GemStone®

GemConnect Installation Guide

For use with
GemStone/S and GemStone/S 64 Bit
on UNIX and Linux platforms

July 2010

Version 2.2.2

GEMSTONE S™

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This document explains how to install GemConnect version 2.2.2.

For information regarding new and modified features in this release of GemConnect, please refer to the *GemConnect Release Notes* for version 2.2.2.

These documents are also available on the GemStone Technical Support website, as described below.

Technical Support

GemStone's Technical Support website provides a variety of resources to help you use GemStone products.

GemStone Web Site: http://support.gemstone.com

Use of this site requires an account, but registration is free of charge and provides immediate access.

All GemStone product documentation is provided in PDF form on this website. Documentation is also available at

http://www.gemstone.com/documentation

In addition to documentation, the support.gemstone.com website provides:

▸ Bugnotes, identifying performance issues or error conditions that you may encounter when using a GemStone product.

▸ TechTips, providing information and instructions that are not otherwise included in the documentation.

▸ Compatibility matrices, listing supported platforms for GemStone product versions.

This material is updated regularly; we recommend checking this site on a regular basis.

Help Requests

You may need to contact Technical Support directly, if your questions are not answered in the documentation or by other material on the Technical Support site.

Requests for technical assistance may be submitted online, or by email or by telephone. We recommend you use telephone contact only for more serious requests that require immediate evaluation, such as a production system down. The support website is the preferred way to contact Technical Support.

> **Website: http://techsupport.gemstone.com**
>
> **Email: support@gemstone.com**
>
> **Telephone: (800) 243-4772 or (503) 533-3503**

Your GemStone support agreement may identify specific designated contacts who are responsible for submitting all support requests to GemStone. If so, please submit your information through those individuals.

If you are reporting an emergency by telephone, select the option to transfer your call to the Technical Support administrator, who will take down your customer information and immediately contact an engineer. Non-emergency requests received by telephone will be placed in the normal support queue for evaluation and response.

When submitting a request, please include the following information:

▶ Your name, company name, and GemStone server license number.

▶ The versions of all related GemStone products, and of any other related products, such as Oracle.

▶ The operating system and version you are using.

▶ A description of the problem or request.

▶ Exact error message(s) received, if any, including log files if appropriate.

Technical Support is available from 8am to 5pm Pacific Time, Monday through Friday, excluding GemStone holidays.

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Chapter 1. Installing GemConnect version 2.2.2

1 *Installing GemConnect version 2.2.2*

This document describes how to install GemConnect 2.2.2 on workstations running the UNIX or Linux operating system. It also explains how to upgrade an existing GemConnect installation and how to set up new GemConnect users.

This version of GemConnect supports GemStone/S and GemStone/S 64 Bit. Please review the *GemConnect Release Notes* for details of the changes before upgrading to this version. If you are upgrading from a version earlier than 2.2, please review the Release Notes for each intermediate version, to see the full set of changes.

We recommend that this installation be done by an experienced system administrator. If you need more information, the *Installation Guide* for your GemStone/S or GemStone/S 64 Bit server tells how to install the GemStone system, and lists any additional requirements for network communications between your workstation and GemStone.

For GemConnect to work properly with the rest of the GemStone system and your relational server, you must follow every step of this installation procedure.

System Requirements

Before installing GemConnect, ensure that the following system requirements are satisfied.

GemStone server

▶ A GemStone/S or GemStone/S 64 Bit object server, installed and started according to instructions in the appropriate *Installation Guide.*

GemConnect version 2.2.2 is compatible with GemStone/S version 6.2 and later, and GemStone/S 64 Bit 2.2 and later. Older versions may require recompile and relink in order to load the user action library.

Platform

▸ A supported platform for the GemStone server product and version you will be using. See the *Installation Guide* for your GemStone server product for more information.

Table 1. Supported GemStone server versions and platforms for GemConnect v2.2.2

GemStone/S 6.5.7	GemStone/S 64 Bit 2.3.1.6	GemStone/S 64 Bit 2.4.4
▸ Solaris 2.8, 2.9, and 2.10 ▸ AIX version 5.2, 5.3, and 6.1 ▸ Linux Red Hat ES 5.0 ▸ Windows XP ▸ Windows 2003 ▸ Windows Vista ▸ Windows 7	▸ Solaris 2.9 and 2.10 ▸ AIX version 5.3 and 6.1 ▸ HP-UX 11.11 and 11.31 on PA-RISC ▸ Linux SuSE ES 10	▸ Solaris 2.9 and 2.10 on SPARC ▸ Solaris 2.10 on x86 ▸ AIX version 5.3 and 6.1 ▸ HP-UX 11.11 and 11.31 on PA-RISC ▸ HP-UX 11.31 on Itanium ▸ SuSE Linux ES 10

This Installation Guide provides instructions for installing GemConnect version 2.2.2 on GemStone/S or GemStone/S 64 Bit servers running on UNIX and Linux Platforms. To install GemConnect on GemStone/S servers running on Windows platforms, see the *GemConnect Installation Guide* for Windows.

Disk Space

▸ Approximately 1 megabyte for GemConnect system files

RAM

▸ 3 megabytes per GemStone session (See the *System Administration Guide* for other configuration recommendations.)

Relational Database Server

▸ An Oracle 9i or later relational database server must be running and available via the `$ORACLE_HOME` environment variable. GemConnect on UNIX/Linux was built and tested with Oracle version 10.2.0.1.0. If you are not running with this version of Oracle, you may need to relink your GemConnect libraries. This is described in the *GemConnect Programming Guide*. If you have difficulty with this, contact GemStone Technical Support

▸ If GemStone and your relational database server run on different machines, you will also need Oracle Net9/Net10 (supersedes SQL*Net). Be sure that it is installed and running on the machine where GemStone will be running, so that GemStone will be able to communicate with the relational database.

C compiler

See the *Installation Guide* for your GemStone server product and version for specific C compiler details.

A C compiler is required only for customizing GemConnect. It is used to relink with any changes you make in the C language source module provided with GemConnect,

or to relink with modules for other Oracle versions or GemStone libraries. You do not need a C compiler if you do not expect to relink GemConnect.

Install GemConnect

These steps provide instructions to do the following:

‣ Create the GemConnect installation directory from the distribution media

‣ Setup the environment

‣ Install the GemConnect files in your GemStone repository

The process is the same whether you are installing GemConnect for the first time, or if you are upgrading from a previous GemConnect version.

Step 1. Log in to a machine that has the GemStone repository server installed on it.

We recommend that you log in using a local UNIX user name (such as the name of your GemStone system administrator) to perform this installation procedure, so that the GemConnect files will be owned by this user. Later in the installation you need to log in as `root`. However, if you copy the files as `root` (as in Step 3) the original ownerships are maintained, which may result in file protection errors for users at your site. If you plan to limit GemConnect access to a certain UNIX group, the owner of the GemConnect files must be a member of that group.

Step 2. Create an installation directory.

You can install the GemConnect files into almost any directory. Administration is easier, however, if you install GemConnect in a directory you create from top-level directory you installed the GemStone server software. For example, if the GemStone server directory is:

`/usr2/GemStone64Bit2.4.4-sparc.Solaris`

then install GemConnect under `/usr2`. For example,

`% ` **`mkdir`** ` /usr2/GemConnect2.2.2`

From now on, we'll refer to your site's Gemstone installation directory, such as `/usr2/GemStone64Bit2.4.4-sparc.Solaris`, as *GSInstallDir*, and your site's GemConnect directory, such as `/usr2/GemConnect2.2.2`, as *GCInstallDir*. When you see *GSInstallDir* or *GCInstallDir* in a command or pathname, substitute the name of the corresponding directory.

Move to the disk drive and directory where you will install GemConnect software:

`% ` **`cd`** ` GCInstallDir`

Step 3. Copy the GemConnect distribution file to this directory. GemConnect is provided as a zipped archive file with a name similar to `GemConnect-2.2.2+oracle9i-`*platform*`.`*OS*`.zip`. See Table 1.2 "Distribution file names" for specific file names on each platform.

Table 1.2   Distribution file names

Solaris on SPARC	`GemConnect-2.2.2+oracle10i-sparc.Solaris.zip`
Solaris on x86 (GemStone/S 64 Bit only)	`GemConnect-2.2.2+oracle10i-i386.Solaris.zip`
AIX	`GemConnect-2.2.2+oracle10i-RISC6000.AIX.zip`
Linux (with 32bit GemStone/S)	`GemConnect-2.2.2+oracle10i-i686.Linux.zip`
Linux (with GemStone/S 64 Bit)	`GemConnect-2.2.2+oracle10i-x86_64.Linux.zip`
HP-UX on Itanium (GemStone/S 64 Bit only)	`GemConnect-2.2.2+oracle10i-ia64.hpux.zip`
HP-UX on PA-RISC (GemStone/S 64 Bit only)	`GemConnect-2.2.2+oracle10i-hppa.hpux.zip`

Step 4. Unzip the distribution file using unzip. For example:

% **unzip GemConnect-2.2.2+oracle10i-***platform*.*OS***.zip**

InstallDir now contains the contains the following subdirectories and files:

```
PACKING   verora.txt   doc   install   make   ualib
```

See Table 1.4 for tables describing the contents of each file and directory.

Step 5. Log in as `root`.

You must perform the rest of the installation as `root`, because a number of these procedures require `root` privileges.

Step 6. Set the GemStone environment.

Set the `$GEMSTONE` environment variable to the full pathname (starting with a slash) of your GemStone installation directory.

C shell:

% **setenv GEMSTONE** *GSInstallDir*

Bourne shell or Korn shell:

$ **GEMSTONE=***GSInstallDir*
$ **export GEMSTONE**

Step 7. Complete setup of the GemStone environment by invoking `gemsetup`.

Depending on your login shell, type:

C shell:

% **source $GEMSTONE/bin/gemsetup.csh**

Bourne shell or Korn shell:

```
$ . $GEMSTONE/bin/gemsetup.sh
```

Step 8. Define an environment variable to the GemConnect installation directory to reduce the need to type the long pathname. For example:

C shell:

```
% setenv GEMCONNECT GCInstallDir
```

Bourne shell or Korn shell:

```
$ GEMCONNECT=GCInstallDir
$ export GEMCONNECT
```

Step 9. Check to make sure that the new GemConnect directory tree includes all of the files listed in the PACKING file. Use the following step to automate the checking, by running the GemStone checksum utility.

```
% cd $GEMSTONE/install
```

```
% ./checksum $GEMCONNECT $GEMCONNECT/PACKING \
$GEMCONNECT/install/checksums.good install/checksums.good
```

This script checks the files that have been unzipped from the distribution against the file checksums.good to make sure that all the files listed in the PACKING file are present. If there are any discrepancies, they are displayed on your screen in standard **diff** format. If a discrepancy occurs, contact GemStone Technical Support.

Step 10. Check the file protection settings for the GemConnect files.

Check that GemConnect users have read and execute access to GemConnect directories and all the directories above them in the directory tree. GemConnect users who need to rebuild the GemConnect shared library will also need write access to the make directory.

```
% cd $GEMCONNECT
% ls -al
```

If the permissions are set correctly, they look similar to this:

```
dr-xr-xr-x  6 gsadm     4096 Jul 16 09:34 .
dr-xr-xr-x  4 gsadm     4096 Jul 16 09:34 ..
-rw-r--r--  1 gsadm      979 Jul 16 09:34 PACKING
dr-xr-xr-x  1 gsadm     4096 Jul 16 09:34 doc
dr-xr-xr-x  2 gsadm     4096 Jul 16 09:34 install
drwxr-xr-x  2 gsadm     4096 Jul 16 09:34 make
dr-xr-xr-x  2 gsadm     4096 Jul 16 09:34 ualib
-r--r--r--   1 gsadm       57 Jul 16 09:34 verora.txt
```

Make sure that the files have the appropriate permissions for your site.

If necessary, use the **chmod** command to reset permissions or the **chown** command to change the owner.

Step 11. Copy the appropriate GemConnect shared library into the GemStone object server shared library directory.

The GemConnect installation for Solaris and AIX include shared libraries for both Gemstone/S 64 Bit and the 32-bit GemStone/S server. Table 1.3 shows the shared library to use with specific server product.

Table 1.3   Shared Library Names

Server product and version	Shared library name
GemStone/S	liboraapi222-32.so
GemStone/S 64 Bit v2.x	liboraapi222-642.so or liboraapi222-642.sl

As `root`, you have the necessary write permission on the subdirectories of `$GEM-STONE`. Issue this command:

`% ` **`cp $GEMCONNECT/ualib/`***`libname`* **`$GEMSTONE/ualib`**

where *libname* is the library name from Table 1.3. For example,

`% ` **`cp $GEMCONNECT/ualib/liboraapi222-32.so $GEMSTONE/ualib`**

Step 12. Check the shared library file protection settings.

The permissions on the shared library file should look like this:

`-r-xr-xr-x-  1 gsadm     111400 Jul 16 09:34 liboraapi222-32.so`

If the GemStone files are on a disk owned by a different workstation, you may have permission problems. If so, log in directly on that machine and set your environment variables again for that session.

Add GemConnect to your GemStone Repository

You add GemConnect to your existing GemStone repository with the following steps.

> *Note*
> *The following examples assume a GemStone/S 64 Bit v2.4.4 server. Use the appropriate default names for your server installation. The procedure is the same for all server products and versions.*

Step 1. Back up your GemStone repository.

Before you begin the installation or upgrade, make sure a current backup of your GemStone repository exists. If you need to make one, use the GemStone backup method described in the *System Administration Guide.*

Step 2. Ask users to log off GemStone.

Step 3. Check to be sure a GemStone network server (NetLDI) process is running.

To start a NetLDI process on your workstation, type the following command:

`% ` **`startnetldi`**

This starts a network server process with the default name of `netldi65` or `gs64ldi`, depending on the server product you are running.

For information about additional options for the `startnetldi` command, see the *System Administration Guide.*

Step 4. Log in with some UNIX user name other than `root`.

Do not try this upgrade as `root`, unless the Stone (GemStone repository monitor process) is running on your local machine. Log in as the UNIX user who owns the Gem-Connect directories and files (`gsadm` in the example listing above). Make sure the account you use is set up with a `.netrc` file that lists the host where the Stone is running.

Step 5. Set the GemStone, GemConnect, and Oracle environment for this user.

Define the `GEMSTONE` and `GEMCONNECT` environment variables and execute the `gem-setup` script for this user, as you did for `root` on page 10.

Step 6. Set the Oracle environment for this user. The GemConnect filein loads the GemConnect library, which requires access to the Oracle libraries.

The ORACLE_HOME environment variable should be set to the directory containing the relational software.

Set the library path variable so that GemStone can reach the Oracle libraries.

> *NOTE*
> *If you are running GemStone/S 6.x in an Oracle installation that supports both 32-bit and 64-bit Oracle, replace $ORACLE_HOME/lib with $ORACLE_HOME/lib32.*

C shell:

```
% setenv LD_LIBRARY_PATH $ORACLE_HOME/lib:${LD_LIBRARY_PATH}
```

Bourne or Korn shell:

```
$ LD_LIBRARY_PATH=$ORACLE_HOME/lib:$LD_LIBRARY_PATH
$ export LD_LIBRARY_PATH
```

`$ORACLE_HOME/lib` must be the first entry for the `LD_LIBRARY_PATH` environment variable.

Log In To GemStone

Step 7. Change to the GemConnect `make` directory.

```
% cd $GEMCONNECT/make
```

Step 8. Log in to the GemStone server as SystemUser, using linked Topaz. For instance:

```
% topaz -l
topaz> set gemstone gs64stone
topaz> set user SystemUser password swordfish
topaz> login
[Info]: LNK client/gem GCI levels = 844/844
[Info]: User ID: SystemUser
[Info]: Repository: gs64stone
[Info]: Session ID: 4
[Info]: GCI Client Host: <Linked>
[Info]: Page server PID: -1
[Info]: Login Time: 07/21/10 15:23:43.233 PDT
[07/21/10 15:23:43.543 PDT] gci login: currSession 1 rpc gem
processId -1
successful login
topaz 1>
```

> *WARNING:*
> *Logging in to GemStone as SystemUser is like logging in to your workstation as root—an accidental modification to a kernel object can cause a great deal of harm. Use the DataCurator account for all system administration functions except those that **require** SystemUser privileges, such as upgrades and full restores.*

File In the New Classes

Step 9. File in the GemConnect for Oracle classes and methods, using the following Topaz command line:

```
topaz 1> input gsoraapi.gs
```

The filein writes output to a file gsoraapifilein22.log in the current directory.

Step 10. Check for errors in the install.

The number of errors will appear at the end of the file-in process. The error line should look similar to the following:

```
topaz 1> obj ErrorCount
0
```

If the number is greater than zero and there were no other topaz errors, check the output file gsoraapifilein22.log for details on what failed. Note that topaz errors such as typing errors or login failures will be included in the errorcount. If the source of the problem is not clear, contact GemStone Technical Support.

Step 11. Log out of GemStone.

```
topaz 1> logout
```

Step 12. Leave Topaz and return to the operating system prompt.

If you want to do something else in Topaz, reset the user name, unless you want to be SystemUser, and type the **login** command again. Otherwise, type **quit** to return to an operating system prompt.

```
topaz> quit
```

This completes the GemConnect installation or upgrade procedure. GemConnect is now ready for use with your GemStone system. For further information on using GemConnect, see the *GemConnect Programming Guide*

Set Up New Users

Step 1. If anyone who is going to use GemConnect does not have a GemStone user account, set it up according to the instructions in the *Installation Guide* for your server product and version.

Step 2. Help GemConnect users edit their login shells' initialization files (`.cshrc` or `.profile`). Have them add:

▸ The GemStone `gemsetup` command line

▸ The definition of the `ORACLE_HOME` environment variable, which is the same command line they use to define `$ORACLE_HOME` interactively.

▸ The definition of an environment variable `LD_LIBRARY_PATH` to `$ORACLE_HOME/lib` in their path. `$ORACLE_HOME/lib` must be the first entry for the `LD_LIBRARY_PATH` environment variable.

For information on automatic gemsetup, see the *Installation Guide*. For information on defining the `ORACLE_HOME` environment variable, see "Environment Variables" in Appendix A of the *GemConnect Programming Guide*.

Step 3. Have the users invoke their edited initialization files immediately. This allows the new path to take effect, and also tests for errors in the files.

Depending on their login shell, users should type:

C shell:

```
% source $HOME/.cshrc
```

Bourne shell or Korn shell:

```
$ . $HOME/.profile
```

From now on, the environment needed for running GemConnect will be set up automatically each time they log in.

Step 4. Once users log in to GemStone, they can also test the `ORACLE_HOME` environment variable setting by invoking this method:

```
System performOnServer: 'echo $ORACLE_HOME'
```

If the variable is set correctly, this method returns a GemStone string that is the pathname to the Oracle installation directory.

Installed Files and Directories

This section contains a table that shows the directories and files installed by the GemConnect installation process. Note that the 32-bit versions of the make file and library will not be present in distributions for platforms that do not support GemStone/S.

Table 1.4 shows the directories and files installed under the GemConnect installation directory.

Table 1.4 Files in GemConnect installation

Directory	File Name	Function
	PACKING	Packing file for GemConnect
	verora.txt	GemConnect version information
install	checksums.good	Installation verification file
make	Makefile32	Makefile to rebuild shared library for Gem-Stone/S
make	Makefile642	Makefile to rebuild shared library for Gem-Stone/S 64 Bit v.2.x
make	gsrdbapi.hf	Exported functions and variables for the GemConnect interface (header file)
make	gsrdbapi.ht	Exported types and definitions for the Gem-Connect interface (header file)
make	gsoraapi.gs	GemStone Smalltalk source code for Gem-Connect for Oracle
make	gsoraapi.ht	Exported Oracle types and definitions for rebuilding the user-action library (header file)
make	gsorapublic.c	Public source module for adding functional-ity
make	liboraapi222-32.a	Used to relink shared library (archive library) for GemStone/S
make	liboraapi222-642.a	Used to relink shared library (archive library) for GemStone/S 64 Bit v.2.x
make	patchlevel.h	Patch level and version information for Gem-Connect
ualib	liboraapi222-32.so	User action shared library for GemStone/S
ualib	liboraapi222-642.so	User action shared library for GemStone/S 64 Bit v.2.x