

# GWAVA Reload Technical White Paper

## What Reload Is:

- Hot Backup System for GroupWise post offices and domains
- Disaster Recovery Solution for GroupWise post offices and domains

## What Reload Enables:

- **Accessing a backup** of a post office or domain **within 2 minutes**
- Users access the Reload backup by connecting to the Reload server with their GroupWise client (all platforms are supported, **no client software snapins are needed**)
- The most recent post office backup can be made available to users, without any intervention from the GroupWise administrator
- **Push-Button Disaster Recovery** (one button to push in a web interface), that enables a GroupWise Post Office or Domain to fully function off of the most current backup of that post office or domain
- Combined with the GWAVA Reveal product, Reload becomes an easy to use time-machine of sorts for the GWAVA Reveal product

## What Makes Reload Unique from Other Backup Solutions?

- **No software** needs to be installed to GroupWise servers
- Reload backs up **all server platforms** that GroupWise runs on, the Reload server software runs on the Novell SUSE Linux platform
- No e-mail can be purged before it is backed up by Reload
- Each backup of a GroupWise post office is effectively a full backup, however the amount of data that is replicated and stored is only 12% of the size of the post office
- Reload Incremental backup speeds are **faster** than other backup solutions
- Reload Full Backups require no network bandwidth to perform
- The Reload administrator can load a post office backup set, or enable Disaster Recovery Failover from their wireless device such as a BlackBerry, or any device with an SSH client

## Technical Specifications for Reload

- Reload supports GroupWise 6.5 and GroupWise 7
- The Reload server must be SLES9, SLES10 (32-Bit or 64-Bit) or OES Linux
- The Reload server must have disk space available according to the following calculations:

- 2.5 X size of post office for each week of hot backups + 1 extra week
  - Example: 10 gigabyte post office, two weeks of hot backups = 75 gigabytes of space needed on the Reload server
  - 1 X size of the domain database for each backup of a domain
- Installing the Reload software package is one command
  - Each Reload server can backup up to 20 post offices and 20 domains
  - Most customers will want to keep their Tape Backup solution for long-term backup purposes. Reload can enhance existing Tape Backup solutions, while significantly reducing the need to use the Tape Backup system for restoration of backed up data.

### **How a Reload Post Office Backup Works**

A GroupWise post office has three major data locations. They are the OFUSER, OFMSG and OFFILES directories. The contents of the OFUSER and OFMSG directories are always changing. The contents of the OFFILES directory are not changing; files are either added or deleted from the OFFILES directory. Every Reload backup set contains the entire contents of the OFUSER and OFMSG directories, but only the additions to the OFFILES directory. The previous files that were backed up from the OFFILES directories are simply referenced through a technology available on the Linux platform called a "symbolic link". The structure of a GroupWise post office backup on the Reload server looks and feels exactly like a normal GroupWise post office directory structure. So the GroupWise POA functions normally against the backup, even though the size of the backup is only 12% of the total size of the post office.

The Reload Backup Agent gathers the data from a GroupWise post office through a client mapping to the post office being backed up. The Reload Backup Agent can scale up to 11 simultaneous threads accessing the GroupWise message store in order to determine and backup all changes to the message store. Because of this model, customers are able to accomplish speeds in a high-speed local network of the following:

NetWare post offices: 3 gigabytes per minute. Or for example, a GroupWise post office that is 250 gigabytes in size is backed up in 85 minutes per night.

Linux post offices: 6 gigabytes per minute. Or for example a GroupWise post office that is 60 gigabytes in size is backed up in 10 minutes per night.

Full Backups in Reload, which wrap up a backup period, are unique in that they do not take ANY bandwidth to accomplish. The reason for this is that all data needed for a Full Backup is actually on the Reload server, because it has been

obtained through the Standard (Incremental) Backups. So in fact, when a Reload Full Backup is created, data is actually just copied on the local Reload server, no data is pulled from the live server housing the GroupWise post office. Outside of the initial Reload backup for a GroupWise post office, the notion of a full replication of the post office to the Reload server is, well . . . an old-fashion notion attributable to other backup solutions.

The speed differences in Reload allow for the following:

1. Reload Standard (Incremental) backup windows are much smaller than with most traditional backup solutions.
2. Reload Full Backups can be scheduled even during peak business hours, because they do not use bandwidth, or require exclusive access to the GroupWise post office message store.

### **Problems Backup Software Has Backing Up GroupWise Post Offices**

First off, let's clarify, as we explain the "problems" with backing up a GroupWise post office, the problems are not unique to GroupWise, they are specific to any set of data that is in a constant state of change.

A GroupWise post office is in a constant state of change, even during non-peak hours. This poses a problem for most backup software in that in order for the backup to truly be considered a backup, the backup software plays a bit of a game trying to get the changes to the message store that may have taken place during the backup period. And in large measure, backups get almost all the changes that happen to a GroupWise post office during the backup. However, in order to accomplish this, the backup software wastes time taking a second pass over the GroupWise post office, trying to catch items that came in during the backup window. Other backup solutions attempt to exert exclusive locks on GroupWise databases in order to ensure a consistent backup. Because of this, many backup solutions are in-efficient, problematic, and some backup solutions cannot be considered as entirely accurate.

Most GroupWise systems are on NetWare. However, many customers are migrating, or planning to migrate their GroupWise systems to the Linux or Windows platform. On the NetWare platform, many backup solutions are using the NetWare TSA technology. The TSA technology is not fully available for the Linux platform, and is not available at all on the Windows platform. The TSA technology has it's benefits (speed), but it also has it's limitations (not cross platform, TSA abends etc). Because Reload uses a unique approach to backups with symbolic links along with APIs that are GroupWise based, it accomplishes significant speed that is even greater than TSA backup speeds. This ensures that

all GroupWise customers will have the benefits of TSA-like backup speeds, no matter which platform they choose to run their GroupWise post offices on.

Another thing to consider is this. Does your current backup solution catch messages that may be deleted and purged from the trash, or archived, on the same day the item was received? Most backup solutions cannot claim such a feat. However Reload does do this. Reload uses the SmartPurge APIs that allow for the following:

- All user databases have an internal backup timestamp
  - Every message that is received has a timestamp
  - When the GroupWise SmartPurge feature is enabled from within ConsoleOne, messages that have a timestamp after the backup timestamp, cannot be purged. Messages that are archived, do archive, but a copy of the message is kept by GroupWise in the user's trash folder.
  - Reload advances the internal timestamp of user databases to the time that is just prior to when the Reload backup job began. By using this method the following is accomplished:
    - The Reload backup agent only needs to take one pass at a message store, because messages that came in during the time in which the backup was running, can be caught at the next backup period.

## **Disaster Recovery**

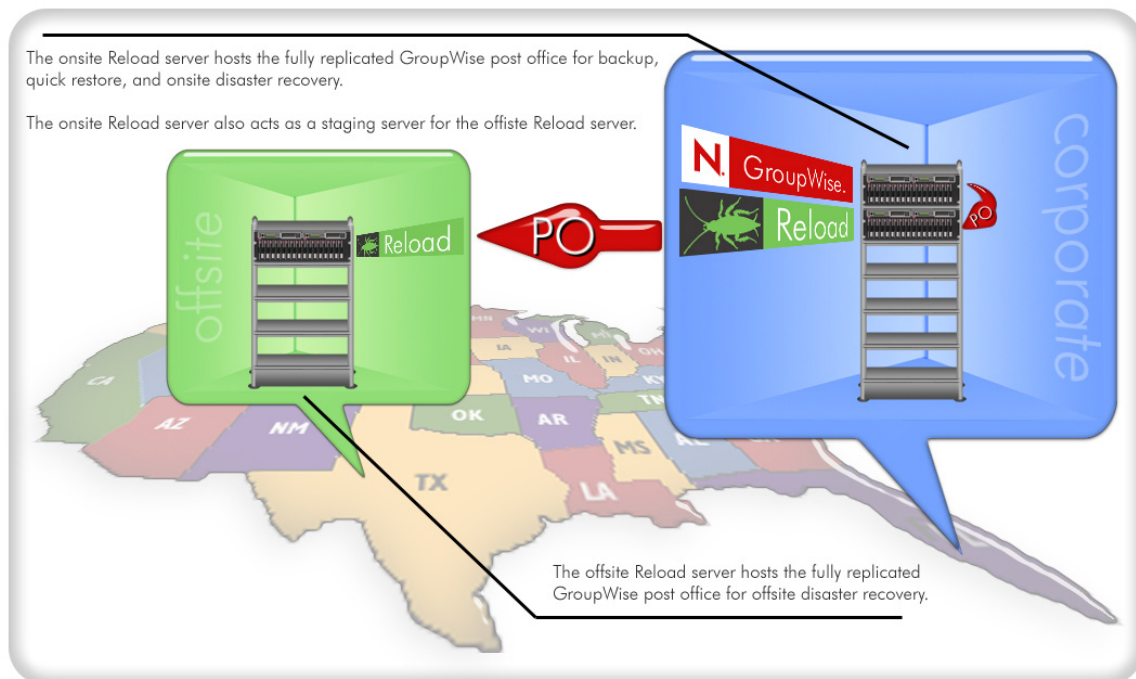
There are two different kinds of disaster recovery scenarios to consider, and plan for. They are:

- Server Disaster
  - Disk sub-system failure
  - Other hardware failure
  - Software failure
  - Human error, someone deletes a post office or domain directory structure, or a portion thereof
- Site Disaster
  - Extreme weather
  - Flooding, fire, earthquake, man-made disasters

Generally a Server Disaster is the most likely scenario, however due to increased destruction due to both natural and man-made causes, Site Disasters are an increasing threat.

In the case of a Server Disaster, the Reload server becomes the live server for a GroupWise post office or domain. In the case of a Site Disaster, if you have configured what's called a "Remote Reload Profile" on a Reload server at an off-site location, then you have the most comprehensive Disaster Recovery scenario. Figure 1 illustrates this scenario.

**Figure 1**



If your organization does not have a second physical facility, you could consider using the Reload ASP services of a service provider, such as Viable Solutions (<http://www.viable-solutions.com>) or you could consider creating a sister-site with another Reload customer.

## Post Office Disaster Recovery

Because every Reload Backup is a Full Backup of a GroupWise post office, it can be used immediately as a "live" post office. Reload has a "Live Mode POA" that is a GroupWise POA that accesses the most current backup for a particular post office. When the Disaster Recovery "FAILOVER" button is pushed, the Live Mode POA is launched, and ready to take GroupWise client connections, along with

communicate with the GroupWise MTA etc. Furthermore, when Disaster Recovery is enabled, the Reload server will not attempt to pull backups from the original server during the time in which the post office that is in Disaster Recovery mode is being hosted on the Reload server.

Switching to the Reload server for Disaster Recovery purposes really is as simple as pushing a button. You must also make sure that the GroupWise client knows how to connect to the Reload server. If you are using DNS to configure your GroupWise client connections to the GroupWise POA, then making the switch to the Reload server is a simple two step process:

1. Enabled Disaster Recovery Failover on the Reload server
2. Switch the DNS entry indicating that the GroupWise POA for that particular post office should point to the IP Address of the Reload server

Generally in a Disaster Recovery scenario, repairing or replacing the original server is

### **Domain Disaster Recovery**

Disaster recovery of a GroupWise domain is just as simple to enable as a post office. However, in the case of a GroupWise domain that owns a GWIA for example, you will need to perform some additional design in your existing system to allow for a GWIA on the Reload server to function. This is explained further in the Reload documentation. Furthermore, if you need to administer your GroupWise system, you need eDirectory access also. So when considering your overall disaster recovery plan, consider that an off-site location for example will need to have a server in it that houses eDirectory replicas. You may choose to host these eDirectory replicas on the same Linux server that is hosting Reload.

### **After Disaster Recovery**

Once the disaster recovery situation has been remedied, and a production server is ready to host the GroupWise post office or domain, you migrate the data from the Reload server back to the production server. Reload has a migration agent that will migrate the data from the reload server to a production server. Configuring a migration is a simple wizard driven process, within the Reload Administration interface, it's not a side utility or manual process. The migration agent for post office migrations can perform a Pre-Migration which copies over most of the data from the post office on the Reload server, prior to the time that you bring down the Live Mode POA on the Reload server. The Full-Migration is then run with the Live Mode POA down. Since the Pre-Migration was done, the Full-Migration goes much faster which helps to limit downtime.