

SAS® Grid Manager – Security Administration

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INTRODUCTION

This document contains details about the IT requirements of SAS Grid Manager and the Platform Suite for SAS. These requirements are specific to SAS Grid Manager and are above and beyond any requirements of the SAS Intelligence Platform. The components in SAS Grid Manager and the Platform Suite for SAS are what SAS uses in order to instantiate SAS sessions on the nodes in a grid. Therefore, many of the requirements in this document are specific to the Platform Suite for SAS components.

PORT USAGE BY SAS GRID MANAGER

Each SAS session that runs on a grid node will use a unique port. You can control the range of ports that SAS will use by modifying the **sasgrid** shell script to use the **tcpportfirst** and **tcpportlast** options on the SAS command that is used to start the SAS session. You could take the number of job slots available on the machine, add two to that number and make that number of ports available in the range of available ports. You add two ports in case some other application happens to use up one or two of the ports. For example, if the number of job slots on a machine is 4 then add the following options to the SAS command line:

-tcpportfirst 5000 -tcpportlast 5005

This allows the SAS session to use any port between 5000 and 5005 inclusive.

PORT USAGE BY PLATFORM SUITE FOR SAS

The following ports are used by the Platform Suite for SAS components:

Product	Component	Default Port	Property	Configuration File
PM		1966	JS_PORT	pm/conf/js.conf
LSF	LIM	6879	LSF_LIM_PORT	lsf/conf/lsf.conf
	RES	6878	LSF_RES_PORT	lsf/conf/lsf.conf
	MBD	6881	LSB_MBD_PORT	lsf/conf/lsf.conf
	SBD	6882	LSB_SBD_PORT	lsf/conf/lsf.conf
GMS		1976	GABD_PORT	gms/conf/ga.conf

To change a port, change the specified property in the specified configuration file.

PORT USAGE BY SAS SERVERS

SAS Grid Manager is used in conjunction with a number of SAS servers that also have open ports for connections. The following are other possible servers used in conjunction with SAS Grid Manager and the default ports they use. The actual ports used can be found by using the Server Manager in the SAS Management Console.

SAS Server	Default Port
SAS/CONNECT Server	7551
SAS/SHARE Server	8551
SAS Metadata Server	8561
SAS Object Spawner	8581, 8582, 8583, 8584
SAS Workspace Server	8591
SAS Stored Process Server	8601, 8611, 8621, 8631

USE OF CREDENTIALS BY SAS GRID MANAGER

A job on the grid is run with the credentials of the user who submitted the job (in other words there is no "grid server user" or other generic userid involved). Because of this, the user submitting the job will need to be defined on any node in the grid where his/her job may be executed. For someone using Foundation SAS to run a job (either through a Display Manager session or in batch mode), their user credentials are used to run the job on the grid node. This is also the way a job runs if it is coming from SAS Solutions such as DI Studio and EM, where the job submission goes through the Workspace Server since the Workspace Server is started with the user's credentials. If a job is submitted through a stored process, it is run with the credentials of the stored process server.

SAS Grid Manager makes it possible to restrict certain users from running jobs on certain machines in the grid and to allow certain machines to be used by certain groups, for certain purposes or at certain times of the day. Depending on the complexity of the business rules involved, this can be accomplished by using the Workload

options of the `grdsvc_enable` function or by creating LSF queues. See the SUGI31 paper by Cheryl Doninger and Alan Wong titled "SAS Goes Grid – Managing the Workload Across Your Enterprise"
<http://www2.sas.com/proceedings/sugi31/211-31.pdf>

Platform Suite for SAS does the following with user credentials:

- Stores administrator userids (without the passwords) in clear text in `conf/lsf.cluster.<cluster_name>`
- May store userids in clear text in `/conf/lsbatch/<cluster_name>/configdir/lsb.users`.
- On Windows, it stores userids and passwords in `conf/passwd.lsfuser` file. The userids are in clear text but the passwords are encrypted using 56 bit DES. The passwords are used to run grid jobs under a specific userid.
- Passes userids in clear text. Passwords are not passed around – the password has to be read from the master machine.

LSF USER ACCOUNTS UNDER WINDOWS

In a Windows grid, there are three different types of users that need different rights assigned to them.

INSTALLATION ACCOUNT

The first type of user is the user account used to run the LSF install. This 'install user' will need to have administrative rights on every machine LSF will be installed.

SERVICE ACCOUNT

The next account type of user is the user account used for running the LSF services (daemons). The 'service user' that will run the LSF services need the following rights:

- "**Act as part of the operating system**" so that the service can use the LogonUser API on Windows NT/2000.
- "**Replace a process level token**" so that the service can use the CreateProcessAsUser API.
- "**Increase Quotas**" so that the service can use the CreateProcessAsUser API on Windows NT/2000.
- "**Log on as a service**" since this userid will be logging on to run an LSF service.
- "**Debug programs**" so that the service can use the CreateProcessAsUser API.

Some additional requirements on the service account are

- This account must be valid on all the hosts selected.
- The account name cannot include spaces.
- This account must have read and write permission on the installation directory and all associated files.

By default, LSF Setup makes the service account a cluster administrator.

By default, the LSF service account is either **lsfadmin** or the installation account.

- If your installation account is a domain user without domain administrator privileges, LSF Setup defaults to your own account.
- If your installation account is a domain administrator, LSF Setup defaults to the **lsfadmin** account under the same domain as your installation account. LSF Setup will create this account if it does not already exist.
- If your installation account is a local account, LSF Setup defaults to **.lsfadmin**. LSF Setup will create this account on every host if it does not already exist.

GRID USER ACCOUNT

The last user type is the user that will submit SAS jobs to the grid. Any user that will submit SAS jobs to the grid will need the right "**Logon as a batch job**" since Platform Suite for SAS starts the job on a remote machine after doing a "batch" logon.

FOR MORE INFORMATION

For more information about SAS and grid computing, visit the following websites:

SAS Scalability and Performance Community

<http://support.sas.com/rnd/scalability/grid>

SAS Grid website

<http://www.sas.com/grid>

SAS/CONNECT Grid Syntax

<http://support.sas.com/rnd/scalability/grid/gridfunc.html>

Example wrapper code for load balancing multiple users SAS jobs

<http://support.sas.com/rnd/scalability/grid/gridfunc.html>

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