

Beginfinite Inc.

GWAVA Retain

For GroupWise

Linux Install Guide

For version 1.5

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Technical Support

If you have a technical support question, please consult the GWAVA Technical Support section of our website at www.gwava.com.

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Intended Audience

This manual is intended for IT administrators in their use of Retain for GroupWise or anyone wanting to learn more about Retain for GroupWise. It includes installation instructions and feature descriptions.

Organization

The guide is organized into two sections, Overview and Installation. The Overview section covers all the basic information needed to plan where to implement and install the different parts of Retain in your System. The Installation section briefly goes over the necessary steps to install Retain.

General use and management of Retain is covered in the User's Guide, please read that guide for setup and configuration steps and information.

IMPORTANT NOTE:

Current Retain 1.0x Customers:

There is a schema update between 1.0 & 1.5 which takes place the first time Retain 1.5 is run after an update. With large databases, the update can take hours. WHILE THE DATABASE SCHEMA IS BEING UPDATED, THE WEB CONSOLE WILL BE UNAVAILABLE. **DO NOT INTERRUPT THE SCHEMA UPDATE OR DATABASE CORRUPTION MAY RESULT** Retain will write to the Retain Server log that a schema update is needed and then performs the update. Retain also warns, in the log, if any issues occurred, and lists them. Otherwise a successful schema update is logged, and Retain proceed to complete its startup. The Retain Server logs are nested with the Tomcat 5 logs, which differs depending on installation source and platform. The most common locations are:

Windows: C:\Program Files\Apache Software Foundation\Tomcat 5.5\logs

SLES 10.x /srv/www/tomcat5/base/logs

(OES2 on Linux may change this location.)

Overview

Retain is GWAVA's long-term archiving solution and retention system designed specifically for Novell GroupWise 7.0.1 and higher. Retain uses a web-based, centralized management system to schedule and configure archive jobs. Retain can work with GroupWise retention and purge systems and settings and is designed as a cross-platform solution with full auditing built in.

What Retain does

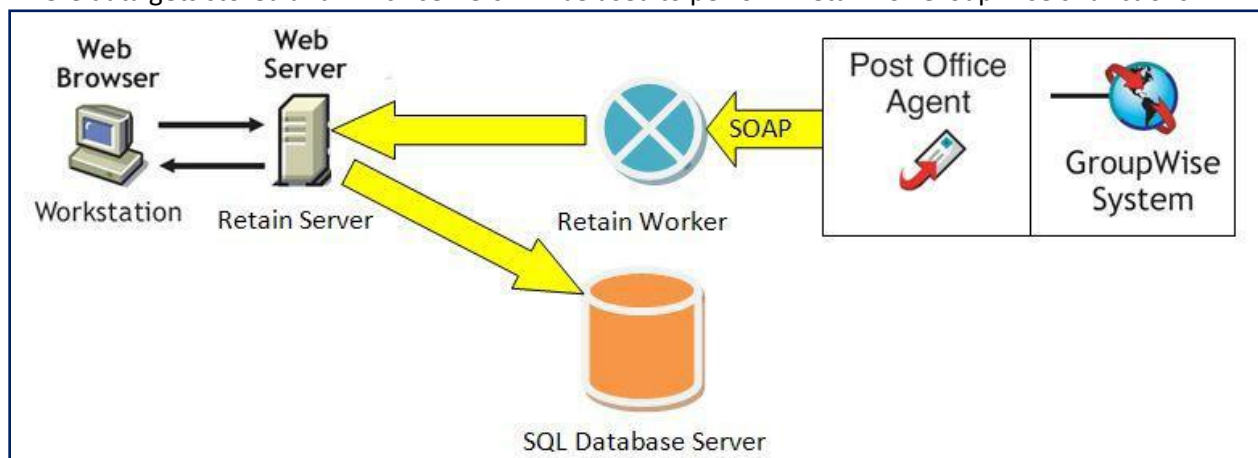
Retain provides a service of long-term storage of data as well as providing search, retrieval, and review services for retained messages. Retain is NOT a backup or emergency restoration system. Retain dredges messages from GroupWise post offices and stores them for long-term reference. Users may log in and review their personal archived mail and search through it.

How Retain works

The Retain Worker process uses *SOAP* and a trusted application key to collect GroupWise data as defined in a specified profile and according to a defined schedule. This data is handed to the Retain Server which in turn stores the collected data in an administrator-defined location. Users log in to the Retain Server to search through and access their archived messages. User rights are managed by the administrator.

Architecture

Retain for GroupWise consists of three main parts which can be installed on the same server or they can be spread out across different servers. This gives the administrator enormous flexibility in choosing where data gets stored and which servers will be used to perform Retain for GroupWise's functions.



- **Retain Server:** This is the heart and soul of Retain for GroupWise itself. All functions are controlled from the Retain Server. The server also manages the Retain Worker and stores its data in the database server. Usually there is only one Retain Server per system.
- **Retain Worker:** There is at least one per system, usually installed on each computer running a GroupWise Post Office Agent. (GWPOA) The worker does the actual data collection work. The collected data is handed to the server. The server stores the data in a database.

- **SQL Database Server:** This is an SQL server where Retain for GroupWise stores the collected data. It is not actually part of Retain for GroupWise itself. Retain for GroupWise was designed to support many different databases. The default is MySQL 5.0, but Retain also supports MySQL 5.0, Oracle 10 and 11, MS SQL server 2000, MS SQL server 2005, and Postgres 8.2+

Installation, maintenance, tuning and backup of the database is the customer's responsibility.

Best Practices for Component Placement

Retain for GroupWise components communicate via TCP/IP. Placing all the components in the same server will yield the best communication speed. However, this is impractical in a large scale environment. Thus, you must balance the performance of the components on the physical servers with the speed of the network links joining them.

How Retain Stores the Archives

Retain for GroupWise uses a hybrid data storage approach. The database contains all the metadata, folder structure and attachment information but does not hold the actual message text or actual attachments. These are stored on the file system. Data is hashed using an SHA-256 algorithm which can be used to detect tampering.

Other components that Retain for GroupWise depends on:

The following items must be ready before you install Retain for GroupWise's core components.

- SuSE Linux Enterprise Server 9 SP3+, OES Linux 1.0 SP2+, OES 2, SuSE Linux Enterprise Server 10
- Novell GroupWise
- Apache Web Server OR Microsoft IIS
- Sun's JDK or JRE
- Apache Tomcat Application Server
- SQL Database for storage (MySQL 5.0, Oracle 10/11, MS SQL 2000/2005, or Postgres 8.2)

System Requirements

The hardest part about installing Retain is preparing GroupWise and your server(s). You must first decide *where* you want everything installed. Once the support and core components are installed, using Retain is the same no matter what platform it is installed on. You may spread out Retain's components on different servers or run them all on one.

Minimum System Requirements

- Pentium 4 (or higher) at least 1.0GHz
- 1 GB of Ram (for the Server) 64 MB of Ram (for the Worker)
- Tomcat 5.0x (bundled with Linux)
- Apache 2.0x (2.2 for SLES 10.1 and OES 2)
- MySQL 5.0x (or alternate supported database version)
- Java JDK or JRE 1.42 (bundled with Linux)
- As much storage space as system requires. (see [Estimating storage requirements](#))

Suggested Requirements

- 3 GHz or better Processor (Dual-Core recommended)
- 2 GB of system Ram or more installed
- 1.5 GB Ram free for Retain Server
- 160 MB Ram free for Retain Worker

Supported Linux Versions:

- Open Enterprise Server Linux 1.0 SP2+
- Open Enterprise Server 2 Linux
- SuSE Linux Enterprise Server 9 SP3+
- SuSE Linux Enterprise Server 10

Novell GroupWise Requirements:

- Version 7.0.1, 7.0.1IR, or higher.
- 7.0.2 is recommended for bug fixes and performance improvements.
- SOAP port must be enabled on all POAs to be scanned for messages.
- SSL is ok, but costs significantly in performance.

Server hardware, memory, and storage

At a minimum the Retain Server component must be installed on a 2 GB RAM machine, with 1 GB RAM reserved exclusively for the Retain Server. (applies to all platforms). In addition to base memory requirements, Tomcat will require memory proportional to the amount of users on your Retain Server. Please see the section on tuning Tomcat for details.

- ***Tomcat must be adjusted prior to running Retain for GroupWise. Without adjustment, Tomcat can run out of memory, causing it to crash. This will disable all web applications that depend on it. Please see the section on memory tuning for Tomcat.***

CPU should be **at least** a Pentium 4 or higher, **at least** 1.0 GHz. *The faster, the better.*

- ***A considerably more powerful CPU, such as a dual core 3+ GHz, is highly recommended.***

Disk storage needs are diverse and vary widely from system to system due to mail flow and type of mail in the respective system. Retain for GroupWise compresses data as it stores, much like GroupWise does. So the storage requirements will be similar to GroupWise. Bear in mind however, that storage requirements are dependent on WHAT you decide to store and how much data you add to the GroupWise system as time moves forward. Remember that Retain for GroupWise storage is cumulative and nothing is ever lost. Generally, assuming you will store “*everything*”, the initial storage requirements will be 100% of your post office size. If you want an idea of how much more you will need as time goes on, you will have to factor in how much your post office has grown over time and deduct how much is generally pruned or deleted from GroupWise.

2 TB Storage Limit – File System Considerations

It is important to consider that some file storage systems have a limit of 2 TB. If your data storage needs will exceed this amount, please choose a file system that can accommodate this. This is something you should verify on all parts of the storage system you choose, from the hardware on up. If you believe your data storage requirements will exceed 2TB, you may wish to consider an enterprise-class storage subsystem like a SAN. Many excellent choices exist in the marketplace. Be sure your chosen platform for Retain Server can use it. This is a function of the operating system. Windows server 2003 can manage more than 2 TB of storage, but required special partitioning to accomplish this task.

Supported SQL Database Servers

MySQL 5.0x

Oracle 10/11

MS SQL Server 2000 / 2005

Postgres 8.2+

Backup and Restore of Database and Retain

- Backup and restore of the SQL database is your responsibility and is beyond the scope of this manual.
- Retain for GroupWise has built-in routines to backup its indexes and configuration database.
 - Your backup strategy should focus on these backup files. Doing this, you can back up the system while Retain for GroupWise is running.

Known Incompatibilities

The following are systems known to be incompatible with Retain for GroupWise. DO NOT USE THESE on the same server as Retain for GroupWise.

- **Apache 1.x** – Retain for GroupWise will NOT function with Apache 1.x
- **MySQL 4.x** – DO NOT USE THIS; it will cause data corruption. Use only MySQL 5.x and above.
- **iFolder 3.x** – iFolder 3.x and Retain for GroupWise must NOT be used on the same server. Disruption to the Retain Worker will result.
- **GroupWise WebAccess** – only incompatible if using Microsoft IIS for running Retain for GroupWise
- **Retain cannot access mailboxes with either of the following set**
 - Disabled/Expired account
 - Limited client license

Novell will be addressing the limited client license issue in GroupWise 7 SP3.

Design Considerations

Retain for GroupWise is designed to be as flexible as possible, giving you choices as to where to install its components. Here are some points to keep in mind when deciding where to put everything.

SQL Database Server

- Where to place it in the network? The faster the network connection the better. Local installation gives the best communication speed, but it's usually unrealistic to do so. In a large system, you might have the database on a server by itself for performance or security reasons. Then, network speed and reliability become key considerations.
- Network link between the Retain Server and SQL Database Server must be speedy and reliable.
- **MUST SUPPORT UTF-8 character set**, and collation (MySQL 5.0x is an example of this).
- Database will have to be manually created by the administrator, and a user account assigned with rights. See the MySQL section included below. (Appendix A)
- Storage requirements: Roughly equivalent to your cumulative POs, minus OFFILES and OFINDEX.
- Backup, Clustering, Tuning: See your SQL Database Server manual. **This is the customer's responsibility.** Tuning an SQL Database Server can make huge performance differences.

Retain Server

- Preferably installed on the same box as the POA for communications speed, reliable address book caching and authentication. This POA can be a low usage one.
 - In a larger installation, you might create a secondary domain with a dummy post office just for the purposes of speeding up the address book caching and user lookups.
 - The default POA should be highly available. A special POA just for this is a good idea.
- CPU requirements are high. The bigger and faster the better.
- Storage requirements: Approximately the same as your GroupWise Post Offices, assuming you are archiving "everything". See Appendix C for more information.
- Backup and Clustering: Backup of indexes and internal database may be done automatically. Attachments can be safely backed up manually.
- We recommend other web applications such as GroupWise WebAccess or iManager NOT be installed on this same server.
- iFolder 3 must NEVER be installed on the same box as Retain Server.

Retain Worker

- The piece that actually grabs data on a scheduled basis from the POAs is the Retain Worker. It then passes this data to Retain Server.
- Requires a reliable, speedy network connection between Retain Server and Retain Worker.
- Requires a reliable, speedy network connection to Post Office Agents being accessed.
- How many and where? Local to the SOAP POA has its privileges and is recommended. That way you have maximum network throughput and don't need SSL at the SOAP POA. We then compress what we send to the Retain Server. So often one per POA and locally placed is better. If you run more than one POA on the same server, you will encounter a long-standing Novell bug. You will have to manually edit the PO redirection tables. Novell doesn't recommend more than one POA on a server for a variety of reasons. You can have more than one Worker on a server but one worker will handle only one job at a time.

- DO NOT put iFolder 3 on a Retain Worker machine.
- To reiterate, it's recommended to put the Worker on the same server as the POA it dredges for performance reasons.

GroupWise Address Book

Retain for GroupWise gathers mail from known users. Users known to GroupWise are stored in GroupWise's **System Address Book**. Retain for GroupWise caches this information locally. Often, the address book needs to be updated as users are added. The Retain Server component NEVER deletes a user from the cached address book.

Over time, Retain for GroupWise will know about all GroupWise users on the system, both current and past.

Because Retain for GroupWise stores past users in its cached address book, it can distinguish between two users of the same name. For example, "John Smith" will be recognized as a different user from "John Smith" who worked at the company six months ago.

GroupWise

- SOAP MUST be enabled at all Post Office Agents being contacted by Retain Worker.
- SSL must be universally on/off at all SOAP Ports. One or the other, but not a mixed state. We can always change from plaintext to SSL, but not the reverse downgrade. However, it costs in performance. SSL in general is VERY performance intensive. Therefore we recommend leaving SSL off, and having a Retain Worker installed local to each POA in question.
- During the setup wizard, you'll need to generate a **Trusted Application Key** on a Win32 workstation with full rights to the primary domain.
- (optional) Retention and/or Smart Purge flags enabled.
- It's recommended that access by Retain Worker occurs at off hours, to avoid overloading the Post Office Agent.
- Address Book caching is recommended every 24 hours.

Tomcat

- Normally you can connect to Tomcat directly via port 8080 on all platforms except NetWare. This is a good diagnostic.
- **Tomcat memory usage must be fine tuned.** This cannot be stressed enough. Default values are insufficient for normal operation of Retain for GroupWise. See [tuning Tomcat section](#), below.

Installation

Preparing Your Server(s)

The general steps to preparing your server are:

- 1) Java (JDK)
- 2) Apache
- 3) Tomcat
- 4) SQL Server
- 5) You're ready to install Retain for GroupWise core components.

Linux

Applies to: SuSE Linux Enterprise Server 9 SP3+

Java

SLES 9 features JDK 1.42 (type "java2" in YAST). This can be installed explicitly via YAST. However installing Tomcat (see below) normally does this automatically.

Apache

Apache Web Server 2.0 is included. You can install Apache 2.0x via YAST (apache2). Then go to Network services, and activate HTTP SERVER to run on boot. You'll also want to make sure mod_jk is installed via YAST (apache2-jakarta-tomcat-connector). *** **Apache 1.3x is not supported**. Installing the OES Web Services as part of the OES install probably pre-installed Java, Apache (including mod_JK), and Tomcat 4.1 for you. (In YAST, the latter appears as "novell-tomcat4"). Double-check all this via YAST.

Tomcat

Apache Tomcat 5.0x is included with SLES 9 and can be installed via YAST (jakarta-tomcat). This is the only version supported on SLES 9. The SLES 9 Tomcat 5 instance is recommended and used by default if it has been installed using YAST.

SQL Server

Retain requires a supported SQL server connection. Supported SQL servers are: MySQL 5.0, Oracle 10/11, PostGres 8.2+, or MS SQL Server 2000/2005.

SQL Servers

A MySQL quick start guide is included as a courtesy, if you prefer to use a different database engine, it is your responsibility to find the proper installation procedures and documentation from your chosen database vendor.

MySQL – WARNING: MySQL 4.x is provided with this version and it is installable via YAST. Do NOT use it; it is NOT compatible with Retain for GroupWise and will corrupt your data if used. Uninstall MySQL 4, and get MySQL 5.0x MySQL 5.0 needs to be downloaded and installed.

MySQL Quick Start Guide

This guide is provided purely as a courtesy and will detail a very basic installation and database creation for Retain. This guide is provided with no warranty or MySQL support offered.

The entire responsibility for installation, care and maintenance of the database server lies with the customer. We do not provide any kind of support for the database server.

***** WARNING:** OES 1.0/SLES 9 come with MySQL 4.x installations. **DO NOT use these!** Retain for GroupWise is not compatible with their storage format. Irreparable corruption and loss of data is almost guaranteed. Beginfinite inc. and GWAVA Retain assumes no responsibility for running Retain for GroupWise against MySQL 4.x!

To use MySQL with Retain for GroupWise, you will need to do the following:

- 1) Download MySQL
- 2) Install it to the server of your choice.
- 3) Log in and create a database for Retain for GroupWise to use.
- 4) Create a user with rights for Retain for GroupWise
- 5) Retain for GroupWise will do all the rest.

Getting MySQL

- 1) Go to <http://www.mysql.com>
 - 2) Get MySQL 5.0.x
- Get the following binaries; Linux x86 Generic RPM (dynamically linked)
- 1) Server package
 - 2) Client programs
 - 3) Shared Client Libraries

NOTE: MySQL 5.0x is the latest RELEASED version of MySQL. MySQL 5.1x is beta quality and 5.2x is alpha quality, hence we do not recommend their usage nor have we tested them.

MySQL requires careful memory tuning. By default it assumes it is running on a 64 MB Server. In fact, you should give at least 1 GB RAM to MySQL. Larger sites may well allocate 2,4, 16, or even 64 GBs of RAM depending on their data store. We do not support or discuss memory tuning requirements. However the following links may help (Retain uses InnoDB tables):

<http://www.mysqlperformanceblog.com/files/presentations/UC2007-Innodb-Performance-Optimization.pdf>

Covers InnoDB specifically. Clear, concise, the "bible" for optimization

<http://www.mysqlperformanceblog.com/files/presentations/UC2007-MySQL-Server-Settings-Tuning.pdf>

MySQL 5.0x Installation Procedure on Linux

Applies to: SLES 9/OES Linux 1.0/SLES 10

- 1) Log in as root

- 2) Get MySQL 5.x
- 3) Open a command-line terminal (like a DOS box in Windows)
- 4) Go to the directory where the RPM is.
- 5) For each rpm you downloaded, type
`rpm -ihv <rpmfilename>.rpm`
- 6) The Perl dbi module will be installed by YAST at same time, because many MySQL utilities require Perl)
- 7) Create a directory where you want your data stored.
- 8) Type
`mysql_install_db --datadir=<datadirectory>`
- 9) Start MySQL:
MySQL is a standard linux service, with a script stored in /etc/init.d. It is configured to run automatically on restart.
- 10) From the command line, type
`/etc/init.d/mysql <command> --datadir=<datadirectory>` where available commands are stop, start, and restart, as appropriate.
- 11) Create a password: type
`mysqladmin -u root password '<yourrootpassword>'`
- 12) Log in to MySQL by typing:
`mysql --user=root --password=<yourrootpassword>`
- 13) You are now ready to create the database. See below.

***** You may proceed exactly as the SLES 9 instructions instruct after the client and server are installed. One minor difference is that MySQL is not set to run on restart with SLES 10. Change this with the RunLevel Editor in YAST.**

Create a new database for Retain

MySQL

Applies to: All platforms.

1) Log in to MySQL, as in the last step of the installation procedures.

2) Type:

```
CREATE DATABASE retain DEFAULT CHARACTER SET 'utf8' DEFAULT COLLATE 'utf8_general_ci'; *** This is critical. Not storing the database in UTF-8 format guarantees irreparable corruption for non US-ASCII characters.
```

3) If you make a mistake, type:

```
DROP DATABASE retain; and repeat step 2.
```

Create a user for Retain for GroupWise and grant rights.

It is poor security practice to use the root account for ordinary database access. Retain for GroupWise needs a user account created that has full rights to the retain database. The example below will use mjb as the username and the password will be turnip. You may substitute these values for the user name and password you desire.

1) While logged in to MySQL, type:

```
GRANT ALL PRIVILEGES ON retain.* TO 'mjb'@ '%' IDENTIFIED BY 'turnip';    <hit enter>
```

```
GRANT ALL PRIVILEGES ON retain.* TO 'mjb'@ 'localhost' IDENTIFIED BY 'turnip';    <hit enter>
```

(Both are needed. The % is a wildcard. If you want to restrict the connection to a specific ip address, put that address instead.)

Further tuning

You need to know:

- MySQL server IP Address/HostName
- data port
- database username
- database password

It is your responsibility to learn more about your SQL Database Server. Tuning these for performance often requires an experienced DBA. It is your responsibility to backup the database store, and make it fault tolerant.

Other Databases

SQL Server 2005 (SP1+ required)

1. Install as default instance, with Latin 1 as standard encoding.
2. Enable SQL Server Authentication in addition to Windows Authentication
3. Verify server is listening on port 1433 (telnet ipaddress 1433)
4. Run SQL Server Management Studio, connect to Server
5. Under Security/Logins, right click and create a new user, (for example retainuser) that uses SQL Server authentication. Assign a password.
6. Right click on Databases, and create a new database named retain and assign retainuser as the owner. (There are other ways to grant the permissions but this is easiest)

SQL Server 2000 (SP4 required)

1. Install as default instance, with Latin 1 as standard encoding.
2. Enable SQL Server Authentication in addition to Windows Authentication
3. Make sure TCP/IP is enabled, on port 1433, during setup.
4. Verify server is listening on port 1433 (telnet ipaddress 1433)
5. Run Enterprise Manager, connect to Server
6. Under Security/Logins, right click and create a new user, (for example retainuser) that uses SQL Server authentication. Assign a password.
7. Right click on Databases, and create a new database named retain
8. Expand retain, and under users create a new user (retainuser) and assign all rights to the db
9. Right click on retain, and make sure retainuser has all of the Permissions set.

ORACLE 10/11

We support the usage of Oracle 10 and 11 on all platforms. However, **we do not support the installation or tuning of Oracle** for this purpose.

The instructions below serve as a guideline, but may result in poorly performing, insecure environments,

Oracle Installation instructions vary wildly depending the version, OS, storage, clustering, etc. so consult your DBA. There is no one-size-fits-all. This is true of other SQL Server products, but Oracle even more so.

Using Oracle with Retain consists of

- Installation of the Oracle Server
- setting up a TCP IP listener
- Setting up a new database named retain
- creating a user to access the database, and granting sufficient rights.

Installation

Install your Oracle Server normally, according to your standards and practices. One option is to use the Universal Installer, specifying a custom installation, choose the type of Oracle Server to install, and to Install Files Only

TCPIP Listener

Next use the Net Configuration Assistant (or manually edit the Oracle Listener configuration) to create a TCP based listener on port 1521. This allows TCPIP clients to connect to Oracle and is required for Retain.

Database Creation

Next, either use the Database Configuration Assistant or manually create the database with your favorite tool.

Regardless you want to create a database and sid, named retain, and create your SYSTEM account

An example of a create statement (which should *not* be used as is)

```
connect "SYS"/"&&sysPassword" as SYSDBA
set echo on
spool C:\oracle\product\10.2.0\admin\retain\scripts\CreateDB.log
startup nomount pfile="C:\oracle\product\10.2.0\admin\retain\scripts\init.ora";
CREATE DATABASE "retain"
MAXINSTANCES 8
MAXLOGHISTORY 1
```

```

MAXLOGFILES 16
MAXLOGMEMBERS 3
MAXDATAFILES 100
DATAFILE 'C:\oracle\product\10.2.0\oradata\retain\system01.dbf' SIZE 300M REUSE AUTOEXTEND ON
NEXT 10240K MAXSIZE UNLIMITED
EXTENT MANAGEMENT LOCAL
SYSAUX DATAFILE 'C:\oracle\product\10.2.0\oradata\retain\sysaux01.dbf' SIZE 120M REUSE
AUTOEXTEND ON NEXT 10240K MAXSIZE UNLIMITED
SMALLFILE DEFAULT TEMPORARY TABLESPACE TEMP TEMPFILE
'C:\oracle\product\10.2.0\oradata\retain\temp01.dbf' SIZE 20M REUSE AUTOEXTEND ON NEXT 640K
MAXSIZE UNLIMITED
SMALLFILE UNDO TABLESPACE "UNDOTBS1" DATAFILE
'C:\oracle\product\10.2.0\oradata\retain\undotbs01.dbf' SIZE 200M REUSE AUTOEXTEND ON NEXT
5120K MAXSIZE UNLIMITED
CHARACTER SET AL32UTF8
NATIONAL CHARACTER SET AL16UTF16
LOGFILE GROUP 1 ('C:\oracle\product\10.2.0\oradata\retain\redo01.log') SIZE 51200K,
GROUP 2 ('C:\oracle\product\10.2.0\oradata\retain\redo02.log') SIZE 51200K,
GROUP 3 ('C:\oracle\product\10.2.0\oradata\retain\redo03.log') SIZE 51200K
USER SYS IDENTIFIED BY "&&sysPassword" USER SYSTEM IDENTIFIED BY "&&systemPassword";
spool off

```

The most critical items to note are the CHARACTER SET (AL32UTF8 aka UTF8), and the NATIONAL CHARACTER SET (AL16UTF16). If using a GUI based installed, be careful to set these - they are easily missed. (They are located on the Encoding tab of the 10th step or so of the wizard).

User Account Creation

Finally, using the SYSTEM account, connect to the database, create a user, and grant full system privileges to the account.

An example is shown below:

```

CREATE USER user-name IDENTIFIED BY password;
grant dba to user-name;

```

Restart everything, and verify you can telnet on the TCP LISTENER's PORT (1521 if as above).

Tuning

Tuning Oracle is quite far beyond the scope of this manual. The manuals on Oracle's site, as well as several days of training are strongly recommended.

PostGres 8.2

1. When installing, specify the UTF-8 encoding, and if the Retain Server is on another machine, that you want to accept connections on all addresses, not just localhost
2. Connect to PostGres using psql command line with the PostGres user you created.
3. Create a new user. In the example below, we are creating a user called retainuser with a password of turnip

```
CREATE ROLE retainuser LOGIN ENCRYPTED PASSWORD 'password';
```

4. Create the retain database, and assign ownership to the user created in previous step.

```
CREATE DATABASE retain WITH ENCODING='UTF8' OWNER=retainuser;
```

5. If the Retain Server is on another machine, you'll also need to edit the pg_hba.conf, and restart PostGres.

Here's an example entry, delimited with tabs, for a user mjb being granted rights to access retain from 192.168.2.2

```
host    retain  mjb    192.168.2.2/32 md5
```

Here is another example, the same except allowing anyone on 192.168.2.x to connect

```
host    retain  all    192.168.2.2/24 md5
```

Retain Installation

Now all of the prerequisites for Retain are installed, you are ready to install Retain for GroupWise's core components. *Applies to: OES Linux 1.0 *** Everything under SLES 9 is true, as OES Linux 1.0 is a superset of SLES 9.* Additional considerations:

Now you're ready to install Retain for GroupWise's core components.

SuSE Linux Enterprise Server 10 Java SLES 10 features JDK 1.42 (type "java-1.4.2-sun-devel" in YAST). This can be installed explicitly via YAST. However installing Tomcat (see below) normally does this automatically. Apache Web Server 2.2x included. You can install this via YAST (apache2). Then go to Network services, and activate HTTP SERVER to run on boot. ***** Apache 1.3x and Apache 2.0x are not supported.** Tomcat Apache Tomcat 5.0x is included with SLES 10 and can be installed via YAST (tomcat5). This is the only version supported on SLES 10. SQL Server MySQL 5.0 needs to be downloaded and installed. See section below on MySQL.

Installing GWAVA Retain Core Components

***** NOTE: BE SURE YOUR SERVER'S CLOCK IS ACCURATE BEFORE YOU BEGIN! USING NTP IS RECOMMENDED TO KEEP YOUR CLOCK ACCURATE.** Now that your server is ready, you are ready to install Retain for GroupWise's core components. Retain for GroupWise is installed as follows:

- 1) Download the Retain for GroupWise package from gwava.com.
- 2) Unzip the package to a work directory. Almost any name will do, as long as you remember it.
- 3) Copy all files and folders to the server(s) you want to install to, into another work directory. This will be your "distribution" directory. After installation, you may delete this directory.
- 4) Run the install procedure.
- 5) Now you're ready to proceed with the post install tasks.

Once you've downloaded the file and unzipped it, the files in the work directory should look like this: readme.txt license.txt RetainInstall.sh (Linux install script) RetainInstall.ips (NetWare install script) RetainInstall.exe (Windows installer) RetainWorker.zip (core Retain Worker) RetainServer.zip (core Retain Server) <common> <linux> <NetWare> <win32> <tools> **Note: After unzipping on Linux, you must run the following from the command line to be able to run the install script.**
chmod +x *.sh

Install Procedure on Linux

- 1) Install the SQL server of your choice and create the database
- 2) Unzip the install files to a work directory. (your distribution directory) (example: /root/retain)
- 3) Open a terminal session such as Gnome terminal.
- 4) Navigate to the directory where you unzipped the install files. (example: cd /root/retain)
- 5) Type:

```
chmod +x *.sh ./RetainInstall.sh
```

- 6) Read and accept the license agreement.
- 7) Determine whether Retain Server, Retain Worker or both will be installed.
 - Apache and Tomcat will be stopped
 - Retain for GroupWise will be unzipped into /opt/beginfinite/retain.
 - The data will be stored in /var/opt/beginfinite/retain by default.
 - Backups of modified files go in /opt/beginfinite/retain/backup
 - The Apache integration file is in /opt/beginfinite/retain/ws
 - Apache and Tomcat are made to restart and their runlevels are altered to run automatically on system start.
- 8) Reboot.
- 9) In a terminal window, check the status of **apache 2** and **tomcat 5**. They should both be “running”:
rcapache2 status
rctomcat5 status (For SLES 9 – rctomcat status)
- 10) You are now ready to proceed to post-install tasks.

NOTE: (SLES 10 only): Because of an odd bug in SLES 10 Tomcat, catalina.sh will be backed up to /opt/beginfinite/retain/backup and then altered.

Custom Storage Path Rights

Retain requires read and write access and permissions to the storage path. If you are specifying a storage path other than the default (/var/opt/beginfinite/retain) then you need to grant rights and ownership to Retain.

After running ./RetainInstall.sh, find out which user Retain is using to access the file system. (For SLES 10.1 the user is called 'tomcat').

In a console, type:

```
l /opt/beginfinite/retain
```

This shows the User and the group that own the directory structure.

```
vm-sles10-retain:~ # l /opt/beginfinite/retain
total 1
drwxrwxr--  6 tomcat www  160 Mar  7 13:03 ./
drwxr-xr-x  3 root   root  72 Mar  7 13:03 ../
drwxr-xr-x 14 tomcat www  528 Mar  7 12:58 RetainServer/
drwxr-xr-x  7 tomcat www  416 Mar  7 12:58 RetainWorker/
drwxrwxr--  3 tomcat www   72 Mar  7 13:03 backup/
drwxrwxr--  2 tomcat www   88 Mar  7 13:03 ws/
vm-sles10-retain:~ #
```

In the system shown, Retain is using Tomcat as the user.

Create the directory structure for the desired storage location, and then grant the permissions and ownership to the Retain user.

```
(mkdir <desired directory structure>)
```

```
(chown -R <user> <storage directory>)
```

```
(chmod -R 744 <storage directory> )
```

(In this example, we have already mounted our SAN or physical drive to the /retain directory and wish to store mail in the /retain/archives directory.)

```
mkdir /retain/archives
```

```
chown -R tomcat /retain/archives
```

```
chmod -R 744 /retain/archives
```

```
vm-sles10-retain:/retain # mkdir /retain/archives
vm-sles10-retain:/retain # chown -R tomcat /retain/archives
vm-sles10-retain:/retain # chmod -R 744 /retain/archives
```

Now check the directories for ownership.

```
l /retain
```

```
vm-sles10-retain:/retain # l /retain
total 1
drwxr--r--  3 tomcat root   72 Mar  7 16:06 ./
drwxr-xr-x 25 root   root  608 Mar  7 16:01 ../
drwxr--r--  2 tomcat root   48 Mar  7 16:06 archives/
vm-sles10-retain:/retain #
```

Tomcat now has rights to the storage location.

Appendix A

Tomcat Memory Tuning

General Recommendations

The following are our general recommendations for the maximum memory allocation parameter. The initial memory allocation parameter may be anywhere from 50%-100% of these values. These parameters are discussed in more detail in the next section.

Retain Server Component

A minimum of 1 GB of RAM is recommended. For larger systems, 2-3 GB RAM may be fully warranted. Remember, if this RAM is in use by Tomcat, it is unavailable to other server processes – leave sufficient physical RAM for these. Of course, these others server processes are ideally minimal. Also, remember this memory is shared with other web applications.

Retain Worker Component(s)

The Retain Worker component(s) have been designed to be light weight. Nonetheless, a minimum of 64MB RAM is recommended, and 160MB is strongly recommended, to give room for future functionality. Remember, if this RAM is in use by Tomcat, it is unavailable to other server processes – leave sufficient physical RAM for these. Also, remember this memory is shared with other web applications.

Tomcat Configuration Parameters

There are three significant parameters:

1) Memory allocated upon Tomcat startup

- Indicates how much memory is immediately allocated and reserved to Tomcat upon startup. This memory will be in usage for the entire lifetime of Tomcat and never available to the other server processes.
- Typically this is set to 50%-100% of the maximum memory parameter discusses below. It can be lower, but pre-allocating a sizeable percentage of memory *enhances performance* and reduces memory fragmentation.

2) Maximum Memory available to Tomcat

- If the memory usage grows beyond the startup allocation, Tomcat will allocate additional blocks of memory in chunks as needed up to this limit. It will never return this memory to the general server memory pool. (Although memory internally will be freed and reused for Tomcat applications).

- Tomcat guarantees that it will never exceed this memory allocation parameter. If Tomcat runs out of memory, it will try to reclaim unused memory via garbage collection. If this is insufficient, the web application will be denied the memory allocation. Unpredictable (but invariably unpleasant) results will then occur.
- **This is the most critical parameter to tune.**

3) Stack Size

- For each thread (which includes each and every concurrent user request), Tomcat will allocate stack space.
- This value is typically measured in KB, and defaults to 512KB.
- It is allocated per concurrent users, and is in fact far too generous a number in general. 1000 users for example would take 500 MB of RAM just for stack space, before the program even allocates memory to run!
- Generally we recommend reducing this number to 128k-160k. Increase conservatively, in 64 KB chunks, if you see out-of-stack-space errors in the logs.

NOTE: Linux can allocate a maximum of 3 gb of memory for Java and Tomcat5.

SLES 9:

- 1) Edit **/usr/share/tomcat/bin/catalina.sh**.
- 2) Add a line right below the **#!/bin/sh** like (for a Retain Server):

CATALINA_OPTS="-Xms512m -Xmx1024m -Xss160k" **OES Linux:** *If you are using the OES Tomcat4 instance (default)*

- 1) Edit **/etc/opt/novell/tomcat4/tomcat4.conf**.
- 2) Edit **JAVA_OPTS** (may contain some settings already) to something like: (for a Retain Server)

JAVA_OPTS="-Xms512m -Xmx1024m -Xss160k" *** **A typical OES Linux server uses lots of web services and if you installed them, don't skimp on RAM.** *If you are using the SLES Tomcat5 instance, apply the SLES 9 instructions.*

SLES 10:

- 1) Edit **/etc/sysconfig/j2ee**
- 2) Change the **CATALINA_OPTS** line to something like: (for a Retain Server)

CATALINA_OPTS="-Xms512m -Xmx1024m -Xss160k"

Checking memory:

After logging into Retain Server, click the bug icon at the upper left. Among other stats, you'll see the tomcat Memory statistics. These are for all web apps, not just Retain Server.

Appendix B

Estimating Storage Requirements

How much storage space you will need in your Retain for GroupWise system is dependent on many factors. While there is no hard-and-fast rule, we have provided the following guide to help you evaluate your own needs. If you have GWAVA Redline, you could use its reports to help you with your estimates. In all cases, you are making an estimate for how much disk space to provide to Retain for GroupWise. When rounding your figures, round up to provide more disk space than you estimate you need.

Calculation guide: Use the table below to help you calculate your storage requirements for Retain for GroupWise. Do this for each post office you plan to store in Retain for GroupWise and add up the results to get a final figure.

1. Get the disk space used by the post office, usually measurable in Gigabytes (GB). If you use GroupWise Document Management and its data is stored within the post office, run a library report using **GWCHECK** and subtract these values. Alternately, get the size of your post office directory and subtract the size of the DMS directory within it.
2. Estimate how much your post offices will grow in size over the upcoming years. There are many ways to estimate this. See below for suggestions. Remember that Retain for GroupWise is cumulative.
3. Decide how long you want to keep your data (retention time) in years.
4. Calculate your disk space requirements by multiplying your estimated growth per year by the number of years and adding the current size of your post office.

Parameter	Answer	Value #
Post Office Space Used (GB): (not including document management)		1
Yearly Additional Disk Space (GB): (estimate)		2
How long will you keep your data (Years)		3
Disk Space Requirements (GB): Calculate: [value 2] x [value 3] + [value 1]		4
Add 35% for indexes to get a Grand Total (GB) Calculate [value 4] x 1.35		5

Remember, this is only an ESTIMATE, assuming you will be storing EVERYTHING. As you restrict what you will actually store, this figure will go down. For example, do you want to store 50MB attachments? It is your choice.

Suggestions on methods to estimate your post office growth per year.

Post office growth varies wildly from company to company and even from post office to post office. There is no hard-and-fast rule which works for everybody. However, some historical data from your own company can help you make a reasonable estimate to determine your ongoing disk space requirements. It is very strongly recommended that the file system you use to store your Retain for GroupWise data be either LVM, NSS or some other system which will allow you to simply add to the storage pool as your needs dictate. Retain for GroupWise tends to need less disk space than your GroupWise post office. It's a small amount less but a conservative estimate would be to simply say "the same amount". Naturally, this only applies if you are storing "everything". Not every organization will store "everything". If, for instance, you're only storing data for certain specific users, you can run GWCheck to determine approximately how much of the post office is used by their data. Redline has a report on post office usage which will tell you right away how much space these users are taking. Take this figure as your baseline "post office size today". Everything else will be calculated based on this figure. $\text{Current Size} = \text{Past Size} + \text{Additions} - \text{Deletions}$ Retain for GroupWise Needs = Past Size + Additions So the real challenge is making a reasonable estimate of what was or will be deleted. Calculate these figures for each post office you plan to store in your Retain for GroupWise archive and add the results together to get a final total. Suggested Method

- 1) Take your post office size today. (Present Size)
- 2) Take the size of the post office at some point in the past – as close to a year as you can get. (Past Size)
- 3) Calculate the size difference between them (Size Increase) and the time difference (Time Difference)
- 4) Extrapolate the size difference over the year. You'll get an estimate of NET growth. (mail was deleted too).
- 5) Estimate how much mail was deleted from the system. This will be a wild guess at best but only you can make such an estimate.
- 6) Your annual growth will be Net Growth + Deletions.

Even if you can measure your actual growth from last year to this year, it is a NET growth. In addition, rates of growth tend to go up as bandwidth increases because people are simply sending larger and larger items. Some people store things in GroupWise like it was a filing cabinet. So it's a good idea to overestimate your needs and plan accordingly.

Appendix C

Uninstalling Retain for GroupWise

Should you wish to uninstall Retain for GroupWise, use the following general procedure. Actual steps will vary according to your host Operating System.

1. Shut Down Tomcat
2. Shut Down Apache
3. Remove the data storage path (delete the files)
 - a. Can be: sys:retain, \retain, /var/opt/beginfinite/retain ... etc.
 - b. See the Retain Administration Guide section on storage to see where your data actually is placed.
4. Remove the program files
 - a. Can be: on linux /opt/beginfinite/retain, on other platforms, stored under storage path
5. Remove the RetainWorker.xml and RetainServer.xml from Tomcat.
 - a. Linux Tomcat5 `/usr/share/tomcat5/conf/Catalina/localhost`
6. Remove the directories under tomcat/work (but NOT work itself)
 - a. Linux: `rm -rf /usr/share/tomcat5/work`
7. Remove references to Retain for GroupWise in httpd.conf
 - a. Can be: /etc/apache2, sys:\apache2/conf, or <InstallPath>\conf).
8. (optional) remove MySQL, Apache, Tomcat
9. If Apache and Tomcat were not removed, restart them both to verify that they load without problems.