
GemStone®

GemStone/S Installation Guide

for Windows
on Intel-compatible Systems

Version 6.5.4

October 2009

GEMSTONE ™

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PATENTS

GemStone is covered by U.S. Patent Number 6,256,637 "Transactional virtual machine architecture", Patent Number 6,360,219 "Object queues with concurrent updating", and Patent Number 6,567,905 "Generational Garbage Collector". GemStone may also be covered by one or more pending United States patent applications.

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Preface

This document explains how to install GemStone/S version 6.5.4, and how to upgrade from previous GemStone releases. This Installation Guide is also available on the GemStone customer website.

For information regarding new and modified features in this release of GemStone/S, please refer to the *GemStone/S Release Notes*.

Terminology Conventions

This document uses the following terminology:

The term “GemStone” is used to refer both to the product, GemStone/S, or previous GemStone/S server products; and to the company, GemStone Systems, Inc.

Typographical Conventions

This document uses the following typographical conventions:

- ▶ Operating system and Topaz commands are shown in **bold** typeface. For example:

copydbf

- ▶ Smalltalk methods, GemStone environment variables, operating system file names and paths, listings, and prompts are shown in `monospace` typeface. For example:

`markForCollection`

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

StoneName.conf

- ▶ The symbols `%GEMSTONE%` and `$GEMSTONE` refer to the directory where the GemStone software is installed.

Technical Support

GemStone provides several sources for product information and support. The product-specific manuals provide extensive documentation, and should be your first source of information.

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

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:

Documentation for GemStone/S is provided in PDF format. This is the same documentation that is included with your GemStone/S product.

Release Notes and **Install Guides** for your product software are provided in PDF format in the Documentation section.

Downloads and **Patches** provide code fixes and enhancements that have been developed after product release, and past and current versions of GemBuilder for Smalltalk.

Bugnotes, in the Learning Center section, 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.

TechTips, also in the Learning Center section, provide information and instructions for topics that usually relate to more effective or efficient use of GemStone products.

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.

Help Requests

You may need to contact Technical Support directly for the following reasons:

- ▶ 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 GemStone 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, the support website is the preferred way to contact Technical Support. Only designated support contacts may submit help requests via the support website. If you are a designated support contact for your company, or the designated contacts have changed, please contact us to update the appropriate user accounts.

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

Email: support@gemstone.com

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

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 that is non-operational. In these cases, please also submit your request via the web or email, including pertinent details such as error messages and relevant log files.

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.

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.

Training and Consulting

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.

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Installing GemStone/S Version 6.5.4

This chapter describes the procedure for installing GemStone/S version 6.5.4 on a single machine. If you have enough disk space on a single machine, we recommend that you set up GemStone this way initially to ensure that all the pieces work together. At the end of this chapter, we suggest refinements you might want to make, such as relocating the repository files or running GemStone in a network configuration.

NOTE

If you are upgrading to GemStone/S 6.5.4 from an earlier release, follow the instructions in Chapter 2 of this installation guide.

Adjust the installation to meet your specific needs. The topic “What Next?” on page 1-14 provides references to procedures and related information in the *System Administration Guide for GemStone/S*.

Review the Installation Procedure

The following list summarizes the steps to install GemStone.

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Check the System Requirements

Before you install GemStone, ensure that the following system requirements are satisfied. Systems meeting these requirements are suitable for installing GemStone and beginning development, but additional system resources may be necessary to support large applications.

Platform

- ▶ An Intel-compatible Pentium-class system, clock speed 200Mhz or faster

RAM

- ▶ At least 128 MB (256 MB recommended)
- ▶ 2 MB for each Gem session process beyond the first two

Virtual memory

- ▶ At least 128 MB of virtual memory beyond other system needs (512 MB recommended). In general, your total virtual memory should be at least twice the RAM installed.

Disk space

- ▶ About 50 MB on an NTFS or FAT file system for the typical (default) installation of the GemStone software. Installation on HPFS is not supported.
- ▶ Additional disk space as required for your repository.
- ▶ The repository files should be located on a disk drive that does not contain virtual memory. Use of multiple disk drives is advisable for servers.

Operating system

- ▶ Windows 2000 5.0, Windows XP 5.1, or Windows 2003 Standard Edition, Service Pack 1
- ▶ The configuration option `SHR_PAGE_CACHE_SIZE_KB` defines the size (in KBytes) of extent page space in the shared page cache. The maximum acceptable value for this configuration option is limited by system memory, kernel configurations, and cache space allocated by `SHR_PAGE_CACHE_NUM_PROCS`. As a general guideline, the maximum limit for `SHR_PAGE_CACHE_SIZE_KB` is approximately 1.3 GB.

For more general information about these and other configuration options, see Appendix A of the *System Administration Guide for GemStone/S*.

System clock

- ▶ The system clock must be set to the correct time. When GemStone opens the repository at startup, it compares the current system time with the recorded checkpoint times as part of a consistency check. A system time earlier than the time at

which the last checkpoint was written may be taken as an indication of corrupted data and prevent GemStone from starting. The time comparisons use GMT.

TCP keepalive option

- ▶ GemStone processes ordinarily use the TCP *keepalive* option to determine how long they will wait after communications activity ceases unexpectedly. This setting can be useful for reaping stale RPC Gems, but the operating system default may not be appropriate for this purpose. For further information, refer to your operating system documentation.

C/C++ Compiler

- ▶ Microsoft Visual C++, version 6.0 Professional

GemStone requires a C/C++ compiler only if you are developing C or C++ code for user actions or for a C or C++ application. This compiler is required only for development work, not for execution.

Debugger

A C debugger can be useful to allow problem analysis by GemStone consulting or Technical Support. It also may allow you to debug your C user actions. It is not required for GemStone execution.

Prepare for Installation

Perform the following steps to prepare the machine to receive the GemStone software. You must perform these steps as Administrator or while logged in as a member of the Administrators group.

NOTE

For the rest of this document, the installation directory is referred to as InstallDir, which is the same directory as %GEMSTONE%.

1. As the Windows Administrator account or as an account that belongs to the Administrators group, log in to a machine with adequate resources to run GemStone and that owns the disk on which you are going to install the GemStone files.
2. Determine that adequate virtual memory is available:
 - a. Right click on the My Computer icon and select Properties. Select the Advanced tab.
 - b. Click on the Performance settings tab or button. On Windows XP, select the Advanced tab.
3. Check the free disk space and determine the disk drive and partition on which you will install the GemStone software. The default path is \GemStone654 on the file system where Windows is installed.
4. Select an installation directory, *InstallDir*, and make this directory the current working directory.
5. GemStone/S is provided as a zipped archive file with a name similar to GemStone6.5.4-x86.Windows_NT.zip. Move this distribution file to the direc-

tory location in which GemStone will be installed, *InstallDir*, then unzip the distribution file using unzip. For example:

```
% unzip GemStone6.5.4-x86.Windows_NT.zip
```

If you are installing from CD-ROM, insert the CD-ROM into the drive, then unzip the files.

6. The *InstallDir* now contains a GemStone directory with a name similar to GemStone6.5.4-x86.Windows_NT.

In addition to several subdirectories, this directory also contains two text files: `PACKING`, which lists all of the GemStone files, and `version.txt`, which identifies this particular product and release of GemStone.

Set the Environment

Perform the following steps to properly configure the operating environment.

1. Add or update GemStone environment variables from previous installations:
 - a. Open the Control Panel.
 - b. From the Control Panel, double-click the System icon.
 - c. Click on the Advanced tab, then on the Environment Variables button.
 - d. Set the environment variable GEMSTONE to the *full pathname* (starting with a slash) of your new GemStone installation directory.

If this is a new installation, in the System Environment Variables list, click on the **New** button, and enter the full path, starting with the drive, of your new Gemstone Installation directory.

If you are updating an existing installation, select GEMSTONE in the System Environment Variables list. Click on the **Edit** button, and update the value with your new GemStone new installation directory

- e. In the System Environment Variables list, select the `path` variable, and click on the **Edit** button. Add the full path, starting with the drive, of your new Gemstone Installation directory to the front of the path string. If you are updating an existing installation, remove the previous GemStone directory from the path.

Create the GemStone Key File

To run GemStone, you must have a key file. The keyfile contents are provided by your GemStone sales representative, or contact keyfiles@gemstone.com.

2. Using a text editor, create the key file
`%GEMSTONE%\sys\gemstone.key`.
3. GemStone keys are provided in text email. Paste the contents of this email into the keyfile and save.

Verify TCP/IP

To run GemStone, TCP/IP networking software must be functioning, even if your machine is not connected to a network.

1. Verify that TCP/IP networking software is functioning by executing the following command at a Windows command prompt (1 is the number one):

```
C:\> ping -n 1 hostname
```

where *hostname* is the name of your machine. If ping responds with statistics, TCP/IP is functioning. If you see a message that indicates that the name is not recognized as an internal or external command, no TCP/IP network adapter is installed on the machine. Perform the following procedure.

Install the Minimum TCP/IP Functionality

Perform this procedure only if the machine is not connected to a network. This procedure installs the minimum TCP/IP functionality required for GemStone interprocess communication.

1. From the Control Panel, double-click the Network icon.
2. In the Network Settings dialog box, click Add Adapter.

In the Add Network Adapter dialog box, select the MS Loopback Adapter from the Network Adapter Card selection list, and click OK.

Define the NetLDI Service

The appropriate NetLDI service must be defined in your TCP/IP network database. By default, GemStone/S 6.5.4 will use `netldi65`. You may use another name, although this may require further configuration to allow remote caches to connect.

1. The TCP/IP network database is:

```
C:\WINDOWS\system32\drivers\etc\services
```

2. Add an entry similar to the following to the network database:

```
netldi65 50383/tcp #GemStone 6.5.4
```

Choose a port number that is not being used by another service. The port number should be in the range $49152 \leq \text{port} \leq 65535$, to conform to IANA standards (<http://www.iana.org/assignments/port-numbers>).

NOTE

If you are upgrading from a previous version, you might need to keep the NetLDI for that version running. You may need to define a new netldi service name with a different port number, or assign a different port number to netldi65.

3. If several machines will be running GemStone, have the system administrator update the network database for each machine. The port number must be the same on every machine.

Run the Configuration Script

The executable `gsconfig.exe` adds the GemStone keys to the Windows registry (the path is `HKEY_LOCAL_MACHINE\SOFTWARE\GemStone\GemStone`)

1. Open a command prompt window.
2. Verify that the `GEMSTONE` environment variable is set correctly:

```
C:\>echo %GEMSTONE%
```

this should report your new GemStone installation directory.

3. Run the `gsconfig` executable:

```
C:\>gsconfig
```

Set the GemStone File Permissions or Attributes

To protect certain GemStone files, you must change the files' permissions. Because the files in a directory on an NTFS file system inherit their permissions from the parent directory, you need only set the permissions for the directories.

To set these permissions:

1. In Explorer, select the directories `InstallDir\log` and `InstallDir\data`.
2. Right-click, select **Properties**, click the Security tab, and click Permissions
3. In the Directory Permissions dialog box, check the box Replace Permissions on Existing Files.
4. Select the group named Everyone, and set the Type of Access to **Change**.
5. Click OK.

NOTE

Your site may prefer to restrict access to these directories to a special group. Chapter 1 of the System Administration Guide for GemStone/S contains suggestions for doing this.

6. Protect the other GemStone directories (that is, all but `data` and `log`) by changing the permissions for group Everyone to **Read**.

Ordinary users do not need to create or modify any files in the other directories.

Create a working copy of the repository

If this is a new installation, you will need to set up a fresh repository and configuration file. If you are upgrading an existing installation, you do not need to do this — you will copy the `extent/s` and configuration file from your existing repository.

1. To set up a fresh repository, copy the file `InstallDir\bin\extent0.dbf` to the directory `InstallDir\data`. You can do this using File Explorer or a command prompt.

```
C:\> copy InstallDir\bin\extent0.dbf InstallDir\data\
```

Caution

Ensure that you copy the extent file, and do not move it to the working directory. You may need the clean, empty extent later to restore from backup

2. A default configuration file is provided in the *InstallDir*\bin. Create a copy of this file for your repository, modifying this as required for your application.

```
C:\> copy InstallDir\bin\initial.config InstallDir\data\system.conf
```

Define the Windows Services

The GemStone repository monitor (the Stone) and the NetLDI network server ordinarily run as Windows services independent of a particular login. As services, they can be started automatically when the system boots, and they can continue to run after the user who started them logs out.

Creating the services merely adds them to the Windows services database so that they can be started later as described in the *System Administration Guide for GemStone/S*.

1. Create the recommended default Stone service:

```
C:\> stone create /b
```

This command creates a Stone service with the default name of `gemserver65` and configures it to start automatically at system boot (`/b`).

2. Create the recommended default NetLDI service.

```
C:\> netldi create /b /g /a
```

This command creates a NetLDI service with the default name `netldi65` and configures it to start automatically at system boot (`/b`) using guest mode (`/g`) with a captive account (`/a`).

For information about the `stone` and `netldi` commands, see the online help or Appendix B of the *System Administration Guide for GemStone/S*.

Start the GemStone Services

Before you log out as Administrator, start the Stone and NetLDI services.

1. Start the recommended default Stone and NetLDI services:

```
C:\> stone start
```

```
C:\> netldi start
```

2. Log out as Administrator.

Change System Passwords and Add Users

After installing GemStone 6.5.4, you must change the passwords for the three administrative users: DataCurator, SystemUser, and GcUser (The initial password for each is `swordfish`). The DataCurator account is used to perform system administration tasks. The SystemUser account ordinarily is used only for performing GemStone system

upgrades. The GcUser account is used by the garbage collection task, which runs automatically as a separate login. Access to each of these accounts should be restricted.

Chapter 6 of the *System Administration Guide for GemStone/S* tells you how to change the passwords and set up accounts for other GemStone users.

What Next?

This chapter has guided you through installation of GemStone 6.5.4 in an initial configuration that is sufficient to create a basic repository and begin setting up user accounts. The objective was to get a simple, default configuration up and running.

You might consider performing the following tasks:

- ▶ To modify the initial object server configuration to one that is more efficient for your particular needs, refer to Chapter 1 of the *System Administration Guide for GemStone/S*. This chapter contains sample configurations, from small to very large, and also contains detailed information about how to tailor these configurations to your own system.
- ▶ To modify the configuration of Gem session processes and to ensure that users have the necessary permissions to access the shared page cache and the extents, refer to Chapter 2 of the *System Administration Guide for GemStone/S*.
- ▶ If you are going to operate in a network environment, Chapter 3 of the *System Administration Guide for GemStone/S* has additional information about the GemStone network object server (NetLDI), how to handle user authentication, how to share software over the network, and how to set up some common configurations.
- ▶ To start and stop the GemStone object server, refer to instructions in Chapter 4 of the *System Administration Guide for GemStone/S*.
- ▶ GemStone/S is shipped with a default time zone of US Pacific. To modify this setting, edit the file `installtimezone.txt` in the GemStone upgrade directory, then execute it as SystemUser.

Upgrading from Previous GemStone/S Versions

This chapter describes how to upgrade an existing GemStone/S installation to GemStone/S version 6.5.4.

GemStone/S version 6.5.4 supports upgrade from GemStone/S version 6.1 and later. If you are upgrading from a version prior to 6.1, you must first convert and upgrade to a GemStone/S 6.1.x version, preferably 6.1.5. For instructions, see the Installation Guide for GemStone/S 6.1.5.

If you are using GemBuilder for Smalltalk (GBS), you should also upgrade the client libraries that are used by GBS. See Chapter 3 for supported versions of GBS for use with GemStone/S 6.5.4, and instructions on installing updated client libraries.

For applications using GemConnect, Gembuilder for Java, or GemEnterprise, these products will need to be reinstalled following the upgrade process. For details, see the Installation Guide for that product.

NOTE

The following instructions use the version number 6.1.5 to represent any of the versions 6.1.5, 6.3, 6.3.1, 6.5.1, or 6.5.2. The procedure is the same regardless which of these versions you have; exceptions are noted in the instructions.

Overview of the Upgrade Strategy

We recommend that you perform the upgrade twice: first a pilot upgrade and then the production upgrade. With this strategy, you can keep your version 6.1.5 production system running while you familiarize yourself with the upgrade process.

Pilot Upgrade

The purpose of the Pilot upgrade is to familiarize yourself with the upgrade process and to help ease the upgrade of your production system. To help you gain the most information and experience from the Pilot upgrade, you must create a small repository that contains objects that are representative of your production system.

Using the representative repository, complete the upgrade and file out all changes so you can minimize down time when you upgrade your production system. During the Pilot upgrade, you:

- ▶ Modify classes and methods that run in GemStone so they work properly with the version 6.5.4 classes and methods.
- ▶ Modify your application's client code as necessary. This code may be in C, C++, or client Smalltalk.
- ▶ File out the changes so they can be loaded quickly when you perform the Production upgrade.
- ▶ Recompile and relink any C or C++ programs.
- ▶ Reload client Smalltalk images.

Once you complete the Pilot upgrade, you will be able to schedule down time of your production system based on what you learned during the Pilot upgrade.

NOTE

Most upgrade procedures apply to both the Pilot upgrade and the Production upgrade. Differences are noted in the procedures.

Production Upgrade

The purpose of the Production upgrade is to upgrade your production system using the information you gathered during the Pilot upgrade.

Perform the Upgrade

Review the Upgrade Procedure

The following list summarizes the steps to upgrade to GemStone version 6.5.4.

- ▶ Prepare for the Upgrade2-3
- ▶ Perform the Upgrade.....2-4
- ▶ Restore Your Site-Specific Settings and Back Up the Repository2-5

Prepare for the Upgrade

Perform the following steps to prepare for the upgrade.

1. Install GemStone/S 6.5.4 to a new installation directory, separate from the installation directory for version 6.1.5, using the instructions in Chapter 1.
2. Create the version 6.5.4 Stone as a Windows service:


```
C:\> stone create StoneName
```
3. Configure version 6.5.4 the way you expect to use it — that is, with the appropriate extent locations and sizes.

Ensure that adequate space is available for extents, transaction logs, and a backup during the upgrade:

Use Windows Explorer to determine available disk space.

Space is needed for the following:

- ▶ Your version 6.1.5 extents and transaction logs.
- ▶ Your version 6.5.4 extents and transaction logs — allow for some growth of the extents during the upgrade (you can reclaim much of the physical space later by performing a full backup and restoration of the converted repository).

4. Log in to the 6.1.5 GemStone system and reset the SystemUser password to 'swordfish':

```
topaz 1> printit
(AllUsers userWithId: #SystemUser) password: 'swordfish' .
System commitTransaction .

%
```

The upgrade scripts log in to GemStone with the SystemUser account and the default password.

5. Halt all user activity on the repository you are going to upgrade:
 - a. Log in to Topaz as DataCurator.
 - b. Force all other users off the system:

```
topaz 1> printit
System stopOtherSessions.

%
```

CAUTION

You MUST file out any changes you have made to the GemStone kernel classes in order to preserve these changes in version 6.5.4. Also, consider saving important modified files, such as configuration files, that will be overwritten during the upgrade.

6. If this is the Pilot upgrade, file out any modifications or additions you made to GemStone kernel class methods by using Topaz command `fileout`. (For information about `fileout`, see the *GemStone Topaz Programming Environment*.)

7. Shut down the Stone:

```
C:>\ stone stop stone615
```

where *stone615* is the name of version 6.1.5 Stone on this machine.

8. Set up the 6.5.4 environment.

Set the environment variables required for the upgrade.

```
C:\> set GEMSTONE=InstallDir654
C:\> set PATH=%GEMSTONE%\bin;%PATH%
C:\> set upgradeLogDir=tempDir
```

where *tempDir* is a temporary directory for which you have write permission.

NOTE

Use a separate log directory for each repository you upgrade. A repository may contain multiple extents.

9. Copy your version 6.1.5 extent files into the location specified by the GemStone configuration option `DBF_EXTENT_NAMES`:
 - a. Using a text editor, open the file `%GEMSTONE%\data\system.conf`, or whichever configuration file your system uses.
 - b. Locate the last occurrence of the option `DBF_EXTENT_NAMES`, and note its value.
 - c. Copy each `.dbf` file to the noted location. For example:

```
C:\> cp InstallDir615\data\extent0.dbf 654location
C:\> cp InstallDir615\data\extent1.dbf 654location
C:\> cp InstallDir615\data\extent2.dbf 654location
```

where *654location* is the location specified by `DBF_EXTENT_NAMES` in the configuration file that will be used in version 6.5.4. If you are changing platforms, as well as upgrading, use `copydbf` instead of `cp`.

Perform the Upgrade

1. Start the 6.5.4 Stone. For upgrading from version 6.1.5 or earlier, you must start the stone using the `-C` flag, which performs the conversion. For example:

```
C:\> stone start stone654
```

You may omit the stone name, in which case `gemserver654` will be used. When this step completes, the results will be:

```
startstone[Info]: GemStone server has been started.
```

2. Run the upgrade script:

```
C:\> upgradeImage stone654
```

where *stone654* is the name of the version 6.5.4 Stone started in the previous step.

This script invokes several subordinate scripts to complete the upgrade. It is normal for the display to stop scrolling occasionally while output is sent only to a log file and while methods are recompiled. Each step should end with this display:

```
No errors detected in this step.
```

If errors were reported during the upgrade, please preserve the contents of `%upgradeLogDir%`. Contact your internal GemStone support person or GemStone Technical Support.

Restore Your Site-Specific Settings and Back Up the Repository

1. Reinstall any other GemStone products that modify kernel classes.

If you use GemConnect, GemBuilder for Java, or GemEnterprise, you must install them again at this time. Use the procedure in the installation guide for each product. If you have an upgraded product version you may install it at this time. Otherwise, install the same version that was previously installed.

2. Log in to GemStone version 6.5.4 as DataCurator.

3. Change the password for SystemUser, which you changed to `swordfish` prior to the conversion, back to its version 6.1.5 value. Also, change the password for GcUser, which was reset by the conversion process, back to its version 6.1.5 value:

```
topaz 1> printit
(AllUsers userWithId: 'SystemUser') password: '615Password'.
(AllUsers userWithId: 'GcUser') password: '615Password'.
System commitTransaction
%
```

where *615Password* is the account password used in version 6.1.5.

4. If you have modified any kernel class methods in the previous version, carefully compare these changes with version 6.5.4 kernel methods to see whether your changes are still necessary or appropriate. This should be done before or during the Pilot upgrade, so a filein can be created containing only the required changes.

File in the application-specific kernel modifications and commit. You may need to log in as SystemUser to do this.

5. If you are upgrading from a version earlier than 6.2, and your application includes indexes on values that may contain Characters greater than 128, you need to rebuild these indexes. This is due to changes in Character collation in version 6.2.
6. If this is the Production upgrade, create a full backup of the upgraded repository now. The upgraded repository is now usable.
7. If you are using GBS clients, configure these to use the version 6.5.4 client libraries. See Chapter 3, 'Configuring GBS for the v6.5.4 Server' for details.

Configuring GBS for the v6.5.4 Server

This chapter describes how to configure your GemBuilder for Smalltalk (GBS) application to run with GemStone/S version 6.5.4. You will need to install the client shared libraries for GemStone/S 6.5.4 to your GBS location, and modify GBS settings to use the new client libraries.

We recommend upgrading to GBS version 7.1.2patch2 or later for VisualWorks Smalltalk, or 5.2.5 or later for VisualAge or VA Smalltalk, if you have not already done so. Previous versions of GBS (5.2.2 or later for VisualAge or VA Smalltalk and 6.0 or later with VisualWorks) are expected to work with GemStone/S version 6.5.4 but have not been tested.

Supported Versions and Platforms

The following tables list supported versions of GemBuilder for Smalltalk with the compatible versions of client Smalltalk and Operating System.

GBS version 7.1.2patch2

GemBuilder for Smalltalk version 7.1.2patch2 is supported with GemStone/S version 6.5.4, on the following VisualWorks and OS platforms:

VisualWorks 7.5 with 7.5 OE	VisualWorks 7.4.1 with 7.4d OE	VisualWorks 7.4 with 7.4 OE	VisualWorks 5i.1 Envy with 5i.4c OE
Windows XP, SP1 or later, and Win- dows 2003 Server	Windows XP, SP1 or later, and Win- dows 2003 Server	Windows XP, SP1 or later, and Win- dows 2003 Server	Windows 2000, SP1 or later, Win- dows XP, SP1 or later, and Win- dows 2003 Server
Solaris 8, 9 and 10 on SPARC	Solaris 8, 9 and 10 on SPARC	Solaris 8, 9 and 10 on SPARC	
Red Hat Linux AS 3.0	Red Hat Linux AS 3.0	Red Hat Linux AS 3.0	

GBS version 5.2.5

GemBuilder for Smalltalk version 5.2.5 is supported with GemStone/S version 6.5.4, on the following VA Smalltalk and OS platforms:

VA Smalltalk 7.5.2	VA Smalltalk 7.0
Windows 2000, SP1 or later, Windows XP, SP1 or later, and Windows 2003 Server	Windows 2000, SP1 or later, Windows XP, SP1 or later, and Windows 2003 Server

Installing the GemStone/S 6.5.4 Libraries onto Windows Clients

This section describes the procedure for installing client libraries on Windows and getting GBS to recognize them.

You can either follow the instructions to extract the libraries from `clientFiles.zip`, or you can copy these files from your GemStone/S 6.5.4 object server installation. The libraries are the same ones found in `%GEMSTONE%\bin`

1. Install the GemStone/S 6.5.4 object server if you have not already done so.
2. Copy the file `clientFiles.zip`, distributed with your platform installation, to a location on the Windows client machine, *<InstallDir>*.
3. Unzip `clientFiles.zip`. This file unzips into a directory tree:
<InstallDir>\clientFiles<clientPlatform>*\<shared library files>*
4. Quit any running client Smalltalk VM that is using GBS.

5. Your client libraries may be placed in the directory in which the client Smalltalk executable resides, or in any directory that is on the path, %PATH%.

NOTE

In step 6., <GBS> refers to the directory in which the client Smalltalk executable resides, or any directory that is on the path that will be used by the GBS application, and <SRC> refers to the clientFiles subdirectory for the GBS platform; for example, <InstallDir>clientFiles\x86.Windows_NT.

6. To copy the files from the clientFiles directory <SRC> to the GemBuilder installation directory, or another directory on the Windows path, <GBS>, execute the following:

```
C:\> copy <SRC>\gcilw65.dll <GBS>
C:\> copy <SRC>\gcirw65.dll <GBS>
C:\> copy <SRC>\gsw65.dll <GBS>
C:\> copy <SRC>\englis65.err <GBS>
```

7. No other files from clientFiles.zip are needed. You may delete <InstallDir>\clientFiles if you wish.
8. Ensure that there are no other copies of these libraries on the search path.
9. Start up the client Smalltalk VM.
10. Determine the appropriate library name to use. The library gcilw65.dll permits both linked and RPC logins. gcirw65.dll permits only rpc logins.
11. Set the library name in GBS. There are several ways to do this. Using the GBS settings dialog, select the tab titled "Server Communication", and edit the field libraryName. You may also execute:

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

for example:

```
GbsConfiguration current libraryName: 'gcilw65.dll'
```

12. Save your image, exit, and restart, to allow the correct libraries to be loaded.

Installing the GemStone/S 6.5.4 Libraries onto Unix Clients

This section describes the procedure for installing client libraries on UNIX or Linux clients, and getting GBS to recognize them.

1. Install the GemStone/S 6.5.4 object server if you have not already done so.
2. Unzip the file clientFiles.zip, distributed with your platform installation. This file unzips into a directory tree:

```
clientFiles/<clientPlatform>/<shared library files>
```
3. Log in to your GBS client machine as the user who is the owner of the GBS installation files.
4. Your client libraries may be placed in any directory that is on the machine search path \$LD_LIBRARY_PATH, or you may add the directory containing the client libraries to the \$LD_LIBRARY_PATH. Ensure that there are no other copies of the client libraries

on the search path. (In the following instructions, the term “path” means the path specified by `$LD_LIBRARY_PATH`)

Alternatively, you can place the shared libraries in any location, and in the GBS configuration parameter *libraryName*, specify the absolute path to the client library file.

NOTE

In step 5., <GBS> refers to your GemBuilder installation directory, or any directory that is on the path that will be used by the GBS application, and <SRC> refers to the `clientFiles` subdirectory of the GemStone/S installation for your GBS platform (For example, `$GEMSTONE/clientFiles/sparc.Solaris`).

5. To copy the files from the GemStone/S server source directory *<SRC>* to the GemBuilder installation directory, or another directory, *<GBS>*, execute the following:

```
% cp <SRC>/libgcilnk65.so <GBS>
% cp <SRC>/libgcirpc65.so <GBS>
% cp <SRC>/english65.err <GBS>
```

6. Start up the client Smalltalk VM.
7. Determine the appropriate library name to use. The library `libgcilnk65.so` permits both linked and RPC logins. `libgcirpc65.so` permits only rpc logins.
8. Set the library name. There are several ways to do this. Using the GBS settings tool, select the tab titled “Server Communication”, and edit the field *libraryName*. You may also execute:

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

for example:

```
GbsConfiguration current libraryName: 'libgcilnk65.so'
```

If the client libraries are not in a directory on the path, *libraryName* must be set to the absolute path and name of the client library.

9. Save your image, exit, and restart, to allow the correct libraries to be loaded.