
GemStone®

GemConnect™ *Installation Guide*

For use with
GemStone/S 64 Bit v3.2 and later

Version 2.3

April 2014



GEMTALK™
SYSTEMS

GEMSTONE S™ 64
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PATENTS

GemStone software is covered by U.S. Patent Number 6,256,637 "Transactional virtual machine architecture", Patent Number 6,360,219 "Object queues with concurrent updating", Patent Number 6,567,905 "Generational garbage collector with persistent object cache", and Patent Number 6,681,226 "Selective pessimistic locking for a concurrently updateable database". GemStone software may also be covered by one or more pending United States patent applications.

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About the Documentation

This document provides instructions for installing GemConnect® version 2.3. You should read through this document before beginning installation or upgrade.

Please also read through the changes in this release, which are described in the *GemConnect Release Notes* for version 2.3.

These documents are available on the GemTalk support website, as described below.

Terminology Conventions

The term “GemStone” is used to refer to the server products GemStone/S 64 Bit and GemStone/S, and the GemStone family of products; the GemStone Smalltalk programming language; and may also be used to refer to the company, now GemTalk Systems, previously GemStone Systems, Inc. and a division of VMware, Inc.

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<http://gemtalksystems.com/techsupport>

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- ▶ **Downloads**, including current and recent versions of GemTalk products.
- ▶ **Bugnotes**, identifying performance issues or error conditions that you may encounter when using a GemTalk product.
- ▶ **TechTips**, providing information and instructions that are not in the documentation.

- ▶ **Compatibility matrices**, listing supported platforms for GemTalk product versions.

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

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Website: <http://techsupport.gemtalksystems.com>

Email: techsupport@gemtalksystems.com

Telephone: (800) 243-4772 or (503) 766-4702

When submitting a request, please include the following information:

- ▶ Your name and company name.
- ▶ The version of GemConnect, Oracle, and versions of all related GemTalk products, and of any other related products.
- ▶ 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.

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Installing GemConnect

This document describes how to install GemConnect 2.3 on workstations running the UNIX or Linux operating system. It also explains how to upgrade a GemStone repository for use with GemConnect and how to set up new GemConnect users.

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 2.2.2, please review the Release Notes for each intermediate version, to see the full set of changes.

This version of GemConnect supports GemStone/S 64 Bit v3.2 and later only.

System Requirements

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

GemStone server

A GemStone/S 64 Bit v3.2 or later object server, installed and started according to instructions in the appropriate *GemStone/S 64 Bit Installation Guide*. GemConnect version 2.3 is compatible with GemStone/S 64 Bit v3.2 and later only.

Server keyfile

With the release of GemStone/S 64 Bit v3.2 and GemConnect version 2.3, authorization for using GemConnect is now provided by the GS/64 keyfile. Your GemStone server must be started using a keyfile that provides authorization for GemConnect in order to use GemConnect. New keyfiles are required for v3.2. If you are licensed to use GemConnect, you should receive a keyfile with the appropriate authorization. Contact GemStone Technical Support, or write to keyfiles@gemtalksystem.com, if you have issues or questions.

Platform

A supported platform for the GemStone server product and version you will be using. See the *GemStone/S 64 Bit Installation Guide* for v3.2 for more information.

GemConnect version 2.3 is tested and supported on the following GemStone server product versions and platforms:

GemStone/S 64 Bit 3.2
<ul style="list-style-type: none"> ▶ Solaris 10 and 11 on SPARC ▶ Solaris 10 on x86 ▶ AIX 6.1 and 7.1 ▶ Ubuntu 10.04 on x86 ▶ Red Hat Linux ES 6.1 on x86 ▶ Mac OSX 10.6.4 with Darwin 10.4.0 on x86

Relational Database Server

- ▶ An Oracle 10i or later relational database server must be running and available via the `$ORACLE_HOME` environment variable. GemConnect was tested with Oracle version 10.2.0.4.
- ▶ If GemStone and your relational database server run on different machines, you will also need Oracle 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 *GemStone/S 64 Bit 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. You do not need a C compiler if you do not expect to customize GemConnect.

Install GemConnect

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/GemStone64Bit3.2.0-sparc.Solaris
```


then install GemConnect under /usr2. For example,

```
% mkdir /usr2/GemConnect2.3
```

In these instructions, the GemStone/S 64 Bit installation directory will be referred to as *GS64InstallDir*, and the GemConnect installation directory you have created will be referred to as *GemConnectInstallDir*.

Step 3. Copy the GemConnect distribution file to this directory. GemConnect is provided as a zipped archive file with a name similar to `GemConnect-2.3+oracle10i-platform.OS.zip`. See Table 1 “Distribution file names” for specific file names on each platform.

Table 1 Distribution file names

Solaris on SPARC	<code>GemConnect-2.3+oracle10i-sparc.Solaris.zip</code>
Solaris on x86	<code>GemConnect-2.3+oracle10i-i386.Solaris.zip</code>
AIX	<code>GemConnect-2.3+oracle10i-RISC6000.AIX.zip</code>
Linux	<code>GemConnect-2.3+oracle10i-i686.Linux.zip</code>
Mac	<code>GemConnect-2.3+oracle10i-i386.Darwin.zip</code>

Step 4. Change directory (`cd`) to the directory in which you will install the GemConnect files, *GemConnectInstallDir*. Unzip the distribution file. For example:

```
% cd GemConnectInstallDir
% unzip GemConnect-2.3+oracle10i-platform.OS.zip
```

InstallDir now contains the following subdirectories (denoted with a / character) and files:

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

See Table 2, “Files in GemConnect installation,” on page 16, for a description of the contents of each file and each 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, as you would normally have when working with GemStone.

For example, for C shell with GemStone/S 64 Bit v3.2 on Solaris for Sparc, you may do the following:

```
% setenv GEMSTONE GS64installDir/GemStone64Bit3.2-sparc.Solaris
```

Or for Korn shell:

```
$ GEMSTONE=GEMSTONE GS64installDir/GemStone64Bit3.2-sparc.Solaris
$ 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 complete pathname. For example:

C shell:

```
% setenv GEMCONNECT GemConnectInstallDir
```

Bourne shell or Korn shell:

```
$ GEMCONNECT=GemConnectInstallDir
$ export GEMCONNECT
```

Step 9. Check to make sure that the new GemConnect directory tree includes all of the files listed in the `PACKING` file, and that they have the correct file protection settings.

GemConnect users should 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 gsadmin smtalk 4096 2014-04-08 15:19 .
dr-xr-xr-x 4 gsadmin smtalk 4096 2014-04-08 15:19 ..
dr-xr-xr-x 2 gsadmin smtalk 4096 2014-04-08 15:19 doc
dr-xr-xr-x 2 gsadmin smtalk 4096 2014-04-08 15:19 install
drwxr-xr-x 2 gsadmin smtalk 4096 2014-04-08 15:19 make
-r--r--r-- 1 gsadmin smtalk  912 2014-04-08 15:19 PACKING
dr-xr-xr-x 2 gsadmin smtalk 4096 2014-04-08 15:19 ualib
-r--r--r-- 1 gsadmin smtalk   55 2014-04-08 15:19 verora.txt
```

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

Step 10. Copy the GemConnect shared library into the GemStone object server shared library directory. For GemStone/S 64 Bit v3.2 or later, this library will be `liboraapi23-643.so`.

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

```
% cp $GEMCONNECT/ualib/liboraapi23-643.so $GEMSTONE/ualib
```

Verify that this library has the correct file protection settings. The permissions should look like this:

```
-r-xr-xr-x 1 gadmin smtalk 152161 2014-04-08 15:19 liboraapi23-643.so
```

If necessary, use the `chmod` command to reset permissions

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 v3.2 server. Use the appropriate default names for your server installation.

Step 1. Back up your GemStone repository.

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

Step 2. 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 GemConnect directories and files (`gsadm` in the example listing above).

Step 3. Set the GemStone 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 1-11.

Log In To GemStone

Step 4. Change to a directory in which you have write permission. This will be where the output log file for the GemConnect installation will be created. We will use `workingDirectory` in the following example.

```
% cd workingDirectory
```

Step 5. 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 = 860/860
[Info]: User ID: SystemUser
[Info]: Repository: gs64stone
[Info]: Session ID: 6
[Info]: GCI Client Host: <Linked>
[Info]: Page server PID: -1
[Info]: Login Time: 03/17/2014 11:36:29.258 PDT
Gave this VM preference for OOM killer, Wrote to
/proc/3983/oom_adj value 4
[03/17/2014 11:36:29.264 PDT]
gci login: currSession 1 linked session
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 6. File in the GemConnect for Oracle classes and methods, using the following Topaz command line:

```
topaz 1> input $GEMCONNECT/make/gsoraapi.gs
```

Step 7. Check for errors in the upgrade.

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, please contact GemTalk Technical Support. With your request, include the log file that was created during the installation, *workingDirectory/gsoraapifilein23.log*

Step 8. Log out of GemStone.

```
topaz 1> logout
```

Step 9. 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 GemStone repository upgrade procedure. GemConnect is now installed and ready for use with your GemStone system.

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 *GemStone/S 64 Bit 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. This should already be present for GemStone users.
- ▶ 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.

Have the users invoke their edited initialization files immediately, to verify that this is setup correctly.

The environment needed for running GemConnect will now be set up automatically each time they log in.

Step 3. 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 path-name 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.

Table 2 shows the directories and files installed under the GemConnect installation directory.

Table 2 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	Makefile643	Makefile to rebuild shared library for GemStone/S 64 Bit v.3.x
make	gsrdbapi.hf	Exported functions and variables for the GemConnect interface (header file)
make	gsrdbapi.ht	Exported types and definitions for the GemConnect interface (header file)
make	gsoraapi.gs	GemStone Smalltalk source code for GemConnect 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 functionality
make	liboraapi23-643.a	Used to relink shared library (archive library) for GemStone/S 64 Bit
make	patchlevel.h	Patch level and version information for GemConnect
make	utf.h	Exported functions and variables for UTF functions used in GemConnect interface (header file)
ualib	liboraapi23-643.so	User action shared library for GemStone/S