
GemStone®

GemBuilder® for Java
Installation Guide
for UNIX platforms

March 2004



Version 2.1.1

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Patents

GemStone is covered by U.S. Patent Number 6,256,637 "Transaction virtual machine architecture" and Patent Number 6,360,219 "Object queues with concurrent updating". GemStone may also be covered by one or more pending United States patent applications.

About This Documentation

This document provides instructions for installing GemBuilder® for Java™, Version 2.1.1. You should read through this document before beginning the installation process, to ensure that you understand the installation process and that all system requirements are satisfied before beginning the installation.

Typographical Conventions

This document uses the following typographical conventions:

- Commands and user input are shown in **bold** typeface. For example:
`prompt> java com.gemstone.tools.GbjLauncher`
- Methods, environment variables, file names and paths, and screen dialog examples are shown in monospace typeface. For example:

```
allElements()
```

Sometimes **monospace bold** is used to call attention to selected parts of a longer code example.

- Placeholders that are meant to be replaced with real values are shown in *italic* typeface. For example:

`execute: aString`

In formal syntax listings, these additional conventions are used:

- Literals are shown in **bold** typeface. For example:

`tcp`

- Optional arguments and terms are enclosed in square brackets. For example:

`[fileName]`

- Braces { } mean 0 or more modifiers. For example:

`{modifier}`

In this example you may list as many modifiers as you wish, but they are not required.

- Alternative arguments and terms are separated by a vertical bar (pipe). For example:

`gemStoneName | netLdiName`

In this example you must specify one name, but not both.

Other Useful Documents

- *GemBuilder for Java Release Notes* describe new features and bug fixes in the GemBuilder for Java Version 2.1.1 release.
- The *GemStone/S Programming Guide* describes the GemStone System and the GemStone Smalltalk language.
- If you will be acting as a system administrator, or developing software for someone else who must play this role, you should read the *GemStone/S System Administration Guide*.

Technical Support

GemStone provides several sources for product information and support. The *product-specific manuals*, *API reference pages*, and *online help* provide extensive documentation, and should always be your first source of information. GemStone Technical Support engineers will refer you to these documents when applicable. However, you may need to contact Technical Support for the following reasons:

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- Your technical question is not answered in the documentation.
 - You receive an error message that directs you to contact GemStone Technical Support.
 - You want to report a bug.
 - You want to submit a feature request.

Questions concerning product availability, pricing, keyfiles, or future features should be directed to your GemStone account manager.

When contacting GemStone Technical Support, please be prepared to provide the following information:

- Your name, company name, and GemStone/S license number
- The GemBuilder product and version you are using
- The hardware platform and operating system you are using
- A description of the problem or request
- Exact error message(s) received, if any

Your GemStone support agreement may identify specific individuals who are responsible for submitting all support requests to GemStone. If so, please submit your information through those individuals. All responses will be sent to authorized contacts only.

For non-emergency requests, you should contact Technical Support by web form or E-mail. You will receive confirmation of your request, and a request assignment number for tracking. Replies will be sent by E-mail whenever possible, regardless of how they were received.

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

This is the preferred method of contact. GemStone's Technical Support website provides a variety of resources to help you use GemStone products. Use of this site requires an account, but registration is free of charge. To get an account, just complete the Registration Form, found in the same location. You'll be able to access the site as soon as you submit the web form.

The following types of information are provided at this web site:

Help Request allows designated support contacts to submit new requests for technical assistance and to review or update previous requests.

Technotes provide answers to questions of general interest submitted by GemStone customers. They may contain coding examples, links to other sources of information, or downloadable code.

Bugnotes identify performance issues or error conditions that you may encounter when using a GemStone product. A bugnote describes the cause of the condition, and, when possible, provides an alternative means of accomplishing the task. In addition, bugnotes identify whether or not a fix is available, either by upgrading to another version of the product, or by applying a patch. Bugnotes are updated regularly.

Tips and Examples provide information and instructions for topics that usually relate to more effective or efficient use of GemStone products. Some Tips may contain code that can be downloaded for use at your site.

Release Notes and Install Guides for your product software are provided in PDF format.

Documentation for GemBuilder for Java is provided in PDF format. This is the same documentation that is included with your GemBuilder for Java product.

Community Links provide customer forums for discussion of GemStone product issues.

Technical information on the GemStone Web site is reviewed and updated regularly. We recommend that you check this site on a regular basis to obtain the latest technical information for GemStone products. We also welcome suggestions and ideas for improving and expanding our site to better serve you.

Email: support@gemstone.com

Please do not send files larger than 100K (for example, core dumps) to this address. A special address for large files will be provided as appropriate.

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

We recommend you use telephone contact only for more serious requests that require immediate evaluation, such as a production system that is non-operational. In these cases, please also submit your request via the web or email, including pertinent details.

Emergency requests are handled by the first available engineer. If you are reporting an emergency and you receive a recorded message, transfer your call to the next available technical support administrator, who will take a message and immediately contact an engineer.

Non-emergency requests received by telephone will be placed in the normal support queue for evaluation and response.

24x7 Emergency Technical Support

GemStone 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, if they encounter problems that cause their production application to go down, or that have the potential to bring their production application down. For more details, contact your GemStone account manager.

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Consulting and training for all GemStone products are available through GemStone's Professional Services organization.

- Training courses are offered periodically at GemStone's offices in Beaverton, Oregon, or you can arrange for onsite training at your desired location.
- Customized consulting services can help you make the best use of GemStone products in your business environment.

Contact your GemStone account representative for more details or to obtain consulting services.

Chapter 1. Installing GemBuilder for Java

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Installing GemBuilder for Java

This Installation Guide tells how to install GemBuilder for Java on workstations running the UNIX operating system.

System Requirements

To install GemBuilder for Java, you must meet the requirements in Table 1.1.

Table 1.1 GemBuilder for Java System Requirements

Component	Minimum Requirement
Operating system	Solaris version 2.8, HP-UX version 11.0 or 11.x, or AIX version 5.1 or 5.2
Disk space	Approximately 4.5 MB of free disk space to hold the GemBuilder for Java distribution files
RAM	Approximately 4 MB for the Session Broker, plus 8 MB per logged-in Tools session
Media	CD-ROM drive
Display system	Support for at least 256 colors (8 bits)

Table 1.1 GemBuilder for Java System Requirements (Continued)

Component	Minimum Requirement
Java	A Java development environment of your choice. This release is based on Java Developer's Kit (JDK) version 1.4.1.
GemStone/S	A GemStone/S 6.1 or later server. Install GemStone/S and start the Stone repository monitor before installing GemBuilder for Java. GemStone/S can run on a different machine than GBJ.

Preliminaries

For best results, prepare your system as described in this section before copying the GemBuilder for Java software from the distribution media.

1. Check disk space.

You can install GemBuilder for Java in any directory. Check disk space and determine the disk drive (and partition) on which you will install GBJ. You will need 4.5 MB of free disk space.

Note the root directory for the partition in which you will install GemBuilder (for example, /user1 or /beta):

Name of directory _____

2. Verify that TCP/IP networking software is up and running.

In order for GemBuilder for Java to connect to GemStone/S, TCP/IP must be functional, even if your workstation is not connected to a network. Verify that TCP/IP networking software is up and running on your workstation and on the machine where the Stone is running. Issue the **ping** command for your workstation and again for the Stone host, if different. For instance:

Solaris:

```
% /usr/sbin/ping hostname 1 1
```

HPUX and AIX:

```
% /etc/ping hostname 8 1
```

where *hostname* is the name of your node or the Stone host. If ping responds with statistics or "*hostname* is alive," you have verified that TCP/IP is functional.

If you don't know the host names of the machines, you can find a list of all the network nodes in the `/etc/hosts` file. If you are running **NIS**, check the `/etc/hosts` file on your **NIS** master node. Otherwise, check the file on your current machine.

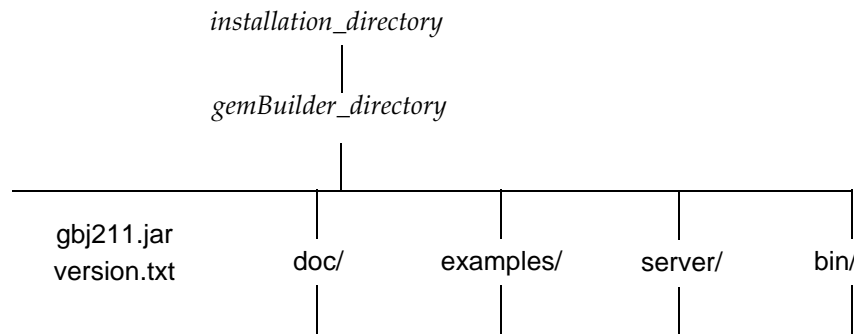
Reading the Distribution Medium

When you copy GemBuilder for Java from your distribution medium, a GBJ directory tree is created in your installation directory. Depending on your platform, the topmost directory is one of the following:

- `GembuilderJV2.1.1-sparc.Solaris`
- `GembuilderJV2.1.1-hppa.hpux`
- `GembuilderJV2.1.1-RISC6000.AIX`

In the instructions that follow, we refer to this directory as *gemBuilder_directory*. As shown in Figure 1.1, *gemBuilder_directory* contains one informational file, one Java class library, and four subdirectories.

Figure 1.1 Installation Directory Structure



The `doc` directory contains the following entry points:

- `index.html` — a Web page with links to descriptions of the API classes, a programming guide, and a tools guide (the supporting files are also in this directory)

- `GbjGuide.pdf` and `GbjTools.pdf` — versions in Adobe PDF format of the programming guide and the tools guide, respectively. You can view these books using the free Acrobat reader available from Adobe (www.adobe.com/products/acrobat/readstep2.html)

Installing GemBuilder for Java from the CD-ROM

To install the GemBuilder for Java software from the CD-ROM, perform the following steps:

1. **Go to the installation directory.**

Issue the `cd` command to move to the disk drive and directory where you will install GBJ.

```
% cd installation_directory
```

2. **Read the distribution medium.**

Mount the CD-ROM and extract the GBJ files using the `unzip` command that corresponds to your platform:

```
% mount_point/utils/aix/unzip mount_point/gbj/aix.zip  
% mount_point/utils/hpux/unzip mount_point/gbj/hpux.zip  
% mount_point/utils/solaris/unzip mount_point/gbj/solaris.zip
```

Checking the Environment Variables

1. Verify that your GEMSTONE environment variable is set. For example (for a platform running HP-UX):

```
% echo $GEMSTONE  
/users/GemStone6.1-hppa-hpux
```

2. Verify that the GemStone executables are in your path. For example:

```
% which topaz  
/users/GemStone6.1-hppa-hpux/bin/topaz  
%
```

Installing GemBuilder for Java into your Repository

1. If necessary, start GemStone/S on the repository with which you want to use GemBuilder for Java. If necessary, also start a NetLDI for use later in testing the GBJ installation.
2. Change (**cd**) to a working directory where you want the installation log to be created. (You must have write permission for this directory.)
3. Log in to GemStone/S as SystemUser, using linked Topaz. Use the **-i** switch, which keeps Topaz from reading any initialization file you might have. For instance:

```
% topaz -i -l
topaz> set gemstone gemserver61
topaz> set user SystemUser password swordfish
topaz> login
successful login
```

4. File in the server component, which is located in the `server` directory of the GemBuilder for Java installation tree (the path must be complete, beginning with a slash). For instance:

```
topaz 1> input gemBuilder_directory/server/install.gs
```

During the file-in operation, output is directed to the file `GbjServerFilein.log` in the current directory.

The file-in operation should end with a message that the errorcount is 0. If you encounter errors, notify GemStone Technical Support, as described on page vi.

5. Exit Topaz:

```
topaz 1> quit
```

Starting the Session Broker

1. To use the session broker, you must have the `gemBuilder_directory/bin` directory in your executable search path.
2. Go to the `server` directory.

```
% cd gemBuilder_directory/server
```

3. Make the configuration file `gbj.ini` writable. For example:

```
chmod u+w gbj.ini
```

4. Optionally, edit the configuration file `gbj.ini` in the `gemBuilder_directory/server` directory to change the various GBJ configuration parameters. This file contains comments describing each parameter and its valid values.

Two important parameters are the port number of the broker and the port numbers of the spawned gems. In the default assignment, port 9090 serves as the “well-known” port at which Java clients contact this Session Broker to open a session. Users may need to provide this number as input to an application.

By default, ports 9091 through 9099 are used internally during the login process, then recycled. These port numbers do not need to be contiguous with the well-known port (9090). Their quantity is arbitrary but limits the number of logins that can be processed concurrently.

5. Write-protect the file `gbj.ini`. For example:

```
chmod u-w gbj.ini
```

6. Unless you set the log file directory when you changed the configuration parameters, move to the directory where you want the Session Broker logs to be created.

7. Invoke `startgbj`:

```
% cd gemBuilder_directory/server
% startgbj
```

When the message “Ready” appears, the Session Broker is ready to accept connection requests.

Incorporating GemBuilder for Java into your Java Development Environment

1. Set your `CLASSPATH` environment variable to point to the Tools class library, `gbj211.jar`. You may need to append this file to your existing `CLASSPATH`, separated with a colon (:).

To set the operating system environment:

C shell:

```
% setenv CLASSPATH gemBuilder_directory/gbj211.jar
```

Bourne or Korn shell:

```
# CLASSPATH=gemBuilder_directory/gbj211.jar
# export CLASSPATH
```

2. Invoke the GBJ Launcher:

```
% java gemstone.tools.GbjLauncher [options]
```

or

```
% java -jar gbj211.jar [options]
```

You may specify the following command line options:

- `help` — print a help message (to standard output)
- `version` — print GBJ version information
- `UseLogFile filename` — write log output to the specified file
- `NoFileLogger` — send log output to standard output rather than to a file
- `UsePrefFile filename` — use the specified file for the preferences file
- `NoPrefFile` — do not load or save a preferences file

Testing your Installation by Logging in to GemStone

To log in to GemStone, the following requirements must be met:

- GemStone/S and a NetLDI are running.
- A Session Broker has been started, as described in “Starting the Session Broker” on page 1-5.
- The Java executables (such as the JDK bin directory) are in your path.

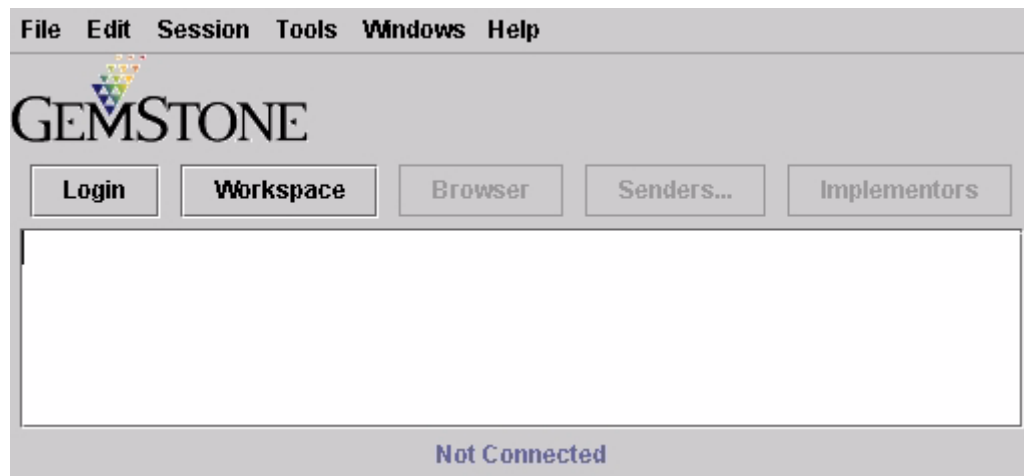
1. Start the GemBuilder Development Tools by issuing the following command:

```
% java com.gemstone.tools.GbjLauncher
```

If you receive the message “Can’t find class `com.gemstone.tools.GbjLauncher`”, it’s likely that CLASSPATH is not defined appropriately for the Java system you are using. Consult the documentation for your Java tools and operating system.

2. When the Tools Launcher (Figure 1.2) appears, click **Login...** to begin a session. A Login Dialog appears, prompting you for the session parameters.

Figure 1.2 The Tools Launcher



3. Fill in the session parameters, as described in Table 1.2. (See Figure 1.3.)

Table 1.2 Session Parameters

Parameter	Description
GemBroker Machine	(Required) The name of the machine where the Session Broker is running. (May be "localhost" if the broker is on your machine.)
GemBroker Port	(Required.) The number of the well-known port, either 9090 or the number you specified explicitly in <code>gbj.ini</code> .
GemStone Server	(Required.) The name of the Stone process. The default is <code>gemserver61</code> . For a Stone running on a remote server, be sure to include the server's hostname in Network Resource String (NRS) format. For example, for a Stone process called 'gemserver61' running on node 'handel', you would specify this NRS string: <pre>!@handel!gemserver61</pre> For more information on Network Resource Strings, see your <i>GemStone/S System Administration Guide</i> .
GemStone User	(Required.) Your GemStone username, such as DataCurator.

Table 1.2 Session Parameters (Continued)

Parameter	Description
GemStone Password	(Required.) Your GemStone password.
Gem Service	Specify gemnetobject (the initial default, but not shown) or gemnetobjcsh (for C-Shell users on UNIX hosts). Because the Gem process must run on the same machine as the Session Broker, a server name should not be provided in this field as part of an NRS.
Host User	The username for your account on this machine. (This username and password are required for an RPC session unless your GemStone/S installation uses another method of providing network authentication, such as a <code>.netrc</code> file or running NetLDIs in guest mode with a captive account. For details, see the <i>GemStone/S System Administration Guide</i> .)
Host Password	The password for your account.
Transaction Mode	One of the following: <ul style="list-style-type: none"> • Auto — Places your session in a GemStone transaction and starts a new one each time you commit or abort. • Manual — You must explicitly begin transactions before making changes that you want to commit.
TimeOut	The length of time (in seconds) that the Gem will wait before it drops an idle session. The Tools default of 0 means that the session will not timeout.
Connect Timeout	The length of time (in seconds) that the Java client will wait for a response from the Broker.

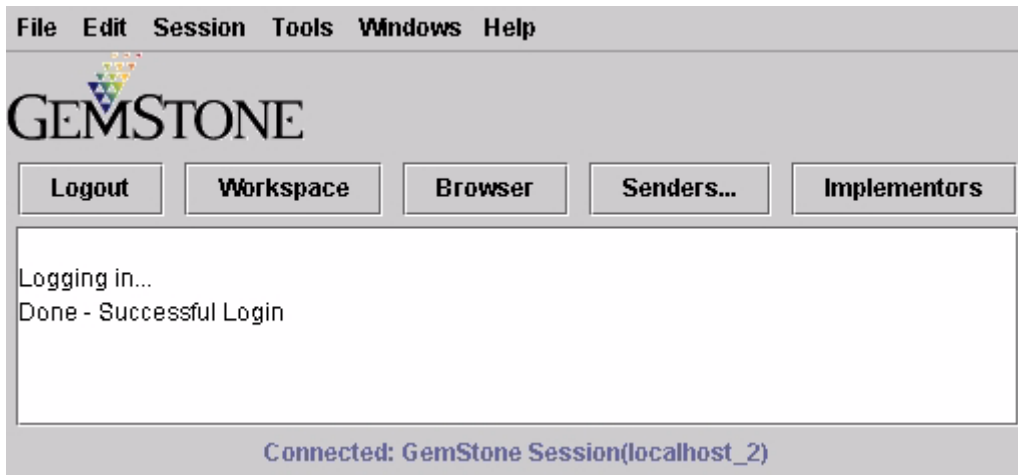
When you're done, click **OK**.

Figure 1.3 The Session Parameters

GemBroker Machine	localhost
GemBroker Port	9090
Gemstone Server	gemserver61
Gemstone User	
Gemstone Password	
Gem Service	
Host User	
Host Password	
Transaction Mode	<input checked="" type="radio"/> Manual <input type="radio"/> Auto
TimeOut	900
Connect Timeout	150
<input type="button" value="Ok"/> <input type="button" value="Cancel"/>	

4. A successful login results in the event being recorded in the Launcher's Text Pane, which serves as a transcript. Additional buttons are activated, and the Login button becomes **Logout** (Figure 1.4).

Figure 1.4 The Launcher After Login



After you have successfully logged in to GemStone/S, your GemBuilder installation is complete. To end the session, click **Logout**. To close the launcher, choose **File > Exit**.

If the login attempt did not succeed, examine the error message to determine the reason. Also examine the file `gbjbroker.log` (the location of this file was displayed by the Session Broker at startup).

- For details on login parameters and the Session Broker, see the GemBuilder for Java online documentation.
- To change your session parameter settings and try again, click **Login**.

Upgrading from Previous Versions

Before upgrading to GemBuilder for Java version 2.1.1, you must upgrade the GemStone/S server to version 6.1 or higher. This release is not compatible with any GemStone/S release prior to 6.1.

To upgrade GemStone/S, follow the upgrade instructions in the *GemStone/S Installation Guide*.

To upgrade GemBuilder for Java, follow the instructions to install GemBuilder for Java as described in Chapter 1, “Installing GemBuilder for Java.”

