
GemStone®

GemBuilder® for Smalltalk Installation Guide

For Cincom Smalltalk VisualWorks
Environment

Version 7.6

April 2013

vmware®

GEMSTONE[™]
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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 This Documentation

This document explains how to install GemBuilder® for Smalltalk version 7.6. This documentation is also available on the GemStone Technical Support website.

For information regarding new features and changes in this release of GemBuilder for Smalltalk, please refer to the *GemBuilder for Smalltalk Release Notes* for version 7.6.

Terminology Conventions

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

Technical Support

GemStone Website

<http://support.gemstone.com>

GemStone’s Technical Support website provides a variety of resources to help you use GemStone products:

- ▶ Documentation for released versions of all GemStone products, in PDF form.
- ▶ Downloads and Patches, including past and current versions of GemBuilder for Smalltalk.
- ▶ Bugnotes, identifying performance issues or error conditions you should be aware of.
- ▶ 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. Technical Support is available to customers with current support contracts.

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

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

Email: techsupport@gemstone.com

Telephone: (800) 243-4772 or (503) 533-3503

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. Please also open a ticket on the website, and include error and log information. 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 client Smalltalk 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.

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

24x7 Emergency Technical Support

GemStone Technical Support offers, at an additional charge, 24x7 emergency technical support. This support entitles customers to contact us 24 hours a day, 7 days a week, 365 days a year, for issues impacting a production system. For more details, contact your GemStone account manager.

Training and Consulting

Consulting is available to help you succeed with GemStone products. Training for GemStone software is available at your location, and training courses are offered periodically at our offices in Beaverton, Oregon. Contact your GemStone account representative for more details or to obtain consulting services.

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This document describes how to install GemBuilder for Smalltalk v7.6.

Please review the *GemBuilder for Smalltalk Release Notes* for details of the changes, before upgrading to this version.

This version of GemBuilder for Smalltalk (GBS) is compatible with both GemStone/S 64 Bit, the 64-bit GemStone/S-based object server, and with GemStone/S, the original 32-bit GemStone object server. Applications using GBS version 7.6 can log in to either GemStone/S 64 Bit or GemStone/S repositories (but not simultaneously), provided that the appropriate client libraries for each are used. For details, see “GemStone Server Shared Library Files” on page 8.

GBS version 7.6 supports VisualWorks 7.9 and later only.

Installing GBS is a multi-step process:

1. Ensure that your system is running the appropriate GemStone object server, operating system, and VisualWorks versions.
2. Install the GBS files in the desired directory.
3. Load the GBS code into your Smalltalk image.
4. Set up access to the server shared library files.
5. Configure GBS to locate the libraries.
6. Test the installation.

System Requirements

Operating system

Supported operating systems are listed in Table 1, Table 2, and Table 3.

Client Smalltalk

This version of GBS is supported with the Cincom VisualWorks Smalltalk environment, both 32-bit and 64-bit, as listed in Table 1, Table 2, and Table 3.

This version of GBS can only be loaded into VisualWorks v.7.9 or later.

The 32-bit VisualWorks Smalltalk environment is supported with both 32-bit GemStone/S and GemStone/S 64 Bit.

The 64-bit VisualWorks Smalltalk environment is supported with GemStone/S 64 Bit only.

GemStone Server

Supported GemStone/S and GemStone/S 64 Bit platforms are listed in Table 1, Table 2, and Table 3.

GemStone Server Shared Library Files

GemBuilder for Smalltalk requires access to a set of shared library files that are compatible with the specific GemStone/S server product and version.

The required libraries must be for the platform on which GBS will be running, regardless of the platform on which the server is running.

32-Bit VisualWorks Smalltalk

With 32-bit VW, you must use 32-bit shared libraries. These are distributed with both 32-bit GemStone/S and with GemStone/S 64 Bit. The GemStone/S 64 Bit distribution includes 32-bit libraries in addition to (on Unix) 64-bit libraries.

32-bit GemStone/S allows both linked and RPC logins from 32-bit VW. With GemStone/S 64 Bit, you can only login RPC from 32-bit VW.

Details of the required libraries are listed in Table 1 on page 13.

64-Bit VisualWorks Smalltalk

With 64-bit VW, you can only login to GemStone/S 64 Bit; it is not compatible with 32-bit GemStone/S.

Using 64-bit GemStone/S 64 Bit shared libraries with 64-bit VW, you can login linked as well as RPC.

Details of the required libraries are listed in Table 2 on page 13.

Table 1 Supported 32-bit GemStone/S Server versions

	VW 7.9.1 32-bit	VW 7.9 32-bit
Windows 2008 R2; Windows 7; Windows XP, SP 1 or later	6.6.3.3	6.6.3.3
Red Hat Linux ES 5.0, 5.5, and 6.1	6.6.3.3	6.6.3.3
Solaris 9 and 10 on SPARC	6.6.3.3	6.6.3.3

Table 2 Supported GemStone/S 64 Bit Server versions - RPC logins only

	VW 7.9.1 32-bit	VW 7.9 32-bit
Windows 2008 R2	3.1.0.2	3.1.0.2
Windows 7; Windows XP, SP 1 or later	3.1.0.2, 2.4.5.1	3.1.0.2, 2.4.5.1
SUSE Linux ES 10 and 11; Red Hat Linux ES 5.5 and 6.1	3.1.0.2, 2.4.5.1	3.1.0.2, 2.4.5.1
Solaris 10 on SPARC	3.1.0.2, 2.4.5.1	3.1.0.2, 2.4.5.1
Solaris 9 on SPARC	2.4.5.1	2.4.5.1

Table 3 Supported GemStone/S 64 Bit Server versions - Linked or RPC logins

Linked logins require 64-Bit VisualWorks Smalltalk clients

	VW 7.9.1 64-bit	VW 7.9 64-bit
SUSE Linux ES 10 and 11; Red Hat Linux ES 5.5 and 6.1	3.1.0.2, 2.4.5.1	3.1.0.2, 2.4.5.1
Solaris 10 on SPARC	3.1.0.2, 2.4.5.1	3.1.0.2, 2.4.5.1

Installation Process

The following steps show you how to install GemBuilder for Smalltalk, install the required server shared libraries, and configure GBS to log in.

1. Install GBS Files

GemBuilder for Smalltalk is provided in zipped form. Prior to installation, unzip the distribution.

The distributions includes the following:

A directory named **docs** that contains PDF copies of the GemBuilder for Smalltalk documentation:

- GBS-UsersGuide-VW-7.6.pdf
- GBS-ReleaseNotes-7.6.pdf
- GBS-InstallGuide-7.6.pdf

A directory named **VW** with the parcel files for VisualWorks:

- CstMessengerSupport.pcl
- CstMessengerSupport.pst
- GbsRuntime.pcl
- GbsRuntime.pst
- GbsTools.pcl
- GbsTools.pst

Determine the appropriate location for the GBS v7.6 parcels. This directory should already be on, or will need to be added to, the VisualWorks parcel path (this is described in the next section).

Copy the parcel files from the distribution directory named **vw** to this location.

2. Load GBS into a VisualWorks Image

1. Start VisualWorks, using a clean image without any previous versions of GemBuilder for Smalltalk.
2. Use the **System > Settings** tool to ensure that the directory to which you copied the parcels is included in **System > Parcel Path**. Add it, if necessary.
3. In a Parcel Manager, select the parcel **GbsTools**. Select **Parcel > Load**. This parcel in turn loads the other required parcels.

If you are building a deployment image and do not need the GBS development tools, install the **GbsRuntime** parcel instead of **GbsTools**.

4. Save your image. You may find it helpful to create an additional copy of this GBS image to use as a backup during application development.

3. Install Shared Libraries from GemStone Server

If you are running GBS on the same machine as your GemStone server is running, and you have already installed and configured GemStone, you can skip this step.

GBS requires a set of client-specific shared libraries (.dlls or .so files) that are provided as part of the GemStone server product distribution. These libraries need to be loaded into the VisualWorks image in which GBS code is installed, in order for GBS to be able to login to the GemStone server.

Each version of the GemStone server has a version and platform specific set of shared libraries. If your GBS client is on a different platform than your GemStone server, you will need to download the version-specific libraries for the GBS client platform.

You can install the entire GemStone server (or GemStone/S 64 Bit Windows server component) on the client machine, or just copy the specific libraries you need. If you are new to installing GemBuilder and GemStone, we recommend that you install the GemStone server on your client machine. This will provide access to all available GemStone functionality, as well as the client libraries you need.

If your GBS client will be on Windows, but your GemStone server is GemStone/S 64 Bit, only a small subset of GemStone server functionality is available on the client, since GemStone/S 64 Bit is not available for Windows. For Windows clients, GemStone/S 64 Bit provides a subset of the install in a file with a name starting with `GemBuilderC`, which is available to download along with the other server platform distributions. Installing this provides the required client library and allows you to run a subset of server functionality, including `topaz` and `gslis`, on your Windows client.

Install the GemStone Server for Shared Library Access

Full details for installing the GemStone server are provided in the Installation Guide for your server product and version. However, if you do not plan to run stone repository monitors on your client machine, you do not need to follow all of the instructions in the server *Installation Guide*.

The simplified GemStone server installation can be done with the following steps:

1. Download the version of the GemStone server for your client platform. For example, if you will be logging into a v3.1.0.2 stone, and you intend to run GBS on Linux, download the file named:

```
GemStone64Bit3.1.0.2-x86_64.Linux.zip
```

Move this distribution file to the directory location in which this will be installed on your client, *InstallDir*.

To login to GemStone/S 64 Bit from Windows clients, download and install the GemBuilderC installation. For example, for clients logging into v3.1.0.2, download:

```
GemBuilderC3.1.0.2-x86.Windows_NT.zip
```

2. `cd` to this directory.
3. Unzip the distribution file using `unzip`. This will create a directory with a name similar to the filename (without the .zip extension); in this example,

```
InstallDir/GemStone64Bit3.1.0.2-x86_64.Linux/
```

4. The following steps are not required to run GemBuilder, but are needed in order to use GemStone server utilities such as `gslis`, `startnetldi`, and so on.
 - ▶ Create a GEMSTONE environment variable pointing to the GemStone installation directory, for example:

```
EXPORT GEMSTONE=InstallDir/GemStone64Bit3.1.0.2-x86_64.Linux/
```
 - ▶ Add the bin subdirectory of the GemStone install directory to your machine search path.

These steps are similar on Windows, Linux, and Solaris although the specific environment variable syntax differs. The *GemStone Installation Guide* for each platform provides detailed platform-specific instructions.

Alternative: copy only specific shared libraries

It is not necessary to have a full installation of the GemStone server on your client machine. Only a limited number of shared library files are required for GBS to login to a GemStone server, using an RPC login with the Gem on the Stone's host (the most common scenario).

The set of shared library files, and their name and locations within the distribution, varies for the different GemStone server products and version. The required library files are listed in Table 1 and Table 2.

To install only the shared library files, rather than the full GemStone server, copy the particular set of library files from the GemStone server installation to a location on your client machine. If this location is the VisualWorks working directory, or if GBS is provided the full path, this location may not need to be on your machine search path.

For server configurations that support both linked and RPC logins, you do not need both the linked ("`lnk`" or "`lw`") and RPC ("`rpc`" or "`rw`") library files. The linked version allows both linked and RPC logins, while the RPC only allows RPC logins.

The following tables lists the shared library files required for running with VisualWorks clients with the supported GemStone/S server product, product versions, and operating system platforms.

32-Bit VisualWorks clients

You must use the 32-bit server shared libraries with 32-bit VisualWorks images. 32-bit shared libraries are provided both with the 32-bit GemStone/S and GemStone/S 64 Bit products.

When running against GemStone/S 64 Bit, you cannot login linked from 32-bit VisualWorks.

Table 1 Shared Libraries to use with 32-bit VisualWorks

Server product and Version	Windows Client Shared Libraries	Solaris or Linux Client Shared Libraries
GemStone/S v6.6.3.3 32-bit VW Clients RPC or Linked Logins	In %GEMSTONE%\bin: gcilw66.dll (linked or RPC logins) gcirw66.dll (RPC logins only) gsw66.dll englis66.err	In \$GEMSTONE/lib: libgcilnk66.so (linked or RPC logins) libgcirpc66.so (RPC logins only) english66.err
GemStone/S 64 v2.4.5.1 32-bit VW Clients RPC logins only	In %GEMSTONE%\bin: libgcirpc.dll libgs64-245.dll msvcr90.dll	In \$GEMSTONE/lib32: libgcirpc.so
GemStone/S 64 v3.1.0.2 32-bit VW Clients RPC logins only	In %GEMSTONE%\bin: libgcirpc-3.1.0.2-32.dll libssl-3.1.0.2-32.dll msvcr90.dll	In \$GEMSTONE/lib32: libgcirpc-3.1.0.2-32.so libssl-3.1.0.2-32.so

64-Bit VisualWorks clients

When running with 64-Bit VisualWorks clients, you may log in either linked or RPC to GemStone/S 64 Bit. You must use the 64-Bit server shared libraries.

Table 2 Shared Libraries to use with 64-bit VisualWorks

Server product and Version	Solaris or Linux Client Shared Libraries
GemStone/S 64 v2.4.5.1 64-bit VW Clients Linked or RPC logins	In \$GEMSTONE/lib: libgcilnk.so (linked or RPC) libgcirpc.so (RPC only)
GemStone/S 64 v3.1.0.2 64-bit VW Clients Linked or RPC logins	In \$GEMSTONE/lib: libgcilnk-3.1.0.2-64.so (linked or RPC) libgcirpc-3.1.0.2-64.so (RPC only) libssl-3.1.0.2-64

4. Configure GBS to locate the correct shared libraries

GBS uses the configuration parameter `libraryName` to determine the name and location of the shared library to load. While only one specific library name is set by this parameter, any other shared library files that are listed in Table 1 or Table 2 must be available, usually in the same location, in order for the library load to succeed and logins to work.

There are a number of options for specifying the library file that should be loaded:

OPTION 1

Set `libraryName` to the full path and file name of the client library file. For example, for clients on Windows logging into GemStone/S 64 Bit v3.1.0.2:

```
GbsConfiguration current libraryName:  
'InstallDir\GemBuilderC3.1.0.2-x86.Windows_NT\bin\libgcirpc-  
3.1.0.2-32.dll'
```

This does not require the library be on the `%PATH%` or `$LD_LIBRARY_PATH`.

OPTION 2

Set `libraryName` to the file name of the client library file. For example, for clients Windows logging into GemStone/S 64 Bit v3.1.0.2:

```
GbsConfiguration current libraryName:  
'libgcirpc-3.1.0.2-32.dll'
```

This requires that the library be in a directory on the `%PATH%` or `$LD_LIBRARY_PATH`; or on Linux, in the standard Linux library directories.

On Windows, it may also be in the current working directory or in the VisualWorks executable directory.

For server products and versions other than GemStone/S 64Bit v3.1.x, be sure to verify that no other versions of shared libraries are in directories on the path.

OPTION 3

Leave `libraryName` set to the empty string. This is the default, equivalent to:

```
GbsConfiguration current libraryName: ''
```

This requires that the client libraries be in the current working directory, or in the `bin` directory or subdirectory of your VisualWorks image's `VISUALWORKS` directory.

Be sure to verify that no other versions of GemStone shared libraries are in these locations.

OPTION 4

Use the file dialog to select the library name and path.

If the library name specified by `libraryName` cannot be loaded, the resulting notification provides the option of selecting a file using a file dialog. The load error may be due to an incorrect `libraryName`, copying the wrong library, or an additional required library failing to load.

Navigate to the location of the shared library and select the file. The dialog provides filename filtering, so only valid library names will appear.

Selecting a file using the file dialog will set `libraryName` to the full path selected.

Save Image with libraryName

To preserve your `libraryName` setting, you may wish to save your image.

The `libraryName` setting controls the shared library that is loaded the first time GemStone server code is accessed after image startup. If you have a client library already loaded in your image, changing the `libraryName` has no effect. If later, you want to use a different shared library (for example, to log in to a different server product or version), you will need to update the `libraryName`, and save and restart the image.

5. Verify installation by logging into the GemStone server

Once the shared libraries are loaded, you should test your installation by logging into the GemStone/S server. You will need to ensure that the Stone repository monitor, and a NetLDI (if necessary), are accessible.

See the *GemBuilder for Smalltalk User's Guide*, Chapter 11, for instructions on logging into the GemStone/S server.

Note that GemStone/S 64-bit v3.1 and later uses SRP (Secure Remote Password) and SSL to initiate login and authenticate passwords for RPC logins, and for all communication between GBS clients and gem processes that are on separate machines. See the *GemStone/S 64 Bit System Administration Guide* for more information.