GemStone®

GemStone/S 64 Bit™
Release Notes

Version 3.2.13

March 2016

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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 64 Bit™ version 3.2.13 release. Read these release notes carefully before you begin installation, conversion testing, or development with this release.

No separate Installation Guide is provided with this release. For instructions on installing GemStone/S 64 Bit version 3.2.13, or upgrading or converting from previous products or versions, see the Installation Guide for version 3.2.6.

These documents are available on the GemTalk website, as described below.

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.

Technical Support

Support Website

gemtalksystems.com

GemTalk's website provides a variety of resources to help you use GemTalk products:

‣ **Documentation** for the current and for previous released versions of all GemTalk products, in PDF form.

‣ **Product download** for the current and selected recent versions of GemTalk software.

‣ **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.

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. Technical Support is available to customers with current support contracts.

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: support.gemtalksystems.com

Email: techsupport@gemtalksystems.com

Telephone: (800) 243-4772 or (503) 766-4702

When submitting a request, please include the following information:

‣ Your name and company name.

‣ The versions of GemStone/S 64 Bit and of all related GemTalk 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 GemTalk holidays.

24x7 Emergency Technical Support

GemTalk 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 GemTalk Support Renewals.

Training and Consulting

GemTalk Professional Services provide consulting to help you succeed with GemStone products. Training for GemStone/S is available at your location, and training courses are offered periodically at our offices in Beaverton, Oregon. Contact GemTalk Professional Services for more details or to obtain consulting services.

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Chapter 1. GemStone/S 64 Bit 3.2.13 Release Notes

1 GemStone/S 64 Bit 3.2.13 Release Notes

Overview

GemStone/S 64 Bit 3.2.13 is a new version of the GemStone/S 64 Bit object server. This release includes a number of bug fixes and other improvements; we recommend everyone using GemStone/S 64 Bit v3.2.x upgrade to this new version.

These release notes provide changes between the previous version of GemStone/S 64 Bit, version 3.2.12, and version 3.2.13. If you are upgrading from a version prior to 3.2.12, review the release notes for each intermediate release to see the full set of changes.

For installation, upgrade and conversion instructions, use the *Installation Guide* for version 3.2.6. Note that application code recompilation is now recommended; see "Upgrade" on page 9.

Supported Platforms

Platforms for Version 3.2.13

GemStone/S 64 Bit version 3.2.13 is supported on the following platforms:
- Solaris 10 and 11 on SPARC
- Solaris 10 on x86
- AIX 6.1 and AIX 7.1
- Red Hat Linux ES 6.4 and 6.5, Ubuntu 12.04, and SUSE Linux Enterprise 12, on x86
- Mac OSX 10.6.8 (Snow Leopard), with Darwin 10.8.0 kernel, on x86

For more information and detailed requirements for supported platforms, please refer to the *GemStone/S 64 Bit Installation Guide* for that platform.

GBS Versions

The following versions of GBS are supported with GemStone/S 64 Bit version 3.2.13. You must use GBS version 7.6.1 or later for VisualWorks, or 5.4.2 or later for VA Smalltalk with GemStone/S 64 Bit v3.2.13.

GBS version 8.1

VisualWorks 7.10.1 32-bit	VisualWorks 7.10.1 64-bit
‣ Windows 8, Windows 2008 R2 and Windows 7 ‣ Solaris 10 on SPARC ‣ Ubuntu 12.04, RedHat Linux ES 6.4 and 6.5, and SUSE Linux ES 12	‣ Windows 8, Windows 2008 R2 and Windows 7 ‣ Solaris 10 on SPARC ‣ Ubuntu 12.04, RedHat Linux ES 6.4 and 6.5, and SUSE Linux ES 12

GBS version 7.6.1

VisualWorks 7.10.1 32-bit	VisualWorks 7.10.1 64-bit	VisualWorks 7.9.1 32-bit
‣ Windows 8, Windows 2008 R2 and Windows 7 ‣ Solaris 10 on SPARC ‣ Ubuntu 12.04, RedHat Linux ES 6.4 and 6.5, and SUSE Linux ES 12	‣ Windows 8, Windows 2008 R2 and Windows 7 ‣ Solaris 10 on SPARC ‣ Ubuntu 12.04, RedHat Linux ES 6.4 and 6.5, and SUSE Linux ES 12	‣ Windows 2008 R2 and Windows 7 ‣ Solaris 10 on SPARC ‣ Linux ES 6.4 and SUSE Linux ES 12

GBS version 5.4.2

VA Smalltalk 8.6	VA Smalltalk 8.5.2
‣ Windows 8, Professional or above ‣ Windows 2008 R2 ‣ Windows 7, Professional or above	‣ Windows 2008 R2 ‣ Windows 7

For more details on supported GBS and client Smalltalk platforms and requirements, see the *GemBuilder for Smalltalk Installation Guide* for that version of GBS.

VSD Version

The GemStone/S 64 Bit v3.2.13 distribution includes VSD version 5.1.2. The previous version of GemStone/S 64 Bit, v3.2.12, included VSD v5.1.

Between v5.1 and v5.1.2, the changes include:

- changes in the statistic type for a number of statistics, affecting combined graphs.
- Incorrect chart values when data is displayed on little-endian systems (AIX and solaris/SPARC).
- On Windows, some statistic values wrap to negative when value exceeds 2^{31}

For more details, see the *Release Notes* for VSD v5.1.1 and v5.1.2.

Upgrade

The upgrade process from 3.1.x to 3.2.x did not specify that method recompilation was required.

However, there were minor changes in the bytecodes generated from method compilation between v3.1.x and 3.2.x, related to the changes that allow a step point at the beginning of a method.

A case has been observed in which a SEGV in a Gem was apparently related to this difference in the bytecodes. While this is a very rare situation and is not believed to be at risk for causing any other problems, for reliability it is recommended that all application methods be recompiled as part of the 3.1.x to 3.2.x upgrade process.

Changes and Bug Fixes

Updated SSL libraries

The version of OpenSSL used by GemStone/S 64 Bit v3.2.7 has been updated to 1.0.2g.

GsFile atEnd now returns true for empty file

When GsFile opened an empty file, previously the atEnd message returned false. Now, it will return true.

Handling of reused PIDs in defunct lock files

gslist looks at GemStone lock (..LCK) files to determine what GemStone server processes (Stones, NetLDIs, etc.) are running. The lock files include information about the server process, including the PID of the process.

In earlier versions, gslist only verified that the PID was running, not that the process using that PID was the same GemStone server process. If a process was killed, leaving the lock file behind, and that PID was reused, gslist assumed the PID was valid. The server name/lock file were stuck, and the lock file had to be manually deleted.

Now, on Linux only, lock files involving reused PIDs are handled correctly, by checking in `/proc/`*PID*`/`.

▶ gslist always checks for the correct process pid, and will report such servers as killed, not OK.

▶ gslist -c will clear the lock file

▶ startnetldi will clear the lock file and start the requested netldi.

On platforms other than Linux, you must still manually delete the lock file.

(#46066)

gslist -x did not show startnetldi -D value

The -D option was added in recent versions of GemStone. The value of this argument was not reported in the results of gslist -x. (#45935)

NetLDI socket leak on incompatible connection

When the NetLDI opened a connection to an incompatible version of GemStone, there was a code path in which the socket connection was not closed, resulting in a socket leak in the NetLDI. (#45902)

Conversion and Upgrade issues

Conversion from 2.4.x to 3.2.x could fail after Symbol conversion with corrupt object error

During the symbol conversion phase of the 2.4.x to 3.2.x conversion, a data page could end up with an out of range clusterId. This resulted in a corrupt object error. (#46032)

Conversion problems with very large Symbols

GemStone/S 64 Bit does not allow Symbols larger than 1024 bytes. However, repositories converted from 32-bit may contain Symbols that are larger, including ones larger than 8K that require LargeObjectNodes for internal storage.

During the conversion to 3.x, startstone -C resorts AllSymbols; this sort operation will fail if any symbols over 8K are present, causing the startstone -C to fail. (#45923)

As of this version, the startstone -C conversion will not fail; any symbols over 8K are removed from AllSymbols. These symbols remain as uncanonical symbols and can be removed or, if unreferenced, will be removed by garbage collection. It is recommended that before conversion, you examine your repository for large symbols and convert appropriately.

Filein class definitions that fail in _equivalentSubclass:... did not provide details

When a class definition is filed in, it invokes the method

```
Class>>_equivalentSubclass:superCls:name:newOpts:newFormat:
    newInstVars:newClassInstVars:newPools:newClassVars:inDict:
    constraints:isKernel:
```

to determine if a new version of the class should be created, or if the definition is the same in all ways. When this method determined that the classes were not the same, it did not provide details about the specific cause of the failure, which made analysis of upgrade/conversion issues difficult. (#45836)

Upgrade issues for SessionMethods installed for users other than DataCurator

The GLASS/Seaside/GsDevKit environment uses Session Methods, an undocumented feature allowing session-specific methods to be installed. The upgrade process expected Session Methods to be in the UserGlobals of DataCurator.

The upgradeSeasideImage script now includes -u <user> and -p <password> optional arguments, which can be used when upgrading systems in which Seaside/GLASS/GsDevKit was not installed as DataCurator. (#45746)

After remote cache startup timeout, cache status may be stuck

If a remote cache fails to complete startup within the time period of STN_REMOTE_CACHE_STARTUP_TIMEOUT, the stone starts shutting down and cleaning up after the startup attempt. There were timing cases in which the remote cache could complete the startup and shut itself down, leaving the Stone status incorrect. (#46020)

Checkpoints not written during replay of possible dead objects

Stopping and restarting the Stone during the restore of transaction logs that include a reclaim of possible dead, required that the reclaim restart from the beginning. Now, checkpoints are written during the replay. The main impact of this would be on warm and hot standby systems. (#45901)

Large operations on hidden sets can run out of ME object memory space

Operations on hidden sets, such as System>>hiddenSetEnumerate:limit:, against very large bitmaps could encounter a logic error that filled the ME space part of temporary object memory. In-memory garbage collection was not triggered when ME Space was full but other spaces did not need GC. This resulted in an error "VM temporary object memory is full , ME-space overflow" errors (4067), which could not be trapped using the AlmostOutOfMemory exception. (#46054, #46058)

Configuration Parameter Changes

the maximum for GEM_TEMPOBJ_MESPACE_SIZE and GEM_TEMPOBJ_POMGEN_SIZE has been increased from 1000000 to 64000000

The minimum for GEM_TEMPOBJ_MESPACE_SIZE has been changed from 1000 to 2000.

Reclaim Gem may startup in transaction

When the stone starts up and has to recover due to an unclean shutdown, and there were pages to reclaim, then the Reclaim Gem started up in transaction. This could cause a commit record backlog until recovery completed, or Reclaim Gems' maxTransactionDuration was reached. (#46005)

Indexing issues

IndexingErrorPreventingCommit error not informative

After an indexing error occurs, commits may be disallowed to avoid committing an inconsistent state of the indexes. The Exception IndexingErrorPreventingCommit did not itself provide any details of what the error was; now, the details of the original error are added to the IndexingErrorPreventingCommit error details. (#44749, 45812)

This does not affect cases of indexing state preventing commit that originate in the VM.

Message Not Understood during processing indexing error

Some cases of indexing errors reported an MNU on #'_idxBasicCanCompareWithUnicodeInstance:'. Now, the regular error message is reported. (#44429)

Index creation with autoCommit and manual transaction mode leaves session in transaction

In manual transaction mode when indexing autoCommit is enabled, when an indexing operation is performed, the system starts a transaction , performs the task, and commits; it should then leave the session in the same state as prior to the operation was started. However, a number of indexing operations, including `createEqualityIndexOn: withLastElementClass:`, on completion left the session in transaction. (#45896)

StringKeyValueDictionary>>at:ifAbsent: did not use block on nil argument

The methods `StringKeyValueDictionary >> at:ifAbsent:` and `StringKeyValueDictionary >> at:otherwise:` returned the error #rtErrNilKey (error 2090) when the specified key was nil, rather than executing the block supplied to handle nil keys. (#45367)

upgradeSeasideImage failed as a result of recently added class GsFailedMethodCompilationDuringCopyMethodToNewClass

After the GLASS/Seaside/GsDevKit class GsFailedMethodCompilationDuringCopyMethodToNewClass was added, the upgradeSeasideImage step failed. (#46059)

topaz output pushnew limit increased

Previously, up to 100 files could be specified; now, 1000 are allowed.

Changes in Cache Statistics

Statistic value range changes

The following were previously signed int, and now are unsigned int:

asyncFlushesInProgress
commitQueueThreshold
commitTokenSession

The following were previously unsigned int, and now are 64-bit int:

recoverTranlogFileId
recoverTranlogBlockId
tranlogFileId
tranlogBlockId

Added cache statistics

RemoteCachesLost (Stone)
The number of remote caches for which stone has detected loss of connection

TotalObjsCommitted (Stone)
Total of new plus modified objects committed by all gems.