

GroupWise 6.5

Best Practices Guide

prepared for **GroupWise**  
**Administrators**

[www.novell.com](http://www.novell.com)

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**Novell**<sup>®</sup>



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Novell GroupWise 6.5 –Best Practices Guide

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# Introduction

This guide serves as a set of considerations and guidelines for Novell® GroupWise® administrators. It is not a comprehensive instruction set, and it is not intended to replace product manuals. Administrators using this guide should consult product documentation, technical information documents (TIDs), and online help for further instruction regarding each of the guidelines offered here.

It is intended that this will be a “living document,” and content will be modified in the future.

We recognize that administrators are often restricted in the changes they may make to their GroupWise Systems. Depending on the state of the existing Novell GroupWise system, some of the practices outlined in this document may be difficult or cost-ineffective to implement.

Use these guidelines wherever possible in expanding systems or creating new systems, but temper their application with your experience and knowledge of your organization’s unique computing environment.

Please also refer to the [Novell GroupWise 6.5 Documentation](#).

You may also refer to our [partners](#) for more information, tools, and services.

# System Requirements

## GroupWise NLM Agent Recommended Requirements

For optimal performance, each NetWare® server on which you run the GroupWise NLM agents must meet or exceed the following recommended system requirements:

Requirements	Description
Operating System	Novell NetWare 6.0 or 6.5 plus the latest Support Pack for your version of NetWare.
Available Disk Space for Agent files	23 MB for all language files. Approximately 15 MB for English plus one other language.
Available Memory	1.2 GB or more.
Available Disk Space	Post office and Domain - No less than 25% Free Disk Space/Total Disk Space (Free Disk Space/Total Disk Space). Auto purge must be set on Novell GroupWise Post office and Domain volumes.

The required disk space accommodates both GroupWise agents because both are installed together automatically. The required memory would be adequate for the most basic configuration of a single NLM agent on the server. Additional free memory can significantly increase agent performance. Multiple agents on the same server require additional memory.

### Estimating NLM POA Memory Requirements

The amount of memory required for the NLM POA is influenced by many factors, including the following:

- Number of client/server connections being supported
- Number of active client connections vs. idle connections
- Number of TCP handler threads
- Number of message handler threads
- Number of database maintenance threads

### Estimating NLM MTA Memory Requirements

The amount of memory required for the NLM MTA is influenced by many factors, including the following:

- Number of post offices and domains



- Volume of message traffic between post offices and domains
- Volume of large messages (for example, large attachments, remote updates, and so on)
- TCP/IP or mapped/UNC links between MTAs

## GroupWise NT/2000 Agent Recommended Requirements

For optimal performance, each Windows NT® or Windows 2000® machine where you run the GroupWise NT/2000 agents must meet or exceed the following recommended requirements:

Requirements	Description
Operating System	Windows 2000 or higher plus the latest Service Pack for your version of Windows.
Available Disk Space For Agent Files	23 MB for all language files. Approximately 15 MB for English plus one other language.
Available Memory	1.2 GB or more.
Available Disk Space	Post office and Domain—No less than 25% Free Disk Space/Total Disk Space (Free Disk Space/Total Disk Space). Auto purge must be set on Novell GroupWise Post office and Domain volumes.

The required disk space accommodates both GroupWise agents because both are installed together automatically. The required memory would be adequate for the most basic configuration of a single agent. Additional free memory can significantly increase agent performance. Multiple agents on the same machine require additional memory.

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- TCP/IP or mapped/UNC links between MTAs

## GroupWise Client Recommended Requirements

For optimal performance, the workstation to which you install the GroupWise client for Windows must meet or exceed the following recommended requirements:

Requirements	Requirements
Operating System	Windows 2000 or higher.
CPU	Pentium® III or higher.
RAM	256 MB or higher.
Disk Space	60 MB for a standard installation (installed to local drive) for client files only. 10 to 40 MB for Attachment Viewing Temp files. For Caching Mode you will need more than the master mailbox size.

## GWIA System Requirements

### Network Server Recommended Requirements

For optimal performance, the network server to which you install the Internet Agent should meet or exceed the following recommended requirements:

Requirements	Description
Processor	Same as the recommended processor for the operating system.
Operating system	NetWare 4.2 or higher with latest Support Pack. Windows NT with latest Service Pack. Windows 2000 with Service Pack 2 or higher.
Disk space	17 MB for the Internet Agent program files. 200 MB minimum for message file processing. The actual amount will be determined the by number and size of message files being processed at one time by the Internet Agent.
RAM	12 MB. This is the amount of memory the Internet Agent needs to operate. It does not include memory for the operating system or for TCP/IP connectivity. This amount can increase depending on message size and complexity.

# WebAccess System Requirements

## Network Server Recommended Requirements

For optimal performance, verify that the machines you've selected to run the WebAccess components meet or exceed the following recommended requirements:

Requirements	Description
WebAccess Agent Platform	<p>GroupWise 6.5 system: The GroupWise 6.5 WebAccess Agent can only access GroupWise 6.5 post offices and libraries.</p> <p>Server: NetWare 4.2, 5.x, or 6; Windows NT; Windows 2000.</p> <p>With NetWare 5.x and 6, the WebAccess Agent can run on multi-processor servers and clustered servers.</p> <p>With Windows NT and 2000, the WebAccess Agent can run as either a Windows application or a Windows service.</p>
Web Server and Java <sup>®</sup> Servlet Engine	<p>The WebAccess and WebPublisher Applications require one of the following Web server and Java servlet engine configurations:</p> <ul style="list-style-type: none"> <li>• NetWare 4.2/5.x: NetWare Enterprise Web Server and Novell Servlet Gateway</li> <li>• NetWare 6: NetWare Enterprise Web Server and Tomcat servlet engine; Apache Web Server and Tomcat servlet engine</li> <li>• Windows NT: Netscape Enterprise Server™ 3.6 or higher and Novell Servlet Gateway; Microsoft<sup>®</sup> Internet Information Server 4.0 or higher (Windows NT must have Service Pack 3 or higher) and Novell Servlet Gateway</li> <li>• Windows 2000: Microsoft Internet Information Server 5 or higher and Novell Servlet Gateway</li> <li>• UNIX<sup>®</sup> Solaris<sup>®</sup>: Apache Web Server 1.3.3 or higher and Tomcat servlet engine</li> </ul> <p>The Novell Servlet Gateway is included and can be installed during WebAccess installation. The Tomcat servlet engine or other JSDK 2.0 (or higher)-compatible servlet engines must be installed before installing WebAccess.</p> <p>Although WebAccess may run on other configurations, only the above configurations have been tested by Novell. To use a non-tested configuration, see the WebAccess Readme file.</p>
Java Virtual Machine <sup>®</sup>	<p>The WebAccess and WebPublisher Applications require JVM<sup>®</sup>, version 1.1.7B or higher. Please be aware of the following:</p> <ul style="list-style-type: none"> <li>• NetWare servers can run only one JVM. On NetWare, WebAccess requires JVM 1.1.7B dated 12/12/2001 or later. This version is included with WebAccess. During installation, you will be prompted to replace your current version with the WebAccess version; you should do so unless the server's current version is newer.</li> <li>• Windows NT/2000 machines can run multiple JVMs at the same time. To ensure compatibility with WebAccess, you should install JVM 1.1.8 or higher. JVM 1.4.1 (Java 2 Runtime Environment, Standard Edition Version 1.4.1) is included with WebAccess.</li> <li>• A JVM is not included for UNIX Solaris. You will need to separately install JVM 1.1.7B or higher to your UNIX Web server. We recommend the newest version available.</li> </ul>

## Monitor System Requirements

### Monitor Recommended Requirements

For optimal performance, verify that the machines you've selected to run the Monitor components meet the following recommended requirements:

Requirements	Description
Monitor Agent Platform	The GroupWise Monitor Agent, which provides the Monitor Agent console, runs on Windows NT and Windows 2000 with full functionality.
Web Server and Java Servlet Engine	<p>The GroupWise Monitor Application, which enables the Monitor Web console, requires one of the following Web server and Java servlet engine configurations:</p> <ul style="list-style-type: none"> <li>• NetWare 5.1: NetWare Enterprise Web Server and Novell Servlet Gateway.</li> <li>• NetWare 6: Apache Web Server and Tomcat servlet engine.</li> <li>• Windows 2000: Microsoft Internet Information Server 5 or higher and Novell Servlet Gateway.</li> <li>• UNIX Solaris/Linux: Apache Web Server 1.3.3 or higher and Tomcat servlet engine.</li> </ul> <p>The Novell Servlet Gateway is included and can be installed during Monitor installation. The Tomcat servlet engine or other JSDK 2.0 (or higher)-compatible servlet engines must be installed before installing Monitor.</p> <p>Although Monitor may run on other configurations, only the above configurations have been tested by Novell. To use a non-tested configuration, see the Monitor Readme file.</p>
Java Virtual Machine® (JVM)	<p>The Monitor Application requires JVM, version 1.1.7B or higher. Please be aware of the following:</p> <ul style="list-style-type: none"> <li>• NetWare servers can run only one JVM. On NetWare, the Monitor Application requires JVM 1.1.7B dated 12/12/2001 or later. This version is included with Monitor. During installation, you will be prompted to replace your current version with the Monitor version; you should do so unless the server's current version is newer.</li> <li>• Windows NT/2000 machines can run multiple JVMs at the same time. To ensure compatibility with the Monitor Application, you should install JVM 1.1.8 or higher. JVM 1.4.1 (Java 2 Runtime Environment, Standard Edition Version 1.4.1) is included with Monitor.</li> <li>• A JVM is not included for UNIX Solaris. You will need to separately install JVM 1.1.7B or higher to your UNIX Web server. We recommend the newest version available.</li> </ul>

Requirements	Description
Workstation Web Browser	The following are minimum requirements. For best performance, we recommend the newest available version.  Windows: Microsoft Internet Explorer 5.5 or higher; Netscape Navigator® 7.0 or higher; Opera 6 or higher.  Macintosh®: Microsoft Internet Explorer 4.5 or higher; Netscape Navigator 4.51 or higher; Opera 6 or higher.  UNIX: Netscape 4.0 or higher; Microsoft Internet Explorer 4.0 or higher; Opera 6 or higher.  Linux®: Netscape 6.2.2 or higher; Opera 6 or higher.
Wireless Device	Must support the Wireless Access Protocol (WAP).  Must have a microbrowser that uses Handheld Device Markup Language (HDML) 3.0 or above or Wireless Markup Language (WML) 1.1 or above.
Palm OS® Device	Any Palm OS version that supports Web Clipping Applications (PQAs).
Windows CE Device	Any Windows CE version.

## GroupWise Exchange Gateway Requirements

### Hardware/Software Requirements

Requirements	Description
Processor	80486 Pentium® II or later
Disk space	80 MB 80 MB or more
RAM	32 MB 64 MB
Operating System	Windows NT server 4.0 with Service Pack 3 or Windows 2000 server
Exchange server	4.0 5.0 with Service Pack 3 or Exchange 2000 server
GroupWise®	5.1 5.2 or later
ConsoleOne®	1.34 or later

## GroupWise Notes Gateway

### Hardware/Software Requirements

Requirements	Description
Processor	80486 Pentium II or later
Disk space	20 MB 40 MB or more
RAM	16 MB 32 MB or more
Operating System	Windows NT server 4.0 with Service Pack 3 4.0 with Service Pack 3 or later
Lotus Notes® server	4.0 4.5 or later
Lotus Notes Client	4.0 4.5 or later
ConsoleOne®	1.2d or later

## GroupWise Async Gateway - NLM

### Component Recommendation

Recommendation	Description
Processor	80486 (1 to 16 ports), 80486/33 (17 to 32 ports)
Disk space	10 MB
Async Gateway	NLM 6.00
Novell NetWare®	5.x or later CLIB.NLM 3.12g or later GWENN3.NLM 6.00b or later AIO.NLM Dated 5/4/94 or later
Modem	AT command-set-compatible, with error correction protocol, 14400 baud or faster

## GroupWise Async Gateway - Windows

### Component Recommended Requirements

Recommendation	Description
Processor	80486
Operating System	Windows NT® 4.0 with Service Pack 3
Disk Space	20 MB
RAM	16 MB
Modem	AT command-set-compatible, with error correction protocol, 14400 baud or faster

# System Administration

Use only the latest version of ConsoleOne and the GroupWise 6.5 Snapins. To ensure that only ConsoleOne is to be used for administration, disable NWAdmin GroupWise Administration on upgraded systems.

The Novell [GroupWise 6.5 Import/Export utility](#) is an add-on to ConsoleOne that enables you to transfer GroupWise information into and out of NDS®.

ConsoleOne should be used for all administration, with the following exceptions:

- Async Gateway
- API Gateway
- Exchange Gateway
- Notes Gateway

# System Design

## Post Office Sizing and Configuration

With any messaging system, there are general characteristics of the overall network environment, such as backup and restore times, that come into play when sizing the information store. A primary consideration when sizing a GroupWise post office is the messaging habits of the user base (i.e., messaging utilization and client access mode). The correct sizing of GroupWise post offices also depends on several other factors, such as the overall GroupWise mailbox size, message database size, and size and number of attachments in the information store.

**Note:** The sizing recommendations in this guide are general guidelines based on many years of experience with many different environments. These are not exact recommendations for sizing GroupWise post offices in a particular environment. For the most accurate sizing possible, we recommend engaging Novell Consulting<sup>SM</sup> or a qualified partner for an in-depth analysis of your messaging needs.

## General Factors

There are several general factors that affect the performance of a messaging system. Backup, restore, maintenance, and perceived performance of the messaging client are useful scaling factors. Addressing these factors is important to different components of a network.

Factors	Description
Backup	Backup engine, target service agents, and device.
Restore	Restore engine, target service agents, and device.
Maintenance	Database maintenance application: mode, location (client vs. server), and server utilization.
User Performance	Messaging client access mode to post office, server utilization, network traffic, and client workstation speed.

Once these factors are taken into consideration, you can start to generalize the sizing of the number of mailboxes in a GroupWise post office. The following table shows approximate numbers of mailboxes in a single post office; based on messaging utilization, access mode, and sizing information.



Messaging Utilization	Mailbox Access Mode		
	Online	Caching	Deskless Workforce (i.e. Web/Wireless/IMAP/POP3)
Heavy	700-1000	2,500-4,000	N/A
Medium	1,000-1,500	4,000-5,000	N/A
Light	1,500-2,500	5,000 +	5,000 +

## Messaging Utilization

### Heavy

Heavy mail users are those who use nearly all of the features of Novell GroupWise 6.5 and rely on messaging for a large percentage of their day-to-day productivity. Numbers of messages sent and received are also high for heavy users. Typically, heavy users send 25 messages and receive 100 messages per day and have total mailbox sizes in excess of 300 MB.

### Medium

Medium mail users rely on Novell GroupWise for communication via e-mail messages and managing their time with calendar events but do not use all of the features of GroupWise such as Proxy or Discussions. Typically, medium users send 10 messages and receive about 25 messages per day and have total mailbox sizes of up to 200 MB.

### Light

Light users send and receive few e-mail messages each day, with limited use of attachments and almost no calendaring activity. These users will send an average of 25 messages per week and will have an average mailbox size of less than 50 MB.

## Mailbox Access Modes

### Online

Since the online mode still relies on the POA to deliver 100% of the content to the GroupWise 6.5 client, the guidelines for previous versions of GroupWise apply. Experience shows that while some organizations have successfully implemented 1,000 mailbox or larger post offices, performance is consistently better for smaller numbers of mailboxes.

Post offices with heavy message flow, or where users are using Novell GroupWise for full collaboration (calendars, task lists, shared folders, document management, etc.), demand more resources than post offices where GroupWise is only used for e-mail.

Often, a very large post office will have excellent performance for an extended period before performance “mysteriously” begins to degrade. This is typically a function of increased user employment of the Novell GroupWise product. Adhering to the online-mode mailbox guideline of keeping mailboxes within the range of 700 to 1,000 should ensure that your users have the room to grow into the full collaboration GroupWise offers.

Novell recommends that the number of active online-mode users per post office does not exceed the range of 700 to 1,000. With the assumption that on average only 60% to 70% of users will be logged in and using mail at any given time, GroupWise could easily support a post office of 1,000+ “total users.”

Here are some things to consider when deciding on an acceptable number:

LAN/WAN Speed and Topology	The slower the network, and the more hops a packet has to make, the slower the performance will be.
Clean-Up Policies	Without standard clean-up policies implemented, there is no way to control the size of the GroupWise databases or the user’s mailbox. As the databases get larger, maintenance routines and client display will take longer. In addition, as the number of messages the POA must query for Finds and/or indexing increases, the POA slows down.
Number and Size of Attachments	The average user is expected to have a certain number and size of attachments. In Novell Technical Services <sup>SM</sup> , the post office has less than 300 users due to the size of attachments each user has; these include large databases and core dumps mailed from customers. Novell Technical Services needed to reduce the number of users on a post office to provide adequate disk space.
Backup and Restore	Backup and restore can be an issue as the number users and messages increase. This issue requires that situation- specific decisions be made. Solutions will include limiting the number of users per post office, adding more disk space, implementing an e-mail policy, restricting the size of attachments, limiting the number of messages, or billing the user when limits are exceeded.

### Caching / Remote

Since the Caching and Remote modes rely on the Novell GroupWise 6.5 client acting upon a local disk store, the load on the POA is greatly reduced, while the performance of the client is greatly increased.

While keeping in mind the other factors involved in correctly sizing GroupWise post offices (such as GWCheck times, Backup, Restore, etc.), typical post offices that were previously sized to 500 to 700 mailboxes can now be potentially increased by a factor of about three (3) to five (5) using Caching mode. This would equate to a potential post office size with continued client performance of 2,800 to 3,500 mailboxes.

### Deskless Workforce (WebAccess/Wireless, POP3/IMAP4)

**WebAccess / Wireless**—Based on the assumption that a percentage of total users will access the system concurrently with these clients, a GroupWise post office with the majority (if not all) of the mailboxes being accessed with these clients can be larger (in

terms of number of mailboxes) than one with the majority of online client access mailboxes.

A deskless client user will have messaging habits and practices similar to those of a “light” e-mail user as defined above (see Messaging Utilization). The features of the deskless clients, however, may appeal to all levels and types of users.

**Important:** Since these clients rely on the POA to supply 100% of the content to the WebAccess gateway, the performance of the POA is critical.

**POP3/IMAP4**—Since these clients are limited to e-mail information only, post offices with a majority of POP3 or IMAP4 clients can hold many more mailboxes; and since they will be smaller in size, they will operate more like the “light” mail users. Note that the POA has to deliver 100% of the content to the GWIA for delivery to the POP3/IMAP4 clients.

### **Multiple E-mail Accounts: POP3 and IMAP4**

Multiple e-mail accounts can cause a post office store to grow quickly in size; the mailbox size limits available in GroupWise 6.5 can help manage this. Additionally, the administrator can limit who has the ability to access multiple accounts from the GroupWise client.

Once messages are in the message store, the mailbox access mode (listed above) will be used to read messages.

## **NNTP**

Internet news group information can also add to the size of the message store. In turn, this will add to the GWCheck, backup, and restore times. The mailbox size limits available in GroupWise 6.5 can help manage this. Additionally, the administrator can limit who has the ability to access news groups from the GroupWise client.

Once the NNTP messages are in the message store, the mailbox access mode (listed above) will be used to read messages.

## **Post Office Server Assignment**

For non-clustered GroupWise post offices, assign no more than one GroupWise post office to each file server.

E-mail has evolved from a “nice utility to have” to a “mission critical application.” Novell encourages customers to treat it as such. Deliver other applications and services from separate hardware.

The principle behind this guideline is simple: a single POA can favor client/server threads over indexing or message handling threads, whereas multiple POAs cannot.

Multiple POAs cannot “talk” with each other to announce that they have pending client/server requests and that other tasks should be suspended for a while.

Many customers run successful systems with more than one post office on a single file server—many others do not. The success or failure of running multiple post offices on a single server depends on the degree to which users are using Novell GroupWise as a full collaboration tool.

## **Post Office Configuration for Client/Server Only Access Mode**

Configure every post office for Client/Server Only access mode.

The GroupWise Information Store is reliable only if users have no file system rights to it. In Direct Access mode, users must have file system rights, and a GPF or cold-reboot can result in incomplete transactions and damage to the message store.

Windows 95® and 98® allow for “write-behind caching” to enhance responsiveness of the Windows interface. This feature, which is enabled by default, will always introduce some level of corruption into the GroupWise message store if users run in Direct Access mode.

## **Client Configuration in Caching Mode**

Whenever possible, configure every client in Caching mode.

The Caching mode provides increased client performance due to the local storage of a mirror image of the user’s “live” mailbox: folders, address book, calendar information, and all other information. Only changes are synchronized in the background.

The initial “priming” of this caching will be a heavy load for the POA; it is recommended to monitor this for load and to perform it during off-peak hours if possible. The priming is handled via client/server threads. A limit can be set on the POA of the percentage of the processor utilization for priming the caching. The default limit is 20% of the available client/server threads.

Once the client is operating in Caching mode, the POA only has to provide new information to the client, run the rules, and monitor the state of the “live” databases and other activities.

The GroupWise 6.5 client has an option to “Repair Mailbox” in Caching and Remote mode, executing a local copy of GWCheck installed in the GroupWise client directory.

Caching mode is not advisable, and Online mode is recommended for these users:

- Users with no dedicated workstation (Windows client access from multiple workstations)
- Users with low disk space available (less than 150Mb)

- Heavy document management users

## Dedicated GroupWise Server Volume Recommendations in Non-Clustered Post Offices

For non-clustered post offices, dedicate a server volume (e.g., MAIL) for the post office on that file server.

Separating applications and data from the SYS volume on NetWare servers is generally a good idea. If the mail volume fills up for example, SYS operations (Directory Services, most notably) will continue. Performance will still suffer, but TTS will not shut down.

For large non-clustered post offices (400 or more users in Online mode or over 2,000 users in Caching mode), dedicate the server to GroupWise.

For smaller environments (i.e., 25 to 150 users), you can locate the GroupWise components on a server that is used for other functions.

## Novell Cluster Services™, Fault Tolerance, and Availability

For maximum fault tolerance and availability, install the post office in a Novell Cluster Services environment.

Installing Novell GroupWise in a Novell Cluster Services environment will provide the maximum failover with reliable service to GroupWise users. Proper configuration of the Novell Cluster Services system and correct configuration of GroupWise to leverage Novell Cluster Services are essential.

These enhancements are available with Novell GroupWise 6.5 to increase utilization of Novell Cluster Services:

1. New abend option in the core OS to flush GW DB. This option is available with NetWare 5.1 SP3. Use the following two switches:
  - AUTO RESTART AFTER ABEND = 0
  - AUTO RESTART DOWN TIMEOUT= 180 (Default)
2. With NetWare 5.1 SP3 and higher, GroupWise agents will auto-detect if they are running on a cluster.
3. Better client reconnect logic; 8908 errors that occurred in previous versions should not appear in the GroupWise 6.5 client connected to a GroupWise 6.5 post office in a cluster, resulting in more tolerance of failover.

**Note:** For more information on installing GroupWise on a cluster, see the [GroupWise 6.5 Clustering Guide](#).

## POAs Per Post Office

The recommended number of POAs is one (1) POA per post office. This POA should also be run on the same server that houses the data store. By running this configuration, the

POA is able to use built-in “Load Balancing” to determine which threads and/or requests get priority over others. When a second POA is loaded on the same server, one process cannot control the threads of the other process and therefore the two processes compete for time.

If a second POA is needed for Quickfinder™ Indexing or for faster processing, Novell recommends running the second POA on a different server. This server can be connected via the LAN (recommended to be on the same network segment as the first server) or a second NIC can be installed with a crossover cable to either a NetWare server or an NT server where the second POA will run.

## Tuning the POA

Tune the POA and the NetWare server according to the “GroupWise Sizing Recommendations” document. This document is the result of extensive experience with “real world” post offices. The tuning parameters provided in this document improve GroupWise agent performance.

## “ngwnameserver” Redirection

On large systems, create one POA for ngwnameserver redirection. If you have more than 2,000 users, it is likely that at least a hundred of them will need to use redirection to find their post office in the morning. Dedicating a lightweight server to the task of ngwnameserver redirection prevents another post office from suffering a performance hit every morning as users log on.

An existing Post Office can provide the home directory for the ngwnameserver POA, but the agent should be run on separate hardware.

The benefits of this configuration increase on larger systems (i.e., 10,000+ users). Note that for organizations using a local DNS for each site, the DNS ngwnameserver entry should point to a local POA and not to one across a WAN link.

## Domain Sizing and Configuration

There is no limitation to the number of Domains contained in a System. However, Novell Technical Services recommends as few as possible to limit the amount of admin traffic on the network. Synchronization traffic increases as the number of domains increases.

The exact number of domains in any GroupWise System needs to be determined on an individual basis by considering the following:

- Carefully consider the number of post offices per domain, keeping these three objectives in mind:

1. Minimize the number of rebuilds that you may need to perform from a single domain
  2. Avoid single points of failure
  3. Minimize the MTA workload
- You should assign no more than 20 full-size post offices per domain. Assuming that a well-configured MTA can sustain throughput of 100,000 messages per day and each user sends and receives 10 messages per day, then twenty 500 mailbox post offices will generate 100,000 messages.
  - The primary domain should not own any post offices, gateways, or users.
  - The MTA should be loaded on the same server as the domain it services.
  - The primary domain should have a direct TCP/IP link to all secondary domains where possible. This ensures that administration traffic is isolated from message delivery routes. It also ensures that administration changes are replicated as quickly as possible throughout the system.
  - The primary domain should not be used as a routing domain.
  - Messaging hub domains (a centralized domain for routing messages) should be used at WAN to LAN connection points and service the remote domains that come through these points.
  - If a messaging hub domain is used, it should have a dedicated server.
  - A messaging hub domain can service 60+ links depending on LAN/WAN traffic, speed and protocol (TCP/IP) used.
  - Secondary domains should be created based on topology with a goal to minimize network traffic.
  - All high-traffic gateways should be assigned to a dedicated “gateway” secondary domain and placed on a dedicated server.
  - Additional domains for Internet traffic (primarily GWIA and Web Access) can be placed at WAN/LAN hub locations to reduce the time/cost for message delivery and network bandwidth. Other high-traffic gateways (e.g., the Lotus Notes gateway and the Microsoft Exchange gateways) may also require their own domain and file server.
  - Create a separate domain for GWIA. The GWIA is easily the highest-traffic gateway on the average GroupWise system. All mail sent to Internet addresses on other systems will pass through this domain. For larger systems, this requires that the GWIA have its own, dedicated domain. The GWIA and the MTA for this domain should be loaded on the same server where the “GWIA” domain directory resides.

- Sometimes it is cheaper to access Web Access and Remote Async gateway connections locally, rather than by using an 800 line. In this case, placing a domain in the remote location allows the gateway to run local to the users reducing the cost of long distance and 800 numbers.
- Other considerations would include the use of dial-up routing where link scheduling could reduce costs and external synchronization with other GroupWise 5.x systems where there is a high volume of administrative traffic. This guideline assumes that all post offices are TCP-IP linked to the domain with message transfer ports and IP addresses. If UNC links are used, then a domain should support no more than six full-sized (500-mailbox online connected, 2500 caching mode connected) post offices.
- Novell recommends clustering domains. The fault tolerance provided by clustering domains will provide maximum uptime for message routing between the domains in the Novell GroupWise 6.5 system.

**Note:** For more information on installing GroupWise on a cluster, see the [GroupWise 6.5 Clustering Guide](#).

As a rule of thumb, Novell does not recommend running a domain and post office on the same server.

## Links

### LAN Domains

Link all LAN domains via IP in a mesh configuration. On a switched LAN, mesh-style linking provides the most efficient transfer of data. Indirect, hub-style linking can seriously burden the hub domain and presents a single-point-of failure as well.

### Message Transfer Ports

Link all post offices to their domains with message transfer ports and IP addresses. IP connectivity between domains and post offices prevents the MTA from polling each post office directory in turn. This polling can severely impact performance and poses serious problems if there are post offices over WAN connections.

### Routing Domains

Establish hub domains at WAN links. While mesh-style connectivity should be the rule on the LAN, it poses serious problems for domains across WAN connections. TCP connections may time out, and throughput may be erratic. Establishing a domain for routing at each WAN connection prevents these problems by bringing the “store-and-forward” aspect of communication up to the application level where time-outs are not an issue.



**Note:** Novell GroupWise 6.5 agent communication (MTA to MTA and POA to MTA) has been enhanced to reduce the negative effect of slow or unreliable WAN links on messaging traffic.

## Internet Addressing

Novell recommends enabling Internet Addressing (IA). Enable IA on your GroupWise system after considering all points below. For more information about Internet Addressing, read the [Internet-Style Addressing Guide](#) in the Online Documentation.

### Naming Conventions for GroupWise Objects

Establish naming conventions for Novell GroupWise objects such that each object is **unique system-wide**. This recommendation may be tedious to implement, but the benefits are obvious: Users system-wide will have unique Internet addresses and those addresses will continue to work correctly even after users are moved between post offices.

Novell GroupWise does offer many alternatives to system-wide unique user IDs. Gateway aliases, user-level IDomains, nicknames, and post office aliases may all be used, but their use typically increases workload for the system administrator.

Domains, post offices, gateways, resource lists, distribution lists, libraries, and other GroupWise objects (except for user IDs) generally are made unique by adding numerals to the name, such as “PO1.” User IDs are generally made unique by adding a middle initial or a portion of the first or last name, such as JASMITH and JSMITH.

**Note:** Ensure that post office names are unique from user given names or surnames. Any message addressed in First.Last@IDomain or Last.First@IDomain format will first be parsed as if it were in UserID.PostOffice@IDomain format. If there are post offices with the same names as given or surnames, then First.Last and Last.First messages will not be delivered to users with those names.

### Preferred Address Format

Novell recommends setting the preferred address format to userID@IDomain. This is the easiest way to ensure uniqueness and to match the most common Internet e-mail address format used in different organizations. The User.PO.Domain and User.PO preferred addressing format options will prove to be somewhat problematic for moved users. If you select the First.Last and Last.First options, then you will need to make sure these components are unique; if not, aliases or some other method will need to be used to assure uniqueness. GroupWise 6.5 adds the “FLast” (First initial, Last name) for a possible e-mail address format.

Note that mail may still be addressed in the First.Last (i.e., john.smith) or Last.First (i.e., smith.john), or Flast (i.e., jsmith) format, and it will be delivered correctly

provided there is no ambiguity. The preferred addressing format only affects the “reply-to” field seen by Internet recipients.

### **Internet Addressing and External System Synchronization**

If you are synchronizing with external Novell GroupWise systems, make sure both systems have Internet addressing enabled. If your system is synchronizing domains with external systems that do not have Internet Addressing enabled, Internet Addressing will be enabled on the external system.

**Note:** Novell does not recommend and does not support separate systems sharing GWIAs when Internet addressing is enabled.

### **Disabling Internet Addressing**

**Do not attempt to disable Internet addressing.** The cost of this is simply too high. All personal address books and frequent contacts will become suspect and will need to be deleted. All addressing rules for Internet e-mail (any rule with a colon, an ampersand (@), and a period in it) will be disabled.

# GroupWise Monitoring

## Description

GroupWise Monitor is an agent that tracks agents in your Novell GroupWise system.

Monitor can be configured to alert the administrator if agents are not responding, have large backed-up queues, and so forth.

Monitor communicates with the agents in one of two ways:

XML over HTTP (primary method)	This method uses the http server built in to each of the GroupWise 5.5ep or GroupWise 6.5 agents.
SNMP (secondary method)	This method uses the SNMP variables published by each of the GroupWise 5.2, 5.5, 5.5ep, or GroupWise 6.5 agents and provides backwards compatibility with older agents.

## Thresholds

You may set thresholds based on any of the variables exported by the agents. You define the state the agent will be in if the threshold is exceeded. To give you more granularity, you can define your own state: for example, “MTA backed up” or “POA overloaded.”

You will want to set the thresholds to meet your needs.

Below is a sample of the thresholds used by Novell found in the Monitor.XML file:

```
<PROFILE_MTA>
<THRESHOLD var="mtaClosedPostOffices" operator=">=" value="1" state="Post office link down" />
<THRESHOLD var="mtaClosedGateways" operator=">=" value="1" state="Gateway link down" />
<THRESHOLD var="mtaClosedDomains" operator=">=" value="1" state="Domain link down" />
<THRESHOLD var="mtaAvailDiskSpace" operator="<=" value="100" state="Critically low on disk space" />
<THRESHOLD var="mtaAvailDiskSpace" operator="<=" value="400" state="Disk space below 400 MB" />
<THRESHOLD var="mtaOtherQCCount" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="mtalNetQCCount" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="mtalNetQCCount" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="mtaClosedDomains" operator=">=" value="10" state="Domain links down" />
<THRESHOLD var="mtaOldestQMsg" operator=">=" value="320000" state="Messages queued (>60) min." />
<THRESHOLD var="mtaOtherQCCount" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="mtaOtherQCCount" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="mtalNetQCCount" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="mtalNetQCCount" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="mtaOtherQCCount" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="mtaOldestQMsg" operator=">=" value="640000" state="Messages queued (>120) min." />
</PROFILE_MTA>
<PROFILE_POA>
<THRESHOLD var="poaNormalQueues" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="poaPriorityQueues" operator=">=" value="100" state="Messages backed up (>100)" />
```

```
<THRESHOLD var="poaAvailDiskSpace" operator="<=" value="400" state="Disk space below 400 MB" />
<THRESHOLD var="poaAvailDiskSpace" operator="<=" value="100" state="Critically low on disk space" />
<THRESHOLD var="poaNormalQueues" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="poaNormalQueues" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="poaPriorityQueues" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="poaPriorityQueues" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="poaDBStatusNumber" operator="=" value="1" state="MTA Router not processing" />
<THRESHOLD var="poaDBStatusNumber" operator=">=" value="1" state="Admin database is corrupt" />
</PROFILE_POA>
<PROFILE_GWIA>
<THRESHOLD var="gwiaQueueWpcsin" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="gwiaQueueWpcout" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="gwiaQueueWpcout" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="gwiaQueueWpcsin" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="gwiasmtpQueueReceive" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="gwiasmtpQueueSend" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="gwiasmtpQueueSend" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="gwiasmtpQueueReceive" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="gwiaQueueGwprob" operator=">=" value="10" state="Problem queue backed up" />
<THRESHOLD var="gwiasmtpdThreadsAvailSend" operator="<" value="1" state="No threads available" />
<THRESHOLD var="gwiasmtpdThreadsAvailReceive" operator="<" value="1" state="No threads available" />
<THRESHOLD var="gwiaQueueWpcout" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="gwiaQueueWpcsin" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="gwiasmtpQueueSend" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="gwiasmtpQueueDefer" operator=">=" value="1000" state="Defer Queue Backed up >1000" />
<THRESHOLD var="gwiasmtpQueueDefer" operator=">=" value="1500" state="Defer Queue > 1500" />
<THRESHOLD var="gwiasmtpQueueReceive" operator=">=" value="100" state="Messages backed up (>100)" />
<THRESHOLD var="gwiasmtpQueueReceive" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="gwiaNumMessages" operator=">=" value="1000" state="Messages backed up (>1000)" />
<THRESHOLD var="gwiaNumMessages" operator=">=" value="500" state="Messages backed up (>500)" />
<THRESHOLD var="gwiaNumMessages" operator=">=" value="100" state="Messages backed up (>100)" />
</PROFILE_GWIA>
```

When you start Monitor, you will be prompted for the http user ID and password for each agent. You can avoid entering the user ID and password for each agent by loading Monitor with the /httpuser and /httppassword switches. As each agent loads, GroupWise Monitor will use this default ID and password.

For more information, please refer to the [GroupWise 6.5 Monitor Guide](#).

# Software Installation and Patching

For more information, please refer to the [Minimum Patch List](#).

## Software Distribution Directories

Use the following steps when dealing with software distribution directories (SDDs):

1. Create a master SDD containing a fully patched and installable Novell GroupWise CD.  
No post offices should be assigned to use this SDD. This will allow the system administrator to update this directory without inadvertently triggering the Client Auto-Update procedure.
2. Burn a copy of the master SDD to CD for backup purposes.  
A fully patched and installable GroupWise 6 CD may prove to be extremely handy, whether for restoring SDDs or for creating new ones at remote sites.
3. Place SDDs on application servers rather than mail servers.  
This will simplify server licensing, backup procedures, and application delivery. Be sure to grant users sufficient access (read and file scan) to the client subdirectory, allowing them to run setup at will.

## Applying the Service Packs

Use these steps when applying the service packs:

1. Make a backup copy of the SDD.
2. Apply the patch to the backup copy of the SDD.
3. Copy this patched backup copy of your SDD to the production SDD. Either rename or backup the original.
4. Once the local SDD is patched, use this directory to distribute the new software (i.e., administration, agents, client software).

## Administration Upgrades

Apply administration upgrades and patches to every workstation where Novell GroupWise administration is run. This ensures that only the latest GroupWise Administrator ConsoleOne snap-ins are used.

## Server Upgrades

Use these steps for server upgrades:

1. Test new agent software on a lab server that is configured exactly like your production servers.  
A good test system is invaluable. Novell tests software thoroughly before shipping it, but all possible configurations cannot be tested. Your test system offers you an added layer of defense against defects or incompatibilities.
2. Pilot new agent software on one domain and post office for at least a week.  
This will allow you to continue your testing without committing to the new software on all servers. It will provide you with an accurate idea of how the new software will work on the rest of your production system.

## Client Upgrades

### Distribution GroupWise Client Updates

#### ZENworks®

ZENworks (and NAL) are the best tools to distribute the Novell GroupWise Client (as well as any other software).

ZENworks for Desktops is a far more powerful tool for software distribution than the auto-update tools included with GroupWise for updating the client software. For example, the GW Auto-update forces everyone on an entire post office to upgrade, whereas you can be much more granular with an application object associated with a group of users or container. When you create application objects for GroupWise, you may choose to include customized registry entries with the address of the ngwnameserver POA.

GW6 SP1 has a set of pre-configured .AOT files for distribution via ZENworks for Desktops. It is located in the <name of GW6 SDD>\client\ZEN folder.

Use ZENworks for Desktops to distribute GroupWise Client updates to all LAN users.

### AutoUpdate and SetupIP

You may also consider using the GroupWise AutoUpdate feature. AutoUpdate notifies users of the availability of new client software that may then be downloaded and installed using either a mapped drive or an IP connection to the SDD.

If you choose to use the AutoUpdate feature of GroupWise, Novell recommends doing so over an IP connection.

Please refer to the [Novell GroupWise SetupIP Client Installation Guide](#).

## **GroupWise Client Code**

Always keep the Novell GroupWise Client code up-to-date. Many performance and stability issues are patched in both the client and the POA engine libraries. Old versions of the GroupWise client may defeat the purpose of a current POA patch. Some features available in GroupWise 6 require that both the client and agents run the same code level.

## **Advance Notice of Updates**

Notify end-users in advance of any GroupWise Client updates. This is common courtesy.

# Novell Directory Services Configuration

## Object Placement

Use these steps for object placement:

1. Place domain, distribution list, resource, and library objects in the same partitions as their administrators.  
This decreases WAN traffic for administration, because users do not authenticate to these objects and the administrators do.
2. Place the post office in the same partitions and container as their users.  
Since all NDS users with a GroupWise mailbox authenticate to their post office, placing the post office object in the same container / partition will lower WAN traffic and GroupWise startup times.

## Trustee Assignments

Use the following steps for trustee assignments:

1. Create organizational roles for GroupWise administrators.  
Administration of complex trustee assignments is greatly simplified if you use organizational roles. Different roles should be created for different types of administrators. Data-center personnel responsible for updating telephone numbers should not have the same roles as administrators responsible for MTA link configuration.
2. Allow GroupWise Administrator to automatically grant users the necessary file system and NDS rights.  
This preference is set from “System Operations” and will ensure that the client can find the POA using NDS.
3. Enable NDS User Synchronization for each MTA and assign each MTA to perform NDS sync for its own domain.  
Do this instead of using a single MTA to scan for NDS changes for multiple domains, which could increase traffic on the network and within NDS.  
For larger organizations with dedicated DS servers, additional MTAs can be created and loaded to provide NDS user sync in a more efficient manner. The MTA on these servers will be associated with all domains in the system for NDS user sync, and the NDS partitions on these servers can be scanned for changes.

## NDS Groups and Roles in the Address Book

Use NDS groups and role objects as addressable commodities in the GroupWise address book. This will lower redundancy for the administrators.



# WebAccess and Wireless

## Planning

Plan the number and location of WebAccess gateways. The number and location of WebAccess gateways is determined in part by the number of post offices and users to be serviced by each gateway. Bandwidth of WAN links and geographic location of users should also be considered. WebAccess gateways should be placed close to the users that use them. In a large distributed system, there may be multiple WebAccess gateways.

## Installation

Dedicate a web server for the WebAccess gateway. This will provide the maximum performance and ability for growth.

A WebAccess gateway should always run on the same server that holds the domain database in which it exists.

## Load Balancing

Load balancing of the WebAccess gateways can be accomplished by specifying gateways at a domain or post office level. This will spread the workload logically over the various gateways in the system. It will also guarantee that the user will go through the gateway that is closest to his or her post office. This configuration is also fault tolerant: if one gateway is down or not responding, it will try to access the post office through another gateway.

Load balancing the Web servers/WebAccess servlets can be accomplished logically based on geographic location or an organizational structure by providing links to various Web servers based on this pre-determined criteria. It can also be done with a DNS round-robin configuration; however, this configuration requires a Layer 4 switch.

## Configuration

**Acceleration**—Novell does not recommend accelerating the WebAccess gateway using a cache program such as BorderManager® or a hardware appliance.

**Fault Tolerance**—Novell recommends running WebAccess in a clustered environment for fault tolerance. Novell also recommends multiple gateways so that if the default gateway is down, you can still access the post office through another gateway.

**Default WebAccess Gateway**—Novell recommends setting default WebAccess gateways for domains and/or post offices if multiple gateways exist in a system.

**Note:** Post office links should always be set to client/server only.

## Maintenance

Use these steps for maintenance:

1. Make sure the most recent code is running on the WebAccess servers.  
This includes service packs for the operating system (NetWare, NT, etc.), the web server software (NetWare Enterprise Web Server, Apache, IIS, etc.), the servlet engine (Tomcat, Novell Servlet Gateway, etc.), and the GroupWise WebAccess gateway software itself.
2. Ensure that purge immediate is set on the following directories used for temporary files:
  - Web Server
  - SYS:\NOVELL\WEBACCESS
  - WebAccess Agent Server
  - WPDOMAIN\WPGATE\<WEBACCESS>
  - Root of SYS Volume
  - SYS:\SYSTEM\GWCACHE

# GroupWise Training

Use the following list for GroupWise training:

1. Provide basic Novell GroupWise training for end-users.  
GroupWise is an extremely powerful collaborative tool. If users only use it for e-mail, they are not likely to be as productive. A little bit of education on calendaring, resource scheduling, proxying, and the use of shared and Find Results folders will help users get the most out of the GroupWise Client.
2. Provide access to the [GroupWise 6 End-User's Guide](#).
3. Provide basic GroupWise Administration Training for System Operators.  
In many companies, the people responsible for day-to-day adds, deletes, and modifications of Novell GroupWise accounts are not the Network/NDS administrators. Due to GroupWise integration with NDS, it is recommended that these types of administrators receive basic NDS and GroupWise training. It is also recommended that all network administrators receive basic GroupWise training.

# System Maintenance

## Corporate E-mail Policy

Create an e-mail policy at your organization that establishes the points below. Be sure to run it through your organization's legal arm to ensure propriety. The following guidelines (in **bold**) will help to create a solid e-mail policy.

**E-mail on the organization's servers is the property of the organization, and the disposition of such is at the sole discretion of management.**

With this policy in place, your e-mail administration team can clean up mailboxes without fear of legal reprisals from disgruntled employees. This sort of policy statement, however, may not be applicable in university or research environments.

**E-mail may not be used for spamming (inside or outside the company), virus alerts, chain letters, and "junk mail" (e.g., "kittens for sale").**

These types of communication are a waste of time and money—especially virus alerts, which seem to be valid but only serve to excite and annoy.

**E-mail should not be used for the wide distribution of large attachments.**

Make your users familiar with the alternatives—send URLs instead of AVI files they downloaded from the Web. Use the Document Management System instead of trying to track document changes through e-mail.

**Only authorized users may send to large groups for official communications.**

Establish an official channel for virus alerts. Give your users confidence in the fact that you are going to be more likely to have the latest information on a virus than they are.

**E-mail may be used for communication with family members and friends.**

Many view e-mail as a perk they are entitled to use in certain ways. Your policy should, however, state that time spent using e-mail for personal purposes should be kept to a reasonable minimum during business hours.

**E-mail will be purged from the corporate system after 180 days.**

Keeping mailboxes lean will improve system performance. As established under Client Options above, users may archive their mail but should be aware of disk space limitations in their archive directories.

## Scheduled Maintenance

Use this list of steps for scheduled maintenance:

1. Check and fix the structure of the information store nightly.  
Create an event (and enable it on each POA) that checks the structure of User, Message, and Document databases each evening during the week. Schedule this operation to run before the nightly backup.
2. Check and fix the contents of the information store weekly.  
Create an event (and enable it on each POA) that checks the structure and contents of User, Message, and Document databases over the weekend. Schedule this operation to run following the Friday night backup. Review the log files Monday morning to determine the health of your message stores.
3. Run Expire and Reduce to enforce the retention policy.  
Run Expire/Reduce on the message store at least weekly to enforce mailbox retention policies.
4. Run Reduce Only to manage database sizes.  
Run Reduce Only on the information store at least weekly to manage the sizes of the GroupWise information store databases.  
**Note:** It is unnecessary to perform a Reduce Only if expire/reduce is run. After expiring, the reduce is automatically run.
5. Leave “Nightly User Upkeep” enabled and set to occur early morning, after midnight.  
Leave the Nightly User Upkeep option on the POA enabled so uncompleted tasks are pushed forward to the next date on the calendar, deleted items are purged from the Trash folder according to the “Empty Trash / Automatic after” setting, and Personal Address Book entries are synchronized with the corresponding System Address Book entries (in case users are moved).
6. Leave Quickfinder Indexing enabled.  
Leave Quickfinder Indexing enabled so Find activities are returned more quickly and less demand is made on the POA for each Find.
7. Lock Cleanup Options to “Manual Delete and Archive.”  
This will force users to choose which items they wish to store in their GroupWise Archives, preventing unnecessary expansion of archive directories.  
Cleanup should be performed via scheduled maintenance and should be done in accordance with your e-mail policy.
8. Lock the archive path to the network “USERS” volume.  
Lock the path to a drive letter that is map-rooted to the user’s home directory so that the setting will correctly apply to all users. You may also choose to place space restrictions on users to discourage abuse of the archive.  
With archives on the network, the administrator has the ability to back up user archives and can run maintenance on them without visiting user workstations. Do not store GroupWise archives on the mail volume.
9. Set mailbox size limits.  
Locking the size of user’s mailboxes allows you to control the size of the information store; users can see the space utilization of their mailbox from the GroupWise 6 client under Tools | Check Mailbox Size.
10. Set message size limits.  
Novell GroupWise 6 allows you to set a limit for the size for both internal (within the GroupWise system) and external (i.e., Internet mail) messages. Again, establishing this policy allows for greater control of the size of the information store as well as messaging traffic.

## Anti-Virus

Novell GroupWise is not as susceptible to viruses as other vendors' products; however, as a messaging product, GroupWise can transport viruses. Novell recommends that customers implement virus protection solutions at every entry point of their network. Viruses sent in from Internet messages pose the greatest threat. Many different vendors have made products specifically written to integrate with Novell GroupWise to protect your GroupWise system from virus-laden messages from the Internet. Please refer to the [Anti-virus/Anti Spam Partner Page](#) for additional information.

## Backup

Use these guidelines for backup:

1. Back up the Novell GroupWise Information Store nightly.  
The information store is everything under the post office directory. This includes the OFUSER, OFMSG, OFFILES, OFWORK and GWDMS directory structures.  
Whatever backup strategy you currently use, consider that many GroupWise database files remain open continuously and may even be in use (written to) during your backup. Your strategy should allow for the capture of these open files. GroupWise 6.5 provides a Target Service Agent (TSA) for open file backups.  
For more information, refer to the [GroupWise Target Service Agent \(GW TSA\)](#) in the Online Documentation.
2. Provide fault tolerance for the primary domain.  
Run Reduce Only on the information store at least weekly to manage the sizes of the GroupWise. Again, there is no need to do this if expire/reduce is running.
3. Back up each domain database nightly.  
Domain databases are part of the administration system, and if they are damaged, they can be rebuilt from the primary domain database. If, however, changes made to a domain database have not been replicated to the primary yet, a simple rebuild may result in the loss of those administrative records (user objects, distribution lists, etc.) Having a recent backup to synchronize these records will make the rebuild more complete.
4. Manually back up the primary domain database prior to and immediately following any major system changes.  
If you are merging systems, adding large numbers of users, or making other dramatic changes, use the DBCopy tool to capture the domain database before and after the changes have been made. This will make it possible for you to back out if necessary.

## Restoration

Use the following guidelines for restoration:

1. One or more servers should be on standby to receive restored backup tapes.  
This will allow for restoration of data without requiring the live system to be overwritten. This is especially useful if old e-mail is subpoenaed.  
Since Novell GroupWise 6 allows for per-mailbox restoration, a GroupWise 6 client would access this server to restore the mailbox. The entire post office would need to be restored to this server.
2. Backup tapes should be restored periodically.  
This will serve as a spot-check of tape viability and will help the administration team establish time frames and procedures for disaster recovery plans.

# Document Management

For more information, refer to the [Document Management Services Guide](#) in the online documentation and see [TID 10066600, “Planning a GW DMS System.”](#)

## Library Placement and Configuration

### Library Placement

Establish libraries on the same post offices as the users who will be using them. Performance will be better if users do not need to search for or retrieve documents across the network. In most organizations, there are only a few users actively creating documents. The additional disk space required for a library on each post office should not cause problems.

Documents may be stored either under the post office library directory or in a separate location known as a document storage area. Carefully plan out the location of your document storage areas. Do not store documents from different libraries in the same document storage area.

### QuickFinder Indexing

Dedicate a server for QuickFinder Indexing heavy-use libraries and post offices. The indexing process is CPU-intensive and may impact Client/Server performance on post offices of even moderate size. A dedicated indexing station can be a workstation-class machine, but it should have a fast network interface and should be on the same LAN segment as the post office. [Consult TID 10066601 “GroupWise QuickFinder Indexing.”](#)

In some cases, it may be necessary to put two network interfaces in the post office file server and run the indexing station on a dedicated segment. This will prevent the indexing process from competing with client/server requests on the network.

After you begin using GroupWise libraries, ensure that you are performing regular backups of your library and document storage areas. It is also important that you back up the NGWGUARD.DB. You never want to recreate the NGWGUARD.DB if you have libraries under that post office.

### End-User Guidelines

Use the Find Results folders instead of creating large numbers of document references.



A hierarchical system of folders with document references in them defeats the purpose of full-text indexing. True collaboration and document management requires “live” updates of folder contents. Only Find Results folders offer this.

Set default sharing rights to allow all users to view the documents you create.

Most documents are created so that others can read them. Setting these rights ahead of time saves work. If a document needs to be secured, default rights can always be revoked when the document is created (or at any time thereafter).