
GemStone®

GemStone/S *Release Notes*

Version 6.6.2

February 2012

vmware®

GEMSTONE S™
.....

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 © 1986-2012 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

About This Documentation

These release notes describe changes in the GemStone/S version 6.6.2 release. We recommend that everyone migrating to this version read these release notes before beginning installation, testing or development.

For information on installing or upgrading to this version of GemStone/S, please refer to the *GemStone/S Installation Guide* for version 6.6.2.

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.

Chapter 1. GemStone/S 6.6.2 Release Notes

<i>Overview</i>	7
<i>Supported Platforms and GBS Versions</i>	7
Platforms	7
GBS version summary	8
<i>Changes in this release</i>	9
Support for AIX on POWER7	9
New compilers and compile information for AIX	9
Multithreaded MFC crash when extents on raw partitions	9
SIGSEGV when DB approaches OOP limit	10
Added cache statistics	10
Distribution change for client libraries	10

GemStone/S 6.6.2 Release Notes

Overview

GemStone/S 6.6.2 is a new version of the GemStone 32-bit Smalltalk object server, containing C-level memory barrier additions that address issues with AIX on POWER7. These issues technically also could affect Solaris on SPARC, but have no effect on operating systems running on Intel processors. In addition, several bugs are fixed in this release. We recommend everyone using GemStone/S upgrade to this new version.

These release notes provide changes between the previous version of GemStone/S, version 6.6.1, and version 6.6.2. If you are upgrading from a version prior to 6.6.1, please also review the release notes for each intermediate release to see the full set of changes.

For details about installing GemStone/S 6.6.2 or upgrading from earlier versions of GemStone/S, see the *GemStone/S Installation Guide* for version 6.6.2 for the appropriate platform.

Supported Platforms and GBS Versions

Platforms

GemStone/S version 6.6.2 is supported on the following platforms:

- ▶ Solaris 8, 9 and 10 on SPARC
- ▶ AIX 5.3, 6.1, and 7.1
- ▶ 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 Installation Guide* v6.6.2 for that platform.

GBS version summary

The following versions of GBS are supported with GemStone/S version 6.6.2, with the following client Smalltalk and platforms versions.

GBS version 7.4.1

VisualWorks 7.8.1	VisualWorks 7.8	VisualWorks 7.7.1
<ul style="list-style-type: none"> ▶ Windows XP, Windows 7, and Windows 2008 R2 ▶ Solaris 9 and 10 on SPARC ▶ RedHat Linux ES 5.0, 5.5, and 6.1 	<ul style="list-style-type: none"> ▶ Windows XP, Windows 7, and Windows 2008 R2 ▶ Solaris 9 and 10 on SPARC ▶ RedHat Linux ES 5.0, 5.5, and 6.1 	<ul style="list-style-type: none"> ▶ Windows XP 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	VisualWorks 7.7
<ul style="list-style-type: none"> ▶ Windows XP and Windows 7 ▶ Solaris 9 and 10 on SPARC ▶ RedHat Linux ES 5.0 and 5.5 	<ul style="list-style-type: none"> ▶ Windows XP 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
<ul style="list-style-type: none"> ▶ Windows XP, Windows 7, and Windows 2008 R2 	<ul style="list-style-type: none"> ▶ Windows XP

For more information and details, see the *GemBuilder for Smalltalk Installation Guide* for that version. This information, and instructions for upgrading client libraries for GBS, are in the *GemStone/S Installation Guide v6.6.2*, chapter 3.

Changes in this release

Support for AIX on POWER7

The POWER7 chip provides more aggressive prefetch of data and instructions. This required additional memory barriers on atomic updates within GemStone, to avoid the risk of coherency and audit problems.

Previous versions of GemStone were not certified on POWER7. These earlier versions could encounter cache coherency and corruption problems when running with production loads on POWER7 systems. (#42090)

New compilers and compile information for AIX

This version of GemStone/S has been created using updated compilers. If you compile user actions or GCI applications, you will need to modify your compiler and make process.

Compiler: IBM XL C/C++ for AIX, V11.1

Debugger: dbx

Compilation command line for user action or GCI application:

```
/usr/vacpp/bin/xlC_r -O3 -qstrict -qalias=noansi +- -q32
-qlonglong -qarch=pwr5 -qtune=balanced -D_REENTRANT -qnoeh
-qpic -D_BSD=44 -qlanglvl=extended -qalias=noansi
-qsuppress=1540-216 -qsuppress=1540-1090 -D_LARGEFILE64_SOURCE
-qthreaded -I/usr/vacpp/include -I$GEMSTONE/include
-c usercode.c -o usercode.o
```

Link command line for user action:

```
/usr/vacpp/bin/xlC_r -G -q32 usercode.o $GEMSTONE/lib/gcualib.o
-o libusercode.so -e GciUserActionLibraryMain -L/usr/lib/threads
-lpthread -lm -lc_r -ldl -lbsd -Wl,-bh:0
```

Link command line for GCI application:

```
/usr/vacpp/bin/xlC_r -Wl,-bmaxdata:0xD0000000/dsa,-bh:0
usercode.o $GEMSTONE/lib/gcirtlobj.o -Wl,-brtllib
-L/usr/lib/threads -lpthread -lm -lc_r -ldl -lbsd -Wl,-bh:0
-o userapp
```

Multithreaded MFC crash when extents on raw partitions

If extents are on raw partitions, running the multithreaded MFC (introduced in v6.6) was likely to crash. If STN_HALT_ON_FATAL_ERR was set to true, the stone would also be brought down; but otherwise there was no risk of corruption or any other persistent problem. (#42119)

SIGSEGV when DB approaches OOP limit

When OOP usage approaches the 1B OOP limit, running out of non-persistent oops causes gems to crash. When approaching the limit on committed OOPs, warnings are printed to the stone log. However, if many sessions are logged in, they may be using sufficient temporary OOPs to exceed available capacity without triggering the limits for committed OOPS. (#42111)

Added cache statistics

To improve tracking of OOPs as systems approach the limit, the following cache statistics have been added:

FreeTempOopCount (Stone)

Total number of available OOPs that have not been allocated to any session and have not been committed.

- ◆ decreases when gems request free oops
- ◆ increases when dead objects are reclaimed.
- ◆ increases when gems logout or return unused oops.
- ◆ does NOT change when gem commits new persistent objects.
- ◆ does NOT change when the OOP HW mark increases

FreePersistentOopCount (Stone)

Total number of available OOPs that have not been committed.

- ◆ does NOT change when gems request free oops
- ◆ increases when dead objects are reclaimed.
- ◆ does NOT change when gems logout or return unused oops.
- ◆ decreases when gem commits new persistent objects.
- ◆ does NOT change when the OOP HW mark increases

Distribution change for client libraries

Since distributions are provided for all platforms, it is no longer necessary to use `clientFiles.zip` to access client libraries. `clientFiles.zip` will no longer be distributed; the client libraries are provided with the GemStone/S installation for each platform. You should download the GemStone/S installation for your client platforms as well as your server platform.

The Installation Guide instructions have been updated with the new process.