GemStone®

GemStone/S Release Notes

Version 6.6.1

January 2012

vmware®

GEMSTONE S™

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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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Preface

About This Documentation

These release notes describe changes in the GemStone/S version 6.6.1 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 version 6.6.1, or upgrading or converting from previous products or versions, see the Installation Guide for version 6.6.

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

Technical Support

GemStone's Technical Support website provides a variety of resources to help you use GemStone products.

Documentation for released versions of all GemStone products is provided in PDF form on this website:

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

In addition to documentation, the GemStone support website provides:

- Downloads and Patches, including past and current versions of GemBuilder for Smalltalk.
- Bugnotes, identifying performance issues or error conditions that you may encounter when using a GemStone product.
- TechTips, providing information and instructions that are not in the documentation.
- Compatibility matrices, listing supported platforms for GemStone product versions.

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

Help Requests

You may need to contact Technical Support directly, if your questions are not answered in the documentation or by other material on the Technical Support site.

Requests for technical assistance may be submitted online, 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 down. The support website is the preferred way to contact Technical Support.

Website: http://techsupport.gemstone.com

Email: techsupport@gemstone.com

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

Your GemStone support agreement may identify specific designated contacts who are responsible for submitting all support requests to GemStone. If so, please submit your information through those individuals.

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.

When submitting a request, please include the following information:

- Your name, company name, and GemStone server license number.
- The versions of all related GemStone products, and of any other related products, such as client Smalltalk 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.

Technical Support is available from 8am to 5pm Pacific Time, Monday through Friday, excluding GemStone holidays.

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, for issues impacting a production system. For more details, contact your GemStone account manager.

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Chapter 1

GemStone/S 6.6.1 Release Notes

Overview

GemStone/S 6.6.1 is a new version of the GemStone 32-bit Smalltalk object server. This release provides significant improvements and bug fixes for systems using remote caches, as well as several other new features and bug fixes. We recommend everyone using GemStone/S upgrade to this new version. The details of these changes are provided in this document.

These release notes provide changes between the previous version of GemStone/S, version 6.6, and version 6.6.1. If you are upgrading from a version prior to 6.6, 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 6.6.

Supported Platforms and GBS Versions

Platforms

GemStone/S version 6.6.1 is supported on the following platforms:

- Solaris 8, 9 and 10 on SPARC
- AIX 5.3 and AIX 6.1, POWER5 or later
- Red Hat Linux ES 5.0, 5.5, and 6.1
- Windows XP, Windows 2003, Windows 7, and Windows 2008 R2

For more information and detailed requirements for each supported platforms, please refer to the GemStone/S v6.6 Installation Guide for that platform.

GBS versions

The following versions of GBS are supported with GemStone/S version 6.6.1, with the following client Smalltalk and platforms versions.

GBS version 7.4

VisualWorks 7.8 with 7.8 OE	**VisualWorks 7.7.1** with 7.7.1 OE
▸ Windows XP, Windows 2003 Server, Windows 7, and Windows 2008 R2 ▸ Solaris 9 and 10 on SPARC ▸ RedHat Linux ES 5.0, 5.5, and 6.1	▸ Windows XP, Windows 2003 Server, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ RedHat Linux ES 5.0 and 5.5

GBS version 7.3.3

VisualWorks 7.7.1 with 7.7.1 OE	**VisualWorks 7.7** with 7.7 OE
▸ Windows XP, Windows 2003 Server, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ RedHat Linux ES 5.0 and 5.5	▸ Windows XP, Windows 2003 Server, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ Red Hat Linux ES 5.0

GBS version 5.2.7

VA Smalltalk 8.0.2	**VA Smalltalk 7.5.2**
▸ Windows 7, Windows 2003 Server, Windows XP, and Windows 2008 R2	▸ Windows XP and Windows 2003 Server

For more information and details, see the GemStone/S Installation Guide for 6.6, chapter 3, or the GemBuilder for Smalltalk Installation Guide for that version.

Changes and New Features

ContinueTransaction usable with RcQueues

Starting with GemStone/S version 6.2, 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.

Improvements to communication between Page Manager and remote caches.

The code that handles communication between the PageManager and remote shared page caches has been redesigned and improved to allow large numbers of remote caches to be handled efficiently, as well as fixing a number of bugs.

Error messages for remote cache communication problems have been made more informative and consistent between the Page Manager and Stone logs.

The TCP socket send and receive buffers that are used between the PageManager and remote caches have been resized for more efficient handling of data transfers.

Guard page address ranges included in login information

The memory page size and the Smalltalk stack's guard page range is now included with the login information. For example,

```
. . .
[Info]: LNK client/gem GCI levels = 55/55
[Debug]: Memory page size: 4096 bytes
[Debug]: Guard page address ranges:
   [1] 0xf6d7e000:0xf6d7f000  [2] 0xf6d85000:0xf6d86000  [3]
0xf6d8c000:0xf6d8d000
[Info]: User ID: DataCurator
. . .
```

Changes to configuration parameters

STN_REMOTE_CACHE_PGSVR_TIMEOUT

This value is now changeable at runtime using the internal parameter name #StnRemoteCachePgsvrTimeout. Changes to this setting are reported in the page manager log file.

In addition, the minimum has been changed from 0 to 1; you can no longer configure the system to wait forever for a response from remote page servers.

The cache statistic RemoteCachePgsvrTimeout has been added to track this value.

Statmonitor added options

Statmonitor now include the -Q option, which specified to collect statistics for only the stone, SPC and page manager.

On Linux only, statmonitor now also includes the -R option, which disables file descriptor caching. Normally, statmonitor caches three file descriptors per process. If this causes excessive demand on file descriptors, as with a large number of concurrent processes, this option can be used to force the files to be opened and closed for each sample.

Cache Statistics Changes

Added Cache Statistics

The following cache statistics have been added:

NumFileDescriptors (All)
Number of file descriptors the process currently has open.

RemoteCachePgsvrTimeout (Stone)
Maximum amount of real time in seconds the page manager will wait while attempting to send or receive a message to or from a remote shared page cache page server.

Host statistics on Linux

Host statistics are now collected on Linux. Network statistics may be also be collected by specifying -s2 or higher and disk statistics may also be collected by specifying -s3 or higher.

Per-process linux system statistics are also collected.

Note that PercentCpuUsed, as reported on Linux systems, is reported in a way that is consistent with how statmonitor reports this statistic on Solaris. PercentCpuUsed is reported as the percent of the total number of CPUs that this gem is using. While this is information originating from the OS, on Linux, top reports the percentage of one CPU that the Gem is using, rather than the percentage of all CPUs. The PercentCpuUsed value will not match what top reports on Linux.

Bugs Fixed

The following bugs in version 6.6 are fixed in version 6.6.1.

Pass returned from wrong block when nested exceptions

Nested exceptions that returned to a handler that did a pass, returned from the incorrect block. (#41884)

Nested exceptions returned with value from wrong level

Nested exceptions may have resumed with the value from the wrong handler. (#38061)

Printing C stack may hang on Linux

Linux Only

If the process is out of memory, the attempt to print a C stack may cause the gem to hang rather than exit. (#41999)

Statmonitor on Linux may use excessive file descriptors

Linux Only

Statmonitor uses three file descriptors per process, which it keeps open to avoid the cost of repeatedly opening and closing files. This may result in running out of file descriptors on large systems. (#41900)

To avoid this problem, statmonitor now include the -R option, which forces Statmonitor to open and close the three files for each sample.

Slow logins while recovering slots following session crash

While the shared page cache monitoring is recovering following a session unclean shutdown, logins could be slow. (#41988)

GemStone FIFO pipe file in locks directory not regenerated

If the file in the GemStone locks directory with the name *stonename*`..FIFO` is deleted, it is not regenerated the way the other critical files in this directory are regenerated in v6.6. If this file is deleted while the system is running, the system will still function but may be very slow. (#42000)

Issues related to Distributed Configurations

Invalid attempt to use Stone's cache as mid-level cache crashed rather than errored

Attempts to use the stone's cache as a bit level cache resulted in a crash, rather than a connect error. (#41923)

Incorrect memory handling in remote cache startup

In some rare cases of failure during remote cache startup, there was a chance that data structures could have been accessed during error handling after they were freed, causing a crash. (#41893)

Unexpected mid-level cache shutdown

If a mid-level cache has no gems attached to it, but is used by gems on leaf caches, the stone will incorrectly shutdown the cache after the remote cache shutdown expires. This is related to incorrect tally of references to the cache. Now, mid-level caches are treated the same as any other remote cache. (#41914)

Gems on remote cache killed if previous mid-level cache connected

When an unused mid-level cache is automatically shutdown, it could result in a leaf cache also shutting down, terminating gems using that leaf cache that were not using the mid-level cache. This is due to an unnecessary connection between the leaf cache and the mid-level cache. (#41918)

PageManager may have blocked

The PageManager previously used a timeout when reading responses from remote caches, but did not have a timeout when sending data. This could result in delays under some circumstances, such as the remote page server waiting on a lock. Now, data sends as well as response reads are controlled by the configured value for STN_REMOTE_CACHE_PGSVR_TIMEOUT. (#41930)

In addition, warnings will be printed to the Page Manager's log if the write exceeds the value for STN_PAGE_MGR_PRINT_TIMEOUT_THRESHOLD.