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GemStone®

# *GemBuilder® for Smalltalk Installation Guide*

For the Cincom Smalltalk  
VisualWorks Environment

Version 7.6.1

April 2014



GEMTALK™  
SYSTEMS

GEMSTONE<sup>™</sup>  
S64



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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 7.6.1. This documentation is also available on the GemTalk 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 7.6.1.

## 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.

## Technical Support

### Support Website

<http://gemtalksystems.com/techsupport>

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

- ▶ **Documentation** for released versions of GemTalk products, in PDF form.
- ▶ **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.

## 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 assistance may be submitted online, 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.gemtalksystems.com>

**Email:** [techsupport@gemtalksystems.com](mailto: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 GemBuilder for Smalltalk, client Smalltalk product and version, and versions of all related GemTalk products and other 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.

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

## 24x7 Emergency Technical Support

GemTalk 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 GemTalk Support Renewals.

## Training and Consulting

GemTalk Professional Services provide consulting to help you succeed with GemStone products. Training for GemStone/S is available at your location, and training courses are offered periodically at our offices in Beaverton, Oregon. Contact GemTalk Professional Services for more details or to obtain consulting services.

***Chapter 1. Installation***

1. Verify System Requirements . . . . . 8  
    Supported Platforms and Versions . . . . . 9

2. Install GBS v7.6.1 distribution . . . . . 10

3. Load GBS Smalltalk code into your VisualWorks Image . . . . . 10

4. Install client shared libraries from GemStone/S Server . . . . . 11  
    Complete GemStone/S Server Installation . . . . . 11  
    Shared Libraries only. . . . . 11

5. Determine client shared library to load . . . . . 13

6. Configure GBS to load client shared library . . . . . 14

7. Verify installation by logging into the GemStone/S Server. . . . . 15



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This document describes how to install GemBuilder for Smalltalk v7.6.1.

Please review the *GemBuilder for Smalltalk Release Notes* for v7.6.1 for details of the changes, before installing or 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 7.6.1 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 7.6.1 is supported with VisualWorks 7.9.1 and later, and cannot be used with versions earlier than 7.9.

Installing GBS is a multi-step process:

1. Verify System Requirements (page 8)
2. Install GBS v7.6.1 distribution (page 10)
3. Load GBS Smalltalk code into your VisualWorks Image (page 10)
4. Install client shared libraries from GemStone/S Server (page 11)
5. Determine client shared library to load (page 13)
6. Configure GBS to load client shared library (page 14)
7. Verify installation by logging into the GemStone/S Server (page 15)

GBS does not support upgrade from an image in which an older version of GBS has been previously installed. To upgrade GBS, start with a VisualWorks image in which GBS is not installed. Follow the instructions in this *Installation Guide*, and then restore your application code.

## 1. Verify System Requirements

Prior to installing, verify that your system meets the requirements for v7.6.1.

### Operating system

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

### Client Smalltalk

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

This version of GBS is supported with VisualWorks 7.9.1 and later, and cannot be loaded into versions earlier than 7.9.

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 and Table 2.

### GemStone Server Shared Library Files

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

The required libraries must match the platform on which the client Smalltalk execute will run, regardless of the platform on which the server is running.

### 32-Bit VisualWorks Smalltalk

With 32-bit VisualWorks, 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 both 32-bit and 64-bit libraries.

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

### 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 from Solaris and Linux clients. On Windows, only RPC logins are possible.

## Supported Platforms and Versions

The following tables describe the client Smalltalk versions and platforms supported by GBS 7.6.1, and the GemStone/S server products and versions that can be used with each.

**Table 1 Supported GemStone/S 64 Bit Server versions**

	VW 7.10 32-bit	VW 7.10 64-bit	VW 7.9.1 32-bit
Windows 8	3.2	3.2	
Windows 2008 R2	3.2, 3.1.0.6	3.2	3.2, 3.1.0.6
Windows 7	3.2, 3.1.0.6, 2.4.6	3.2	3.2, 3.1.0.6, 2.4.6
Ubuntu Linux 10.04	3.2	3.2	3.2
Red Hat Linux ES 6.1	3.2, 3.1.0.6, 2.4.6	3.2, 3.1.0.6, 2.4.6	3.2, 3.1.0.6, 2.4.6
Red Hat Linux ES 5.5	3.1.0.6, 2.4.6	3.1.0.6, 2.4.6	3.1.0.6, 2.4.6
Solaris 10 on SPARC	3.2, 3.1.0.6, 2.4.6	3.2, 3.1.0.6, 2.4.6	3.2, 3.1.0.6, 2.4.6

**Table 2 Supported 32-bit GemStone/S Server versions**

	VW 7.10 32-bit	VW 7.9.1 32-bit
Windows 2008 R2	6.6.4	6.6.4
Windows 7	6.6.4	6.6.4
Red Hat Linux ES 5.5 and 6.1	6.6.4	6.6.4
Solaris 9 and 10 on SPARC	6.6.4	6.6.4

## 2. Install GBS v7.6.1 distribution

GemBuilder for Smalltalk is provided in zipped form. You will need to unzip the distribution into a temporary location or into the installation directory you have selected.

The GemBuilder for Smalltalk distribution 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-7.6.1.pdf**  
**GBS-InstallGuide-7.6.1.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 v7.6.1 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.

## 3. Load GBS Smalltalk code into your 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.

## 4. Install client shared libraries from GemStone/S Server

GBS requires a set of client-specific shared libraries (.dll 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.

The GCI client libraries should be the same release version as the GemStone/S server, but since they are loaded into the VisualWorks client, they are specific to the OS platform and VisualWorks bit size (32-bit or 64-bit).

You may need or wish to install the entire GemStone/S server on the client node, or just copy the specific shared libraries that are required.

### Complete GemStone/S Server Installation

See the GemStone/S Installation Guide for your client platform for instructions on how to install the GemStone/S server component.

In most cases, you will want to define the `$GEMSTONE` or `%GEMSTONE%` environment variable to point to the GemStone server or client installation directory, and add `$GEMSTONE/bin` or `%GEMSTONE%\bin` to your machine search path.

Defining `$GEMSTONE` is required for 64-bit linked logins.

### Shared Libraries only

If you will be only have RPC logins (with the gem on the stone's host or on a gemserver), and do not need tools such as topaz, gslit, and VSD on the client, then you may copy only shared client libraries to your client node. You will need to download the GemStone/S Server or Windows Client, locate the required files, and copy them.

The required libraries files are listed in tables 3, 4, 5, and 6, depending on your server product and version.

Note that the server installation includes two directories containing the shared libraries; `bin`, containing 64-bit libraries and executables, and `bin32`, containing 32-bit libraries and executables.

You may copy these shared libraries to:

- ▶ the Visual Works installation directory, or a directory under the `bin` subdirectory of your `$VISUALWORKS` environment
- ▶ to a directory location on your machine search path, or that you add to the machine search path
- ▶ To a directory that is not on your machine search path.

Your choice of destinations on the client will affect your options in specifying the client library, that is, whether you must include the full path and filename, filename only, or may leave `libraryName` empty.

The following tables list the specific client libraries that you must copy from the server installation to the client node.

Note that linked library names are not included; linked logins (available on Solaris and Linux) require additional executables on the client, so you cannot simply copy the shared libraries. If you require linked logins on the client, you should follow the instructions above for 'Complete GemStone/S Server Installation'.

**Table 3 Shared Libraries to copy for RPC login to GemStone/S 64 Bit 3.2**

Client Image	Windows Client Shared Libraries	Solaris or Linux Client Shared Libraries
<b>32-bit VW Clients</b>	In %GEMSTONE%\bin32: libgcirpc-3.2.0-32.dll libssl-3.2.0-32.dll msvcr100.dll	In \$GEMSTONE/lib32: libgcirpc-3.2.0-32.so libssl-3.2-32.so
<b>64-bit VW Clients</b>	In %GEMSTONE%\bin: libgcirpc-3.2.0-64.dll libssl-3.2.0-64.dll msvcr100.dll	In \$GEMSTONE/lib: libgcirpc-3.2.0-64.so libssl-3.2-64

**Table 4 Shared Libraries to copy for RPC login to GemStone/S 64 Bit 3.1.0.6**

Client Image	Windows Client Shared Libraries	Solaris or Linux Client Shared Libraries
<b>32-bit VW Clients</b>	In %GEMSTONE%\bin: libgcirpc-3.1.0.6-32.dll libssl-3.1.0.6-32.dll msvcr90.dll	In \$GEMSTONE/lib32: libgcirpc-3.1.0.6-32.so libssl-3.1.0.6-32.so
<b>64-bit VW Clients</b>	<i>not available</i>	In \$GEMSTONE/lib: libgcirpc-3.1.0.6-64.so libssl-3.1.0.6-64

**Table 5 Shared Libraries to copy for RPC login to GemStone/S 64 Bit 2.4.6**

Client Image	Windows Client Shared Libraries	Solaris or Linux Client Shared Libraries
<b>32-bit VW Clients</b>	In %GEMSTONE%\bin: libgcirpc.dll libgs64-246.dll msvcr90.dll	In \$GEMSTONE/lib32: libgcirpc.so
<b>64-bit VW Clients</b>	<i>not available</i>	In \$GEMSTONE/lib: libgcirpc.so

**Table 6 Shared Libraries to copy for RPC login to 32-Bit GemStone/S 6.6.4**

Client Image	Windows Client Shared Libraries	Solaris or Linux Client Shared Libraries
<b>32-bit VW Clients</b>	In %GEMSTONE%\bin: gcirw66.dll gsw66.dll englis66.err	In \$GEMSTONE/lib: libgcirpc66.so english66.err

## 5. Determine client shared library to load

Whether or not you have a full server installation on the client or have copied a few libraries, there is a specific library name you will specify to have GBS load using the `libraryName:` parameter.

The following table lists the possible library names for each supported GemStone server product and version. Library names that include 'lnk' allow both linked and RPC logins; library names with 'rpc' allow only RPC logins.

You will specify only one library name from the following table with `libraryName:;` other required library files can then be found automatically.

With GemStone/S 64 Bit v3.x, library names with '64' or '32' specify the compiled bit size of the library, and should match the client Smalltalk bit size.

**Table 7 Library names to use with libraryName:**

Server Product and Version	Windows	Solaris and Linux
<b>GemStone/S 64 Bit v3.2</b>	libgcirpc-3.2.0-32.dll or libgcirpc-3.2.0-64.dll	libgcirpc-3.2.0-32.so or libgcirpc-3.2.0-64.so or libgbslnk-3.2.0-64.so
<b>GemStone/S 64 Bit v3.1.0.6</b>	libgcirpc-3.1.0.6-32.dll or libgcirpc-3.1.0.6-64.dll	libgcirpc-3.1.0.6-32.so or libgcirpc-3.1.0.6-64.so
<b>GemStone/S 64 Bit v2.4.6</b>	libgcirpc.dll	libgcirpc.so or libgcilnk.so
<b>GemStone/S v6.6.4</b>	gcirw66.dll or gcirw66.dll	libgcirpc66.so or libgcilnk66.so

## 6. Configure GBS to load client shared library

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 the preceding tables 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. 32-bit VisualWorks clients on Windows, logging into GemStone/S 64 Bit v3.2:

```
GbsConfiguration current libraryName:
'InstallDir\GemBuilderC3.2.0-x86.Windows_NT\bin32\libgcirpc-
3.2-32.dll'
```

With this option, the shared libraries may be anywhere on the client; the libraries do not need to be on the `%PATH%` or `$LD_LIBRARY_PATH`.

### OPTION 2

Set `libraryName` to the file name of the client library file. For example, for 32-bit VisualWorks clients on Windows, logging into GemStone/S 64 Bit v3.2:

```
GbsConfiguration current libraryName:
'libgcirpc-3.2-32.dll'
```

This options 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.

If you are using 32-bit GemStone/S, or GemStone/S 64 Bit 2.x, the client library names are not unique. 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 the 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` in the previous options 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.

## 7. Verify installation by logging into the GemStone/S Server

To preserve your `libraryName` setting, save your image. You may wish to make a backup of this 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. To change the shared library that is loaded, update the `libraryName`, and save and restart the image.

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.