
GemStone®

GemBuilder® for Smalltalk Release Notes

Version 7.6.1

April 2014



GEMTALK™
SYSTEMS

GEMSTONE STM 64

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PATENTS

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

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About This Documentation

These Release Notes describe the changes in the GemBuilder® for Smalltalk version 7.6.1 release.

For information on installing or upgrading to this version of GemBuilder for Smalltalk, please refer to the *GemBuilder for Smalltalk Installation Guide* for version 7.6.1.

This documentation is also available on the GemStone Technical Support website.

Terminology Conventions

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

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

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

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

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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.

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Release Notes for GemBuilder for Smalltalk 7.6.1

GemBuilder for Smalltalk (GBS) version 7.6.1 is a new version of the GemBuilder for Smalltalk product, adding support for GemStone/S 64 Bit version 3.2 and VW Smalltalk 7.10, as well as fixing a number of bugs. Please take time to read through these release notes before installing or upgrading, to acquaint yourself with the changes.

These release notes provide changes between the previous version of GBS, version 7.6, and version 7.6.1. If you are upgrading from a version prior to 7.6, please also review the release notes for each intermediate release to see the full set of changes.

This release supports both GemStone/S 64 Bit, the 64-bit GemStone/S-based object server, and with GemStone/S, the original 32-bit GemStone object server.

GBS v7.6.1 is supported with VisualWorks 7.9.1 and later, and cannot be used with versions earlier than 7.9, nor with VA Smalltalk.

To install GemBuilder for Smalltalk 7.6.1, follow the instructions in the *GemBuilder for Smalltalk Installation Guide* for version 7.6.1.

Supported Platforms and Versions

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

For more details, including the specific required client libraries for each server product and versions, refer to the *GemBuilder for Smalltalk Installation Guide* for version 7.6.1.

Table 1 Supported GemStone/S 64 Bit Server versions

	VW 7.10 32-bit (RPC only)	VW 7.10 64-bit (RPC, and linked on UNIX)	VW 7.9.1 32-bit (RPC only)
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

Changes and New Features

Support for latest server and client smalltalk versions

This release adds support for GemStone/S 64 Bit v3.2, with a single socket connection to the Gem. Older versions of GBS cannot be used with GemStone/S 64 Bit v3.2. Refer to the GemStone/S 64 Bit v3.2 Release Notes for more information on the changes.

Version 7.6.1 also adds support for VisualWorks Smalltalk v7.10.

Note that GemStone products are no longer supported on Windows XP, which has reached end of life from Microsoft.

64-bit VisualWorks on Windows now supports RPC logins to GemStone/S 64 Bit

The GemStone/S 64 Bit 3.2 distribution includes both 32-bit and 64-bit shared libraries, now on Windows as well as on UNIX platforms. On Windows, the 32-bit libraries are now in the directory `\bin32`, and the 64-bit libraries are in the `\bin` directory. While a change in the Windows distribution, this pattern is consistent with other GemStone/S 64 Bit platform distributions.

See the *GemBuilder for Smalltalk Installation Guide* for details.

NOTE

Existing 32-bit VisualWorks client applications on Windows may have libraryName: paths including %GEMSTONE%\bin. These paths must be changed to \bin32 with GemStone/S 64 Bit v3.2 Windows Client.

AutoCommit and manual transaction mode

Version 7.6 introduced autocommit, in which all code changes immediately trigger a commit. In manual transaction mode, a commit results in the session being out of transaction, which makes autocommit fail. (#43015)

Now, when a session is changed from automatic transaction mode to manual transaction mode, autocommit is turned off automatically. You cannot turn on autocommit when in manual transaction mode.

GBS classes added to replicate server Unicode strings

GBS now includes the classes Unicode7 (a subclass of VW ByteString), Unicode16 (a subclass of TwoByteString), and Unicode32 (a subclass of FourByteString), for use with GemStone/S 64 Bit v3.1 and above. These classes are only mapped when running with 3.1.x and later servers.

Launcher changes

Session Parameters list display includes host name

The display of each session parameters in the session parameters list now includes the host name.

Launcher Parameter menu now includes delete All

You may now delete all session parameters using this added menu option.

Added About > GemStone Server dialog

The Launcher **About** menu now include **About GemStone© Server** with information on the shared library that is currently loaded.

Format code with Ctrl-Shift-F

Previously, the shortcut key to format code was Ctrl-o. Now, both this shortcut and Ctrl-shift-F will format code.

GS-File In accepts additional topaz commands

GBS understands a subset of topaz commands that are used to implement GS-File in. There are two new commands that are included in file outs produced using topaz fileout command in version 3.2. These commands are not produced in the fileout forms generated using server Smalltalk image code or fileout using GBS tools.

GBS has been adjusted to accept these commands, although they do not have any effect in GBS. GBS relies on VisualWork's facilities for file management, and code containing Characters with any codePoint range file out and in UTF-8 by default from GBS without any additional effort needed.

The new accepted commands are:

```
fileformat fileFormatType
set sourcestringclass StringCls
```

If your code includes Characters with codePoints over 127, and you will fileout and filein with both topaz and GBS, you should take care that the fileformat is set correctly when using topaz; see the GemStone/S 64 Bit Release Notes for v3.2 for more information.

Changes that apply when running with GemStone/S 64 Bit v3.2

There are a number of changes in v3.2 that impact GBS behavior, when logged into a v3.2 repository. Refer to the GemStone/S 64 Bit Release Notes for v3.2 for more information.

For GBS 7.6.1 running with 2.x or 3.1.x versions of GemStone/S 64 Bit, or with 32-bit GemStone/S, these changes do not apply.

Changes in 3.2 that impact GBS include the following:

Linked logins require different library

The library name for linked logins has changed; you will load a file name beginning with libgbslnk. See the *GemBuilder for Smalltalk Installation Guide* for details.

Linked logins no longer need NetLDI

Linked logins to v3.2 no longer require a NetLDI to be running on that machine.

Debugger stack frame printing

In the debugger, server frames now include the class that implements the method as well as the receiver, and do not include envId, if that is 0.

"self" now resolves to nil

Evaluated (non-method) code that includes "self" will now resolve self to nil, rather than error.

Bugs Fixed

The following bugs in v7.6 are fixed in 7.6.1.

Store traversals of very large dictionaries with unmapped symbols or classes may result in error

If an instance of `KeyValueDictionary`, `RcKeyValueDictionary`, or any of their subclasses is split over multiple traversal buffers, and the penultimate traversal buffer leaves it with an odd number of value buffer elements sent to the server, and class mapping or symbol generation is needed before being able to send the ultimate traversal buffer, this operation will trigger `_processDeferredGciUpdates` before the traversal is complete. The execution of `_deferredGciUpdateWith:` with a `valueArray` of odd length will attempt to access one element past the end of the `valueArray`, resulting in `objErrBadOffsetIncomplete`. (#43545)

Replication may fail due to GC under specific conditions

A session's `serverMap` is normally weak, but becomes strong during server interactions to avoid GC. If an object with an OOP in a range that was not previously seen, such that a new node is required in the `serverMap`, the new node was incorrectly created as weak. If GC occurred during this narrow window, replication could fail with a number of symptoms. (#43923)

IdentityClamp errors if GbxIdentityClampSet grows

Identity clamps are held in instances of `GbxIdentityClampSet`. If this objects reaches its capacity and must grow, an instance variable `gsFirstOffset` is lost. This causes misinterpretation and incorrect clamping behavior: at tempi ng to replicate objects for which a forwarder already exists. (#43478)

Server -0.0 was replicated as client +0.0

Previously, when a server `-0.0` was replicated, it would be positive `0.0` in `VisualWorks`. It now is returned correctly. (#43595)

Replicates of SmallDouble were mutable

Instances of `SmallDouble` were replicated as mutable `Doubles` on the client. This has been corrected, and `SmallDouble` replicates are now immutable. (#43589)

File out of multiple selected method errors

If two methods are selected, an attempt to file out the methods using `Method` menu item `File out As...` resulted in an error. (#43069)

remoteClass can results in “Object does not exist” errors

When a `remoteClass` was performed, an object that had not been flushed to the server would be treated as if it still did not have a server OOP. (#43588)

Errors with GsSocket mapping

GBS `GsSocket` in was incorrectly mapped to `ObsoleteGsSocket` when logging into a 3.x server. This resulted in errors when replicating a `GsSocket` to the client. (#43159)

Overriding identityHash causes cache lookup errors

32-bit GemStone/S only

GBS uses identityHash for a 14-bit value to lookup cached objects. If identityHash is overridden to return a value larger than 14 bits, it will result in out of range errors in the cache lookup. Now, GBS uses a private gbxIdentityHash method. (#41997)

Terminated session ID may be reused by newly logging in session

If a session is terminated outside of GBS, and a new login is performed before GBS has handled the logout, then the new session may reuse the old session's session id, causing problems. (#42813)

Inspector Issues

Out of bounds exception inspecting large QuadByteString

When inspecting a server QuadByteString that was split over more than one traversal buffer, an out of bounds exception could occur. (#43195)

Drag and drop in Inspector may result in unhandled exception and unsynchronized session

When inspecting a collection, the GUI permits the action of dragging an element and dropping it onto another element. This resulted in an unhandled exception, causing the session to become unsynchronized. This state requiring logout and potential loss of work. (#43304)

Set Inspector may have errored when removing an element

When inspecting a server Set, a remove operation could result in a message not understood error. (#43109)

Inspectors did not work well with AllSymbols

Inspecting AllSymbols resulted in display errors in the Inspector. (#43301)

Subclasses of RcIdentityBag inspector basic tab out of range error

When inspecting an instance of a subclass of RcIdentityBag, clicking on the GS Basic tab resulted in an out of range error. This is fixed with GemStone/S 64, but will still error with 32-bit GemStone/S servers. (#43091)

Hierarchy implementors missed implementors in lower subclasses

Hierarchy implementors should return implementors in all superclasses and all subclasses of the given Class. However, it did not search below the first level of subclasses, and therefore missed implementors in these classes. (#44103)

Versioning class in Class/Hierarchy Browsers did not update reference

Creating a new class version by modifying the class's definition in the Class or Class Hierarchy Browsers did not update that browser to the new version. (#43046)

Deleting class with Class/Hierarchy Browsers open caused walkback

When a Class, Class Hierarchy, or Class version browser was open on a particular class, deleting that class in another browser caused walkbacks as the system attempted to update these browsers with that change. (#43051)

Debugger issues

Debugger could evaluate and display in incorrect pane

Using the menu bar Edit >> GS operations on code in a pane other than the main text pane could evaluate and display results from and to the main text pane. (#43542)

Could not step into blocks with 3.x servers

GemStone/S 64 Bit v3.x only

When logged into GemStone/S 64 Bit v3.0 and later servers, stepping into blocks did not work; blocks were stepped over instead. (#42940).

The fix involves changes in both the server and in GBS, so this bug still exists when logged into 3.1.0.x servers.

Debugger GS-Hierarchy Senders/Implementors incorrect when in block context

When in a debugger stack frame for block context within method code, GS-Hierarchy Senders returned results for Block Context, not for the class of the method that contained the block. (#43089)

Server contexts missing in debugger during user action or GsFile server errors

Server bug that impacts GBS; fixed when logged into a v3.2 server, still present when logged into an earlier server version.

If an error occurred during a UserAction (including GsFile operations, which are implemented as UserActions), the server context were not included in the debugger stack. (#38477, #43672)

On first step into server context, cannot evaluate temporary variables

Server bug that impacts GBS; fixed when logged into a v3.2 server, still present when logged into an earlier server version.

In the GBS debugger, before any step within a server context, GemStone was not able to resolve temporary variables in the method. (#42543, #42546)

The fix includes a new bytecode in the compiled server method, so there is an additional step point. Since this is added when the method is compiled, there is no change in behavior with existing compiled server methods. New or recompiled methods will include the step point, and will not have this problem.

Connector Issues

Creating a connector could flush all dirty to server

The act of creating most kinds of connectors caused all dirty objects in all sessions to be immediately flushed to the server, even if it is not necessary at that point. Now, the flush is deferred until the new connector is connected. (#43302)

Connector to missing server class raises exception on login

If your session connectors include a connector for a class that does not exist on the server, and #generateServerClasses remains at false (the default), attempting to login would raise the exception: "Failed to find or generate a server class for client class or metaclass". (#43547)

Disconnect of Global connectors failed

Disconnecting a Global connector in the connector browser could fail. (#43062)

Connector Browser incorrect for Session connectors

Session connectors in the Connector Browser incorrectly showed that the connectors were not connected, regardless of actual status, and did not change status to connected; and inspecting the server object resulted in an error an error message that no appropriate logged in session is available. (#43056, #43962)

Uncached forwarder to a server special returned the client object

Creating an uncached forwarder to a server special object, such as a SmallDouble, was disallowed, and returned the client object. While forwarders should not be created to specials, uncached forwarders don't have this limitation. (#43587)

asGSCopy did not copy instance variables for some collections

The deprecated method Object>>asGSCopy failed to copy instance variables for instances of subclasses of Dictionary or Set. (#39319)

Could not evaluate block with an explicit return

Server bug that impacts GBS; fixed when logged into a v3.2 server, still present when logged into an earlier server version.

Evaluating a block from GBS that contained an explicit return from the block returned an error, unable to find home context. (#42837)