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GemStone®

# *GemBuilder for Smalltalk Release Notes*

August 2005



GemBuilder for Smalltalk Version 6.2

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## Patents

GemStone is covered by U.S. Patent Number 6,256,637 "Transactional 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.

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## Preface

These release notes describe the new features and bugs fixed in the GemBuilder for Smalltalk® version 6.2 release.

We recommend that everyone using GemBuilder for Smalltalk read these release notes before installing or upgrading. These release notes are also available on the GemStone customer website, as described in the next section.

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

## Technical Support

GemStone provides several sources for product information and support. The product-specific manuals 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.

**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:

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

**Documentation** for GemBuilder for Smalltalk is provided in PDF format. This is the same documentation that is included with your GemBuilder for Smalltalk 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. Most code fixes and enhancements listed on the GemStone Web site are available for direct downloading.

**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. Some Tips may contain code that can be downloaded for use at your site.

**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.

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.

**Email: [support@gemstone.com](mailto:support@gemstone.com)**

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

Requests for technical assistance may also be submitted 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

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- ▶ Customized consulting services can help you make the best use of GemStone products in your business environment.

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# *Release Notes for GemBuilder for Smalltalk 6.2*

GemBuilder for Smalltalk (GBS) version 6.2 is a new release of the GemBuilder for Smalltalk product. These release notes provide details of the new features and bugs fixed in this release. Please take time to read through them before installing the product, to acquaint yourself with the changes

This release supports VisualWorks 7.x only. Corresponding VisualWorks 5.x and VisualAge changes appear in a separate release.

To install GemBuilder for Smalltalk 6.2, follow the instructions in the *GemBuilder for Smalltalk v6.2 Installation Guide*.

If you have any questions regarding this release, please contact your GemStone account manager or GemStone Technical Support.

## **1.1 Supported Platforms and Versions**

The following tables describes the client Smalltalk versions and platforms supported by GBS 6.2, and the GemStone/S server product shared library versions that can be used with each.

GemBuilder for Smalltalk supports all three GemStone/S server products: GemStone/S, the original GemStone object server; GemStone/S 2G, a specialized server product, and GemStone/S 64, the redesigned 64-bit GemStone/S-based object server.

The following tables list the supported configurations for use with the different GemStone/S server products.

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

	<b>VW 7.2.1</b> with 7.3a OE	<b>VW 7.3</b> with 7.3a OE	<b>VW 7.3.1</b> with 7.3a OE
<b>Windows 2000, SP 1 or later</b>	6.1.3, 6.1.4	6.1.3, 6.1.4	6.1.3, 6.1.4
<b>Windows XP, SP 1 or later</b>	6.1.3, 6.1.4	6.1.3, 6.1.4	6.1.3, 6.1.4
<b>Red Hat Linux Advanced Server 2.1</b>	6.1.3, 6.1.4	6.1.3, 6.1.4	6.1.3, 6.1.4
<b>Red Hat Linux Advanced Server 3.0</b>	6.1.4	6.1.4	6.1.4
<b>Solaris 2.8</b>	6.1.3, 6.1.4	6.1.3, 6.1.4	6.1.3, 6.1.4
<b>Solaris 2.9</b>	6.1.3, 6.1.4	6.1.3, 6.1.4	6.1.3, 6.1.4
<b>HPUX 11.11</b>	6.1.3, 6.1.4 (RPC only)	6.1.3, 6.1.4 (RPC only)	6.1.3, 6.1.4 (RPC only)

**Table 2 Supported GemStone/S 64 Bit Server versions**

	<b>VW 7.2.1</b> with 7.3a OE	<b>VW 7.3</b> with 7.3a OE	<b>VW 7.3.1</b> with 7.3a OE
<b>Windows 2000, SP 1 or later</b>	1.0, 1.1 (RPC only)	1.0, 1.1 (RPC only)	1.0, 1.1 (RPC only)
<b>Windows XP, SP 1 or later</b>	1.0, 1.1 (RPC only)	1.0, 1.1 (RPC only)	1.0, 1.1 (RPC only)
<b>Solaris 2.9</b>	1.1 (RPC only)	1.1 (RPC only)	1.1 (RPC only)

**Table 3 Supported GemStone/S 2G Server versions**

	<b>VW 7.2.1</b> with 7.3a OE	<b>VW 7.3</b> with 7.3a OE	<b>VW 7.3.1</b> with 7.3a OE
<b>Windows 2000, SP 1 or later</b>	1.1, 1.2 (RPC only)	1.1, 1.2 (RPC only)	1.1, 1.2 (RPC only)
<b>Windows XP, SP 1 or later</b>	1.1, 1.2 (RPC only)	1.1, 1.2 (RPC only)	1.1, 1.2 (RPC only)

## 1.2 New Features

The following new features and modifications have been made in GemBuilder for Smalltalk 6.2.

### “Trippy” inspectors

The VisualWorks standard inspectors, or “trippy” inspectors, are now the default inspectors for GemStone server objects. The Trippy inspector will show tabs for both the client and server personalities of an inspected object whenever appropriate. To use the older inspectors, hold the shift key down while opening the inspector.

### LibraryName specification on Windows has changed

The way the GbsConfiguration parameter libraryName may be specified has assigned has changed on Windows, due to the limitations of the Windows operating system. Windows loads shared libraries by name in accordance to the path order, so specifying an absolute path will not permit libraries that are not on the path to be loaded, nor avoid inadvertently loading a library with the same name in a different directory on the path. Therefore the file selection dialog has been removed, and you must type in the library name (without the path) in the field provided. The library file name to enter may be found in the *GemBuilder for Smalltalk Installation Guide*.

### Option to migrate instances following class changes now requires commit

When the instance variables of a class are modified, a dialog provides the option to migrate all instance to the new class version. This option now requires that you commit the class modification prior to migrating all instances, and the button text has changed to indicate this.

### Ability to record GBS statistics and view in VSD

GemBuilder for Smalltalk now has the ability to maintain statistics describing the performance of its internal operation. These statistics are archived to a file (a stat archive file), which can be viewed by a tool called vsd. The tracking of stats introduces minimal overhead into GBS. A VisualWorks process named “GBS Stat Monitor” samples and archives the stats at a regular, configurable time interval.

To enable the tracking of all GBS stats in an image, and start the stat monitor archiving at a default interval of once every 2000 milliseconds, execute the following:

```
GBSM statsEnabled: true
```

To disable all stat tracking and turn off the stat monitor, execute:

```
GBSM statsEnabled: false
```

To check if any stats are currently enabled:

```
GBSM statsEnabled
```

## GBS Main Statistics

GBS provides two groups of stats, called “main stats” and “cache inventory stats”. The “main stats” of GBS are stats associated with the session manager and with each logged in session. The session manager stats are:

**Table 1 Session Manager Main Statistics**

Statistic	Description
numSessions	The number of logged in GbsSessions
sessionListProtectInvocations	The number of accesses to the sessionListProtect semaphore
cInterfaceAccessProtectInvocations	The number of accesses to GBSMs cInterface semaphore
gciCallProtectInvocations	The number of accesses to the GciCallProtect semaphore (a GbxCInterface shared variable)
stObjectCacheSizes	The number of entries in the stObjectCache
mainStatSampleTime	The amount of time spent sampling manager and session statistics
cacheStatSampleTime	The amount of time spent sampling cache statistics

The stats associated with each logged in session are:

**Table 2 Session Main Statistics**

Statistic	Description
gciCallsToGem	The number of gci calls made that communicate with the gem
gciCallsToGemTime	The amount of time spent in gci calls that communicate with the gem
traverseCalls	The number of traversal calls (all types, including more traversal)
traverseCallTime	The amount of time spent in traversal calls
objectsTraversed	The total number of objects (with or without a value buffer) received by traversal call
bytesTraversed	The cumulative number of bytes returned by traversal calls
traversalUnpackingTime	The total number of milliseconds spent unpacking traversal buffers
storeTraversals	The number of store traversal calls made
bytesSentByStoreTraversal	The number of bytes sent cumulatively by store traversal calls
objectsStoredByTraversal	The total number of objects stored by store traversal calls
sigAborts	The number of signaled aborts received

**Table 2 Session Main Statistics**

Statistic	Description
lostOtRoots	The number of lost to roots signals received
changedObjNotifications	The number of changed object notifications received
sessionSignals	The number of gem-to-gem signals received
freeOopsFetched	The number of free oops fetched
sessionProtectInvocations	The number of times the sessionProtect semaphore has been invoked
cInterfaceProtectInvocations	The number of times this session's cInterface accessProtect semaphore has been invoked
cInterfaceProtectTime	The amount of time spent in the session's cInterface accessProtect critical region
gciErrors	The number of errors reported by GciErr()
nbEndResultReady	The number of times GciNbEnd() was called and a result was ready
nbEndResultProgressed	The number of times GciNbEnd() was called and progress was made
nbEndResultNoProgress	The number of times GciNbEnd() was called when the result wasn't ready and no progress was made
gsObjectCacheSize	The number of entries in this session's gsObjectCache

To enable the main stats without enabling cache stats, execute:

```
GBSM mainStatsEnabled: true
```

Unlike the all-in-one “statsEnabled:” method, this method doesn't start the stat monitor.

To start the stat monitor, execute:

```
GBSM statMonitorRunning: true
```

To specify a specific stat archiving interval in milliseconds, execute:

```
GBSM statSampleInterval: 2000
```

### GBS Cache Inventory Stats

GBS provides cache inventory stats, which show the number of instances of, and bytes consumed by each class of object found in the stObjectCache. To enable cache inventory stats without enabling main stats, execute:

```
GBSM cacheStatsEnabled: true
```

```
GBSM statMonitorRunning: true
```

Cache inventory stats are more expensive to sample and archive than the main GBS stats. Because of this, cache stats are not sampled and archived every time the stat monitor performs sampling and archiving of the main stats. By default, the cache stats are sampled and archived every 5th time. This value is configurable by sending:

```
GBSM cacheSampleIntervalMultiplier: anInteger
```

This value times `statSampleInterval` is the interval between two cache stat samples. For example, with the default `cacheSampleIntervalMultiplier` of 5 and the default `statSampleInterval` of 2000 milliseconds, the cache stats will be sampled and archived every 10000 milliseconds (or once every 10 seconds). A `cacheSampleIntervalMultiplier` of 1 would mean that cache stats will be sampled and archived every time the main stats are sampled.

## VSD

The visual stat display tool, `vsd`, is provided with the GemStone server product, and can be found in the directory `$GEMSTONE/bin/vsd`. However, the version of `vsd` that is shipped with the GemStone/S 6.x or GemStone/S 2G server product is incompatible with the GBS stat archive format. The version of `vsd` that is shipped with the GemStone/S 64 Bit server can be used to read GBS stat files.

If you do not have GemStone/S 64 Bit, you can download the latest version of `vsd` from:

[http://support.gemstone.com/gemstone\\_s/downloads/add\\_ons/vsd4/index.htm](http://support.gemstone.com/gemstone_s/downloads/add_ons/vsd4/index.htm)

To view one or more GBS stat files, invoke `vsd` with the stat files as arguments. See the help system in `vsd` for more information.

## New configuration settings to control event detection style

“Waiting” detection of non-blocking server call completion and of server asynchronous events is now available on Windows. For the past several years this feature has only been available on Unix and Linux platforms, and the “polling” style of detection has been used on Windows.

Which detection style is used is controlled by two new `GbsConfiguration` settings.

**pollForRpcResponse** - If using nonblocking protocol for RPC sessions, this setting determines which method to use to detect when a response has been received from the GemStone server. When true, GBS uses a timed polling loop. When false, it waits for traffic on the socket that the gem uses for communication.

The default is false; under most circumstances, the socket wait provides better latency and uses slightly less CPU time. This setting only affects non-blocking RPC sessions, and is ignored for linked sessions and for RPC sessions when `blockingProtocolRpc` is set to true.

`pollForRpcResponse` is on the Server Communications page of the Settings tool. It can also be modified via:

```
GbsConfiguration current pollForRpcResponse: <boolean>
```

**pollForAsynchronousEvents** - This setting determines which method to use to detect asynchronous events from the GemStone server. When true, GBS uses a timed polling loop, polling once every `eventPollingFrequency` milliseconds. When false, GBS waits for traffic on the socket that the gem uses for communication, and also polls once every `eventPollingFrequency` milliseconds.

The default is false; under most circumstances, the socket wait provides more timely notification of these events.

`pollForAsynchronousEvents` is on the Signals and Events page of the Settings tool. It can also be modified via:

```
GbsConfiguration current pollForAsynchronousEvents: <boolean>
```

### Cursor switching now configurable.

The new GbsConfiguration parameter #alwaysUseGemCursor can be used to reduce the number of conditions under which GBS switches cursors. When true, GBS changes the cursor to the “gem” cursor during all interactions with the server. When false, the cursor is only changed during some server operations by the GBS tools. The default is true. This can be changed in the Settings tool, on the User Interface pane, or by executing:

```
GbsConfiguration current alwaysUseGemCursor: <boolean>
```

### Login Editor renamed

The dialog previously titled “Login Editor” is now named “Session Parameters Editor”.

### Session Browser launch does not open second instance

The Session Browser launcher toolbar button and menu item will now only open a new session browser if no session browser is open. If a session browser window is currently open, the button or menu item will raise the existing window.

### Connector Browser table headings change

In the Connector Browser, the column headings “Smalltalk” and “GemStone” have changed to “Client” and “Server”. Various popups also show a similar change.

The postConnect action symbols #updateST or #updateGS have **not** been changed, to avoid impacting existing applications.

### Configuration Parameters generate\*Classes renamed

The configuration parameter generateSTClasses has been renamed to generateClientClasses. The parameter generateGSClasses has been renamed to generateServerClasses. This change applies to both the label in the Settings tool, and the methods used to access the GbsConfiguration programmatically. The former names have been deprecated, but may be used programmatically if deprecation warnings are disabled.

### Deprecation warnings are now provided.

When the new GbsConfiguration parameter #deprecationWarnings is set to its default value of true, a proceedable exception is raised on any attempt to use a deprecated feature of GBS. When set to false, no exception is raised. This makes it easier for application developers to find uses of deprecated features before they are removed from the product. You are encouraged to test your applications with deprecation warnings enabled and adjust any uses of deprecated features.

### Server halts and breakpoints no longer trapped by generic handlers

In VisualWorks, certain server-generated exceptions, such as halt and breakpoint, are not subclasses of Error, and so will not be trapped by exception handlers on Error or Exception. This is useful for debugging. Similar exceptions that originate on the GemStone server (such as pause, softBreak, and breakpoints) but are handled in GBS now behave the same way.

## Debugger shows error message when no context selected

The debugger window will now display the error message in the text pane when no context is selected.

## 1.3 Bugs Fixed

The following bugs have been fixed since GemBuilder for Smalltalk 6.1.

### DoubleByteStrings may have been corrupted during replication

When a DoubleByteString was been replicated to a TwoByteString on a little-endian platform (such as Windows), and a traversal buffer containing the same object was received, the TwoByteString was overwritten without swizzling, resulting in corruption. (#28482)

### Method fileout added CR

Method fileout added a CR at the end. When this method was filed in again, the method text was not equal, causing it to show up as a modified method. (#30604)

### Walkback when GS-Senders or GS-Implementors selected in Debugger

In the Method menu, and the stack pane pop-up menu, selecting the menu item GS-Senders or GS-Implementors resulted in a walkback. Selecting any item from the GS-Senders or GS-Implementors submenus worked properly. (#32183)

### Menu display problem when GemStone context selected in the debugger

When a GemStone context is selected in the debugger, the Method menu, and the right button menu in the context pane, can be slow to draw, which could result in flicker. (#32180)

### Evaluation of temporary variables and arguments in Debugger method pane was incorrect

GS-Do It, GS-Print It, GS-Inspect It, and GS-Debug It executed from the debugger with a server context selected could not previously access and modify arguments or temporary variables. (#32060)

### Image hang in GbsConfiguration>>dumpAllProcessStacks

If GbsConfiguration>>dumpAllProcessStacks was run and a forwarder appeared at some places in the stack, it attempted to replicate the GbxContextDumpPolicy, which could hang the image. (#33002)

### Comparison of Client and Server classes for update was insufficient

If a class existed both on the client and server, and the class definition changed, attempting to updated it using “create in GS” or “compile in GS” often did nothing. The comparison that determined if the definition had changed only compared the number of instance variables; so instance variable name changes or addition, removal, or rename of class or class instance variables did not allow the update to occur. (#25995)



### **Code to print timeStamps moved**

The code to print timestamps to the transcript has been moved from CstMessegeDispatcher to GbxMessageDispatcher, to permit the more general use of CstMessegeDispatcher. (#32425)

### **Attempting to stub a delegate now raises an exception**

Sending stubYourself or similar messages to an instance of GbsObject will now raise an exception. (#32524)

### **Possible deadlock in LostOTRoot processing**

A code path existed in GbsSession>>postLostOTRoot that held a risk of deadlock. (#32674)

### **Inspecting a special object in a Symbol List Browser gives walkback**

When a special object (such as Character, Boolean or SmallInteger) was inspected from a Symbol List browser, it resulted in a walkback (#31491)

### **Compiler errors caused hang when filing into GemStone**

When filing in to the GemStone server using GBS, compiler errors caused a window to open, but hang without filing in the text or permitting input to correct the problem. (#32311)

### **Stub for a float in one session result in an error when stored in second session.**

GemStone floats that are faulted in in one session were not able to be stored in a second session. Doing this resulted in a DNU #oopValue. (#32873)

