



Novell GroupWise with Network Appliance™ Storage Array

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Novell GroupWise with Network Appliance Storage Array

Novell GroupWise is a complete collaboration software solution that provides information workers with e-mail, calendaring, instant messaging, task management, and contact and document management functions.

Current Version - GroupWise 7

GroupWise 7 Supported Platforms	Supported File Systems	VMware ESX	NetApp Snapshot™ Support	NetApp Snapshot Method
NetWare 5.1 and 6.0 Domains and post offices can be located on NetWare 3.12 and NetWare 4.2 servers, although the agents cannot run there.	NSS	Supports all GroupWise operating system platforms	Supported only by dismounting the NSS volume before taking the Snapshot copy to guarantee that the data is quiesced.	<p>NetApp does not have an agent for NetWare or SUSE Linux® to quiesce the file system prior to taking a Snapshot copy. Therefore the following steps apply to both OSs.</p> <ul style="list-style-type: none"> • Unload GroupWise • Dismount the volume • Take the NetApp Snapshot copy • Mount the volume • Load GroupWise
NetWare 6.5 and 6.5 Open Enterprise Server (OES)	NSS	Provides the ability to take a quiesced snapshot of the Guest system without disruptions.	<p>Unless a third-party tool is used, databases like GroupWise must be unloaded to guarantee that the data is quiesced prior to a NetApp Snapshot copy.</p> <p>Some customers use a Perl Script to initiate a NSS Pool Snapshot copy.</p> <p>The Perl script option is currently not supported.</p>	
SUSE Linux Open Enterprise Server and SUSE Linux Enterprise Server 10	Reiser, NSS		<p>Supported only by dismounting the Reiser volume before taking the Snapshot copy to guarantee that the data is quiesced.</p> <p>NSS volumes are not supported by NetApp</p>	

GroupWise 7 Supported Platforms	Supported File Systems	VMware ESX	NetApp Snapshot™ Support	NetApp Snapshot Method
Windows® 2000 Server and Windows 2003 Server	NTFS		Supported only by dismounting the NTFS partition before taking the Snapshot copy to guarantee that the data is quiesced.	

GroupWise Information

For additional information on hardware configuration requirements, refer to the Novell GroupWise 7 documentation at www.novell.com/documentation/gw7.

For GroupWise product information, refer to www.novell.com/products/groupwise.

NetApp Snapshot Copies with VMware ESX

The following two technical documents discuss the virtual storage solutions that reduce cost, increase storage utilization, increase fault tolerance, and address the challenges of backing up and restoring VMware ESX Server environments by using Network Appliance technology:

- “Using Network Appliance Snapshot Technology with VMware ESX Server”
www.netapp.com/library/tr/3393.pdf
- “Network Appliance and VMware ESX Server 3.0: Building a Virtual Infrastructure from Server to Storage”
www.netapp.com/library/tr/3515.pdf

Future Versions of GroupWise

In GroupWise **Aspen**, expected to be released in the fall of 2007, Novell plans to further team collaboration and provide new data backup capabilities. Novell will also focus on enabling more partner applications. To date, Novell partners have taken advantage of trusted application programming interfaces (APIs) to create more than 150 add-on products that run efficiently with GroupWise.

The focus for GroupWise **Cedar** is to bring the rich functionality of GroupWise to users on any platform, anywhere, at any time; to improve user experience; and to increase administrative functionality and to grow scalability. This release will build on GroupWise 7 and Aspen for team-enabled collaboration and simplified administration.

NFS File System

The Novell NFS Gateway does not support the Network Lock Manager Protocol and sparse files, so database files are not supported.

For additional information, refer to www.novell.com/documentation/nfsgynw65/readme/readme.html.

How the NetWare Pool Snapshot Function Works

The NetWare pool snapshot function uses copy-on-write technology to enable the instantaneous block-level snapshot of a pool, while requiring only a fraction of the storage space of the original data pool. A pool snapshot does not save an exact copy of the original data pool. Instead, the snapshot is a metadata-based copy that stores only the blocks of data that changed subsequent to the instant of the snap. The snapshot combines the metadata and stored block data with the unchanged data on the original pool to provide a virtual image of an exact copy of the data at the instant the snapshot was taken, plus any end-user modifications made to that snap.

Before the snapshot can occur, the snapshot function must render the original pool quiescent by briefly halting all data transaction activity when current transactions complete. It temporarily prevents new writes to the pool and flushes the file system cache to make the pool current with existing writes. Any open files are seen by the snapshot feature as being closed after these outstanding writes occur. Then it takes a snapshot copy of the now-stable pool and allows data transaction activity to resume.

After the snap, the snapshot function continues to track the transaction activity in the original pool. It determines which blocks in the original pool will change as data writes are made to the original pool. It suspends the write activity while it copies the original block data to the designated pool where it stores the pool snapshot, referred to as the *stored-on pool*. Then it allows a write to that block in the original pool. This keeps the snapshot metadata consistent in time with the exact instant the snapshot was taken.

As the original pool changes, the snapshot can grow to the size of the stored-on pool. The average disk space requirement for a pool snapshot is 10% to 20% of the original pool size. The actual space depends on how many writes are made to the original volume and the time period that the snapshot exists before it is archived or deleted. Currently, up to 500 snapshots can exist on any given stored-on pool. The more snapshots you must traverse to find data, the longer it takes to retrieve the data, and the slower the perceived response time to the user.

Network Appliance does not have an agent that can be installed on either Novell NetWare or SUSE Linux to quiesce the file system prior to a NetApp Snapshot copy. As a result, many Novell customers ask, “What is the supported method to take a NetApp Snapshot copy?”

NetApp has published a document that covers the various configurations Novell customers may use. As a caution, the document is considered a Proof of Concept as an option that a customer could use only after their configuration is certified with a NetApp Policy Verification Request (PVR). Network Appliance does not support the use of the Perl script mentioned in the document, because it has not been certified.

- “Novell NetWare and NetApp NAS: NetWare and eDirectory Solutions Using NAS Technologies”

www.netapp.com/library/tr/3343.pdf

Factors to Consider in Recommending the Number of Users Per GroupWise Post Office

There are four main considerations in recommending the number of users per post office:

- **Performance.** A server's ability to handle the Post Office Agent (POA) requirements decreases as these recommendations are exceeded. This includes TCP/IP (client/server) requests, thread usage, processor demands, and disk I/O.
- **Manageability.** This includes ease of managing users, libraries, distribution lists, and NDS rights.
- **Maintenance.** The time it takes to run GWCheck, back up and restore post office data, and perform general maintenance routines.
- **Disk space.** The amount of space required for database growth and attachment blob areas.

GroupWise 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 (for example, 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.

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.

Factor	Description
Backup	Backup engine, target service agents, and device. When using NetApp Snapshot, backup time is no longer an issue because the Snapshot copy takes just seconds.
Restore	Restore engine, target service agents, and device. When using NetApp SnapRestore®, restore time is no longer an issue because the restore takes just seconds.
Maintenance	Database maintenance application: mode, location (client versus 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 (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 7 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 300MB.

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 and Discussions. Typically, medium users send 10 messages and receive about 25 messages per day and have total mailbox sizes of up to 200MB.

Light

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

Mailbox Access Modes**Online**

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

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 used only 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 room to grow into the full collaboration that GroupWise offers.

Novell recommends that the number of active online-mode users per post office 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.

Message Transfer Agent (MTA) Memory Requirements

These MTA memory requirements are in addition to memory needed for the operating system.

- For a small system with 3 to 5 direct links, 10MB is the minimum required.
- For larger systems with more than 3 to 5 direct links, add the following per link to the 10MB minimum required:
 - Light to moderate traffic (fewer than 50,000 messages routed per day) add .2MB.
 - Moderate to heavy traffic (more than 50,000 messages routed per day) add .5MB.

Novell recommends that you exceed the minimums rather than just meet them.

Post Office Agent Memory Requirements

The memory requirements for a POA vary based on the number of active users. The total number of users in the post office is irrelevant. Again, these numbers are based on the assumptions just described.

- 100 active users: 94MB additional memory
- 250 active users: 208MB additional memory
- 500 active users: 232MB additional memory
- 700 active users: 274MB additional memory

Disk Space Requirements: The domain directory requires a minimum of 100 to 200MB of disk space for the domain database. In addition, you should plan for an additional 1GB or more of free disk space for the temporary storage of messages when links are down.

Disk Space Requirements: The post office directory holds users' messages and attachments, so you should plan a minimum of 5MB per user. Use Novell ConsoleOne to specify the maximum size of a user's mailbox.

Hosting a GroupWise 7 System on a NetApp Storage Array

Let's assume that you are creating a new domain, and that you need to support 4,000 users.

The users are categorized as heavy users, with 100% concurrency, and have configured the GroupWise client in caching mode (the default mode). To allow for growth and configure for performance, you need to create four POs and provide 300MB per user's mailbox. Here's what this configuration looks like.

GroupWise component	Name	Users	Space	NetApp Space Required iSCSI or FCP with Snapshot (120% Res)* with FS off
Domain	NetApp	n/a	1.1GB	2.42GB
PO 1	Sunnyvale1	1,000	300GB	660GB
PO 2	Sunnyvale2	1,000	300GB	660GB
PO 3	OrangeCo1	1,000	300GB	660GB
PO 4	SanDiego1	1,000	300GB	660GB
Library 1	SValeLib1	4,000		
Total Space		4,000 users	1.2TB	2.642TB

* With NetApp Data ONTAP® 7 and later, fractional space reservation can be used. This means that rather than allocating a predetermined amount, a percent can be used, and when the volume reaches the watermark set, either the volume can automatically be resized or the oldest Snapshot copy can automatically be deleted.

www.netapp.com/library/tr/3348.pdf

Rules of Thumb:

- ▶ A user's mailbox grows by an average 15 to 20 messages per day.
- ▶ Approximately 20% of messages have attachments.
- ▶ Average size of message with attachments = 180 to 200KB.
- ▶ Average size of message with no attachments = 5KB.
- ▶ Average user sends/receives 60 to 70 messages per day, and deletes about 70% of them within 1 month.
- ▶ Average number of sharers of a new message is 2.4.
- ▶ A typical user's GroupWise mailbox has 60% to 70% of messages older than 60 days.

Moving GroupWise to Another Platform

The Post Office Agent (POA) and the Message Transfer Agent (MTA) are always installed together. The agent installation directory differs depending on the platform where the agents are installed. The following two links show the GroupWise file structure on Windows, NetWare, and Linux:

- www.novell.com/coolsolutions/feature/17192.html
- www.novell.com/documentation/gw7/gw7_tsh3/index.html?page=/documentation/gw7/gw7_tsh3/data/bs8virf.html

Moving the GroupWise database is the easy step. The next step is to bring high availability to GroupWise on a Microsoft® cluster:

- www.novell.com/documentation/gw65/index.html?page=/documentation/gw65/gw65_interop/data/am02pcn.html