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# **SAS<sup>®</sup> Financial Management 5.5**

System Administrator's Guide  
**Second Edition**

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# Using This Book

## Audience

This guide is intended for system administrators of SAS Financial Management.

To administer SAS Financial Management, you must be familiar with the operating system on which it is installed. For example, you must know how to create folders, run scripts, and update environment variables. If you are using Microsoft Windows, you must also be an administrator of the machine.

## Documentation Conventions

### Directory Paths

#### Directory Paths Used by Previous Installations

This book uses the following documentation conventions to identify directory paths used by SAS Financial Management 5.3 and earlier installations:

Term	Refers to	Example Path
!sasroot	Path to the SAS root directory in a SAS 9.2 installation	Windows: C:\Program Files\SAS\SASFoundation\9.2 UNIX: /usr/local/SAS/SASFoundation/9.2
!sasroot	Path to the SAS root directory in a SAS 9.3 installation	Windows: C:\Program Files\SASHome\SASFoundation\9.3 UNIX: /usr/local/SASHome/SASFoundation/9.3
SAS-config-dir	Path to the SAS configuration directory	Windows: C:\SAS\Config\Lev1 UNIX: /usr/local/SAS/config/Lev1

Term	Refers to	Example Path
MySQL-install-dir	Path to the MySQL installation directory in a SAS installation prior to SAS 9.4	Windows: C:\MySQL\bin UNIX: /usr/local/mysql  <b>Note:</b> As of SAS Financial Management 5.4, MySQL is no longer supported. For more information, see <i>SAS Financial Management: System Administration Guide</i> .

## Directory Paths Used by a SAS Financial Management 5.4 and SAS Financial Management 5.5 Installation

This book uses the following documentation conventions to identify directory paths that are used by SAS Financial Management 5.5:

Term	Refers to	Example Path
!sasroot	Path to the SAS root directory (SAS Foundation)	Windows: C:\Program Files\SASHome\SASFoundation\9.4 UNIX: /usr/local/install/SASHome/SASFoundation/9.4
!sasinst	Path to the SAS installation directory	Windows: C:\Program Files\SASHome UNIX: /usr/local/install/SASHome
SAS-config-dir	Path to the SAS configuration directory	Windows: C:\SAS\Config\Lev1 UNIX: /usr/local/SAS/config/Lev1

## Terms

This book uses the following terms:

Term	Description
Data Mart	The SAS Financial Management Data Mart
data tier	The machine on which you install the data-tier software for SAS Financial Management.

Term	Description
middle tier	The machine on which you installed the web application server and on which your web applications run.
metadata tier	The machine on which you installed the SAS Metadata Server. Usually, this is the same machine as the data tier.
multi-tier installation	An installation that is done on more than one machine (for example, with a data tier and a middle tier).
single-tier installation	An installation that is done on one machine. In that case, the single machine functions as both the data tier and the middle tier. Follow instructions for both the data tier and the middle tier.
staging area	The SAS Financial Management staging area.

**Note:**

- The name of the configuration directory and the SAS release might be different at your site.
- If your configuration is the result of a migration from the previous release of SAS Financial Management, the SASApp directory might be called SASMain instead. For example: `c:\sas\config\Lev1\SASMain` instead of `c:\sas\config\Lev1\SASApp`. Please make the appropriate substitutions as you read this book.
- File system pathnames are typically shown with Windows separators (`\`); for UNIX, substitute a forward slash (`/`).
- Some code examples contain line breaks so that the code fits on the line. If you copy the code, remove the line breaks.





## What's New

# What's New in SAS Financial Management 5.5

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## Overview

The following sections describe the new features and enhancements introduced in SAS Financial Management 5.5.

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## Performance Improvements

New features and enhancements that improve the performance of the SAS Financial Management solution include the following:

- High Availability—Leverages the standby and failover support provided by the SAS Web Server to implement a high availability configuration. Standby and failover is a traffic balancing configuration in which two instances of a SAS Web Server are redundantly configured in a primary server and standby server relationship. The standby server accepts traffic only when the connection to the primary server fails. When the connection to the primary server is restored, traffic is automatically rerouted back to the primary server.
- Reduced impact from refreshing the fact cache during data load.
- Improved performance when opening SAS Financial Management reports and forms.
- Improved performance when expanding and collapsing SAS Financial Management read-only reports and data-entry forms.
- Improved auto-allocation performance.

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## Usability Improvements

New features and enhancements that improve the usability of the SAS Financial Management solution include the following:

- Viewing Reports—The functionality of the Reports Workspace in the SAS Financial Management Web Application has been removed. SAS Financial Management reports are now accessed from the SAS Home page (or also referred to as the SAS Visual Analytics Hub).
- Extended Partial Promotion—Content promotion has been expanded to support the promotion of the following SAS Financial Management objects:
  - Exchange Rate Sets and Driver Rate Sets
  - Models
  - Manual Adjustments
  - Cycles
- Enhanced SAS Financial Management Forecasting—When generating a forecast, you can now also generate a report that provides details about how the forecast was derived.
- Expanded Auto-Allocation Functionality—Auto-Allocation capabilities have been added to the forms viewed in the SAS Financial Management Web Application. The reallocation of values for a selection of cells, or at a table level, is supported by both the SAS Financial Management Web Application and the SAS Financial Management Add-In for Microsoft Excel. In addition, batch auto-allocation is supported.

# Accessibility

## Accessibility Information

For information about the accessibility of SAS Financial Management, see *SAS Financial Management: User's Guide*.

For information about the accessibility of any of the other products mentioned in this document, see the documentation for that product.



## 1

# Introduction to SAS Financial Management System Administration

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## Overview

This chapter describes the following topics:

- SAS Financial Management
- SAS Financial Management system administration
- summary of data administrator tasks
- SAS Financial Management server configuration
- related documentation

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## About SAS Financial Management

### SAS Financial Management Features

SAS Financial Management is an advanced system for planning and reporting. It is designed to support the following financial management activities:

- data collection and retrieval
- currency translation
- management of dynamic hierarchical structures
- intercompany eliminations
- allocations and balancing entries
- ownership eliminations
- reporting

## SAS Financial Management User Interfaces

There are three ways to interface with SAS Financial Management:

**Table 1.1** SAS Financial Management Interfaces

Interface	Description
SAS Financial Management Studio	Desktop application from which process administrators and other users build and manage the infrastructure that is required by the SAS Financial Management Add-in for Microsoft Excel application and the SAS Financial Management web application. For example, an administrator can use SAS Financial Management Studio to define the metadata that feeds into meaningful reports and forms.
SAS Financial Management Add-In for Microsoft Excel	<p>SAS application that connects a desktop copy of Microsoft Excel to the SAS Financial Management database.</p> <p>With this client application, certain users build and save financial reports and forms. Other users (with permission) can use this application to view report data and enter data into forms for planning purposes.</p> <p>Data administrators also use the SAS Financial Management Add-In for Microsoft Excel client to create form templates for financial planning.</p>
SAS Financial Management Web Application	<p>Web-based application that alerts the information consumer when a report is published or alerts the information provider or information reviewer when an action is required.</p> <p>From the SAS Home page, data-entry forms can be managed and edited. The flow of data is controlled by a workflow that an administrator defines in SAS Financial Management Studio.</p> <p>The SAS Financial Management web application also includes workspaces for business processes and (for administrators) viewing security information. From the web application, you can access financial reports from the SAS Home page.</p>

**Note:** Every SAS Financial Management deployment also includes SAS Data Integration Studio. Administrators use SAS Data Integration Studio to load data and metadata for SAS Financial Management.

## Elements of SAS Financial Management Data

### Cycles and Dimension Types

In SAS Financial Management, a *cycle* is a structured pool of stored data. There are seven required dimension types in a cycle:

- Account
- Analysis
- Currency
- Frequency
- Organization
- Time
- Source
- Trader (a mirror of Organization)

**Note:** If necessary, administrators can define additional dimension types to meet the requirements of their site. The Frequency and Source dimensions are defined at implementation.

### Dimension Members and Crossings

Each numeric value belongs to a *crossing*. A crossing consists of the set of all dimension members that are associated with that value. There is one member from each relevant dimension type.

Each data record in the SAS Financial Management database consists of one crossing and one associated numeric value. The dimension members that are associated with a SAS Financial Management data record indicate what the numeric value in that record represents. For example, the dimension members of one record might indicate that the numeric value represents the actual revenue for an Italian subsidiary in October 2011, expressed in euros. The dimension members of another record might indicate that the numeric value represents the planned salary expense for a Japanese subsidiary for fiscal year 2012, expressed in yen.

### Hierarchies

The dimension members SAS Financial Management uses belong to *hierarchies*. The hierarchical relationships between members help define the structure of the dimension.

For certain dimension types (Currency, Frequency, and Analysis), there is no hierarchical relationship between the dimension members. These are known as *flat hierarchies*.

### Models

A *model* is a structure for viewing and interacting with the data in a cycle. The model is the basis of both forms and reports. The structure of a model includes a set of hierarchies (from required and optional dimension types) as well as rates and formulas. A model can also have its own set of adjustments and rules.

## SAS Financial Management Server Configuration

When using SAS Financial Management, you might work with the following types of servers.

- Metadata server—Server on which the SAS Metadata Server software is running. SAS must be available on this same machine.
- Data Tier server—Server on which SAS runs data-handling programs (including the logical servers for SAS Workspace and SAS Stored Process servers). Transformations, error tables, and jobs are installed on the data tier server.

**Note:** The same machine is often used as both the data tier server and the metadata server.

- Middle-Tier server—Server on which the managed servers run.

**Note:** SAS 9.4 does not use SAS Remote Services. However, SAS Remote Services is included in SAS 9.4 installations for backward capability.

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## Related Documentation

### SAS Financial Management

For information about installing, administrating, or migrating SAS Financial Management, see the documentation located at

<http://support.sas.com/documentation/onlinedoc/fm/>

**Note:** This site is password-restricted. You can find the user name and password in the pre-installation checklist, the Instructions.html, or by contacting SAS Technical Support at <http://support.sas.com/techsup/contact/>

### SAS Intelligence Platform

For information about administering the SAS Intelligence Platform, see the documentation located at

<http://support.sas.com/documentation/onlinedoc/intellplatform/index.html>

### SAS Information Delivery Portal

For information about the SAS Information Delivery Portal, see the documentation located at

<http://support.sas.com/documentation/onlinedoc/portal/index.html>



## **SAS Visual Analytics**

For information about SAS Visual Analytics, see the documents at <http://support.sas.com/documentation/onlinedoc/va/index.html>

## **SAS Information Delivery Portal**

For information about the SAS Information Delivery Portal, see the documents at <http://support.sas.com/documentation/onlinedoc/portal/index.html>.

## **SAS Notes**

SAS Technical Support develops SAS Notes to inform customers of issues that they need to be aware of when using SAS software. SAS Notes contain additional information about a SAS product and support fixes.

To view SAS Notes for SAS Financial Management, see the product page at <http://support.sas.com/software/products/fm/index.html>

On the left side of the product page, select **Samples & SAS Notes** from the menu.



## 2

## Performing Post-Configuration Tasks

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### Overview

This chapter describes the following topics:

- post-configuration tasks
- checking SAS notes
- modifying managed servers
- configuring SAS Financial Management options
- installing SAS PC Files Server
- securing your installation
- verifying the software operation using sample data
- creating site users and groups
- loading production data
- implementing SAS Financial Management High Availability support
- improving performance by configuring multiple query processors
- optimizing automatic allocation by using Demand Planning

---

## About Post-Configuration Tasks

This chapter describes the post-configuration tasks that as a system administrator, you need to perform after SAS Financial Management has been installed and configured. This chapter also describes how to load sample data that an administrator can use to verify the installation and demonstrate the software.

For more information about performing these tasks, see the online Help, the *SAS Financial Management: User's Guide* and the *SAS Financial Management: Data Administration Guide* (see “[Related Documentation](#)” on page 4.)

The topics in this chapter apply to migrating from a previous release, as well as after an initial installation has been performed.

**CAUTION!** Do not install the sample data on a migrated system. Doing so would overwrite your existing data.

---

## Important! Checking SAS Notes

After SAS Financial Management has been installed and configured, check the SAS Notes for additional information and support fixes.

To check SAS Notes, go to the product page at <http://support.sas.com/software/products/fm/index.html> and select **Samples & SAS Notes** from the **Knowledge Base** menu on the left side page.

## Modifying Managed Servers

### About the Managed Servers

Depending on how SAS Financial Management was installed and configured,, your system can have several managed servers. The following table lists the default servers and a partial listing of the contents of each server. The servers' contents consist of web application ARchive (WAR) files.

Server (Default Name)	Partial Contents (WAR Files)
SASServer1	The Web Infrastructure Platform (WIP), the Logon Manager, the SAS Information Delivery Portal, SAS BI Dashboard
SASServer2	The SAS WebDoc application, SAS Web Report Studio
SASServer3	SAS Financial Management
SASServer4	ODCS
SASServer5	Financial Management Web Data Entry
SASServer12	SAS Visual Analytics Administration and Reporting

**Note:** The SAS Financial Management managed servers are SASServer3, SASServer4, and SASServer5 .

**Note:** If you restart SASServer1, you must restart the other managed servers as well.

**Note:** SAS 9.4 introduces the ability for administrators to limit the reach and activities of a SAS server by putting it in a *locked-down* state. SAS Financial Management 5.5 does not support the SAS lockdown feature. For more information about locked-down servers, see the *SAS Intelligence Platform: Security Administration Guide*.

For additional information about managed servers, see the following publications:

- *SAS Financial Management: Performance Guide*
- *SAS Intelligence Platform: Middle-Tier Administration Guide*

### Using an Alternate SAS Web Infrastructure Platform Data Server

By default, the SAS Web Infrastructure Platform Data Server is a PostgreSQL 9.1.9 database that is customized for use with SAS and SAS Financial Management.

If you choose to use an alternate PostgreSQL database, then you must configure the alternate database. In addition, you must locate the alternate

PostgreSQL database on a different host than the default PostgreSQL database that is provided by SAS.

Before running the SAS Deployment Wizard, you must have a database instance and user ID with permission to access and create tables.

To create a database instance and user, complete the following steps:

- 1 Log on to the system as the PostgreSQL user ID to create a role:

```
create role sharedservices LOGIN PASSWORD 'password';
```

- 2 Create the database:

```
createdb SharedServices owner sharedservices encoding 'UTF8'
```

- 3 Confirm that the **listen\_addresses** parameter in the postgresql.conf file permits connections from hosts other than the localhost.

- 4 Ensure that the pg\_hba.conf file is configured to permit access from the machine that is hosting the SAS Web Application Server.

**Note:** Your site needs might differ from those described here. For more information about configuration files and additional configuration options, see the PostgreSQL documentation.

- 5 Install the extension that provides support for managing Large Objects:

```
create extension lo;
```

You must install the latest compatible version of the JDBC driver for PostgreSQL on the machine that is hosting the SAS Web Application Server. SAS requires the 9.1 or later version of the PostgreSQL JDBC driver. The SAS Deployment Wizard configures the SAS Web Application Server with a JDBC data source that uses a URL that is similar to the following example:

```
jdbc:postgresql://host:5432/SharedServices
```

If you want the SAS Deployment Wizard to automatically configure and load tables, then verify that the user account can perform the query select 1 successfully before you start the SAS Deployment Wizard.

## (Optional) Deploying a Cross-Domain Policy File

If the SAS Financial Management application (sas.financialmanagement5.5.ear) is located on a different physical machine from the Web Data Entry application (sas.financialmanagementwde5.3.ear), the site must deploy a *cross-domain policy file*. The cross-domain policy file permits the Adobe Flash applications to communicate with one another.

During installation and configuration, if the two applications are installed on different physical machines, the required policy file is created in the following folder on the middle tier: `SAS-config-dir\Lev1\Web\Applications\SASFinancialManagementWebDataEntry5.5`. The file contains the host name for the SAS Financial Management application and the port number for the Web Data Entry application.

- 1 Deploy the cross-domain policy file to the root context of the managed server for the SAS Financial Management Web Data Entry application.
- 2 Restart SASServer3 and the other servers managed by SAS Financial Management.

For detailed information about deploying cross-domain policy files, see the Adobe technical specification for Cross Domain Security located at <http://learn.adobe.com/wiki/display/security/Application+Security+Library>.

**Note:** If you move one application to a different machine post-configuration, you might need to create the cross-domain policy file. If you do need to create a cross-domain policy file, you can find a template in the following folder: `SASHOME\SASFinancialManagementWebDataEntry\5.5\Config\Deployment\CrossDomain`. SASHOME is the name of the folder in which you installed SAS. Edit the file and deployed it as described above.

---

## Configuring SAS Financial Management Application Options

### (UNIX Only) Add umask to Stored Process Server Options

In a UNIX installation, by default, users do not have Write permission for files that they did not create. However, generating a forecast requires users to re-create a file that might have been originally created by another user. Therefore, to support forecasting, you must set umask in both the stored process server and the workspace server. The umask settings give the sas group Read and Write permission for new files.

To set the umask option on the stored process server, complete the following steps:

- 1 On the data tier, navigate to the following directory:  
`SAS-config-dir/Levl/SASApp/StoredProcessServer`
- 2 Open the `StoredProcessServer_usermods.sh` file for editing.
- 3 Just before the `USERMODS_OPTIONS=` line, add code similar to the following:

```
CURR_GID=`/usr/bin/id -g`
GID=sas
if [ $CURR_GID -eq $GID ]; then
umask 002
fi
```

**Note:** Use a version of the ID command that supports the `-g` option. Use back ticks (not single quotation marks) around `/usr/bin/id -g`.

- 4 Save the file. The umask settings give the sas group Read and Write permission for new files.

**Note:** Instead of applying the umask to the sas group, you could create a group that includes all of the users who will be generating forecasts. Make it the primary group for these users, and substitute that group name for “sas” in the code above.

## (UNIX Only) Add umask to Workspace Server Options

To set the umask option on the workspace server, complete the following steps:

- 1 On the data tier, navigate to the following directory:  
*SAS-config-dir/Lev1/SASApp/WorkspaceServer*
- 2 Open the WorkspaceServer\_usermods.sh file for editing.
- 3 Just before the USERMODS\_OPTIONS= line, add code similar to the following:

```
CURR_GID=`/usr/bin/id -g`
GID=sas
if [ $CURR_GID -eq $GID ]; then
umask 002
fi
```

**Note:** Use a version of the ID command that supports the -g option. Use back ticks (not single quotation marks) around `/usr/bin/id -g`.

- 4 Save the file. The umask settings give the sas group Read and Write permission for new files.

**Note:** Instead of applying the umask to the sas group, you can create a group that includes all users who generate forecasts. Make the group the primary group for these users, and substitute the group name for “sas” in the code above.

## (Optional) Change the CTA Behavior for Intercompany Transactions

SAS Financial Management supports the following methods of accounting for cumulative translation adjustments (CTAs) as they relate to intercompany transactions:

- 1 Elimination of CTA amounts related to intercompany transactions.  
This is the default behavior. This behavior assumes that revaluation of intercompany balances as a result of exchange rate fluctuations occurs within a customer’s source accounting system. In SAS Financial Management, any translation adjustments that arise as the result of intercompany transactions are eliminated in the originating organization’s functional currency via Intercompany Eliminations.
- 2 Persistence of CTA amounts related to intercompany transactions  
This behavior ignores CTA amounts related to intercompany transactions. It allows values to persist without being eliminated. This behavior might be necessary when revaluation of intercompany balances does not occur in a customer’s source accounting system, and the reporting currency differs from the functional currency of the lowest common parent.



Choose a method based on a customer's practices for recording and managing intercompany transactions and balances. Selecting the appropriate method results in balanced, consolidated results.

The behavior is determined by a system property, `odcs.cta.elim.behavior`. The default value of this property, `TransactionCurrency`, corresponds to the elimination of CTA amounts related to intercompany transactions.

To change this behavior so that it persists CTA amounts that are related to intercompany transactions, complete the following steps:

- 1 Add the following argument to the JVM options for the ODCS managed servers:

```
-Dodcs.cta.elim.behavior=ReportingCurrency
```

- 2 Restart the ODCS managed servers.

## (Optional) Change the Default for Trader Security

**Note:** This option applies only to member-level security. It does not affect object-level security settings for an Organization dimension.

In a cycle, the Trader dimension type mirrors the Organization dimension type. In the record of a two-organization transaction, the trader member identifies the second organization.

Members of a Trader dimension inherit the security settings of the corresponding Organization dimension members. As a result, a user who is associated with a member of one organization cannot view the facts for transactions with a second organization.

With SAS Financial Management 5.2 and later, by default, the member-level security is effectively ignored in the Trader dimension type. This default enables users to view facts for transactions with other organizations.

However, in SAS Financial Management releases prior to 5.2, the Trader security settings (inherited from the Organization dimension) are honored. To revert to the prior behavior (honoring the Trader security settings), complete the following steps:

- 1 Add the following argument to the JVM options for the ODCS managed servers:

```
-Dodcs.member.security.ignoreTrader=false
```

- 2 Restart the ODCS managed servers.

**Note:** We recommend that you enable Trader security (by setting `ignoreTrader` to `false`) only if you do not set member-level security on organization members.

## (Optional) Change the Materiality Threshold

By default, automatic and explicit allocations, driver formulas, and most adjustment rules are subject to an absolute value threshold. The default threshold value is 0.001.

To set a different threshold value, complete the following steps:

- 1 Add the following argument to the JVM options for SAS Server3 (the managed server where SAS Financial Management is running):

```
-Dfms.threshold.materiality=new-value
```

where *new-value* is a value of 0.0 or greater. If *new-value* is 0.0, no threshold is applied.

**Note:** The number of decimal places in the threshold value has no effect on the precision of the output values.

- 2 Restart SAS Server3 and the other SAS Financial Management managed servers.

For more information about thresholds, see the *SAS Financial Management: Process Administrator's Guide*.

## (Optional) Change the Maximum Crossings for Data Validation

By default, data validation for a form is limited to 100,000,000 crossings per rule. If the validation process encounters more crossings for a rule, the process ends. The user receives a message saying that the scope of the rule must be reduced.

To set a different value for the maximum number of crossings per rule, complete the following steps:

- 1 Add the following argument to the JVM options for SAS Server3 (the managed server where SAS Financial Management is running):

```
-Dfms.data.validation.max.crossings.per.rule=new-value
```

where *new-value* is an integer value that is less than MAX\_INT (2147483647). Do not use commas.

- 2 Restart SAS Server3 and the other SAS Financial Management managed servers.

---

## Installing SAS PC Files Server

Installing the SAS PC Files Server is mandatory for loading data from 32-bit PC files into 64-bit SAS. With this configuration, data administrators can use 32-bit Microsoft Excel or Microsoft Access files as input to jobs in SAS Data Integration Studio.

If you use Microsoft Office 2007, you must install the Microsoft Office 2007 ODBC driver on the machine on which you installed the SAS PC Files Server. For instructions on downloading the ODBC driver, see the following SAS Note: <http://support.sas.com/kb/37/521.html>.

For information about the SAS PC Files Server, see *SAS/ACCESS Interface to PC Files: Reference* at <http://support.sas.com/documentation/onlinedoc/access/index.html>.

---

## Securing Your Installation

### About SAS Financial Management Protection

This section contains information about configuring operating system protection for the Windows and UNIX configuration directories.

The following list is additional information that might be helpful to you when securing your installation:

- For an overview and detailed information about security in the SAS Intelligence Platform, see the *SAS Intelligence Platform: Security Administration Guide*.
- If you installed SAS Web Report Studio, see “Configuring SAS Web Report Studio” in the *SAS Intelligence Platform: Web Application Administration Guide*. This chapter includes information about securing the folders that are used by SAS Web Report Studio.

### (Windows) Security Settings for Configuration Directories

To configure the security settings for configuration directories on the Windows platform, complete the following steps:

- 1 On the SAS Intelligence Platform, apply the operating system protections that are recommended for configuration directories.

For information about applying operating system protections on the SAS Intelligence Platform, see “What to Do Next: Administration Tasks” in the *SAS Intelligence Platform: System Administration Guide*.

- 2 For SAS Financial Management, apply the additional protections that are recommended for configuration directories. For a description of the recommended protections, see [Table 2.1 on page 16](#).

**Note:** The following configuration directories are located on the data tier in the *SAS-config-dir\Lev1* directory.

**Table 2.1** Windows: Recommended Permissions for SAS Financial Management Directories

Directories	Permissions
Under SASApp\SASEnvironment \FinancialManagement and SASApp\SASEnvironment \SolutionsServices: SASCode\Jobs SASFormats SASMacro	Grant permission to the SAS Server Users group.
SASApp\Data and its subdirectories	Grant Full Control to SAS General Server User (sassrv) .  Grant Read/Write/Modify permission to users who run SAS Data Integration Studio jobs to update data in the data warehouse. These users should include the Solutions Host User.

## (UNIX) Security Settings for Configuration Directories

To configure the security settings for configuration directories on the UNIX platform, complete the following tasks:

- 1 On the SAS Intelligence Platform, apply the operating system protections that are recommended for configuration directories.

For information about applying operating system protections on the SAS Intelligence Platform, see “What to Do Next: Administration Tasks” in the *SAS Intelligence Platform: System Administration Guide*.

- 2 For SAS Financial Management, apply the additional protections that are recommended for configuration directories. For a description of the recommended protections, see [Table 2.2 on page 17](#).

**Note:** The following configuration directories are located on the data tier in the *SAS-config-dir\Lev1* directory.

**Table 2.2** UNIX: Recommended Permissions for SAS Financial Management Directories

Directories	Permissions
Under SASApp/SASEnvironment/ FinancialManagement and SASApp/SASEnvironment/ SolutionsServices: SASCode/Jobs SASFormats SASMacro	Permit full access for the SAS user ID and the SAS user group
SASApp/Data and its subdirectories	Set permissions to 775.

## (Optional) Verifying the Installation Using Sample Data

### About Verifying the Installation Using Sample Data

**CAUTION!** Do not complete the tasks in this section if one of the following conditions exists: your installation is the result of a migration, data is stored that you want to keep, or you are installing in a SAS Capital Planning and Management environment. Performing the tasks in this section overwrites existing data.

Sample data is provided that you can use to verify the correct operation of the software and to demonstrate functionality. After verification, you can run batch programs to load the StageFM and SASSDM databases again. These batch programs reset the databases to their default state (their state immediately following a new installation and configuration).

The verification procedure includes the following tasks:

- 1 Load the sample data.
- 2 Restart the managed servers.
- 3 Verify the installation.
- 4 Reset the databases to their default state.
- 5 Restart the managed servers.

## Load Sample Data

If your installation is the result of a migration, or if data is stored that you want to keep, do not load the sample data or reset the databases.

### Load Sample Data for the SAS Financial Management Staging Area

Running the LoadFMSampleData script replaces the tables in the StageFM library.

To load sample data for the SAS Financial Management staging area, complete the following steps:

- 1 Log on to the data-tier server.
- 2 At a command prompt, change directory to *SAS-config-dir* \Lev1\Applications\SASFinancialManagement5.5\SampleData.  
**Note:** Logs for these commands are written to a subdirectory of the current working directory.
- 3 Run one of the following scripts to load the StageFM sample data:
  - on Windows—LoadFMSampleData.bat
  - on UNIX—LoadFMSampleData.sh
- 4 When prompted, enter the following connection information:

Prompt	Description
<b>SAS Metadata User ID</b>	User ID of the unrestricted user (for example, sasadm@saspw)
<b>SAS Metadata User Password</b>	User password

### Load Sample Data for SAS Financial Management Data Mart

Running the LoadSASSDMSampleData script populates tables in the SAS Financial Management Data Mart (SASSDM).

- 1 Log on to the data-tier server.
- 2 At a command prompt, change the directory to *SAS-config-dir* \Lev1\Applications\SASFinancialManagement5.5\SampleData.
- 3 Run one of the following scripts to load the sample data:
  - on Windows—LoadSASSDMSampleData.bat
  - on UNIX—LoadSASSDMSampleData.sh
- 4 When prompted, enter the following connection information:

Prompt	Description
<b>Data Mart Host Name</b>	Name of the host machine where Data Mart is running.
<b>Data Mart DB Name</b>	<b>sassdm</b>
<b>Data Mart Port</b>	PostgreSQL port number. 9632 is the default port number.
<b>Data Mart DB User ID</b>	User ID for accessing the database (SASSDM). The default database account identity is sassdmbadm
<b>Data Mart DB User Password</b>	Password for accessing the database.

## Verify the SAS Financial Management Installation

### About SAS Financial Management Verification

To verify the SAS Financial Management Web Application, follow the steps documented in the Instructions.html file on the middle tier. Log on to the middle tier as the SAS Demo User.

### SAS Financial Management Studio

**Note:** For instructions on installing SAS Financial Management, see the *SAS Financial Management Release: Installation and Configuration Guide*.

To verify the SAS Financial Management Studio, complete the following steps:

- 1 Restart SASServer3 and the other SAS Financial Management managed servers. Not restarting the servers causes your tests to fail.
- 2 Log on to SAS Financial Management Studio as the SAS Demo User (sasdmo).
- 3 Verify the dimensions in the Dimensions workspace.
- 4 Expand the Account dimension and view these sample hierarchies:
  - ACCOUNT\_MR
  - ACCOUNT\_Sal
  - ACCOUNT\_TH
- 5 View the default model in the Models workspace.

### SAS Financial Management Add-In for Microsoft Excel

**Note:** For installation instructions, see the *SAS Financial Management: Installation and Configuration Guide*.

To verify the operation of the SAS Financial Management Add-In for Microsoft Excel, complete the following steps:

- 1 Open a workbook in Microsoft Excel.
- 2 From the **SAS Financial Management** tab, select **Log On** and log on to the middle tier as the SAS Demo User (sasdmo).
- 3 Insert a read-only table by completing the following steps:
  - a Select **SAS Financial Management** ► **Insert** ► **Read-only table**.
  - b Select the **Default\_Model** and click **Next**.
  - c Use the arrows to make the following selections:
    - **Rows:** Account
    - **Columns:** Time
    - **Slicers:** Analysis, Organization, Frequency, and Product
  - d Click **Next** to make additional selections in the rest of the wizard or click **Finish** to accept the defaults.

## Reset the Databases

**CAUTION!** If your installation is the result of a migration, or if data is stored that you want to keep, do not load the sample data or reset the databases.

To reset the StageFM and SASSDM databases to their default states, complete the following steps:

- 1 Log on to the data-tier server.
- 2 On the data-tier, at a command prompt, change the directory to `SAS-config-dir \Lev1\Applications\SASFinancialManagement\SampleData`.
- 3 Make a backup copy of the appropriate restore script:
  - Windows—`restore_original_install_data_fm.bat`
  - UNIX—`restore_original_install_data_fm.sh`
- 4 Modify the following variables as necessary for your site configuration.

When you modify the script,

- replace `SAS-config-dir` and `!sasroot` with the appropriate file system path
- replace `SASApp` and `Lev1` as necessary for your site
- in the SET statements, do not use spaces around the equal sign (=)

*Table 2.3 Restore Script Variables*

Variable	Description
SAS_EXE	Full path (including filename) to the sas executable, located in the <code>!sasroot</code> directory.  For an explanation of the <code>!sasroot</code> directory, see the <i>SAS Companion for Windows</i> or the <i>SAS Companion for UNIX Environments</i> at <a href="http://support.sas.com/documentation">support.sas.com/documentation</a> .



Variable	Description
SAS_DIR (UNIX)	Path to the <code>!sasroot</code> directory. In UNIX scripts, this variable is used in the definition of SAS_EXE.
SAS_CONFIG (Windows) or SOL_CFG (UNIX)	Full path (including filename) to the SASV9.cfg file that is located in the <code>SAS-config-dir\Lev1\SASApp</code> directory.
REG_STAGEDDS_DD S	Full path (including filename) to the <code>register_stagedds_and_dds.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASSolutionsServices5.5\SASCode</code> directory.
REG_COMMON	Full path (including filename) to the <code>register_common.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASSolutionsServices5.5\SASCode</code> directory.
REG_ODCS	Full path (including filename) to the <code>register_odcs.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASSolutionsServices5.5\SASCode</code> directory.
REG_FM	Full path (including filename) to the <code>register_fm.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASFinancialManagement5.5\SASCode</code> directory.
REG_OP	Full path (including filename) to the <code>register_opplan.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASFinancialManagement5.5\SASCode</code> directory.
REG_STAGEFM	Full path (including filename) to the <code>register_fm.sas</code> file, which is located in the <code>SAS-config-dir\Lev1\Applications\SASFinancialManagement5.5\SASCode</code> directory.

5 Run the script:

- Windows—`restore_original_install_data_fm.bat`
- UNIX—`restore_original_install_data_fm.sh`

6 When prompted, enter the following connection information:

Prompt	Description
Data Mart Host Name	Name of the host machine on which the Data Mart is running
Data Mart DB PORT	Port number for PostgreSQL (default: 9432)
Data Mart DB NAME	Database name (default SASSDM)
Data Mart DB User ID	User ID for accessing the SASSDM database (default sssdmbadm)

Prompt	Description
<b>Data Mart DB Password</b>	Password for accessing the SASSDM database
<b>META USER ID</b>	User ID of the unrestricted user (for example, sasadm@saspw)
<b>META USER PASSWORD</b>	Metadata user password

The batch program runs several SAS registration programs. The logs from these programs are in the *SAS-config-dir\Lev1\Logs\Configure* directory.

- Restart SASServer3 and the other SAS Financial Management managed servers.

---

## Creating the Site's Users and Groups

Register users at the site and assign them to groups and roles. For information about users and groups, see [Chapter 3, "Assigning Groups and Roles,"](#) on page 25.

---

## Loading Production Data

For instructions about loading production data, see the *SAS Financial Management: Data Administrator's Guide*.

---

## (Optional) Configuring Multiple Query Processors

If you have a site in which many users are executing queries at the same time, you can attach multiple query processors to an ODCS instance. With a multiple query processor configuration, ODCS jobs are automatically routed to various machines where the ODCS query processor is running.

The benefit of a multiple query processor configuration is that it maximizes simultaneous query processing in multi-user environments. This configuration is most effective in situations where there are many users executing small queries simultaneously. Although a multiple query processor configuration does not improve the performance of individual queries, it allows more queries to execute simultaneously, therefore, improving overall throughput.

For more information about implementing multiple query processors, see [Chapter 4, “Using Multiple Query Processors to Improve Performance,”](#) on page 35.

For performance-related information about configuring multiple query processors, see the *SAS Financial Management: Performance Guide*.

---

## (Optional) Configuring High Availability Support

A high availability configuration ensures that server failures do not significantly impact users. Without a high availability configuration, if a web server becomes unavailable for any reason, the SAS Financial Management middle-tier must be restarted. Restarting web application servers can cause significant downtimes depending on the size of the data and metadata or various controls for automatically loading fact caches at start-up.

To alleviate the issues of service outages, SAS Financial Management leverages the High Availability (standby and failover) support provided by the SAS Web Server. Standby and failover is a traffic balancing configuration in which two instances of a SAS Web Server are redundantly configured in a primary server and standby server relationship. The standby server accepts traffic only when the connection to the primary server fails. When the connection to the primary server is restored, traffic is automatically rerouted back to the primary server.

For more information about implementing SAS Financial Management High Availability support, see [Chapter 5, “Implementing High Availability Support,”](#) on page 43.

For detailed information about high availability support on a SAS Web Server, see the *SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide*.

---

## (Optional) Optimizing Automatic Allocation by Using Demand Planning

By default, the SAS Financial Management automatic allocation performs an FM query of weights and target crossings. When there are a large number of crossings (that is, millions), the process of automatic allocation might take several minutes.

Certain SAS Financial Management scenarios; for example, in a Demand-Driven Planning and Optimization scenario, you do not need all of the functionality that is supported by the automatic allocation FM query. For these types of sites, customers can optimize automatic allocation by enabling an optional facts-based behavior called *Demand Planning*.

For information about optimizing automatic allocation by using the optional Demand Planning behavior, see [Chapter 6, “Optimizing Automatic Allocation,”](#) on page 49. For more information about automatic allocations, see the *SAS Financial Management: User’s Guide*.



## 3

## Assigning Groups and Roles

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### Overview

This chapter describes the following topics:

- users, groups, roles, and capabilities
- default user identities
- groups
- capabilities and roles
- registering users

---

### About Users, Groups, Roles, and Capabilities

This chapter describes the default users that are defined when you install SAS Financial Management, as well as the groups, roles, and capabilities that are required to use SAS Financial Management.

Additional information:

- The SAS Intelligence Platform configures a default set of users, groups, and roles during the deployment process. For information about those identities,

see “Understanding the State of Your System” in the *SAS Intelligence Platform: System Administration Guide*.

- For detailed information about authentication and authorization, see the *SAS Intelligence Platform: Security Administration Guide*.

---

## Default User Identities

SAS Financial Management has two default user identities: *Solutions Host User* and *SAS Solutions Administrator*.

Identity	Description
Solutions Host User	<ul style="list-style-type: none"> <li>■ Is an external identity.</li> <li>■ Has JDBC access to the SAS Financial Management Data Mart (depending on group membership and operating system permissions).</li> </ul>
SAS Solutions Administrator	<ul style="list-style-type: none"> <li>■ Is an internal identity.</li> <li>■ Used for cases in which a user must perform a query as a part of a larger process. However, the query requires a role that the user does not generally need. Rather than requiring the user to be assigned to that role, the application recognizes the SAS Solutions Administrator as a user with the proper role to successfully complete the process.</li> <li>■ Performs special tasks within SAS Financial Management and should have the following permissions for SAS Financial Management content:               <ul style="list-style-type: none"> <li><input type="checkbox"/> ReadMetadata</li> <li><input type="checkbox"/> Read</li> <li><input type="checkbox"/> WriteMetadata</li> <li><input type="checkbox"/> Write</li> <li><input type="checkbox"/> Create</li> </ul> </li> </ul> <p><b>Note:</b> Do not use this identity as a login identity.</p> <p><b>Note:</b> In a system that was migrated from SAS 9.1.3, this user is called Solutions Role Administrator.</p>

---



---

## Groups

SAS Financial Management uses the following predefined groups: *SASSDM Database Users* and *Administrators*. In addition, system administrators typically create their own groups at their sites to meet their needs (for example, for assigning roles or access permissions to folders).

Group	Description
SASSDM Database Users	<ul style="list-style-type: none"> <li>■ Has a login to the SASSDM database.</li> <li>■ Users need to belong to this group if they run stored processes and jobs that directly write to Data Mart tables in the SASSDM database.</li> <li>■ The following administrative stored processes require membership in the SASSDM Database Users group: <ul style="list-style-type: none"> <li>□ Import Users and Groups</li> <li>□ ETL Job Status</li> </ul> </li> <li>■ The following SAS Data Integration Studio jobs require membership in the SASSDM Database Users group: <ul style="list-style-type: none"> <li>□ solnsvc_1300_load_users</li> <li>□ solnsvc_1400_load_groups</li> <li>□ solnsvc_1500_load_user_x_group</li> </ul> </li> <li>■ If you create a stored process from a SAS Data Integration Studio job, and include a reference to etlstatus.sas, then users who run the stored process must belong to the SASSDM Database Users group.</li> <li>■ To access and view SAS Financial Management reports from the SAS Home page, you must belong to the SASSDM Database Users group.</li> </ul>
Administrators	<ul style="list-style-type: none"> <li>■ Grants superuser status on its members.</li> <li>■ Users who belong to the Administrators group are not subject to security restrictions on objects such as cycles, models, and dimensions. These users still need the appropriate capabilities, and member security still applies.</li> </ul> <p><b>Note:</b> Use caution in assigning users to the Administrators group.</p>

---

## Capabilities and Roles

### About Capabilities and Roles

*Role* membership determines the actions that a user can perform in an application, as well as the menus and links that are displayed when that user logs on to the application. *Capabilities* are assigned to roles. Each role is assigned one or more capabilities, such as the ability to manage dimensions or approve forms.

Capabilities are additive. They grant the ability to perform one or more actions. They do not deny the ability to perform an action.

Having a capability does not grant access to data. For example, a user might have the Model Administration capability but be denied access to specific models because of object security. A user might have the Submit Financial Forms capability but not be able to view the contents of all the cells in a form because of member-level security.

**Note:** Capabilities do not function as data security. Use role assignments to enable the actions that a user can perform and the menu items that are available to a user. Use data security, such as metadata permissions, to restrict the data that a user can access.

For more information about roles and capabilities, see the “Role-Based Access to Application Features” section of the *SAS Intelligence Platform: Security Administration Guide*.

## **SAS Financial Management Capabilities**

### **Description of All Capabilities**

The following capabilities are available for SAS Financial Management. Each capability grants the ability to perform specific actions, such as creating and managing cycles and periods.



Table 3.1 SAS Financial Management Capabilities

Category	Capability	Description
Administrative	Cycle Administration	Perform all actions in the Periods workspace and Cycle Manager of SAS Financial Management Studio.
	Dimension Administration	Perform all actions in the Dimensions workspace of SAS Financial Management Studio.
	Form Administration	<ul style="list-style-type: none"> <li>■ Perform all actions to SAS Financial Management forms (in SAS Financial Management Studio and via the web from the SAS Home page).</li> <li>■ Create and update form templates in the SAS Financial Management Add-In for Microsoft Excel.</li> <li>■ Create reports in the SAS Financial Management Add-In for Microsoft Excel.</li> </ul>
	Model Administration	Perform all actions in the Models workspace of SAS Financial Management Studio.
	Rate Administration	Perform all actions in the Rates workspace of SAS Financial Management Studio.
	Security Administration	<ul style="list-style-type: none"> <li>■ Assign security permissions for objects (such as cycles and models) and dimension members in SAS Financial Management Studio. This activity requires additional capabilities (such as Cycle Administration or Model Administration) for the workspace in which the objects or members reside.</li> <li>■ Access the Administration workspace of SAS Financial Management Web Portal.</li> </ul>
	Manage Processes	<ul style="list-style-type: none"> <li>■ Create and edit process definitions.</li> <li>■ Start an active process.</li> <li>■ Perform most tasks in an active process in the <b>Processes</b> workspace of the SAS Financial Management Web Portal. (Running a task typically requires additional capabilities; see “Defining a Process” in the <i>SAS Financial Management: Process Administration Guide</i> for details.)</li> <li>■ Delete a completed process.</li> <li>■ In SAS Financial Management Studio, create process definitions in selected wizards. This activity requires additional capabilities for the workspace in which the wizard resides (for example, Model Administration or Cycle Administration).</li> </ul>
Planning	Approve Financial Forms	<ul style="list-style-type: none"> <li>■ Approve forms.</li> <li>■ Create reports in the SAS Financial Management Add-In for Microsoft Excel.</li> </ul>
	Submit Financial Forms	<ul style="list-style-type: none"> <li>■ Submit and enter data into forms.</li> <li>■ Create reports in the SAS Financial Management Add-In for Microsoft Excel.</li> </ul>

Category	Capability	Description
Reporting	Create and Edit Reports	<ul style="list-style-type: none"> <li>■ Create reports in the SAS Financial Management Add-In for Microsoft Excel.</li> <li>■ Access the Reports workspace of the SAS Financial Management Web Portal.</li> </ul>
	View Reports	<ul style="list-style-type: none"> <li>■ View SAS Financial Management reports.</li> <li>■ In Microsoft Excel, change the view of a table. However, View Reports capability does not enable them to copy the table, create a new table, or publish a report or information map.</li> <li>■ Access the Reports workspace of SAS Financial Management.</li> </ul>
Processes	View Processes	View an active process and its tasks. A task owner can run, skip, disable, enable, or disable a task, depending on task status.

### Capabilities for SAS Financial Management Studio

To log on to SAS Financial Management Studio, users must have at least one of the following capabilities:

- Cycle Administration
- Dimension Administration
- Form Administration
- Model Administration
- Rate Administration

**Note:** Users have full access to the workspaces that are associated with their capabilities. Users have Read access to the other workspaces.

### Capabilities for SAS Data Integration Studio Jobs

The Administrative capabilities also enable users to execute SAS Data Integration Studio jobs.

To execute SAS Data Integration Studio jobs, the following capabilities are required:

**Table 3.2** Capabilities for SAS Data Integration Studio Jobs

Job	Required Capabilities
Load Facts	Cycle Administration
<ul style="list-style-type: none"> <li>■ Export Facts</li> <li>■ Load Cell Protection Rules</li> <li>■ Load Member Selection Rules</li> </ul>	Model Administration
<ul style="list-style-type: none"> <li>■ Load Supplemental Schedule Details</li> <li>■ Load Supplemental Schedule Facts</li> </ul>	Cycle Administration

Job	Required Capabilities
<ul style="list-style-type: none"> <li>■ Load Exchange Rates</li> <li>■ Load Driver Rates</li> </ul>	Rate Administration

## Default Roles

SAS Financial Management has a set of default roles. Each default role has pre-assigned capabilities. As a system administrator, you can create additional roles with the capabilities that are required at your site.

**Table 3.3** SAS Financial Management: Default Roles

Role Name	Display Name	Capabilities
Finance Process Administrator	Financial Management: Process Administrator	all SAS Financial Management capabilities
Finance Adjuster	Financial Management: Model Administrator	<ul style="list-style-type: none"> <li>■ Model Administration</li> <li>■ Excel Reporting</li> <li>■ View Reports</li> </ul>
Form Approver	Financial Management: Form Approver	<ul style="list-style-type: none"> <li>■ Approve Financial Forms</li> <li>■ View Reports</li> </ul>
Form Submitter	Financial Management: Form Submitter	<ul style="list-style-type: none"> <li>■ Submit Financial Forms</li> <li>■ View Reports</li> </ul>
Process Administrator	Financial Management: Process Administrator	Process Administration
Process Viewer	Financial Management: View Processes	View Business Processes

## Registering Users

### About Registering Users

For information about registering users, see the *SAS Intelligence Platform: Security Administration Guide*.

When you define a user, be sure to include the user's email address. Email notifications are often sent to users. For the successful processing of some functions, you must define an email address for every user.

**Note:** On Windows, for users to access a standard workspace server using credential-based host authentication, they need the local **Log on as a batch job** right on that machine. For more information, see “Windows Privileges” in the *SAS Intelligence Platform: Security Administration Guide*.

## Synchronizing Users and Groups

### About Synchronizing Users and Groups

Information about users and groups is stored in database tables that must be kept in synchronization with the metadata. As a part of best practices, it is recommended that you set up a SAS Data Integration Studio job as a scheduled process to synchronize data tables.

### Running a Batch Job

The typical way to update user and group information is by using a batch job.

To update user and group information using a batch job, complete the following steps:

- 1 In SAS Data Integration Studio, create a batch job that includes these three jobs:
  - solnsvc\_1300\_load\_users
  - solnsvc\_1400\_load\_groups
  - solnsvc\_1500\_load\_user\_x\_group
- 2 Schedule the batch job to be performed on a regular basis.

For more information about jobs to load users and group information, see the *SAS Financial Management: Data Administrator's Guide*. For information about creating batch jobs and about scheduling jobs, see the *SAS Intelligence Platform: System Administration Guide*.

### Running the Import Users and Groups Stored Process

In some cases, changes to users and groups might need to be reflected in the database as soon as those changes are made in the metadata. In that case, you can run the jobs manually, rather than waiting for the scheduled process to run.

To run a job to update the database manually, complete the following steps:

- 1 In a web browser, log on to the SAS Information Delivery Portal.
 

**Note:** You must be a member of the SASSDM Database Users metadata group.
- 2 If the **Import Users and Groups** stored process is not already available, add it to a portlet such as the Collection portlet.
 

This stored process is located in the **Products** ▶ **SAS Financial Management** ▶ **5.5 Standard Reports** folder.

- 3 Run the stored process.
- 4 Check the stored process log to make sure that the stored process ran successfully. (You might not see an error message in your web browser.) .


The stored process log files are located at `SAS-config-dir\Lev1\SASApp\StoredProcessServer\Logs`

For changes in roles, you might also need to clear (flush) the user cache. For information about clearing the user cache, see [“Clear User Cache” on page 33](#).

### Clear User Cache

For performance reasons, roles and capabilities are cached when a web application server is started. If capabilities or roles have changed, and the web application server has not been restarted, clear the cache. Not clearing the cache affects users' eligibility to edit or review forms, or to be assigned as form authors or reviewers.

To clear the cache, complete the following steps:

- 1 From a web browser, log on to the SAS Financial Management Web Portal as a user with the Security Administration capability.
- 2 Select the **Administration** workspace.
- 3 From the categories menu on the left, select either **Users** or **Groups**.
- 4 Click the **Clear the user cache** button .



## 4

## Using Multiple Query Processors to Improve Performance

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---

### Overview

This chapter describes the following topics:

- using multiple query processors
- connecting to SASServer3
- connecting to SASServer4
- starting the query processors
- configuring optional ODCS parameters

---

### Using Multiple Query Processors

#### Multiple Query Processor Overview

If you have a site in which many users are executing queries at the same time, you can implement multiple query processors. Implementing multiple query processors maximizes simultaneous query processing in a multi-user environment.

**Note:** A multiple query processor configuration is most effective in situations where there are many users executing small queries simultaneously.

To implement a multiple query processors, you connect one or more external query processors to an instance of the ODCS application. The query processors that are connected to the same ODCS instance share the workload of processing queries for that ODCS instance. Jobs are automatically routed to various machines on which a query processor is running.

Although a multiple query processor configuration does not improve the performance of individual queries, it enables more queries to execute simultaneously, which improves overall throughput.

When implementing multiple query processors, note the following:

- In prior releases of SAS Financial Management, the ODCS application ran on SASServer4. In SAS Financial Management 5.5, there are two instances of the ODCS application. One instance runs on SASServer3, and the other instance runs on SASServer4.

The types of queries that a query processor services is determined by how it is implemented. For information about the types of queries serviced based on implementation, see [“Query Processors Function by Implementation” on page 36](#).

- In SAS Financial Management 5.5, you deploy query processors by using the SAS Deployment Wizard. The SAS Deployment Wizard automates many of the manual configurations that were required in prior releases.

For information about using the SAS Deployment Wizard, see *SAS Deployment Wizard and SAS Deployment Manager: User’s Guide*.

- Ensure that each target machine is network-accessible from the server on which the ODCS instance is running.
- During installation, a configuration file is created in `C:\Program Files\SASHome\SASFinancialManagementQueryProcessor\5.5\fmqp.ini`.

This file might contain the following optional statement:

```
odcs.queryprocessor.maxthreads
```

If this statement exists, you might need to modify the value for optimal performance. After installation, we recommend that a system administrator review this file for this statement and perform one of the following actions:

- Set the value of the statement to the number of cores your machine uses minus one. For example, if there are two CPUs, and each CPU has four cores, set the value for the statement to 7 as seen in the following example:

```
odcs.queryprocessor.maxthreads=7
```

- Remove the statement from the file, and let the system default to the best value. If you choose this option, ensure that you renumber the JavaArgs that come after the statement in consecutive order.

## Query Processors Function by Implementation

By default, queries are processed by the internal query processor that is built into the instance of the ODCS application running on SASServer3 and SASServer4.



In a SAS Financial Management 5.5 multiple query processor implementation, the following applies:

- SASServer3 is a transactional server. The ODCS instance in SASServer3 is primarily responsible for queries associated with client writeback (adding or editing values at crossings within a client).
- SASServer4 is a read-only server. The ODCS instance in SASServer4 is primarily responsible for queries associated with client refreshes or redraws of the user interface.

During periods of high query loads, one or both of the internal query processors might become overloaded. If this condition occurs, a system administration can choose to connect external query processors to distribute the query load. Distributing the query load improves overall throughput. However, external query processors that are located on separate physical hosts other than the ODCS instance to which they are connected might introduce partial or fully offsetting latency. This latency occurs when query states and results have to be transferred across a network. Therefore, implementing external query processors might not be appropriate for all situations.

System administrators should monitor the performance of SASServer3 and SASServer4 during periods of high query loads to determine whether an ODCS instance might benefit from additional query processors.

**Note:** For detailed information about the factors and performance issues to consider when implementing external query processors, see the *SAS Financial Management: Performance Guide*.

Once you connect an external query processor, the processor immediately begins to service queries. The types of queries a processor services when it connects to an ODCS instance depend on several factors, including:

- the start-up configuration of the server (SASServer3 or SASServer4) in which the ODCS instance resides and the start-up configuration of the query processor
- the start-up configuration of the query processor
- whether the processor is connecting to SASServer3 or SASServer4
- whether the processor is located on the same physical machine as the ODCS instance to which it is connected

The following table provides a high-level summary of the types of queries an external query processor services as determined by its implementation.

**Table 4.1** External Query Processor Function by Implementation

Query Processor Location	ODCS Location	Queries Serviced
SASServer3	SASServer3	Contributing fact*
SASServer3	SASServer4	Client refresh and redraw**
SASServer4	SASServer3	Writeback**,***
SASServer4	SASServer4	Contributing fact*

Query Processor Location	ODCS Location	Queries Served
Other	SASServer3	Writeback***
Other	SASServer4	Client refresh and redraw

\* Contributing fact queries are specialized queries generated by certain SAS Financial Management operations. To reduce latency, these types of queries are run internally or locally on the same machine as the ODCS instance.

\*\* We recommend that these query processors are run on dedicated hardware and not located on the same physical machine as SASServer3 or SASServer4.

\*\*\* For information about this implementation, see [“Connecting to SASServer3” on page 39](#).

A query processor becomes active when it connects to an ODCS instance. However, you might have to make some additional configurations to enable the processor to receive and process queries from the ODCS instance to which it is connected. To ensure that external query processors are able to receive and process queries from an ODCS instance, complete the tasks that are described in [“Connecting to SASServer3” on page 39](#) and [“Connecting to SASServer4” on page 39](#).

## Start-up Configuration Options

The start-up configuration options discussed in the tasks that are included in this chapter are located in the following files and directories:

- query processors

The start-up configuration options are located in the `fmqp.ini` file. The `fmqp.ini` file is located in the following directory: `C:\Program Files\SASHome\SASFinancialManagementQueryProcessor\5.5\fmqp.ini`.

- ODCS instances

The start-up configuration options for the ODCS instances are located in the `wrapper.conf` file.

- SASServer3

`C:\SAS\Config\Lev1\Web\WebAppServer\SASServer3_1\conf\wrapper.conf`

- SASServer4

`C:\SAS\Config\Lev1\Web\WebAppServer\SASServer4_1\conf\wrapper.conf`

- SAS Managed Servers

The start-up configuration options are located in the `server.xml` file.

- SASServer3

`C:\SAS\Config\Lev1\Web\WebAppServer\SASServer3_1\conf\directory`.

- SASServer4

`C:\SAS\Config\Lev1\Web\WebAppServer\SASServer4_1\conf\directory`.

---

## Connecting to SAS Server3

To configure a connection to the ODCS instance on SAS Server3, complete the following steps:

- 1 In the `server.xml` file, change the value of the `bind` option in the JMX listener statement from the IP address of the local loopback interface (`bind="127.0.0.1"`) to the host name of the machine hosting SAS Server3 (`bind="hostname"`).

- 2 In the ODCS `wrapper.conf` file, enable support of external query processors by setting the value of the following statement to `false`:

```
-Dodcs.perform.writeback.queries.on.internal.qp=false
```

By default, the ODCS instance in SAS Server3 attempts to use only the internal query processor (`true`).

- 3 In the `fmqp.ini` file, point the query processor to the dispatcher in the ODCS instance in SAS Server3. To point the query processor to the dispatcher, set the dispatcher host name to the name of the machine hosting SAS Server3 in the following statement:

```
JavaArgs_13=-Dodcs.dispatcher.hosthostname
```

**Note:** The value that you specify for `hostname` should match the host name that you defined in the `bind` statement in the SAS Server3 `server.xml` file.

---

## Connecting to SAS Server4

To configure a connection to SAS Server4, complete the following steps:

- 1 In the SAS Server4 `server.xml` file, change the value of the `bind` option in the JMX listener statement from the IP address of the local loopback interface (`bind="127.0.0.1"`) to the host name of the machine hosting SAS Server4 (`bind="hostname"`).

- 2 In the query processor `fmqp.ini` file, make the following changes:

- a Indicate that the query processor is connecting to a read-only server by changing the value of the following statement to `true`:

```
JavaArgs_21=-Dodcs.readonly.server=true
```

The default value is `false`.

- b Point the query processor to the dispatcher in the ODCS instance in SAS Server4. To point the query processor to the dispatcher, set the dispatcher host name to the name of the machine hosting SAS Server4 in the following statement:

```
JavaArgs_13=-Dodcs.dispatcher.hosthostname
```

**Note:** The value that you specify for *hostname* should match the host name that you defined in the bind statement in the SASServer4 server.xml file.

---

## Starting the Query Processors

When a query processor is started, it checks to see whether the ODCS instance to which it is connected is running. If the ODCS instance is running, the query processor connects to the ODCS dispatcher and waits for it to send it jobs to process. If the ODCS instance is not running, the query processor waits until the ODCS instance starts and then connects to the dispatcher. When the ODCS instance is shut down, all of the query processors that are connected to it shut down as well.

To start a query processor, run the following executable:

```
fmqp_console.exe
```

The fmqp\_console.exe executable is located in the following directory:

```
C:\Program Files\SASHome\SASFinancialManagementQueryProcessor
\5.5
```

---

## Configuring Optional ODCS Parameters

The ODCS server is the managed server on which an ODCS instance is running (SASServer3 and SASServer4). The ODCS server acts as the dispatcher. When you start the server, you can pass it any of the optional ODCS configurations that are listed in the table below.

To pass optional configurations, use the *-Doption=value* syntax.

**Table 4.2** ODCS Server Options

Option	Description
odcs.dispatcher.port	TCP/IP port through which the query processors make the bootstrap contact. The default port number is 9876.
odcs.dispatcher.passkey	Password key handshake between the query processor and the dispatcher. If the passkey does not match, then the query processor is not allowed to connect to the dispatcher to run queries. The passkey must be specified by both the dispatcher and the query processor. The following example passes this argument to the command lines of both the ODCS instance and the query processor.  -Dodcs.dispatcher.passkey=mysecretpassword The default value for the passkey is <b>passkey</b> .

---

Option	Description
<code>odcs.dispatcher.ipfilter</code>	List of IP addresses, separated by commas, of machines that are allowed to connect. If you specify such a list and a query processor tries to connect to an IP address that is not in the list, then the connection is rejected.  There is no default.
<code>odcs.queryprocessor.reattach</code>	If this value is set to <code>false</code> (the default), then the query processor shuts down when the ODCS dispatcher stops running. If the value is <code>true</code> , then the query processor waits for this dispatcher to start again and reattaches to the dispatcher immediately.



## 5

## Implementing High Availability Support

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---

### Overview

This chapter describes the following topics:

- reviewing the SAS Financial Management implementation of High Availability support
- implementing high availability support

For detailed information about high availability support on a SAS Web Application Server, see the *SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide*

---

### Reviewing the SAS Financial Management High Availability Support

A high availability configuration ensures that server failures do not significantly impact users. Without a high availability configuration, if a web server becomes unavailable for any reason, the SAS Financial Management middle-tier must be restarted. Restarting web application servers, which can result in significant downtimes depending on the size of the data and metadata or various controls for automatically loading fact caches at start-up.

To alleviate the issues of service outages, SAS Financial Management leverages the standby and failover support provided by the SAS Web Server to

implement a high availability configuration. High availability is a traffic balancing configuration in which two instances of a SAS Web Server are redundantly configured in a primary server and standby server relationship. The standby server accepts traffic only when the connection to the primary server fails. When the connection to the primary server is restored, traffic is automatically rerouted back to the primary server.

The SAS Financial Management High Availability support consists of the primary server (SASServer3) and a standby server (SASServer3 or SASServer4).

---

## Implementing High Availability Support

### High Availability Requirements for SAS Financial Management

When implementing High Availability support for SAS Financial Management, you must complete the following:

- manually update the proxy balancer configurations for SASServer3 and SASServer4
- redundantly configure the servers that are a part of the High Availability implementation. The web.xml file contains the basic configuration for enabling and controlling standby and failover for SAS Financial Management. The web.xml file exists at the following locations:
  - SASServer3—..SAS\Config\Lev1\Web\WebAppServer\SASServer3\_1\sas\_webapps\sas.financialmanagement.war\WEB-INF\web.xml
  - SASServer4—..SAS\Config\Lev1\Web\WebAppServer\SASServer4\_1\sas\_webapps\sas.solutionsodcs.war\WEB-INF\web.xml

### The Proxy Balancer Configuration

To enable the High Availability (standby and failover) support provided by the SAS Web Server, you must manually edit proxy balancer configurations for SASServer3 and SASServer4 in the sas.conf file (SAS-configuration-directory\Levn\Web\WebServer\conf\sas.conf). Specifically, you must add the `status=+H` parameter to the BalancerMember directive of the standby server and then restart the server.

Once the server is restarted, the SAS Web Server routes all traffic to the primary server (the server without the `status=+H` parameter configuration). If the connection to the primary server fails, the standby server (the server with the `status=+H` parameter configuration) becomes active and traffic is sent to the standby server. When the connection to the primary server is reestablished, traffic is sent to the primary server and the standby server once again becomes inactive.

The following is an example of the Proxy Balancer configuration for SASServer3:

```
...
<Proxy balancer: //<SAS_Web_Server_Cluster3>
```



```

BalancerMember https://myhost.example.com:8280 route=<route>_SASServer3_1
BalancerMember https://myhost.example.com:8281 route=<route>_SASServer3_2 status=+H
ProxySet scolonpathdelim=on stickysession=<routeID>_Cluster3

```

The following is an example of the Proxy Balancer configuration for SASServer4:

```

...
<Proxy balancer: //<SAS_Web_Server_Cluster4>
  BalancerMember https://myhost.example.com:8380 route=<route>_SASServer4_1
  BalancerMember https://myhost.example.com:8381 route=<route>_SASServer4_2 status=+H
  ProxySet scolonpathdelim=on stickysession=<routeID>_Cluster4

```

## The Primary Server Configuration

When High Availability is enabled, the configuration of the primary server (SASServer3), should be similar to the following example:

```

<init-param>
  <param-name>fmsys.fm.ha.system</param-name>
  <param-value>>true</param-value>
</init-param>
<init-param>
  <param-name>fmsys.fm.ha.standby</param-name>
  <param-value>>false</param-value>
</init-param>
<init-param>
  <param-name>fmsys.fm.server</param-name>
  <param-value>3</param-value>
</init-param>
<init-param>
  <param-name>fmsys.fm.ha.heartbeat.multiplier</param-name>
  <param-value>1</param-value>
</init-param>
<init-param>
  <param-name>fmsys.fm.ha.shutdown.timeout</param-name>
  <param-value>5</param-value>
</init-param>

```

Where:

- `fmsys.fm.ha.system`—indicates whether the server is part of a high availability configuration. Possible values are `true` and `false`. The default is `false`.
- `fmsys.fm.ha.standby`—indicates whether the server functions as a standby server in the high availability configuration. Possible values are `true` and `false`. The default is `false`.
- `fmsys.fm.server`—identifies the SAS managed server. Possible values are 3 or 4.

**Note:** Do not change the value for this parameter.

- `fmsys.fm.ha.heartbeat.multiplier`—specifies the interval, in seconds, at which the primary server and secondary server maintain and monitor activity. Possible values are 1 (5 seconds), 2 (10 seconds), and 3 (15 seconds). The default interval for the primary server is 1.

These default values are the minimum interval specifications and you only can change the values by updating the heartbeat multiplier that is associated with the specific server.

For example, to increase the heartbeat monitor interval to 30 seconds, set the heartbeat multiplier to 3 on the dedicated standby server. Likewise, to extend the heartbeat generation interval to 15 seconds, set the heartbeat multiplier to 3 on the dedicated primary server. Typically, you should tune (increase) the multiplier on the standby server, rather than the multiplier on the primary server. However, there might be cases where you must tune both server configurations.

Depending on the loading (with respect to processor or memory consumption) of the SAS Financial Management system, SASServer3 and SASServer4 heartbeat multipliers might differ. If the system is typically loaded with fact query operations, SASServer4 experiences a higher processing load than SASServer3, and might require larger monitoring multiplier values. If the system is loaded more with fact writes and metadata updates, then SASServer3 experiences a higher processing load and might require larger multiplier values.

**Note:** To properly tune the multiplier values, a system administrator must account for and understand the overall expected usage of the system.

**CAUTION!** The multiplier value on the standby server must always be greater than or equal to the multiplier on the primary server. If this is not the case, unpredictable and possibly undesirable failover behavior might result. The multiplier values are not automatically correlated between the primary and standby server and must be managed manually .

- `fmsys.fm.ha.shutdown.timeout`—specifies the amount of time, in seconds, before a server is shutdown after the loss of activity that is detected on that server. The default is 5 seconds.

## The Standby Server

The configuration for the standby server on SASServer3 typically differs only in the `fmsys.fm.ha.standby` setting, as shown in the following configuration example:

```
<init-param>
  <param-name>fmsys.fm.ha.standby</param-name>
  <param-value>true</param-value>
</init-param>
```

## Primary Server and Standby Server Configuration on a Different SAS Server

The primary and standby configurations for SASServer4 are typically identical to those that are used for SASServer3, with the exception of the `fmsys.fm.server` setting. This setting should not be changed from the default value in the `web.xml` files of either SASServer3 or SASServer4, as shown in the following example:

```
<init-param>  
  <param-name>fmsys.fm.server</param-name>  
  <param-value>4</param-value>  
</init-param>
```



## 6

## Optimizing Automatic Allocation

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### Overview

This chapter describes the following topics:

- overview of the automatic allocation demand planning behavior
- enabling the automatic allocation optional demand planning

### Reviewing the Automatic Allocation Demand Planning Behavior

By default, the SAS Financial Management automatic allocation performs an FM query of weights and target crossings. When there are a large number of crossings (that is, millions), the process of automatic allocation might take several minutes.

Certain SAS Financial Management scenarios; for example, in a Demand-Driven Planning and Optimization scenario, you do not need all of the functionality that is supported by the automatic allocation FM query. For these types of sites, customers can optimize automatic allocation by using an optional facts-based behavior called *Demand Planning*.

The automatic allocation Demand Planning behavior enables the FM query to bypass areas that are not required by the site. The Demand Planning behavior scans relevant crossings for facts before automatic allocation is performed. This behavior significantly reduces the size and performance of the automatic allocation execution.

**Note:** When configured, the Demand Planning behavior is used when automatic allocation is enabled. In addition, the behavior is used when hold rules are enabled even if automatic allocation is not enabled. For more information about automatic allocation, see the *SAS Financial Management: User's Guide*.

---

## Enabling the Automatic Allocation Optional Demand Planning

Before implementing the Demand Planning behavior, note the following requirements and restrictions:

- the Demand Planning behavior can be used only when the following elements do not exist in the weight or target crossings:
  - formulas
  - intercompany eliminations
  - account behavior other than Flow (account types Asset, Liability, Equity, Statistical Balance, Statistical, CTA, and Retained Earnings)

**Note:** You can use the items above in the model, but you cannot use them in the weight or target crossings of the automatic allocation.

- automatic allocation is used when one or both of the following options are enabled for a data-entry table:
  - **Allocate from Parent members other than Time using predefined weights**
  - **Allow Hold Rules**

To enable the automatic allocation Demand Planning behavior, complete the following steps:

- 1 Add the following argument to the JVM options for SASServer3 (the managed server on which SAS Financial Management is running):  
`-Ddemand.planning=true`
- 2 Restart SASServer3 and the other SAS Financial Management managed servers.



## Configuring Log Files

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---

### Overview

This chapter describes the following topics:

- log file locations and configuration files
- configuring a log file for SAS Financial Management Reports
- configuring log files for client applications
- temporary files for the Microsoft Excel Add-In
- additional log files

---

### About Log File Locations and Configuration Files

The log files for SAS Financial Management and other applications are configured using log4j.xml files in the *SAS-config-dir*\Lev1\Web\Common\LogConfig directory.

---

## Configuring a Log File for the SAS Financial Management Reports

On the data tier, you can configure a log file to be written when a stored process uses the `Javaobj` interface. `Javaobj` is a mechanism that is similar to Java Native Interface (JNI) for instantiating Java classes and accessing their methods and fields. This mechanism is used by the standard reports that are shipped with SAS Financial Management.

You can also use this log file to capture output from SAS Data Integration Studio jobs that invoke SAS code.

To log this output, complete the following steps:

- 1 Create a `log4j.properties` file that is similar to the following:

```
# Hierarchy: DEBUG < INFO < WARN < ERROR < FATAL
log4j.appender.A1=org.apache.log4j.FileAppender
log4j.appender.A1.layout=org.apache.log4j.PatternLayout
log4j.appender.A1.layout.ConversionPattern=%d{MM-dd HH:mm:ss,SSS} [%t] [%-5p%c{1}] - %m%n

# Modify the path to the log file as needed
log4j.appender.A1.File=c:/tmp/logs/javaapi.log
log4j.appender.A1.Append=False
log4j.rootLogger=INFO, A1
log4j.rootCategory=INFO, A1

# for FM API logging, uncomment this line
# log4j.category.com.sas.solutions.finance.api=DEBUG

# for SAS Data Integration Studio logging, uncomment this line
# log4j.category.com.sas.solutions=DEBUG
log4j.category.com.sas.solutions.finance=DEBUG
```

- 2 Open the `sasv9_usermods.cfg` file, and add the following line to the `JREOPTIONS` :

```
-Dlog4j.configuration=file:/c:/log4j.properties
```

- The configuration file is located in the `SAS-config-dir\Lev1\SASApp` directory.
- Be sure to add the option within the parentheses that specify the JRE options. Modify the path to the `log4j.properties` file as needed.

---

## Configuring Log Files for Client Applications

SAS Financial Management Studio writes log messages to a file called `client.log`, in a location that is relative to the Java system property `user.home`.



This property represents the user's home directory (in this case, the user who is logged on to Windows).

If you are running Windows Vista and logging is not working correctly, edit the application's INI file and set `user.home` to the following:

```
-Duser.home=C:\Users\userid  
-data  
@user.home\SAS\FinancialManagementStudio\5.5
```

where `userid` represents the Windows user.

For information about logging from SAS Data Integration Studio, see “Configuring a Log File for the SAS Financial Management Reports” on page 52.

For information about configuring a log file for the Excel add-in, see “The SAS Financial Management Add-In API for Microsoft Excel” in the *SAS Financial Management: Customization Guide*.

---

## Temporary Files for the Microsoft Excel Add-In

The SAS Financial Management Add-In for Microsoft Excel saves temporary files in the `My SAS Files\FMTempFiles` directory relative to the Excel default save location.

**Note:** Do not delete temporary files from this directory while Microsoft Excel is running.

---

## Additional Log Files

- For information about log files for other web applications, such as SAS Web Report Studio, see the *SAS Intelligence Platform: Web Application Administration Guide*.
- For information about log files that are generated by the SAS servers, see “Enabling Server Logging” in the *SAS Intelligence Platform: System Administration Guide*.

Both books are available at [support.sas.com/94administration](http://support.sas.com/94administration).



# 8

## Configuring the Environment File

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---

### Overview

This chapter describes the following topics:

- about the SAS environment file
- customizing the SAS environment file for multiple environments

---

### About the SAS Environment File

A *SAS environment file* defines the available set of SAS environments for SAS client applications (for example, SAS Financial Management Studio and SAS Financial Management Add-In for Microsoft Excel). SAS Financial Management desktop clients use one environment file. The SAS environment file enables the SAS Financial Management client applications to retrieve server information, including a list of services available in an environment.

During the SAS Financial Management installation process, you are prompted to supply the URL for the SAS Environment file. By default, the installation process automatically deploys the SAS Environment file (sas-environment.xml) file to `http://server.domain.com/sas/sas-environment.xml` where *server* is the name of the middle-tier server to which you want to connect. The port defaults to 7980.

Your site might have requirements that SAS Financial Management Studio and SAS Financial Management Add-In for Microsoft Excel interact with separate development, test, and production environments. When multiple environments are required, you can customize and deploy the SAS Environment file as needed.

**Note:** Before customizing a SAS Environment file, we recommend that you create a backup copy.

For information about customizing the SAS Environment file for multiple environments, see “Customizing the SAS Environment File for Multiple Environments ” on page 56.

If any of the following conditions is true at your site, the SAS Environment file must be located in a central location:

- SAS Financial Management is used in multiple environments, such as development, test, and production environments, and you want your users to be able to select from a list of available environments.
- Secure Sockets Layer (SSL) is configured for SAS Financial Management.
- Web authentication is configured for SAS Financial Management. (In this case, the central location must be an HTTP server.)

When you log on SAS Financial Management Studio, you are asked to select a SAS environment in which to run the application. The **SAS environment** drop-down menu contains a list of available environments. You select the environment and connect to the middle tier for that environment.

For information about specifying values in the SAS Environment file during installation, see the *SAS Financial Management: Installation and Configuration Guide*.

For detailed information about middle-tier administration, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*.

---

## Customizing the SAS Environment File for Multiple Environments

SAS Financial Management Studio and the SAS Financial Management Add-In for Microsoft Excel use the `sas-environment.xml` to retrieve server information, including a list of services available in an environment. By default, the installation process deploys the SAS Environment file to `http://server.domain.com/sas/sas-environment.xml` where `server` is the name of the middle-tier server to which you want to connect. The port defaults to 7980.

If multiple environments are needed for end users, you can modify the SAS Environment file to include information about each of the available environments.

The following is an example of the `sas-environment` file that is configured for multiple environments:

```
<?xml version="1.0" encoding="UTF-8"?>
<environments xmlns="http://www.sas.com/xml/schema/sas-environments-9.4"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.sas.com/xml/schema/sas-environments-9.4
  http://www.sas.com/xml/schema/sas-environments-9.4/sas-environments-9.4.xsd"
  version="2.0">
  <environment name="Red" default="false" platform-version="9.4">
    <desc>test server Red for SAS Financial Management</desc>
    <service-registry>http://red.example.com:7980/SASWIPClientAccess/remote/ServiceRegistry</service-registry>
    <service-registry interface-type="soap">http://red.example.com:7980/SASWIPSoapServices/services/ServiceRegistry</service-registry>
    <service-registry interface-type="rest">http://red.example.com:7980/SASWIPClientAccess/rest/</service-registry>
  </environment>
  <environment name="White" default="true" platform-version="9.4">
    <desc>test server White for SAS Financial Management</desc>
    <service-registry>http://white.example.com:7980/SASWIPClientAccess/remote/ServiceRegistry</service-registry>
    <service-registry interface-type="soap">http://white.example.com:7980/SASWIPSoapServices/services/ServiceRegistry</service-registry>
    <service-registry interface-type="rest">http://white.example.com:7980/SASWIPClientAccess/rest/</service-registry>
  </environment>
  <environment name="Blue" default="true" platform-version="9.4">
    <desc>test server Blue for SAS Financial Management</desc>
    <service-registry>http://blue.example.com:80/SASWIPClientAccess/remote/ServiceRegistry</service-registry>
    <service-registry interface-type="soap">http://blue.example.com:80/SASWIPSoapServices/services/ServiceRegistry</service-registry>
    <service-registry interface-type="rest">http://blue.example.com:80/SASWIPClientAccess/rest/</service-registry>
  </environment>
</environments>
```

When customizing the SAS environment file, note the following:

- The service registry that is specified in the file enables desktop client applications to determine the location of required services on the middle tier. It also enables the applications to obtain a list of services available in the environment. Note that this is used by SAS Web Server, and the configuration in the file refers to the host name and port number of SAS Web Server.
- If SSL is configured at your site, specify the https protocol and the SSL port number for the service registry.
- If your site has multilingual users, you can configure the SAS Environment file to include localized descriptions.

For more information about the SAS environment file, including a description of each of the elements that you can use in the `sas.environment.xml` file, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*.



# Appendix 1

## Port Usage

The servers in the SAS Intelligence Platform communicate with clients and other servers using TCP/IP. Each server listens on a particular port or ports for incoming requests. During installation, the SAS Deployment Wizard enables you to either accept the default ports or to specify different port numbers for some servers.

For a list of default ports, see the *SAS Intelligence Platform: Installation and Configuration Guide*.

In addition, the following default port numbers apply to SAS Financial Management:

*Table A1.1 Default Port Numbers and Descriptions*

Port Number	Description
25	SMTP mail, Port used by mail host or Simple Mail Transfer Protocol (SMTP). Used to send administrative email notices and end-user alert notifications.
9632	SAS Financial Management Database server port. Port used for all Java Database Connectivity (JDBC) access from the managed servers to the embedded middle-tier server called the SAS Web Application Server server. SAS/ACCESS to the SAS Web Application Server also uses this port.

**Note:** Your site might use different port numbers than the defaults. For a complete list, see the pre-install checklist for your site.





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