GemStone®

GemStone/S 64 Bit™ Release Notes

Version 2.4.5

December 2011

vmware®

GEMSTONE S™ 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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Preface

About This Documentation

These release notes describe changes in the GemStone/S 64 Bit™ version 2.4.5 release. Read these release notes carefully before you begin installation, conversion testing, or development with this release.

For information on installing or upgrading to this version of GemStone/S 64 Bit, please refer to the *GemStone/S 64 Bit Installation Guide* for version 2.4.5.

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

Terminology Conventions

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

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GemStone Website

http://support.gemstone.com

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

- **Documentation** for released versions of all GemStone products, in PDF form.
- **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.

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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

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.

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Chapter 1

GemStone/S 64 Bit 2.4.5 Release Notes

Overview

GemStone/S 64 Bit 2.4.5 is a new version of the GemStone/S 64 Bit object server. This release provides feature enhancements and fixes a number of serious bugs; we recommend everyone using GemStone/S 64 Bit 2.x upgrade to this new version.

These release notes provide changes between the previous version of GemStone/S 64 Bit, version 2.4.4.7, and version 2.4.5. If you are upgrading from a version prior to 2.4.4.7, please also review the release notes for each intermediate release to see the full set of changes.

For details about installing GemStone/S 64 Bit 2.4.5 or upgrading from earlier versions of GemStone/S 64 Bit or other GemStone server products, see the *GemStone/S 64 Bit Installation Guide* for version 2.4.5.

Supported Platforms and GBS Versions

Platforms

GemStone/S 64 Bit version 2.4.5 is supported on the following platforms:

- Solaris 9 and 10 on SPARC
- Solaris 10 on x86
- HP-UX 11.11 and 11.31 on PA-RISC
- HP-UX 11.23 and 11.31 on Itanium
- AIX 5.3 and AIX 6.1
- SuSE Linux ES 10 and 11, and Red Hat Linux ES 5.0, 5.5, and 6.1

For more information and detailed requirements for each supported platform, please refer to the GemStone/S 64 Bit v2.4.5 Installation Guide for that platform.

GBS versions

The following versions of GBS are supported with GemStone/S 64 Bit version 2.4.5.

GBS version 7.4

VW 7.8 32-bit	VW 7.8 64-bit	VW 7.7.1 32-bit	VW 7.7.1 64-bit
▸ Windows XP, Windows 2003, Windows Vista, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ SuSE Linux ES 10 and 11; Red Hat Linux ES 5.0, 5.5, and 6.1	▸ Solaris 10 on SPARC ▸ SuSE Linux ES 10 and 11; Red Hat Linux ES 5.0, 5.5, and 6.1	▸ Windows XP, Windows 2003, Windows Vista, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5	▸ Solaris 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5

GBS version 7.3.3

VW 7.7.1 32-bit	VW 7.7.1 64-bit	VW 7.7 32-bit	VW 7.7 64-bit
▸ Windows XP, Windows 2003, Windows Vista, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5	▸ Solaris 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5	▸ Windows XP, Windows 2003, Windows Vista, and Windows 7 ▸ Solaris 9 and 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5	▸ Solaris 10 on SPARC ▸ SuSE Linux ES 10, Red Hat Linux ES 5.0 and 5.5

GBS version 5.3.2

VA Smalltalk 8.0.2	VA Smalltalk 7.5.2
▸ Windows 2008 (64-bit), Windows 7 (32- and 64-bit), Windows XP (32-bit)	▸ Windows 2003 Server, Windows XP

For more details on supported platforms and requirements, see the Release Notes for that version of GemBuilder for Smalltalk.

Changes and new features

Improved performance for restore from compressed backups

Restoring from compressed backups previously was considerably slower than from uncompressed backups. Now, the performance of restore should be similar for compressed and uncompressed backups; there is no longer a need to uncompress backups before restoring. (#41780)

Topaz EXIT and QUIT can now return specific exitStatus

QUIT and EXIT now take an additional argument that is used to provide an explicit exitStatus for the Topaz process. Either a SmallInteger or an object specification that resolves to a SmallInteger in the range 0...255 is accepted. If no argument is specified, the exitStatus will be 1 if there was a GCI error or if the Topaz errorCount was nonzero, or 0 if no errors occurred during Topaz execution.

Added methods to list objects in memory

The following methods have been added:

`Repository >> listInstancesInMemory:` *anArray*
Returns a list of instances of the classes specified in *anArray* that are found in temporary object memory. The result of this method is an Array of Arrays, where the contents of each inner array consists of all instances of the corresponding element in *anArray*. The result contains in-memory objects only. Objects which are not currently in memory are not analyzed. Does not abort the current transaction.

`Repository >> listReferencesInMemory:` *anArray*
Returns a list of instances in temporary object memory that have a reference to one of the objects specified in *anArray*. The result of this method is an Array of Arrays, where the contents of each inner array consists of all instances that have a reference to the corresponding element in *anArray*. The result contains in-memory objects only. Objects which are not currently in memory are not analyzed.

Adding extents and Reclaim GcGems

The existing method `Repository>>createExtent:withMaxSize:`, now starts an additional Reclaim GcGem; this fixes bug #40859 (see "Dynamically created extents may not get page reclaim" on page 16).

The following method has been added:

`Repository >> createExtent:` *extentFilename* `withMaxSize:` *aSize* `startNewReclaimGem:` *aBool*

This method is similar to `Repository>>createExtent:withMaxSize:`; if *aBool* is true, an additional Reclaim GcGem is started for the new extent, if *aBool* is false, no further Reclaim GcGem is started.

invalidReferenceAudit and invalidReferenceAuditWithRepair: removed

These methods fixed conditions resulting from a bug that was fixed long ago, and are no longer necessary.

Remote cache timeout is configurable

In previous releases, the timeout on a remote cache was fixed at 60 seconds. This could cause unnecessary timeouts and cache shutdown on slow networks.

Now, the timeout on response from a remote cache is configurable using the following new configuration parameter, STN_REMOTE_CACHE_PGSVR_TIMEOUT. See "Added parameter STN_REMOTE_CACHE_PGSVR_TIMEOUT" on page 14 for details.

New privilege to allow non-SystemUser to compile primitive methods

A new privilege has been added, CompilePrimitives. UserProfiles that are granted this privilege may compile methods containing primitives; previously, only SystemUser could compile primitive methods.

This is intended to avoid login as SystemUser for the rare cases where a modification to a kernel primitive method is required.

Improvements to auditIndexes

progress counts and statistics have been added to auditIndexes, to allow monitoring of the progress of auditIndexes.

A new gem cache statistic has been added, IndexProgressCount, which can be used to monitor the progress of certain index operations. This statistic has the following meanings:

0 - Inactive
1 - Identity index audit in progress.
2 - Equality index audit - auditing root terms.
3 - Equality index audit - auditing NSC counts.
4 - Equality index audit - auditing btree counts.
5 - IndexManager>>removeAllIndexes in progress.

For some of the status reported by IndexProgressCount, the ProgressCount statistic is also updated to indicate the progress of some of these operations. In these cases, it starts at the number of path terms to be checked and is decremented each time the audit of a path term has completed, or incremented when the audit switches to audit a different index.

The following methods have been added to support the update of these cache statistics by the audit operations performed in Smalltalk:

```
UnorderedCollection class >>
    statValueForAuditingIdentityIndexes
UnorderedCollection class >> statValueForAuditingRootTerms
UnorderedCollection class >> statValueForAuditingNscCounts
UnorderedCollection class >> statValueForAuditingBtreeCounts
UnorderedCollection class >> statValueForRemovingAllIndexes
System class >> incrementProgressCountBy: aSmallInt
System class >> decrementProgressCountBy: aSmallInt
System class >> setProgressCountTo: aSmallInt
System class >> incrementIndexProgressCountBy: aSmallInt
System class >> decrementIndexProgressCountBy: aSmallInt
System class >> setIndexProgressCountTo: aSmallInt
```

Note that the range has changed for the _sessionCacheStatAt:* methods. This should not affect customer application code. These now accept indexes of -1 for the progressCount and -2 for the indexProgressCount.

Backup files contain version information

Backup files now include information regarding the GemStone version that created them. Copydbf has been enhanced to report this information. Now, when using copydbf -i or -I to get information about a backup file from version 2.4.5 or later, the results include the version of GemStone/S 64 Bit that created the backup. This makes it simpler to determine the GemStone version required to restore the backup, since backups should be restored in the same version in which they were created.

The additional output of copydbf includes a line similar to:

```
Backup was created by GemStone Version: 2.4.5 .
```

pageaudit utility now audits data pages by default

In previous releases, the pageaudit utility only audited non-data pages: object table pages, bitmap pages, etc. Data pages were audited separately by objectAudit.

In version 2.4.5, pageaudit also checks data pages, reading them into memory and confirming that they are data pages. Data page audit is the new default. To disable audit of data pages and revert to the pageaudit behavior of previous releases, use the new pageaudit **-d** option.

```
Usage: pageaudit [-d] [-h] [-f] [-k logfile ] [-e execfg]
[-z syscfg] [name]
  -d disables auditing of data pages.
  -e specifies executable specific configuration file.
  -f keeps running beyond first error if possible
  -h prints usage information and exits.
  -l write output to logfile
  -z specifies system configuration file.
  name the name of the stone (default is gs64stone-audit).
```

MinutesFromGMT no longer created for new users

An obsolete variable in UserGlobals, MinutesFromGmt, is no longer created for new users.

Added environment variable GS_PAGE_MGR_PRINT_REMOTE_STACKS

If this variable is set, if a remote cache page server becomes stuck, the page manager will request that the remote cache page server print its call stack to its log file.

Improved stack trace utility for Linux/Mac

The gstack utility, which was previously distributed in $GEMSTONE/bin on the Linux and Mac platforms, has been replaced by a custom pstack script, which provides more information in the resulting stacks. You should now use pstack instead of gstack to get stack trace information on Linux or Darwin.

gslist now included in Windows distributions

The gslist -m option allows you to list GemStone processes on a different server. To allow this to be done from Windows, the distribution file for Windows now also include the gslist executable.

Note that gslist on Windows will query a compatible netldi on the remote host for this information. The environment for gslist must set %GEMSTONE_NRS_ALL% to the correct netldi, if the remote host does not use gs64ldi as the v2.x netldi name.

gslist for version 2.4.5 and other 2.x versions cannot communicate with netldi version 3.0 or later.

Changes in distributed files

makeusers no longer distributed

The makeusers script is no longer distributed.

checksums and fixman no longer distributed

installgs no longer verifies install tree using checksums, and checksums files are no longer included in the $GEMSTONE/install directory.

While man pages continue to be distributed, the whatis database is no longer updated by installgs, and the fixman script no longer distributed.

Cache Statistics, VSD, and Statmonitor changes

VSD main window now includes SessionId column

The VSD graphical application main window now includes a column with the sessionId. The sessionId is no longer reported as part of the name.

Also, the PID column has been relabled "ProcessId".

Change in behavior with the -r flag

Previously, when the -r flag was used to start statmonitor, if the stone was shut down or died for any reason, statmonitor would wait for up to 120 seconds for the stone to restart, in which case (on some platforms), it would attach and monitor the new cache.

Now, when the stone terminates, any statmonitor monitoring the caches for that stone will shut down and not restart. In order to monitor the restarted stone, statmonitor must be invoked again; we recommend starting the stone using a script which also starts statmonitor.

The -r flag now may only be used in combination with either the -t or -h flags.

TimeWaitingForIo type change

The statistic TimeWaitingForIo has been changed from uvalue to counter; it will now display by default as per Second rather than unfiltered.

Added Cache Statistics

IndexProgressCount (Gem)

Used to monitor the status of certain index operations:
0 - Inactive
1 - Identity index audit in progress.
2 - Equality index audit - auditing root terms.
3 - Equality index audit - auditing NSC counts.
4 - Equality index audit - auditing btree counts.
5 - IndexManager>>removeAllIndexes in progress.

The ProgressCount statistic is also used to indicate the progress of some of these operations. When it is used, it starts at the number of path terms to be checked and is decremented each time the audit of a path term has completed.

NumProcsSleepingForLock (SPC Monitor)

Number of processes on this shared page cache which are currently sleeping while waiting to acquire a spin lock.

StnRemoteCachePgsvrTimeout (Stone)

Current value of the STN_REMOTE_CACHE_PGSVR_TIMEOUT stone configuration parameter.

Configuration Parameter Changes

Configuration parameter change reporting

Changes to runtime configuration parameters are reported in the stone log. The format of these reports has been improved to more consistently use the exact name of the parameter that is changed.

Changes in default for STN_FREE_SPACE_THRESHOLD

The default for STN_FREE_SPACE_THRESHOLD has been 1M, which is much too small for modern disk and repository sizes.

The default is now 0, which means that the stone will compute a free space threshold that is 1/1000 of the current size of the repository and at least 5M. This is adjusted as the repository grows.

You should examine your current configuration settings to confirm that if you have explicitly set STN_FREE_SPACE_THRESHOLD, that this value is sufficiently large to allow the system enough free space to handle repository full situations as gracefully as possible.

Changes in default for SHR_NUM_FREE_FRAME_SERVERS

Previously, the default number of Free Frame Page servers was 1. Using this default, if the number of AIO page servers was increased, could cause performance bottlenecks for the AIO page servers (see “Slow checkpoints with multiple AIO pgsvrs and fewer Free Frame pgsvrs” on page 15).

Now, the default setting for this configuration parameters is -1, which specifies to use the value for STN_NUM_LOCAL_AIO_SERVERS on the primary cache, or 1 on a remote cache, as the value for SHR_NUM_FREE_FRAME_SERVERS.

You should examine your current configuration settings to check if you have explicitly set SHR_NUM_FREE_FRAME_SERVERS to a value other than the same value as STN_NUM_LOCAL_AIO_SERVERS.

Added parameter STN_REMOTE_CACHE_PGSVR_TIMEOUT

STN_REMOTE_CACHE_PGSVR_TIMEOUT

Maximum time in seconds that the page manager session will wait for a response from a page server on a remote shared page cache. If no response is received within the timeout period, all Gems attached to that cache are logged off and a message is written to the Stone and page manager logs. Negative timeouts are not allowed. A timeout value of zero causes the page manager to wait forever.

Runtime equivalent: #StnRemoteCachePgsvrTimeout
Cache Statistic: StnRemoteCachePgsvrTimeout (Stone)
Min: 0
Max: 3600
Default: 15

Bugs fixed

Removing element from KeyValueDictionary could result in incorrect size

When an element is removed from a KeyValueDictionary using removeKey:otherwise:, if the element is not present it is still possible for the cached size of the dictionary to be decreased. Sending the size message to the dictionary then does not return the actual number of entries. This results in errors when removing the last items, but rarely other symptoms. Most access and iteration operations do not use the size. (#41950)

Dead object reclaim may have stopped

Under certain circumstances, the Reclaim GcGems could have stopped reclaiming dead objects. (#41634)

ProfMonitorTree profiling errored with user actions

When profiling code containing a user action using ProfMonitorTree, it resulted in a message not understood error on #'_classAndSelectorNameWidth:'. (#41261)

Cachewarmers did not load DependencyMap pages

Running the startcachewarmer script should load all system pages, or if the -d option is specified, the entire repository into the shared cache, if possible. The cachewarmer gems did not load dependencyMap pages, which resulted in page reads when these were needed, such as during markForCollection. (#41817)

Issues related to Privileges

Instance Migration required CodeModification privilege

Class >> migrateInstances:to: and Class >> migrateInstancesTo: previously required CodeModification. Now, you can migrate instances without this privilege if you have write access to the instances. (#41597)

SymbolList select: required OtherPassword privilege

Performing a SymbolList select: required OtherPassword, since adding to the result SymbolList requires this privilege. Now, select: on SymbolList will return an instance of Array, and this privilege is not required. (#41791).

Slow checkpoints with multiple AIO pgsvrs and fewer Free Frame pgsvrs

With multiple AIO page servers, and only one Free Frame page server, free pages may be returned to the free frame list in such a way that only one of the AIO page servers can write these pages to disk. During a checkpoint when pages are written to disk, the other AIO page servers may be idle while one does the writes, resulting in checkpoints taking much longer than necessary. (#41809)

The fix for this is to have the number of Free Frame page servers match the number of AIO page servers. The default for SHR_NUM_FREE_FRAME_SERVERS has been changed, so this will be the default; see “Changes in default for SHR_NUM_FREE_FRAME_SERVERS” on page 13.

Dynamically created extents may not get page reclaim

If Reclaim GcGems are specified for existing extents, and a new extent is added programmatically, the newly created extent will not have an assigned Reclaim GcGem and pages in this extent will not get reclaimed. (#40859)

Now, a reclaim GcGem is started by default when an extent is added. See "Adding extents and Reclaim GcGems" on page 9.

Topaz issues

Input focus after executing code via -I parameter

When executing code in a file passed in using the -I parameter, which in turn input a second topaz file, input focus was not returned properly to stdout when script processing completed (#41698)

Message flushing when topaz output is piped

When topaz output is piped to a file, status output generated during execution, such as the progress of restoreFromBackups:, was not flushed until the operations completed. (#41741)

Removing indexes did not disableStoneGemTimeout

To avoid gems performing long-running indexing operations from termination due to STN_GEM_TIMEOUT, index creation invokes `disableStoneGemTimeout`. Now, index removal operations also invoke this code, to allow long-running index removal tasks to complete. (#41484)

Remote Cache Issues

Performance problems in page manager poll() with remote caches

When the page manager read responses from remote cache page servers, it performed non-blocking I/O, and therefore called code to wait and poll for response. On a heavily loaded system with many remote caches, this resulted in very high CPU use by the page manager, and high values for the cache statistic TimeInNetPgsvrReads.

Since the page manager has already been informed that a response is available, there is no need to wait or poll. Now, the page manager uses blocking I/O to read the response.

In addition, the page manager no longer calls poll() when conversing with the Stone. (#40733)

Race condition in page manager handling of dead remote caches

The sequence of recycling pages and the detection of a dead remote cache was not correct, allowing the pages returned by gems on a remote cache that had timed out to potentially be reused before the gems were terminated. This resulted in cache coherency errors in gems on the dead remote cache. (#40746)

Remote cache timeouts counted sequentially, resulting in delayed timeout

The STN_REMOTE_CACHE_PGSVR_TIMEOUT configuration parameter controls how long the page manager waits before determining that a remote cache is unresponsive. These timeouts were not handled correctly with multiple remote caches, resulting in potentially delayed handling of unresponsive remote caches.

When the page manger was waiting for responses from multiple page servers, instead of counting the timeout from the time the message was sent to a specific remote pgsvr, the timeout was started at the time a response was received from any remote pgsvr. This resulted in potentially nearly cumulative timeouts. (#40728)

In addition to simultaneous timeouts, when the remote cache response is received after more than 50% of the remote cache timeout period has elapsed, a warning is printed to the page manager log file. For example,

```
[Warning]: Slow response from page server on host bebop.gem-
stone.com with process ID 23441: 8164 ms
```

Statmonitor could corrupt output or crash when stone restarted with -r option

With the previous behavior of the statmonitor -r option, if the Stone is killed and restarted while statmonitor is running with the -r option, statmonitor may write final output from the previous cache to the beginning of the next statmonitor data file, before writing the header data. This resulted in an statmonitor file that cannot be read by VSD. It was also possible for statmonitor to crash with a SEGV in this circumstance. (#40880)

Now, statmonitor will not continue running if the Stone exits, avoiding this problem. See “Change in behavior with the -r flag” on page 12.

String >> printOn: required receiver to implement _nextPut:

The argument to String >> printOn: needs to implement stream protocol, but not necessarily be a kind of Stream. The printOn: code inappropriately required that instances of classes used as arguments to printOn:, other than GemStone stream classes, implemented the private method _nextPut:. (#41802)

Recovery and restore issues

A number of minor issues, race conditions and corner cases in recovery and restore have been fixed in this release.

commitRestore could reset tranlog sequence to 0

When commitRestore is performed immediately after startstone -N, it may reset the stone’s tranlog Id to 0. This may cause a conflict with existing tranlogs. (#41904)

Restore messages in stone log

Now, a restore operation writes messages in the stone log when restore is started, with the file name being restored, as well as when restore completes.

GsFile >> atEnd performance for large compressed files

GsFile >> atEnd was increasingly slow for large compressed files. (#41850)

copyFrom:to:into:startingAt: on very large OrderedCollections may not handle conflicts correctly

If an OrderedCollection is very large, such that it's internally composed of LargeObjectNodes, sending OrderedCollection>>copyFrom:to:into:startingAt: may not place the root node in the write set. This may cause incorrect behavior for locks and handling transaction conflicts. (#40767)

Performance problems with System cacheStatistics:

Gem CPU statistics on some platforms require opening a system /proc file, which could cause excessive CPU use. A gem returning statistics for itself now does not close the /proc file on Solaris and Linux. (#41416)

Method with long literal ByteArray could hang during compile

Methods with multi-megabyte literal ByteArrays could hot hang during compilation, when attempting to allocate memory for the literal. (#41875)

UnorderedCollections (NSCs) converted from 6.x failed audit

UnorderedCollections (NSCs or NonSequentialCollections) that originate in a 32-bit GemStone/S repository were converted with some internal flags incorrectly set, resulting in NSC audit failures in GemStone/S 64 Bit. The conversion process now correctly converts collections, and the repair messages `repairInternalStructures` and `auditInternalStructuresWithRepair: true` will correct any problems in existing repositories. (#40452, #40442)

Warnings reported if gem -T option with larger GEM_TEMPOBJ settings

On platforms with growable cache (AIX and HP), if the -T gem option specified a smaller cache than GEM_TEMPOBJ_CACHE_SIZE, such as with system gems, warnings may be reported for various GEM_TEMPOBJ* settings that were set according to the system-wide GEM_TEMPOBJ_CACHE_SIZE. (#41249)

User creation failed if no #Published in DataCurator's SymbolList

If a SymbolDictionary named #Published was not in DataCurator's SymbolList, new user creation encountered an error. (#40939)

GcGems deleted log files with #verboseLogging enabled

When the Admin or Reclaim GcGems are shut down, the log files were being deleted, even when #verboseLogging is enabled. Now, these log files are not deleted. (#41829)

Upgrade modified Segment authorizations

Upgrades that did not require conversion updated the authorizations for system Segments, modifying changes made by customer applications. These updates are no longer made, except for the GcUser's Segment. (#41803)

Shrpcmon ignored SIGTERM

An idle shared page cache monitor did not respond to kill -TERM. (#41192)

GciLogout() from RPC client may have hung

If an exception occurred during the gem logout and shutdown code called from GciLogout(), the gem may never send a response to the client. (#40850)

Passivate/Activate did not handle QuadByteStrings correctly

PassiveObject's code to passivate and activate objects did not correctly handle QuadByteStrings. (#40803)

Missing error message for #'objErrDiffSizeColl'

Using replaceFrom:to:with: or with:do: with incorrect argument collection size results in an error objErrDiffSizeColl. This error did not have an appropriate error message. (#41889)