

# **GT 4.0 Tech Preview: SweGrid Accounting System (SGAS)**

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## GT 4.0 Tech Preview: SweGrid Accounting System (SGAS)

### Overview

This component is a **technical preview** (commonly referred to as tech preview) for the GT 4.0 final distribution. As such, this documentation is not part of the GT 4.0 official documentation but is provided by the developer(s) to assist early adopters. This component also has very limited support.

The SweGrid Accounting System (SGAS) is a 100% Java implementation of a resource allocation enforcement and tracking service for the Grid, based on the latest Web services technologies. It runs on all platforms supporting JRE 1.5. SGAS comprises of several subcomponents, presented briefly below.

- *Bank*: the central service of the accounting system that maintains and enforces allocation quotas.
- *LUTS*: The Logging and Usage Tracking Service (LUTS) is a general purpose logging system for tracking resource usage in SGAS. It allows secure publication and query-based retrieval of usage data in the format of GGF UsageRecord XML.
- *JARM*: The Job Account Reservation Manager (JARM) is a component responsible for integrating various workload managers, schedulers and local accounting systems deployed at the resource sites with SGAS. JARM is typically used as a callout to the bank during the job submission phase. The bank then issues a time-limited reservation to run the job, based on user, resource and bank policy. After the job has completed the job is logged in LUTS, and if a valid account reservation was made, JARM also charges the account in the Bank, and releases the reservation on behalf of the resource.
- *PAT*: The Policy Administration Tool (PAT) component is designed to be used to manage the security policies of all of the SGAS services. It contains a command line tool that can be run in interactive or batch mode for easy scripting.

More detailed information, publications and presentations of the SGAS effort can currently be obtained at <http://www.sgas.se/>.

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# Chapter 1. Key Concepts

See the [Security Key Concepts Guide](#)<sup>1</sup>.

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<sup>1</sup> <http://www.globus.org/toolkit/docs/4.0/security/key-index.html>

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# Chapter 2. GT 4.0 SweGrid Accounting System (SGAS) (Tech Preview): System Administrator's Guide

## 1. Introduction

This guide contains advanced configuration information for system administrators working with the SweGrid Accounting System (SGAS). It provides references to information on procedures typically performed by system administrators, including installing, configuring, deploying, and testing the installation.

### Important

This information is in addition to the basic Globus Toolkit prerequisite, overview, installation, security configuration instructions in the [GT 4.0 System Administrator's Guide](#)<sup>1</sup>. Read through this guide before continuing!

## 2. Building and installing

Building from source is only needed if you need to modify or test the source code for some reason.

The source code is available in the same installer tar ball as the binaries, in the file `sgas-4.0.1-src.tar.gz`. To build from source, extract the files in that tar ball and run the `make-dist` script contained therein.

Source code is available via AFS. To retrieve the latest code set your `CVSROOT` environment variable to: `/afs/pdc.kth.se/src/packages/SweGrid/SourceRepository`. Then export the code by running the following command:

```
cvs export -D today accounting
```

If you don't have access to AFS you can also download a nightly checkout of the code from <http://www.sgas.se/source/>.

## 3. Configuring

This information is in addition to the basic configuration instructions in the [GT4.0 System Administrator's Guide](#)<sup>2</sup>.

The accounting system is an orthogonal component that complements an installation of (in particular) GRAM. Integration with WS GRAM is ongoing and not included in this tech preview.

At this point in time, detailed deployment and configuration information can be found at <http://www.sgas.se/docs/SGAS-InstallConfig.pdf>.

## 4. Deploying

At this point in time, detailed deployment and configuration information can be found at <http://www.sgas.se/docs/SGAS-InstallConfig.pdf>.

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<sup>1</sup> `../admin/docbook/`

<sup>2</sup> <http://www.globus.org/toolkit/docs/4.0/admin/docbook/>

## 5. Testing

A test suite for an SGAS installation is provided. To use it run:

```
build.sh run-test
```

after you have installed the system.

On Windows systems, use the **build.bat** script instead of **build.sh**.

## 6. Security considerations

Normal considerations in regards to deployment of Grids, Web Services and protection of GSI credentials apply. The bank should preferably be deployed on a separate machine.

SGAS has been built using an asynchronous allocation/charge model, to minimize the impact on the job submission process and to avoid the possibility for deadlocks or stalls.

## 7. Troubleshooting

Detailed error messages, such as stack traces are not logged to the command line utility (**sgas-admin**) output but instead are written to an error log file. The default location of this file is `./sgas-admin.log`. The location and other SGAS admin log properties can be changed in the file `etc/sgas-client/sgas-admin-log4j.properties` in the SGAS installation directory. The errors displayed in the command line tool share the same correlation id (CID) as the errors in the error log file.

If you encounter problems or need assistance, don't hesitate to send an email to [swegrid-accounting@pdc.kth.se](mailto:swegrid-accounting@pdc.kth.se).

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# Chapter 3. GT 4.0 Component Fact Sheet: SweGrid Accounting System (SGAS)

## 1. Brief component overview

The SweGrid Accounting System (SGAS) is a 100% Java implementation of a resource allocation enforcement and tracking service for the Grid, based on the latest Web services technologies. It runs on all platforms supporting JRE 1.5. SGAS comprises of several subcomponents, presented briefly below.

- *Bank*: the central service of the accounting system that maintains and enforces allocation quotas.
- *LUTS*: The Logging and Usage Tracking Service (LUTS) is a general purpose logging system for tracking resource usage in SGAS. It allows secure publication and query-based retrieval of usage data in the format of GGF UsageRecord XML.
- *JARM*: The Job Account Reservation Manager (JARM) is a component responsible for integrating various workload managers, schedulers and local accounting systems deployed at the resource sites with SGAS. JARM is typically used as a callout to the bank during the job submission phase. The bank then issues a time-limited reservation to run the job, based on user, resource and bank policy. After the job has completed the job is logged in LUTS, and if a valid account reservation was made, JARM also charges the account in the Bank, and releases the reservation on behalf of the resource.
- *PAT*: The Policy Administration Tool (PAT) component is designed to be used to manage the security policies of all of the SGAS services. It contains a command line tool that can be run in interactive or batch mode for easy scripting.

More detailed information, publications and presentations of the SGAS effort can currently be obtained at <http://www.sgas.se/>.

## 2. Summary of features

Features new in release GT 4.0.1:

- SGAS is a new tech preview in GT 4.0.1; therefore, this section does not apply.

Other Supported Features

- Soft-state, non-intrusive Grid accounting solution
- Logging and tracking in GGF Usage Record XML format
- Remote and scriptable management interface

Deprecated Features

- SGAS is a new tech preview in GT 4.0.1; therefore, this section does not apply.

## 3. Backward compatibility summary

Protocol changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

API changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

Exception changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

Schema changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

## 4. Technology dependencies

SGAS depends on the following GT components:

- Java WS Core

SGAS depends on the following third party software:

- Java Runtime Environment (JRE) 1.5.0 (or higher)
- eXist
- Apache Maven

## 5. Tested platforms

Tested Platforms for SGAS

- Windows XP (all components)
- Linux Fedora Core 3 (all components)

## 6. Associated standards

Associated standards for SGAS are:

- Global Grid Forum, Usage Record format (draft in progress)
- [WS-ResourceProperties](#)<sup>1</sup>
- [WS-ResourceLifetime](#)<sup>2</sup>
- [XACML](#)<sup>3</sup>
- [WS-I Basic Profile](#)<sup>4</sup>

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<sup>1</sup> <http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceProperties-1.2-draft-04.pdf>

<sup>2</sup> <http://docs.oasis-open.org/wsrf/2004/06/wsrf-WS-ResourceLifetime-1.2-draft-03.pdf>

<sup>3</sup> <http://www.oasis-open.org/committees/download.php/2406/oasis-xacml-1.0.pdf>

<sup>4</sup> <http://www.ws-i.org/Profiles/BasicProfile-1.0-2004-04-16.html>

## 7. For More Information

Click [here](#)<sup>5</sup> for more information about this component.

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<sup>5</sup> index.html

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# Chapter 4. GT 4.0.8 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.8. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.8. It includes a summary of changes since 4.0.7, bug fixes since 4.0.7 and any known problems that still exist at the time of the 4.0.8 release. This page is in addition to the top-level 4.0.8 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.8>.

This tech preview was new with release 4.0.7. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.7 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have happened since the last release.

## 3. Bug Fixes

You can find information about fixed bugs [here](#)<sup>2</sup>.

## 4. Known Problems

You can find information about known issues [here](#)<sup>3</sup>.

## 5. For More Information

Click [here](#)<sup>4</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> <http://www.sgas.se/tickets/>

<sup>3</sup> <http://www.sgas.se/tickets/>

<sup>4</sup> [index.html](#)

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# Chapter 5. GT 4.0.7 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.7. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.7. It includes a summary of changes since 4.0.6, bug fixes since 4.0.6 and any known problems that still exist at the time of the 4.0.7 release. This page is in addition to the top-level 4.0.7 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.7>.

This tech preview was new with release 4.0.6. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.6 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have happened since the last release.

## 3. Bug Fixes

You can find information about fixed bugs [here](#)<sup>2</sup>.

## 4. Known Problems

You can find information about known issues [here](#)<sup>3</sup>.

## 5. For More Information

Click [here](#)<sup>4</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> <http://www.sgas.se/tickets/>

<sup>3</sup> <http://www.sgas.se/tickets/>

<sup>4</sup> [index.html](#)

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# Chapter 6. GT 4.0.6 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.6. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.6. It includes a summary of changes since 4.0.5, bug fixes since 4.0.5 and any known problems that still exist at the time of the 4.0.6 release. This page is in addition to the top-level 4.0.6 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.6>.

This tech preview was new with release 4.0.5. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.5 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

No changes have happened since the last release.

## 3. Bug Fixes

You can find information about fixed bugs [here](#)<sup>2</sup>.

## 4. Known Problems

You can find information about known issues [here](#)<sup>3</sup>.

## 5. For More Information

Click [here](#)<sup>4</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> <http://www.sgas.se/tickets/>

<sup>3</sup> <http://www.sgas.se/tickets/>

<sup>4</sup> [index.html](#)

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# Chapter 7. GT 4.0.5 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.5. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.5. It includes a summary of changes since 4.0.4, bug fixes since 4.0.4 and any known problems that still exist at the time of the 4.0.5 release. This page is in addition to the top-level 4.0.5 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.5>.

This tech preview was new with release 4.0.4. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.4 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

Since 4.0.3, SGAS has transitioned from 2.0 beta to 2.0 "final" version. You can get the latest release at <http://www.sgas.se/>.

## 3. Bug Fixes

You can find information about fixed bugs [here](#)<sup>2</sup>.

## 4. Known Problems

You can find information about known issues [here](#)<sup>3</sup>.

## 5. For More Information

Click [here](#)<sup>4</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> <http://www.sgas.se/tickets/>

<sup>3</sup> <http://www.sgas.se/tickets/>

<sup>4</sup> [index.html](#)

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# Chapter 8. GT 4.0.4 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.4. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.4. It includes a summary of changes since 4.0.3, bug fixes since 4.0.3 and any known problems that still exist at the time of the 4.0.4 release. This page is in addition to the top-level 4.0.4 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.4>.

This tech preview was new with release 4.0.3. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.3 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

Since 4.0.3, SGAS has transitioned from 2.0 beta to 2.0 "final" version. You can get the latest release at <http://www.sgas.se/>.

## 3. Bug Fixes

You can find information about fixed bugs [here](#)<sup>2</sup>.

## 4. Known Problems

You can find information about known issues [here](#)<sup>3</sup>.

## 5. For More Information

Click [here](#)<sup>4</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> <http://www.sgas.se/tickets/>

<sup>3</sup> <http://www.sgas.se/tickets/>

<sup>4</sup> [index.html](#)

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# Chapter 9. GT 4.0.3 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.3. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.3. It includes a summary of changes since 4.0.2, bug fixes since 4.0.2 and any known problems that still exist at the time of the 4.0.3 release. This page is in addition to the top-level 4.0.3 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.3>.

This tech preview was new with release 4.0.2. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.2 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

Instructions on how to integrate the SweGrid Accounting System (SGAS) contribution with GT4 WS-GRAM now exist in the latest snapshot release at <http://www.sgas.se/source/>. It has been tested with the Fork and PBS adapters and can be considered beta- quality.

## 3. Bug Fixes

SGAS is in technical preview and as such it is subject to rapid development and testing. During the course of this effort, several bugs and problems have been found and corrected.

## 4. Known Problems

Besides the limited number of tested GRAM adapter backends, we are not aware of any outstanding issues at this time. That said, SGAS is a technical preview and to be regarded as pre-production quality.

## 5. For More Information

Click [here](#)<sup>2</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> [index.html](#)

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# Chapter 10. GT 4.0.2 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.2. This techpreview is being introduced with this release.

These release notes are for the incremental release 4.0.2. It includes a summary of changes since 4.0.1, bug fixes since 4.0.1 and any known problems that still exist at the time of the 4.0.2 release. This page is in addition to the top-level 4.0.2 release notes at <http://www.globus.org/toolkit/releasenotes/4.0.2>.

This tech preview was new with release 4.0.1. For those release notes (including feature summary, technology dependencies, etc) go to the [SGAS 4.0.1 Release Notes](#)<sup>1</sup>.

## 2. Changes Summary

Instructions on how to integrate the SweGrid Accounting System (SGAS) contribution with GT4 WS-GRAM now exist in the latest snapshot release at <http://www.sgas.se/source/>. It has been tested with the Fork and PBS adapters and can be considered beta- quality.

## 3. Bug Fixes

SGAS is in technical preview and as such it is subject to rapid development and testing. During the course of this effort, several bugs and problems have been found and corrected.

## 4. Known Problems

Besides the limited number of tested GRAM adapter backends, we are not aware of any outstanding issues at this time. That said, SGAS is a technical preview and to be regarded as pre-production quality.

## 5. For More Information

Click [here](#)<sup>2</sup> for more information about this component.

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<sup>1</sup> [http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS\\_Release\\_Notes\\_401.html](http://www.globus.org/toolkit/docs/4.0/techpreview/sgas/SGAS_Release_Notes_401.html)

<sup>2</sup> [index.html](#)

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# Chapter 11. GT 4.0.1 Incremental Release Notes: SweGrid Accounting System (SGAS)

## 1. Introduction

These release notes are for the incremental release 4.0.1. This techpreview is being introduced with this release.

## 2. Component Overview

The SweGrid Accounting System (SGAS) is a 100% Java implementation of a resource allocation enforcement and tracking service for the Grid, based on the latest Web services technologies. It runs on all platforms supporting JRE 1.5. SGAS comprises of several subcomponents, presented briefly below.

- *Bank*: the central service of the accounting system that maintains and enforces allocation quotas.
- *LUTS*: The Logging and Usage Tracking Service (LUTS) is a general purpose logging system for tracking resource usage in SGAS. It allows secure publication and query-based retrieval of usage data in the format of GGF UsageRecord XML.
- *JARM*: The Job Account Reservation Manager (JARM) is a component responsible for integrating various workload managers, schedulers and local accounting systems deployed at the resource sites with SGAS. JARM is typically used as a callout to the bank during the job submission phase. The bank then issues a time-limited reservation to run the job, based on user, resource and bank policy. After the job has completed the job is logged in LUTS, and if a valid account reservation was made, JARM also charges the account in the Bank, and releases the reservation on behalf of the resource.
- *PAT*: The Policy Administration Tool (PAT) component is designed to be used to manage the security policies of all of the SGAS services. It contains a command line tool that can be run in interactive or batch mode for easy scripting.

More detailed information, publications and presentations of the SGAS effort can currently be obtained at <http://www.sgas.se/>.

## 3. Feature Summary

Features new in release GT 4.0.1:

- SGAS is a new tech preview in GT 4.0.1; therefore, this section does not apply.

Other Supported Features

- Soft-state, non-intrusive Grid accounting solution
- Logging and tracking in GGF Usage Record XML format
- Remote and scriptable management interface

Deprecated Features

- SGAS is a new tech preview in GT 4.0.1; therefore, this section does not apply.

## 4. Changes Summary

The SweGrid Accounting System (SGAS) is a new tech preview available with the 4.0.1 release.

## 5. Bug Fixes

SweGrid Accounting System (SGAS) is a new tech preview with the 4.0.1 release; therefore, this section does not apply.

## 6. Known Problems

SweGrid Accounting System (SGAS) is in tech preview and as such it is not deemed as a "final product" at this stage. We welcome any comments and suggestions for improvements (which you may send to [swegrid-accounting@pdc.kth.se](mailto:swegrid-accounting@pdc.kth.se)).

## 7. Technology Dependencies

SGAS depends on the following GT components:

- Java WS Core

SGAS depends on the following third party software:

- Java Runtime Environment (JRE) 1.5.0 (or higher)
- eXist
- Apache Maven

## 8. Tested Platforms

Tested Platforms for SGAS

- Windows XP (all components)
- Linux Fedora Core 3 (all components)

## 9. Backward Compatibility Summary

Protocol changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

API changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

Exception changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

Schema changes since GT version 3.2:

- None; SGAS is new with GT 4.0.1.

## 10. For More Information

Click [here](#)<sup>1</sup> for more information about this component.

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<sup>1</sup> index.html