GemStone®

GemStone/S 64 Bit™ Release Notes

Limited Distribution
Special Release

Version 3.2.4.1

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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 3.2.4.1 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 3.2.

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

http://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: http://techsupport.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

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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 3.2.4.1 Release Notes (Limited Distribution Special Release)

Overview

GemStone/S 64 Bit 3.2.4.1 is a new limited distribution special release version of the GemStone/S 64 Bit object server.

These release notes provide changes between the previous version of GemStone/S 64 Bit, version 3.2.4, and version 3.2.4.1. If you are upgrading from a version prior to 3.2.4, review the release notes for each intermediate release to see the full set of changes.

Supported Platforms

Platforms for Version 3.2.4.1

GemStone/S 64 Bit version 3.2.4.1 is supported on the following platforms:

- Solaris 10 and 11 on SPARC
- Solaris 10 on x86
- AIX 6.1, TL1, SP1, and AIX 7.1
- Red Hat Linux ES 6.1, 6.4 and 6.5; Ubuntu 12.04; and SUSE Linux Enterprise 11 Service Pack 3, on x86
- Mac OSX 10.6.8 (Snow Leopard), with Darwin 10.8.0 kernel, on x86

For more information and detailed requirements for each supported platforms, please refer to the GemStone/S 64 Bit v3.2 Installation Guide for that platform. Note that the Linux Installation Guide does not mention SUSE or recently added versions of Red Hat and Ubuntu. Configuration information is the same as for the other Linux platforms.

VSD Version

The GemStone/S 64 Bit v3.2.4.1 distribution includes VSD version 4.0.1. The previous version of GemStone/S 64 Bit, v3.2.4, included VSD v4.0.

Changes between v4.0 and v4.0.1 include:

- Per-second calculation of statistics values are incorrectly 1000x high
- F12 is now hotkey

For more details, see the *Release Notes* for VSD version 4.0.1.

Changes and Bugs Fixed

Slow reclaim with idle/unused extents

When a reclaim thread finds no pages in an extent that need reclaim, it sleeps for one second before continuing. This can be the case in systems configured with sequential allocation mode and a large amount of free space, where extents that are later in the sequence have no active data(#45015)

Connection refused errors on NetLDI connect backlog

On login, gems connect to the netldi on its listening socket. The backlog for this socket is set at 20, and if the number of login requests is much higher than the netldi can process and the backlog exceeds 20, the login will error with "Connection refused". (#45008)

Now, the default socket backlog for NetLDI, SPC Monitor, and Stone has been increased to 64.

The netldi has a new option, -b, to specify the maximum backlog on the listening socket.

```
Usage: startnetldi [-b backlog] [-h] [-d] [-g|-s] [-n]
   [-a account] [-l logFile] [-t seconds] [-P portNumber]
   [-A address] [name]
```

Note that if a value passed in with the -b argument is larger than the OS configuration allows, as on Linux per /proc/sys/net/core/somaxconn, it will be truncated to that limit.

Page Servers on mid-level cache not using Gem's #log for log location

A Gem process's GEMSTONE_NRS_ALL may includes a setting for #log, indicating a directory to which the associated logs should be written. If the Gem uses a mid-level cache, it has a page server process on that machine, and the log for this page server should be but was not using the Gem's #log setting. Instead, this log was using a #log setting from the mid-level cache machines NetLDI environment, or to the unix user's home directory. (#45004)

Cache warmer main thread detaches cache uncleanly

When the cache warmer completes and detaches from the shared cache, the main cache warmer thread's disconnect is not clean, which results in the need for slot recovery. (#45003)

Reclaim Gem log logging of session count off by one

When the number of Reclaim Gem sessions is changed, the new number of Reclaim Gem sessions is logged in both the Stone log and the Reclaim Gem log. The number in the Stone

log is correct, but the reported in the Reclaim Gem log is one lower than the actual number. (#45013).

System currentSessions result may have included nils

System currentSessions may return an array including nils, due to a race condition within the C code supporting System currentSessions when the number of sessions decreases during execution. (#45012)

Socket disconnect may result in stuck spin lock

When a socket to a remote cache disconnects while the page server was holding the free PCE spin lock, it was possible for the page server to exit without releasing the spin lock, leaving it stuck. (#45009)

Errors on restoreFromBackup from NFS-mounted drive

Attempting to restore from a backup that was located on an NFS-mounted drive could error. (#45019)

Improvements that address slow reclaim performance issues

This release includes code changes that may improve handling for certain cases of slow reclaim performance.

ReclaimGem cache statistic for PinnedPagesCount is incorrect

Reclaim Gem cache statistics for PinnedPagesCount is incorrect. (#45020)

Added Linux System cache statistics

The following system stats may now be collected on Linux:

FileBufferSizeKB
The amount of memory used in file buffers.

CachedMemoryKB
The amount of memory used as cache memory.

CachedSwapKB
The amount of swap used as cache memory.

ActiveMemoryKB
The amount of memory that has been used more recently and usually not reclaimed unless absolutely necessary.

InactiveMemoryKB
The amount of memory which has been less recently used. It is more eligible to be reclaimed for other purposes.

ActiveAnonMemoryKB
The amount of non-file backed memory that has been used more recently.

InactiveAnonMemoryKB
The amount of non-file backed memory that has not been used recently.

ActiveFileMemoryKB
The amount of memory used for buffering files that has been used recently.

InactiveFileMemoryKB
The amount of memory used for buffering files that has not been used recently.

UnevictableMemoryKB
The amount of memory that cannot be swapped.

LockedMemoryKB
The amount of memory that has been locked using mlock(2) or similar calls. Locked memory cannot be swapped.

WritebackMemoryKB
The amount of memory which is actively being written back to disk.

AnonymousMemoryKB
The amount of non-file backed memory mapped into userspace page tables.

MappedMemoryKB
The amount of memory which has been mapped to files.

SharedMemoryKB
The amount of memory enabled for sharing between multiple processes via shmat(2) and mmap(2) with the MAP_SHARED attribute set.

KernelDataMemoryKB
The amount of memory used by the kernel for caching data structures.

KernelDataReclaimableMemoryKB
The amount of memory used by the kernel for caching data structures that may be reclaimed.

KernelDataUnreclaimableMemoryKB
The amount of memory used by the kernel for caching data structures that cannot be reclaimed.

KernelStackMemoryKB
The amount of memory used by the kernel stack.

PageTablesMemoryKB
The amount of memory dedicated to low-level page tables.

NfsUnstableMemoryKB
The amount of memory used by NFS pages sent to the server, but not yet committed to stable storage.

BounceMemoryKB
The amount of memory used for bounce buffers for block devices.

WritebackTmpMemoryKB
Amount of memory used by FUSE (Filesystem in Userspace) filesystems.

CommitLimitKB
The total amount of memory currently available to be allocated on the system.

CommittedAsKB
The amount of memory presently allocated on the system, including memory allocated by processes that has not yet been used.

HardwareCorrupted
A boolean indicating if the system has detected a memory failure.

AnonHugePagesKB
The amount of non-file back memory backed by huge memory pages.

HugePagesTotalKB
The total amount of memory in the huge pages pool.

HugePagesFreeKB
The amount of memory in the huge pages pool that has not yet been allocated.

HugePagesRsvdKB
The amount of memory in the huge pages pool for which a commitment to allocate from the pool has been made, but no allocation has yet been made.

HugePagesSurpKB
The amount of memory in the huge pages pool above the value in /proc/sys/vm/nr_hugepages.

HugePageSize
The size of a huge memory page in bytes.