

---



# **GemStone/S 64 Bit<sup>TM</sup>** **Release Notes**

**Version 3.6.5**

August 2022



## INTELLECTUAL PROPERTY OWNERSHIP

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

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 GemTalk Systems 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 GemTalk Systems.

This software is provided by GemTalk Systems LLC 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 GemTalk Systems LLC 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 © 1986-2022 GemTalk Systems LLC. All rights reserved by GemTalk Systems.

## 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).

## TRADEMARKS

**GemTalk**, **GemStone**, **GemBuilder**, **GemConnect**, and the GemTalk logo are trademarks of GemTalk Systems LLC, or of VMware, Inc., previously of GemStone Systems, Inc.

**UNIX** is a registered trademark of The Open Group.

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

**Intel** and **Pentium** are registered trademarks of Intel Corporation.

**Microsoft**, **Windows**, and **Windows Server** are registered trademarks of Microsoft Corporation.

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

**Red Hat**, **CentOS**, and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc.

**Ubuntu** is a registered trademark of Canonical Ltd., Inc.

**AIX**, **POWER7**, **POWER8**, **POWER9** and **VisualAge** are trademarks or registered trademarks of International Business Machines Corporation.

**Apple**, **Mac**, **MacOS**, **Macintosh**, and **M1** are trademarks of Apple Inc.

**CINCOM**, **Cincom Smalltalk**, and **VisualWorks** are trademarks or registered trademarks of Cincom Systems, Inc.

**Raspberry Pi** is a trademark of the Raspberry Pi Foundation.

**RabbitMQ** is a trademark of VMware, Inc.

**Prometheus** is a registered trademark of The Linux Foundation.

**Grafana** is a registered trademark of Raintank, Inc. dba Grafana Labs.

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. GemTalk Systems 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.

**GemTalk Systems LLC**  
15220 NW Greenbrier Parkway  
Suite 240  
Beaverton, OR 97006

---



# Preface

---

## About This Documentation

These release notes describe changes in the GemStone/S 64 Bit™ version 3.6.5 release. Read these release notes carefully before you begin installation, upgrade, or development with this release.

No separate Installation Guide is provided with this release. For instructions on installing GemStone/S 64 Bit version 3.6.5, or upgrading or converting from previous products or versions, see the Installation Guide for version 3.6.2.

## 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 LLC, previously GemStone Systems, Inc. and a division of VMware, Inc.

## Technical Support

### Support Website

**[gemtalksystems.com](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.
- ▶ **Supplemental Documentation and TechTips**, providing information and instructions that are not in the regular documentation.
- ▶ **Compatibility matrices**, listing supported platforms for GemTalk product versions.

We recommend checking this site on a regular basis for the latest updates.

## Help Requests

GemTalk Technical Support is limited to customers with current support contracts. Requests for technical assistance may be submitted online (including by email), or by telephone. We recommend you use telephone contact only for urgent requests that require immediate evaluation, such as a production system down. The support website is the preferred way to contact Technical Support.

**Website:** [techsupport.gemtalksystems.com](http://techsupport.gemtalksystems.com)

**Email:** [techsupport@gemtalksystems.com](mailto:techsupport@gemtalksystems.com)

**Telephone:** (800) 243-4772 or (503) 766-4702

Please include the following, in addition to a description of the issue:

- ▶ The versions of GemStone/S 64 Bit and of all related GemTalk products, and of any other related products, such as client Smalltalk products, and the operating system and version you are using.
- ▶ Exact error message received, if any, including log files and statmonitor data if appropriate.

Technical Support is available from 8am to 5pm Pacific Time, Monday through Friday, excluding GemTalk holidays.

## 24x7 Emergency Technical Support

GemTalk 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 GemTalk Support Renewals.

## Training and Consulting

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.

---



# Table of Contents

---

## *Chapter 1. Release Notes for 3.6.5*

Overview . . . . .	7
Supported Platforms . . . . .	7
Platforms for Version 3.6.5 . . . . .	7
GemBuilder for Smalltalk (GBS) Versions . . . . .	8
VSD Version. . . . .	8
Open Source Library Versions . . . . .	8
Support for cache monitoring via Prometheus . . . . .	9
Prometheus . . . . .	9
Configuring Statprom and Prometheus . . . . .	9
Configure statprom. . . . .	9
Additional configuration requirements for monitoring Gems. . . . .	10
Statprom usage . . . . .	10
Configure Prometheus . . . . .	11
Monitoring . . . . .	11
Configuration file JSON format. . . . .	11
Validating JSON configuration file . . . . .	14
Other Changes and Bug Fixes . . . . .	14
New GemKind statistic . . . . .	14
Other added Cache Statistics . . . . .	15
Added GCSI functions . . . . .	15
GcsiCacheIsAlive . . . . .	15
GcsiAllGemStatsForGemKindRange . . . . .	15
GcsiAllGemStatsForRegexName . . . . .	16
Bugs Fixed . . . . .	17
Performance of markForCollection for long object chains . . . . .	17
In a hot standby system, shutdown of slave Stone may hang. . . . .	17
Multi-file encrypted backup fails when signing key is DSA. . . . .	17
Reclaim may be deferred when extents are full but could grow . . . . .	17

Slow stone restart after unexpected shutdown during reclaim . . . . . 17  
Warning message during login . . . . . 17  
DEBUGGEM messages sent to stderr. . . . . 17

# Release Notes for 3.6.5

---

## Overview

GemStone/S 64 Bit™ 3.6.5 is a new version of the GemStone/S 64 Bit object server. Version 3.6.5 adds support for monitoring via Prometheus, as well as fixing several significant bugs. We recommend everyone using or planning to use GemStone/S 64 Bit upgrade to this new version.

These Release Notes include changes between the previous version of GemStone/S 64 Bit, v3.6.4, and v3.6.5. If you are upgrading from a version prior to 3.6.4, review the release notes for each intermediate release to see the full set of changes.

The Installation Guide has not been updated for this release. For installation, upgrade and conversion instructions, use the Installation Guide for version 3.6.2.

## Supported Platforms

### Platforms for Version 3.6.5

GemStone/S 64 Bit version 3.6.5 is supported on the following platforms:

- ▶ Red Hat Enterprise Linux Server, CentOS Linux, and Rocky Linux 7.9 and 8.5; Ubuntu 18.04 and 20.04  
GemStone performs testing on a mixture of Red Hat, CentOS, and Rocky servers; these are all fully certified platforms. Any reference to Red Hat applies to all these distributions.
- ▶ Solaris 10 on x86
- ▶ AIX 7.1 and 7.2
- ▶ OSX 11.1 (Big Sur) with Darwin 20.2.0 kernel on x86, and OSX 10.15.6 (Catalina) with Darwin 19.6.0 kernel; and OSX 11.6 (Big Sur) with Darwin 20.6.0 kernel on Apple M1. v3.6.5 is known to work on MacOS Monterey.  
(Mac is supported for development only)

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

## GemBuilder for Smalltalk (GBS) Versions

The following versions of GBS can be used with GemStone/S 64 Bit version 3.6.5:

### GBS/VW version 8.6

<b>VisualWorks 9.1.1 32-bit and 64-bit</b>
<ul style="list-style-type: none"> <li>▶ Windows 10</li> <li>▶ RedHat ES 7.9 and 8.5; Ubuntu 18.04 and 20.04</li> </ul>

### GBS/VA version 5.4.6

VAST Platform 11.0.1	VAST Platform 10.0.2	VA Smalltalk 8.6.3
▶ Windows Server 2016 and Windows 10	▶ Windows Server 2016 and Windows 10	▶ Windows Server 2016 and Windows 10

For more details on GBS and client Smalltalk platforms and requirements, see the *GemBuilder for Smalltalk Installation Guide* for that version of GBS.

## VSD Version

The GemStone/S 64 Bit v3.6.5 distribution includes VSD version 5.5.4. The previous version of GemStone/S 64 Bit, v3.6.4, included VSD v5.5.3. VSD version 5.5.4 includes a fix for a rare but serious bug. For details on the changes, see the [Release Notes for VSD v5.5.4](#). VSD v5.5.4 is included with the GemStone distribution, and can also be downloaded as a separate product. For details or to download, go to <https://gemtalksystems.com/vsd/>.

## Open Source Library Versions

The version of OpenSSL has been updated to 1.1.1p.

GemStone now includes additional libraries:

- cJSON v1.7.15
- prometheus-cpp v0.13.0



## Support for cache monitoring via Prometheus

On Linux, it is now possible to start up a process that can be queried from the Prometheus monitoring software for GemStone cache statistics values.

This feature is provided by the new **statprom** executable. This is only available on the GemStone Linux distribution for x86\_64.

A **statprom** process allows Prometheus to monitor one shared page cache, which may be the Stone's cache or a remote cache. To monitor both a local and remote cache, you must run multiple **statprom** instances.

When **statprom** is started, it takes an argument configuration file that is customized for the cache and monitoring requirements; this includes the port number, the Stone name, and specific statistics to report. This configuration file is in JSON format.

While **statprom** can report any GemStone statistic originating in the shared page cache, host system statistics are not available.

### Prometheus

Prometheus is an open-source systems monitoring and alerting toolkit, that collects and stores metrics (numeric data) as time series, along with key-value tags. Prometheus is widely used, and the Prometheus Github project has a active developer and user community.

In addition to Prometheus, Grafana can be installed and used for live monitoring of Prometheus data; Grafana provides out of the box support for Prometheus, and no additional configuration is needed to collect the GemStone data from Prometheus.

**statprom** is built on the open-source github project Prometheus Client Library for Modern C++ ([jupp0r.github.io/prometheus-cpp](http://jupp0r.github.io/prometheus-cpp)). This imbeds a web server from the CivetWeb project ([civetweb.github.io/civetweb](http://civetweb.github.io/civetweb)), which handles http requests from Prometheus.

**statprom** in turn uses the GemStone C Statistics Interface (GCSI) to access cache statistics. The GCSI attaches the process to the shared page cache as read-only; it does not create a gem session, and therefore has no view of the repository.

## Configuring Statprom and Prometheus

### Configure statprom

The **statprom** process must be started with a configuration file that specifies the stone or cache name, the port to expect queries from prometheus, and the specific cache statistics that can be returned to prometheus. The statprom configuration file is in JSON format and requires specific keys to be present in a specific structure.

For details on the file format, see "Configuration file JSON format" on page 11. An example configuration file is included in the distribution,  
`$GEMSTONE/examples/Prometheus/stats.json`.

The **statprom** configuration file allows you to monitor the Stone, the Shared Page Cache Monitor, or Gems. Any GemStone cache-based statistic of these process can be accessed; however, host process statistics cannot be monitored directly.

## Additional configuration requirements for monitoring Gems

The Stone and Shared Page Cache Monitor are singletons within a cache, and thus straightforward to monitor. However, a GemStone system contains multiple gems with different purposes and monitoring requirements. Prometheus does not handle multiple instances, so there is additional configuration required for monitoring Gems.

When multiple Gems match the criteria, the statistics values for all of them are added together. The monitoring criteria should be designed carefully so that either a single Gem process is identified, or if there is a chance that multiple Gem processes will be matched, that the specific statistic being monitored can logically be summed over all the matched Gems.

There are two options for filtering on the Gem you wish to monitor:

- **ProcessName**

Cache statistics data includes an entry for a String `ProcessName`, which is set by the System; for example, `Gem` or `TopazL`. This can be set to a specific value in your application in several ways: using the `-u` option on the `topaz` command line, executing `System cacheName: gemName`, or `set cachename gemName` in `topaz` (note that `topaz set cachename` takes effect on the next login, and does not affect any current sessions).

`statprom` matches the Gem `ProcessName` using regular expressions, e.g. `MyGemName*`.

- **GemKind**

Starting with this version, cache statistics data includes an entry for an integer `GemKind`. This is 0 by default, and negative for system Gems. This can be set using `System setGemKind: anInt`. Negative values are reserved for use by `GemTalk`.

`statprom` matches the Gem processes' `GemKind`, using a high and low value, forming an inclusive range.

## Statprom usage

```
statprom -f cfgFile [-c] [-d] [-r]
statprom -h | -v
-c      Check the JSON file (-f argument) for errors and exit.
        Requires -f.
-d      Enable printing debug output to stderr.
-f <cfgFile>
        Specifies a configuration file in JSON format which
        determines which processes and statistics are collected.
-h      Print this help screen and exit.
-r      Retry if the shared page cache not running. If the cache
        connection is lost, sleep and attempt to reattach.
        Without -r the process exits if the cache connection is
        lost or not present at startup time.
-v      Print the program version and exit.
```

## Configure Prometheus

Prometheus in turn must be started with a configuration file that specifies the node on which **statprom** is running and the configured port.

For example, the prometheus configuration file may include an additional entry such as:

```
- job_name: 'gemstone'
  static_configs:
    - targets: ['nodename.gemtalksystems.com:9985']
```

## Monitoring

Once Prometheus is started with its updated configuration file, and **statprom** has been started with its configuration file, Prometheus will start querying and recording information for the specified statistics.

Prometheus will retrieve and store values with the name provided in the statprom configuration file. In addition to data tags such as the job name, the name of the Stone is provided as a tag with the key StoneName.

## Configuration file JSON format

A sample JSON file, that could be used as an argument to **statprom**, is included in `$GEMSTONE/examples/Prometheus/stats.json`.

This provides an example of the main features of statprom configuration.

### “http” Section

#### ■ listen\_addresses

This argument provides information on the port that statprom will listen on for connections from Prometheus. It is an Array of strings representing port numbers and interfaces/addresses. Both IPv4 and IPv6 addresses are supported. The default port number for statprom is 9995. The address format is specific to the civetweb webserver, see:

<https://civetweb.github.io/civetweb/UserManual.html>

For example:

```
"http" : {
  "listen_addresses" : ["[::]:9985", "9985"]
},
```

specifies that either IPv6 or IPv4 connection is accepted on port 9985 on localhost.

Note that **statprom** does not support ssl connections at this time.

### “gemstone” Section

#### ■ cache\_name

a String which represents the name of the remote shared page cache to monitor or NULL. Only relevant when monitoring a remote shared page cache; this must be NULL when monitoring the Stone’s cache. The cache name may be obtained from **gslis**t. The cache name is derived from a GemStone-generated hostId and should not change over the life of a host.

#### ■ stone\_name

a String which represents the name of the Stone to monitor or NULL. Only

relevant when monitoring a primary shared page cache; should be NULL when monitoring a remote cache.

- **sample\_interval**

an Integer representing the sample interval, in seconds.

For example:

```
"gemstone" : {
  "cache_name" : null,
  "stone_name" : "gs64stone",
  "sample_interval": 60
},
```

### “metrics” Section

Three types of metrics are supported: `monitor` (shared page cache monitor), `stone`, and `gem`. You do not need to include all three types.

For each type, there should be an array of specific metrics to be monitored for that type. The JSON metrics objects have the following members:

- **vsd\_name** (required)

a String which represents the vsd name of the statistic to monitor. Must exactly match the name of the statistic. It is an error if the statistic name does not exist for the given metric type.

- **metric\_name** (required)

a String which represents the name of the statistic in Prometheus. All values of `metric_name` in the configuration file must be unique. This is a limitation of Prometheus which does not allow duplicate names.

- **metric\_type** (required)

a String representing the Prometheus type for the stat. Accepted values are:

- ▶ Counter - values that only increase and never decrease
- ▶ Gauge - values that may either increase or decrease
- ▶ Histogram - values that will be plotted as a histogram.

- **metric\_help** (required)

a String which describes the function of the statistic.

- **metric\_units** (required)

a String which describes the measurement units of the statistic.

For example,

```
"metrics" : {
  "stone" : [
    {
      "vsd_name" : "CommitRecordCount",
      "metric_name" : "gemstone_stone_commit_records",
      "metric_type" : "Gauge",
      "metric_help" : "Number of commit records.",
      "metric_units" : "Commit Records"
    }
  ],
},
```

In addition to the above object members, entries for Gems require a filter criteria; either `cache_name_regex`, or both `gem_kind_min` and `gem_kind_max`, or all three.

- **cache\_name\_regex**  
a String which represents a regex expression used to match against the cache names of all gems in the cache.
- **gem\_kind\_min**  
an Integer indicating the minimum value of the GemKind statistic used to match against gems in the cache. Requires gem\_kind\_max be specified.
- **gem\_kind\_max**  
an Integer indicating the maximum value of the GemKind statistic used to match against gems in the cache. Must be greater than or equal to gem\_kind\_min. Requires gem\_kind\_min be specified.

All Gems in the cache that match the filter criteria have their statistics values added together for return to Prometheus. You must be careful to ensure that either a unique Gem can be confidently matched to the filter criteria, or that the particular statistic values are meaningful if added together for multiple Gems.

If you have multiple Gems with statistics that need to be separately reported, you will need separate entries, each with a unique Prometheus statistic name, for each Gem/statistic.

### **Gem matching examples**

Since Gems matching the filter criteria have values summed, you can make use of it, for example, if tasks are divided over multiple Gems.

For example:

```
"gem" : [  
  {  
    "cache_name_regex" : "Widget.*",  
    "vsd_name" : "SessionStat01",  
    "metric_name" : "gemstone_gem_widgets_produced",  
    "metric_type" : "Counter",  
    "metric_help" : "Number of widgets produced.",  
    "metric_units" : "Widgets"  
  }]  
}]
```

With this example, if there are multiple Gems with names that match Widget, the values will be summed. E.g. if there are the following Gems in the cache:

```
Gem Widget1, SessionStat01 == 6  
Gem Widget2, SessionStat01 == 8
```

In this case, Prometheus will show the aggregate value of 14 (6 + 8) for the statistic gemstone\_gem\_widgets\_produced.

Note that this monitor example would also match Gems named WidgetLogging, WidgetDefects, and so on; you must be aware of your application's Gem cacheName conventions.

If you do not wish to sum the values, you must be able to identify the specific Gem or Gems for reporting, and create specific entries for each individual value. In the above example, if you wished to monitor Widget1's 6 and Widget2's 8 separately, rather than summed, you could create the following entries:

```
"gem" : [  
  {  
    "cache_name_regex" : "Widget1",  
    "vsd_name" : "SessionStat01",
```

```

    "metric_name" : "gemstone_gem_widgets1_produced",
    "metric_type" : "Counter",
    "metric_help" : "Number of widgets produced by Widget1.",
    "metric_units" : "Widgets"
  },
  {
    "cache_name_regex" : "Widget2",
    "vsd_name" : "SessionStat01",
    "metric_name" : "gemstone_gem_widgets2_produced",
    "metric_type" : "Counter",
    "metric_help" : "Number of widgets produced by Widget2.",
    "metric_units" : "Widgets"
  }
]

```

## Validating JSON configuration file

After editing your .json file, you may use **statprom** to verify that it is valid for use with statprom, using the **-c** option. With this option, the configuration file is validated, but statprom is not started.

```
statprom -c -f promfile.json
```

## Other Changes and Bug Fixes

### New GemKind statistic

A new attribute has been added to distinguish Gems in cache statistics, **GemKind**. This is an integer that can be used instead of or along with the Process's cacheName to identify specific Gems or sets of Gems for monitoring by Prometheus, as well as other situations in which specific-purpose Gems need to be distinguished.

By default, GemKind is 0, and can be set in Smalltalk code to a positive integer. It is set to a negative value by GemStone internal operations such as markForCollection; negative values are reserved for use by GemTalk.

See the use of GemKind by **statprom** for Prometheus monitoring on page 10.

#### **GemKind** (Gem)

A signed integer indicating the specific type of the Gem. 0 be default, set to a negative value for system Gems; negative values are reserved for GemStone internal use.

The following method has been added:

```
System >> setGemKind: aSmallInt
```

Set the GemKind cache stat to be aSmallInt. The default GemKind is zero. Customers are free to use any positive value for this statistic. Negative values are reserved for internal use, and set the GemKind for System processes such as reclaim and markForCollection.

## Other added Cache Statistics

### ReposAtMaxSize (Stn)

A boolean, true if all extents are at maximum configured size or all have failed grow due to disk full

### TranState (Stn)

Value of TranState.\_state:

- 0 - startup
- 1 - pageAudit
- 2 - recovery
- 3, 4 - restore from log
- 5 - normal

## Added GCSI functions

### GcsiCachelsAlive

```
(int) GcsiCacheIsAlive(  
    );
```

Check the status of the cache.

Function returns:

- 1 - cache is alive and we are attached.
- 0 - cache has died and/or we are not or no longer attached.

### GcsiAllGemStatsForGemKindRange

Search the cache for gems with a gemKind stat value within a given range. Return cache stats for matching gems or a count of how many gems meet the criteria.

```
(int) GcsiAllGemStatsForGemKindRange(  
    int gemKindMin,  
    int gemKindMax,  
    GcsiResultSType *result,  
    int *resultSize  
    );
```

Arguments:

**gemKindMin** Minimum value of gemKind to match to.

**gemKindMax** Maximum value of gemKind to match to; must be equal or greater than gemKindMin.

**result** Address of an array of kind GcsiResultSType where statistics will be stored. NULL means return only a count of how many gems match.

**resultSize** Pointer to an integer that indicates the size of the result in elements (not bytes). On return, indicates the number of gems whose gemKind is in the given range, inclusive. If result is not NULL, this is also the number of valid elements in the result array.

Function returns:

- 0 - success
- Otherwise an error code. See `gcsierr.ht` for a list of error codes.

## GcsiAllGemStatsForRegexName

Available on Linux only.

Uses a regular expression to search against the cache name of every gem connected to the shared page cache and return stats for those that match.

```
(int) GcsiAllGemStatsForRegexName(  
    const char *regexString,  
    BoolType ignoreCase,  
    GcsiResultSType *result,  
    int *resultSize,  
    char *errBuf,  
    size_t errBufSize  
);
```

Arguments:

**regexString** A valid regular expression string. This string will be used to match against the cache name of every gem attached to the shared page cache.

**ignoreCase** TRUE causes the regex search to ignore case.

**result** Address of an array of kind `GcsiResultSType` where statistics will be stored. NULL means return only a count of how many gems match.

**resultSize** Pointer to an integer that indicates the size of the result in elements (not bytes). On return, indicates the number of gems whose cache name match. If result is not NULL, this is also the number of valid elements in the result array.

**errBuf** Buffer which will contain a string describing an error if `regexString` is invalid.

**errBufSize** Size of **errBuf** in bytes.

Function returns:

0 - success

Otherwise an error code. See `gcsierr.ht` for a list of error codes and examine `errBufMsg` for an error message.



## Bugs Fixed

### Performance of markForCollection for long object chains

In versions 3.5.x and 3.6.x, when the object environment includes very long chains of objects (a depth of multiple hundreds), the performance of markForCollection and other repository wide mark/sweep operations, such as epoch and write set union sweep, was substantially worse than in 3.3.x. (#50025)

### In a hot standby system, shutdown of slave Stone may hang

When a logreceiver is connected to a slave stone, and the slave stone is executing continousRestore, if stopstone is attempted on the slave stone, the stone will fail to shutdown and stopstone will hang. (#50013)

### Multi-file encrypted backup fails when signing key is DSA

When creating an encrypted programmatic backup, if the backup writes to multiple files and the signing key is DSA rather than RSA, the backup will fail, or crash, depending on the version. (#47207)

### Reclaim may be deferred when extents are full but could grow

When running with no size limits on extents, and no shortage of disk space, the Reclaim GcGem may defer reclaim due to the free space being below the threshold, rather than the extents being grown. (#49993)

### Slow stone restart after unexpected shutdown during reclaim

When the Stone is restarted after an unexpected shutdown and has to recover, and there are many unreclaimed dead objects, the reclaim does not correctly reclaim priority pages, making the restart unnecessarily slow. (#49998)

### Warning message during login

On login, it was possible to encounter warnings of the form:

```
[Warning]: Unable to find /proc/23456/oom_score_adj or
          /proc/23456/oom_adj
```

This release includes code changes to address this issue. (#49990)

### DEBUGGEM messages sent to stderr

In v3.6.4, DEBUGGEM messages (which are reported when GEM\_LISTEN\_FOR\_DEBUG=true), were printed to stderr as well as stdout. In v3.6.5, messages are not sent to stderr. (#50009)