

---

GemStone®

***GemStone/S 64 Bit™***  
***Release Notes***

Version 3.0.1

November 2011

vmware®

GEMSTONE S<sup>™</sup> 64

---

## INTELLECTUAL PROPERTY OWNERSHIP

This documentation is furnished for informational use only and is subject to change without notice. VMware, Inc., assumes no responsibility or liability for any errors or inaccuracies that may appear in this documentation.

This documentation, or any part of it, may not be reproduced, displayed, photocopied, transmitted, or otherwise copied in any form or by any means now known or later developed, such as electronic, optical, or mechanical means, without express written authorization from VMware, Inc.

Warning: This computer program and its documentation are protected by copyright law and international treaties. Any unauthorized copying or distribution of this program, its documentation, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted under the maximum extent possible under the law.

The software installed in accordance with this documentation is copyrighted and licensed by VMware, Inc. under separate license agreement. This software may only be used pursuant to the terms and conditions of such license agreement. Any other use may be a violation of law.

Use, duplication, or disclosure by the Government is subject to restrictions set forth in the Commercial Software - Restricted Rights clause at 52.227-19 of the Federal Acquisitions Regulations (48 CFR 52.227-19) except that the government agency shall not have the right to disclose this software to support service contractors or their subcontractors without the prior written consent of VMware, Inc.

This software is provided by VMware, Inc. and contributors "as is" and any expressed or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall VMware, Inc. or any contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.

## COPYRIGHTS

This software product, its documentation, and its user interface © 1986-2011 VMware, Inc., and GemStone Systems, Inc. All rights reserved by VMware, Inc.

## 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.

## TRADEMARKS

**VMware** is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions.

**GemStone**, **GemBuilder**, **GemConnect**, and the GemStone logos are trademarks or registered trademarks of VMware, Inc., previously of GemStone Systems, Inc., in the United States and other countries.

**UNIX** is a registered trademark of The Open Group in the United States and other countries.

**Sun**, **Sun Microsystems**, and **Solaris** are trademarks or registered trademarks of Oracle and/or its affiliates. **SPARC** is a registered trademark of SPARC International, Inc.

**HP**, **HP Integrity**, and **HP-UX** are registered trademarks of Hewlett Packard Company.

**Intel**, **Pentium**, and **Itanium** are registered trademarks of Intel Corporation in the United States and other countries.

**Microsoft**, **MS**, **Windows**, **Windows XP**, **Windows 2003**, **Windows 7** and **Windows Vista** are registered trademarks of Microsoft Corporation in the United States and other countries.

**Linux** is a registered trademark of Linus Torvalds and others.

**Red Hat** and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc. in the United States and other countries.

**SUSE** is a registered trademark of Novell, Inc. in the United States and other countries.

**AIX**, **POWER5**, and **POWER6** are trademarks or registered trademarks of International Business Machines Corporation.

**Apple**, **Mac**, **Mac OS**, **Macintosh**, and **Snow Leopard** are trademarks of Apple Inc., in the United States and other countries.

Other company or product names mentioned herein may be trademarks or registered trademarks of their respective owners. Trademark specifications are subject to change without notice. VMware cannot attest to the accuracy of all trademark information. Use of a term in this documentation should not be regarded as affecting the validity of any trademark or service mark.

**VMware, Inc.**  
15220 NW Greenbrier Parkway  
Suite 150  
Beaverton, OR 97006

---

## *Preface*

### **About This Documentation**

These release notes describe changes in the GemStone/S 64 Bit™ version 3.0.1 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 3.0.1.

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.

### **Technical Support**

#### **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.

## 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:** <http://techsupport.gemstone.com>

**Email:** [techsupport@gemstone.com](mailto: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.

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.

## Training and Consulting

Consulting is available to help you succeed with GemStone products. Training for GemStone software is available at your location, and training courses are offered periodically at our offices in Beaverton, Oregon. Contact your GemStone account representative for more details or to obtain consulting services.

**Chapter 1. GemStone/S 64 Bit 3.0.1 Release Notes**

<b>Overview</b>	<b>7</b>
<b>Supported Platforms and GBS Versions</b>	<b>8</b>
Platforms . . . . .	8
GBS versions . . . . .	8
<b>Changes and new features</b>	<b>9</b>
Improved performance for restore from compressed backups . . . . .	9
Primitive failures now report arguments to primitive method . . . . .	9
markForCollection return changed. . . . .	9
Exception Added . . . . .	9
Class creation methods allow specification of non-inherited options . . . . .	9
Removed limit on number of symbols in binary selector . . . . .	9
makeusers no longer distributed . . . . .	9
<b>Bugs fixed</b>	<b>10</b>
Epoch-related corruption . . . . .	10
System crash between Epoch completion and checkpoint may corrupt repository . . . . .	10
Turning Epoch on and off may corrupt repository . . . . .	10
Cachewarmers did not load DependencyMap pages. . . . .	10
referencesTo: did not report references to kernel classes. . . . .	10
Conversion error, method from Gs64 v2.x needed recompile. . . . .	10
Collection addAll: required implementation of accompaniedBy:do: . . . . .	10
Dead object reclaim may have stopped . . . . .	10
Remote login failures with no hostid file . . . . .	11
Copy of large object with dynamic instance variables failed . . . . .	11

GsFile >> atEnd problems with compressed files . . . . .	11
Incorrect formatting from Float >> asStringUsingFormat: . . . . .	11
Issues related to Privileges . . . . .	11
Documented privileges not enforced . . . . .	11
Instance Migration required CodeModification privilege. . . . .	11
SymbolList select: required OtherPassword privilege. . . . .	11
FFI was not restricted by NoUserAction privilege. . . . .	11
Exceptions and Signals . . . . .	12
Gem may not have received OOB_SIGNAL_FINISH_TRANSACTION	12
InterSessionSignals may not be caught . . . . .	12
CompileError instances may have had incomplete gsArguments . . .	12
Recompiling Class may not have updated class variables . . . . .	12
validatePassword: may have failed for valid LDAP passwords . . . . .	12
IndexManager class >> sessionAutoCommit . . . . .	12
Reassigning symbolList resulted in empty symbolList . . . . .	12
compileAccessingMethodsFor: put methods in wrong category . . . . .	12
String >> printOn: required receiver to implement _nextPut: . . . . .	12
Topaz issues . . . . .	13
Input focus after executing code via -I parameter . . . . .	13
Message flushing when topaz output is piped . . . . .	13
Problems with handling saved stacks in topaz. . . . .	13
topaz fileout command failed for category . . . . .	13
Constraints enforced in Bag >> add: . . . . .	13
Improved error checking in sessionCacheStatAt:put: . . . . .	13

# *GemStone/S 64 Bit 3.0.1 Release Notes*

## **Overview**

GemStone/S 64 Bit 3.0.1 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 upgrade to this new version.

These release notes provide changes between the previous version of GemStone/S 64 Bit, version 3.0, and version 3.0.1. If you are upgrading from a version prior to 3.0, note there were many changes requiring application conversion in v3.0. You should carefully read the release notes for version 3.0, as well as the release notes for each intermediate release, to see the full set of changes.

For details about installing GemStone/S 64 Bit 3.0.1 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 3.0.1.

## Supported Platforms and GBS Versions

### Platforms

GemStone/S 64 Bit version 3.0.1 is supported on the following platforms:

- ▶ Solaris 10 on SPARC
- ▶ Solaris 10 on x86
  - v3.0.1 will not run on Solaris 9 or earlier.
- ▶ HP-UX 11.31 on Itanium
  - Native code is not supported on Itanium; processing on Itanium will use interpreted code.
- ▶ AIX 5.3, TL7, SP2 and AIX 6.1, TL1, SP1
  - Note that POWER7 is not supported
- ▶ SuSE Linux ES 10 SP1 and Red Hat Linux ES 5.0 and 5.5, on x86
- ▶ Mac OSX 10.6.4 (Snow Leopard), with Darwin 10.4.0 kernel, on x86

For more information and detailed requirements for each supported platforms, please refer to the GemStone/S 64 Bit v3.0.1 Installation Guide for that platform.

### GBS versions

The following version of GBS is supported with GemStone/S 64 Bit version 3.0.1. Versions of GBS earlier than 7.4 may be able to log in, but can expect errors.

#### GBS version 7.4

<b>VW 7.8 32-bit</b> with 32-bit 7.8 OE	<b>VW 7.8 64-bit</b> with 64-bit 7.8 OE	<b>VW 7.7.1 32-bit</b> with 32-bit 7.7.1 OE	<b>VW 7.7.1 64-bit</b> with 64-bit 7.7.1 OE
<ul style="list-style-type: none"> <li>▶ Windows 7, Windows 7 64-bit, Windows Vista, Windows 2003 Server, and Windows XP</li> <li>▶ Solaris 10 on SPARC</li> <li>▶ SuSE Linux ES 10 and RedHat Linux ES 5.5 and 5.0</li> </ul>	<ul style="list-style-type: none"> <li>▶ Solaris 10 on SPARC</li> <li>▶ SuSE Linux ES 10 and Red Hat Linux ES 5.5 and 5.0</li> </ul>	<ul style="list-style-type: none"> <li>▶ Windows 7, Windows 7 64-bit, Windows Vista, Windows 2003 Server, and Windows XP</li> <li>▶ Solaris 10 on SPARC</li> <li>▶ SuSE Linux ES 10 and RedHat Linux ES 5.5 and 5.0</li> </ul>	<ul style="list-style-type: none"> <li>▶ Solaris 10 on SPARC</li> <li>▶ SuSE Linux ES 10 and Red Hat Linux ES 5.5 and 5.0</li> </ul>

For more details on supported GBS and client Smalltalk platforms and requirements, see the release notes for that version of GBS.

## 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. (#41780)

There is no longer a need to uncompress backups before restoring.

### Primitive failures now report arguments to primitive method

Previously, when a primitive failed and no specific error was returned by the primitive method code, the general primitive failed error did not include information about the specific arguments that had been passed to the primitive. Now, these values are included in the error.

### markForCollection return changed

Previously, when markForCollection completed, it signaled a Notification with number 3020. Now, markForCollection signals and returns a Warning with number 2515.

Also, the resulting message has changes in wording and is now formatted to be single line.

### Exception Added

A new exception number #2515 has been added, a Warning specific to MFC completion. This replaces 3020 which is no longer used.

### Class creation methods allow specification of non-inherited options

Subclass creation methods include an options: keyword, which allows specification of a number of features such as #dbTransient and #instancesNonPersistent. Previously, these options, if present, were always inherited by subclasses.

A new option, #noInheritOptions, has been added. If this option is included as the first element in the options array specified in subclass creation, none of the following options are inherited from the superclass: #subclassesDisallowed, #disallowGciStore, #traverseByCallback, #dbTransient, #instancesNonPersistent, #instancesInvariant.

### Removed limit on number of symbols in binary selector

Previously, binary selectors (selectors consisting of symbols such as +) were limited to two characters. This limit has been removed.

### makeusers no longer distributed

The makeusers script is no longer distributed.

## Bugs fixed

### Epoch-related corruption

#### **System crash between Epoch completion and checkpoint may corrupt repository**

If Epoch GC was enabled, and the system shut down uncleanly after the end of the Epoch but before a checkpoint, the recovery on startup may have corrupted the repository. An important step, clearing the internal bitmap containing the Epoch GC OOPs, did not have a record written to the tranlog, so on recovery after a shutdown, this step was not performed, and objects could be reclaimed a second time. (#41775)

This internal bitmap is cleared by a commitRestore, so repositories with tranlogs replayed during restore, including warm standbys, are not affected by this bug.

#### **Turning Epoch on and off may corrupt repository**

If Epoch GC was enabled in a repository, a disable and re-enable of Epoch via the configuration file may result in repository corruption. The internal bitmap that records Epoch GC OOPs was not cleared correctly when Epoch GC state was updated during stone startup, and as a result objects could be reclaimed a second time. (#41784)

This bug does not apply for Epoch disable/enable via runtime parameter.

### 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)

### referencesTo: did not report references to kernel classes

ClassOrganizer >> referencesTo: did not report references to kernel classes; it could located only references to user-defined classes or other symbols. (#41606)

### Conversion error, method from Gs64 v2.x needed recompile

Steps in the upgrade process invoked methods on TimeZone, which had not been yet been recompiled for 3.0. This caused an error during the upgrade process. (#41620)

### Collection addAll: required implementation of accompaniedBy:do:

The Collection >> addAll: method invoked accompaniedBy:do:. Since this method is not required by ANSI, addAll: violated the ANSI standard. A default implementation, Object >> accompaniedBy:do: has been added; custom collection classes no longer need to implement this method. (#41761).

### Dead object reclaim may have stopped

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

## Remote login failures with no hostid file

Logins from machines remote from the stone could have failed with a message that the hostid file, `/opt/gemstone/locks/gemstone.hostid`, could not be found. Now, starting up a netldi will create a hostId file if one does not exist. Remote RPC logins, which do not require a netldi, are not required to have the hostId file present. (#41756, #41837)

## Copy of large object with dynamic instance variables failed

Attempting to execute `Object>>copy` with large objects (objects requiring more than a page) that had dynamic instance variables resulted in an error. (#41691)

## GsFile >> atEnd problems with compressed files

GsFile >> atEnd returned incorrect answers for small compressed files (less than 4K), and was very slow for large compressed files. (#41886, #41850)

## Incorrect formatting from Float >> asStringUsingFormat:

Some cases of SmallDoubles displayed using `asStringUsingFormat`: did not follow the formatting rules for the given format. (#41668)

## Issues related to Privileges

### Documented privileges not enforced

NoGsFileOnServer privilege was not enforced for some information-only operations on GsFiles. (#41665)

GarbageCollection privilege was not enforced for some methods documented to require it. (#41667)

### 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).

### FFI was not restricted by NoUserAction privilege

The new foreign function interface did not respect the NoUserAction privilege. Now, userProfiles that have the NoUserAction inverse privilege set will not be able to execute external C code using the FFI interface. (#41662)

## Exceptions and Signals

### **Gem may not have received OOB\_SIGNAL\_FINISH\_TRANSACTION**

The stone may have failed to send the finish transaction signal to gems that were holding the oldest commit record. (#41785)

### **InterSessionSignals may not be caught**

Under some circumstances, a second InterSessionSignal may not have been caught by an exception handler. (#41787)

### **CompileError instances may have had incomplete gsArguments**

The gsArguments for an instance of CompileError did not include all arguments, although sending printString to the CompileError updated the gsArguments correctly. (#41814)

## **Recompiling Class may not have updated class variables**

When executing a class creation method to recompile an existing class, if the only change is in adding or removing class variables, the change to class variables was not made. This is since class variables are not stored in the class definition, so the existing class instance is returned and the class is not versioned. Now, although the class is not versioned, the class variables are updated to the new definition. (#41575)

## **validatePassword: may have failed for valid LDAP passwords**

In some cases the method UserProfile>>validatePassword: may have returned false for valid LDAP passwords. (#41823)

## **IndexManager class >> sessionAutoCommit**

The method IndexManager class >> sessionAutoCommit was inadvertently missing in the 3.0 release. (#41694)

## **Reassigning symbolList resulted in empty symbolList**

Reassigning a userProfile's symbolList to the same symbolList resulted in the symbolList being emptied. (#41658)

## **compileAccessingMethodsFor: put methods in wrong category**

The method compileAccessingMethodsFor: put all created methods in the category "Updating", rather than separating assignment and access into "Updating" and "Accessing". (#41595)

## **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)

## 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)

### Problems with handling saved stacks in topaz

Topaz permits you to save a stack for later examination, using the `stack` command. There were a number of incorrect behaviors in handing stacks that have been fixed. (#41762)

### topaz fileout command failed for category

Using the topaz command fileout, and specifying a category to file out, failed with an error "There is no Symbol with the specified value". (#41745)

## Constraints enforced in Bag >> add:

While constraints are deprecated, they may still be present in upgraded repositories; they are not enforced except for certain kernel classes and key methods. Bag >> add: inappropriately still enforced constraints. (#41592)

## Improved error checking in sessionCacheStatAt:put:

The error checking following primitive failure in the method System class >> sessionCacheStatAt:put: has been improved, so more specific errors are reported for invalid arguments. (#41569)

