


GemStone/S 64 BitTM

Release Notes

Limited Distribution
Special Release

Version 3.7.1.4

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PATENTS

GemStone software is or has been covered by U.S. Patent Number 6,256,637 "Transactional virtual machine architecture" (1998-2018), Patent Number 6,360,219 "Object queues with concurrent updating" (1998-2018), Patent Number 6,567,905 "Generational garbage collector with persistent object cache" (2001-2021), and Patent Number 6,681,226 "Selective pessimistic locking for a concurrently updateable database" (2001-2021).

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Release Notes for 3.7.1.4

GemStone/S 64 Bit™ 3.7.1.4 is a limited-distribution special release version of the GemStone/S 64 Bit object server, fixing significant bugs and with other feature improvements.

These Release Notes include changes between the previous version of GemStone/S 64 Bit, v3.7.1.3, and v3.7.1.4.

Supported Platforms

GemStone/S 64 Bit version 3.7.1.4 is supported on Linux/x86_64 only, with clients running on Windows and Linux.

GemBuilder for Java

This release does not support GemBuilder for Java (GBJ), and does not include the GBJ 3.1.3 shared library.

Changes in this Release

Improved handling for heavy reduced-conflict processing

When reduced conflict (RC) collections encounter what would normally be conflicts with other sessions, the conflict is resolved using RC replay. To determine which Gem should commit or replay, the Gems send the set of replay objects (the RcReadSet), to the Stone. When the union of these sets over multiple Gems became large, the Stone took longer to processing these sets and the application would see commits involving RC collections take longer.

Now, rather than sending the full RcReadSet to the Stone, the Gems send a smaller set, the LogicalRcReadSet, that omits LargeObject collection infrastructure objects. This reduces the overhead of conflict processing and improves replay performance.

LogicalRcReadSet

There is a new internal set (hidden set), the LogicalRcReadSet.

This set is available from GsBitmap as #LogicalRcReadSet, and as a legacy HiddenSet, HiddenSetSpecifier 19, which was previously unused.

The private method `System class >> _printRcReadSet` has been added.

Removed private method

The method `IdentityBag >> _rcOccurrencesOf:` has been removed.

Additional information in commit conflict reports

The conflict details returned from `System class >> commitConflicts`, `detailedConflictReportStringnow`, and `transactionConflicts` have been updated. This includes timestamps and printing of LogicalRcReadSet contents.

The method `System class >> _gemCommitConflictDetails` (and the primitive it invokes) now returns a SmallInteger rather than a boolean.

Native code did not correctly handle block results on stack

Errors have been found in native code generation that resulted in incorrect block evaluation results or SEGV. (#51094, #51093)

Incorrect results from -1 bitShift: with arguments greater than 60

When the argument to `-1 bitShift:` is greater than 60, the result is incorrect, due to a failure to overflow to a large integer. (#51097)

Other Method Changes

`GsTestCase >> assert:identical:` has improved printing when SmallInteger arguments do not match.

`GsSecureSocket >> setCaCertLocation` now includes checking the trusted CA cert locations on the Mac, which allows the GsSecureSocket class example methods to work on Mac.

GCI changes

The following functions have been added:

```
(BoolType) GciSetSessionId_(GciSessionIdType sessionId);
```

This is a variant of `GciSetSessionId` that returns a false if the argument `sessionId` is not valid.

```
(uint) GCI_OOP_TO_CHAR_(OopType anOop)
```

This is the same as `GciOopToChar`, but does not check that `anOop`'s class is Character. This is an optimization for when `anOop`'s class is known.