
GemStone®

GemStone/S 64 Bit Release Notes

Version 2.2.5.1

April 2008

GEMSTONE[™] S 64

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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

About This Documentation

These release notes describe changes in the GemStone/S 64 Bit version 2.2.5.1 release. We recommend that everyone migrating to this version read these release notes before beginning installation, testing or development.

No separate Installation Guide is provided with this release. For instructions on installing GemStone/S 64 Bit version 2.2.5.1, or upgrading or converting from previous products or versions, see the Installation Guide for version 2.2.4.

These documents are available on the GemStone customer support website, as described below.

Terminology Conventions

This document uses the following terminology:

The term “GemStone” is used to refer both to the product, GemStone/S 64 Bit, or previous GemStone/S server products; and to the company, GemStone Systems, Inc.

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 GemStone/S 64 Bit is provided in PDF format. This is the same documentation that is included with your GemStone/S 64 Bit 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 provides 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

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

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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Overview

GemStone/S 64 Bit 2.2.5.1 is a new version of the GemStone/S 64 Bit object server. Since version 2.2.5 did not complete the distribution process, version 2.2.5.1, and these release notes supercede version 2.2.5.

These release notes provide the changes between the previous fully distributed version of GemStone/S 64 Bit, version 2.2.4, and version 2.2.5.1. Changes that are specific only to version 2.2.5.1 are noted; otherwise changes in both 2.2.5 and 2.2.5.1. If you are upgrading from a version prior to 2.2.4, please also review the release notes for each intermediate release to see the full set of changes.

No separate Installation Guide is provided with this release. For installation instructions, use the Installation Guide for version 2.2.4.

Changes and New Features

Optimizations to object replication to GBS

2.2.5.1 only

GemBuilder for Smalltalk version 7.2 and later use “Single-trip”, a new protocol for replicating objects to GBS with fewer round trips than the earlier “Multi-trip” protocol. The server code that supports the Single-trip interface has had optimizations to improve performance and CPU usage for large traversals.

startnetldi accepts port numbers

The NRS syntax for using a NetLDI allows the use of port numbers, as an alternative to the NetLDI name. Now, you may also use the port number in the startnetldi command, and the subsequent stopnetldi command. This avoids the need for named NetLDI, and the need to edit the services file for some distributed configurations.

ContinueTransaction usable with RcQueues

Starting with GemStone/S 64 Bit version 2.2.2, the use of continueTransaction was disallowed if modifications had been made to an instance of RcQueue. The conditions that required this change have been corrected, so you may now use continueTransaction in transactions that modify RcQueues.

Large memory page support on AIX

On AIX, GemStone can now take advantage of large (16MB) memory pages. Large page support requires AIX 5.3 TL 4 or later, and a POWER4 or later processor, and your system must be configured to support large memory pages. For information on large page support on AIX, see the following document:

<http://www.gstinc.com/products/ibm/bull/page-size.pdf>

To enable this mode, set the environment variable `GS_SPC_USE_LARGE_PAGES`:

```
% setenv GS_SPC_USE_LARGE_PAGES 1
```

If this variable is not set, GemStone/S 64 Bit will not use large memory pages, and behavior will be as in previous versions.

In addition, the `shrpcmonitor` must be owned by root, and the `setuid` bit must be set:

```
% chown root $GEMSTONE/sys/shrpcmonitor
% chmod u+s $GEMSTONE/sys/shrpcmonitor
```

When configured to use large memory pages, the physical shared page cache size allocated will be rounded up to the nearest 16MB boundary.

NaNs now always positive

The exceptional Floats `MinusQuietNaN` and `MinusSignalingNaN` are no longer returned from functions that return NaN types. A NaN is “not a number”, for example the results of evaluating “-1.0 sqrt”. Now, instead of returning the a `Minus NaN` type, `PlusQuietNaN` or `PlusSignalingNaN` are returned.

The reason for this change is that on different platforms, inconsistently signed NaN values were returned from mathematical operations, and this is permitted according to the specification. The IEEE Standard for Binary Floating Point states that “The Standard does not interpret the sign of a NaN.” The standard only specifies two kinds of NaNs: QUIET and SIGNALING.

Seaside/GLASS

Many improvements have been made to GemStone Seaside.

`$GEMSTONE/bin` now includes a seaside-enabled extent file, `extent0.seaside.dbf`.

For the latest updates on the changes occurring with GLASS, see the GemStone seaside blog at <http://gemstonesoup.wordpress.com>.

Bugs Fixed

Wrong value returned from negative literal in method

Methods that contained certain specific code formations specifying a return of a negative literal integer larger than -2^{20} from within a block, returned an incorrect value. (#38444)

Stale OOP encountered during index maintenance

It was possible for index maintenance operations to encounter a bad OOP, which resulted in a SIGBUS error and gem crash. (#38399)

Possible SIGSEGV when managing OOPs in sparse large objects

Large Objects are stored internally as a tree structure. In certain sparse graphs, OOPs were not handled correctly, which resulted in a SIGSEGV. (#38452)

Errors with tranlogs on raw partitions on AIX

AIX only

Attempting to put transaction logs on raw partitions on AIX resulted in errors. (#38635)

Conversion failed when sources extents on raw partition on AIX

AIX only

When converting from GemStone/S 64 Bit 1.x, conversion failed if the source extents were on raw partitions on AIX. (#38619)

copyReplaceAll:with: failed on zero length newSubCollection

When sent to instances of SequenceableCollection subclasses other than String with a zero length argument, the method copyReplaceAll:with: failed with #rtErrBadCopyFromTo. This was most commonly seen in DoubleByteString, but also could have occurred with instances of Array, OrderedCollection, SortedCollection, etc. (#38319, #38324)

upgradelImage caused new versions of classes to be created

Due to the sequence of class and method filein during upgradeImage, new versions of the GsPackage* classes were being created. (#38326)

throughAll: produced incorrect results for some cases

Some receiver and argument sequences caused PositionableStream >> throughAll: to return incorrect results. (#38263)

String >> linesIndentedBy: failed to indent last line

String >> linesIndentedBy: did not indent the last line of text. This problem was not visible if the receiver had a trailing newline (the last line was empty.) (#38270)

shrpcmonitor crash related to terminated sessions

When gems are terminated using kill -TERM, including idle gem timeout and other internal reasons, there was a risk that the shrpcmonitor's spin lock queue could get into an invalid state and crash. (#38134)

Cache slot methods got wrong data for reused session id

If a session is terminated but doesn't go away, the session id may be legitimately reused. In this case, the methods `cacheStatisticsForSessionId:` and `cacheSlotForSessionId:` would return information about the zombie session, rather than the current user of that `sessionId`. (#38552)

Zero divided by non-Integer returned wrong type

An Integer 0 divided by a non-Integer non-zero number returned Integer 0 rather than 0 of the type of the argument. This did not agree with the ANSI specification. (#38142)

MGC not immune from lostOTRoot

Previously, it was possible for a session performing `markGcCandidates` (MGC) to receive a `lostOTRoot` signal. This has been fixed, so MGC, like FDC and MFC, is immune from `lostOTRoots`. (#38420)

Hang on MGC lostOTRoot

When a session performing a `markGcCandidates` (MGC) received a `lostOTRoot` (see bug #38420, above), it went into an infinite loop. (#38421)

Method comments included non-ASCII characters

Several method comments included non-ASCII characters, which created problems with certain tools. (#38383)

System >>_disallowCommitClassModFailure called wrong primitive

This method invoked `zeroArgPrim:` with an incorrect argument, which would result in the incorrect primitive code being executed. This method was called from `ClassOrganizer>>makeInstancesPersistent:` and `makeInstancesNonPersistent:`. (#38674)