extract_setupip_packs.cmd`

- In the Working Directory field, specify the temporary location specified in Step 2a. For example:

  `C:\Windows\Temp\gwclient\`

- In the **Wait before proceeding to next action** box, select **When action is complete**.

- On the Advanced tab, make sure **Run as secure system user (Don't allow system to interact with desktop)** is selected.

NOTE: When this step runs on the device, a `win32` folder is created in the temporary folder where the GroupWise client install files were placed previously. You need to know the path to this folder for the following steps.

2c An **Install File(s)** action called `Install groupwise.mst` that does the following:

- Add the `groupwise.mst` file.

- Select **Do not compress or encrypt uploaded content** if it is available.

- Set the **Destination Directory** to be the path to the `win32` folder that gets created by the script in Step 2b. For example:

  `C:\Windows\Temp\gwclient\win32`

- Under **Executable security level**, select **Run as secure system user (Don't allow system to interact with desktop).**

2d A **Run Script** action called `Run install.bat` that does the following:

- Select **Define your own script**.

- Edit the script content and specify the following:

  ```
  SET GW_INST_REMOVE_MSI=True
  SET GW_INST_TRANSFORM_FILE=groupwise.mst
  C:\Windows\Temp\gwclient\win32\install.bat /silent
  ```

  The install.bat can take one of the two following parameters:

Parameter	Description
/unattended	Users see a window showing that GroupWise is being installed, but do not have to interact with the install.
/silent	Users do not see that GroupWise is being installed.

- In **Wait before proceeding to next action**, select **When action is complete**.

- On the **Advanced** tab under **Executable Security**, select **Run as secure system user (Do not allow system to interact with desktop)**.

2e A **Launch Executable** action called `Launch GroupWise` that does the following:

- For **Command**, specify the following:

  `"C:\Program Files (x86)\Novell\GroupWise\grpwise.exe"`

NOTE: Change this path accordingly if GroupWise was installed to a different location.

2f A **Create/Delete Directory** action called `Delete Temporary Install Files` that does the following:

- For **Action Type**, select **Delete directory.**

- For **Directory Name**, specify `C:\Windows\Temp\gwclient` or the temporary location from Step 2a.

- Under **Executable security level**, select **Run as secure system user (Do not allow system to interact with desktop)**.

3 The bundle is now configured to install the GroupWise client. Assign the bundle to a test workstation to test it and make sure it is working as desired before publishing the bundle.

Creating a Bundle to Install/Upgrade the GroupWise Client

Use this bundle if your workstations have the GroupWise Client installed.

1 In the ZENworks Control Center, on the Bundles tab, create a new Windows Empty Bundle with the following:

- Upload the GroupWise icon as the icon for the bundle. The icon can be found on the GroupWise server in the following location:

  `\`*`groupwise_software_path`*`\client\win32\groupwise.ico`

- Select **Create as Sandbox** and make sure **Define Additional Properties** is selected when you finish the bundle.

2 Create the following actions on the Install tab of the bundle:

2a A **Prompt User** action called `Prompt User to close GroupWise` that does the following:

- Select the desired values for **User Cancels Allowed** and **Seconds to be Displayed**.

- Define prompts for desired locales.

- Add prompt text similar to the following:

  ```
  GroupWise is ready to be installed/upgraded. Please save any
  work-in-progress emails, close all GroupWise windows, and click
  OK.
  ```

2b A **Run Script** action called `Check for Running GroupWise` that does the following:

- Select **Define your own script**.

- Edit the script content and add the following:

  ```
  SETLOCAL EnableExtensions
  set EXE=grpwise.exe
  FOR /F %%x IN ('tasklist /NH /FI "IMAGENAME eq %EXE%"') DO IF %%x
  == %EXE% goto FOUND
  EXIT 0
  goto FIN
  :FOUND
  GroupWiseStillRunning
  :FIN
  ```

- In **Wait before proceeding to the next action**, select **When action is complete**.

- On the **Advanced** tab under **Executable security level**, select **Run as secure system user (Don't allow system to interact with desktop)**.

2c An **Install Files** action called `Install GroupWise Installation Files` that does the following:

- Add the following three files:

    - `extract_setupip_packs.cmd`

    - `setupip.fil`

    - `setupip.`*`xx`* (where *xx* is a two-letter language code)

- Select **Do not compress or encrypt uploaded content** if it is available.

- Set the **Destination Directory** to a temporary location on the machine where all of the GroupWise install actions can be performed. For example:

    `C:\Windows\Temp\gwclient\`

- Under **Executable security level**, select **Run as secure system user (Don't allow system to interact with desktop).**

2d A **Launch Executable** action called `Run extract_setupip_packs.cmd` that does the following:

- In the **Command** field, specify the path to the `extract_setupip_packs.cmd` file which was placed on the device in Step 2c. For example:

    `C:\Windows\Temp\gwclient\extract_setupip_packs.cmd`

- In the Working Directory field, specify the temporary location specified in Step 2c. For example:

    `C:\Windows\Temp\gwclient\`

- In the **Wait before proceeding to next action** box, select **When action is complete**.

- On the Advanced tab, make sure **Run as secure system user (Don't allow system to interact with desktop)** is selected.

NOTE: When this step runs on the device, a `win32` folder is created in the temporary folder where the GroupWise client install files were placed previously. You need to know the path to this folder for the following steps.

2e An **Install File(s)** action called `Install groupwise.mst` that does the following:

- Add the `groupwise.mst` file.

- Select **Do not compress or encrypt uploaded content** if it is available.

- Set the **Destination Directory** to be the path to the `win32` folder that gets created by the script in Step 2d. For example:

    `C:\Windows\Temp\gwclient\win32`

- Under **Executable security level**, select **Run as secure system user (Don't allow system to interact with desktop).**

2f Do the following:

- Select the check box next to the `Check for Running GroupWise` **Run Script** action that was created in Step 2b.
- Click **Duplicate** to add another copy of this action.

This is a check to make sure the user hasn't launched GroupWise after the initial prompt.

2g A **File Removal** action called `Delete GroupWise Shortcut` that does the following:

- For **Full Path to Source Files/Directories**, specify the following:

  `${public}\Desktop\GroupWise.lnk`

- For **Run Action As**, make sure **System** is selected.

2h (Optional) A **Display Message** action called `Alert User that GroupWise install is finishing` that does the following:

- Define prompts for the desired locales. The message could be similar to the following:

  ```
  GroupWise will finish it's install/upgrade in a few minutes. The
  application will launch automatically when finished.
  Thank you for your patience!
  ```

2i A **Run Script** action called `Run install.bat` that does the following:

- Select **Define your own script**.
- Edit the script content and specify the following:

  ```
  SET GW_INST_REMOVE_MSI=True
  SET GW_INST_TRANSFORM_FILE=groupwise.mst
  C:\Windows\Temp\gwclient\win32\install.bat /silent
  ```

  The install.bat can take one of the two following parameters:

Parameter	Description
/unattended	Users see a window showing that GroupWise is being installed, but do not have to interact with the install.
/silent	Users do not see that GroupWise is being installed.

- In **Wait before proceeding to next action**, select **When action is complete**.
- On the **Advanced** tab under **Executable Security**, select **Run as secure system user (Do not allow system to interact with desktop)**.

2j A **Launch Executable** action called `Launch GroupWise` that does the following:

- For **Command**, specify the following:

  `"C:\Program Files (x86)\Novell\GroupWise\grpwise.exe"`

NOTE: Change this path accordingly if GroupWise was installed to a different location.

2k A **Create/Delete Directory** action called `Delete Temporary Install Files` that does the following:

- For **Action Type**, select **Delete directory.**

- For **Directory Name**, specify `C:\Windows\Temp\gwclient` or the temporary location from Step 2c.

- Under **Executable security level**, select **Run as secure system user (Do not allow system to interact with desktop)**.

3 The bundle is now configured to install the GroupWise client. Assign the bundle to a test workstation to test it and make sure it is working as desired before publishing the bundle.

13 Using ZENworks Application Virtualization for GroupWise and Messenger

OpenText ZENworks Application Virtualization lets you convert applications that run on Microsoft Windows into self-contained virtual applications. After being virtualized, an application becomes a single, isolated file that runs instantly from anywhere, including a thumb drive or other removable media. Unlike traditional installation methods, the single virtual application file does not require a separate setup process, and does not rely on external components and runtimes, reboots, or administrative privileges. After virtualization, the application is isolated from other system applications, preventing DLL conflicts and other deployment nightmares, yet the experience for the application's user is unchanged.

For instructions on virtualizing the GroupWise client, see "Preparing GroupWise and GroupWise Notify for Virtualization" in the *ZENworks Integration and Streaming Guide* (https://www.novell.com/documentation/zav11/).

For instructions on virtualizing the Messenger client, see "Preparing Novell Messenger for Virtualization" in the *ZENworks Integration and Streaming Guide* (https://www.novell.com/documentation/zav11/).

VIII Mobile Devices

Information about GroupWise interoperability with mobile devices is included in the next section:
Interoperability with Mobile Devices.

14 Interoperability with Mobile Devices

The GroupWise Mobility Service provides data synchronization between GroupWise mailboxes and mobile devices for synchronizing email, appointments, contacts, tasks, notes, and phone messages. The GroupWise Mobility Service is fast, reliable and scalable, and supports the latest device operating systems. For more information, see the GroupWise Mobility Documentation website.

To support BlackBerry devices with an operating system earlier than BlackBerry 10.x, use BlackBerry Enterprise Server for GroupWise.

IX GroupWise TeamWorks

IMPORTANT: Support for integrating TeamWorks with GroupWise ended in GroupWise version 18.3. The content below is only applicable to GroupWise 18.2.1 and earlier versions.

GroupWise TeamWorks helps you easily collaborate via your web browser, mobile device, or the GroupWise client. With TeamWorks, you can discuss ideas, post files, share links, and invite others to join the conversation in virtual discussion rooms.

GroupWise is the desktop client for TeamWorks. Your TeamWorks server information is added to the GroupWise Admin Console by your administrator. Once that's done you can login to TeamWorks while in GroupWise and see the TeamWorks folders in the folder list. From within a room you can read, add new content, or edit content created by you.

15 Enabling GroupWise for Use with TeamWorks

IMPORTANT: Support for integrating TeamWorks with GroupWise ended in GroupWise version 18.3. The content below is only applicable to GroupWise 18.2.1 and earlier versions.

To enable the TeamWorks integration:

❒ In the GroupWise Admin console, select the **Domain**, **Post Office**, or user where you want the TeamWorks integration enabled.

❒ Go to **Client Options** > **Integrations** > **TeamWorks** and select **Enable OpenText TeamWorks**.

❒ Specify the TeamWorks URL and port number in the following format:

```
https://<teamworks_server>:<port>
```

Users are now able to login to TeamWorks in the GroupWise Client

16 Using TeamWorks in the GroupWise Client

IMPORTANT: Support for integrating TeamWorks with GroupWise ended in GroupWise version 18.3. The content below is only applicable to GroupWise 18.2.1 and earlier versions.

Once your administrator has configured TeamWorks in the GroupWise Admin Console, you can use it to collaborate with your teams and groups.

IMPORTANT: In this release of GroupWise, you cannot create TeamWorks Rooms or Topics in the GroupWise client. They must be created in TeamWorks first before you can use them in the GroupWise Client.

You can create a comment to a topic by opening it in the room list and typing in the Reply box at the bottom of the Topic. Comments and topics that you have created can be edited or deleted.