SAS® Intelligence Platform
9.1.3 to 9.2 Migration Guide

Contents

What's New

Overview

The *SAS Intelligence Platform: 9.1.3 to 9.2 Migration Guide* describes the migration approach for upgrading your SAS Intelligence Platform 9.1.3 content and configuration to SAS 9.2. It describes the various phases of design, execution, and validation of your migration using the SAS migration tools.

This document contains new material about changes to the automated migration tools in the second maintenance release for SAS 9.2.

Data Explorations Are Now Maintained as Reports

In the November 2010 release of SAS 9.2, (which contains the release of SAS Web Report Studio 4.3), data explorations are now maintained as reports. When you upgrade or migrate, the SAS deployment tools automatically convert each bookmark in the data exploration into a report that you can view and edit using SAS Web Report Studio 4.3.

For more information, see "Manually Convert Data Explorations to Reports" on page 110.

General Enhancements

☐ The ExportCubes and ImportCubes batch tools are new. These tools provide a simplified method of promoting OLAP cubes from SAS 9.1.3 to SAS 9.2.

☐ New product-specific migration utility properties have been introduced for SAS Marketing Automation and SAS Marketing Optimization.

☐ Support is provided for changing ports and host names.

☐ In the third maintenance release for SAS 9.2, support is provided for the following:

☐ migrating within families of operating systems

☐ using SAS internal accounts

☐ In the November 2010 release of SAS 9.2, the following major documentation enhancements were made:

　☐ manually converting data explorations to SAS Web Report Studio reports

　☐ manually changing ports
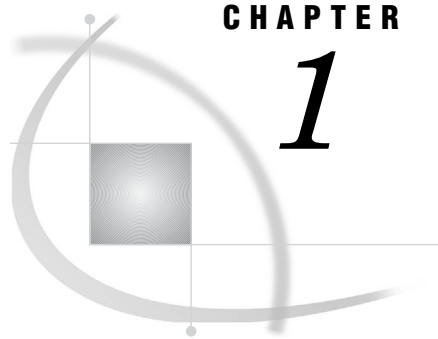
CHAPTER

1

Overview of Migrating Content to SAS 9.2

Approaches for Upgrading to SAS 9.2

You have several approaches for upgrading to SAS 9.2. You can do one of the following:

- Promote—install SAS 9.2 and upgrade *portions* of your current SAS content.

- Migrate—install SAS 9.2 and upgrade *all* your current SAS content.

- Use a combination of migration and promotion.

The terms "promotion" and "migration" are explained in the following sections. This subject is discussed in more depth in "Choosing an Approach for Upgrading to SAS 9.2" on page 8.

What is Promotion?

Promotion is the movement of selected content from a source system to an already configured target system. Sometimes called "partial promotion," promotion of metadata content is typically used to support movement across development, test, and production environments.

Promotion capabilities in SAS 9.2 are embedded within the SAS folder structure. The ability of SAS 9.2 to import SAS 9.1.3 content means that partial promotion can be leveraged as part of a strategy for upgrading content from SAS 9.1.3 to SAS 9.2.

Some important enhancements have been made to support promotion in SAS 9.2. These enhancements include the ability to do the following:

□ promote more types of metadata objects

□ target particular metadata objects to promote incremental changes

□ schedule batch promotions

Promotion supports the following:

□ movement of selected content

□ cross-platform movement of content

Promotion does not support the following:

□ some types of SAS content

□ configuration (either in metadata or in files)

Promotion Tools

Partial promotion is used in an ongoing manner in support of project-level changes over time. The Export SAS Package and Import SAS Package wizards support partial promotion. For more information, see "Using the Promotion Tools" in the *SAS Intelligence Platform: System Administration Guide*.

What Can Be Promoted?

The following list enumerates the type of SAS 9.1.3 content that you can migrate using the promotion tools. (In SAS 9.2, a larger number of object types can be imported and exported.)

□ data explorations

□ documents

□ external files

□ folders

□ generated transformations

□ information maps

□ job flows

- jobs
- libraries
- mining results
- notes
- reports
- scheduled jobs
- stored processes
- tables
- portal content

For more information, see "Promoting Portal Content from SAS 9.1.3 to SAS 9.2" in the *SAS Intelligence Platform: Web Application Administration Guide*.

Special Considerations for Promoting Metadata From SAS 9.1.3 to SAS 9.2

About Promoting Metadata From SAS 9.1.3 to SAS 9.2

You can export a package from a SAS 9.1.3 metadata server and import it to a SAS 9.2 metadata server. This feature is useful in the following situations:

- You are upgrading from SAS 9.1.3 to SAS 9.2, but you chose not to use the SAS Migration Utility.
- You are running SAS 9.1.3 and SAS 9.2 in parallel, and you want to update your SAS 9.2 system with new content that you created in SAS 9.1.3.

The following topics outline the special considerations for promoting metadata from SAS 9.1.3 to SAS 9.2.

Types of Objects That Can Be Promoted from SAS 9.1.3 to SAS 9.2

In SAS 9.1.3, only the following types of objects can be exported: data explorations, deployed jobs, documents, external files, folders, generated transformations, information maps, jobs, jobs flows, libraries, mining results, notes, reports, stored processes, and tables. (In SAS 9.2, a larger number of object types can be imported and exported.)

Ensuring the Correct Software Version When Exporting from SAS 9.1.3

If you use BI Manager in SAS Management Console to perform the export, then the SAS 9.1.3 environment must have SAS Foundation Services 1.4. To check for this version:

- On Windows, go to **Settings ▶ Control Panel ▶ Add or Remove Programs** and find the entry for SAS Foundation Services 1.4.
- On UNIX machines, go the home directory of the user who maintains the SAS installation. Enter the following command:

```
more vpd.properties | grep Foundation
```

The following string should be present in the output that is displayed:

```
SAS Foundation Services 1.4
```

If you use SAS Data Integration Studio to perform the export, then you must have SAS Data Integration Studio 3.4. To check the version, click **Help ▶ About SAS Data Integration Studio**, and make sure that `Version=3.4` is displayed in the window.

Moving SAS 9.1.3 Tables and Libraries to Folders

If you use SAS Management Console to export tables and libraries from a SAS 9.1.3 system, the tables and libraries must be in folders. To move them to folders, right-click the `BI Manager` node and select `Collect Ungrouped Library Metadata`. BI Manager places pointers to the libraries and tables in a folder called `Shared Data`, from which you can perform the export.

Special Considerations for Promoting Prompts from SAS 9.1.3

When you import a prompt from a SAS 9.1.3 system, the following special considerations apply:

- □ The default values for multiple-value prompts are saved in reverse order.
- □ If the prompt's static (custom) list of values contains a row that is invalid in SAS 9.2 (for example, if a row contains blank or null unformatted values), then the row is deleted.
- □ If the prompt's static (custom) list of values contains duplicate formatted values, then each formatted value is appended with its corresponding unformatted value, which is enclosed in square brackets ([]).

Promoting OLAP Cubes from SAS 9.1.3

To promote OLAP cubes from SAS 9.1.3 to SAS 9.2, use the ExportCubes and ImportCubes batch tools. These tools are included in the second maintenance release for SAS 9.2. For detailed instructions, see "Importing and Exporting SAS OLAP Cubes" in the *SAS OLAP Server: User's Guide*.

If you have not installed the second maintenance release after SAS 9.2, then follow the instructions in SAS Usage Note 36842 to promote your OLAP cubes: `http://support.sas.com/kb/36/842.html`.

Converting Data Explorations That Have Been Promoted from SAS 9.1.3

In the November 2010 release of SAS 9.2, SAS Web OLAP Viewer is discontinued. After you have promoted your data explorations from SAS 9.1.3 to SAS 9.2, you can convert the bookmarks in your data explorations to SAS reports. The reports can then be viewed and edited using SAS Web Report Studio 4.3.

To ensure that the data explorations can be converted successfully, do the following when you promote them:

- □ Import the information maps on which the data explorations depend to the same path in which they were located in the SAS 9.1.3 environment.

  Or, if you choose to import the information maps to a different location, import the information maps first and then import the data explorations in a separate package. When you import the data explorations, make sure to specify the correct location for the information maps.
- □ Rebuild any OLAP cubes that the data explorations depend on.

To perform the conversion, follow the manual steps that are described in "Manually Convert Data Explorations to Reports" on page 110.

Promoting Portal Content from SAS 9.1.3

To promote portal pages, page templates, portlet instances, and the portal's application and user permissions trees from SAS 9.1.3, use the content promotion tool for SAS Information Delivery Portal 4.3. For more information, see "Promoting Portal Content from SAS 9.1.3 to SAS 9.2" in the *SAS Intelligence Platform: Web Application Administration Guide*.

Using the Batch Import Tool to Import Metadata from SAS 9.1.3

You can use the batch import and export tools only with a SAS 9.2 metadata server. You can use the batch import tool to import a package that was created in SAS 9.1.3. For details, see "Tool to Import a Package that Was Created in SAS 9.1.3" in the *SAS Intelligence Platform: System Administration Guide*.

CAUTION:
Use of the batch import tool to import SAS 9.1.3 packages can result in a significant number of broken metadata associations, such as tables with no associated library, jobs with missing tables, transformations within jobs with missing mappings, and expressions within mappings with missing columns. As a best practice, you should use the batch import tool to import a SAS 9.1.3 package only if the resources associated with the imported objects have the same values in the two environments. Otherwise, it is strongly recommended that you use the Import SAS Package wizard in either SAS Management Console or SAS Data Integration Studio. △

What is Migration?

Migration is a process in which your SAS content and configuration from an earlier SAS release is upgraded to run in a later SAS release. When performed successfully, migration attempts to preserve as much of your current content and configuration as possible, reduce the number of manual migration tasks, and minimize system downtime.

This document discusses migrating only from SAS 9.1.3 to SAS 9.2.

Comparing Promotion and Migration

The following table summarizes the differences between promotion and migration:

Table 1.1 Migration and Promotion Comparison

	Migration	**Promotion**
What is acted on?	A SAS system (content and configuration)	Selected SAS content (content only)
When is it performed?	During SAS 9.2 deployment One time only	After SAS 9.2 deployment Repeatable

	Migration	**Promotion**
Topology constraints	Same hardware grouping	No constraints
Platform constraints	Same operating system family[1]	No constraints
SAS versions supported	SAS 9.1.3 SP4 and later	SAS 9.1.3 SP4 and later

1   The SAS automated migration tools support migrating within families of operating systems. You can migrate within the Windows family (for example, Windows 32–bit to Windows 64–bit) or migrate within the UNIX family (for example, Solaris to HP-UX).

Migration Tools

SAS provides tools to automate most of the tasks necessary to migrate to SAS 9.2. These tools are:

□ SAS Migration Utility

□ SAS Deployment Wizard

The SAS Migration Utility is a cross-platform framework and set of SAS product extensions whose primary purpose is to output a package of SAS 9.1.3 content and configuration that the SAS Deployment Wizard will use when it installs and configures SAS 9.2.

The SAS Deployment Wizard is a cross-platform utility that installs and initially configures SAS 9.2 products. Using a SAS installation data file and a deployment plan for its initial input, the wizard is designed to prompt the customer for all the remaining input at the start of the session so that the customer does not have to monitor an entire deployment. During a migration, the wizard reads migration packages created by the SAS Migration Utility and upgrades SAS content and configuration to run in SAS 9.2.

What Can Be Migrated?

The SAS automated migration tools migrate the following SAS 9.1.3 content and configuration that reside under the SAS configuration directory (for example, **/SAS/ Config/Lev1**):

□ content stored in metadata

(such as libraries, reports, jobs, information maps, data explorations, and so on)

□ content in the WebDAV repository

(such as report definitions and documents)

□ configuration stored in metadata

(such as for servers, users, groups, ACTs, and so on)

□ certain server configuration files

(such as adminusers.txt and trustedusers.txt)

□ Web application configuration

(such as deployment properties and configuration files)

The SAS automated migration tools do *not* migrate the following SAS 9.1.3 content and configuration:

- □ tables
- □ deployed jobs
- □ stored processes

    For more information, see "Migrating Content Stored Outside the SAS Configuration Directory" on page 104.
- □ certain SAS application server configuration files

    autoexec files (appserver_autoexec.sas) and sasv9.cfg files are not migrated. For more information, see "Update SAS Server Configuration Files" on page 103.
- □ SAS middle-tier configuration information

    For more information, see "Review the SAS Middle-Tier Configuration" on page 113.
- □ custom portlet code

    For more information, see *Developing Portlets for the SAS Information Delivery Portal*.

High-Level SAS Migration Requirements

Migrating SAS 9.1.3 to SAS 9.2, requires the following:

- □ full system migration all at the same time.

    All your SAS 9.1.3 content and configuration is migrated to SAS 9.2 at the same time.
- □ the same topology.

    Your SAS architecture must continue to be distributed across physical machines in the same fashion. When migrating to SAS 9.2, you must continue to group your SAS components on the same physical machine (or a corresponding machine) as you did in SAS 9.1.3.

    Note: You can add new SAS 9.2 products during a migration. Make sure the new product components are contained in your SAS order and deployment plan file. △
- □ the same middle tier.

    Your SAS middle tier must stay essentially the same. However, you can change your Web application server vendor. In fact, when you migrate, the SAS Deployment Wizard makes the following replacements:

    - □ The JBoss Application Server replaces Apache Tomcat.
    - □ The SAS Content Server replaces Xythos and Apache HTTP WebDAV servers.

- □ the same operating system family.

    Your SAS 9.2 components must run on the same operating system family as they did in SAS 9.1.3.

    You can migrate within the Windows family (for example, Windows 32–bit to Windows 64–bit) or migrate within the UNIX family (for example, Solaris to HP-UX).

    The SAS Migration Utility uses the CPORT and CIMPORT procedures to change file formats when migrating within operating system families. For more information, see "The MIGRATE Procedure," "The CPORT Procedure," and "The CIMPORT Procedure" in the *Base SAS Procedures Guide*.

For more information about post-migration tasks when migrating from one version of an operating system to another, see "Overview of Performing Post-migration Tasks" on page 94.

Note: On UNIX, SAS 9.2 should be installed on a file system that supports large files. (Files that are greater than two GB in size.) △

□ baseline SAS maintenance level: 9.1.3, SP4

Xythos must be at 4.0.48 or later.

For additional information about specific SAS offerings, refer to: `http://support.sas.com/migration/utilitynotes`.

Later in this document, you will be instructed to create a migration analysis report for each tier of your SAS 9.1.3 deployment. The major purpose of this report is to help you to identify those SAS components that must be upgraded before you can migrate to SAS 9.2. For more information, see "Inventorying Your Current SAS Deployment" on page 14.

Choosing an Approach for Upgrading to SAS 9.2

You should review your goals for upgrading and develop an upgrade plan that best fits your enterprise environment. Selecting the approach might require trade-offs. You will have to balance the benefits and challenges of the upgrade options with your goals and priorities. Below is a discussion of several approaches for upgrading to SAS 9.2.

□ Promote—install SAS 9.2 and upgrade *portions* of your current SAS content.

Using the Export and Import SAS Package wizards provides you with a great deal of flexibility. Promotion enables you to move gradually to SAS 9.2 if you have additional hardware on which to run SAS 9.2 separate from SAS 9.1.3. Consider using promotion to upgrade to SAS 9.2 when you:

□ want to change your SAS topology or operating systems
□ have made minimal configuration changes to your SAS 9.1.3 deployment
□ want to move only selected SAS 9.1.3 content

□ Migrate—install SAS 9.2 and upgrade *all* your current SAS content.

Using the SAS Migration Utility with the SAS Deployment Wizard to migrate to SAS 9.2 has some definite advantages, as you will achieve the most automation as possible using this method. Consider using migration to upgrade to SAS 9.2 when you:

□ want to retain your SAS topology
□ have made significant configuration changes to your SAS 9.1.3 deployment (such as customizations to users and groups, ACTs, or server configurations)
□ want to move all SAS 9.1.3 content

□ Use a combination of migration and promotion.

Migration and promotion are not mutually exclusive. You might choose to migrate to a 9.2 deployment and run it in parallel with 9.1.3 and periodically refresh the 9.2 content through partial promotion. This enables you to continue to use SAS 9.1.3 in production while you validate your migrated SAS content and become familiar with the new features of SAS 9.2.

What Is Covered in This Document?

This document describes the migration approach for upgrading your SAS 9.1.3 content and configuration to SAS 9.2. It describes the various phases of design, execution, and validation of your migration using the SAS migration tools.

For more information about promotion, see "Using the Promotion Tools" in *SAS Intelligence Platform: System Administration Guide*.

Migrating to SAS Enterprise Miner 6.2

If you are migrating to SAS Enterprise Miner 6.2, then you should also consult the *SAS Enterprise Miner: Migration Guide* available at **http://support.sas.com/ documentation/onlinedoc/miner/em61/migrate.pdf**.

Migrating SAS Content to SAS 9.2

A High-Level View of Migration

The following list summarizes the steps required to install SAS 9.2 and migrate SAS 9.1.3 content on a single machine or in a distributed, heterogeneous environment:

1. Design your migration.

2. Perform pre-migration tasks.

3. Install SAS 9.2 and migrate your SAS 9.1.3 content.

4. Perform post-migration tasks.

5. Validate your migration.

The sections that follow provide brief descriptions of each of these tasks. Subsequent chapters in the guide provide the step-by-step instructions that you will need to perform them.

For SAS solutions, see the product's documentation for additional information about migration and promotion.

Step 1: Design Your Migration

Designing your migration means reviewing the SAS 9.2 requirements (hardware, software, and migration) against your current SAS 9.1.3 deployment, and developing a plan for how to get your SAS 9.1.3 content—your data and configuration—integrated into a SAS 9.2 system.

One of the migration tools that SAS provides, the SAS Migration Utility, generates a migration analysis report. Using this report, you can analyze every machine in your SAS 9.1.3 deployment to answer these crucial design questions:

□ Which SAS 9.1.3 products reside on each machine?

□ Are all my SAS 9.1.3 products at the correct maintenance level?

□ What SAS content will I have to manually migrate?

□ Should I use internal SAS accounts where I can?

Step 2: Perform Pre-migration Tasks

Looking at your migration design, you might have identified some of your SAS 9.1.3 products that require maintenance before you can migrate them. Also, some of your hardware might need to be upgraded or operating systems patched and third-party software updated.

During the pre-migration task phase, you will create a migration package that contains your SAS 9.1.3 data and configuration to use the SAS Migration Utility. The other major SAS migration tool, the SAS Deployment Wizard, uses your migration package as input to move your SAS 9.13 content successfully to SAS 9.2.

In addition to the SAS 9.1.3 migration package, the wizard also relies on the presence of another package—SAS Software Depot—that contains SAS 9.2 installation files. You create a SAS Software Depot when you download your SAS 9.2 order, or from removable media that you receive directly from SAS.

Step 3: Install SAS 9.2 and Migrate Your SAS Content

Step three is when you use the SAS Deployment Wizard to install SAS 9.2 and to migrate your SAS 9.1.3 content and configuration that you packaged using the SAS Migration Utility in step two.

Step 4: Perform Post-migration Tasks

Step four consists of performing manual tasks like running authorization differences reports and moving content that the migration utility did not migrate.

Step 5: Validate Your Migration

An important final step in migration is validating that your SAS 9.2 servers, clients, middle tier, and Web clients are functioning and can use migrated SAS 9.1.3 content.

For a discussion of functionality changes in SAS 9.2, see "Upgrading to SAS 9.2" in *Special Considerations for Customers Upgrading to SAS 9.2.*.

Accessibility Features in the SAS Intelligence Platform Products

For information about accessibility for any of the products mentioned in this book, see the documentation for that product. If you have questions or concerns about the accessibility of SAS products, send e-mail to accessibility@sas.com.
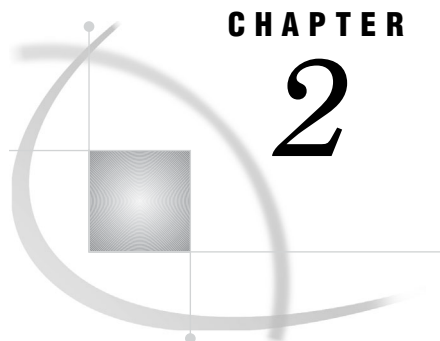
C H A P T E R

2

Designing Your Migration

Overview of Designing Your Migration

Designing your migration is the first of five steps required to install SAS 9.2 and migrate your SAS 9.1.3 content:

▶ 1. *Design your migration*

   2. Perform pre-migration tasks.

   3. Install SAS 9.2 and migrate your SAS 9.1.3 content.

   4. Perform post-migration tasks.

   5. Validate your migration.

Designing your migration means reviewing the SAS 9.2 requirements (hardware, software, and migration) against your current SAS 9.1.3 deployment, and developing a plan for how to get your SAS 9.1.3 content—your data and configuration—integrated into a SAS 9.2 system.

For a discussion of functionality changes in SAS 9.2, see "Upgrading to SAS 9.2" in *Special Considerations for Customers Upgrading to SAS 9.2.*.

For SAS solutions, see the product's documentation for additional information about migration and promotion.

One of the migration tools that SAS provides, the SAS Migration Utility, generates a migration analysis report. Using this report, you can analyze every machine in your SAS 9.1.3 deployment to answer these crucial design questions:

□ Which SAS 9.1.3 products reside on each machine?

Knowing exactly which products reside on which machines is essential for your SAS representative to know in order to provide you with the correct SAS 9.2 plan (required to install SAS 9.2).

□ Are all my SAS 9.1.3 products at the correct maintenance level?

All your SAS 9.1.3 products must be at the correct maintenance level in order for the SAS Migration Utility to generate a valid migration package for migrating to SAS 9.2.

At the end of the migration design phase, you will have accomplished the following:

Table 2.1 Migration Design Goals and Actions

Migration Design Goals	Actions
Understand the high-level SAS migration requirements.	Review "High-Level SAS Migration Requirements" on page 7.
	Decide the proper time for you to migrate to SAS 9.2.
Ensure that your hardware and third-party software meet the SAS 9.2 system requirements.	See "Assess Your Hardware and Third-Party Software" on page 13.
	Plan to address hardware and software gaps as necessary.
Choose whether to use internal SAS accounts	Review "Choose to Use SAS Internal Accounts" on page 13.
	You might have to inform your IT department that you need fewer operating system accounts for SAS 9.2.
Verify that your SAS 9.1.3 software meets the migration tools requirements.	Run a SAS migration analysis report.
	Bring all SAS 9.1.3 products into compliance by applying maintenance as necessary.
	For more information, see "Inventorying Your Current SAS Deployment" on page 14.
Consider how to migrate your middle tier.	Review "Middle-tier Considerations" on page 24.
	Decide whether to enable the SAS Deployment Wizard to automatically configure your Web application server. There are other considerations such as whether to add additional middle-tier machines.

Migration Design Goals	Actions
Obtain a SAS 9.2 deployment plan file.	Having a recent migration analysis report at hand, contact your SAS representative to obtain a valid SAS 9.2 plan file that represents your current SAS deployment.
Plan SAS user downtime at your site.	You will need to schedule a window of time when your SAS deployment is down in order to install and configure SAS 9.2 and migrate your SAS 9.1.3 content.

Review High-Level SAS Migration Requirements

Review the SAS migration requirements that are listed in "High-Level SAS Migration Requirements" on page 7.

If the SAS migration requirements are not in sync with your site's needs, consider the partial promotion alternative. For more information, see "Approaches for Upgrading to SAS 9.2" on page 1.

Assess Your Hardware and Third-Party Software

Part of designing your migration is to evaluate how your hardware and third-party software—operating systems, Web application servers, Java runtimes, and so on—match the requirements for SAS 9.2.

As a general rule, migration requires additional disk space equal to at least twice the amount of disk space that you currently use for your metadata repositories and WebDAV content. For example, if your SAS 9.1.3 metadata repositories and WebDAV content currently occupy 2GB of disk space, you will need at a minimum an additional 4GB of disk space to migrate to SAS 9.2.

Consult the following Web sites for the latest SAS 9.2 system requirements and any alert-level SAS Notes:

☐ SAS 9.2 system requirements:

http://support.sas.com/documentation/installcenter/92/documents/ index.html

☐ Alert-level SAS Notes:

http://support.sas.com/kb/?ct=51000

(Click "Search Problem Notes" in the left-hand navigation pane.)

Choose to Use SAS Internal Accounts

One of the enhancements in SAS 9.2 is that you need fewer operating system accounts (external accounts) to deploy SAS 9.2. You no longer have to maintain external headless accounts for the SAS Administrator (sasadm) and the SAS Trusted User (sastrust).

Instead, SAS gives you the option of using internal accounts for these two users. If you decide to use internal accounts, during the SAS Deployment Wizard phase of your migration, be sure to select the option **Use SAS internal accounts when appropriate** on the Deployment Accounts wizard page.
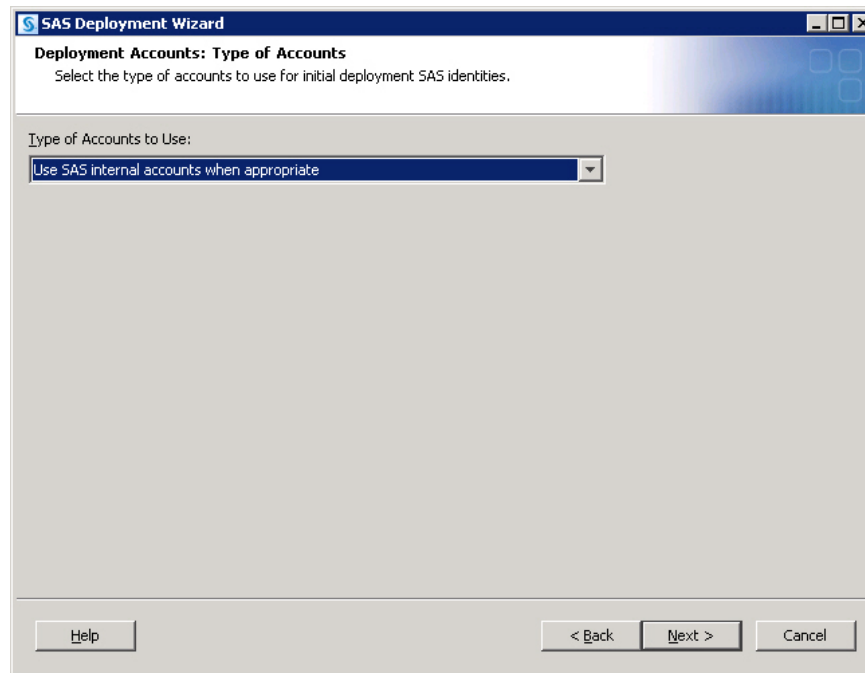
For more information, see "Internal User Accounts" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

Also, two external accounts are no longer used in SAS 9.2:

□   SAS Guest User (sasguest)

□   SAS Web Administrator (saswebad)

Inventorying Your Current SAS Deployment

Overview of Inventorying Your Current SAS Deployment

A key to successfully migrating your SAS 9.1.3 content—data and configuration—is knowing exactly what SAS products you are running on each machine at your site. SAS provides a tool to help you do just that. The *SAS Migration Utility* sweeps a machine to locate SAS 9.1.3 content and performs a validation to ensure that the content can be reliably migrated. During this *analyze* phase, the migration utility also generates a migration analysis report. Using this report, you can determine those SAS products found on your SAS 9.1.3 system to be eligible for automatic migration with the SAS Deployment Wizard.

You can obtain The SAS Migration Utility in two ways: by downloading it separately from the SAS Support Web site or by locating the version that ships with your SAS 9.2 order. Later in this manual when you are instructed to build a migration package, make sure that you use the version of the migration utility that ships with your SAS 9.2 order. For more information, see "Create the Migration Package" on page 59.

Here are the steps for inventorying your SAS 9.1.3 deployment:

1   complete a SAS Migration Utility checklist.

2   prepare your metadata repositories.

3   manage your query cache library folder.

4   review SAS Migration Utility requirements.

5 download and install the SAS Migration Utility.

6 develop a common SAS Migration Utility properties file.

7 review product-Specific SAS Migration Utility properties.

8 create a migration analysis report.

9 analyze your migration analysis report.

10 review your migration log.

Complete a Migration Utility Checklist

The SAS Migration Utility relies on a set of input values such as where you have installed SAS 9.1.3 and SAS Metadata Server connection information. We recommend that you compile a list of the necessary input values before you run the migration utility.

Note: If you have not installed SAS in the same directory on each machine, then complete the following table for every machine in your SAS 9.1.3 deployment. △

Table 2.2   SAS Migration Utility Checklist

Migration Utility Input	Default Value	Actual Value
Absolute path to the SAS 9.1.3 configuration directory	C:\SAS*configuration-directory*\Lev*n* /users/sas/SAS/*configuration-name*/Lev*n*	
Absolute path to the SAS Metadata Server	C:\Program Files\SAS\SAS 9.1 /usr/local/SAS/SAS_9.1	
Absolute path to the top-level directory where SAS 9.1.3 products are installed	C:\Program Files\SAS /usr/local/SAS	
Metadata server connection profile pathname[1]	C:\Documents and Settings*user-ID*\Workspaces*myprofile*.swa $HOME/Workspaces/*myprofile*.swa	
Metadata server name	not applicable	
Metadata server port	8561	
Unrestricted user ID	sasadm	

Migration Utility Input	Default Value	Actual Value
Product-specific properties (Review the sections under, "Review Product-Specific SAS Migration Utility Properties" on page 20.)	not applicable	
Xythos or non-Xythos properties (if you are migrating a machine that contains a WebDAV server) □ Xythos servers: see "Xythos Properties" on page 165 □ non-Xythos servers: see the SMU.DAV.* properties in Run the Migration Utility Using a Properties File	not applicable	

1 You can use a connection profile, or provide the equivalent metadata server information about the migration utility command line or in a utility properties file.

> *Note:* The connection profile that you use should access the metadata server using a full qualified host name or an IP address. Do not refer to the metadata server as `localhost` or its IP equivalent (127.0.0.1) unless *all* of the machines in your SAS deployment are able to connect to the server using that host name. △

Prepare Your Metadata Repositories

Before you migrate your metadata repositories, prepare for migration by performing the following steps:

1 Before you begin preparing your metadata repositories, back them up by using the %OMABAKUP macro without specifying the REORG option.

   For more information, see "Best Practices for Using %OMABAKUP to Perform Backups" in the *SAS 9.1.3 Intelligence Platform: System Administration Guide* at `http://support.sas.com/913administration`.

2 In SAS Data Integration Studio, check in all objects from project repositories.

   For more information, see the *SAS 9.1.3 Data Integration Administration Guide* at `http://support.sas.com/documentation/onlinedoc/etls/`.

3 Delete any unused directory objects such as libraries, stored processes, and deployed jobs.

4 Delete any servers or spawner definitions that are not being used.

5 Remove user directories for users that no longer exist.

6 If you imported user definitions from an enterprise source using the import macros, rerun these macros and reconcile new and deleted users.

7 Rename the SAS Administrators group, if you have one.

8 Run the %OMABAKUP macro again, and this time specify the REORG option.

   For more information, see "Best Practices for Using %OMABAKUP to Perform Backups" in the *SAS 9.1.3 Intelligence Platform: System Administration Guide* at `http://support.sas.com/913administration`.

9 Delete any orphaned metadata objects such as the following:

The SAS Migration Utility analysis report on your metadata tier will help you to identify orphaned objects. So you might want to perform this step later, after reviewing the report.

10 Document any custom settings in your metadata, such as the following:

☐ additional users and group profiles under your Foundation Services deployments

☐ server start up commands

☐ configuration settings for servers

Managing the Query Cache Library Folder

Before migrating to SAS 9.2, you should remove data sets from the query cache library folder. Temporary data sets should be deleted, and any permanent data sets should be moved to a new folder and re-registered within SAS Management Console with the appropriate library. Temporary data sets slow down migration. SAS Web Report Studio 4.3 deletes all other libraries (such as other data sets inappropriately placed in this folder for temporary data) when it first executes with SAS 9.2.

By default, the query cache library file system folder resides in the SAS configuration directory in the **wrstemp** subdirectory (for example, *SAS-configuration-directory***\Lev***n***\SASMain\Data\wrstemp**).

If a path other than the default was specified, you can locate the query cache library folder by examining onWebReportStudioProperties.xml, located in the **WEB-INF** folder under the Web container for SAS Web Report Studio. You can verify this value in SAS Management Console by right-clicking the library, choosing **Properties**, and confirming the value displayed in the **Options** tab. (The **Options** tab also shows the file system folder path for the query cache library in the selected items display.)

You can identify temporary data sets in the query cache library folder as those files beginning with the characters **cdt** (for example, **cdt_domain_na_0003_094417.sas7bdat**).

You should move any other data sets in the query cache library folder to alternate locations and re-register them within SAS Management Console before migration. Otherwise, they will be deleted. These data sets should have their own folder independent of the query cache library file system folder. (We recommend a location that is parallel to the temporary folder with a unique name such as **customer**.)

SAS Migration Utility Requirements

Here are the requirements for installing and running the SAS Migration Utility:

☐ The migration utility must be run on every machine that is running SAS Intelligence Platform 9.1.3. (Run the migration utility on machines that contain the SAS 9.1.3 server tier or middle tier only. Do not run the migration utility on machines that contain SAS 9.1.3 clients only.)

For SAS multiple-machine deployments, we recommend that you copy the utility to shared network storage that is accessible from every SAS machine to avoid having to copy the migration utility separately on each machine. You can then log in to each machine and execute the utility from this shared network storage location.

☐ On SAS multiple machine deployments, run the migration utility *first* on the machine hosting the SAS Metadata Server.

□ The user account with which you run the migration utility (the SAS installer account) must have Read access to all directories under the SAS 9.1.3 configuration directory for each machine.

On UNIX and z/OS, the SAS installer account requires permission to invoke the **chown** command on the directories and files being migrated. If the installer account does not have this permission, then you must manually run the permission scripts using the root account after the SAS Deployment Wizard finishes executing. These scripts reside under *SAS-configuration-directory*/**Lev***n*/**Temp**.

On Windows, migrated files will be owned by the identity running the SAS Deployment Wizard regardless of their ownership on the SAS 9.1.3 system, but will retain the same effective permissions as on the SAS 9.1.3 system.

□ On SAS multiple-machine deployments, the migration utility must be able to write to (and read from) its output directory.

We recommend that the utility output directory be on shared network storage accessible to every SAS machine in the deployment. For an example, see the following figure:

Figure 2.1   Sample Migration Utility Directory Structure
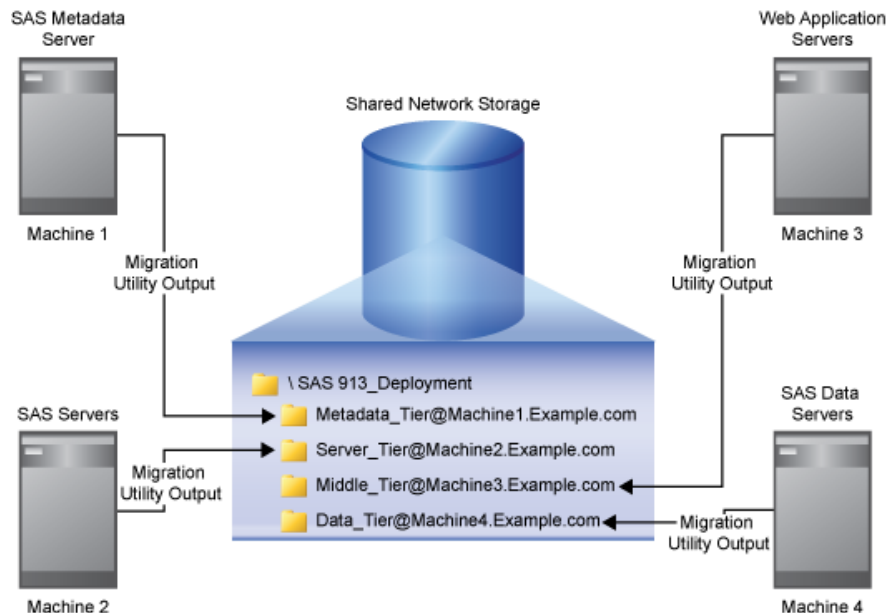
If no shared storage is available, then you must copy the migration package to each successive machine to have the migration utility add the machine's content to the migration package. (The metadata server must be packaged first.) If you use File Transport Protocol (FTP) to copy the migration package, make sure that you specify the file transfer type to binary.

□ The migration utility requires that each SAS machine contain the appropriate version of the Java Runtime Environment (JRE), documented at **http:// support.sas.com/resources/thirdpartysupport/v913sp4/index.html**. (You can also download the necessary JRE from this Web site.)

If you receive error messages about a failure to find the path to the Java executable, make sure that you have the proper JRE version installed.

□ Modify the PATH environment variable such that the directory containing the Java binary is the first JRE found. Verify your setting by executing the following command from the UNIX shell prompt: **which java**.

Download the SAS Migration Utility

You don't have to wait for your SAS 9.2 order to arrive to begin using the SAS Migration Utility. Simply go to the SAS product download site to download the migration utility:

1 Ensure that you have met the requirements listed in the topic, "SAS Migration Utility Requirements" on page 17.

2 On a machine that has Internet access, point a Web browser to the following URL: **http://www.sas.com/apps/demosdownloads/setupintro.jsp**

3 Search for the *SAS Migration Utility*.

   Note: SAS also supplies a migration utility template file (smu.properties.template) that provides examples for how to use various properties. You can find the template file at the same URL where you download the SAS Migration Utility: **http://www.sas.com/apps/demosdownloads/setupintro.jsp**. △

4 After you have downloaded the migration utility, move the utility to a storage location that is accessible to your SAS 9.1.3 deployment (such as a shared network drive).

   There is a unique SAS Migration Utility for each supported operating system family. If your SAS 9.1.3 deployment is a multi-platform deployment, you will have to download the appropriate migration utility for the operating systems on which you have deployed SAS 9.1.3: Windows, UNIX, and z/OS.

   Note: This version of the SAS Migration Utility is provided for users who have not yet received their SAS 9.2 software, and are interested in assessing the scope of migration for their installed 9.1.3 products. When you receive your SAS 9.2 software, you should use the version of the SAS Migration Utility that is included with the order to perform the migration, guaranteeing compatibility with the versions of the products ordered. △

5 On UNIX and z/OS, remember to assign execute permissions before running the downloaded file.

   For more information, refer to your UNIX or z/OS documentation.

Develop a Common SAS Migration Utility Properties File

As the SAS Migration Utility is run from an operating system prompt or command line, typing a set of invocation options can be error prone. If you deployed SAS 9.1.3 in a similar manner across multiple machines, you can benefit from creating a common migration utility properties file and reduce the amount of input you must type on the migration utility command line.

Note: SAS supplies a migration utility template file (smu.properties.template) that provides examples for how to use various properties. You can find the template file at the same URL where you download the SAS Migration Utility: **http://www.sas.com/apps/demosdownloads/setupintro.jsp**. SAS also ships the template with the SAS Software Depot in the **smu** subdirectory underneath **utilities**. For more information, see "Run the Migration Utility Using a Properties File" on page 149. △

Follow these steps to create a common migration utility properties file:

1 Complete a migration utility checklist listed in the topic, "Complete a Migration Utility Checklist" on page 15.

2 Add any necessary product-specific migration utility properties. (See the topic, "Review Product-Specific SAS Migration Utility Properties" on page 20.)

3 Make sure that you have Write access to a migration utility executable directory that is network-shared and accessible from each machine on which you are running SAS.

4 Referring to your completed migration utility checklist and to the following table, use a text editor to add the required migration utility properties to your properties file.

5 Save your properties file in the migration utility executable directory.

Table 2.3   Required SAS Migration Utility Properties

Required Migration Utility Property	Example
SMU.config.dir	SMU.config.dir=C:\\SAS\\BIServer\\Lev1
	SMU.config.dir=/users/sas/SAS/biserver/Lev1
	SMU.config.dir=/usr/lpp/SAS/cpd/CPDSAS_DD/Config311/Lev1
SMU.SASROOT	SMU.SASROOT=C:\\Program Files\\SAS\\SAS 9.1[1]
	SMU.SASROOT=/usr/local/SAS/SAS_9.1
	SMU.SASROOT=/usr/lpp/SAS/cpd/CPDSAS_DD/Config311/Lev1/SASMain
SMU.SASHOME	SMU.SASHOME=C:\\Program Files\\SAS
	SMU.SASHOME=/usr/local/SAS
	SMU.SASHOME=/usr/lpp/SAS/cpd/CPDSAS_DD/Config311
SMU.profile	SMU.profile=C:\\SMU\\profiles\\myprofile.swa
	SMU.profile=/smu/profiles/myprofile.swa
SMU.Output.Dir	SMU.Output.Dir=C:\\SMU\\913_Deployment
	SMU.Output.Dir=smu/913_deployment
	SMU.Output.Dir=/u/cpdsask/SMU/SMU_Package

1 Paths containing spaces in properties files do *not* require double quotes.

Review Product-Specific SAS Migration Utility Properties

Some SAS 9.1.3 products have unique properties that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. For more information, see Appendix 2, "Product-Specific SAS Migration Utility Properties," on page 153.

Create a Migration Analysis Report

The SAS Migration Utility has two execution modes: an analyze mode and a package mode. Before creating a migration package that the SAS Deployment Wizard uses to perform the actual migration, we recommend that you run the migration utility in analyze mode in order to create a migration analysis report. This report is useful in helping you to determine exactly which SAS products are deployed on each machine in your SAS 9.1.3 system.

Figure 2.2 Sample Migration Analysis report

Follow these steps to create a migration analysis report:

1 Review the migration utility requirements. (See "SAS Migration Utility Requirements" on page 17.)

2 Make sure that you have backed up your SAS 9.1.3 metadata repository.

For more information, see "Back Up the SAS 9.1.3 System" on page 32.

3 If you haven't already, complete a migration utility checklist. (See "Complete a Migration Utility Checklist" on page 15).

4 Verify that the SAS 9.1.3 Metadata Server is running.

5 Log on to the SAS 9.1.3 machine (the *target* machine) that you want to inventory.

Note: On SAS multiple-machine deployments, run the migration utility *first* on the machine hosting the SAS Metadata Server. You can run the migration utility on the remaining tiers in any order. Do not run the migration utility on machines that contain SAS clients only. △

6 If the version of the migration utility that you are using has changed from one that you have used previously, then be sure to delete the migration utility's output directory. (For example, in the past, you might have downloaded and run an earlier version of the migration utility to create an analysis report. If so, delete the output created by the older migration utility.)

7 Change to the SAS Migration Utility executable directory.

8 Use the common migration utility properties file and the common connection profile you have developed, unless the target machine requires any special modifications (for example, SAS is installed on a machine-specific path).

For more information, see "Develop a Common SAS Migration Utility Properties File" on page 19.

9 Add any necessary product-specific migration utility properties to your properties file. (See "Review Product-Specific SAS Migration Utility Properties" on page 20.)

10 Invoke the migration utility to run in analyze mode, using the following command from an operating system prompt or command line. If you are running the

migration utility on the WebDAV tier, be sure to use the **-davtier** option or SMU.isdavtier property:

□ Windows:

```
smu -s -a -analyze -properties absolute-path\file -replace
```

□ UNIX:

```
./smu.sh   -- -analyze -properties absolute-path/file -replace
```

□ For more information about migration utility commands, see Appendix 1, "SAS Migration Utility Reference," on page 141.

Note: If you are including WebDAV content in your migration package, it does not matter where the WebDAV store is located in your SAS 9.1.3 environment. The migration utility copies WebDAV content to the configured WebDAV location in your 9.2 environment. In a default SAS 9.2 configuration, that WebDAV location is the SAS Content Server. △

11 The migration utility writes the inventory report (AnalysisReport.xml) to the **AnalysisReport** subdirectory underneath the output directory you specified in the migration utility properties file.

12 To verify that the inventory report successfully completed, open the migration utility log file and scroll to the very end of the log. (The migrate.log file resides in the top-level directory of your migration utility output directory.)

If you see output similar to the following, then the migration utility finished executing the report:

2009-02-22 12:05:07,232 [INFO]Product analyses completed: 50

2009-02-22 12:05:07,232 [INFO]Product packaging completed: 17

If you don't see output lines similar to these, then the migration utility was unable to complete. A common cause can be lack of available disk space.

13 If you have a multi-tier SAS 9.1.3 deployment, you will need to create a migration analysis report for each machine. There are specific options depending on the tier, (for example, **-davtier**). For more information, see Appendix 1, "SAS Migration Utility Reference," on page 141.

Note: You cannot run the migration utility on more than one machine simultaneously, because the migration schema might be updated by more than one process at the same time. △

View and Analyze Your Migration Analysis Report

With your migration analysis report in hand, you and your SAS representative can determine what, if any, further maintenance must be applied to your SAS 9.1.3 products in order for your system to be eligible for automatic migration with the SAS Deployment Wizard.

Figure 2.3 Sample Migration Analysis report

To view your migration analysis report, point a Web browser to the AnalysisReport.xml file in the **AnalysisReport** subdirectory underneath the output directory you specified when you last ran the SAS Migration Utility.

Using the report, answer these questions:

☐ Has the SAS Migration Utility identified any SAS products that are not eligible for automatic migration to SAS 9.2?

☐ Are my SAS products deployed on the machines where I expected them?

☐ Is there content stored outside the configuration directory that I have to deal with after I migrate? (For more information, see "About Migrating Content Stored Outside the SAS Configuration Directory" on page 104.)

For more explanation on analysis report messages, go to **http://support.sas.com/migration/utilitynotes**.

View and Analyze the Migration Log

In addition to studying your migration analysis report, the log file produced by the SAS Migration Utility can also detect possible problems with your content. The migration utility creates a log in the output directory for each machine on which it is run (for example, **C:\migration_package\web_tier\migrate.log**).

A Note About SAS Tables Stored Under the SAS Configuration Directory

Even though the SAS automated migration tools migrate SAS tables that reside under the SAS 9.1.3 configuration directory and in a **SASEnvironment** or **Data** folder, the best practice is to store your SAS tables outside the SAS configuration directory. Migrating large amounts of data encountered under the configuration directory slows migration utility performance.

Middle-tier Considerations

Review Web Application Server Configuration Documentation

SAS provides post-installation documentation that describes how to configure your Web application server. For example, some of the topics include information about how to run your Web application server on different ports, install SAS with one user account, install your Web application server with a different user account, and so on. For more information about configuration steps for your Web application server, go to **http://support.sas.com/resources/thirdpartysupport/v92** and search for the product name of your Web application server.

Choose to Automatically Configure Your Web Application Server

The SAS Deployment Wizard gives you the option of automatically building and configuring the SAS Web applications as well as configuring a Web application server for use with SAS 9.2. (To use this wizard feature, make sure that your Web application server is not running before you start the wizard. For WebSphere, it is necessary to stop all deployment manager servers, all node agent servers, and all application servers before running the wizard.)

When the SAS Deployment Wizard configures the SAS 9.2 middle tier, by default, it automatically creates and configures an instance of a Web application server to host the SAS Web applications. The wizard creates a series of configuration files that enable you to run an instance of your Web application server with the SAS Web applications. The automatic configuration feature and the automatic deployment feature (described later) provide the opportunity to enable the automatic configuration of your Web application server, but not deploy the applications if you prefer to review the configuration to ensure it meets your site's needs. You can then deploy the SAS Web applications afterward.

Some of the configuration tasks performed by the SAS Deployment Wizard include setting options such as the following:

- HTTP ports
- optimized JVM options
- a mail session
- JAAS login modules for SAS services
- JMS queues
- a JDBC data source

Depending on the Web application server you are using, the SAS Deployment Wizard modifies your Web application server configuration differently:

- WebLogic

   No changes to the WebLogic installation directory. The deployment wizard creates a sample domain in the SAS configuration directory.
- WebSphere

   Creates deployment manager and application server profiles in the WebSphere installation directory.

   Note: On z/OS systems, the SAS Deployment Wizard cannot automatically create a server profile. You must do this manually. For more information, go to

> **http://support.sas.com/resources/thirdpartysupport/v92** and search for "WebSphere". △

□ JBoss

Creates a Web application server instance in the JBoss installation directory. The deployment wizard adds a start-stop script to the JBoss **bin** directory. JAR files for the SAS Drivers for JDBC are copied to the JBoss **lib** directory.

If during SAS Deployment Wizard execution, you choose to disable this feature, the wizard generates instructions that describe how to perform these configuration steps manually after you finish running the wizard.

To disable the automatic configuration feature, run the wizard using either the Typical or Custom prompting levels. For more information, see "Interactive Prompting Levels" on page 68.

For samples of the instructions that describe how to manually configure your Web application server for SAS Web applications, go to the Third-Party Software Web site at **http://support.sas.com/resources/thirdpartysupport/v92** and search for the product name of your Web application server.

Choose Whether to Automatically Deploy the SAS Web Applications

In addition to the automatic configuration feature, the SAS Deployment Wizard offers a feature to automatically start the Web application server and deploy the SAS Web applications. (This feature is turned on by default.)

Regardless of whether you choose to automatically deploy your SAS Web applications, when building Web applications, the wizard also automatically explodes Web application archive files (.ear files).

For more information, go to **http://support.sas.com/resources/ thirdpartysupport/v92**.

To disable the automatic deployment feature, run the wizard using either the Typical or Custom prompting levels. For more information, see "Interactive Prompting Levels" on page 68.

Add a Second Middle-Tier Machine

If you want to add a second middle-tier machine to your SAS 9.2 deployment, then later when you run the SAS Deployment Wizard, the deployment instance name for your SAS Web applications must be unique. If the deployment name duplicates a name used previously, then the configuration will fail.

When running the deployment wizard on the second middle-tier machine, be sure to choose the custom prompt level.
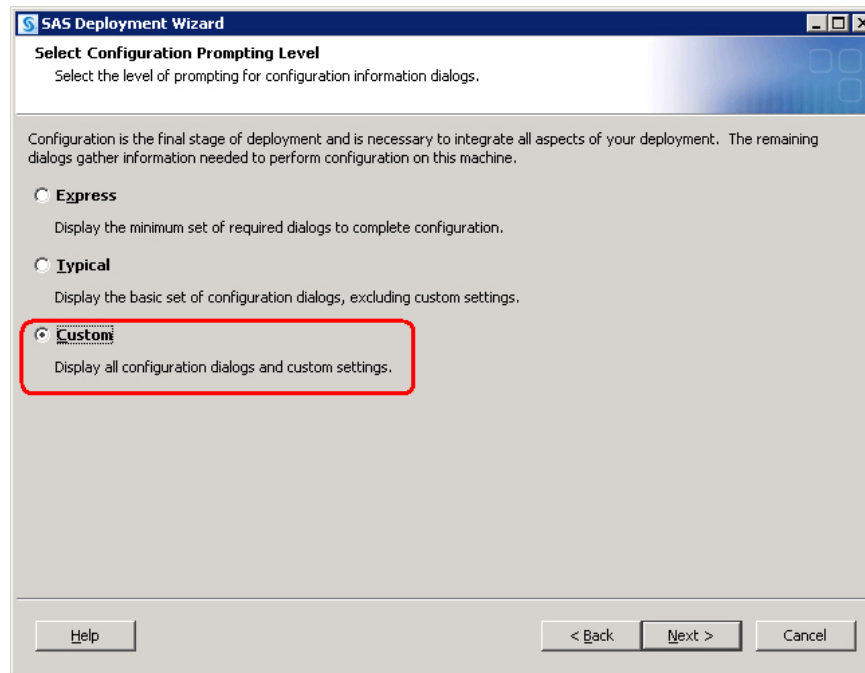
When the wizard prompts you to enter a deployment instance name for a SAS Web application, (such as for SAS Web Report Studio), enter name that is different from the name that you used on your first middle-tier machine.
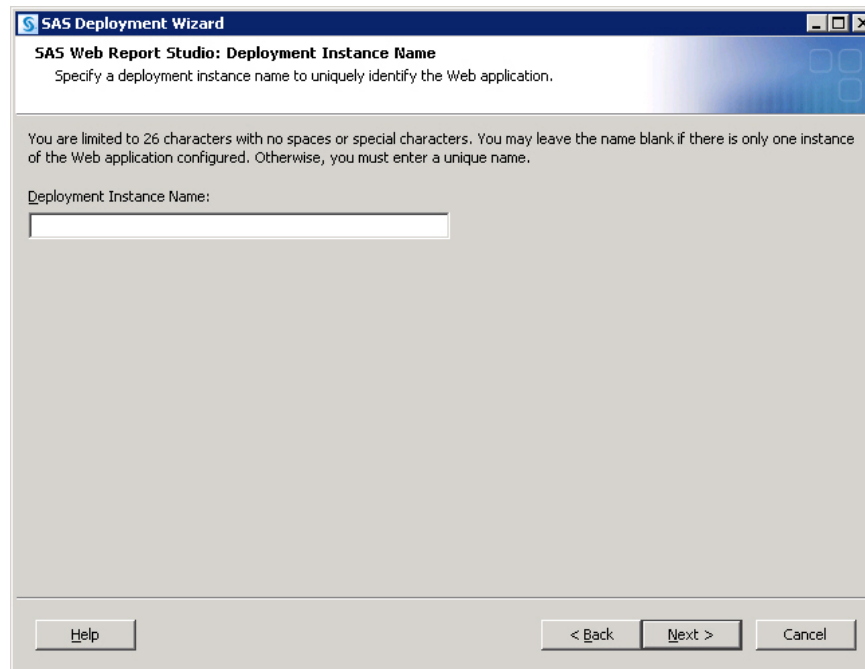
Obtain a Valid SAS 9.2 Deployment Plan File

After you understand exactly which SAS 9.1.3 products you have deployed and on which machines and operating systems, you can contact your SAS representative to

obtain a valid SAS 9.2 deployment plan file. A plan file is a crucial component of the SAS Deployment Wizard, which is the tool that you will use to install SAS 9.2 and migrate the package containing your SAS 9.1.3 data and configuration. When you contact your SAS representative, it will be helpful to have a migration analysis report that represents the current status of your SAS 9.1.3 deployment. For more information, see "SAS 9.2 Changes that Affect the Deployment Plan" on page 66.

Schedule User Downtime

During the migration process, you should schedule downtime for users relying on the SAS 9.1.3 deployment, to ensure that all metadata and physical content stay in sync as SAS 9.1.3 content is migrated to SAS 9.2.

Also, when the migration utility creates the migration package, it actually pauses the metadata server. Any attempts to use your SAS 9.1.3 system during this period will fail.

CHAPTER

3

Performing Pre-migration Tasks

Overview of Performing Pre-migration Tasks

You must now carry out any pre-migration tasks that you identified in your migration design phase, along with some new tasks that are a part of all SAS migrations. Performing pre-migration tasks is the second of five steps required to install SAS 9.2 and migrate your SAS 9.1.3 content:

1. Design your migration.

▶ 2. *Perform pre-migration tasks.*

3. Install SAS 9.2 and migrate your SAS 9.1.3 content.

4. Perform post-migration tasks.

5. Validate your migration.

Looking back at your migration design, you might have identified some of your SAS 9.1.3 products that require maintenance before you can migrate them. Also, some of your hardware might need to be upgraded or operating systems patched and third-party software updated.

During the pre-migration task phase, you will create a migration package that contains your SAS 9.1.3 data and configuration using the SAS Migration Utility. The other major SAS migration tool, the SAS Deployment Wizard, uses your migration package as input to move your SAS 9.13 content successfully to SAS 9.2.

In addition to the SAS 9.1.3 migration package, the wizard also relies on the presence of another package—SAS Software Depot—that contains SAS 9.2 installation files. You create a SAS Software Depot when you download your SAS 9.2 order, or from removable media that you receive directly from SAS.

Figure 3.1 Migration Package and SAS Software Depot Topography
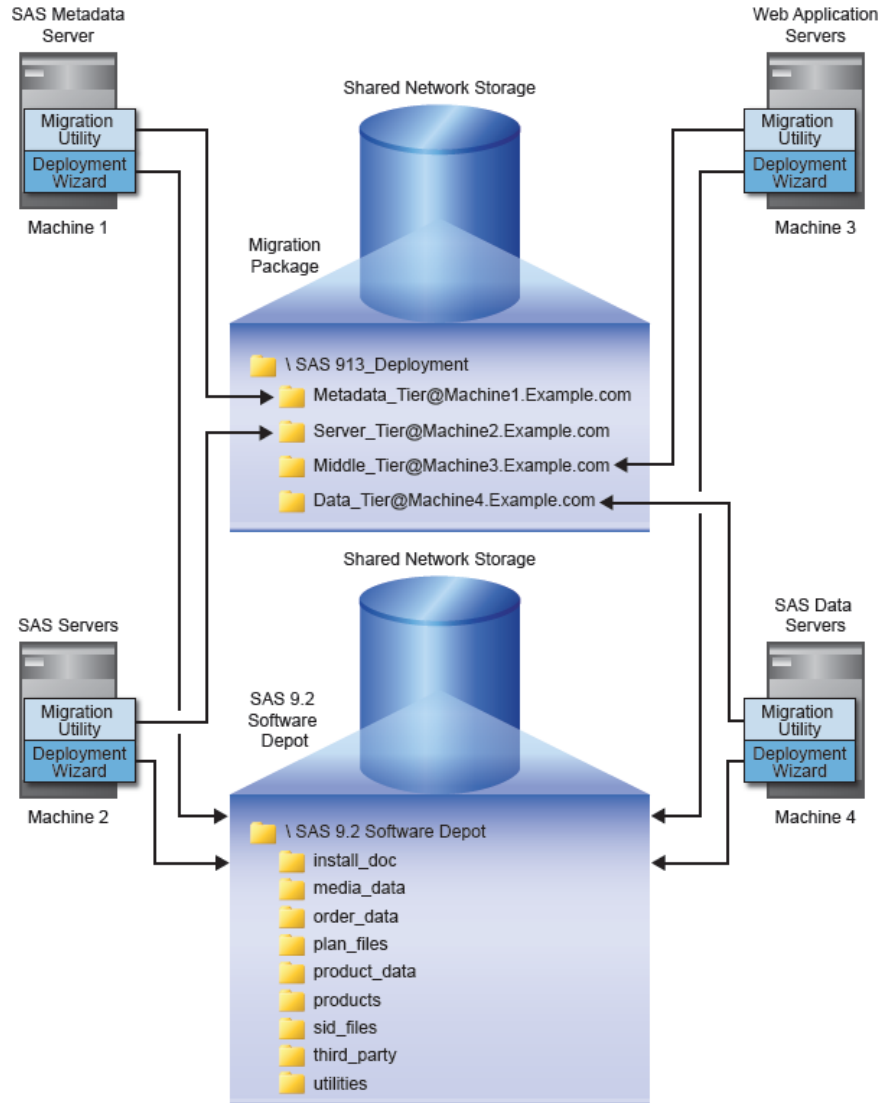
When you have completed the pre-migration tasks, you will have accomplished the following:

1 backed up your current SAS 9.1.3 deployment.

This is a best practice to ensure that your current SAS 9.1.3 deployment is protected.

For more information, see "Back Up the SAS 9.1.3 System" on page 32.

2 applied required maintenance to any SAS 9.1.3 products.

During your migration design, you identified any SAS 9.1.3 products that require maintenance before you can migrate them.

For more information, see "Apply Any Required SAS 9.1.3 Maintenance" on page 33.

3 completed the pre-migration checklists.

The SAS Deployment Wizard prompts you for the required operating system accounts that you used with SAS 9.1.3 and for ports to designate for the new SAS 9.2 servers.

For more information, see "Completing the Pre-migration Checklists" on page 33.

4 installed third-party software required for SAS 9.2.

SAS provides a third-party software site that tells you what to install, how to get it, and how to install it.

For more information, see "Installing Third-Party Software" on page 37.

5 created a SAS 9.2 Software Depot.

The SAS Software Depot contains the SAS installation files used by the SAS Deployment Wizard to install and configure SAS 9.2.

For more information, see "Creating SAS Software Depots" on page 39.

6 created a migration package.

Using the SAS Migration Utility, you create a package containing your SAS 9.1.3 data and configuration that the SAS Deployment Wizard uses.

For more information, see "Create the Migration Package" on page 59.

Back Up the SAS 9.1.3 System

As a best practice, we recommend that you make sure that you have an up-to-date operating system backup of your SAS 9.1.3 deployment. If you have a multi-machine deployment, this means your SAS Metadata Server machine, server tier, middle tier, and data tier. Make sure that you have *shut down the SAS 9.1.3 Metadata Server* and have backed up the following:

☐ SAS 9.1.3 configuration and metadata repository directories

By default, these directories are:

☐ Windows:

C:\SAS*configuration-directory***\Lev***n*

☐ UNIX:

/users/sas/SAS/*configuration-name***/Lev***n*

Note: When backups of the metadata server configuration directory are stored under the current metadata configuration directory, the SAS Migration Utility might use the wrong configuration directory when it creates the migration package. Typically, omaconfig.xml is located in the **Lev***n***/SASMain** subdirectory and the **rposmgr** subdirectory is located in **Lev***n***/SASMain/MetadataServer**. Any other rposmgr subdirectories under SASMain or any other omaconfig.xml files under SASMain might cause the migration package to be created incorrectly. To avoid this problem, rename the backup omaconfig.xml file or the **rposmgr** directory and rerun the SAS Migration Utility so that the correct subdirectory is identified. △

☐ SAS 9.1.3 product and data directories

By default, these directories are:

☐ Windows:

C:\Program Files\SAS

☐ UNIX:

/usr/local/SAS

☐ Windows Registry on the SAS 9.1.3 Metadata Server machine.

For more information, refer to your Windows documentation.

CAUTION:
> **As you would with any backup, run these backups through your site's validation procedures to be confident of their integrity before proceeding with your SAS migration.** △

Apply Any Required SAS 9.1.3 Maintenance

When you designed your SAS migration, you might have discovered that one or more of your SAS 9.1.3 products are ineligible for migration and require that maintenance patches be applied. Your SAS representative can help you get the necessary maintenance that your products require. Follow the instructions provided for this, and make sure that all the affected products have been patched.

Note: After you have applied the necessary maintenance, we recommend that you rerun the migration analysis report on all your affected SAS 9.1.3 machines and use the report to verify that all SAS 9.1.3 products are now eligible for migration. △

For more information, see "Create a Migration Analysis Report" on page 20.

Completing the Pre-migration Checklists

Overview of Completing the Pre-migration Checklists

Later, during the installation and migration step, the SAS Deployment Wizard prompts you for account credentials used to run SAS 9.1.3 (including third-party software) and for ports for SAS servers that are new to SAS 9.2. Complete the following checklists and have them ready to refer to when you run the SAS Deployment Wizard.

Complete the External User Account Checklist

Complete the following checklist to use later, during the installation and migration step, when the SAS Deployment Wizard prompts you for account credentials. In the third maintenance release for SAS 9.2, you have the option of using SAS internal accounts to minimize the number of headless operating system accounts required to deploy SAS. For more information, see "Choose to Use SAS Internal Accounts" on page 13. For migration purposes, the external accounts that you use *must* be the same operating system accounts that you also used in SAS 9.1.3.

Also, make sure that you review important information in the topic, "Important Notes on User Accounts and Authentication" on page 34.

Note: This checklist assumes that you are migrating to SAS 9.2 using the same machines that you used to run SAS 9.1.3.

If you are migrating from SAS 9.1.3 to SAS 9.2, and you want to continue using external IDs for your user accounts, you must make sure that these IDs are set up on the corresponding machines in your SAS 9.2 environment. For more information, see "Setting Up Required Users and Groups" in the *SAS 9.1.3 Intelligence Platform: Installation Guide*, available at **http://support.sas.com/913administration**. △

Table 3.1   Pre-migration Checklist for External User Accounts for SAS and Third-Party Software

SAS 9.1.3 or Third-Party Software Account	SAS 9.2 or Third-Party Software Account	Examples	Actual User ID
SAS Installer	SAS Installer[1]	Windows: *my-domain\installer-ID* UNIX and z/OS: sas[2]	
SAS General Server User	SAS Spawned Servers account	Windows: *my-domain*\sassrv UNIX and z/OS: sassrv	
SAS Administrator	SAS Unrestricted User	Windows: *my-domain*\sasadm UNIX and z/OS: sasadm	
SAS Trusted User	SAS Trusted User	Windows: *my-domain*\sastrust UNIX and z/OS: sastrust	
Not applicable	SAS Anonymous Web User[3]	Windows: *my-domain*\webanon UNIX and z/OS: webanon	
SAS Demo User	SAS First User	Windows: *my-domain*\sasdemo UNIX and z/OS: sasdemo	
SAS Guest User	Not applicable	No longer needed.	
SAS Web Administrator	Not applicable	No longer needed. In SAS 9.2, the SAS Trusted User is the SAS Information Delivery Portal administrator. For more information, see the *SAS Intelligence Platform: Web Application Administration Guide*.	
LSF Administrator	LSF Administrator	Windows: *my-domain*\lsfadmin UNIX and z/OS: lsfadmin	
LSF User	LSF User	Windows: *my-domain*\lsfuser UNIX and z/OS: lsfuser	
J2EE application server administrator	Web application server administrator	Windows: *my-domain*\admin UNIX and z/OS: admin	

1   The installer account used for migration must have Read and Write permissions to the SAS installation and configuration directories. On Windows, this account must be a member of the Administrators group.

2   On UNIX, do not use root.

3   The SAS Anonymous Web User is used to grant clients access to applicable SAS Web Infrastructure Platform applications such as SAS BI Web Services and the Stored Process Web Application.

Important Notes on User Accounts and Authentication

Consider the following items when working with user accounts during the migration process:

☐ Identities must be unique. You cannot reassign an existing system identity that is associated with a metadata persona in either the SAS 9.1.3 or SAS 9.2 configuration. For example, if the operating system user account sasguest is associated in metadata with the SAS Guest persona in your SAS 9.1.3 system, you cannot also associate sasguest in SAS 9.2 with the SAS Anonymous Web User.

☐ On UNIX systems, the SAS Deployment Wizard requires that you supply the root password during configuration. Certain SAS products and features use functionality that requires SAS to check user ID authentication and file access authorizations. This in turn necessitates that certain files within your SAS installation have setuid permissions and be owned by root.

☐ The SAS automated migration tools detect machine name changes for the metadata server during the migration process and automatically changes host name domains in all logins and for the necessary file permissions.

  For example, if the metadata server host name changed from "myhost" to "mynewhost," then all domain logins that are qualified with "myhost" are automatically changed to "mynewhost." (The tools change "myhost\sasadm" and "myhost\sastrust" to "mynewhost\sasadm" and "mynewhost\sastrust.")

☐ The SAS automated migration tools do not automatically change the following:

  ☐ required external user account IDs

    (For example, changing "myhost\ebiadmin" to "myhost\sasadm" or changing "ebiadmin" to "sasadm."

    You must specify these new external accounts when prompted for them in the deployment wizard in order to change the SAS metadata. To change the file permissions, use the temp scripts.

    For more information, see "Permission Considerations when User Accounts or Groups Change" on page 37.

  ☐ required operating system group (UNIX only)

    (For example, changing the primary group of the SAS Installer user from "sas913" to "sas."

    To change the file permissions that involve group membership, use the temp scripts. (There are no SAS metadata changes required when you change an operating system user group.)

    For more information, see "Permission Considerations when User Accounts or Groups Change" on page 37.

☐ If your UNIX system uses an authentication method other than **/etc/passwd** or **/etc/shadow**, then you must configure authentication before you begin your SAS software deployment, or SAS 9.2 will not function properly. For more information, see the *Configuration Guide for SAS 9.2 Foundation for UNIX Environments* available at **http://support.sas.com/installcenter**.

☐ The SAS Anonymous Web User is used to grant clients access to applicable SAS Web Infrastructure Platform applications such as SAS BI Web Services and the Stored Process Web Application.

☐ The SAS Deployment Wizard prompts you for a SAS Spawned Server account. The user ID and password that you supply are assigned as the launch credentials for a new SAS 9.2 server, the pooled workspace server, and stored in the metadata as follows:

  ☐ If you supply a user ID that already exists in metadata, the migrated password in that login is overwritten with the password that you supply.

    For more information, see "Password Policies" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

☐ If you supply a user ID that doesn't already exist in metadata, the credentials that you supply are stored in a new login on the Accounts tab of the SAS General Servers group.

For more information, see "Launch Credentials" in the *SAS Intelligence Platform: Security Administration Guide*.

☐ The migration process doesn't change any existing launch credential assignments. For example, if the SAS 9.1.3 stored process server has a login (for example, spsrv) as its designated launch credential, that assignment is preserved. If the spsrv account isn't valid on the SAS 9.2 machine, the stored process server won't work in the SAS 9.2 environment (until you change that server's launch credential).

Complete the New Server Ports Checklist

Complete the following checklist to use later, during the installation and migration step, when the SAS Deployment Wizard prompts you for ports to designate for the new SAS 9.2 servers. The deployment wizard uses the same ports when migrating the SAS 9.1.3 servers.

Note: This checklist assumes that you are migrating to SAS 9.2 using the same machines that you used to run SAS 9.1.3. (You can change these port assignments in SAS 9.2 with the Port Remap utility. For more information, see "Change Ports Used By SAS Products" on page 61.) If you are using new machines, then you need to make sure that the same ports that you designated for your SAS 9.1.3 servers are available on the new machines. For more information, see "Designating Ports" in the *SAS 9.1.3 Intelligence Platform: Installation Guide* available at `http://support.sas.com/913administration`. △

The following table lists new servers that have been introduced in SAS 9.2:

Table 3.2 Pre-migration Checklist for New Server Ports Introduced in SAS 9.2

Server or Spawner	Default Port	Actual Port
SAS object spawner: pooled workspace server port bank 1	8801	
SAS object spawner: pooled workspace server port bank 2	8811	
SAS object spawner: pooled workspace server port bank 3	8821	
SAS Pooled Workspace Server	8701	
SAS Table Server	2171	

Server or Spawner	Default Port	Actual Port
Metadata utilities SAS Workspace Server	8591[1]	
SAS Deployment Tester server	10021	

1 The default port for the workspace server is also 8591. In SAS 9.2, two or more workspace servers can share the same port even if they are running at the same time.

Determine the User ID Associated with Scheduled Flows

After migration, you will need to reschedule all of your SAS flows. (See "Reschedule Flows" on page 112.) To do this you will need to know the user ID under which each flow is scheduled to run.

Follow these steps to determine the user ID associated with scheduled flows:

1 Log on to Platform Flow Manager.
2 Select the **user ID** tab.
3 For each user ID, note the flows associated with it.

Permission Considerations when User Accounts or Groups Change

The SAS automated migration tools ship with scripts that are used to assign the proper permissions to files and directories under the SAS configuration directory. If you are using required operating system user accounts and group names in SAS 9.2 that are different from the ones on your SAS 9.1.3 system, then you must make sure that the permissions reflect these changes.

During configuration, the SAS Deployment Wizard invokes the levconfig extension (a part of the migration package) which converts certain temporary files into corresponding permission script files (*.bat and *.sh files). The deployment wizard persists these permission script files in the SAS 9.2 configuration directory (under **Lev*n*/Temp**) and then invokes them during configuration.

You have to do *one* of the following procedures:

□ *Before* running the SAS Deployment Wizard, do the following:

Replace occurrences of a SAS 9.1.3 external user account (for example, "ebiadmin") with the SAS 9.2 external user account (for example, "sasadm") in the ***.tmp** files in the **levconfig\levconfig1** directory of the migration package (for example, **/smu_package/host1.example.com/levconfig/levconfig1**).

□ Or, *after* running the SAS Deployment Wizard, do the following:

Replace occurrences of a SAS 9.1.3 required external account with the SAS 9.2 required external account in the permission scripts residing in *SAS 9.2-configuration-directory***Lev*n*/Temp**, and rerun these scripts.

Installing Third-Party Software

Install Third-Party Products Using the SAS Software Depot

Some third-party products ship with SAS 9.2. Such products' installation files and documentation are located in the SAS Software Depot under the **third_party** directory.

Figure 3.2   third_party Directory in the SAS Software Depot
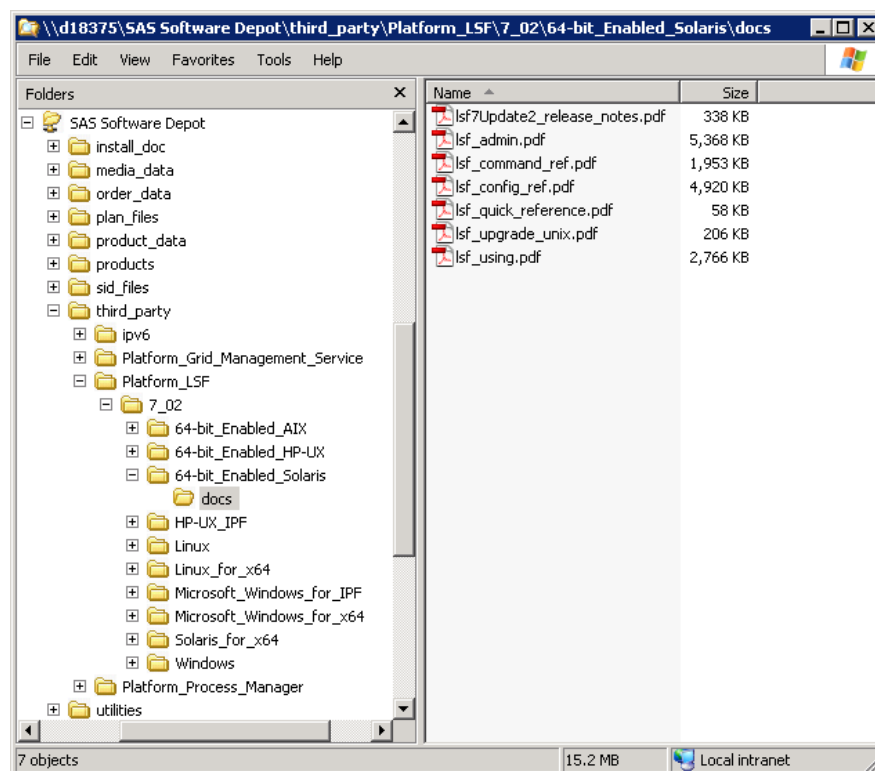
Platform Suite for SAS is an example of one third-party application that you install in this way. To determine whether any of your third-party software is distributed with your order, refer to your *SAS Software Summary* that resides in your SAS Software Depot in your *order_number* directory under `install_doc`. For example:

`C:\SAS Software Depot\install_doc\`*order_number*`\ordersummary.html`

Note: The recommendation is that you migrate the scheduling server and SAS sequentially and not try to migrate both SAS and Platform Process Manager in one step. For same-machine migrations, the recommendation for migrating Platform Process Manager installations is that you first move to version 7 on SAS 9.1.3 before migrating to SAS 9.2. For new-machine migrations, the recommendation is that you install the latest version of Platform Process Manager on the new machine before migrating to SAS 9.2. △

Install Third-Party Products Using the Software Web Site

SAS maintains a third-party software Web site to help you do the following:

□ determine what version of the product to install

□ obtain the product, if you don't already have it

□ find installation instructions

□ learn about any patches required

Note: Some third-party software ships with your SAS order. For more information, see "Install Third-Party Products Using the SAS Software Depot" on page 37. If you are installing Platform Process Manager, Platform LSF, or Platform Grid Management Service, you must use the installation instructions and installation programs provided

in your SAS order. For more information, see "Installing Platform Suite for SAS" in the *SAS Intelligence Platform: Installation and Configuration Guide*. △

To install the Java Development Kit or a Web application server, complete these steps:

1 Go to the Third-Party Software site at **http://support.sas.com/resources/ thirdpartysupport/v92**.

2 Select the link for the product (or type of product) that you are installing.

There are columns that either have links directly to the vendor's site, or an indication that the third-party software ships with SAS.

3 Install the product.

For most installations, you can use the instructions provided by the vendor. For products that are more complex to install—such as the Web application servers—the Third-Party Software site contains links to brief installations instructions. These instructions are not meant to replace the vendor documentation. However, they will enable you to create a simple configuration that will work well with your SAS software.

Note to users in Russia: SAS cannot export the Java Runtime Environment (JRE) to Russia. You will need to locate the appropriate link on the Third-Party Software Web site and download the JRE. Install it in the default location, and it will be ready for use when you install your SAS software.

Moving Platform Suite for SAS Custom Calendars

If you install a version of Platform Suite for SAS on a different machine than the previous version was installed on, you must manually copy the Process Manager calendar metadata to the new location. The new machine must have access to the calendar files on the old machine (such as through FTP, SCP, or shared network storage).

To copy the calendar metadata, follow these steps:

1 Make sure that you have installed Platform Suite for SAS on the new machine.

For more information, see "Installing Platform Suite for SAS" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

2 Log on to the old Process Manager machine.

3 Change to the **calendar** subdirectory that is directly under the **work** directory.

For example:

□ Windows:

cd C:\Program Files\Platform Computing\Platform Process Manager\work\calendar

□ UNIX:

cd /opt/Platform Computing/Platform Process Manager/work/ calendar

4 Copy all files *except* those ending in **@sys** to the corresponding **calendar** directory on the new machine.

Creating SAS Software Depots

Overview of Creating SAS Software Depots

There are two ways that you can create a SAS software depot:

□ download SAS software.

When you download a SAS order, the SAS Download Manager automatically creates a SAS Software Depot on your system.

For more information, see "Create a Depot by Using the SAS Download Manager" on page 44.

□ run the SAS Deployment Wizard.

Creating SAS Software Depots is an option on one of the wizard pages.

For more information, see "Create a Depot by Using the SAS Deployment Wizard" on page 54.

Before you create your depot, it can be helpful to understand exactly what a depot is, as well as a depot's benefits and the best practices for creating and maintaining a depot.

About SAS Software Depots

A *SAS Software Depot* is a file system that consists of a collection of SAS installation files that represents one or more orders. The depot is organized in a specific format that is meaningful to the SAS Deployment Wizard, which is the tool that is used to install and configure SAS. The depot contains the SAS Deployment Wizard executable, one or more deployment plans, a SAS installation data file, order data, and product data.

Figure 3.3   SAS Software Depot File Structure
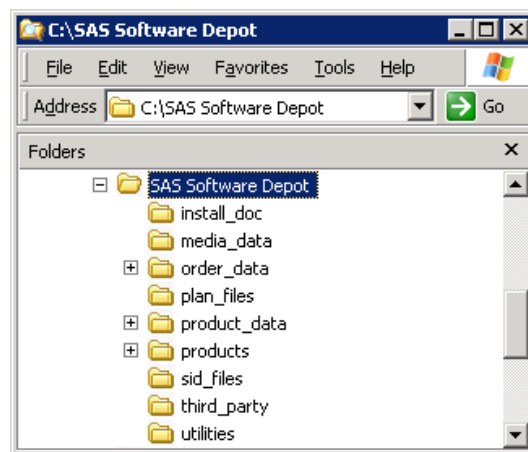
Before you can install SAS, you must first have a software depot to install from. During a SAS software download, the SAS Download Manager downloads your order, verifies it, and automatically creates a SAS Software Depot. If you receive your SAS order in the form of physical media, then you create a depot using the SAS Deployment Wizard.

Figure 3.4 Methods for SAS Software Depot Creation
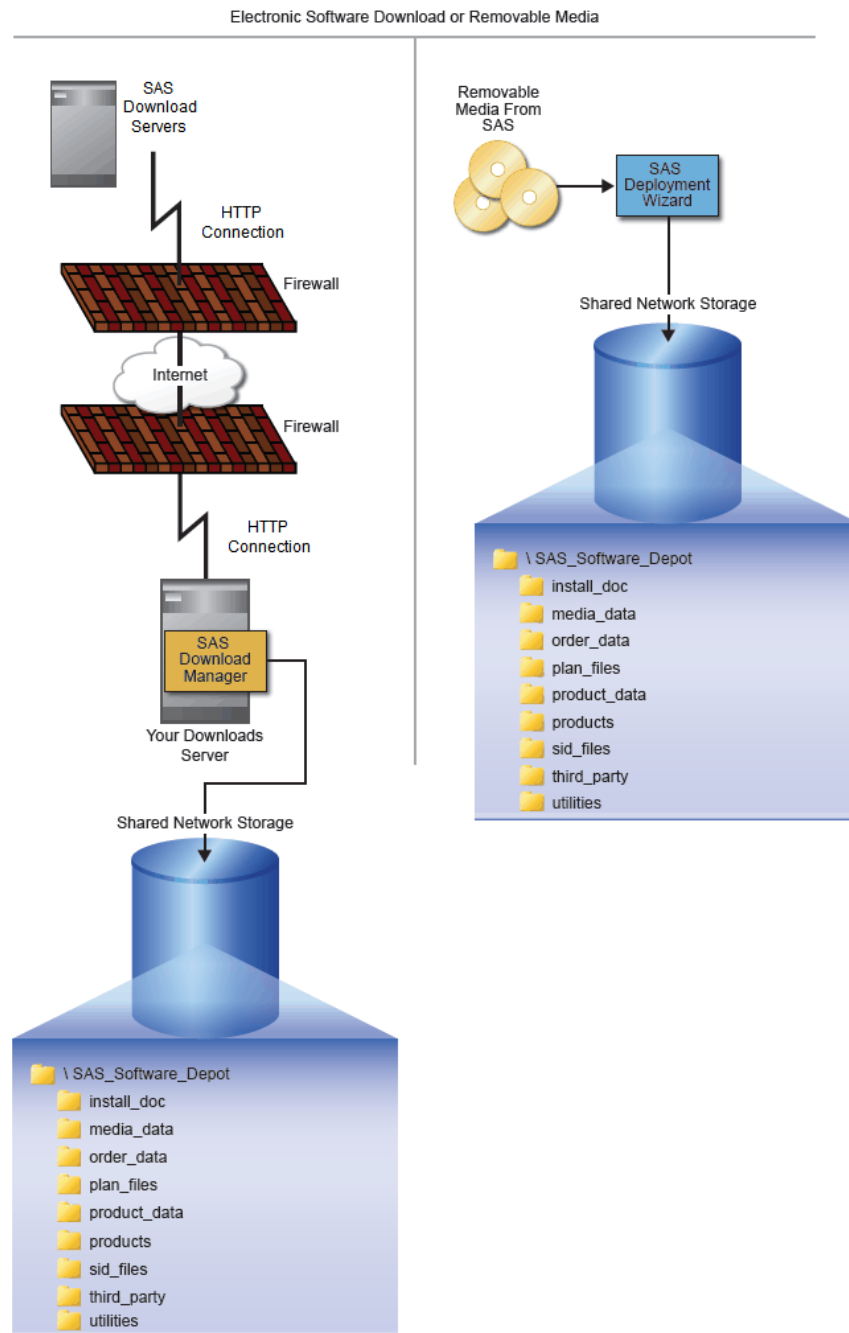
Benefits of a SAS Software Depot

The main advantage of a SAS Software Depot is that it resides on the network at a location that you can share access to. Thus it provides a faster and more reliable means of installation compared to traditional removable media (cartridges, CDs, DVDs, and so on).

Figure 3.5 Shared SAS Software Depot Model
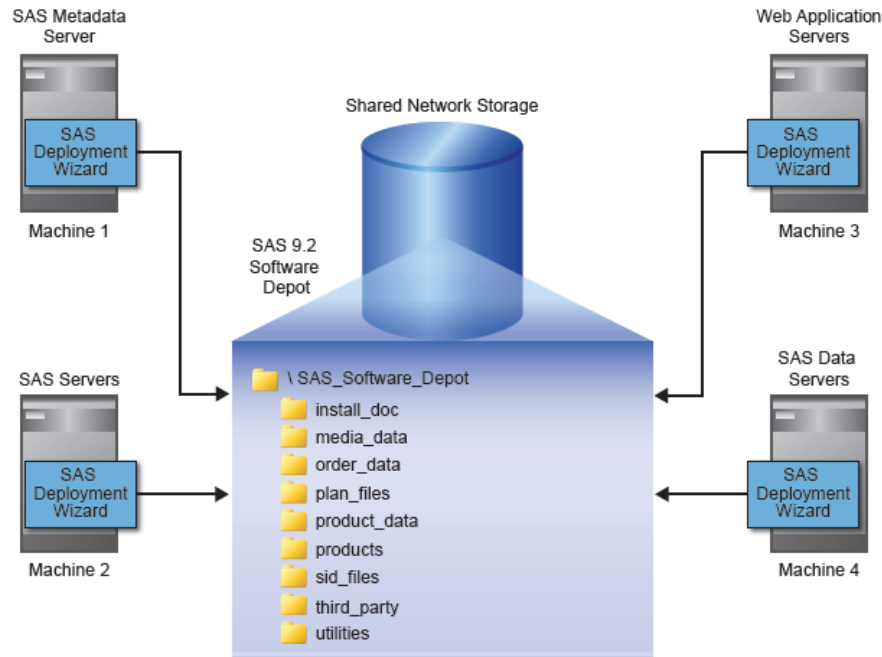
If you have remote sites running SAS without access to the network on which your depot resides, you can use the SAS Deployment Wizard to create your own SAS media image to write to the removable media of your choice.

For more information, see "Create a Disc Image of Your Order" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

Here are some other benefits of a SAS Software Depot:

□ centralizes SAS orders.

The depot enables you to place multiple SAS orders in one location to simplify initial SAS deployment and future maintenance.

□ makes applying maintenance and upgrades easier.

You only need to download the changed depot files instead of having to download an entire SAS order.

□ saves disk space.

Storing multiple orders in a single depot saves disk space, as any content shared between orders is not duplicated, but rather shared, in the depot.

A single depot in SAS 9.2 can store SAS software installation files for more than one operating system, making the single, multi-system SAS 9.2 depot cumulatively smaller than the multiple, single-system depots in SAS 9.1.3.

□ saves download time.

Because there is a shared copy of common files, the SAS 9.2 single, multi-operating system depot requires smaller amounts to download.

□ organizes license keys (also known as SAS installation data files).

The depot enables you to place SAS installation data files in a standard location to better associate license keys with their corresponding orders. (These files are stored in the `sid_files` directory, directly under the depot's root.)

□ identifies multiple orders.

The depot supports the SAS Deployment Wizard's feature that enables you to customize order descriptions and enter notes to better identify multiple orders residing in a single depot.

Because depots contain your personal SAS software order, it is important to use best practices around securing and backing up your depot.

Best Practices for SAS Software Depots

For customers who download SAS, their SAS Software Depot is the only copy of their SAS order. The depot contains the files from which SAS is initially installed. For this reason, it is important to use these best practices when managing your depot:

□ Keep your depot.

When you keep your SAS 9.2 depot, applying maintenance and upgrades becomes easier because you only need to download the changed depot files instead of having to download an entire SAS order.

□ Perform routine backups.

As with your SAS production system, it is important to routinely back up your SAS Software Depot and verify the integrity of these backups.

Note: Another important reason for securing and backing up your SAS Software Depot is that there are limits on the number of times that you can download your order from SAS. △

□ Secure the depot location.

Problems such as data loss, virus infection, and file corruption can compromise your investment in SAS. It is thus imperative that you have a comprehensive security policy in place to protect your depot.

□ Store SAS installation data files with your depot.

The SAS installation data file for your orders contains information that is integral to successfully deploying SAS and applying future SAS hotfixes. As you get these data files from SAS—such as the file that contains your permanent SAS license key—it is important that you store them with your depot in the `sid_files` directory.

□ Create a depot administrator.

Consider designating one or a few users to serve as SAS Software Depot administrators. Persons needing to deploy SAS software or to apply future SAS software maintenance require depot Read and Execute privileges. Depot administration tasks such as initially creating the depot, storing SAS installation data files, and updating order details require depot Write privileges. Separating depot administration from routine depot usage is a best practice that will further protect your SAS Software Depot.

Before creating a depot, make sure that you have met the necessary requirements described in "Prerequisites for Creating a SAS Software Depot" on page 43.

Prerequisites for Creating a SAS Software Depot

Before you start creating a SAS Software Depot, make sure that you have met the following prerequisites:

□ Choose a machine that has the following:

□ Internet access.

If you are downloading your SAS order, you will need a machine that can access the secure SAS download Web site. Also, ideally this machine should be networked so that you can perform deployments directly from the machine, without having to physically relocate the depot to another machine.

□ Java SDK for z/OS installed (z/OS only).

For more information, go to **http://support.sas.com/ thirdpartysupport**.

□ a Windowing environment.

If you will be creating the depot on a UNIX or a z/OS system, make sure that a windowing environment—such as the Common Desktop Environment or X11—is installed. The program that you use to create the depot has a graphical user interface.

□ Designate a target directory.

Decide where you will create the SAS Software Depot. It is helpful if this directory can be shared on a network and accessible to all of the machines on which you will be installing software from the depot.

Note: SAS recommends that you not copy a depot from one location to another. Choose a permanent location before you create the depot. △

□ Grant required access permissions.

The SAS installer user must have Write access on the depot target directory.

□ Check disk space requirements.

Make sure you have enough free disk space available on the target directory.

Finally just before creating a depot, the SAS Deployment Wizard and the SAS Download Manager both present you with an estimate for required disk space.

Create a Depot by Using the SAS Download Manager

A SAS Software Depot contains SAS order data, an initial SAS installation data file, order data, and product data. The depot also contains the SAS Deployment Wizard executable—the tool required to install and initially configure SAS.

Note: There is no expiration date for downloading your SAS order. However, if the time period for your initial SAS installation data file has expired, you will have to obtain a current SAS installation data file before you can run the SAS Deployment Wizard. △

Before you can create a depot by using the SAS Download Manager, you must first download and install the manager itself. The installer automatically launches the SAS Download Manager after installing it. Therefore, the following procedure actually consists of three logical sections:

1 downloading the SAS Download Manager

2 installing the SAS Download Manager

3 downloading a SAS order and creating a software depot using the SAS Download Manager

Although these sections flow one after the other, at the end of each section, you can stop and resume the process later.

Follow these steps to download a SAS software order and automatically create a depot by using the SAS Download Manager:

1 Locate your software order e-mail sent by SAS. In this e-mail, find the URL for the secure SAS Web site from where you will download the SAS Download Manager.

Note: It is very important that you locate your original software order e-mail for the correct order and SAS installation key to download the software. You *cannot* use a renewal order number. The renewal order is a license update and it cannot be used to download software. If you cannot locate your original software order

e-mail, contact your SAS Installation Representative or SAS Contracts at the following URLs:
http://support.sas.com/adminservices/contact.html
http://support.sas.com/adminservices/sasrep.html
http://support.sas.com/techsup/license △

2 Ensure that you have fulfilled the necessary requirements described in "Prerequisites for Creating a SAS Software Depot" on page 43.

3 Log on to the machine as a SAS Software Depot administrator or a user with depot Read, Write, and Execute privileges.

Note: Consider designating one or a few users to serve as SAS Software Depot administrators. Persons needing to deploy SAS software or to apply future SAS software maintenance require depot Read and Execute privileges. Depot administration tasks such as initially creating the depot, storing SAS installation data files, and updating order details require depot Write privileges. △

4 Launch a Web browser and navigate to the secure URL specified in your software order e-mail.

5 At the prompt in the dialog box, select **Save it to disk**.
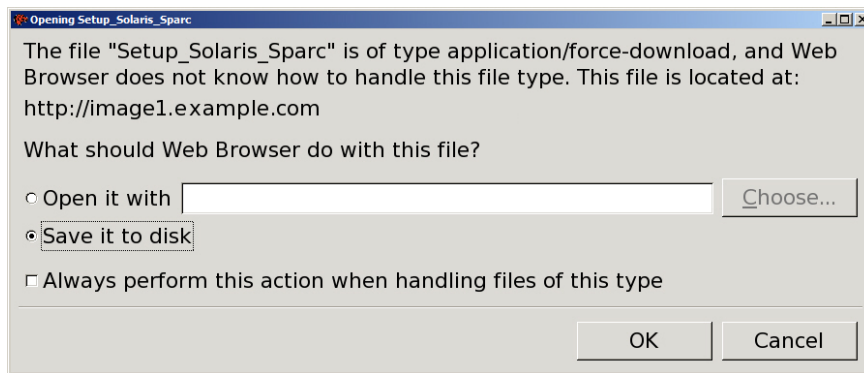
6 Choose a path accessible to the machine to save the download and click **Save**.
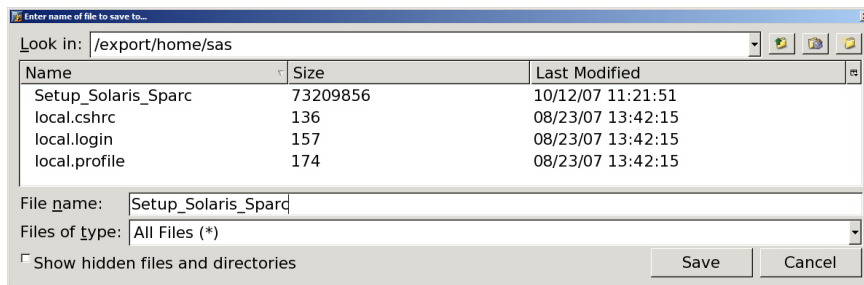
Your download begins.
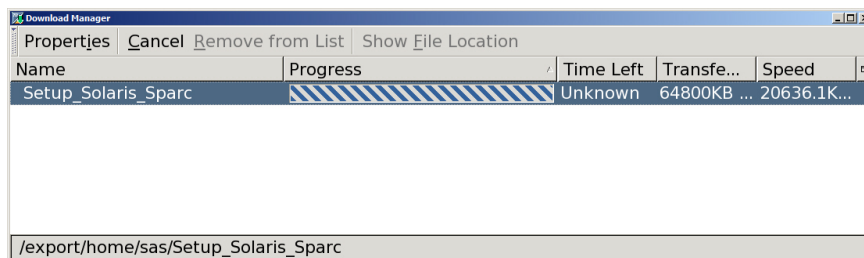
7 When your browser has finished downloading the SAS Download Manager, you can install it. Perform the step appropriate for your operating system:

□ Windows:

In Windows Explorer, navigate to the download path and double-click the download's filename. For example, on Windows x86 machines: **Setup_Win32.exe**.

□ UNIX and z/OS:

In a console, navigate to the download path and type the download's filename. On Solaris, for example: **./Setup_Solaris_Sparc**.

Note: Remember to assign Execute permissions before running the downloaded file. For more information, refer to your UNIX or z/OS documentation. △

You should see the SAS Download Manager installer welcome page.
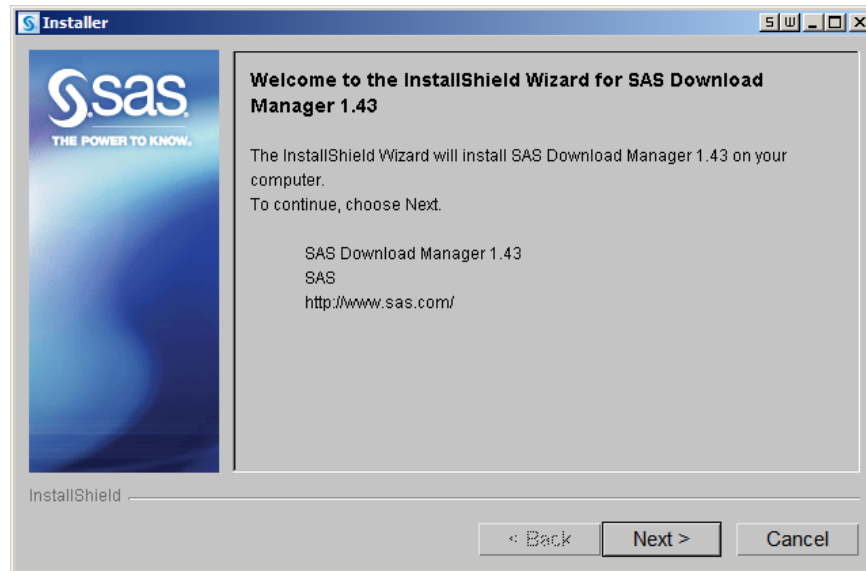
8 Choose a path where you want to install the SAS Download Manager.

Note: If you are reinstalling the download manager to a different location, you must uninstall the existing download manager. (On Windows, use Add and Remove Programs. On UNIX, use the uninstall program *install-directory*/ **_uninstESD/UninstESD**, which SAS supplies.) When you are upgrading to a newer version of the download manager, you do not need to uninstall first. However, you will not be prompted for an installation location. △
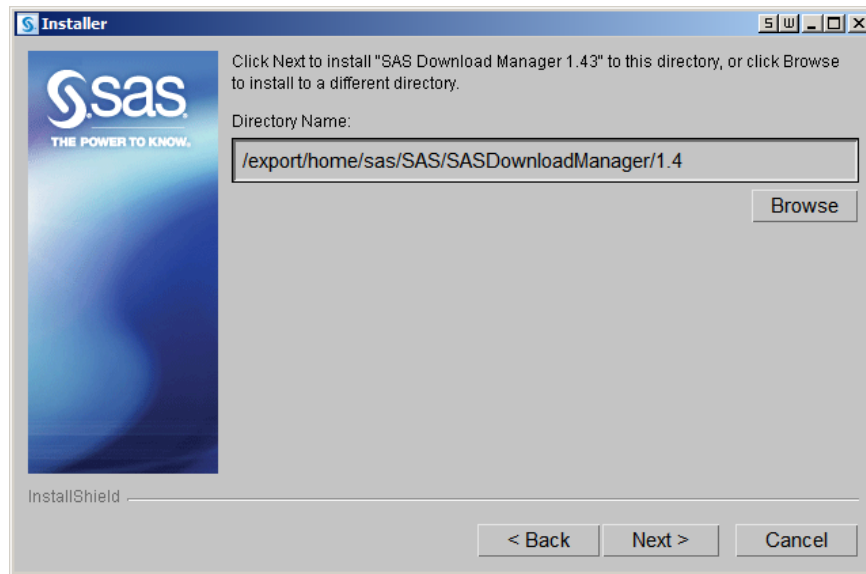
9 Review the path and disk space requirements, and make one of the following choices:

- ☐ Click **Next** to begin installing the SAS Download Manager in the target directory.
- ☐ Click **Back** to navigate to earlier pages to change installation information previously entered.
- ☐ Click **Cancel** to terminate the install session. Note that you will lose the information previously entered.
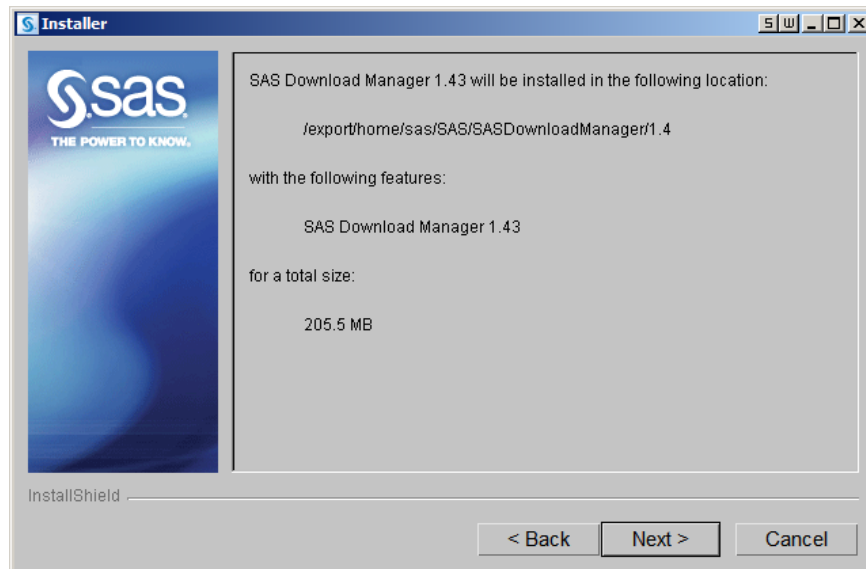
The installation begins.
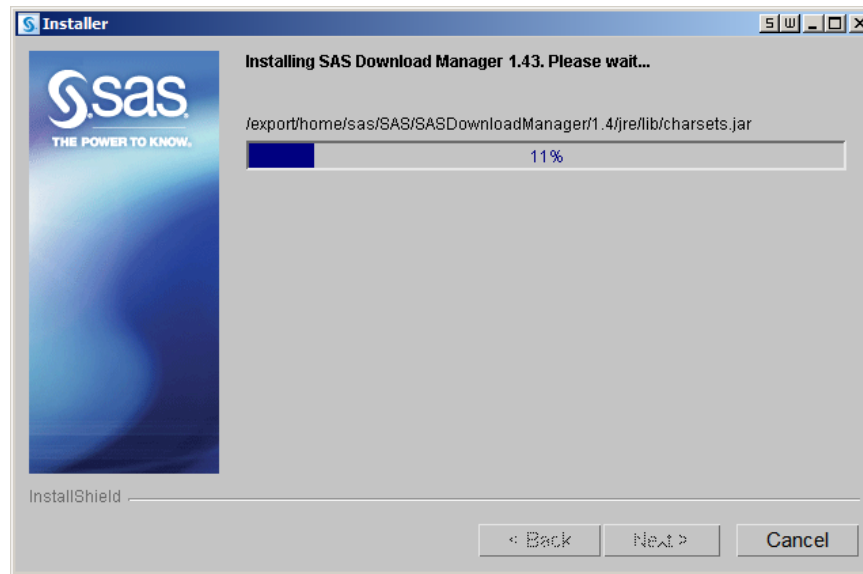
10 When you see a page similar to the following, the installation is complete. Click **Finish** to dismiss the installation program.
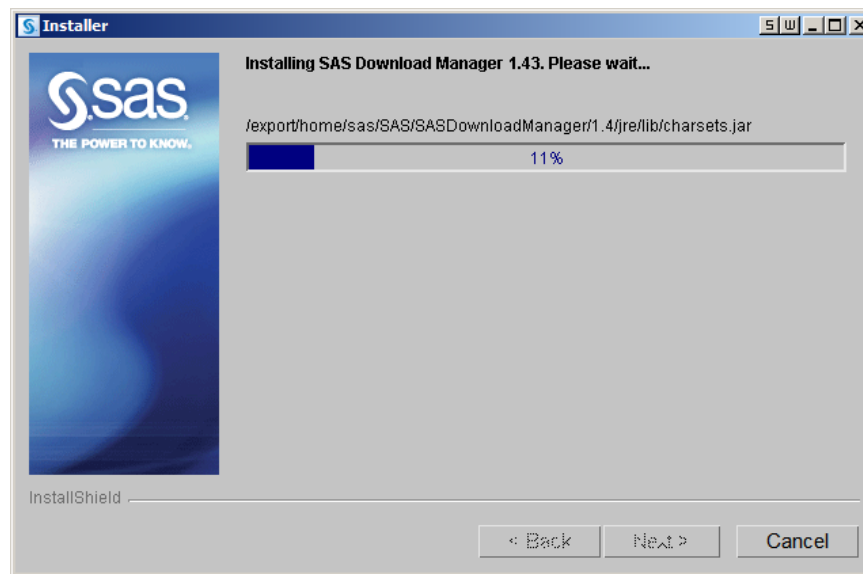
The installer automatically launches the SAS Download Manager.
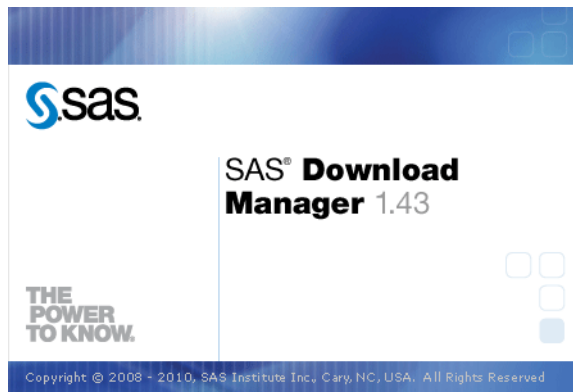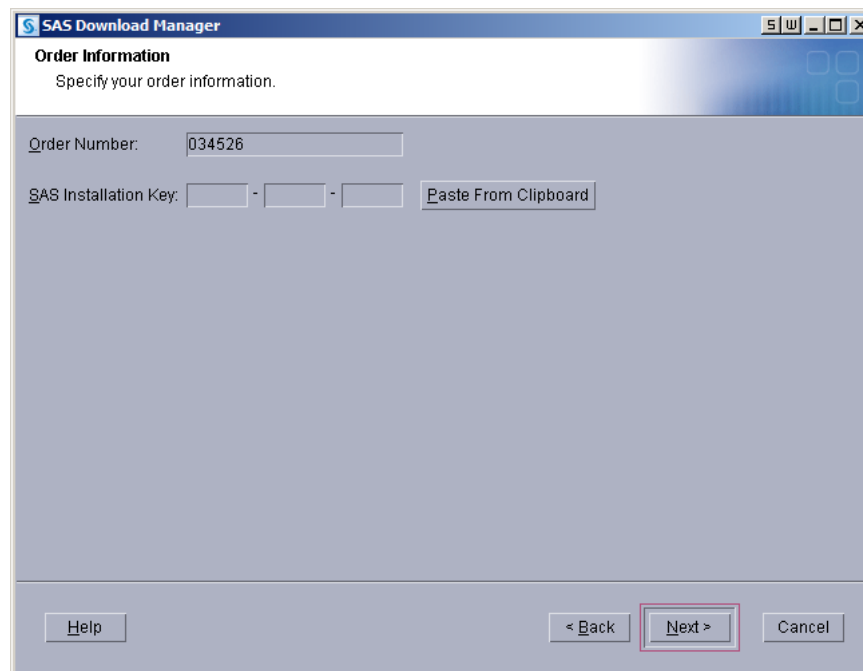
11 Run the SAS Download Manager and choose the language in which the SAS Deployment Wizard will display messages and prompts.
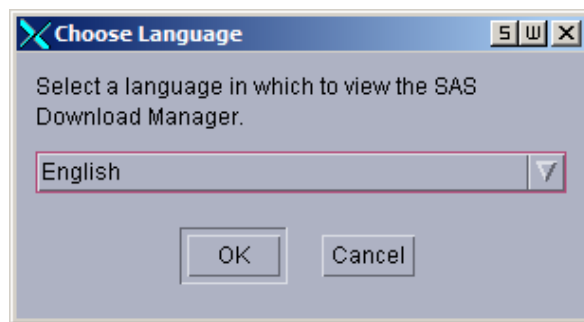
12 At some sites, you might see the page that prompts for proxy information. If so, supply the necessary proxy server settings for the SAS Download Manager to access the Internet. If needed, contact your site's system administrator for help with these settings.
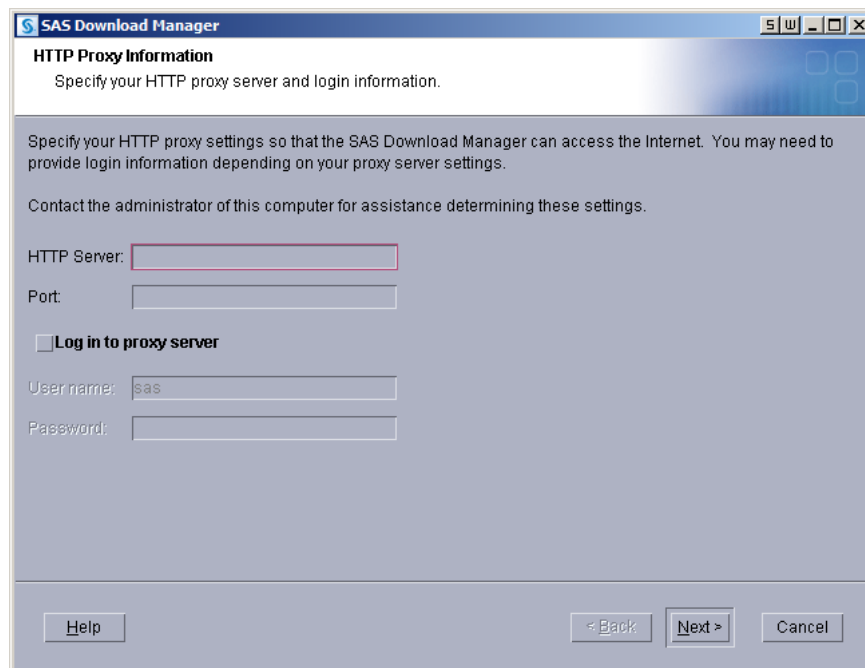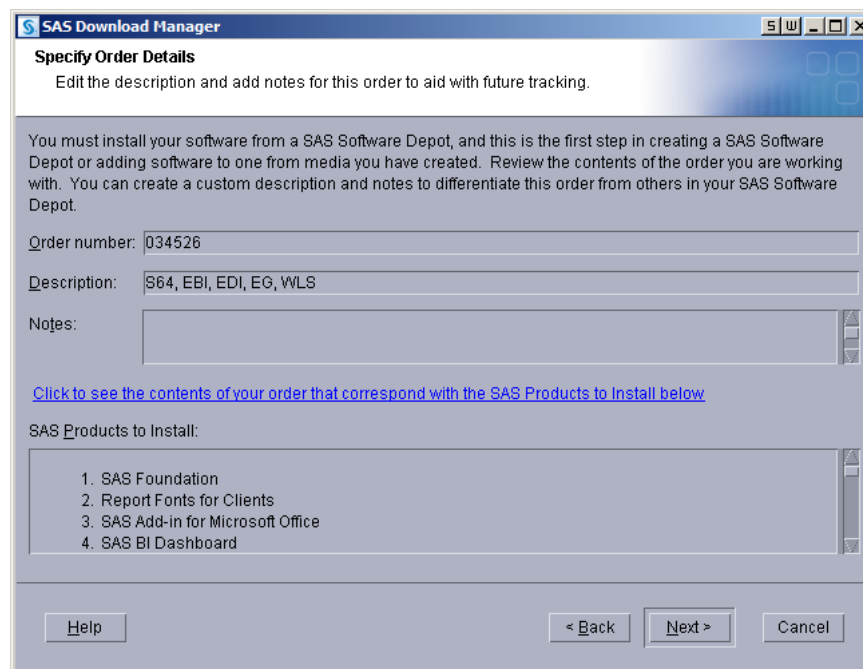
13 When prompted, enter your order number and SAS installation key.

14 Confirm the list of SAS offerings contained in your order. If you want, you can update the description for your order and include any notes to distinguish it from other SAS orders. The SAS Deployment Wizard will display this order information during the SAS installation.

Note: At any time after the download, you can run the SAS Deployment Wizard to add or modify SAS order information details. For more information, see

"Change Order Details" in *SAS Intelligence Platform: Installation and Configuration Guide.* △

15 Specify a location where you want to download SAS and build the SAS Software Depot.

For more information, see "Prerequisites for Creating a SAS Software Depot" on page 43.
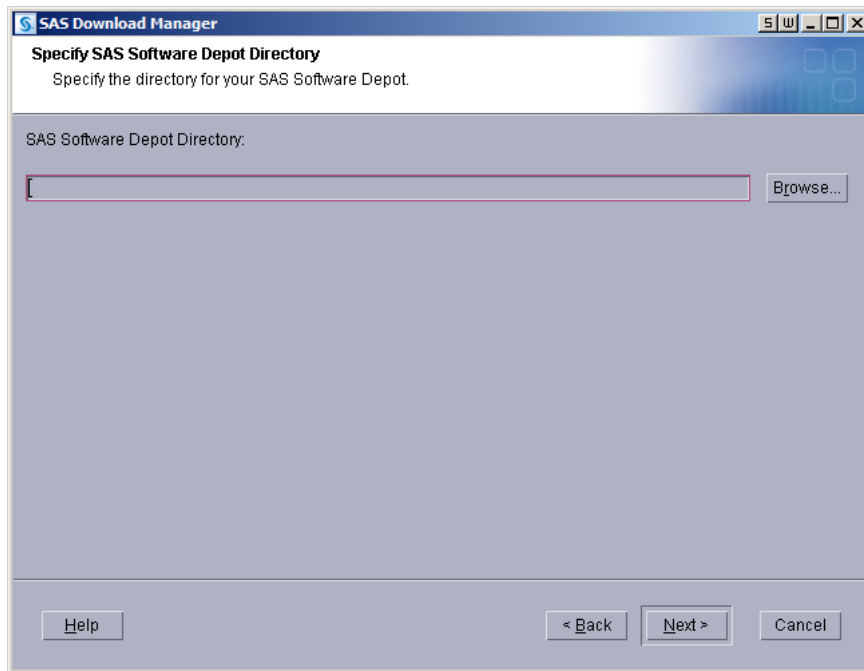
16 If the directory you specify does not exist, the wizard prompts you. If you want it to create the directory for you, click **Yes**.
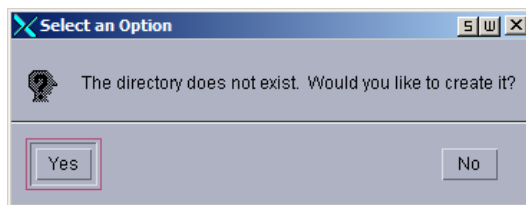
17 The SAS Download Manager has finished collecting order input. This is your last opportunity to change any information before downloading the SAS order and writing files to the target directory.

Make one of the following choices:

□ Click **Download** to begin downloading the SAS order and writing files in the target directory.

□ Click **Back** to navigate to earlier pages to change order information previously entered.

□ Click **Cancel** to terminate the SAS Download Manager session. Note that you will lose the information previously entered.

Note: SAS tracks downloads and counts only a *complete* download toward your download limit. △
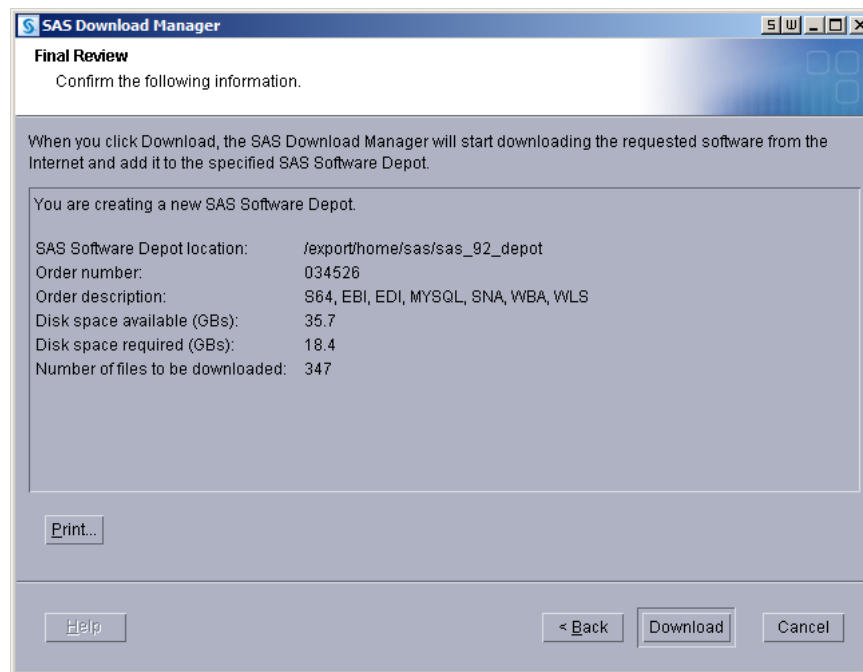
The SAS Download Manager begins downloading, uncompressing, and creating a depot of your SAS order.
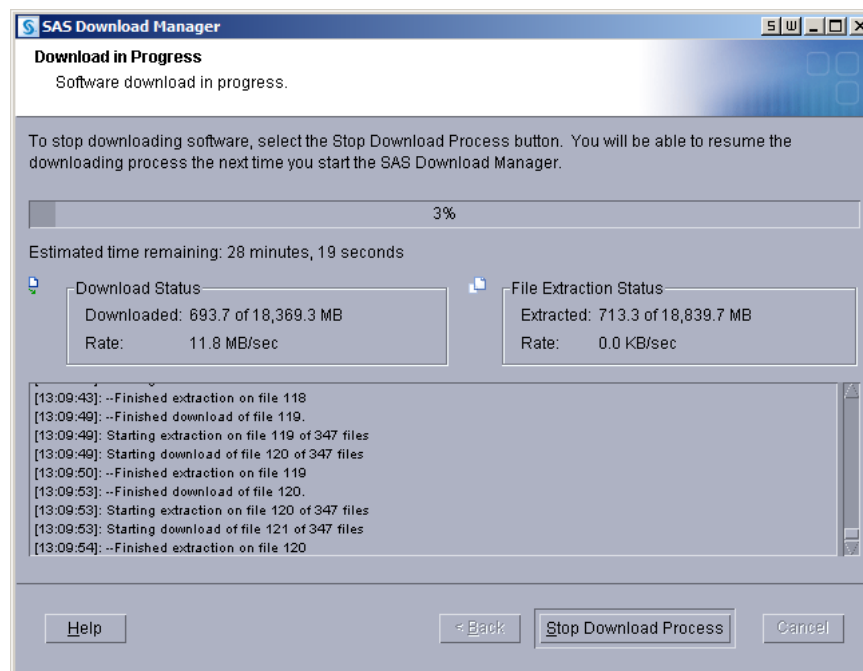
When you see a page similar to the following with the progress indicator at 100%, the SAS Download Manager is finished:
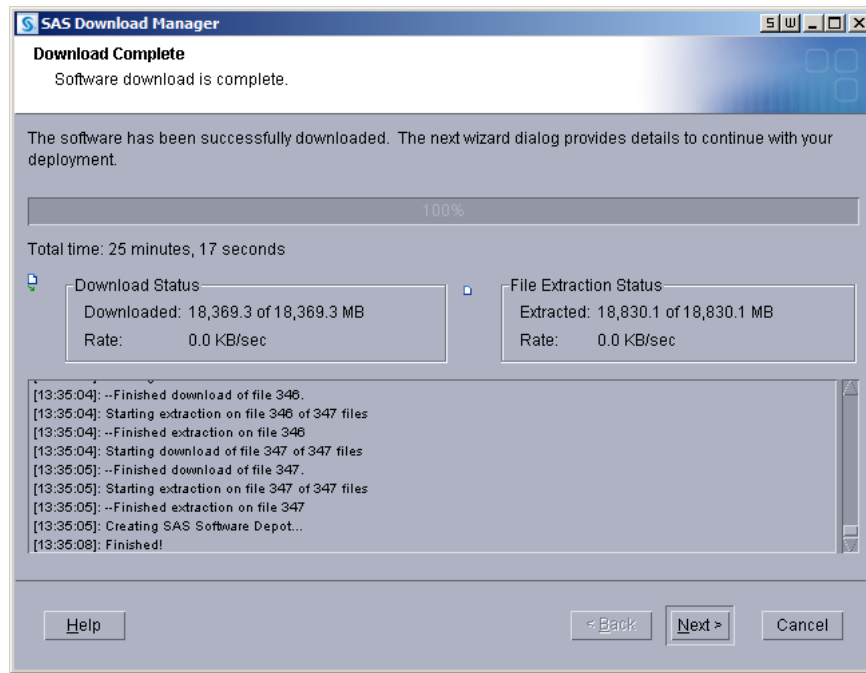
18 Click **Next** to go to the final page, which describes post-download instructions.
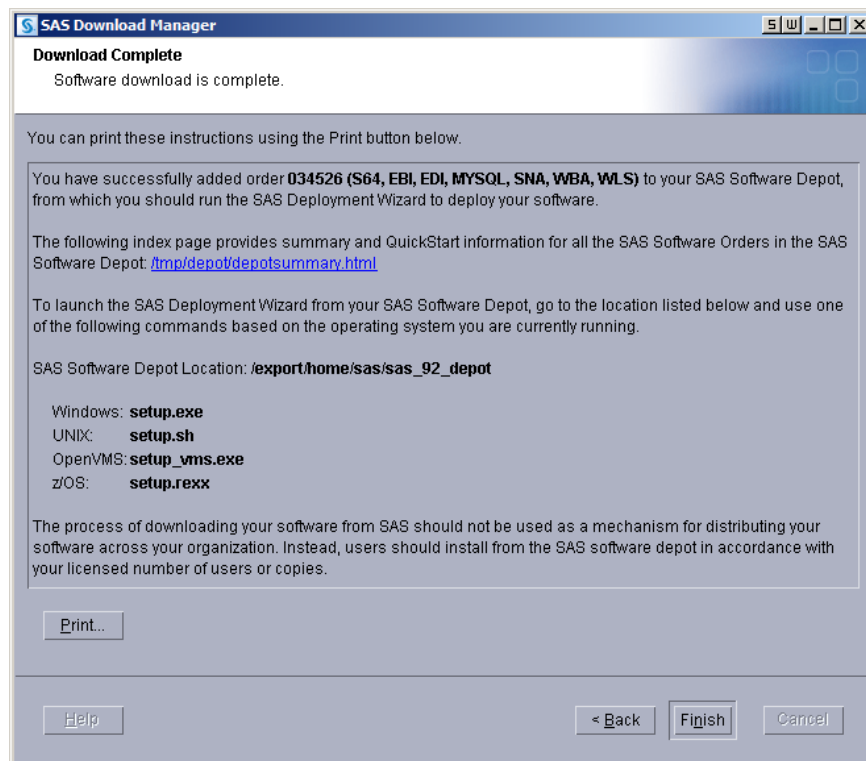
19 Click **Finish** to close the SAS Download Manager.

After you finish your SAS 9.2 deployment, be sure to keep your depot, as this will make applying maintenance and future upgrades easier.

Create a Depot by Using the SAS Deployment Wizard

You can use the SAS Deployment Wizard to create a copy of your SAS Software Depot in another directory. If the new depot location is a remote directory on another machine, the directory must be on a shared network drive accessible from the machine running the wizard.

To create a depot on a machine that does not have shared network storage, you must use another mechanism such as SFTP or SCP to copy the depot. (For more information about these programs, refer to your operating system documentation.)

To create a SAS Software Depot by using the SAS Deployment Wizard, follow these steps:

1 Log on to the machine that will contain the depot as a SAS Software Depot administrator or a user with depot Read, Write, and Execute privileges.

   Note: Consider designating one or a few users to serve as SAS Software Depot administrators. Persons needing to deploy SAS or to apply future SAS maintenance require depot Read and Execute privileges. Depot administration tasks such as initially creating the depot, storing SAS installation data files, and updating order details require depot Write privileges. △

2 Ensure that you have fulfilled the necessary requirements described in "Prerequisites for Creating a SAS Software Depot" on page 43.

3 Start the SAS Deployment Wizard, using one of two methods:

   □ If you are starting the wizard from removable media, proceed as follows, depending on your operating system:

      □ Windows:

         The `setup.exe` program starts automatically when the media is inserted into the drive.

         Note: If the SAS Deployment Wizard does not start automatically, open Windows Explorer, navigate to the root of the DVD, and double-click `setup.exe`. △

      □ UNIX:

         Navigate to the media's root directory, and type `./setup.sh` at a command prompt.

      □ z/OS:

         Navigate to the media's root directory, and type `./setup.rexx` at a command prompt.

   □ If you are starting the wizard from an existing SAS Software Depot, proceed as follows, depending on your operating system:

      Navigate to the depot's root directory and on:

      □ Windows:

         Double-click `setup.exe`.

      □ UNIX:

         Type `./setup.sh` at a command prompt.

      □ z/OS:

         Type `./setup.rexx` at a command prompt.

4 Choose the language in which the SAS Deployment Wizard will display messages and prompts.

5 Select `Create a New SAS Software Depot`. Do *not* select `Install SAS Software`.
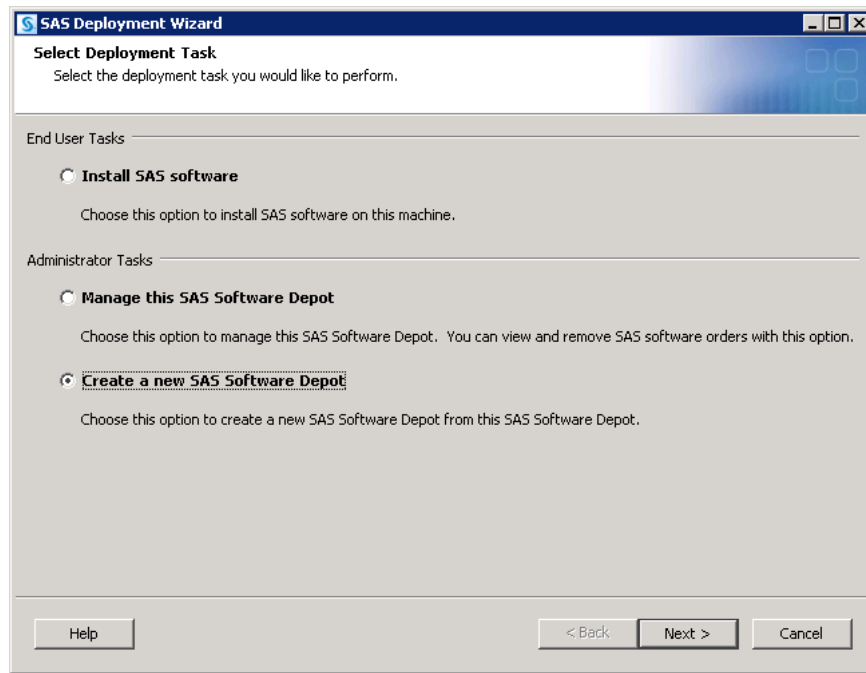
6 Confirm the list of SAS offerings contained in your order.

If you want, you can update the description for your order and include any notes to distinguish it from other SAS orders. The SAS Deployment Wizard will display this order information during the SAS installation.
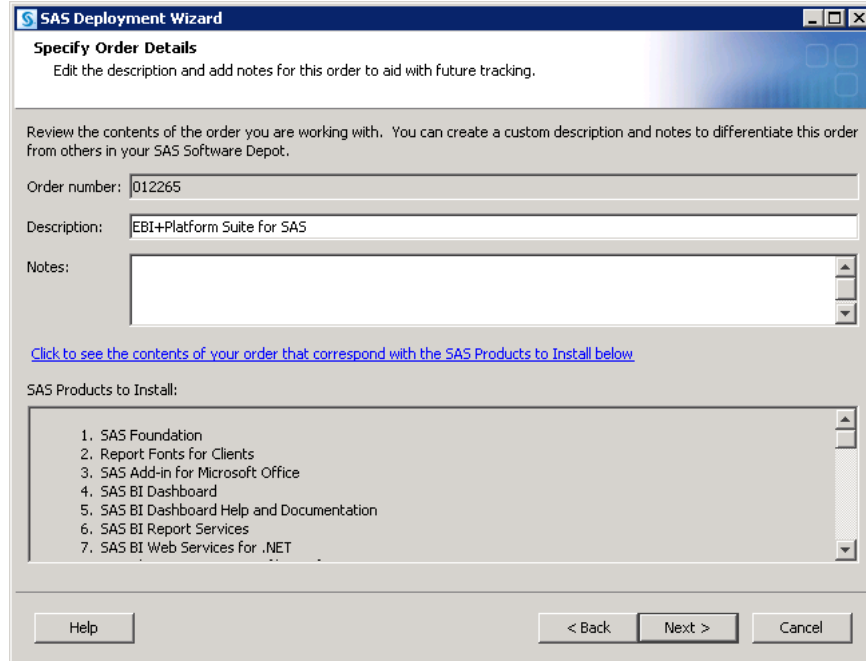

Note: At any time after the download, you can run the SAS Deployment Wizard to add or modify SAS order information details. For more information, see "Change Order Details" in *SAS Intelligence Platform: Installation and Configuration Guide.* △

7 Specify a location where you want to download SAS and build the software depot. (This location can be shared storage that physically resides on another machine.)

For more information, see "Prerequisites for Creating a SAS Software Depot" on page 43.
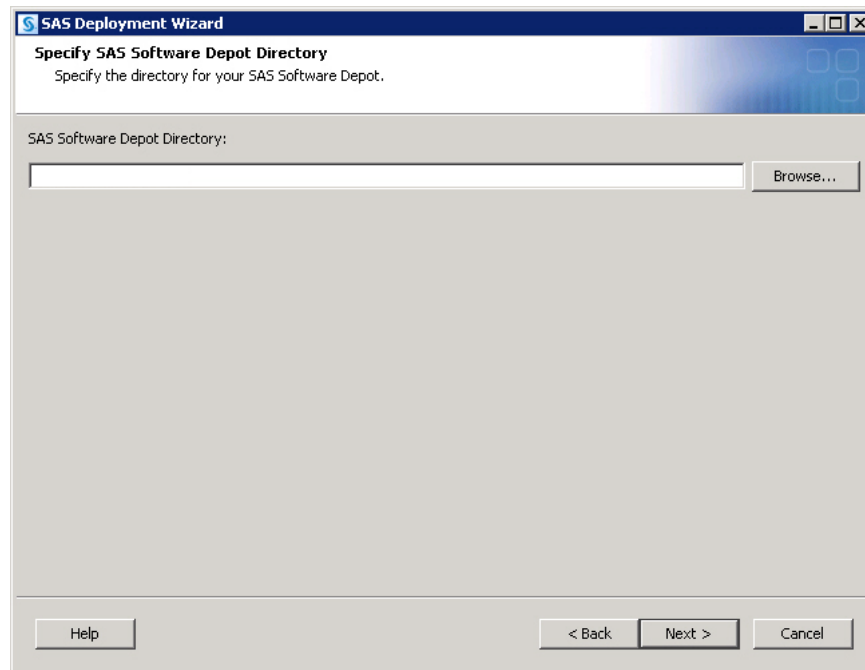
8 If the directory you specify does not exist, the wizard prompts you. If you want it to create the directory for you, click **Yes**.
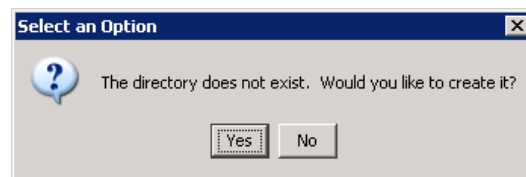
9 The SAS Deployment Wizard has finished collecting order input. This is your last opportunity to change any information you have provided before the wizard begins writing files to the target directory.

Make one of the following choices:

☐ Click **Start** to begin creating the depot in the target directory.

☐ Click **Back** to navigate to earlier wizard pages to change order information previously entered.

☐ Click **Cancel** to terminate the wizard session. Note that you will lose order information previously entered.
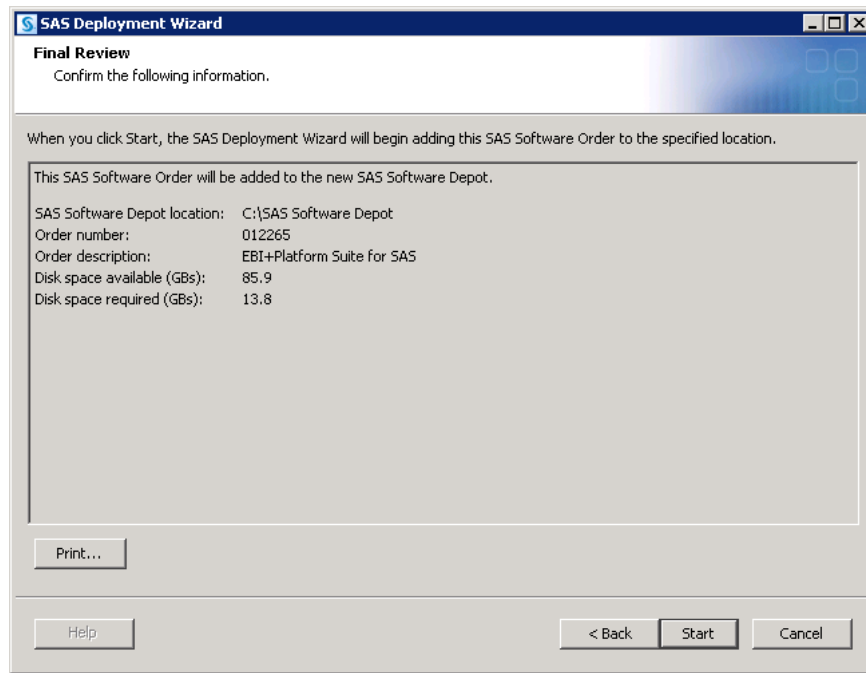
10 If you are running the SAS Deployment Wizard from removable media the SAS Deployment Wizard prompts you for a DVD. Continue to supply discs as prompted.

> *Note:* If you are working on a UNIX system without an automounter, mount the DVD drive. For information about the privileges required to mount a device and the syntax of the **mount** command for your system, see the *SAS Deployment Wizard User's Guide*, which is available on the Install Center: **http://support.sas.com/documentation/installcenter/**. (Search for *SAS Deployment Wizard User's Guide*.) △

The SAS Deployment Wizard begins creating a depot of your SAS order.
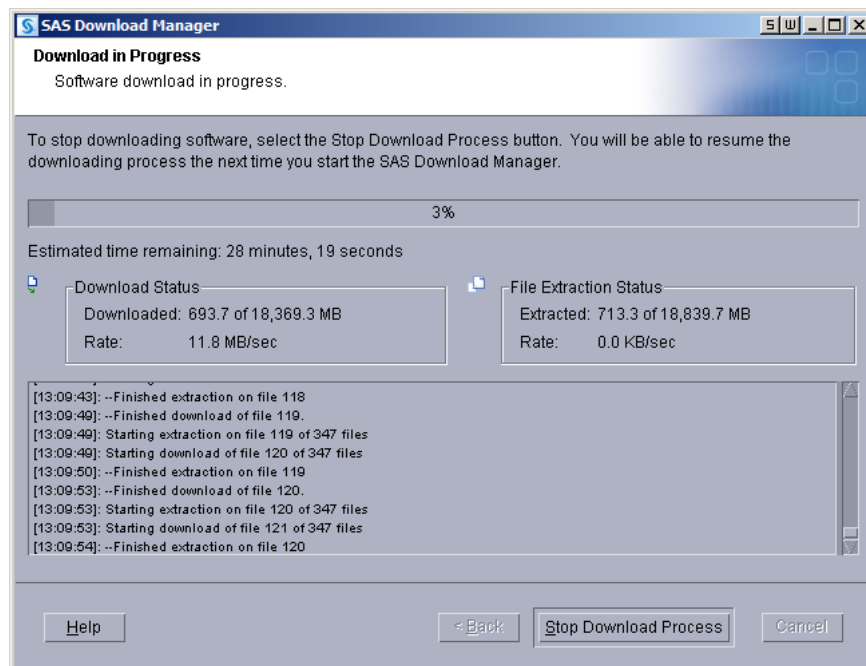
11 When you see a page similar to the following with the progress indicator at 100%, the SAS Deployment Wizard is finished:
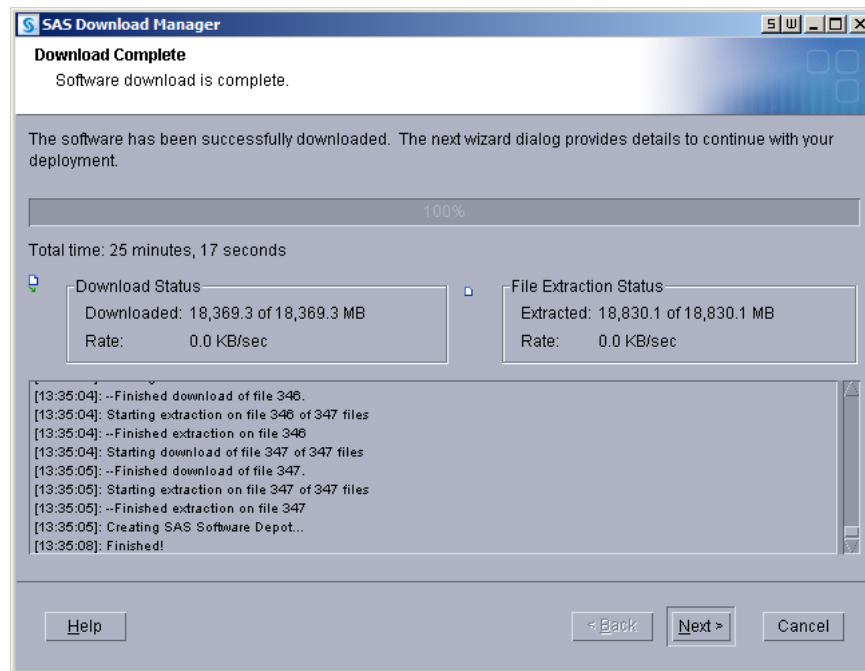
12 Click **Next** to go to the final page, which contains instructions for what to do after creation of the software depot.

13 Click the **depotsummary.html** link on the page to review the SAS QuickStart Guide.
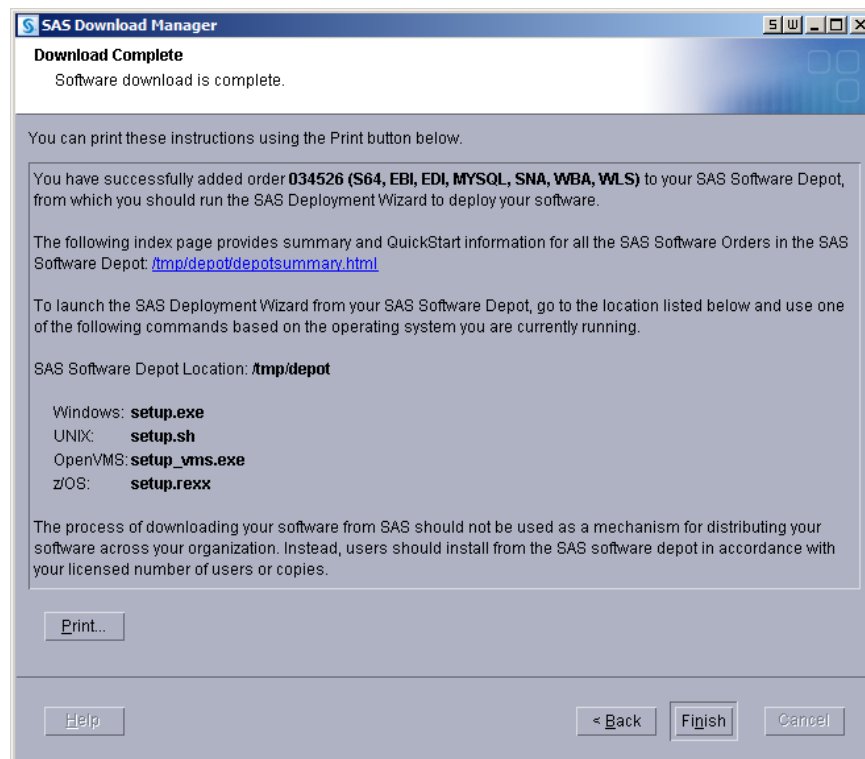
14 Click **Finish** to close the SAS Deployment Wizard.

15 If you are using removable media on a UNIX system where an automounter is being used, use the **eject** command to remove the DVD. On a UNIX system without an automounter, you must unmount the drive by using the **umount** command and then manually opening the drive. For information about the **umount** command that is needed to unmount a device on your system, see the *SAS Deployment Wizard User's Guide*, which is available on the Install Center: **http://support.sas.com/documentation/installcenter/**. (Search for *SAS Deployment Wizard User's Guide*.)

After you finish your SAS 9.2 deployment, be sure to keep your depot, as this will make applying maintenance and future upgrades easier.

Create the Migration Package

In addition to creating migration analysis reports, the SAS Migration Utility creates migration packages. These packages contain all of the SAS 9.1.3 content—data and configuration—residing on a machine. Later in the migration process, the SAS Deployment Wizard uses these migration packages to populate your SAS 9.2 deployment.

Note: If you downloaded the SAS Migration Utility before receiving your SAS 9.2 order, you should now use the migration utility that is provided in your order. The version of the SAS Migration Utility that is included with your SAS 9.2 order is guaranteed to be compatible with the versions of the SAS products that you have ordered. △

If you have multiple machines in your SAS deployment, then you have to run the migration utility once on each machine. (Always run the migration utility on the metadata server first.)

To create a migration package, follow these steps:

CAUTION:
The migration utility pauses the metadata server when it creates a migration package, so any attempts to use your SAS 9.1.3 system during this period will be unsuccessful. Therefore, you should plan accordingly.   △

1 Review the migration utility requirements. (See "SAS Migration Utility Requirements" on page 17.)

2 Make sure that you have backed up your SAS 9.1.3 Metadata Repository.

For more information, see "Back Up the SAS 9.1.3 System" on page 32.

3 If you haven't already, complete a migration utility checklist. (See "Complete a Migration Utility Checklist" on page 15.)

4 Make sure that you have prepared your metadata repositories before you create a migration package on the metadata tier. (See "Prepare Your Metadata Repositories" on page 16.)

5 Verify that the SAS 9.1.3 Metadata Server is running.

6 Log on to the SAS 9.1.3 machine (the *target* machine) whose SAS content you want to migrate.

Note: On SAS multiple machine deployments, run the migration utility *first* on the machine hosting the SAS Metadata Server. △

7 If the version of the migration utility that you are using has changed from one that you have used previously, then be sure to delete the migration utility's output directory. (For example, in the past, you might have downloaded and run an earlier version of the migration utility to create an analysis report. If so, delete the output created by the older migration utility.)

8 Change to the SAS Migration Utility executable directory. By default, this is the utilities directory in your SAS Software Depot.

9 Use the common migration utility properties file and the common connection profile you have developed, unless the target machine requires any special modifications.

(For example, SAS is installed on a nonstandard path.)

For more information, see "Develop a Common SAS Migration Utility Properties File" on page 19.

10 Add any necessary product-specific migration utility properties to your properties file. (See "Review Product-Specific SAS Migration Utility Properties" on page 20.)

11 If you have migration packages from any earlier migration utility invocations, delete or move these packages before rerunning the migration utility.

12 If you have a multi-tier SAS 9.1.3 deployment, you will need to run the migration utility once on each machine. (Do not run the migration utility on machines that only contain SAS 9.1.3 clients.) There are specific options, depending on the tier (for example, **–davtier**). For more information, see Appendix 1, "SAS Migration Utility Reference," on page 141.

Note: You cannot run the migration utility on more than one machine simultaneously, because the migration schema might be updated by more than one process at the same time. △

13 Invoke the migration utility, using the following command from an operating system prompt or command line.

Note: On UNIX and z/OS, if you have not already, remember to assign file execute permissions to smu.sh before attempting to run the migration utility. For more information, refer to your UNIX or z/OS documentation. △

Use the **–replace** option if the migration utility writes to the output directory used in earlier invocations. If you are migrating on the WebDAV machine, make sure that you specify **–davtier** on the command line or use the appropriate WebDAV properties:

□ Windows:

```
smu -s -a -properties absolute pathname to property file -replace
```

□ UNIX:

```
./smu.sh -- -properties absolute pathname to property file -replace
```

□ z/OS:

```
./smu.zos -- -properties absolute pathname to property file -replace
```

□ For more information about migration utility commands, see Appendix 1, "SAS Migration Utility Reference," on page 141.

For more information about migration utility properties files, see "Develop a Common SAS Migration Utility Properties File" on page 19.

14 Review the migration analysis report to ensure that the migration package was properly created. Point a Web browser to AnalysisReport.xml in the **AnalysisReport** subdirectory underneath the output directory you specified in the migration utility properties file.

15 After you have created the migration package, make a backup of the package. Backups are especially recommended in multi-tier deployments. If the package creation fails for one tier, you can restore the package to the last successful version, without having to rerun the migration utility on every tier again.

16 If you have a multi-tier SAS 9.1.3 deployment, you will need to create a migration package for each machine. (Do not run the migration utility on machines that contain only SAS 9.1.3 clients.) There are specific options, depending on the tier (for example, **-davtier**). For more information, see Appendix 1, "SAS Migration Utility Reference," on page 141.

Note: You cannot run the migration utility on more than one machine simultaneously, because the migration schema might be updated by more than one process at the same time. △

Change Ports Used By SAS Products

Change Ports Using the Port Remap Utility

By default, the SAS automated migration tools assume that you will retain the machine ports that you used for your various SAS 9.1.3 products. During a migration, the only ports that the SAS Deployment Wizard prompts for are for products that are new to SAS 9.2, such as the pooled workspace server.

However, SAS does enable you to make changes. The Port Remap utility provides scripts that partially automate the steps required to change ports.

Note: The Port Remap utility requires the public domain, third-party library xsltproc. Most operating systems already have it installed. If you encounter any problems, a machine that is missing the xsltproc library might be the cause. An alternative to using the utility is to manually change the ports. For more information, see "Change Ports Manually" on page 63. △

To change a port used by a SAS 9.1.3 product that you are migrating, follow these steps:

1 Locate the deployment plan file that you will use to migrate to SAS 9.2.

To download the latest SAS 9.2 standard deployment plans, go to **http://support.sas.com/installcenter/plans**.

2 Open the plan file, search for "Machine Id", and record the names of your various SAS tiers.

(If you are using a standard plan, the diagram that accompanies it contains the tier names.) Also, be sure to have a list of the machine names to which you want to migrate. Keep this information handy as you will need to refer to it later in this procedure.

3 Create a migration package for each tier of your SAS 9.1.3 deployment as described in "Create the Migration Package" on page 59.

Every machine in your SAS deployment should be able to write to the migration package and also have access to the SAS 9.2 Software Depot.

4 Log on to a machine in your deployment with the user ID you used to create the migration package, open a command prompt or console, and change to the **portremap/**operating-system subdirectory under **utilities/smu** in your SAS 9.2 software depot.

> For example:
>
> cd **\SAS Software Depot\utilities\smu\portremap\win**

5 Run the transform script.

> □ Windows:
>
> > transform.bat
>
> □ UNIX and z/OS:
>
> > ./transform.sh

6 When prompted, provide the transform script with the absolute path to your migration package on the current machine. (This is the value of SMU.Output.Dir.)

> The script copies one of the migration package files (template.xml) to a new file (deployment-wizard.xml). Inside deployment-wizard.xml, the script copies the **<original-tiers>** section and renames this copy **<newTiers>**. Within the **<newTiers>** section the script inserts placeholders for the tier and host names. No placeholders are used for ports. But, you can make any port changes that you require.
>
> For example:

```
<newTiers>
 <tier name="[Insert machine name from plan file here]"
    host="[Insert host name from plan file here]"
    configdir="/data1/config913/Lev1" osfamily="Unix" os="s64" primary="true">
   <products>
    <product id="metadatasrv">
     <deployments>
      <deployment singleton="true"
         URL="1d7dfa85c836c5d1:255b9d6e:11d6954d386:-7fff">
       <port URL="sas12:metadatasrv" sdwprop="iomsrv.metadatasrv.port"
          functionLabel="">8561</port>
      </deployments>
     </product>
     ...
```

> When the transform script is finished, it writes a file named deployment-wizard.xml to the migration-schemas subdirectory in your migration package.

7 Open deployment-wizard.xml in a text editor and make the following changes:

> □ Replace the string **[Insert machine name from plan file here]** with the name of the tier.
>
> > Using the information you recorded in Step 2, specify a tier name that matches the machine ID in your deployment plan file (for example, **Metadata Tier**).
>
> □ Replace the string **[Insert host name from plan file here]** with the fully qualified name of the target machine.
>
> > For example, **myhost.example.com**.
>
> □ Change ports as needed.
>
> For example:

```
<newTiers>
 <tier name="Metadata Tier" host="myhost.example.com"
   configdir="/data1/config913/Lev1" osfamily="Unix" os="s64" primary="true">
    <products>
     <product id="metadatasrv">
```

```
    <deployments>
     <deployment singleton="true"
        URL="1d7dfa85c836c5d1:255b9d6e:11d6954d386:-7fff">
      <port URL="sas12:metadatasrv" sdwprop="iomsrv.metadatasrv.port"
        functionLabel="">8560</port>
     </deployments>
    </product>
    ...
```

Note: Review your changes carefully, as the deployment wizard does not validate host names contained in deployment-wizard.xml. △

8 Load deployment-wizard.xml in a Web browser to verify that your XML edits are well-formed.

9 Next, run the SAS Deployment Wizard on each machine in your SAS deployment as described in "Overview of Installing SAS and Migrating Your Content" on page 65.

Change Ports Manually

Some operating systems, such as z/OS, do not contain the public third-party library, xsltproc, that is required by the Port Remap utility. The alternative to running the utility is to copy the template.xml file and, using a text editor, change certain property values manually.

To manually change a port used by a SAS 9.1.3 product that you are migrating, follow these steps:

1 Locate the deployment plan file that you will use to migrate to SAS 9.2.

To download the latest SAS 9.2 standard deployment plans, go to **http://support.sas.com/installcenter/plans**.

2 Open the plan file, search for "Machine Id", and record the names of your various SAS tiers.

If you are using a standard plan, the diagram that accompanies it contains the tier names. Also, be sure to have a list of the machine names to which you want to migrate. Keep this information handy as you will need to refer to it later in this procedure.

3 Create a migration package for each tier of your SAS 9.1.3 deployment as described in "Create the Migration Package" on page 59.

Every machine in your SAS deployment should be able to write to the migration package and also have access to the SAS 9.2 Software Depot.

4 In the **migration-schemas** subdirectory of the migration package, copy template.xml to deployment-wizard.xml.

5 Using a text editor, open deployment-wizard.xml and copy the entire **original-tiers** section and change the outer tag to **newTiers**.

6 In the section you just created, change the value for the **name= tag** of each tier to match the name given in the plan (for example, "Metadata Tier").

7 Finally, in the same section, change the port numbers to their new values.

For example:

```
<newTiers>
 <tier name="Metadata Tier" host="myhost.example.com"
   configdir="/data1/config913/Lev1" osfamily="Unix" os="s64" primary="true">
    <products>
```

```
<product id="metadatasrv">
 <deployments>
  <deployment singleton="true"
     URL="1d7dfa85c836c5d1:255b9d6e:11d6954d386:-7fff">
   <port URL="sas12:metadatasrv" sdwprop="iomsrv.metadatasrv.port"
     functionLabel="">8560</port>
  </deployments>
</product>
...
```

Note: Review your changes carefully, as the deployment wizard does not validate host names contained in deployment-wizard.xml. △

8 Load deployment-wizard.xml in a Web browser to verify that your XML edits are well-formed.

9 Next, run the SAS Deployment Wizard on each machine in your SAS deployment as described in "Overview of Installing SAS and Migrating Your Content" on page 65.

C H A P T E R

4

Installing SAS 9.2 and Migrating Your SAS Content

Overview of Installing SAS and Migrating Your Content

This is the third of five tasks required to install SAS 9.2 and migrate your SAS 9.1.3 content:

1. Design your migration.

2. Perform pre-migration tasks.

▶ **3.** *Install SAS 9.2 and migrate your SAS 9.1.3 content.*

4. Perform post-migration tasks.

5. Validate your migration.

Preparing to Install and to Configure

SAS Deployment Wizard Options

The *SAS Deployment Wizard* is a cross-platform utility that installs and configures many SAS products. Using a SAS installation data file and a deployment plan for its initial input, the wizard is designed to prompt the customer for all the remaining input at the start of the session so that the customer does not have to monitor an entire deployment.

There are two major ways that you can run the SAS Deployment Wizard:

□ interactively

    a standard method of providing input via fields on wizard pages with a back and next button navigation method. You can choose from three levels of configuration prompting: Custom (all prompts), Typical (basic set of prompts), and Express (minimum set of prompts). For more information, see "Install and Migrate SAS Interactively" on page 73.

□ non-interactively

    a record and playback feature that enables you to automate a SAS installation for use on multiple machines. This feature is designed for large-scale enterprise deployments to prevent users from having to manually provide input on every page each time the SAS Deployment Wizard is run on a machine. For more information, see "Automating SAS 9.2 Client Installation Across Multiple Machines" on page 92.

About Deployment Plans

A *deployment plan* describes what software should be installed and configured on each machine in a SAS deployment. A deployment plan is an XML file that is used as input to the SAS Deployment Wizard. There are two types of deployment plans: standard and custom. A standard deployment plan describes a common configuration. Standard plans are stored by default in the SAS Software Depot. A custom deployment plan is created by a SAS representative specifically for a site.

□ If a SAS representative created a custom plan for you, an XML file (or a ZIP file containing an XML file) will have been e-mailed to you.

□ If your SAS representative recommended that you use a standard plan, you just need the name of the plan that you will use; you will download the actual plan with your SAS custom order (or included in your custom media that is shipped to you.) During the installation, the standard plan will be available from a drop-down list in the SAS installation program.

At the end of the SAS deployment, the SAS Deployment Wizard makes a copy of the deployment plan it used. The deployment plan can be helpful when you want to add another SAS product or change your SAS configuration. The wizard stores a copy of the deployment plan in the SAS configuration directory in the utilities directory, and inserts a date and time stamp to the deployment plan file name. For example:

    C:\SAS\Config\Lev1\Utilities\plan.2009-02-17-11.04.xml

To download the latest SAS 9.2 standard deployment plans, go to **http:// support.sas.com/installcenter/plans**.

SAS 9.2 Changes that Affect the Deployment Plan

When you work with your SAS representative to develop a custom deployment plan, or if you are choosing among the standard deployment plans available to you in your SAS 9.2 Software Depot, remember that there have been some deployment plan changes between SAS 9.1.3 and SAS 9.2. The following table enumerates these changes:

Table 4.1 SAS 9.2 Changes That Affect the Deployment Plan

SAS 9.1.3 Deployment	Change in SAS 9.2 Deployment
Standard deployment plans are not shipped with the SAS Software Depot.	Standard deployment plans are shipped with the SAS Software Depot (and also available at **http://support.sas.com/installcenter/ plans**).
No architectural diagrams and pre-installation checklists that match the standard deployment plans are supplied by SAS.	Architectural diagrams and pre-installation checklists that match the standard deployment plans are supplied by SAS (available in the SAS Software Depot and at **http:// support.sas.com/installcenter/plans**).
The deployment plan used to deploy SAS is not stored in the SAS configuration directory.	The deployment plan used to deploy SAS is stored in the SAS configuration directory (under *SAS-config-dir***/Lev***n***/Utilities**).
SAS Web Infrastructure Kit is included.	The SAS Web Infrastructure Kit has been replaced by the SAS Web Infrastructure Platform.
Xythos and Apache HTTP WebDAV servers are included.	Xythos and Apache servers are replaced with the SAS Content Server.
Apache Tomcat is included.	Apache Tomcat is replaced with the JBoss Application Server.
A separate deployment plan entry is required for SAS Foundation Services Manager.	No separate entry is required for SAS Foundation Services Manager (part of SAS Management Console).
SAS Query and Reporting Services and SAS Reporting Services are included.	These components are replaced with SAS BI Reporting Services.
SAS Web Report Studio scheduling requires Platform Process Manager.	SAS In-Process Scheduler can be used for SAS Web Report Studio scheduling.
By default, certain deployment plans contain both SAS Web Report Studio and SAS Web Report Viewer.	By default, certain deployment plans contain SAS Web Report Studio only.
The Java Runtime Environment (JRE) is required in deployment plans.	The JRE is no longer included in deployment plans.
SAS Add-In for Microsoft Office is optional in deployment plans (when part of the order).	SAS Add-In for Microsoft Office is required in deployment plans (when part of the order). *Note:* In the SAS Deployment Wizard, you can deselect SAS Add-In for Microsoft Office to avoid errors when deploying on machines without Microsoft Office. △
SAS Configuration Troubleshooter is included.	SAS Configuration Troubleshooter is not yet available in SAS 9.2.
SAS Deployment Tester is optional in deployment plans.	SAS Deployment Tester is required in deployment plans.

SAS 9.1.3 Deployment	Change in SAS 9.2 Deployment
SAS Pooled Workspace Server is not available.	SAS Pooled Workspace Server is new in SAS 9.2.
SAS Table Server is not available.	SAS Table Server is new in SAS 9.2.

Content Repository Considerations

Before deploying SAS 9.2, consider where certain content repositories will reside:

□ SAS Table Server

   If you are deploying the SAS Table Server, then the SAS configuration path should be a path local to the machine. The configuration path should not be on an NFS shared disk. If you want to put your configuration path on a shared disk, then you must make sure that you specify a local path for the table server content directory. You can set the table server content directory only on the SAS Deployment Wizard custom configuration prompting level. For more information, see "Interactive Prompting Levels" on page 68.

□ SAS Metadata Server

   We recommend that your metadata repositories reside either on a local file system or a high-performance, high-availability network file system. For more information about metadata repositories, see "About SAS Metadata Repositories" in the *SAS Intelligence Platform: System Administration Guide*.

Installation Order Rules for Multiple Machine Deployments

Be aware that if you are deploying SAS on a multiple-machine, distributed system, you must install software on your computers in a particular order:

□ *Always* install SAS software on the metadata server machine first.

□ Install SAS Application Servers (such as workspace or stored process servers) on machines other than the metadata server machine.

□ Install the middle tier with SAS Foundation Services (that is, Remote Services).

□ Install the middle tier with SAS Web Infrastructure Platform.

□ Install the middle tier with other Web applications (such as SAS BI Dashboard, SAS Web Report Studio, and so on).

□ Install software on machines that will host only clients last.

Interactive Prompting Levels

Shortly after you begin running the SAS Deployment Wizard to interactively install and initially configure SAS, you will be asked to choose between three wizard prompting levels. These levels are as follows:

□ `Express`

   displays the minimum number of wizard pages needed to complete the SAS configuration.

□ `Typical`

   displays the basic set of wizard pages needed to complete the SAS configuration.

□ `Custom`

   displays all the wizard pages needed to complete the SAS configuration.

Note: If you are deploying the SAS Table Server, then the SAS configuration path should be a path local to the machine. The configuration path should not be on an NFS shared disk. If you want to put your configuration path on a shared disk, then you must make sure that you specify a local path for the table server content directory. You can set the content directory on the Table Server Invocation Options page. This page is available only on the custom configuration prompting level. △

The following table lists all the configuration options that the SAS Deployment Wizard prompts you for based on the wizard prompting level that you choose:

Note: The configuration options for which the SAS Deployment Wizard prompts you depends on which SAS products are identified in your deployment plan, and, in multiple machine deployments, which machine you are currently deploying. △

Table 4.2 Configuration Options By Prompt Level

Configuration Option in the SAS Deployment Wizard	Prompt Level That Displays the Option		
	Express	Typical	Custom
Configuration prompting level[*]	X	X	X
Configuration directory and level[*]	X	X	X
Migration[*]	X	X	X
Type of deployment accounts[*]	X	X	X
Unrestricted administrator account credentials [*]	X	X	X
Trusted user account credentials[*]	X	X	X
Anonymous Web user account credentials[*]	X	X	X
E-mail server information[*]	X	X	X
Web application server: managed server name and ports[*]	X	X	X
SAS Shared Services JDBC connection credentials [*]	X	X	X
Web application server administrator (WebLogic and WebSphere only)[* 1]	X	X	X
WebSphere application server node name, node agent name, and profile name[*]	X	X	X
Web application server dependencies	X	X	X
SAS Web Application Themes dependencies	X	X	X
SAS Web Report Studio scheduling user (Platform LSF only)	X	X	X
SAS Web Report Studio dependencies	X	X	X
SAS BI Dashboard dependencies	X	X	X
SAS Information Delivery Portal JPS extension dependencies	X	X	X
SAS Help Viewer metadata configuration dependencies	X	X	X
SAS Web Infrastructure Platform dependencies	X	X	X
SAS Information Delivery Portal dependencies	X	X	X
SAS Shared Services dependencies	X	X	X

Configuration Option in the SAS Deployment Wizard	Prompt Level That Displays the Option		
	Express	Typical	Custom
SAS BI Portlets dependencies	X	X	X
SAS Flex Application Themes dependencies	X	X	X
SAS BID to WIP Cross Pollination dependencies	X	X	X
Local machine name[*]		X	X
Windows options: create shortcuts option		X	X
Windows shortcuts scope		X	X
Integrated Windows authentication (IWA) [*]		X	X
Anonymous Web access[*]		X	X
First user display name and account credentials		X	X
Object spawner port bank ports		X	X
Pooled workspace server port[*]		X	X
Table server port[*]		X	X
Metadata utility SAS DATA step batch server deployed jobs information[*]		X	X
Deployment Tester port and JUnit JAR file		X	X
Web application server automatic configuration [*]		X	X
SAS Remote Services application host name and port		X	X
Event broker HTTP port and admin port		X	X
Web application server automatic deployment [*]		X	X
SAS Web Application Themes host name, protocol, and port		X	X
IP multicast address, UDP port, TTL, authentication token option[2*]		X	X
SAS Web Report Studio enable clustering support		X	X
Enable SAS Web Report Studio scheduling [*]		X	X
SAS Web Report Studio in-process scheduling ports		X	X
BI Web Services: new Web services deployment method		X	X
SAS Content Server repository directory [*]		X	X
SAS Information Delivery Portal samples		X	X
Database type for SAS Shared Services		X	X
SAS Shared Services database properties (not for SAS Table Server)[*]		X	X
SAS Shared Services JDBC driver jars directory [*]		X	X
WebLogic Web application server node manager host name and port		X	X

Configuration Option in the SAS Deployment Wizard	Prompt Level That Displays the Option		
	Express	Typical	Custom
Web application server administration server name, port, and secured port (WebLogic and WebSphere only)		X	X
WebSphere application server deployment manager profile name, node name, and cell name		X	X
WebSphere application server deployment manager SOAP port and RMI port		X	X
Web application server enable administrative security		X	X
WebSphere application server node SOAP port and RMI port		X	X
SAS WebParts for Microsoft SharePoint automatic deployment		X	X
SAS Flex Application Themes host name, port, and protocol		X	X
SAS BI Portlets Portal server		X	X
Select products to configure[3]			X
Authentication domain[*]			X
Windows options: run as managed scripts or services[*]			X
Metadata server: server librefs			X
Metadata server name and logical name[*]			X
Metadata server log file name and invocation options			X
Metadata server foundation repository			X
Metadata server Windows service information			X
SAS BI Web Services authentication method [*]			X
SAS General Servers group			X
SAS Table Server Admins group			X
SAS BI Web Services Users group			X
Common directories for logs, users, data, and temporary space[*]			X
Metadata server encryption level and algorithm [*]			X
Client-side connection profile credentials policy[*]			X
Object spawner invocation options and log file name			X
SAS Application Server librefs			X
Pooled workspace server name, logical name, and host name[*]			X
Pooled workspace server invocation options and log file name			X
Stored process log file name			X
OLAP server schema name			X
OLAP server invocation options and log file name			X
OLAP server Windows service information			X

Configuration Option in the SAS Deployment Wizard	Prompt Level That Displays the Option		
	Express	Typical	Custom
SAS/SHARE server invocation options, server short name, and log file name			X
SAS/SHARE server Windows service information			X
SAS/CONNECT server invocation options and log file name			X
Table server name and host name[*]			X
Table server content directory, invocation options and log file name			X
Table server Windows service information			X
Metadata utility SAS DATA step batch server name, logical name, invocation options, and deployed jobs information[*]			X
Deployment Tester host name			X
Query cache library directory and libref [*]			X
Output management library information[*]			X
Web application server administration server protocol and additional JVM options			X
WebSphere application server protocol for deployment manager - node agent protocol and ports			X
Secure JMS resources (WebLogic and JBoss only)			X
Web application server: proxy information [*]			X
WebSphere application server node additional JVM options[*]			X
Web application server: configure multiple managed servers[*]			X
WebLogic Web application server domain path and home directory			X
Web application server: managed server protocol and additional JVM options[*]			X
Web application server restrictive policy files (WebSphere and JBoss only)			X
SAS Remote Services Windows service information			X
SAS Remote Services JVM settings[*]			X
SAS Web Report Studio upgrade reports			X
SAS Web Report Studio deployment instance name (WebLogic and WebSphere only)			X
SAS Web Report Studio description and context root			X
SAS BI Dashboard context root			X
SAS BI Dashboard content directory			X
SAS BI Web Services: completion code values, dynamic prompt validation, and execution time-out			X

Configuration Option in the SAS Deployment Wizard	Prompt Level That Displays the Option		
	Express	Typical	Custom
BI Web Services: new Web services base namespace, temp directory, and delete temp files			X
SAS Information Delivery Portal banner title and menu display options			X
SAS Information Delivery Portal unchallenged access[*]			X
SAS Information Delivery Portal and SAS Package Viewer context root			X
SAS BI Portlets editing and viewing interfaces			X
SAS BI Portlets and SAS JSR 168 Remote Portlets context roots			X
SAS Flex Application Themes host name, port, and protocol			X
SAS Web Parts for Microsoft SharePoint name, port, directory, and application pool			X
SAS Web Parts for Microsoft SharePoint URLs, installation directory, and user ID[*]			X

* An asterisk (*) next to a configuration option indicates that more information is available later in this document. See the SAS Deployment Wizard online Help for information about all options.
1 Option displays during express for WebLogic deployments only.
2 Option displays during express and typical prompting when the configuration directory and level pre-exists.
3 Option displays during express and typical prompting whenever the middle tier is deployed.

Install and Migrate SAS Interactively

Installing and migrating SAS interactively with the SAS Deployment Wizard consists of two main phases:

- □ providing installation information such as the following:
    - □ deployment plan location
    - □ machine type (metadata server machine, server machine, and so on)
    - □ SAS components to be installed on the machine
    - □ valid paths to any required pre-installed, third-party software
- □ providing migration and configuration information such as the following:
    - □ migration package location
    - □ prompting level
    - □ configuration directory name
    - □ required user account credentials

This topic describes some of the more important configuration dialog boxes that you will encounter during the migration and configuration phase of a SAS 9.2 deployment. The type and number of configuration-related dialog boxes that you will see depend on

the prompt level that you choose, the SAS tier that you are currently migrating, and the contents of your SAS 9.2 custom order. For information about all SAS Deployment Wizard prompts, see the online Help for the wizard page in question.

To migrate and configure SAS interactively, follow these steps:

1 Verify that you have performed the earlier required steps outlined in "Overview of Installing SAS and Migrating Your Content" on page 65.

Note: A few pages into the SAS installation, the SAS Deployment Wizard prompt you for paths to the requested third-party software. You must have the necessary third-party software installed on the current machine, or the SAS Deployment Wizard will *not* let you continue with the installation. In this situation, you will have to end the SAS Deployment Wizard session and install the required third-party software before you can continue. △

2 If you use any garbage collection scripts, temporarily suspend these scripts during SAS Deployment Wizard execution. If any wizard temporary files are deleted during wizard execution, configuration failures can occur.

3 Ensure that you have the list of required user IDs available. For more information, see "Completing the Pre-migration Checklists" on page 33.

4 If you are deploying a middle-tier machine, make sure that you have read and understood the information in, "Middle-tier Considerations" on page 24.

5 Review information about where to source certain SAS content repositories described in the topic, "Content Repository Considerations" on page 68.

6 Review information about SAS Deployment Wizard configuration prompting levels described in the topic, "Interactive Prompting Levels" on page 68.

7 If you are deploying SAS on multiple machines, make sure that you are following the process described in "Installation Order Rules for Multiple Machine Deployments" on page 68.

8 Log on to the machine with a user ID that meets the requirements for the appropriate operating system:

   □ Windows

     Use the same account that was used to deploy SAS 9.1.3. This account must be a member of the Administrators group.

   □ UNIX

     Use the same account that was used to deploy SAS 9.1.3. Do not use `root`.

   □ z/OS

     Use the same account that was used to deploy SAS 9.1.3.

9 Make sure that the SAS 9.1.3 servers are not running on the machine on which your are currently migrating.

Note: In situations where you are rerunning the deployment wizard to address configuration errors, make sure that there are no SAS *9.2* servers running. On UNIX and z/OS, you can run the following command: `./sas.servers status`. If any SAS 9.2 servers are running, shut them down with the following command: `./sas.servers stop`. △

   □ Windows

     Use the Windows Services snap-in to stop the SAS 9.1.3 servers. For more information, see your Windows documentation.

   □ UNIX and z/OS

     Use the server scripts to stop the SAS 9.1.3 servers. These scripts reside in the SAS configuration directory under the SAS Application Server directory for the respective server. For example:

> `/opt/config913/Lev1/SASMain/MetadataServer/MetadataServer.sh`
> `-stop`

For more information, see the *SAS 9.1.3 Intelligence Platform: System Administration Guide*.

10 Start the SAS Deployment Wizard from the highest-level directory in your SAS Software Depot using the command appropriate for your operating system:

Table 4.3 Start Up Commands for the SAS Deployment Wizard

Operating System	Command
Windows	`setup.exe –record –deploy`
UNIX	`setup.sh –record –deploy`
z/OS	`setup.rexx –record –deploy` To use a temporary directory other than `/tmp`, specify `–templocation` *new-temp-dir*.

Note: Using the `–record –deploy` options causes the wizard to create a response file that records the inputs that you supplied. This can be helpful when you want to repeat the deployment on other machines or when troubleshooting a deployment issue. △

By default, the deployment wizard writes the response file in the following location:

☐ Windows:

`C:\Documents and Settings\`*current-user*`\sdwresponse.properties`

☐ UNIX and z/OS:

`~/sdwresponse.properties`

You should see a welcome screen similar to the following:
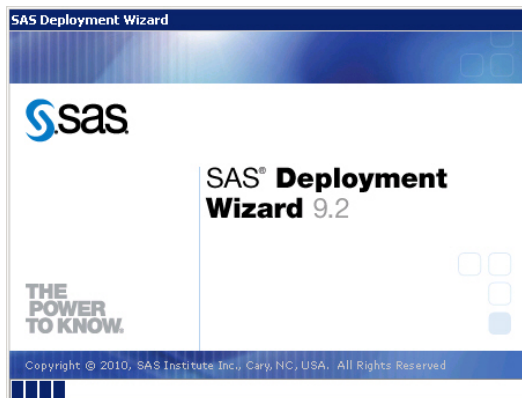
11 Select the language that you want the SAS Deployment Wizard to use when it displays text.

12 Select `Install SAS Software`.

13 Select **Perform a Planned Deployment**, and make sure that **Install SAS Software** and **Configure SAS Software** are both checked.
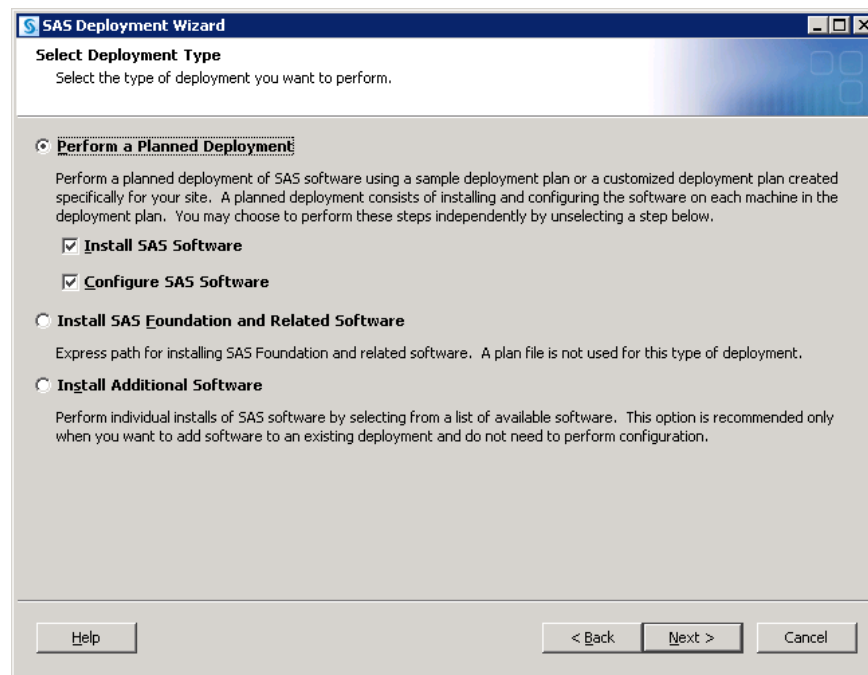
14 Specify the location (SAS Home) where you want to install SAS.

Note: The deployment wizard prompts you for SAS Home the first time that you run the wizard. On any subsequent sessions on this machine, the wizard uses the previously specified location for SAS Home. △

15 Specify the type of deployment plan you are using:

□ customized deployment plan

Choose **Specify the full path to a customized deployment plan**, and then click **Browse** to navigate to the plan file.

□ standard deployment plan

Choose **Select a standard deployment plan**, and then choose the appropriate plan in the drop-down list.

For more information, see "About Deployment Plans" on page 66.
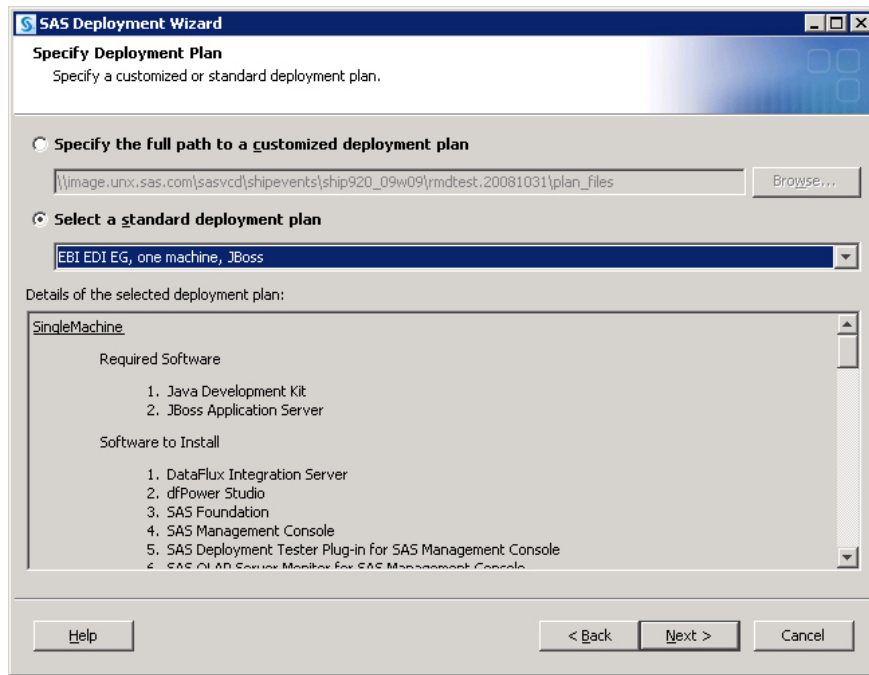
16 Select the machine on which you are installing software, and select the SAS products that you want to install, by doing the following:

    a Select the machine on which you are installing software from the `Machine` drop-down list.

    b By default, all products displayed will be installed. Deselect any products that you do *not* want to install.
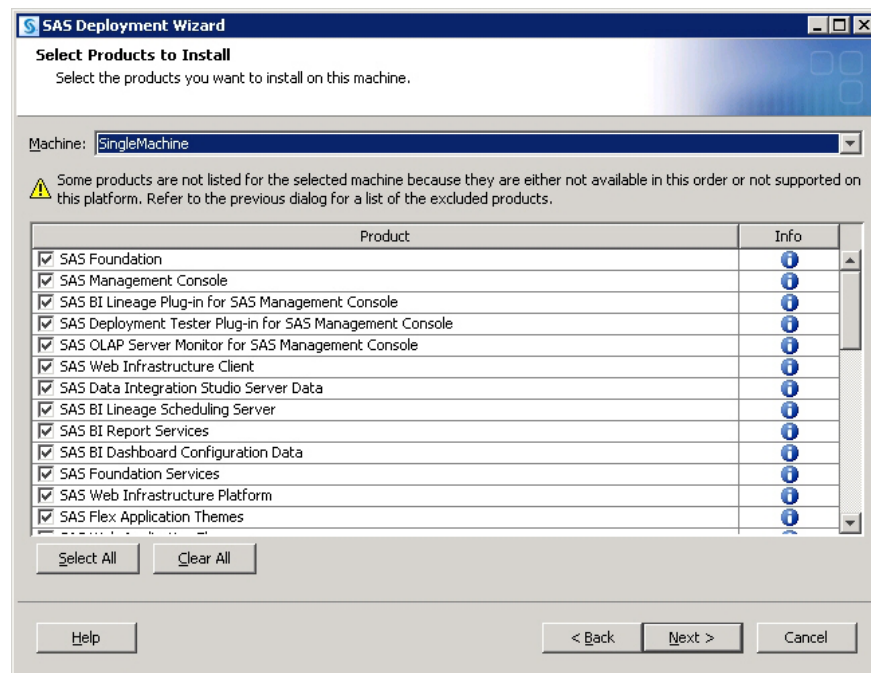
17 Specify the location of the SAS installation data file that contains information about the software that you have licensed for the current machine.

> ***CAUTION:***
> **If you do not use the installation data file that supports the products you are planning to install and configure on this machine, you might experience errors later when you are trying to use the products.** △

18 Deselect any languages that you do not want SAS to support. By default, SAS attempts to support all languages that your machine's operating system is configured for.

19 The deployment wizard prompts you to do one of the following:

(z/OS only) **No Java Runtime Environment**	Select to have the deployment wizard install your software on z/OS without a Java Runtime Environment (JRE).
(UNIX and Windows only) **Use the recommended Java Runtime Environment**	(Recommended) select to have the deployment wizard install the required JRE on this machine. On UNIX, specify in the text box where you want the deployment wizard to extract the JRE.
Select an existing Java Runtime Environment	Select to specify the path to a JRE that you have already installed on this machine.

For more information, see **http://support.sas.com/resources/ thirdpartysupport/v92/jres.html**.

20 (z/OS only) Provide input for the following prompts:

Note: For more information, see the *Configuration Guide for SAS 9.2 Foundation for z/OS*, available on the SAS Install Center (**http://support.sas.com/ documentation/installcenter/**). △

☐ **FTP Batch Generation**

   Specify the fully qualified host name or IP address of the z/OS mainframe machine on which you are deploying SAS. Also supply a valid user ID and password with which the SAS Deployment Wizard will FTP deployment information to the mainframe machine.

☐ **Specify Jobcard Information**

   Specify the job account, programmer-name, message class, message level, time, and region values. For more information, consult your z/OS documentation.

☐ **Media Type**

   Select the check box if installing from cartridge tape media. Leave the check box deselected if you are installing from a DVD or from the Internet.

☐ **Select Installation Action**

   Choose **A – Install a new SAS system**.

☐ **Specify New Installation Qualifier**

   Specify the path where you want to install SAS. You can also choose to require Storage Management Subsystem (SMS) parameters. For more information, consult your z/OS documentation.

☐ **Specify IBM's SMS Parameters**

   If you chose to require Storage Management Subsystem (SMS) parameters in the previous page, enter them here. For more information, consult your z/OS documentation.

☐ **Specify Parameters**

These are all parameters that are used in various DD statements throughout the installation. For more information, consult your IBM JCL documentation.

☐ **Specify Entry Point**

Specify the parameters for various ways that SAS can be run with different performance implications. Choose SAS (default ENTRY point) to run the unbundled configuration. Choose SASB to run the bundled configuration. Choose SASLPA to run the bundled configuration with some modules installed in the Link Pack Area (LPA).

☐ **Specify Parameters**

Specify additional parameters for DD statements. VOLDISK designates the VOLSER that the installed data sets will go to. For more information, consult your IBM JCL documentation.

☐ **Specify Parameters**

Specify parameters used for reblocking the SAS load modules to a library with an optimum block size.

21 (UNIX only) If your system uses Pluggable Authentication Modules (PAM), select **Use PAM Authentication**. In addition, you might also need to update your PAM configuration files in order for SAS 9.2 to use PAM authentication. For more information, see the *Configuration Guide for SAS 9.2 Foundation for UNIX Environments*.

If you are uncertain that this system uses PAM for authentication, contact your system administrator.

Note: Do not select the PAM option if you know that your system uses /etc/password or /etc/shadow authentication. △

22 Review the list of required third-party software that is required for the SAS software that you are installing on the current machine. (The list of third-party software depends on the SAS software that you are installing on the current machine.)

23 In the pages that immediately follow, be prepared to provide paths to these third-party applications. (The number of pages varies depending on the SAS software you are deploying on the current machine.)

Note: You must provide valid paths to the requested third-party software, or the SAS Deployment Wizard will *not* let you continue with the installation. △

24 Specify the amount of information to provide the SAS Deployment Wizard for configuring the SAS software you are installing on the current machine. Choose one of the three prompting levels:

Express

displays the minimum number of wizard pages needed to complete the SAS configuration.

Typical

displays the basic set of wizard pages needed to complete the SAS configuration.

Custom

displays all the wizard pages needed to complete the SAS configuration.

Refer to "Interactive Prompting Levels" on page 68 for more information about the SAS Deployment Wizard prompting levels.

25 **Specify Configuration Information**

Choose a path where the SAS Deployment Wizard will write SAS 9.2 configuration files and logs and the level you want to deploy. (For example, Lev1 = production.) This path should differ from your SAS 9.1.3 configuration path.

Note: The last digit of the default port number reflects the configuration level that you select in the SAS Deployment Wizard. For example, when you select **Lev1**, the default port for the metadata server is 8561. If you choose another level, such as **Lev2**, the wizard changes the default port to 8562. During a migration, this setting pertains only to ports for servers that are introduced in SAS 9.2, such as the table server. The deployment wizard will retain the port settings from your SAS 9.1.3 servers. For information about how to change port numbers, see "Change Ports Used By SAS Products" on page 61. △

For more information, see "Overview of the Configuration Directory Structure" in the *SAS Intelligence Platform: System Administration Guide*.

Note: Although your SAS Home and SAS configuration directories can share the same parent directory, one directory should not reside inside another. Defining the configuration directory under the SAS Home directory, or vice versa, can lead to file permission issues arising from the need to manage installed files differently from site-specific configurations. △

On z/OS, the mount point must exist; the SAS Deployment Wizard will create the necessary subdirectories.

If you are deploying the SAS Table Server, then SAS configuration path should be a path local to the machine. The configuration path should not be on an NFS shared disk. If you want to put your configuration path on a shared disk, then you must make sure that you specify a local path for the table server content directory. You can set the content directory on the Table Server Invocation Options page. This page is available only on the custom configuration prompting level.

26 Select Products to Configure

Migrating via the SAS Deployment Wizard should be performed only once per tier for a deployment. You cannot selectively choose products to migrate. You must migrate all products targeted for the current machine.

27 Local Machine Name

Enter the complete name of the local host in **Fully-qualified Local Host Name**. The fully qualified local host name typically takes the form of the local host name plus the domain name server (for example, myserver.example.com). Enter a short host name in **Short Local Host Name**. The short local host name is the abbreviated, more common method of referring to the host, usually only a single word.

28 Migration Information

Choose **Perform Migration** and enter the path to the package that you created with the SAS Migration Utility. This path should be to the top level directory of the migration package (for example: **C:\SMU\913_Deployment**). (This path should match the value of the **SMU.Output.Dir** property.)

Note: Migrating via the SAS Deployment Wizard should be performed only once per tier for a deployment. (Also, you cannot selectively choose products to migrate. You must migrate all products targeted for the current machine.) If SAS components are unconfigured for a particular tier, you cannot migrate them a second time by choosing **Perform Migration**. In this situation, you have to perform a standard, non-migrated configuration using the deployment wizard (unless you want to unconfigure the entire SAS deployment). △

CAUTION:

The Perform Migration check box should not be selected when running the SAS Deployment Wizard on any client tiers. The Perform Migration check box should be selected only when there is content available in the SAS Migration Utility package for that machine. △

29 If you are performing a multiple machine deployment, and are migrating a machine other than the metadata server, the wizard prompts you to select the machine to migrate.

Note: If you have already deployed the metadata tier and you have only a total of two tiers, the deployment wizard automatically selects the remaining tier for you. △

30 Provide the remaining migration and configuration information as the wizard prompts you for it.

Note: This topic describes some of the more important pages that you will encounter during the migration and configuration phase of a SAS 9.2 deployment. The options for which the SAS Deployment Wizard prompts you depends on which SAS products are identified in your deployment plan and, in multiple machine deployments, which machine you are currently deploying. For information about all SAS Deployment Wizard prompts, see the online Help for the wizard page in question. △

☐ **Authentication Domain**

Accept the default value (DefaultAuth), unless the deployment that you are migrating uses a different SAS authentication domain for servers on this machine.

For example, if the metadata server is on Windows and the workspace server is on UNIX, the workspace server might be assigned to a SAS authentication domain named UnixAuth. For more information, see "About Authentication Domains" in the *SAS Management Console: Guide to Users and Permissions*.

Note: Authentication domain assignments from the original deployment are always preserved. This prompt affects only new servers that are introduced in the 9.2 environment. △

☐ **Windows Options (run as managed scripts or services)**

On Windows, choose how to run your SAS servers either by using management scripts or running them as Windows services. If you choose the script option, then the user account that runs the object spawner must meet the following requirements on the object spawner machine:

☐ be the administrator or a member of the Windows Administrator's group

☐ have the following Windows local user rights:

☐ **Adjust memory quotas for a process**

☐ **Replace a process level token**

☐ **Integrated Windows Authentication**

Select to use Integrated Windows authentication (IWA) for workspace servers running on Windows only. IWA supports a single sign-on feature in which a metadata server running on Windows accepts a user's previous authentication to his or her Windows desktop when the user attempts to access a workspace server.

Selecting this page when you are deploying a workspace server on Windows enables the workspace server to use IWA. You also encounter this page when deploying SAS Enterprise Guide and SAS Add-In for Microsoft Office. If you

have not chosen IWA for the workspace server, then choosing IWA for these clients has no effect.

For more information, see "Integrated Windows Authentication" in the *SAS Intelligence Platform: Security Administration Guide*.

By default, a metadata server running on Windows has IWA turned on by default. For more information, see "SSPI System Option" in the *SAS Intelligence Platform: Application Server Administration Guide*.

□ **SAS Metadata Server**

If you have any changes for the metadata server, enter them in this page.

The deployment wizard creates a separate server context (SASMeta) for the metadata server and the other servers required to perform metadata server utility functions, such as backup and promotion. A server context is a SAS IOM server concept that describes how SAS Application Servers manage client requests. A SAS Application Server has an awareness (or context) of how it is being used and makes decisions based on that awareness. The server context name is prepended to all server names defined in the server context. Therefore, we recommend that you not change the logical server or server prefix (SASMeta).

For more information, see "Overview of the SAS Metadata Server and Its Initial Configuration" in the *SAS Intelligence Platform: System Administration Guide*.

□ **Deployment Accounts: Type of Accounts**

Select whether to use internal accounts when appropriate. Internal user accounts are accounts known only to SAS and are created and authenticated internally in metadata rather than externally. For more information, see "Choose to Use SAS Internal Accounts" on page 13.

Note: On Windows, whenever the deployment wizard prompts you for an external account, always enter a domain-qualified user account (for example, myDomain\myAccount). △

□ **External Account: Unrestricted Administrator**

Enter user ID and password for an account known to the host that will serve as an unrestricted administrator for the purpose of configuring the SAS metadata server. On Windows, enter a domain-qualified user ID. If your SAS 9.2 operating system user account is different from the one you use for SAS 9.1.3, then you must be sure to make the corresponding file permissions changes. For more information, see "Permission Considerations when User Accounts or Groups Change" on page 37.

□ **External Account: Trusted User**

Enter the user ID and password for an account known to the host that will enable the SAS server and spawner components to communicate securely with each other. On Windows, enter a domain-qualified user ID. If your SAS 9.2 operating system user account is different from the one you use for SAS 9.1.3, then you must be sure to make the corresponding file permissions changes. For more information, see "Permission Considerations when User Accounts or Groups Change" on page 37.

□ **SAS BI Web Services: Authentication Method**

Select the method by which users of SAS BI Web Services are authenticated:

□ **SAS Authentication** is managed by the metadata server.

□ **Web Authentication** is managed by the Web application server using container-based authentication or a third-party product. Selecting **Web authentication** has these effects:

□ fully configures Web authentication for .NET BI Web Services.

□ partially configures Web authentication for Java BI Web Services.

For more information, see "Securing SAS BI Web Services for Java" in the *SAS Intelligence Platform: Web Application Administration Guide*.

□ has no effect on the BI Web applications (such as SAS Web Report Studio, SAS Web Information Portal, and so on).

You will have to configure Web authentication for these BI Web applications.

□ prevents you from being offered a chance to set up an anonymous Web user (as this is incompatible with Web authentication).

□ **Anonymous Web Access**

When using SAS authentication you can select this option to set up a SAS identity for anonymous access to certain Web services and Web applications that support this feature. Currently, SAS BI Web Services for Java and .NET and the SAS Stored Process Web Application are the only components that support this feature.

For more information, see "Using the SAS Anonymous Web User With SAS Authentication" in the *SAS Intelligence Platform: Web Application Administration Guide*.

□ **External Account: Anonymous Web User**

(Optional) Enter the user ID and password for an account to be used to grant clients access to applicable SAS Web Infrastructure Platform applications such as SAS BI Web Services and the Stored Process Web Application. On Windows, enter a domain qualified user ID. When SAS authentication is being used and the user has not preemptively specified credentials, the client will be given access to these Web applications under the anonymous user account.

For more information, see "Using the SAS Anonymous Web User With SAS Authentication" in the *SAS Intelligence Platform: Web Application Administration Guide*.

□ **External account: SAS Spawned Servers Account**

Enter the user ID and password for the external account to be used to start the pooled workspace server and the stored process server. On Windows, enter a domain qualified user ID. For migration purposes, you must use the same operating system accounts and passwords that you had in SAS 9.1.3.

For more information, see "Important Notes on User Accounts and Authentication" on page 34.

□ **Create Common Directories**

Select to create common directories for server and spawner logs, user-specific files, and temporary work tables and files.

When you select this option, the deployment wizard creates the specified directory (**Logs**, **Users**, and **Temp**) under the SAS configuration directory.

□ **Server Encryption**

Select the encryption level and algorithm that SAS clients and servers use to connect to the metadata server.

Choose **Credentials** to encrypt only login credentials. Choose **Everything** to encrypt all communication with the metadata server.

To specify an encryption algorithm other than SASPROPRIETARY, you must have a license for SAS/SECURE software. The other algorithms are: RC2, RC4, DES, TripleDES, and AES.

For more information, see "Encryption Model" in the *SAS Intelligence Platform: Security Administration Guide*.

☐ **Client-side Credentials Policy**

Select this option to set the policy to allow users to save their user IDs and passwords in client-side connection profiles on the metadata server for desktop applications. This input sets the value for OMA_SASSEC_LOCAL_PW_SAVE in omaconfig.xml.

For more information, see "Reference Information for omaconfig.xml" in the *SAS Intelligence Platform: System Administration Guide*.

☐ **E-mail Server**

Enter the port and host name for an SMTP e-mail server that the SAS Metadata Server uses to send e-mail alerts to an administrator if journaling issues arise. The SAS Deployment Wizard also uses this e-mail server as the default for the SAS Application Server to provide e-mail services to various SAS clients. For example, with SAS Data Integration Studio, you can use a Publish to Email transformation to alert users about various data changes. In order for SAS BI Dashboard to send alerts by e-mail to dashboard users and administrators, the port and host name must be configured for the e-mail server.

For more information, see "Overview of Adding or Modifying E-Mail Settings for SAS Application Servers" in the *SAS Intelligence Platform: Application Server Administration Guide*.

☐ **SAS Pooled Workspace Server**

Enter the name of the logical pooled workspace server and the pooled workspace in metadata. You also need to enter the name of the machine on which the pooled workspace server runs and the port on which the object spawner will listen for client requests to launch pooled workspace servers. The machine name should match the name specified to the object spawner.

The pooled workspace server is a new SAS 9.2 server. For more information, see "Overview of Workspace Servers and Stored Process Servers" in the *SAS Intelligence Platform: System Administration Guide*.

☐ **SAS Pooled Workspace Server Dependencies**

Make sure that you choose an application server context that exists in the foundation repository, or SAS components dependent on the pooled workspace server (such as SAS BI Dashboard) won't be able to access the server.

☐ **SAS Table Server**

Enter the name of the logical table server in metadata. You also need to enter the name of the machine on which the table server runs and the TCP/IP port on which the table server will listen to.

The table server is a new SAS 9.2 server for use with SAS Shared Services. For more information, see the *SAS Intelligence Platform: Web Application Administration Guide*.

☐ **Metadata Utility SAS DATA Step Batch Server**

Enter the various values required to configure a SAS DATA step batch server. The directory fields identify where the deployed SAS program is stored and the name of the deployed SAS DATA step program job. Access to this server is limited to members of the SAS Administrators group, and its use is limited to metadata server backup.

For more information, see "Contents of the Metadata Server Subdirectory (SASMeta)" in the *SAS Intelligence Platform: System Administration Guide*.

☐ **Query Cache Library**

Enter the physical location on the file system where the SAS library will exist for temporary files used when creating optimized tables for query look-up.

In **Query Cache Libref**, enter the SAS library reference which SAS will use to refer to the query optimizer SAS library. The name must be eight characters or shorter and should be unique from other librefs used within this repository. Librefs must start with a letter or underscore and contain only letters, numerals, or underscores. The typical installation libref name is wrstemp. The libref will be used in conjunction with the server context name to form the SAS library name for the optimizer library.

Select **Enable Query Cache** to allow the query optimizer to run. If this selection is not made, then the query optimizer will not attempt to optimize queries and will not create temporary data sets for improving performance during rendering. A typical installation will have this selection turned on. The temporary files created within the query cache library will be visible to anyone with Read permission on the Renderer Optimizer directory, so if you have security concerns with the authorization on this folder you might want to leave the optimizer off.

For more information, see "Using the Query Cache" in the *SAS Intelligence Platform: Web Application Administration Guide*.

☐ **Output Management Library**

Enter the physical location on the file system where the SAS library will exist for burst set definition tables for reports which will be distributed by e-mail. A burst definition table will contain e-mail addresses, channels, and possibly by group information.

In **Output Management Library Libref**, enter the SAS library reference that SAS will use to refer to the output management SAS library. The name must be eight characters or shorter and should be unique from other librefs used within this Repository. Librefs must start with a letter or underscore and contain only letters, numerals, or underscores. The typical installation libref name is wrstemp. The libref will be used in conjunction with the server context name to form the SAS library name for the distribution library.

For more information, see "Verifying Permissions for the Distribution Library" in the *SAS Intelligence Platform: Web Application Administration Guide*.

☐ **Web Application Server: Automatic Configuration**

Select this option for the deployment wizard to automatically build and configure the SAS Web applications as well as configuring a sample Web application server for use with SAS 9.2. (To use this wizard feature, be sure that your Web application server is not running before proceeding. For WebSphere, it is necessary to stop all deployment manager servers, all node agent servers, and all application servers before continuing with your SAS 9.2 deployment.) For more information, see "Middle-tier Considerations" on page 24.

If you choose not to automatically configure your Web application server, you will still be prompted for Web application server information, and deployment stages such as Configure Products, Deploy Web Applications, and Start Web Application Servers will execute to create instructions for manual deployment. When configuration is complete, follow these manual instructions on how to configure your server and deploy your Web applications. If you manually configure WebLogic, a reference domain will be created in your SAS configuration area, but no servers will be started. If you manually configure JBoss, sample start scripts will be created, but not launched.

For more information, go to **http://support.sas.com/resources/ thirdpartysupport/v92** and search for the product name of your Web application server.

□ **Web Application Server: Multiple Managed Servers**

Select to have the deployment wizard automatically configure multiple managed servers for you using SAS best practices for choosing the server to deploy each application to.

In some situations it might be preferable to split the SAS Web applications across multiple managed servers. This is usually done for performance reasons.

If you chose to manually configure your Web application servers, you will be provided with recommended configuration settings in a generated instructions file (Instructions.html) when the SAS Deployment Wizard completes.

More advanced performance configuration considerations are documented in the SAS Business Intelligence Application Administration Guide, which can be found at **http://support.sas.com/92administration**.

□ **Web Application Server: Managed Server**

Enter a logical name for your managed server. This name will be displayed in your Web application server administrative console and used in administrative scripting.

In **HTTP Port**, enter the unsecured port on which the managed server will listen.

In **HTTPS Port**, enter the SSL port to be assigned to the managed server.

In **RMI Port**, enter a port using these considerations:

□ WebSphere

This maps to the RMI BOOTSTRAP port. Each server contains an administrative services component and a separate and unique port is required for each Web application server.

□ JBoss

This maps to the default JNDI port. Clients connecting to applications running on JBoss, such as the JBoss shutdown command, would use this port.

□ WebLogic

No RMI port is required for WebLogic.

In **Configured Protocol**, select the communication protocol for the administration server: HTTP or HTTPS. Automated configuration through the SAS Deployment Wizard only supports the HTTP protocol. If you perform a manual configuration, you can set up HTTPS.

In **Additional JVM Options**, enter any additional Java options that you want the managed server JVM (Java Virtual Machine) to use. These JVM options are tagged onto the end of the managed server's command line. Options that are deployment wizard defaults can be overridden in this way.

For more information, go to **http://support.sas.com/resources/ thirdpartysupport/v92** and search for the product name of your Web application server.

□ **SAS Shared Services database properties** (not displayed when SAS Table Server is selected)

Enter the host name, fully qualified host name, or IP address for the host where the database is installed. Specify the port that the database server is listening to, and the name of the database that will contain the SAS Shared Services tables.

Choose **Automatically create tables and load data** to have the deployment wizard automatically create tables and load the selected pre-existing database with initial data.

In the case of MySQL, the Shared Services configuration process will also create a new MySQL database in addition to creating tables and loading data. The new database is named according to the value specified in the **Database Name** field.

Note: If you are using MySQL, do not specify a pre-existing MySQL database or the configuration will fail. For more information, see "Configuring an Alternative Database for SAS Shared Services" at: http://support.sas.com/resources/thirdpartysupport/v92m3/appservers/SharedServicesAlternativeDatabase.pdf. △

For more information, see "About SAS Shared Services" in the *SAS Intelligence Platform: Web Application Administration Guide*.

☐ **SAS Shared Services JDBC Properties**

Enter the user account and its password for accessing the database used with your SAS Shared Services tables.

If you have selected to automatically configure the SAS Shared Services database, this user account must have the ability to create tables and insert records. If you are not automatically configuring the SAS Shared Services database, this user account must have the ability to insert, update and delete records. The default user account is the SAS Trusted User account (sastrust@saspw). For more information, see "About SAS Shared Services" in the *SAS Intelligence Platform: Web Application Administration Guide*.

In **Directory containing JDBC driver jars** enter the appropriate JDBC driver jars and your selected RDBMS database and version. Inappropriate or additional jar files will cause configuration failures, so just copy the minimum required jars to the JDBC driver jars directory.

☐ **Web Application Server: Automatic Deployment**

Select to automatically deploy SAS 9.2 Web applications to the Web application server. For more information, see "Middle-tier Considerations" on page 24.

Regardless of whether you choose to automatically deploy your SAS Web applications, when building Web applications, the wizard also automatically explodes Web application archive files (.EAR files).

If you choose not to automatically deploy SAS Web applications, the deployment wizard writes manual deployment instructions to Instructions.html during the Web application deployment stage, that you will need to complete after the wizard finishes executing. For more information, go to **http://support.sas.com/resources/thirdpartysupport/v92** and search for the product name of your Web application server.

Note: The SAS Deployment Wizard does *not* automatically deploy SAS OnlineDoc for the Web, even when you choose the automatic deployment option. You must manually deploy SAS OnlineDoc for the Web. For more information, see "Deploying SAS OnlineDoc Manually for the Web" in the *SAS Intelligence Platform: Web Application Administration Guide*. △

☐ **External Account: Web Application Server Administrator**

You are prompted for this information if your site uses the WebSphere or WebLogic Web application server. Enter the user ID and password for the administrator account for either the WebSphere Application Server or the WebLogic Server. On Windows, be sure to enter a domain-qualified user ID.

□ For WebSphere, the Web application server administrator user ID is the administrator account specified when WebSphere Admin Security was enabled.

□ For WebLogic, the Web application server administrator user ID is used to configure the WebLogic default security realm. When the deployment wizard automatically configures your Web application server, the wizard uses these credentials to create the administrator account and the WebLogic domain.

If you choose to manually configure your Web application server, you will need to create this administrator account (using the credentials you define here) with the WebLogic administrative tools.

For more information about configuring Web application servers to support the SAS middle tier, go to **http://support.sas.com/resources/ thirdpartysupport/v92** and search for "WebSphere" or "WebLogic".

□ **Web Application Server : Proxy Information**

If you are using SAS Information Delivery Portal RSS feeds, then you will have to provide proxy server information. Enter the fully qualified host name for the proxy server and its port that your site uses to access the Internet.

For **NonProxy Hosts** enter the DNS names of all the machines that should not be accessed through the proxy server. Be sure to include other machines where application servers are configured as part of a common WebLogic Domain or are part of a WebSphere cell. Separate each machine name with a vertical line character (|). Use an asterisk (*) as a wildcard for an entire subnet. For example, *.subnet.com excludes all machines with a DNS name that ends with .subnet.com.

If your site does not allow Internet access on production systems, refer to configuration information available at this SAS Web site: **http:// support.sas.com/resources/thirdpartysupport/v92**. (Search for your Web application server.)

□ **WebSphere Application Server: Node**

In **Profile Name**, enter a profile name, or accept the default (SAS*hostname*01). The profile name is used for the directory that contains the node agent and the SAS Web application server.

The node agent name is required, but cannot be configured using the deployment wizard.

In **Node Name**, enter a node name or accept the default (SAS*hostname*Node). The node name is the WebSphere node that contains one or more of the Web application servers.

In **Additional JVM Options**, enter any additional Java options that you want the Web application servers to use.

□ **IP Multicast**

Accept these IP multicast settings or enter new ones.

A multicast group communications protocol is used to communicate among middle-tier SAS applications in a single SAS deployment (the set of applications connected to the same metadata server). The combination of multicast IP address and multicast UDP port should be different for each SAS deployment and also different from those used by other multicast applications at your site. The defaults are most appropriate for deployments in a firewall-isolated data center environment.

For more information, see "Designating Ports and Multicast Addresses" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

☐ **SAS Remote Services Application: JVM**

Enter the desired initial heap size for the remote services application using the JVM option format.

In **Max JVM Heap Size**, enter the desired maximum heap size for the remote services application using the JVM option format.

In **Additional JVM Options**, enter any additional Java options that you want the Remote Services VM to use. For example, you might want to add **-Dmulticast_udp_ip_ttl=1** to restrict multicast traffic to a single subnet based on your network topology.

For more information, go to **http://support.sas.com/resources/ thirdpartysupport/v92** and search for "SAS 9.2 Web Applications: Tuning for Performance and Scalability".

☐ **SAS Web Report Studio: Scheduling**

Choose whether to enable scheduling for SAS Web Report Studio. If Platform Suite for SAS is in your deployment plan, then you have a choice between using Platform Process Manager, provided by Platform Computing, Inc., or SAS In-Process Services.

For more information, see "Setting Up Scheduling Using Platform Suite for SAS" or "Setting Up Scheduling Using SAS In-Process Scheduling" in *Scheduling in SAS*.

☐ **SAS Content Server: Repository Directory**

Enter the location on the disk for the actual contents of the content repository.

The content server is a new SAS 9.2 server. For more information, see "Administering the SAS Content Server" in the *SAS Intelligence Platform: System Administration Guide*.

☐ **SAS Web Parts for Microsoft SharePoint: Details**

We recommend that you accept the defaults.

The Web URL is the address of the web application where the SAS Web Parts solution is deployed.

The Site URL is the site collection where the feature is activated. A web application can have multiple site collections and a site collection can contain multiple sites. In most instances the URLs are the same (a site collection at the root of the web application), but they can also be different.

For more information, contact your site's SharePoint administrator.

The SAS User ID is the metadata identity that you use to implement shared identity mode. For more information, see "Configure User Access for SAS Web Parts for Microsoft SharePoint" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

☐ **SAS Information Delivery Portal unchallenged access**

When unchallenged access is enabled, users can access the portal and interact with selected content without providing a user ID and password.

Enter a user ID that SAS will use to grant unchallenged access to portal users. (On Windows, make sure to qualify the User ID as appropriate. For example, **myDomain\sasguest**.)

Deselect **Display Search Menu for Unchallenged Access** if you want to suppress the search link from displaying in the main portal banner.

Specify what should appear in the portal banner for unchallenged users:

☐ **logoff**

Display the Log Off link.

□ **logon**

Display the Log On link (which users can click to display the SAS Logon Manager).

□ **hide**

Hide the Log Off and Log On links.

For more information, see "Enabling Unchallenged Portal Access" in *SAS Intelligence Platform: Web Application Administration Guide*.

31 When you see the Deployment Summary page, the deployment wizard has finished collecting installation and configuration input. This is the last opportunity to go back and change any information you have provided in previous pages before the wizard begins writing to your system.

Note: Before proceeding with the migration, make sure that the input that you have provided to the deployment wizard is correct. Incorrect user input such as user ID and passwords will cause all or portions of your migration to fail.   △

Make one of the following choices:

□ Click **Start** to begin installing SAS files and writing the configuration to the current machine.

□ Click **Back** to navigate to earlier wizard pages to change installation and configuration information previously entered.

□ Click **Cancel** to terminate the wizard session. Note that you will lose installation and configuration information previously entered.
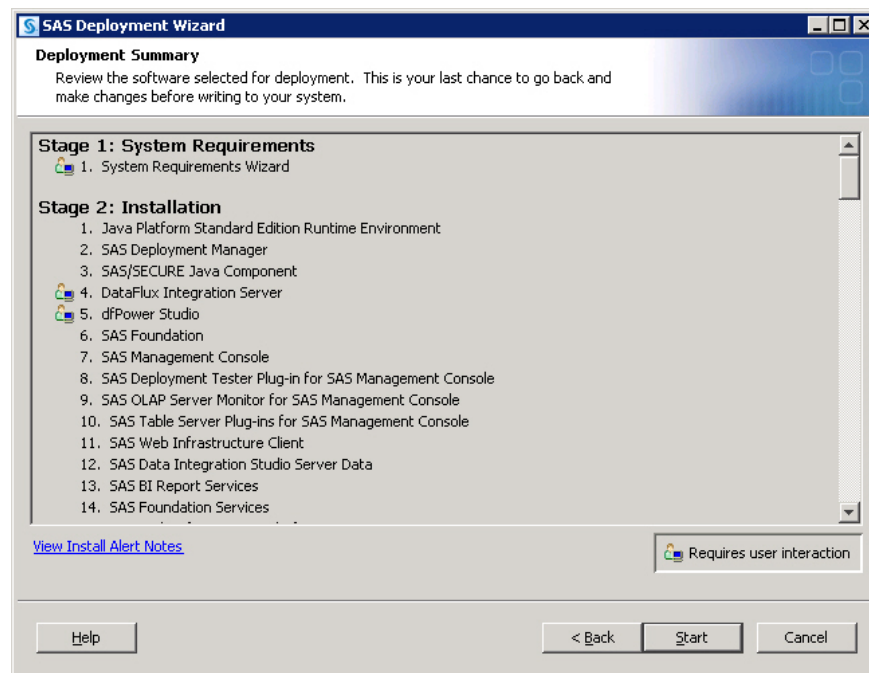

Note: If you encounter a situation in which the deployment wizard reports a configuration failure, consult "Overview of Troubleshooting Your Initial SAS 9.2 Deployment" in the *SAS Intelligence Platform: Installation and Configuration Guide*.   △

On UNIX, when you are installing the server tier, you will be prompted to enter the root password. As the message in the installation program explains, certain SAS products and features use functionality that requires SAS to check user ID

authentication and file access authorizations. This in turn necessitates that certain files within your SAS installation have setuid permissions and be owned by root.

When you see a page similar to the following, the SAS Deployment Wizard is finished:
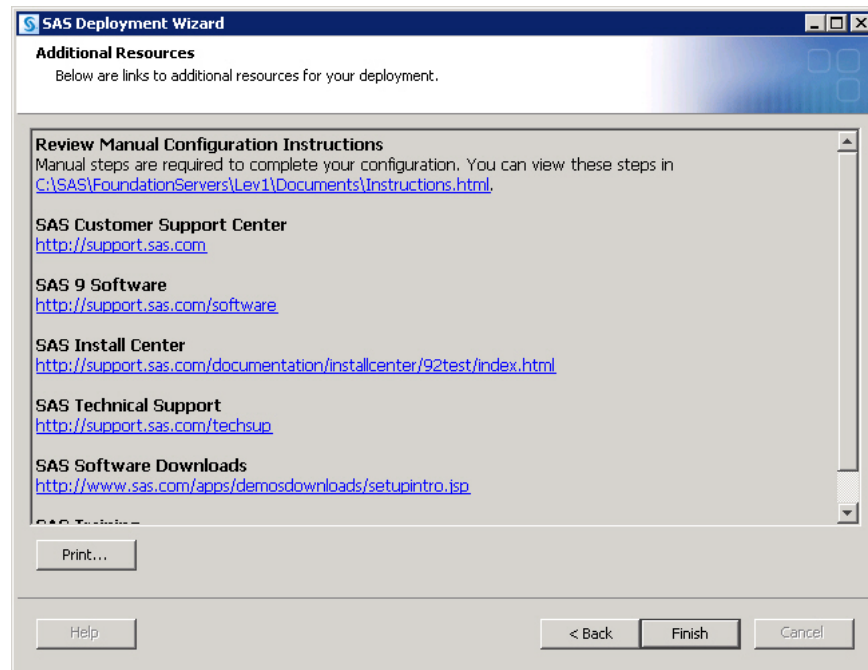
The deployment wizard has installed, configured, and started SAS processes on your machine.

If you had any errors, you will see a link to ConfigurationErrors.html.

32 Proceed to the section, "Review SAS Deployment Wizard Documents and Reports" on page 94 to examine the SAS Deployment Wizard output to troubleshoot any configuration errors and complete any necessary manual configuration steps.

33 Click **Finish** to close the deployment wizard.

34 For multi-machine deployments, back up your metadata repository and your SAS configuration directory before you run the SAS Deployment Wizard on the next machine called for by your deployment plan. (You do not need to back up machines that contain only SAS 9.2 clients.)

☐ Make a backup copy of your SAS 9.2 configuration directories by using your site-approved method. Your SAS configuration directories are all the child directories beneath the path that you specified earlier in this procedure on the **Specify Configuration Information** page.

☐ Back up your Web application server directories.

☐ Back up your metadata repository and repository manager on the SAS Metadata Server machine. For more information, see "Best Practices for Backing Up and Restoring Your System" in the *SAS Intelligence Platform: System Administration Guide*.

35 When you are finished completing any manual configuration tasks, and you have made the necessary backups, repeat the steps listed in this topic on each machine defined in your deployment plan.

36 Be sure to restart any servers that you stopped for purposes of creating a backup.
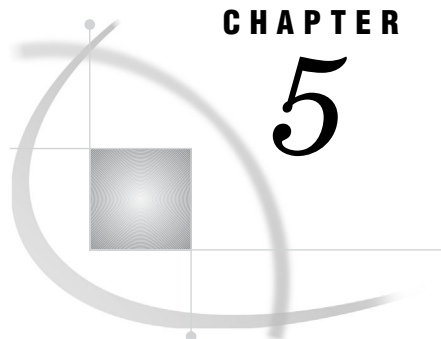
37 When you are finished installing and migrating SAS on each machine called for in your deployment plan, proceed to the section entitled, "Overview of Performing Post-migration Tasks" on page 94.

Automating SAS 9.2 Client Installation Across Multiple Machines

The SAS Deployment Wizard provides a record and playback feature that enables you to automate a SAS installation across multiple machines. This feature is designed for large-scale enterprise deployments where SAS 9.2 clients need to be deployed across many machines. Using the record and playback feature prevents users from having to manually provide input on every page every time the SAS Deployment Wizard is run on a machine. For more information, see "Automating the SAS Installation on Multiple Machines" in the *SAS Intelligence Platform: Installation and Configuration Guide*.

CHAPTER

5

Performing Post-migration Tasks

Overview of Performing Post-migration Tasks

This is the fourth of five tasks required to install SAS 9.2 and migrate your SAS 9.1.3 content:

1. Design your migration.

2. Perform pre-migration tasks.

3. Install SAS 9.2 and migrate your SAS 9.1.3 content.

▶ 4. *Perform post-migration tasks.*

5. Validate your migration.

The actual manual post-migration tasks that you should perform depend on which SAS products you are migrating. Regardless of the SAS products that make up your deployment, you should follow the steps listed in Instructions.html and review any configuration errors in ConfigurationErrors.html and in the configuration logs. For more information, see "Review SAS Deployment Wizard Documents and Reports" on page 94.

The remaining post-migration tasks are grouped according to the tier:

☐ "Metadata Server Tier Post-migration Tasks" on page 95

☐ "Server Tier Post-migration Tasks" on page 103

☐ "Middle-Tier Post-migration Tasks" on page 113

For a discussion of functionality changes in SAS 9.2, see *Special Considerations for Customers Upgrading to SAS 9.2*.

Review SAS Deployment Wizard Documents and Reports

During configuration of SAS 9.2 the SAS Deployment Wizard creates various documents that can help you identify any remaining configuration tasks and errors. Use the following documents to perform any manual configuration steps and correct any configuration errors:

☐ Instructions.html

contains a list of SAS manual steps that must be performed to complete your deployment. **Instructions.html** resides under the SAS configuration directory in the **Lev*n*/Documents** subdirectory (for example: **C:\SAS\Config92\Lev1\Documents**).

☐ DeploymentSummary.html

contains a list of the deployment tasks performed by the SAS Deployment Wizard and a brief status for each. The deployment summary is one source for a list of all the SAS products installed and configured in addition to information such as servers started, Web applications built, and Web applications deployed. **DeploymentSummary.html** resides under the SAS configuration directory in the **Lev*n*/Documents** subdirectory (for example: **C:\SAS\Config92\Lev1\Documents**).

☐ ConfigurationErrors.html

contains a list of configuration errors that require further attention. **ConfigurationErrors.html** resides under the SAS configuration directory in the **Lev*n*/Documents** subdirectory (for example: **C:\SAS\Config92\Lev1\Documents**).

☐ Configuration logs (as needed)

provide a finer list of errors for each SAS component that the SAS Deployment Wizard migrates and configures. There is one log file for each SAS component. The configuration logs reside under the SAS configuration directory in the **Lev*n*/Logs/ Configure** subdirectory (for example: `C:\SAS\Config92\Lev1\Logs\Configure`).

☐ logCrossplatformOutput.log

Generated when migrating from one version of an operating system to another (within families: Windows to Windows or UNIX to UNIX). Outlines parameters passed to MIGRATE and CIMPORT along with the corresponding logs generated by these two SAS procedures. logCrossplatformOutput.log resides under the SAS configuration directory in the **Lev*n*/Logs/Configure** subdirectory (for example: `C:\SAS\Config92\Lev1\Logs\Configure`).

☐ logPermissionsOutput.log

Generated when migrating from one version of an operating system to another (within families: Windows to Windows or UNIX to UNIX). The result of applying all permission migration commands is logged to this file. It shows which commands failed along with the console error for the same. logPermissionsOutput.log resides under the SAS configuration directory in the **Lev*n*/Logs/Configure** subdirectory (for example: `C:\SAS\Config92\Lev1\Logs\Configure`).

☐ **Lev*n*/Temp** subdirectory

All the failed permission commands that are run during the migration are persisted in this subdirectory. You should review the output in this directory. If you encounter any failed attempts, you should make the necessary modification and rerun the commands. For example, if the command failed due to an invalid user on the target machine, either create the user and rerun the command file or change the user ID to the actual new user and rerun the command file.

☐ **Lev*n*/Temp/unmoved** subdirectory

All files that have not been migrated by PROC MIGRATE are written here. Typically a file is written here because it is unsupported by PROC MIGRATE or the file is corrupt. Refer to logCrossPlatformOutput.log to further diagnose the problem.

Metadata Server Tier Post-migration Tasks

Running and Reviewing the Authorization Differences Reports

Impact of Migration on Access Controls

The migration process preserves all metadata layer permission settings. However, the migration process can alter effective access to some metadata objects. The differences in effective access are caused by differences in access control inheritance. Access control inheritance for a migrated object can differ from access control inheritance for the corresponding original object for either or both of these reasons:

☐ changes in the access control inheritance rules. The rules that govern access control inheritance are slightly different in 9.2 than they were in 9.1. For example, in SAS 9.2 tables, cubes, libraries, and OLAP schemas inherit permissions from only their parent folders. Permissions that these objects formerly inherited through their parent application server are no longer applicable.

☐ relocation of objects. The migration process relocates some objects. For example, the process moves each ungrouped library into its own folder under **SAS**

Folders\Shared Data. Another example is folders in custom repositories. Permissions can change for custom repository folders because in SAS 9.2 they become parented by the root folder of the foundation repository. When an object is moved to a new location, access to that object might change, because the object's new parent might have different settings than its old parent did.

About the Authorization Differences Reports

SAS provides reports that identify differences in access between your 9.1.3 environment and your 9.2 environment. You should run these reports after your migration has finished. For more information, see "Run Authorization Differences Reports" on page 96. Here are some key points about the reports:

- □ There are five reports, each for a specific type of object (libraries, tables, folders, OLAP schemas, and cubes). These are the objects that are most likely to have authorization differences.
- □ The reports identify differences in effective permissions. Effective permissions are a calculation of the net effect of all applicable permission settings in the metadata authorization layer.
- □ Each report lists only those objects that have authorization differences. The reports are not inventory listings.
- □ Each report lists objects by folder location and in alphabetical order within each folder location. For each object that has access distinctions, a separate table of changes is displayed.

  Note: Even if a report has a long list of objects, it is usually the case that only a few folder locations are involved. Most libraries, tables, cubes, and schemas don't have explicit settings. Instead, these objects inherit settings from their parent folders. The migration process doesn't add or remove permissions that have been set on these objects. △

- □ The reports don't reflect additional access or any changes that have been granted to the SAS Administrators group or to the SAS Administrator in a 9.2 environment. This group either includes only the original SAS Administrator (sasadm) or includes both the original SAS Administrator and the members of your original SAS Administrators group.
- □ The reports don't provide the reason why a particular access difference occurs.

  Note: If there are differences in **Name** field values and **Display Name** field values between SAS 9.1.3 and SAS 9.2, you might see output similar to the following:
  Removed: SAS Trusted User
  Added: sastrust △

Run Authorization Differences Reports

A good practice is to run the authorization differences reports on the SAS Metadata Server machine. Authorization differences reports list changes to metadata object inheritance relationships for libraries, tables, OLAP schema, and cubes. You manually run these reports after the SAS Deployment Wizard has finished executing on your SAS 9.2 migrated system.

To run the authorization differences reports, follow these steps:

1 Log on to the metadata server machine.

2 Make sure that the SAS Deployment Wizard successfully extracted the authorization data from metadata.

The SAS Deployment Wizard extracts authorization information for folders, libraries, tables, OLAP schemas, and cubes and stores the information in data sets before it makes changes to the metadata. The wizard names these data sets **bupxxxxx** and stores them in the **MetadataServer/reports** directory.

Check the log for the metadata server migration log for encoding and extraction errors. Search for SecExtrBefore.sas to locate where in the log the program was executed, and where errors and warnings for this process would be found. The log resides here:

☐ Windows:

*SAS-configuration-directory***\Lev***n***\Logs\Configure**

metadatasrv_configureMetadata_*yyyy-mm-dd.hh.mm***.log**

☐ UNIX and z/OS:

*SAS-configuration-directory***/Lev***n***/Logs/Configure/**

metadatasrv_configureMetadata_*yyyy-mm-dd.hh.mm***.log**

3 Copy the report (**SecRptAfter.sas**) to the reports directory under (**Lev***n***/ SASMeta/MetadataServer**).

The report resides in the following location:

☐ Windows:

*SAS-installation-directory***\SASFoundation\9.2**

core\sasmisc\sasconf\metadatasrv\config\Deployment

☐ UNIX:

*SAS-installation-directory***/SASFoundation/9.2/**

misc/base/sasconf/metadatasrv/config/Deployment

☐ z/OS:

*SAS-installation-directory***/SASFoundation/9.2/**
base/sasconf/metadatasrv/config/Deployment

For example, on Windows, the command would resemble the following:

copy "C:\Program Files\SAS\SASFoundation\9.2\core\sasmisc\sasconf
metadatasrv\config\Deployment\SecRptAfter.sas"
C:\SAS\Config\Lev1\SASMeta\MetadataServer\reports

4 Using a text editor, open SecRptAfter.sas, add metadata server connection information and the report directory path, and then save the file. This information should be on the first two lines of the file. The report directory path should be an absolute path. The following examples use common SAS configuration paths, but this path can be specific to your site. The user credentials that you specify must be for an unrestricted user. (Either the user ID is listed in adminUsers.txt with an asterisk beside it, or the user ID is a member of the **Metadata Server: Unrestricted** role.)

Note: Depending on your operating system, the path must end with either a backslash (\, Windows) or with a forward slash (/, UNIX and z/OS). △

□ Windows:

options metaserver=localhost metaport=8561
metauser="mydomain\myuserid" metapass="mypassword";

%let
rptdir="*SAS-config-dir*\Lev*n*\SASMeta\MetadataServer\reports\";

□ UNIX:

options metaserver=localhost metaport=8561 metauser="myuserid"
metapass="mypassword";

%let rptdir="*SAS-config-dir*/Lev*n*/SASMeta/MetadataServer/
reports/";

□ z/OS:

options metaserver=localhost metaport=8561 metauser="myuserid"
metapass="mypassword";

%let rptdir="*SAS-config-dir*/Lev*n*/SASMeta/MetadataServer/
reports/";

filename sampsrc "*SAS-install-dir*/SASFoundation/9.2/base";

5 Open an operating system command prompt, change directory to the reports directory, and then run the report using the appropriate SAS invocation for your operating system.

On Windows and UNIX, we recommend that you run the reports using the UTF-8 encoding option. Use a non-UTF-8 execution command only when an error during extraction of the report files indicates that UTF-8 could not be used.

Here is an example that shows how to run the SAS command for UTF-8 systems:

□ Windows:

"C:\Program Files\SAS\SASFoundation\9.2\sas" -config
"C:\Program Files\SAS\SASFoundation\9.2\nls\u8\SASV9.CFG"
-sysin SecRptAfter.sas

□ UNIX:

/usr/local/SAS2/SASFoundation/9.2/bin/sas_u8 -sysin
SecRptAfter.sas

□ z/OS:

On z/OS, there is no UTF-8 option. The report always uses the default session encoding.

Here is an example that shows how to run the SAS command for non-UTF-8 systems:

☐ Windows:

```
"C:\Program Files\SAS\SASFoundation\9.2\sas" -config
"C:\Program Files\SAS\SASFoundation\9.2\SASV9.CFG" -sysin
SecRptAfter.sas
```

☐ UNIX:

```
/usr/local/SAS2/SASFoundation/9.2/sas -sysin SecRptAfter.sas
```

☐ z/OS:

```
/usr/lpp/SAS/Installs/MITB/SAS92/SASFoundation/9.2/sas.sh

-input /u/mitbsas/ServerConfig92E/Lev1/SASMeta/MetadataServer/
reports/SecRptAfter.sas

-log /u/mitbsas/ServerConfig92E/Lev1/SASMeta/MetadataServer/
reports/SecRptAfter.log
```

The report generates data sets and reports in the reports directory. Log output will also be in the report directory.

6 Open the HTML output in a Web browser to view the reports.

☐ librpt.html - Security changes for libraries

☐ ptabrpt.html - Security changes for tables

☐ oschsrpt.html - Security changes for OLAP schemas

☐ cubesrpt.html - Security changes for cubes

☐ fldrrpt.html – Security changes for folders

Note: On z/OS, contact the administrator for the HTTP server and request that the reports directory be available. As an alternative, you can copy the HTML and GIF files from the reports directory to another location that is already available through the HTTP server. You might want to restrict access to these reports, so consider the security of the directories to which they are copied and the audience which might access them. △

Rerunning the reports can be useful when you are making authorization changes and want to analyze the effects of your changes. In these situations, be sure to copy the original reports so that you can compare newer versions of the reports with your original reports.

Identities Whose Access Has Changed

The following figure depicts part of the libraries report from an example migration.

Figure 5.1 Example: Authorization Differences for a Library

Permission Changes for Library: "DemoLibrary"

Location	/Custom_DeptA/SAS Data Integration Studio Custom Tree/DemoFolder/
Library Name	DemoLibrary
Metadata URI	omsobj:SASLibrary/A531Y18S.AC0000SN

Change Type	Identity	ReadMetadata	WriteMetadata	CheckInMetadata	Read	Write	Create	Delete
Change Indicator		⇩	⇩		⇩	⇩		
Changed	PUBLIC	✓	✓	⊘	✓	✓	⊘	⊘
Original	PUBLIC	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Change Indicator								⇩
Changed	SAS DI-administrators	✓	✓	⊘	✓	✓	✓	✓
Original	SAS DI-administrators	✓	✓	⊘	✓	✓	✓	⊘
Change Indicator					⇩	⇩		
Changed	SAS Enterprise Guide - BI	✓	✓	⊘	✓	✓	⊘	⊘
Original	SAS Enterprise Guide - BI	✓	✓	⊘	⊘	⊘	⊘	⊘

The report provides basic identifying information for the DemoLibrary and displays a list of access changes. Here are some details:

□ The **Location** is the object's new, post-migration location for SAS 9.2.

□ The **Changed** rows contain the object's new, post-migration settings for SAS 9.2. In these rows, the symbols indicate effective access as grant ✓ , denial ⊘ , or conditional grant ✓▼ .

□ The **Original** rows contain the object's pre-migration settings for SAS 9.1.

Note: In SAS 9.1.3, the **Authorization** tab does not always display effective permissions. For this reason, the settings in the **Original** rows in the reports might not always match the settings that are displayed in the SAS 9.1.3 **Authorization** tab. The SAS 9.2 **Authorization** tab always displays effective permissions. △

□ The **Change Indicator** rows separate entries for different identities. In these rows, the down arrows ⇩ help draw attention to the settings that differ.

Note: This object happens to have only access changes. An object can have any combination of access changes, added identities, and removed identities. △

Identities Who Are Removed or Added

The following figure depicts part of the cubes report from an example migration.

Figure 5.2 Example: Authorization Differences for a Cube

The change table in the preceding figure indicates that UserA is removed. This means that UserA is listed on this cube's SAS 9.1 `Authorization` tab but is not listed on this cube's SAS 9.2 `Authorization` tab. It is important to understand the following points:

□ UserA has not been removed from the environment.

□ No explicit settings (or ACT settings) for UserA have been removed from this cube (or from any of this cube's parents).

□ The permission settings that the report displays for UserA are for the original environment.

Note: For an added identity, the displayed permissions indicate the identity's access in the SAS 9.2 environment. △

□ UserA's access to this cube is not necessarily discontinued. UserA is just no longer a named participant in the permission settings for this cube.

Note: If you want to look up the effective permissions that UserA has for this cube in SAS 9.2, click the `Advanced` button on the cube's `Authorization` tab and select the `Explore Permissions` tab. The `Advanced` button is available to only unrestricted users. △

□ Removal of UserA from this cube's `Authorization` tab is a side effect of changes in access control inheritance. The report documents that side effect.

Note: This object happens to have only one removed identity. An object can have any combination of access changes, added identities, and removed identities. △

Causes of Authorization Differences

If you migrate an object that derives a grant from an inheritance rule that is discontinued in SAS 9.2, access to that object might be reduced. The following inheritance rules are discontinued in SAS 9.2:

□ **cube ▶ OLAP schema ▶ application server**

□ **table ▶ library ▶ application server**

□ **DBMS table ▶ DBMS schema ▶ DBMS server**

The following figure depicts some of these rules.

Figure 5.3 Selected Inheritance Rules
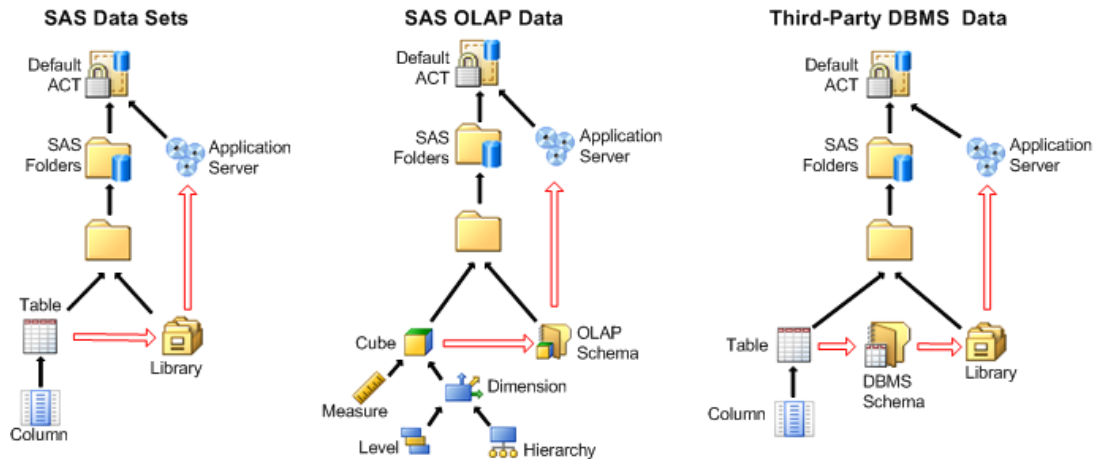
In the preceding figure, the solid arrows indicate selected SAS 9.2 inheritance rules. The hollow arrows indicate selected inheritance rules that existed in SAS 9.1 but are discontinued in SAS 9.2. In SAS 9.2, libraries, tables, OLAP schemas, and cubes inherit from only their parent folders.

Note: You can use the **Inheritance** tab to identify any item's parents. In SAS 9.2, you access this tab by clicking the **Advanced** button on any object's **Authorization** tab. The **Advanced** button is available to only unrestricted users. △

Here are some other causes of authorization differences:

□ If you migrate a custom repository, ReadMetadata access to that repository (and, through inheritance, its contents) might be expanded. The new repository is parented by both its repository ACT and by the **SAS Folders** node in the folder tree.

Note: We recommend that you manage ReadMetadata access on the folder that represents the custom repository. Don't make changes on the custom repository's repository ACT. △

□ If you migrate a SAS Data Integration Studio custom tree, access to ungrouped objects might change.

Addressing Authorization Differences

Your priorities influence how you address any authorization differences that the reports identify. You might use any of these approaches:

□ Make minimal changes so that access is sufficiently available again. This might not require any action. Or, this might require only adding grants on existing folders.

□ Make incremental changes to restore access to the SAS 9.1.3 state. If you have access distinctions among groups, this approach can require that you create some additional folders, set appropriate permissions on those folders, and redistribute content. For more information, see "Working With SAS Folders" in the *SAS Intelligence Platform: System Administration Guide*.

□ Set up a new folder structure, set appropriate permissions on the folders, and redistribute content.

Note: We recommend that you make any changes to settings on the appropriate parent folders, rather than adding settings to specific objects. △

Update Third-Party Software Server Definitions

Your SAS 9.2 migrated system can contain metadata describing third-party servers, such as Web application and database servers. These server definitions are stored in SAS metadata repositories and might need to be modified on the SAS 9.2 system using SAS Management Console to reflect changes to the new system. Examples of such changes might include new host names, ports, connection attributes, or security information. A list of migrated third-party metadata is provided in your SAS Migration Utility analysis report. To view your migration analysis report, point a Web browser to the AnalysisReport.xml file in the **AnalysisReport** subdirectory underneath the output directory you specified when you last ran the SAS Migration Utility.

Refer to your Instructions.html file for more information about what steps you might need to perform. Instructions.html resides under the SAS configuration directory in the **Lev*n*\Documents** subdirectory (or example, **C:\SAS\Config92\Lev1\Documents**).

Server Tier Post-migration Tasks

z/OS Burst Set and Optimizer Library Considerations

If the burst set library is pre-assigned in z/OS, attempting to distribute using an existing burst set in that library generates a message that the table could not be read (or a blank list) when you select **Recipients and Distribution Rules**. Attempting to create a new burst set while the library is pre-assigned generates exceptions, similar to the following:

An error occurred in processing the page request. createBurstSet() (com.sas.report.output.management.OutputManagementException: The physical data is not available [java.sql.SQLException: Unable to execute for an undetermined reason. SQL passthru expression contained these errors: ERROR: Libname WRSDIST is not assigned.

[java.sql.SQLException: SQL passthru expression contained these errors: ERROR: Libname WRSDIST is not assigned.]])SQL passthru expression contained these errors: ERROR: Libname WRSDIST is not assigned.

Root Cause: java.sql.SQLException: SQL passthru expression contained these errors: ERROR: Libname WRSDIST is not assigned.

In actuality, the library is pre-assigned, but the message states that it is not. Removing the pre-assigned flag returns functionality to normal.

Update SAS Server Configuration Files

As mentioned earlier, certain SAS application server configuration files such as autoexec files (appserver_autoexec.sas) and sasv9.cfg files are not migrated. At some point, you might need to tune these files with configuration settings (such as Java options) appropriate for your site. For more information, see "Optional Setup Tasks" on page 138.

Although the command to start SAS and any settings in config or autoexec files are not migrated, load balancing configuration and metadata information for SAS servers is migrated. (Load balancing here should not be confused with server clustering—the management of multiple Web application servers on the SAS middle tier.) The same server load-balancing algorithms that were present in SAS 9.1.3 are available and still

used. The new load-balancing algorithms are for servers or configurations that did not exist in SAS 9.1.3. For more information about the load balancing algorithms available in SAS 9.2, see "Understanding the Load-Balancing Algorithms" in the *SAS Intelligence Platform: Application Server Administration Guide*.

Migrating Content Stored Outside the SAS Configuration Directory

About Migrating Content Stored Outside the SAS Configuration Directory

SAS 9.1.3 content stored outside the configuration directory remains in its SAS 9.1.3 location. Examples of SAS 9.1.3 content include the following:

- □ external files
- □ libraries
- □ stored processes

Note: If you are migrating from Windows 32-bit operating systems to Windows 64-bit operating systems, there are some particular post-migration steps that you must perform, such as converting your custom formats catalog before rebuilding your cubes. For more information, see the white paper available at the Migration Focus Area: **http://support.sas.com/migration/**. △

In the design phase of your migration, the migration analysis report identified any SAS content that would require manual steps to migrate. (These steps are listed in the "Product: Level Configuration" section of the analysis report.) When the migration utility encounters metadata that points to content residing outside of the SAS 9.1.3 configuration directory, it writes a warning message to the analysis report and copies only SAS source files (files with a .sas extension) to the migration package to *tier-name*/ **levconfig/datapackage***suffix*.

The following migration analysis report identifies some SAS 9.1.3 stored processes that would not be migrated to SAS 9.2, because these stored processes reside outside of the SAS 9.1.3 configuration directory:

The SAS migration tools do not support automatically migrating this content and updating the SAS 9.2 metadata. If you want to maintain two separate repositories for your SAS content outside of the configuration directory, then you must manually move this content and update your SAS 9.2 metadata.

CAUTION:
Regardless of whether you choose to migrate SAS 9.1.3 content that is stored outside of the configuration directory, we strongly recommend that you back up this content before proceeding. △

Even though the SAS automated migration tools migrate SAS tables that reside under the SAS 9.1.3 configuration directory *and* in a **SASEnvironment** or **Data** folder,

the best practice is to store your SAS tables outside the SAS configuration directory. Migrating large amounts of data encountered under the configuration directory slows migration utility performance.

Where your tables reside—and how the libraries reference those tables—determine whether you must manually update paths in your libraries. Rules for how the automated migration tools update paths to data in SAS libraries are as follows:

- □ Libraries that reference *relative* paths to data will remain unchanged.
- □ Libraries that reference paths to data in the SAS 9.1.3 configuration directory **SASEnvironment** and **Data** folders will be updated to reference the new 9.2 folder location.
- □ Libraries that reference paths to data outside the SAS 9.1.3 configuration directory will not be updated and will still reference the same path in SAS 9.2.
- □ Libraries that reference paths to data inside the SAS 9.1.3 configuration directory (but not in a **SASEnvironment** or **Data** folder) will not be updated and will still reference the same path in SAS 9.2.

Migrate External SAS Data Integration Studio Content

The SAS Migration Utility is able to migrate all your SAS Data Integration Studio 3.4 jobs and job flows because these are objects that are stored in metadata. However, if any of your jobs or job flows point to files that reside outside of the SAS 9.1.3 configuration directory, (such as source code files), then you have to manually migrate these external files.

For more information, see "Migrate Content Stored Outside the SAS Configuration Directory" in *Special Considerations for Customers Upgrading to SAS 9.2*.

Migrate Libraries Stored Outside the SAS Configuration Directory

The SAS 9.2 migration tools do not support automatically migrating content that is stored outside the SAS configuration directory. (This is true, even when the target machine running SAS 9.2 is the same as the SAS 9.1.3 machine.) For more information, see "What Can Be Migrated?" on page 6.

If you want to maintain two separate repositories for your SAS libraries outside of the configuration directory, then you must manually move these libraries and update your SAS 9.2 metadata.

CAUTION:
   If you do not update the file and library paths to a new SAS 9.2 location, future changes made with SAS 9.2 will be written to the old SAS 9.1.3 libraries. △

To manually migrate SAS libraries that reside outside the SAS 9.2 configuration directory, follow these steps:

1 Using the method prescribed by your site, back up your SAS 9.1.3 libraries.

   Note: As you would with any backup, run these backups through your site's validation procedures to be confident of their integrity before proceeding with your SAS migration. △

2 If you have decided to create a new library repository, create the new location and copy your SAS 9.1.3 libraries to this new location. This new location must be accessible to the SAS Application Servers associated with these libraries.

3 Log on to SAS Management Console as an unrestricted user (such as sasadm).

4 In the left pane, in the **Plug-ins** tab, expand the **Data Library Manager** icon.

5 Expand the `Libraries` folder.

6 Right-click the library, and select `Properties` from the pop-up menu.

7 In the Properties dialog box, select the `Options` tab.

8 In the `Available items` list, select the SAS 9.1.3 library path, and then select `Edit`.
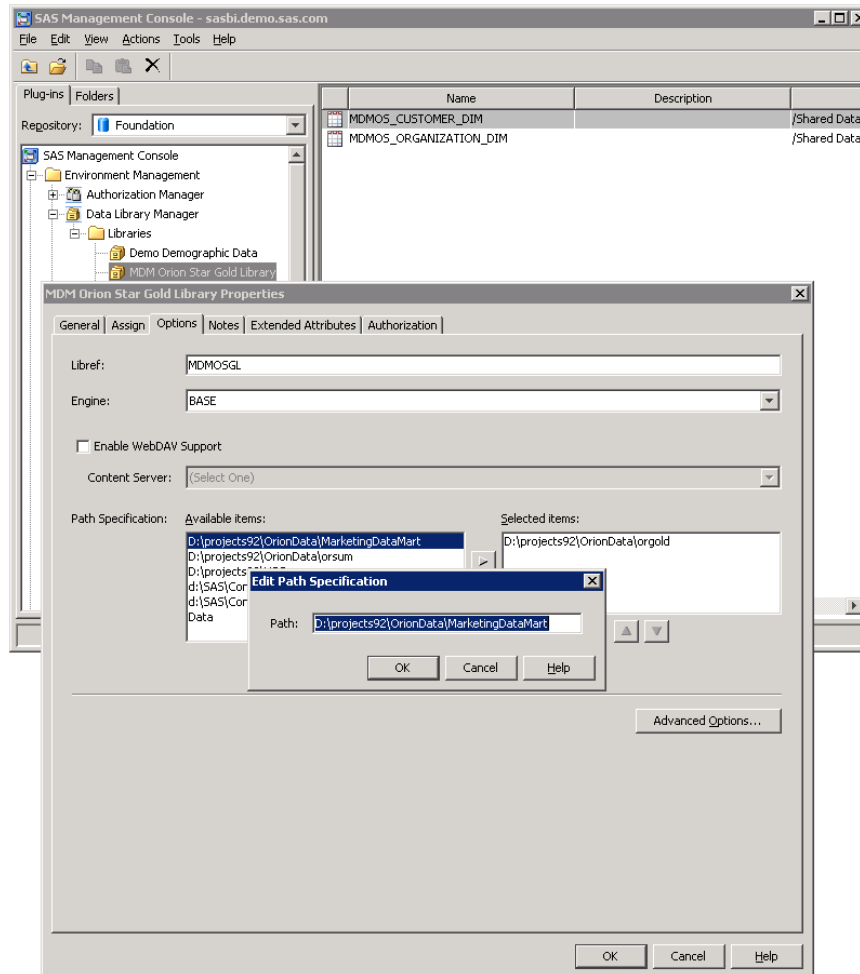
9 In the dialog box that appears, modify the path to the new SAS 9.2 library that you created earlier.

10 Click `OK` to save the path.

11 In the Properties dialog box, select the new path, and click `OK` to select this repository as the repository for the selected library.

In the Properties dialog box, click `OK` to save the change to the library.

12 Repeat this process for each library that you want to change.

Note: Because you have already defined the new path, you will skip steps 8–10. △

Migrate Stored Processes Stored Outside the SAS Configuration Directory

The SAS migration tools do not support automatically migrating content that is stored outside the SAS configuration directory. (However, the migration utility does

package any .sas files pointed to by metadata outside of the SAS 9.1.3 configuration directory.) If you want to maintain two separate repositories for your SAS stored processes outside of the configuration directory, then you must manually move these stored processes and update your SAS 9.2 metadata.

To manually migrate SAS stored processes that reside outside the SAS 9.2 configuration directory, follow these steps:

1 Using the method prescribed by your site, back up your SAS 9.1.3 stored processes.

> *Note:*   As you would with any backup, run these backups through your site's validation procedures to be confident of their integrity before proceeding with your SAS migration. △

2 If you have decided to create a new stored process code repository, create the new location and copy your SAS 9.1.3 stored processes to this new location. This new location must be accessible to your SAS Metadata Server and Stored Process Server.

> The migration utility packages any .sas files pointed to by metadata outside of the SAS 9.1.3 configuration directory. Alternatively, you can copy .sas files from the migration package in *tier-name***/levconfig/datapackage***suffix*.

3 Log on to SAS Management Console as an unrestricted user (such as sasadm).

4 In the left pane, select the **Folders** tab.

5 Navigate to a folder that contains one of your SAS 9.1.3 stored processes.

6 In the right pane, right-click the stored process, and select **Properties** from the pop-up menu.

7 In the Properties dialog box, select the **Execution** tab, and then **Manage**.

8 In the Manage Source Code Repositories dialog box, choose a path that needs to be updated and select **Edit**.
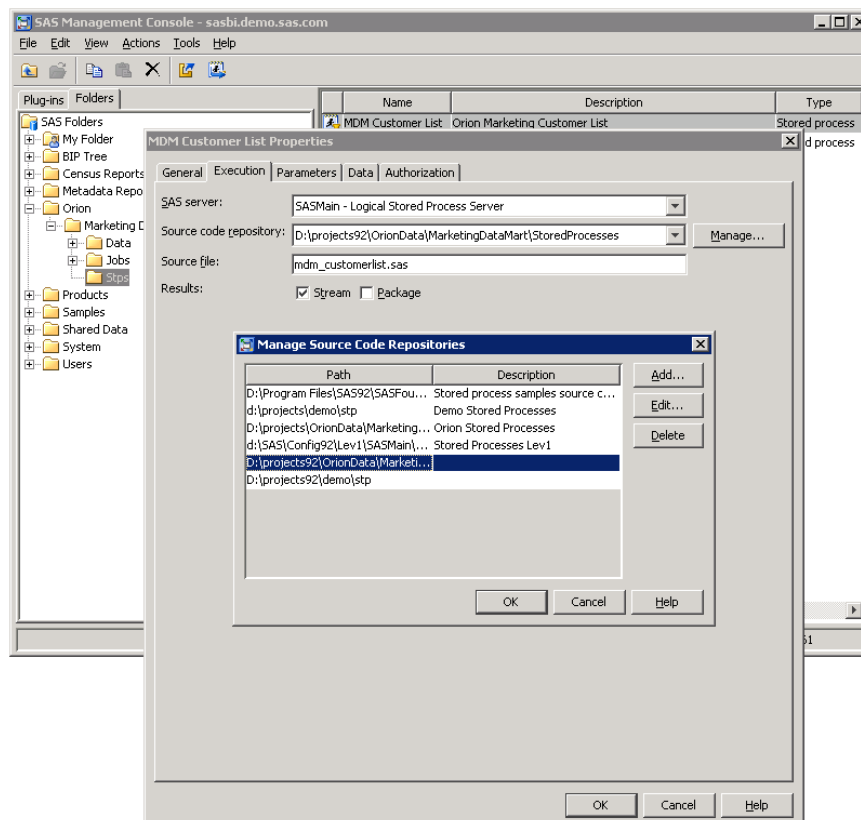
9 Review the Associated Stored Processes dialog box and select **OK**.

10 In the dialog box that appears, modify the path to point to the new SAS 9.2 stored process code repository that you created earlier.

11 Click **OK** to save the modified code repository path.

12 In the Properties dialog box, click **OK** to save the stored process.

Update Stored Process Archive Package Paths

The SAS automated migration tools update stored process archive package paths that point to locations inside the SAS configuration directory.

The SAS Migration Utility cannot update any paths that reside outside of the configuration directory. The migration utility flags such problematic paths in its migration analysis report. In SAS 9.2, stored process archive package paths are no longer modeled by metadata but are stored in prompt metadata. Therefore, after the SAS Deployment Wizard finishes executing, you will need to manually update the _ARCHIVE_PATH prompt for all affected stored processes using SAS Management Console. For more information, see "Developing Stored Processes with Package Results" in the *SAS Stored Processes: Developer's Guide* and the prompt Help in SAS Management Console online Help.

Update Stored Process WebDAV Paths

The SAS 9.1.3, if you published stored process result packages to a Xythos WebDAV server, then the SAS automated migration tools are able to automatically migrate these paths to the new SAS 9.2 WebDAV server, known as the SAS Content Server. In SAS 9.1.3, if you used a WebDAV server other than Xythos, (such as Apache HTTP), then you must manually update these WebDAV paths.

In its migration analysis report. the SAS Migration Utility flags all stored process WebDAV publish paths that are not for Xythos. In SAS 9.2, stored process WebDAV paths are no longer modeled by metadata but are stored in prompt metadata. Therefore, using SAS Management Console, you will need to update the _COLLECTION_URL prompt for all affected stored processes. For more information, see "Developing Stored Processes with Package Results" in the *SAS Stored Processes: Developer's Guide* and the prompt Help in SAS Management Console online Help.

Rebuild OLAP Cubes

In the design phase of your migration, the migration analysis report identified that SAS 9.1.3 cubes would need to be rebuilt in order to run in SAS 9.2:

In SAS 9.2, PROC OLAP does not overwrite a cube repository if it finds files already present. Instead, OLAP creates a new folder with a unique name for the new cube. As part of the SAS Deployment Wizard migration of OLAP content to SAS 9.2, SAS code

files are created that you can run to recreate your SAS 9.1.3 cubes to run in the new environment. The deployment wizard writes these files to the *SAS-configuration-directory***\Lev***n***\SASMain\OLAPServer\OLAP** directory. You can run these SAS files to recreate your cubes without having to specify a new SAS 9.2 path for your cube repository.

Note: During the cube rebuild procedure, if a database that SAS accesses requires login credentials, you must supply these in order to rebuild the cube. For more information, consult with your site's database administrator. △

To rebuild SAS 9.1.3 cubes with SAS 9.2, follow these steps:

1 Using the method prescribed by your site, back up your SAS 9.1.3 cubes.

   Note: As you would with any backup, run these backups through your site's validation procedures to be confident of their integrity before proceeding with your SAS migration. △

2 Before proceeding, make sure that you have first updated your metadata to point to the SAS 9.2 library repository. For more information, see "Migrate Libraries Stored Outside the SAS Configuration Directory" on page 105.

3 If you have decided to create a new cube repository, create the new location. This new location must be accessible to your SAS Metadata Server, SAS OLAP Cube Studio, and the workspace server with which you rebuild the cubes.

4 Log on to SAS OLAP Cube Studio 4.2.

5 In the left pane, select the **Inventory** tab, and expand the **Cube** node.

6 Right-click a cube you want to rebuild and from the pop-up menu, choose **Edit Cube Structure**.

   The Cube Designer Wizard displays.

   Note: The identity used to edit and rebuild the cube must have ReadMetadata and WriteMetadata permissions granted for the cube and all of its dimensions, levels, hierarchies, and measures. If the identity is not granted these permissions, the Edit Cube Structure action is dimmed. The security reporting macros available with SAS 9.2 can help in determining whether an identity has the correct permissions to build a cube. For more information, see "Authorization Model" in the *SAS Intelligence Platform: Security Administration Guide*. Also, to run reports based on cubes and to refresh cubes, make sure that users have Read access to tables and cubes, and Read metadata access to the underlying libraries. △

7 Click **Browse** for the **Physical cube path** field, and enter the new path where you want to store your rebuilt cubes.

   If you have updated your metadata to point to the SAS 9.2 library repository, then accept the wizard defaults. For more information, see "Migrate Libraries Stored Outside the SAS Configuration Directory" on page 105.

8 On the final dialog box of the wizard, make sure that **Save the metadata and create the cube** is selected, and then select **Finish**.

   The SAS 9.2 workspace server rebuilds the cube and saves it to the new location.
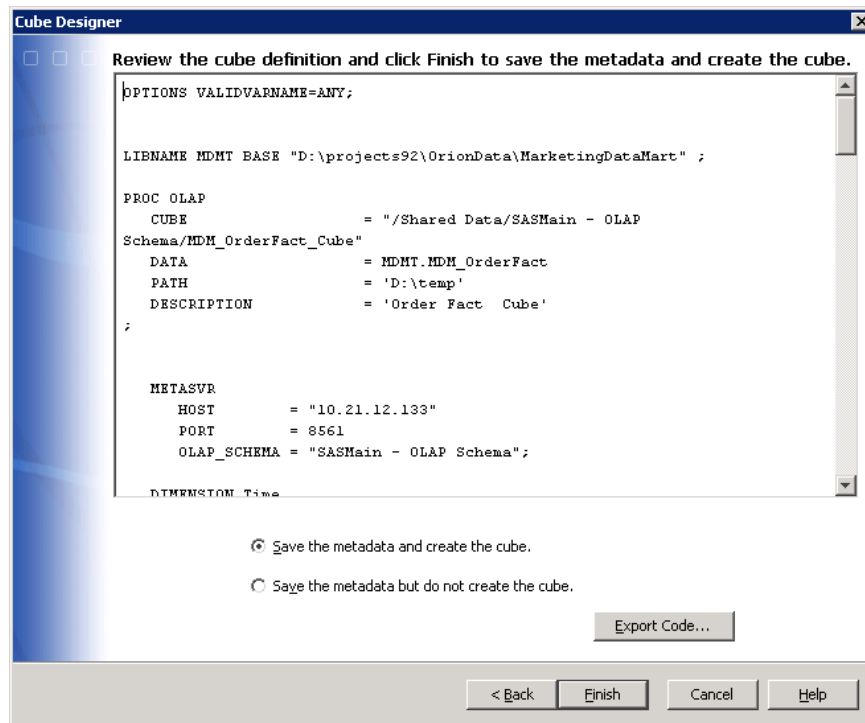
9 Repeat this process for each cube that you want to rebuild.

Manually Convert Data Explorations to Reports

In the November 2010 release of SAS 9.2, (which contains the release of SAS Web Report Studio 4.3), data explorations are now maintained as reports. When you upgrade or migrate, the SAS deployment tools automatically convert each bookmark in the data exploration into a report that you can view and edit using SAS Web Report Studio 4.3.

Note: If the conversion for any data exploration fails, you will receive a warning in the Instructions.html file. Because data explorations can have dependencies on OLAP cubes, make sure the cubes have been built after you migrate and before you run the scripts described later in this topic. For more information, see "Rebuild OLAP Cubes" on page 108. △

To convert the data explorations manually, complete the following steps:

1 Read "Before You Convert" in *Special Considerations for Customers Upgrading to SAS 9.2*.

2 Do one of the following:

☐ After performing a migration or promotion, run the **manualLoadContent–OrderNumber.bat/.sh** script.

☐ After performing an upgrade, run the **manualUpdateContent–OrderNumber.bat/.sh**.

Note: Before execution, you will need to edit the script to replace the SPECIFY_ADMIN_PASSWORD_HERE and SPECIFY_TRUSTED_PASSWORD_HERE values with the correct passwords

before executing it. It is strongly recommended that you specify a value encoded by SAS for the password. △

For more information, such as where the script is located and where its log file is written, see "Update Content Manually for the SAS Content Server" in the *SAS Intelligence Platform: Web Application Administration Guide*.

3 Manually run the script (**manualAdjustUrls-***OrderNumber***.bat/.sh**) to adjust URLs and references to metadata that has moved either during migration or an upgrade.

For more information, such as where the script is located and where its log file is written, see "Adjust Directive URLs Manually" in the *SAS Intelligence Platform: Web Application Administration Guide*.

4 Validate that the conversion script was successful by running SAS Web Report Studio and loading one of the newly created reports.

For more information, see the *SAS Web Report Studio: User's Guide*.

SAS Web Report Studio upgrades the generated reports when you save them. However, if you want to upgrade all the generated reports at once, rerun the appropriate script specified in step 1.

After the conversion to bookmarks, the newly created reports follow this naming convention: *data-exploration-name_bookmark-name*-report.srx

If the bookmark name contains spaces, the resulting report name contains no spaces. For example, assume you have a data exploration named Sales Forecast that contains two bookmarks: Region A and Region B. The resulting report filenames after the upgrade or migration are: **Sales Forecast_RegionA-report.srx** and **Sales Forecast_RegionB-report.srx**, respectively.

Note: If the resulting report name is longer than 60 characters, then the portion of the name that precedes **-report.srx** is truncated. △

If the data exploration contains conditional highlighting that includes an image, the image is removed from the conditional highlight. If a collection portlet in the SAS Information Delivery Portal pages contains links to the data explorations, these links are removed and replaced with links to the newly created reports. The converted links become visible to users when they refresh the collection or reopen the portal. For more information, see "Differences between Data Explorations and Reports" in *Special Considerations for Customers Upgrading to SAS 9.2*.

Any Information Map Viewer portlets are converted to report portlets, and the associate data exploration is converted to a report and associated to the converted report portlet.

Redeploy Jobs for Scheduling

All jobs that were deployed for scheduling or were deployed as stored processes should be redeployed in the SAS 9.2 environment. From the SAS Data Integration Studio desktop, you can select **Tools ▶ Redeploy Jobs for Scheduling** or **Tools ▶ Redeploy Jobs to Stored Processes**.

For more information about migrated jobs, see "Updates to Jobs and Transformations During Migration" in *Special Considerations for Customers Upgrading to SAS 9.2*.

Verify Migrated Jobs with Data Quality Transformations

If jobs that include the Create Match Code transformation do not run successfully after migration, verify that the appropriate Quality Knowledge Base (QKB) location

value (DQSETUPLOC value), is specified on the global options window for SAS Data Integration Studio.

For more information, see "User Action Required for Migrated Jobs with Data Quality Transformations" in *Special Considerations for Customers Upgrading to SAS 9.2*.

Reschedule Flows

After migrating to SAS 9.2, owners of scheduled flows will need to submit them to the scheduling server used by the SAS 9.2 system. To reschedule flows, follow these steps:

1 Determine the user IDs associated with each SAS 9.1.3 flow. (Locate the checklist you completed earlier in "Determine the User ID Associated with Scheduled Flows" on page 37.)

2 If you have migrated any SAS Web applications, such as SAS Web Report Studio, verify that scheduling is enabled (**Configuration Manager ▶ Web Report Studio 4.3 ▶ Properties ▶ Settings ▶ Application ▶ Scheduling**).
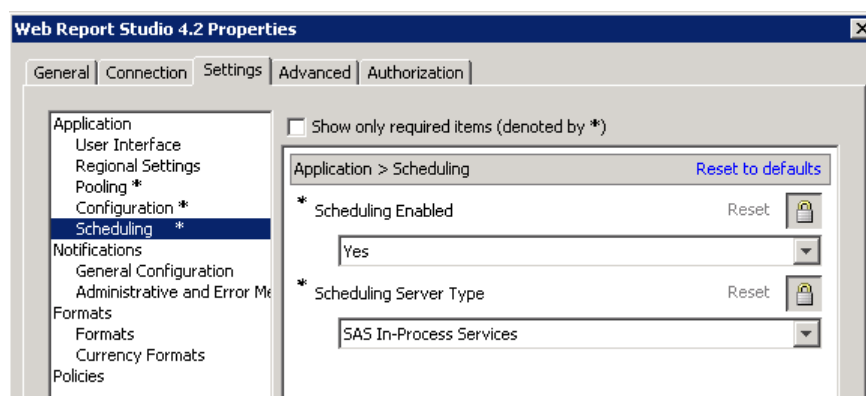
Note: For more information, see "Using Configuration Manager" in *SAS Intelligence Platform: Web Application Administration Guide*. △

3 Reschedule the flow for your SAS product. For example:

☐ For SAS Data Integration Studio, reschedule job flows.

In SAS Management Console, use the reschedule function in Schedule Manager.

For more information, see SAS Management Console online Help.

☐ For SAS Web Report Studio, reschedule report flows.

In SAS Web Report Studio, on the Scheduled and Distributed Reports window (**File ▶ Manage Files ▶ View scheduled and distributed reports**), use the `Actions` button.

For more information, see SAS Web Report Studio online Help.

Modify Migrated Information Maps to Enable SAS Web Report Studio Optimization

When a measure data item that meets the following criteria is migrated from SAS 9.1.3 to SAS 9.2, it is not automatically optimized for SAS Web Report Studio in the same way that an identical, new SAS 9.2 data item is optimized.

□ The measure data items are in an information map that was migrated from SAS 9.1.3 to SAS 9.2 by using the SAS automated migration tools.

□ The migrated information map has large data sources.

□ The migrated measure data items are used in the expressions of other measure data items.

□ The default aggregate function for a migrated measure data item is specified as a property of the data item instead of being defined in the data item expression.

To optimize these migrated data items for SAS Web Report Studio, you must recreate them in a SAS 9.2 environment. Consider the following example, which uses SAS Information Map Studio 4.2 to recreate some migrated data items:

1 When you recreate one of these data items, specify its aggregate function as a property of the data item (that is, follow the same basic steps that you followed when you created the data item in SAS 9.1.3). Do not define the aggregate function in the expression of the data item.

For example, data item DataItem1 was created in SAS Information Map Studio 3.1 and its aggregate function, **SUM(argument)**, was specified on the **Classifications/Formats** tab. In SAS Information Map Studio 4.2, re-create this data item and select **SUM(argument)** on the **Classifications, Aggregations, Formats** tab.

Note: Copying and pasting the information map or data items, or just updating the existing data items will not cause optimization to occur. You must create brand new data items. △

2 Delete the old measure data item or name the new one with a unique name.

3 Go through your reports and modify any references to point to the new data items that you created.

Note: Neither new nor migrated measure data items are optimized for SAS Web Report Studio if the aggregate functions of the data items are defined in the data item expressions. If one of these data items is also referenced by the expression of another data item, then you can optimize it if you can change to specifying its aggregate function as a property of the data item. △

For more information, see SAS Information Map Studio 4.2 online Help and the *Base SAS Guide to Information Maps*.

Middle-Tier Post-migration Tasks

Review the SAS Middle-Tier Configuration

The automated migration tools do not preserve any of the SAS middle-tier configuration information. The deployment of the SAS 9.2 middle tier is always "out of the box." Many of the defaults have changed, and any customizations should be reviewed with respect to SAS 9.2 Web administration guidelines before they are implemented. Do not assume that the defaults used in SAS 9.1.3 middle-tier configuration are appropriate for SAS 9.2. For more information, see *SAS Intelligence Platform: Web Application Administration Guide*.

Review Role Changes to SAS Web Report Studio

SAS Web Report Studio 4.3 uses the user roles that are implemented in SAS 9.2. For information about SAS 9.2 roles, see "Ensure Availability of Application Features" in the *SAS Intelligence Platform: Security Administration Guide*.

You should review your migrated SAS Web Report Studio users and their re-mapped roles to determine whether you should make any changes. The capabilities for most of your SAS Web Report Studio migrated users should remain the same. However, any SAS Web Report Studio 3.1 advanced users lose the ability to manage distribution lists. To review roles and to manually re-apply any lost capabilities, refer to the *SAS Intelligence Platform: Web Application Administration Guide*.

Redefine Themes and Branding

SAS 9.2 includes a new theme infrastructure that is used by Web applications such as SAS Web Report Studio and the SAS Information Delivery Portal. If you created custom themes for your SAS Web applications in SAS 9.1.3, then you can migrate certain components of your themes to the new theme infrastructure. For more information, see "Migrating Custom Themes" in the *SAS Intelligence Platform: Web Application Administration Guide*.

The product-specific branding that was available in SAS Web Report Studio 3.1 is no longer supported, and there are no provisions for migrating older branding changes to the new themes in version 4.3. This means that the branded areas must be redefined in the new themes infrastructure.

Notes about Migrated SAS Web Report Studio User Folders

SAS 9.2 secures a user's folders by using a custom Access Control Template (the Private User Folder ACT). This ACT is designed to allow administrators, System Services, and the user access to a particular user's folder and to prevent other users' access.

In SAS 9.1.3, SAS Web Report Studio manages user folders at the application layer. As part of this management, explicit permissions are added to the user's 9.1.3 SAS Web Report Studio home folder to achieve privacy.

Because SAS 9.2 no longer uses these explicit permissions, during migration to SAS 9.2, these explicit permissions are automatically removed, and all users' home folders are relocated to the SAS 9.2 home folder location.

After migration, reports and folders are relocated and properly secured, and require no additional post-migration action.

For more information, see "About the SAS Folder Structure" in the *SAS Intelligence Platform: System Administration Guide*.

Location of Dashboards and Indicators

After you upgrade to SAS BI Dashboard 4.3, dashboards and any objects in the dashboard (such as indicators, models, and ranges) are metadata objects and are saved in SAS Folders, so any dashboards that you created prior to SAS BI Dashboard 4.3 are saved as metadata objects. The default location for these metadata objects is the **Products\BIDashboard 4.3** directory. This directory contains the **DashboardConfigs**, **IndicatorDefinitions**, **ModelConfigs**, and **RangeDefinitions** subdirectories.

CAUTION:
Do not move the contents of these folders into different folders. If the contents of these folders are moved to different folders, these objects cannot be used with their dashboards. △

SAS BI Dashboard and JDBC DSX Files

If your SAS BI Dashboard relies on any data sources specified in JDBC data source XML (DSX) files, then you must manually migrate these data sources.

You have two options for migrating your data:

☐ Move the data under metadata control.

☐ Continue to use a SAS libref that points to the workspace server's file system.

    If you use this libref method, then you must manually fix the librefs in JDBC DSX files.

For more information, see "Working with Data Source XML (DSX) Files" in the *SAS Intelligence Platform: Web Application Administration Guide*.

Resetting SAS Web Application URLs

When migrating from SAS 9.1.3 to SAS 9.2, attributes required to access your SAS Web applications can change. For example, SAS middle-tier machine names and the ports on which a Web application listens for client requests can change.

After migrating, be sure to review the URLs for your migrated SAS Web applications to make sure that they are still valid. For a list of these applications, see the Portal-WebApplications.html file that resides in the **Documents** subdirectory under your SAS 9.2 configuration path.

Reviewing Your WebDAV Configuration

About Reviewing Your WebDAV Configuration

The SAS automated migration tools migrate SAS 9.1.3 WebDAV repository access control lists (ACLs) *except* for those ACLs under the **/sasfolders** directory. Migrating WebDAV ACLs under the **/sasfolders** directory has these effects:

☐ causes performance degradation during migration and increases repository disk space unnecessarily

☐ compromises WebDAV security by allowing access to user IDs other than the SAS Administrator and the SAS Trusted User

(In SAS 9.1.3, the ACLs are located by default in the SAS configuration path under **sasdav/wrs**.)

The automated SAS migration tools update certain references to identities, so that these references are based on the identity's name, instead of on the identity's user ID. This change affects only WebDAV access control entries (ACEs) and WebDAV personal repository names. The following table provides an example for the user **William Jones** who has a login with a user ID of **WIN\wsj**.

Table 5.1   Example of a Migrated WebDAV Personal Repository Name and ACE Entry

WebDAV Attribute	Example Values	
	Before Migration (SAS 9.1.3)	**After Migration (SAS 9.2)**
WebDAV personal repository name	wsj.WIN	William Jones
WebDAV person identifier in an ACE	WIN\wsj	person/William Jones

Note: SAS 9.2 uses the name value from the user's metadata definition (not the display name value), because the name value should be stable over time. △

Review WebDAV Report Repository Permissions

After migration, you should review your WebDAV security settings and make the changes appropriate for your site and its security needs. For more information, see "Implementing Authorization for the SAS Content Server "in the *SAS Intelligence Platform: Web Application Administration Guide*.

Note about Migrated WebDAV Content Datestamps

The SAS automated migration tools replace creation dates on content with the date on which the migration occurred. The migration tools preserve modification dates on content. For this reason, migrated WebDAV content can have a creation date that is later than its modification date.

Update SAS Information Delivery Portal URLs

Some additional steps must be performed after the SAS Deployment Wizard executes to ensure that links within the SAS Information Delivery Portal have migrated appropriately. To facilitate this process, SAS supplies a script that you should run to perform these tasks. Refer to Instructions.html for more information.

Instructions.html resides under the SAS configuration directory in the **Lev***n***/ Documents** subdirectory (for example, **C:\SAS\Config92\Lev1\Documents**).
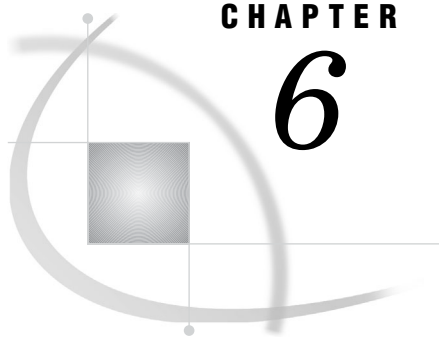
C H A P T E R

6

Validating Your SAS Migrated Deployment

Overview of Validating Your SAS Migrated Deployment

This is the fifth of five tasks required to install SAS 9.2 and migrate your SAS 9.1.3 content.

1. Design your migration.

2. Perform pre-migration tasks.

3. Install SAS 9.2 and migrate your SAS 9.1.3 content.

4. Perform post-migration tasks.

▶ **5.** *Validate your migration.*

The topics in this section describe in step-by-step fashion how to validate your SAS 9.2 servers, clients, middle tier, and Web clients.

For a discussion of functionality changes in SAS 9.2, see *Special Considerations for Customers Upgrading to SAS 9.2.*.

Validate the SAS 9.2 Servers

There are a few simple steps required to confirm that the various SAS servers you have deployed are running properly. The following table summarizes server validation information:

Table 6.1   Validation Summary for the SAS Server Tier

Server	Validation Method
Metadata server	Successful login using the SAS Management Console.
Metadata utility (SASMeta) workspace server	The metadata utility workspace server can be used only by those members of the SAS Administrators group who have an external account that is known to the server's host and is associated with their SAS identity. If the server is on Windows and uses credential-based host authentication, the account must have the **Log on as a batch job** user right.
	Right-click the validate command in SAS Management Console using external account credentials that meet the criteria described above. Default path:
	Server Manager ▶ SASMeta ▶ Logical Workspace Server.
Object spawner	If either the stored process server or one of the workspace servers validates (see below), then the object spawner is running.
OLAP server	Right-click the validate command in SAS Management Console. Default path:
	Server Manager ▶ SASMain ▶ Logical OLAP Server.[1]
Pooled workspace server	Right-click the validate command in SAS Management Console. Default path:
	Server Manager ▶ SASMain ▶ Logical Pooled Workspace Server.[1]
Stored process server	Right-click the validate command in SAS Management Console. Default path:
	Server Manager ▶ SASMain ▶ Logical Stored Process Server.[1]
Workspace server	Right-click the validate command in SAS Management Console using external account credentials. Default path:
	Server Manager ▶ SASMain ▶ Logical Workspace Server.[1]
DATA step batch server	Successful launch of SAS when running the sasbatch script.
	On z/OS, use the Schedule Manager's Deploy SAS DATA Step Program to browse the appserver_autoexec_usermods.sas file created in the AppServer context.
Grid server	Successful launch of the grid test program found on the SAS Scalability and Performance focus area: **http://support.sas.com/rnd/ scalability/grid/gridfunc.html#testprog**. For more information, see "Verifying SAS Job Execution" in *Grid Computing in SAS*.

1   Use the value you entered during the deployment for the server context name. The *default* is SASApp or SASMain, for single-machine installations.

This procedure is meant to provide basic validation. For more complex server configurations, please refer to the appropriate SAS documentation for the server in question.

To validate the SAS server tier that has been deployed using the SAS Deployment Wizard, follow these steps:

1 Log on to the machine hosting one or more SAS servers.

2 Start SAS Management Console, using the following command for the appropriate operating system:

  □ Windows:

  Start menu ▶ Programs ▶ SAS ▶ SAS Management Console 9.2

  □ UNIX:

   Type the following command:

   *SAS-installation-directory***/sasmc**

   For example:

   /opt/sas/SASManagementConsole/9.2/sasmc

  □ z/OS:

   Use a Windows or UNIX machine on which SAS Management Console is installed and connect to the z/OS machine(s) where the SAS 9.2 server tier is running.

3 Log on to the metadata server using a set of valid credentials, such as for the SAS Administrator.

4 In SAS Management Console, on the **Plug-ins** tab, expand the **Server Manager** node.

5 Expand the SAS Application Server node. (The default name is **SASMain**.)

6 Highlight the server you want to validate, such as the **SASMain – Logical OLAP Server**.

7 Right-click the highlighted server, and select **Validate**.

  You should see the following message:

  `Validation Successful!`

8 Repeat steps 6 and 7 for the other SAS servers:

  □ pooled workspace server

  □ stored process server

  □ standard workspace server

9 When validating the workspace server, if you are prompted for credentials, we suggest that you enter the credentials for the Server Invoker (sassrv). Alternatively, you can enter a user ID and password that meet all of these requirements:

  □ The account is known to the host of the standard workspace server.

   (An ID that ends in @saspw does not meet this requirement.)

  □ The account has the Windows right **Log on as a batch job** (if the server is on Windows).

  □ The account has a corresponding metadata identity.

10 To validate the DATA step batch server on Windows and UNIX, SAS should successfully launch when you run the following command, appropriate for the server host operating system:

  □ Windows:

  Start menu ▶ Run ▶ *sas-configuration-directory*\sasbatch.bat

   For example:

  Start menu ▶ Run ▶ C:\SAS\AllServers\Lev1\SASMain\BatchServer\sasbatch.bat

□ UNIX:

Type the following command:

*SAS-configuration-directory***/SASMain/BatchServer/sasbatch.sh**

For example:

/opt/sas/AllServers/Lev1/SASMain/BatchServer/sasbatch.sh

11 To validate the DATA step batch server on z/OS, use the Schedule Manager's Deploy SAS DATA Step Program to browse appserver_autoexec_usermods.sas file created in the AppServer context. When the JCL pane comes up and contains JCL, then the deployment of the batch server is successful.

a From SAS Management Console, right-click on the Schedule Manager plug-in (**Plug-ins** tab) and choose **Deploy SAS DATA Step Program**.

b Click **Browse** and navigate to the appserver_autoexec_usermods.sas file under a server context such as SASMain (for example, *SAS-configuration-directory***/Lev***n***/SASMain**).

c You should see JCL in the bottom list box.

12 To verify that your grid servers are operational, follow the steps located in "Verifying SAS Job Execution" in *Grid Computing in SAS*.

13 Repeat these steps on each machine in your deployment plan on which you have deployed one or more SAS servers.

About the SAS Deployment Tester

SAS 9.2 ships with a SAS Management Console plug-in that you can use to test your SAS deployment. For more information, see the SAS Management Console Help for the SAS Deployment Tester.

Validating the SAS Clients

Overview of Validating the SAS Clients

This section describes how to validate the usability of the following SAS 9.2 clients:

□ SAS Enterprise Guide 4.3

□ SAS Information Map Studio 4.2

□ SAS Data Integration Studio 4.2

Validate SAS Enterprise Guide 4.3

This topic describes a few simple steps that you can perform to verify that SAS Enterprise Guide 4.3 can access and use migrated SAS 9.1.3 tables.

Note: SAS provides a migration wizard that enables you to migrate multiple projects at one time to the SAS Enterprise Guide 4.3 format. If you have SAS Add-In 4.3 for Microsoft Office installed, the wizard also migrates files used with this SAS product, such as Microsoft Word files or Microsoft Excel files. For more information, see "Migration to SAS Enterprise Guide 4.3" in *Administering SAS Enterprise Guide*. △

To validate that your SAS Enterprise Guide deployment can use migrated SAS 9.1.3 tables, follow these steps:

1 Start and log on to SAS Enterprise Guide as a user such as sasdemo: **Start ▶ All Programs ▶ SAS ▶ SAS Enterprise Guide 4.3**.

2 In the Welcome dialog box, select `New Project`.

3 From the menu bar, select **View ▶ SAS Folders**.

4 Expand `My Folder` to see the tables from SAS 9.1.3.
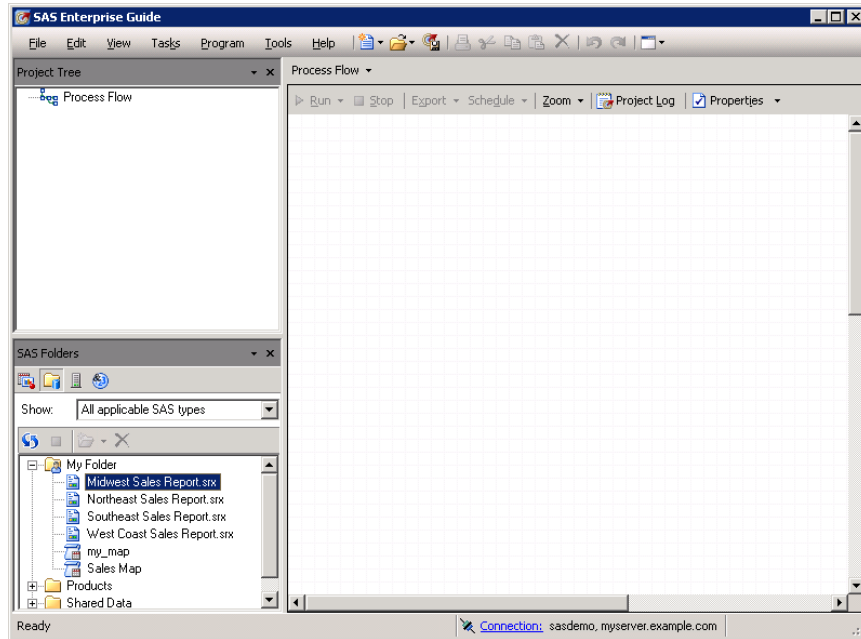
5 Double-click a table to add it to the project.

6 Exit SAS Enterprise Guide without saving the project.

Validate SAS Information Map Studio 4.2

This topic describes a few simple steps that you can perform to verify that SAS Information Map Studio 4.2 can access and use migrated SAS 9.1.3 tables.

To validate that your SAS Information Map Studio deployment can use migrated SAS 9.1.3 tables, follow these steps:

1 Start SAS Information Map Studio: **Start ▶ All Programs ▶ SAS ▶ Information Map Studio 4.2**.

2 In the Connection Profile dialog box, select a connection profile.

3 In the leftmost pane (Resources — Application Servers), expand a data library, and then click and drag one of the tables.

4 From the middle pane (Selected Resources), click and drag a table into the rightmost pane (Information Map Contents).
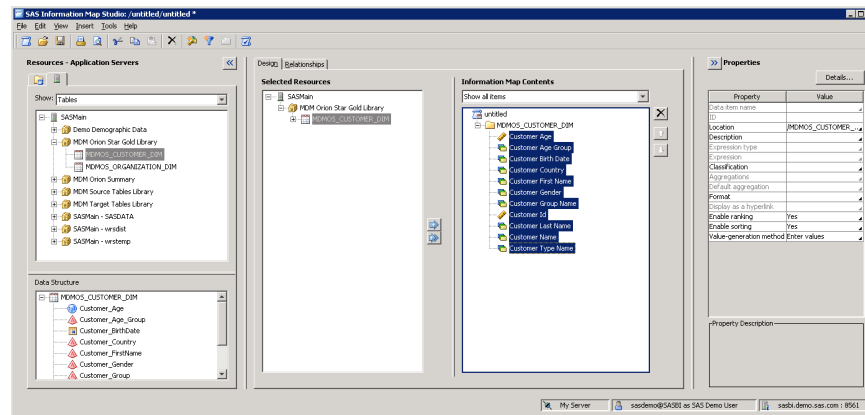
5 From the menu bar, select **Tools ▶ Run a Test Query**.

6 In the Test the Information Map dialog box, in the `Available items` list, double-click an item.

The item displays in the `Selected items` list.

7 Click `Run Test`.

A progress indicator displays.

If the test is successful, a results window displays.

8 Exit SAS Information Map Studio without saving the information map.

Validate SAS Data Integration Studio 4.2

This topic describes a few simple steps that you can perform to verify that SAS Data Integration Studio 4.2 can access and use migrated SAS 9.1.3 tables.

To validate that your SAS Data Integration Studio deployment can use migrated SAS 9.1.3 tables, follow these steps:

1 Start SAS Data Integration Studio: **Start ▶ All Programs ▶ SAS ▶ SAS Data Integration Studio 4.2**.

2 In the Connection Profile dialog box, select a connection profile.

3 In the left pane of the SAS Data Integration Studio window, select the `Inventory` tab.

4 Expand the `Library` node, and expand a particular library icon that contains tables from SAS 9.1.3. Verify that these tables are present.
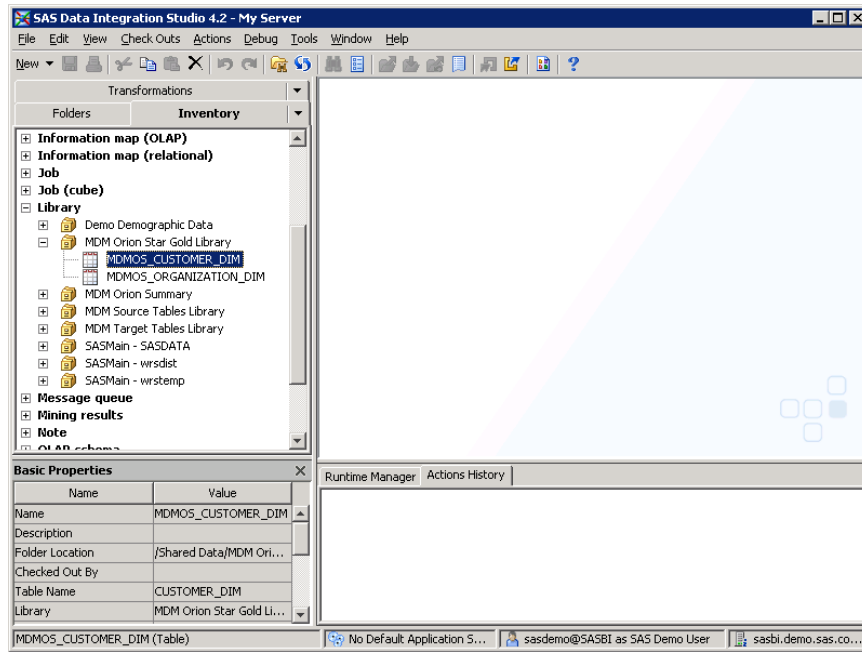
5 From the menu bar, select **Tools ▸ Options ▸ SAS ▸ SAS Data Integration Studio 4.2**.

6 In the Options dialog box, click the `SAS Server` tab.

7 In the `Server` drop-down list, choose the SAS application server that you migrated, and click `Test Connection`.

If the connection is properly functioning, you should see an alert box that displays the message:

```
Connection to the server was successful.
```

8 Exit SAS Data Integration Studio.

Validating the SAS 9.2 Middle Tier and Web Clients

Overview of Validating the SAS 9.2 Middle Tier and Web Clients

This section describes how to validate reports and stored processes that you have migrated in the following SAS 9.2 Web clients:

□ SAS 9.2 Stored Process Web Application

□ SAS Web Report Studio 4.3

□ SAS Information Delivery Portal 4.3

Start SAS Remote Services and Your Java Application Server

In order to validate your SAS Web clients, you will need to make sure that SAS Remote Services and your Java application server are running. You will also need to know your Java application server's default listening port.

On Windows, check the Services snap-in to see whether SAS Remote Services and your Java application server are running. If not, start them in this order:

1 SAS Remote Services

2 your Java application server

On UNIX, type the following command to see whether SAS Remote Services is running:

*SAS-installation-directory***/Lev1/Web/Applications/remoteservices.sh status**

If SAS Remote Services is not running, type the following command:

*SAS-installation-directory***/Lev1/Web/Applications/remoteservices.sh start**

Navigate to the installation directory for the Java application server used at your site and run the start up script for the server.

The default listening ports for the SAS 9.2 supported Java application servers are as follows:

□ WebLogic Server: 7001

□ WebSphere Application Server: 9080

□ JBoss Application Server: 8080

Validate the SAS Stored Process Web Application

This topic describes a few simple steps that you can perform to verify that SAS 9.2 Stored Process Web Application can access and run migrated SAS 9.1.3 stored processes.

To validate that your SAS Stored Process Web Application deployment can run migrated SAS 9.1.3 stored processes, follow these steps:

1 If you have not already, first perform the steps listed in "Start SAS Remote Services and Your Java Application Server" on page 123.

2 Open a Web browser and enter the following URL: **http://***localhost:port***/SASStoredProcess/do**

  localhost is the name of the machine that hosts your Java application server, and *port* is the server's listening port. (The default Java application server listening ports are listed in "Start SAS Remote Services and Your Java Application Server" on page 123.)
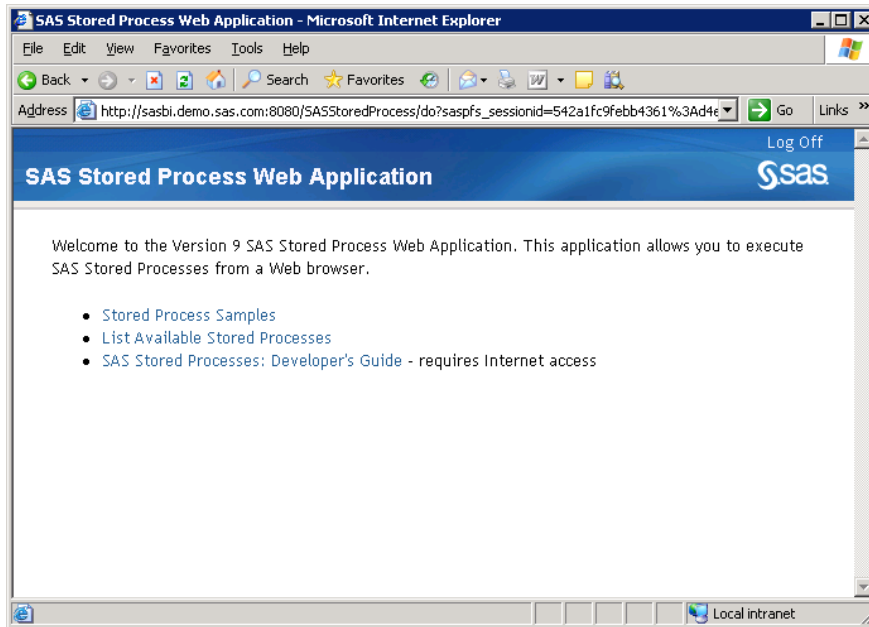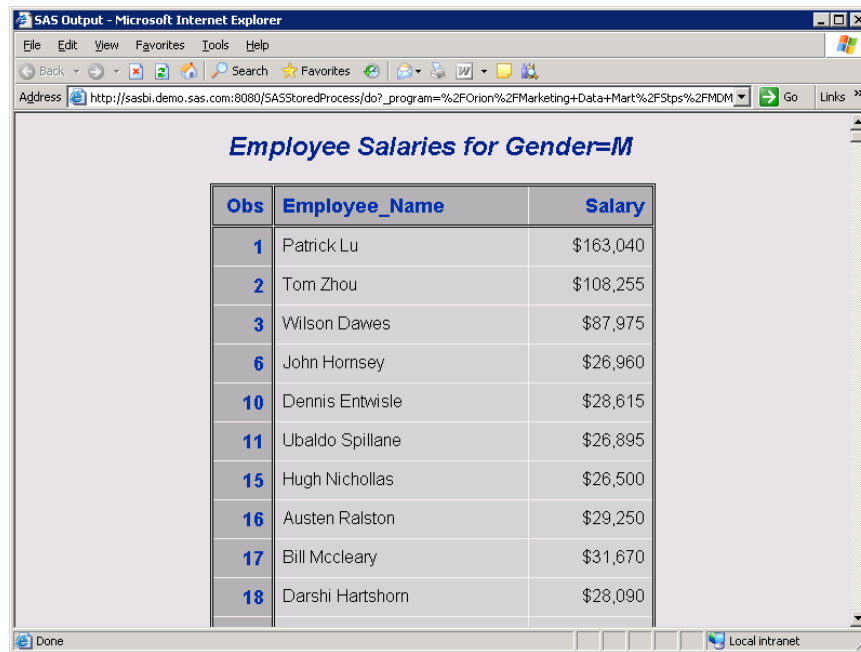
3 When prompted, enter a valid user ID and password. (For example, if you created it, use the SAS first user account, sasdemo.)

4 In the application's left pane, select a link such as `List Available Stored Processes`, and then expand one or more folders until you see a stored process.
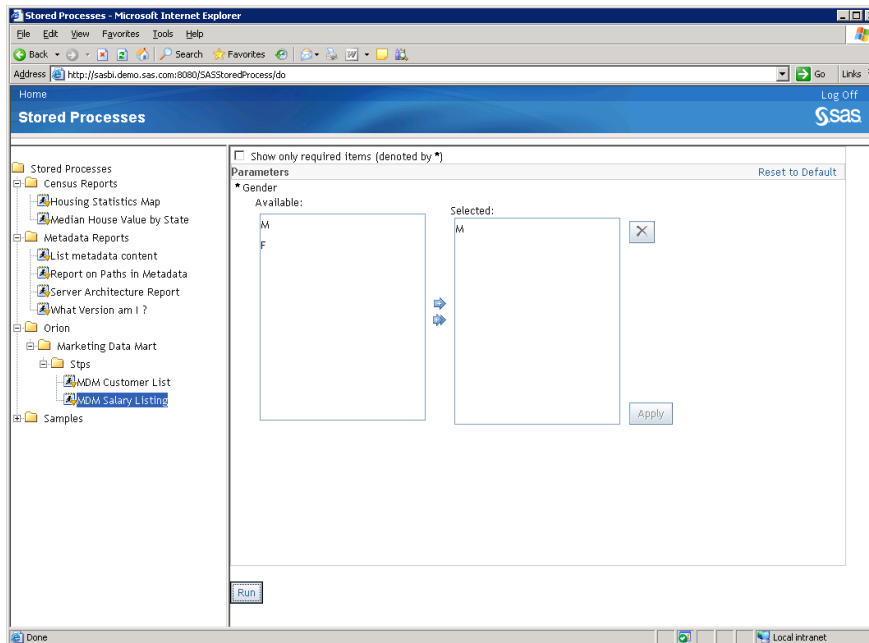
5 Select a stored process, and in the right pane, select `Run`.

If the stored process runs successfully, you should see a separate Web browser output window displaying results of your job.

6 Dismiss the output window, and select `Log Off` in the SAS Stored Process Web Application window.

Validate SAS Web Report Studio 4.3

This topic describes a few simple steps that you can perform to verify that SAS Web Report Studio 4.3 can access and run migrated SAS 9.1.3 reports. To validate that your SAS Web Report Studio deployment can run migrated SAS 9.1.3 reports, follow these steps:

1 If you have not already, first perform the steps listed in "Start SAS Remote Services and Your Java Application Server" on page 123.

2 Open a Web browser and enter the following URL: `http://`*localhost:port*`/` `SASWebReportStudio`

localhost is the name of the machine that hosts your Java application server, and *port* is the server's listening port. (The default Java application server listening ports are listed in "Start SAS Remote Services and Your Java Application Server" on page 123.)

3 When prompted, enter a valid user ID and password. (For example, if you created it, you can use the SAS first user account, sasdemo.)
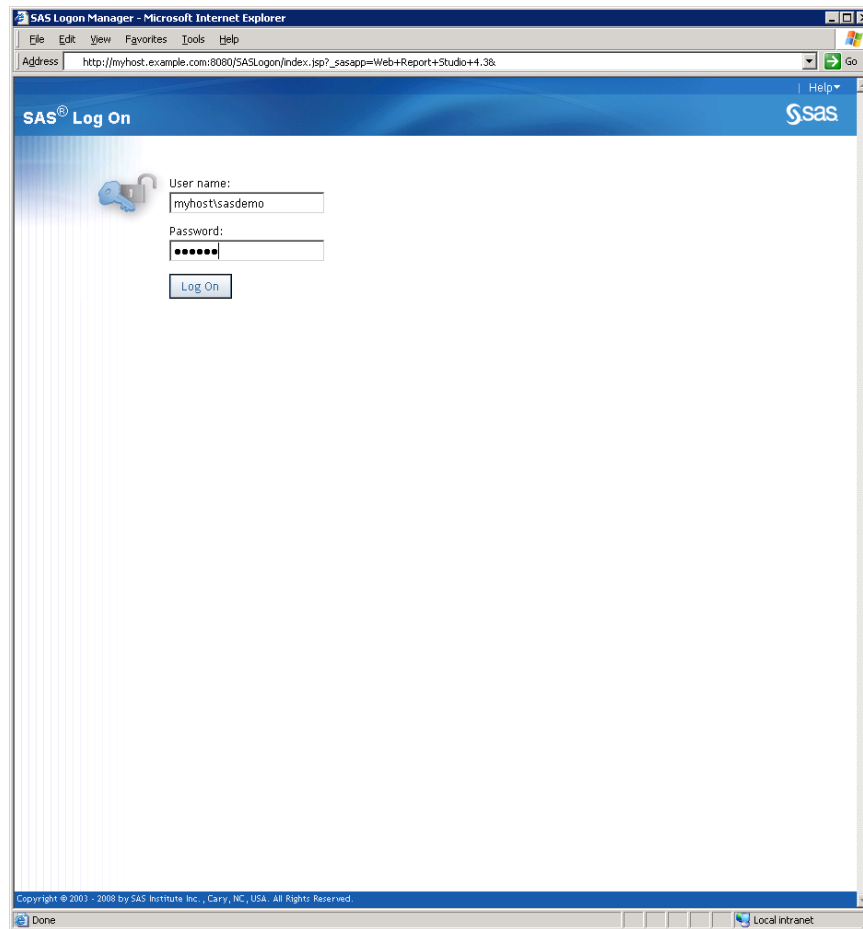
After you log on to SAS Web Report Studio, you see the Welcome window.

4 Select **File ▶ Open** to display the Open dialog box.
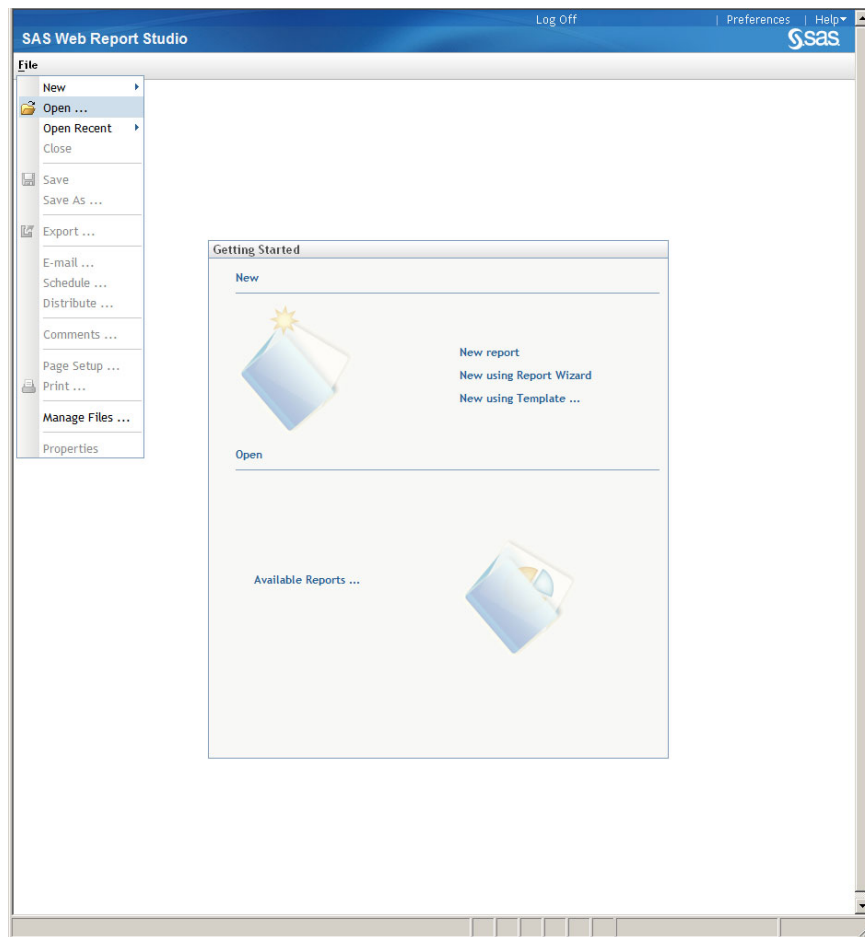
5 In the Open dialog box, select a file and then click **Open** to display it in View mode.
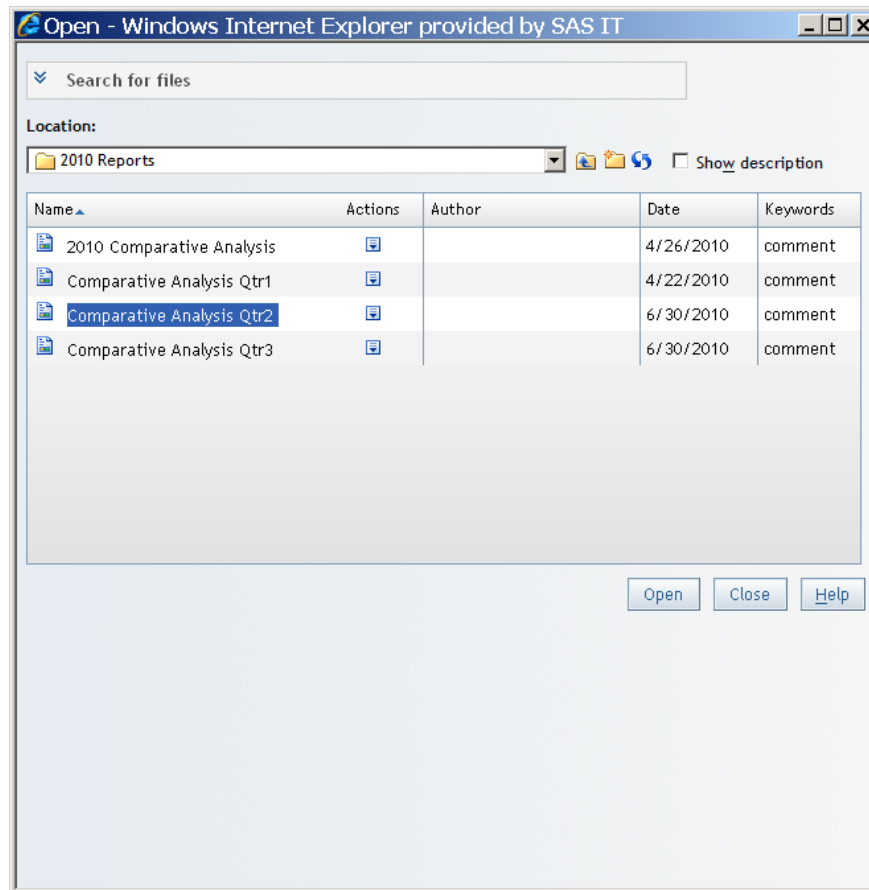
If the file opens successfully, you should see a report in the `View` tab.
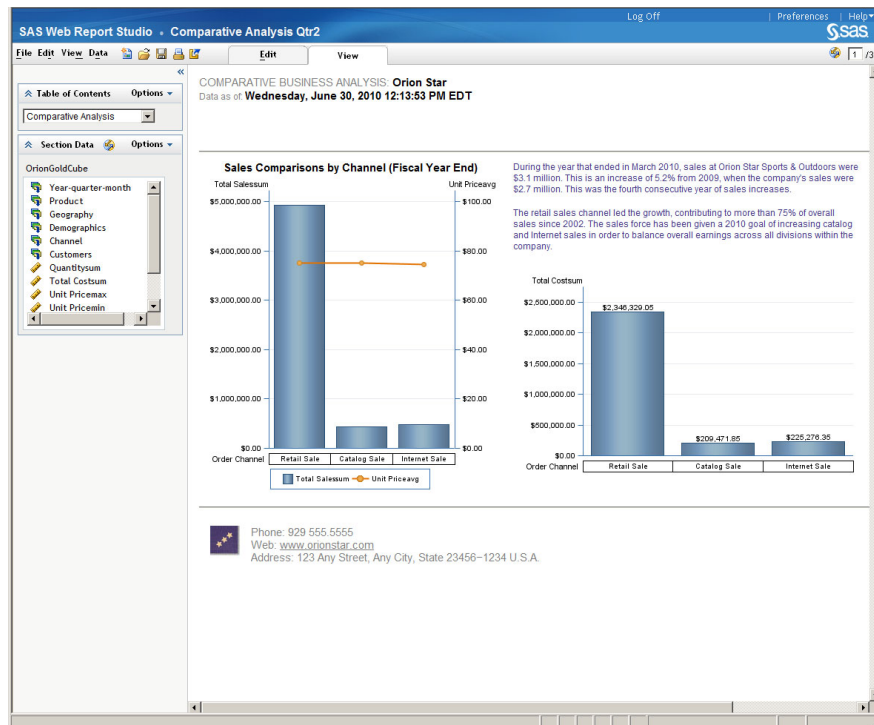
**6** Select `Log Off` in the SAS Web Report Studio window and do not save your changes.
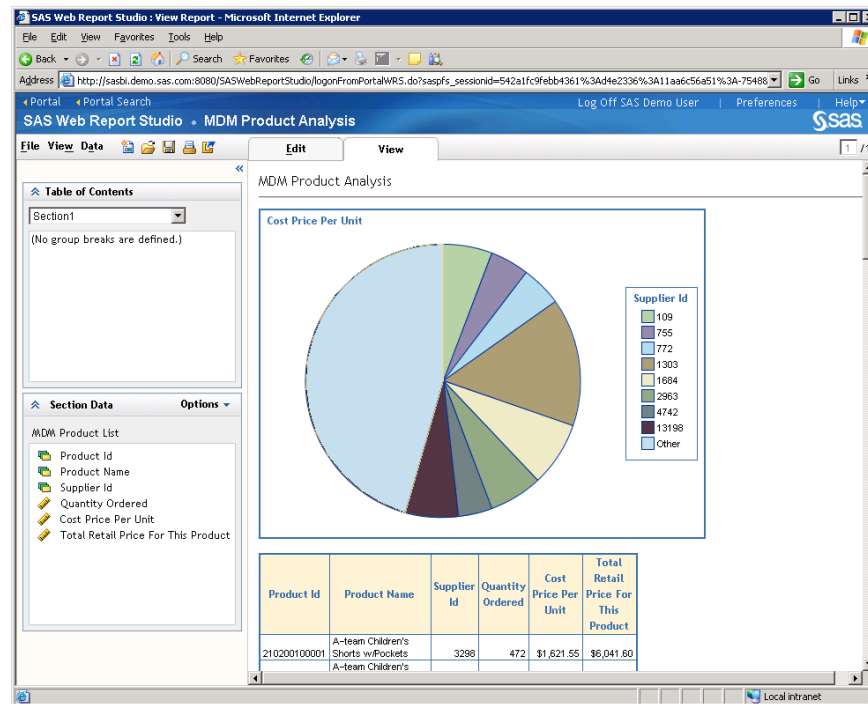
Validate the SAS Information Delivery Portal 4.3

This topic describes a few simple steps that you can perform to verify that the SAS Information Delivery Portal 4.3 can access and run migrated SAS 9.1.3 reports.

To validate that your SAS Information Delivery Portal deployment can run migrated SAS 9.1.3 reports, follow these steps:

1 If you have not already, first perform the steps listed in "Start SAS Remote Services and Your Java Application Server" on page 123.

2 Open a Web browser and enter the following URL: `http://`*localhost:port*`/SASPortal`

localhost is the name of the machine that hosts your Java application server, and *port* is the server's listening port. (The default Java application server listening ports are listed in "Start SAS Remote Services and Your Java Application Server" on page 123.)
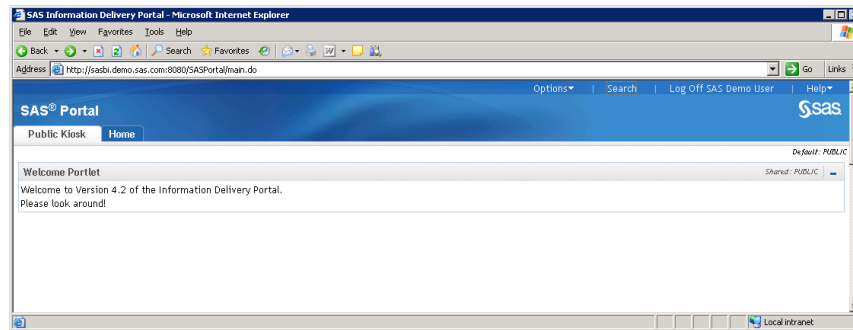
3 When prompted, enter a valid user ID and password. (For example, if you created it, use the SAS first user account, sasdemo.)

4 Select `Search`.
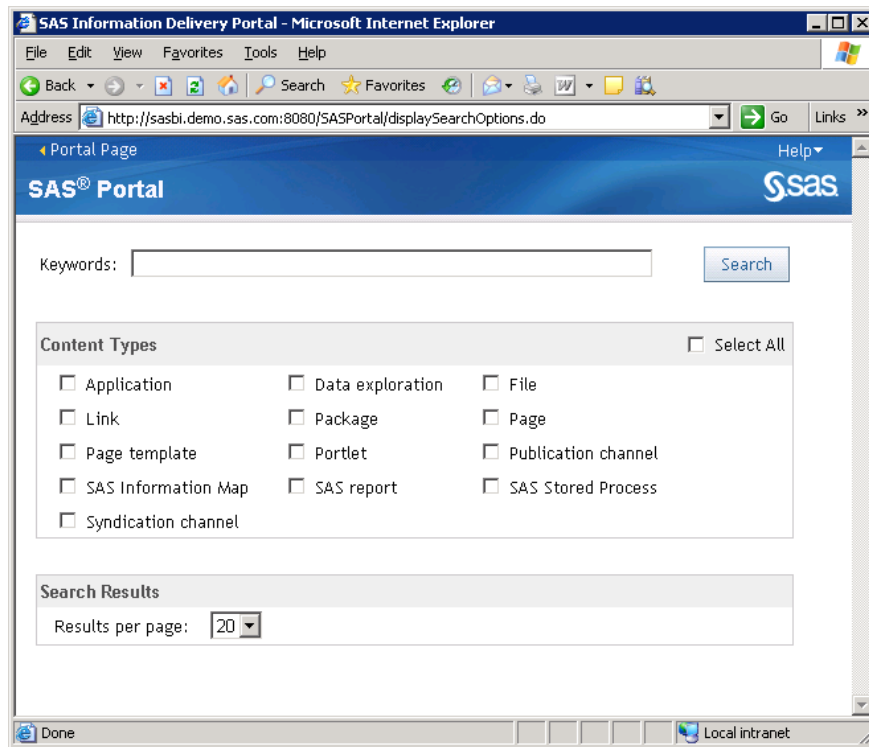
5 In the window that appears, in the `Keywords` field, enter an asterisk (*), select `SAS Reports`, and select `Search`.
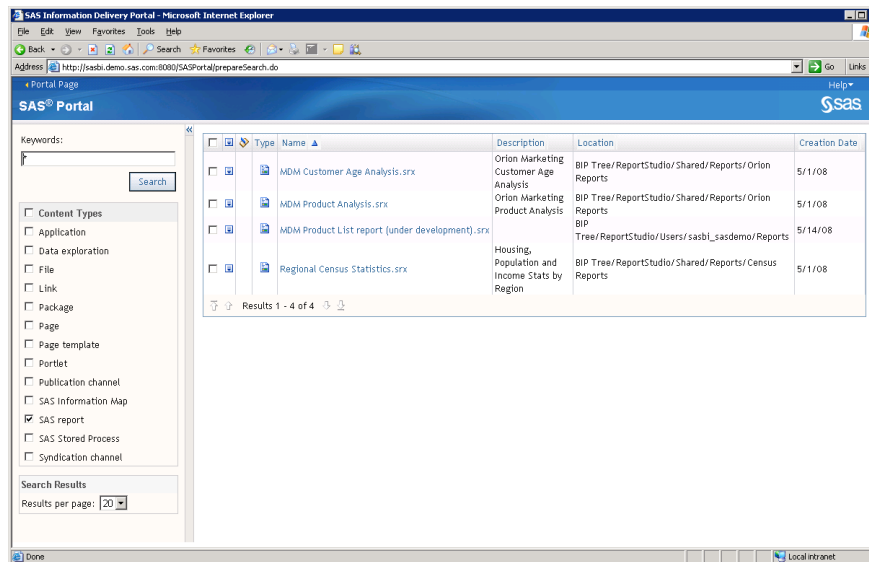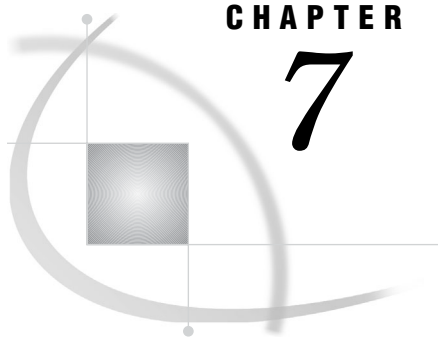

6 Select a report and click `Search`.

If the report runs successfully, you should see some output.

7 Select **Log Off**, and do not save your changes.

CHAPTER

7

What's Next?

Overview of What's Next

After you have validated your migrated data, here are several steps that you should perform:

- ☐ Complete high-priority tasks such as securing your SAS configuration directories.
- ☐ Follow the best practices for ensuring the integrity of your system
- ☐ Consider whether you need to perform any optional tasks such as adjusting server logging.
- ☐ Review the list of ongoing system administration tasks.

First-Priority Setup Tasks

Summary of First-Priority Setup Tasks

The following tasks are necessary to protect the integrity of your system. Complete these steps as soon as possible after migration, before you complete any of the other tasks that are outlined in this chapter.

Table 7.1 First-Priority Setup Tasks

Task	Description
Secure the SAS configuration on each server machine.	For a secure deployment, the configuration directory on each server machine must be protected by operating system controls. These controls will prevent inappropriate access to repository data sets, server scripts, server logs, and configuration files.
	On Windows systems, all configuration directories, files, and scripts are owned by the user who performs the installation. You must update the permissions as shown in "Recommended Operating System Protections for Windows Machines" on page 134. These recommendations assume that your SAS servers and spawners run as services under the Local System account.
	On UNIX and z/OS systems, the SAS Deployment Wizard automatically applies the appropriate permissions. The default permissions are shown in "Default Operating System Protections for UNIX and z/OS Machines" on page 136.
Establish a formal, regularly scheduled backup process.	Establish a formal, regularly scheduled backup process that includes your metadata repositories as well as the associated physical files.
	SAS provides backup and restore utilities that enable you to perform correct backups and restores of your metadata repositories, the repository manager, the metadata journal file, and the metadata server configuration files while minimizing disruptions in service. It is important to also back up the physical data that is associated with the metadata so that related information will be synchronized if a restore becomes necessary.
	Before you back up your SAS Intelligence Platform, read "Best Practices for Backing Up and Restoring Your System" in the *SAS Intelligence Platform: System Administration Guide*.

Recommended Operating System Protections for Windows Machines

On Windows server machines, we recommend that you apply the following operating system protections to your configuration directory. All of these directories are located in *SAS-configuration-directory***\Lev***n*.

Table 7.2 Recommended Operating System Protections on Windows

Directories	Users	Recommended Permissions
SAS-configuration-directory *SAS-configuration-directory***\Lev***n*	SYSTEM and Administrators	Full Control
\Lev*n* subdirectories: **Documents**, **ReportBatch**, **SASApp**, **SASMeta**, **Utilities**, **Web**	All other users	List Folder Contents, Read
\Lev*n* subdirectories: **ConnectSpawner**, **Logs**, **ObjectSpawner**, **SASApp\OLAPServer**, **SASMeta\MetadataServer**, **SASTS**, **ShareServer**	SYSTEM and Administrators	Full Control Remove all other users and groups

Directories	Users	Recommended Permissions
SASApp subdirectories : **PooledWorkspaceServer**, **StoredProcessServer**	SYSTEM, Administrators, and SAS Spawned Servers (sassrv)	Full Control Remove all other users and groups
SASApp subdirectories: **ConnectServer\Logs**, **Data\wrsdist**, **Data\wrstemp**, **PooledWorkspaceServer\Logs**, **PooledWorkspaceServer\sasuser**, **StoredProcessServer\Logs** , **StoredProcessServer\sasuser**, and **WorkspaceServer\Logs** **SASMeta\WorkspaceServer\Logs**	SYSTEM, Administrators, and SAS Spawned Servers (sassrv)	Full Control
sasv9_meta.cfg file	SYSTEM and Administrators	Read and Write Remove all other users and groups
SASMeta subdirectories: **MetadataServer**, **MetadataServer\rposmgr**, **MetadataServer\MetadataRepositories** **\Foundation** Backup destination (for example, **SASMeta\MetadataServer\SASBackup**)	The user who backs up the metadata server. You can add this user to the Administrators group to provide the required access.	Full Control

Note:

□ These recommendations assume that your SAS servers and spawners run as services under the Local System account. If servers and spawners are run under a different account, then grant that account the permissions that are recommended for SYSTEM.

□ You might have selected the custom installation option to place all of your log files in a single directory. If you selected this option, then you will need to grant the SAS Spawned Servers (sassrv) user Full Control of the central log destination (for example, *SAS-configuration-directory***Lev***n***Logs**).

□ If users will be using SAS Enterprise Guide to create stored processes, then the SAS Spawned Servers (sassrv) account must have Write access to the directory in which stored processes will be stored.

□ If you enable logging for a workspace server, then you will need to grant all users of the workspace server Full Control of the log directory. (See "Create a Log File for Workspace Server Troubleshooting" in the *SAS Intelligence Platform: System Administration Guide*).

△

For information about backups, see "Using the Backup Wizard in SAS Management Console" and "Using the %OMABAKUP Macro to Perform Backups and Restores" in the *SAS Intelligence Platform: System Administration Guide*.

For details about the configuration directory structure, see "Overview of the Configuration Directory Structure" in the *SAS Intelligence Platform: System Administration Guide*.

Default Operating System Protections for UNIX and z/OS Machines

The following table shows the default operating system protections that are provided automatically for configuration directories on UNIX and z/OS machines. All of these directories are located in *SAS-configuration-directory***/Lev***n*.

Table 7.3 Default Operating System Protections on UNIX and z/OS

Directories	Users	Default Permissions
SAS-configuration-directory	SAS Installer	Read, Write, and Execute
*SAS-configuration-directory***/Lev***n* **/Lev***n* subdirectories: **Documents**, **ReportBatch**, **SASApp**, **SASMeta**, **Utilities**, **Web**	All other users	Read and Execute
/Lev*n* subdirectories: **ConnectSpawner**, **Logs**, **ObjectSpawner**, **SASApp/OLAPServer**, **SASMeta/MetadataServer**, **SASTS**, **ShareServer**	SAS Installer	Read, Write, and Execute
	All other users	No access
SASApp subdirectories : **PooledWorkspaceServer**, **StoredProcessServer**	SAS Installer	Read, Write, and Execute
	sas group	Read and Execute
SASApp subdirectories : **ConnectServer/Logs**, **Data/wrsdist**, **Data/wrstemp**, **PooledWorkspaceServer/Logs**, **PooledWorkspaceServer/sasuser**, **StoredProcessServer/Logs** , **StoredProcessServer/sasuser**, and **WorkspaceServer/Logs** **SASMeta/WorkspaceServer/Logs**	SAS Installer	Read, Write, and Execute
	sas group	Read, Write, and Execute
sasv9_meta.cfg file	SAS Installer	Read and Write
	All other users	no access

Note:
- □ Make sure that the SAS Spawned Servers account (sassrv) is a member of the sas group, which has the necessary permissions to server configuration files and log directories.
- □ You might have selected the custom installation option to place all of your log files in a single directory. If you selected this option, then you will need to grant either the sas group or the SAS Spawned Servers (sassrv) user Read, Write, and Execute permission on the central log destination (for example, *SAS-configuration-directory***/Lev***n***/Logs**).
- □ If users will be using SAS Enterprise Guide to create stored processes, then the SAS Spawned Servers (sassrv) account must have Write access to the directory in which stored processes will be stored.
- □ If you enable logging for a workspace server, then you will need to grant all users of the workspace server Full Control of the log directory. (See "Create a Log File for Workspace Server Troubleshooting" in the *SAS Intelligence Platform: System Administration Guide*).

□ The user who backs up the metadata server must have full access to *SAS-configuration-directory*/**Lev***n*/**SASMeta/MetadataServer**, to its subdirectories **rposmgr** and **MetadataRepositories/Foundation**, and to the backup destination (for example, *SAS-configuration-directory*/**Lev***n*/**SASMeta/MetadataServer/ SASBackup**). The SAS Installer user has the required access.

> *CAUTION:*
> **Do not run a backup or a restore as the Root user. Doing so will change ownership of the metadata server files.** △

□ For information about backups, see "Using the Backup Wizard in SAS Management Console" and "Using the %OMABAKUP Macro to Perform Backups and Restores" in the *SAS Intelligence Platform: System Administration Guide*.

For details about the configuration directory structure, see "Overview of the Configuration Directory Structure" in the *SAS Intelligence Platform: System Administration Guide*.

△

Best Practices for Ensuring the Integrity of Your System

Allow Only the Metadata Server to Access Your Metadata Repositories

The **MetadataRepositories** and **rpsomgr** subdirectories, which are located in the SAS configuration directory, are critical to the operation of your system. These data sets contain metadata that defines your servers, users, access levels, enterprise data sources, and data structures. They also contain metadata for resources that are created and used by SAS applications, including information maps, OLAP cubes, report definitions, stored process definitions, and jobs.

To safeguard the integrity of your system:

□ Never move, delete, modify, or directly read the data sets in the **MetadataRepositories** and **rpsomgr** directories. These data sets should be accessed only by metadata server processes.

□ Do not place other files in these directories.

□ Back up the contents of these directories regularly, as described in "Best Practices for Backing Up and Restoring Your System" in the *SAS Intelligence Platform: System Administration Guide*.

Use Best Practices for Working with SAS Folders

The folders that appear in the **Folders** tab of SAS Management console are used by client applications to store business intelligence content and system information. Inappropriate renaming, deleting, or moving of these folders or their contents could cause client applications to malfunction.

When interacting with folders in SAS Management Console, be sure to follow the best practices that are provided in "Working with SAS Folders" in the *SAS Intelligence Platform: System Administration Guide*. If you need to move or copy the contents of these folders, use the procedures that are provided in "Using the Promotion Tools" in the *SAS Intelligence Platform: System Administration Guide*.

Optional Setup Tasks

It might be necessary for you to modify your initial configuration to meet specific requirements in your environment. Optional administration and configuration tasks include the following.

Table 7.4 Optional Setup Tasks

Task	Description
Optimize the performance and reliability of the metadata server.	The following are some steps that you might need to take to optimize the performance and reliability of the metadata server:
	☐ Move the metadata server journal file to another file system (see "Move the Journal File to Another File System" in the *SAS Intelligence Platform: System Administration Guide*).
	☐ Adjust the maximum number of threads used by the metadata server (see "Configuring the Number of Threads Used by the Metadata Server" in the *SAS Intelligence Platform: System Administration Guide*).
	For other performance-related tasks, see "Managing Metadata Server Performance" in the *SAS Intelligence Platform: System Administration Guide*.
Modify the configuration of your processing servers.	The following are some server configuration changes that you might want to make for performance optimization or other reasons:
	☐ Define a cluster of load-balanced workspace servers in order to balance a load across workspace servers that you have installed on multiple hosts. This type of configuration is most useful when you have a large number of users (such as data integration specialists) using a workspace server for relatively long-running jobs. For details, see "Understanding Server Load Balancing" in the *SAS Intelligence Platform: Application Server Administration Guide*.
	☐ Modify load balancing or algorithms for stored process servers and pooled workspace servers. For details, see "Modify Logical Pooled Workspace or Logical Stored Process Server Load-Balancing Properties" in the *SAS Intelligence Platform: Application Server Administration Guide*.
	☐ If your SAS server metadata contains characters other than those typically found in the English language, then you must start your SAS server with an ENCODING= or LOCALE= system option that accommodates those characters. For details, see "Encoding and Locale Information" in the *SAS Intelligence Platform: Application Server Administration Guide*.
	☐ If you will be submitting large jobs (for example, JAVA GRAPH jobs) on z/OS servers, then you might need to specify a larger region size. For details, see "Managing Memory" in the *SAS Companion for z/OS*.
Optimize Web application performance.	For information about configuring middle-tier components for better efficiency and performance, see "Best Practices for Configuring Your Middle Tier" in the *SAS Intelligence Platform: Web Application Administration Guide*.

Task	Description
Adjust server logging.	You can change your server configurations to obtain additional logging information for troubleshooting, performance management, or other purposes. For details, see "Administering Logging for SAS Servers" in the *SAS Intelligence Platform: System Administration Guide* and *SAS Logging: Configuration and Programming Reference*.
Enable job and report scheduling.	To enable SAS scheduling features, you can install and configure scheduling software, configure operating system scheduling, or configure in-process scheduling. For details, see *Scheduling in SAS*.
Increase Java heap memory allocation for desktop applications.	To process large amounts of data, you might need to modify the Java heap memory allocation that is configured for SAS Management Console, SAS Data Integration Studio, SAS OLAP Cube Studio, and SAS Information Map Studio. For details, see "Managing the Java Heap Used By Desktop Applications" in the *SAS Intelligence Platform: System Administration Guide*.
Set up change management for SAS Data Integration Studio users.	If you want to implement change management for SAS Data Integration Studio, then you must set up project repositories and at least one change-managed folder. For details, see "Administering Data Integration Studio" in the *SAS Intelligence Platform: Desktop Application Administration Guide*.
Collect ARM log information for SAS Data Integration Studio batch jobs.	If you want to collect ARM log information for SAS Data Integration Studio jobs that are run on a batch basis, then you must enable logging for the batch server that executes the jobs. For details, see "Collecting ARM Log Information for SAS Data Integration Studio Jobs" in the *SAS Intelligence Platform: System Administration Guide*.

Ongoing System Administration Tasks

The following table lists important system administration tasks that you will need to perform on an ongoing basis to keep the SAS Intelligence Platform operational.

Table 7.5   Ongoing System Administration Tasks

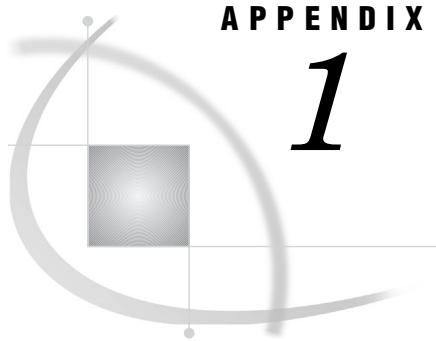| Task	Documentation Reference
Start, stop, pause, resume, and refresh the servers that are used in the system.	"Operating Your Servers" in the *SAS Intelligence Platform: System Administration Guide*
Check the status of a server of or of a metadata repository.	"Checking the Status of Servers" in the *SAS Intelligence Platform: System Administration Guide*
Monitor the activity of servers.	"Monitoring the Activity of SAS Servers" in the *SAS Intelligence Platform: System Administration Guide*
Perform regular full backups of the metadata server.	"Best Practices for Backing Up and Restoring Your System" in the *SAS Intelligence Platform: System Administration Guide*

Task	Documentation Reference
Use server logs and configure logging options.	"Administering Logging for SAS Servers" in the *SAS Intelligence Platform: System Administration Guide* and *SAS Logging: Configuration and Programming Reference*
Create a new metadata repository.	"Creating, Registering, Moving, Copying, Renaming, and Deleting SAS Metadata Repositories" in the *SAS Intelligence Platform: System Administration Guide*
Promote individual metadata objects or groups of objects.	"Using the Promotion Tools" in the *SAS Intelligence Platform: System Administration Guide*

Note: The preceding table includes only the tasks that are documented in this guide. Other important administration tasks are described in the following documents:

□ *SAS Intelligence Platform: Security Administration Guide*. In this guide, you can use the "Checklist for a More Secure Deployment" to ensure that your environment remains secure on an ongoing basis.

□ *SAS Intelligence Platform: Data Administration Guide*.

□ *SAS Intelligence Platform: Application Server Administration Guide*.

□ *SAS Intelligence Platform: Desktop Application Administration Guide*.

□ *SAS Intelligence Platform: Web Application Administration Guide*.

□ *Scheduling in SAS*.

□ *SAS/SHARE User's Guide*.

□ *SAS/CONNECT User's Guide*.

To access these documents, go to **http://support.sas.com/92administration**. △

APPENDIX

1

SAS Migration Utility Reference

SAS Migration Utility Overview

The SAS Migration Utility is an Ant-based framework and set of SAS product extensions whose primary purpose is to output a package of SAS 9.1.3 content—data and configuration—that the SAS Deployment Wizard will use when it installs and configures SAS 9.2. The migration utility framework consists of a two-phase process: an analyze phase, and a package phase.

In the analyze phase, the migration utility locates the SAS 9.1.3 content required for migration, performs a validation to ensure the content can be reliably migrated, and saves the required information for the migration utility package phase. During the analyze phase, the migration utility also generates a migration analysis report that you can use to inventory and enumerate those SAS products found on your SAS 9.1.3 system to be eligible for automatic migration with the deployment wizard.

In the package phase, the migration utility searches the system and copies SAS 9.1.3 content into a migration package that will be used by the deployment wizard as it installs and configures SAS 9.2.

For more information about how to use the SAS Migration Utility, see "Inventorying Your Current SAS Deployment" on page 14.

smu Command Syntax

Windows:

smu -s -a
    <-analyze> <-davtier>
    <-localhost *fully-qualified-host-name***>**

<-**properties** *filename*>
-**sasconfigdir** *path* -**sasexedir** *path* -**sasproductdir** *path*
-**profile** *filename* | -**metadatahost** *host-name* <-**metadataport** *port*> -**user**
userID -**password** *password*
<-**outputdir** *path*> <-**tier** *name*> <-**replace**>
<-**help**>

UNIX:

smu.sh - -
<-**analyze**> <-**davtier**>
<-**localhost** *fully-qualified-host-name*>
<-**properties** *filename*>
-**sasconfigdir** *path* -**sasexedir** *path* -**sasproductdir** *path*
-**profile** *filename* | -**metadatahost** *host-name* <-**metadataport** *port*> -**user**
userID -**password** *password*
<-**outputdir** *path*> <-**tier** *name*> <-**replace**>
<-**help**>

z/OS:

smu.zos - -
<-**analyze**> <-**davtier**>
<-**localhost** *fully-qualified-host-name*>
<-**properties** *filename*>
-**sasconfigdir** *path* -**sasexedir** *path* -**sasproductdir** *path*
-**profile** *filename* | -**metadatahost** *host-name* <-**metadataport** *port*> -**user**
userID -**password** *password*
<-**outputdir** *path*> <-**tier** *name*> <-**replace**>
<-**help**>

smu Command Syntax Description

-s -a
is required by the migration utility when running on Windows only.

Default: None

Required: Yes

Equivalent property: not applicable

- -
is required by the migration utility when running on UNIX or z/OS only. These
are two dashes (- -) without any space between them.

Default: None

Required: Yes

Equivalent property: not applicable

-analyze
specifies that the migration utility only perform the first of its two execution
phases: analyze. In the analyze phase, the migration utility locates the SAS 9.1.3
content required for migration, performs a validation to ensure the content can be
reliably migrated, and saves the required information for the migration utility
package phase. During the analyze phase, the migration utility also generates a
migration analysis report that you can use to inventory and enumerate those SAS

products found on your SAS 9.1.3 system to be eligible for automatic migration with the SAS Deployment Wizard.

When not specified, the migration utility performs both of its two phases, analyze *and* package. In the package phase, the migration utility uses information saved by the analyze phase to search the system and copy SAS 9.1.3 content into a migration package.

Default: None

Required: No

Equivalent property: not applicable

-davtier

specifies that the migration utility should include any local WebDAV content it locates. **-davtier** should be specified only when running the migration utility on the WebDAV tier. If **-davtier** is *not* specified, the migration utility ignores any local WebDAV content it locates.

Default: None

Required: No

Equivalent property: SMU.isdavtier

-localhost *fully-qualified-host-name*

explicitly sets the machine host name on which the migration utility is running.

Use **-localhost** for machines that have multiple network interfaces or a dynamic name. *host-name* should be a fully qualified host name for the machine. For example: **-localhost myserver.example.com**

Default: None

Required: No

Equivalent property: SMU.localhost

-properties *pathname*

specifies the absolute path and filename to a file that contains inputs for the migration utility in the form of Java-like properties. For example: **-properties "C:\SAS Software Depot\utilities\smu\smu.properties"**.

For more information, see "Run the Migration Utility Using a Properties File" on page 149.

Enclose any paths containing spaces in double quotation marks.

Default: None

Required: No

Equivalent property: not applicable

-sasconfigdir *path*

specifies the path to the SAS 9.1.3 configuration directory.

The default SAS 9.1.3 configuration directory used by the SAS 9.1.3 Configuration Wizard is as follows:

□ Windows:

C:\SAS*configuration-directory***\Lev1**

□ UNIX:

/users/sas/SAS/*configuration-name***/Lev1**

Enclose any paths containing spaces in double quotation marks.

Default: None

Required: Yes

Equivalent property: SMU.config.dir

-sasexedir *path*
    specifies the SAS 9.1.3 path to the SAS executable (on Windows) or the top level
    SAS installation directory on (UNIX). If you are running the migration utility on a
    machine that does not contain the SAS executable or script, use **-sasproductdir**
    instead.
    The default SAS 9.1.3 directory for used by the SAS 9.1.3 Configuration Wizard
    is as follows:

□ Windows:

C:\Program Files\SAS\SAS 9.1

□ UNIX:

/usr/local/SAS/SAS_9.1

Enclose any paths containing spaces in double quotation marks.

Default: None

Required: No, when **-sasproductdir** is used

Equivalent property: SMU.SASROOT

-sasproductdir *path*
    specifies the path name to the top-level directory where SAS 9.1.3 products are
    installed.
    The default SAS 9.1.3 top-level product directory used by the SAS 9.1.3
    Configuration Wizard is as follows:

□ Windows:

C:\Program Files\SAS

□ UNIX:

/usr/local/SAS

Enclose any paths containing spaces in double quotation marks.

Default: None

Required: No, when **-sasexedir** is used

Equivalent property: SMU.SASHOME

-profile *filename*
    specifies the absolute path name of a valid SAS 9.1.3 client connection profile that
    contains connection parameters containing unrestricted user credentials for the
    SAS 9.1.3 Metadata Server of the SAS deployment to be migrated. (A SAS client
    connection profile is used by clients such as SAS Management Console, SAS
    Information Map Studio, SAS Data Integration Studio, and SAS OLAP Cube
    Studio.)
    Unless you specify an absolute path to the profile, the migration utility checks
    the machine's default SAS client connection profile directory.
    By default, SAS stores connection profiles here:

□ Windows:

C:\Documents and Settings*user-ID*\Workspaces

□ UNIX and z/OS:

$HOME/Workspaces

Enclose any paths containing spaces in double quotation marks.

Default: SAS connection profile directory (see earlier paths)

Required: No. (See "Notes" section.)

Equivalent property: SMU.profile

-metadatahost *host-name*
    specifies the name of the machine on which the SAS 9.1.3 Metadata Server
    resides. *host-name* is either a fully qualified host name or an IP address for the
    metadata server machine.

Default: None

Required: No. (See "Notes" section.)

Equivalent property: SMU.host.metadata

-metadataport *port*
    specifies the port the migration utility uses to connect to the SAS Metadata
    Server. If no port is specified, the migration utility uses 8561 by default.

Default: 8561

Required: No

Equivalent property: SMU.port.metadata

-user *<domain\>userID* -password *password*
    specifies the user ID and password for sasadm or another unrestricted user ID on
    the SAS 9.1.3 Metadata Server. The migration utility accepts passwords that are
    encrypted using proc pwencode.
    (Specify the unrestricted user ID in the manner in which you would when you
    normally run SAS 9.1.3. For example, if SAS has stored the user ID as
    domain-qualified, and you specify it with the migration utility as unqualified, the
    connection fails.)

Default: None

Required: No. (See "Notes" section.)

Equivalent properties: SMU.user
                           SMU.password

-outputdir *path* -replace
    specifies the absolute path to the *parent* output directory where the migration
    utility should write its output. If the directory does not exist, the migration utility
    creates it for you.
    If the specified directory already exists and contains information from a
    previous migration utility invocation, the migration utility returns an error, unless
    you specify the **–replace** option.
    Enclose any paths containing spaces in double quotation marks.

Default: None

Required: Yes

Equivalent property: SMU.Output.Dir

-tier *name* -replace
    specifies a name for the subdirectory (under the parent directory) where the
    migration utility writes its migration analysis report and the migration package.
    In addition, the migration utility appends an at sign (@) and the fully qualified
    host name to the specified tier name directory. For example,
    middle_tier@myhost.example.com.
    If the specified directory already exists and contains information from a
    previous migration utility invocation, the migration utility returns an error, unless
    you specify the **–replace** option.
    If you omit **–tier**, the migration utility creates a directory using the fully
    qualified host name.
    Enclose any paths containing spaces in double quotation marks.

Default: fully qualified host name

Required: No

Equivalent property: not applicable

-help
  displays the list of migration utility options and a brief description for each.
  Default: None
  Required: No
  Equivalent property: not applicable

smu Command Notes

Follow these notes when running the SAS Software Migration Utility:

□ The SAS Migration Utility command line has a 254 character limit. Command line input that exceeds this length causes the utility to fail. If your input exceeds 254 characters, use a migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

□ The SAS 9.1.3 Metadata Server must be running when you invoke the migration utility.

□ On SAS multiple-machine deployments, run the migration utility *first* on the machine hosting the SAS Metadata Server.

□ You must run the migration utility from its executable directory.

   By default, this is the utilities directory in your SAS Software Depot.

   Note: On UNIX and z/OS, if you have not already, remember to assign file execute permissions to smu.sh before attempting to run the migration utility. For more information, refer to your UNIX or z/OS documentation. △

□ The migration utility must be run on every machine that is running SAS 9.1.3.

   For SAS multiple-machine deployments, we recommend that you install the utility on shared network storage that is accessible from every SAS machine to avoid having to install the migration utility separately on each machine.

□ On SAS multiple-machine deployments, the migration utility must be able to write to (and read from) its output directory.

   We recommend that the utility output directory be on shared network storage accessible to every SAS machine in the deployment.

□ When specifying the metadata server to connect to, it is a best practice to use a fully qualified host name or an IP address. Do not refer to the metadata server as **localhost** or its IP equivalent (127.0.0.1), unless *all* of the machines in your SAS deployment are able to connect to the server using that host name.

□ On the migration utility command line, enclose any paths containing spaces in double quotation marks. (Paths containing spaces in properties files do *not* require double quotation marks.)

   Note: A backslash immediately followed by a double quotation marks (\") is not allowed in the migration utility command line. Avoid ending Windows paths with a trailing backslash on the command line. (This limitation does not apply to migration utility property files.) △

□ Metadata server connection information must be provided to the migration utility through one of the following methods:

   □ the connection-related command-line options (**–metadatahost**, **–user**, and so on.)

      Note: The migration utility accepts passwords that are encrypted using proc pwencode. △

□ a migration utility properties file.

□ a SAS client connection profile.

(The client connection profile must be created and saved on the machine on which you are running the migration utility.)

□ The machine on which you run the migration utility must have a Java Runtime Environment (JRE) 1.4.2 Update 9 (or later).

You can download the necessary JRE from the SAS Third-Party Software Web site located here: **http://support.sas.com/resources/thirdpartysupport/ v913sp4/index.html**

□ On UNIX, modify the PATH environment variable such that the directory containing the Java binary is the first JRE found. Verify your setting by executing from the UNIX shell prompt: **which java**

□ It is recommended that you use the **-replace** command-line option when invoking the migration utility. This ensures that output from any previous migration utility invocations that specified the same output directory and tier directory is overwritten.

□ To create a migration package on the WebDAV tier, use **-davtier** or **SMU.isdavtier**.

There are certain WebDAV properties for which there are no command-line equivalents: the **SMU.DAV.*** properties use standard WebDAV extraction and **SMU.WFS.XythosHome** causes the migration utility to extract WebDAV content using a Xythos-specific mechanism that is more efficient. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

smu Command Examples

Example 1: Basic, Two-Phase Migration Utility Invocation

In this example on Windows, the migration utility executes both its phases—creating a migration analysis report and a migration package. The migration utility uses information in the connection profile named **md1234.swa** to communicate with the SAS Metadata Server:

```
smu -s -a -profile md1234 -sasconfigdir C:\SAS\BIServer\Lev1
-sasproductdir "C:\Program Files\SAS"
-outputdir C:\SMU_packages\host1234 -replace
```

-replace is specified to make sure that any output from a previous migration utility session—that might have specified the same output directory and tier name—is overwritten.

Example 2: Two-Phase Migration Utility Invocation With Output Preferences

In this example on Windows, the migration utility executes both its phases and creates a migration analysis report and a migration package in an output directory named **server_tier@host1234.example.com** that is a child of a parent directory named **C:\SMU_packages**. The migration utility uses information in the connection profile named **md1234.swa** to communicate with the SAS Metadata Server:

```
smu -s -a -profile md1234 -sasconfigdir C:\SAS\BIServer\Lev1
-sasproductdir "C:\Program Files\SAS"
-outputdir "C:\SMU_packages" -tier server_tier -replace
```

-replace is specified to make sure that any output from a previous migration utility session—that might have specified the same output directory and tier name—is overwritten.

Example 3: Report-Only Migration Utility Invocation

In this example on UNIX, the migration utility executes its analyze phase only, and creates a migration analysis report in an output directory named **server_tier@host1234.example.com** that is a child of a parent directory named **/home/sas/smu_packages**. The migration utility uses information in the connection profile named **md1234.swa** to communicate with the SAS Metadata Server:

```
./smu.sh -- -sasconfigdir /users/sas/SAS/sas_913/config/Lev1
-sasproductdir /usr/local/SAS/SAS_9.1 -profile md1234
-outputdir "/home/sas/smu_packages" -tier server_tier
-replace -analyze
```

-replace is specified to make sure that any output from a previous migration utility session—that might have specified the same output directory and tier name—is overwritten.

Example 4: Migration Utility Invocation Using a Properties File

In this example on UNIX, the migration utility executes both its phases and creates a migration analysis report and a migration package. All of the required inputs are supplied to the migration utility in the form of properties contained in a text file named **myhost.properties**:

```
./smu.sh --
-properties /opt/sas_9.2/SAS_Software_Depot/utilities/smu/myhost.properties
-replace
```

-replace is specified to make sure that any output from a previous migration utility session—that might have used the same properties file—is overwritten. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

Example 5: Migration Utility Invocation Using a Properties File on the WebDAV Tier

In this example on UNIX, the migration utility executes both its phases and creates a migration analysis report and a migration package on the machine that contains WebDAV content. All of the required inputs are supplied to the migration utility in the form of properties contained in a text file named **myhost.properties**:

```
./smu.sh --
-properties /opt/sas_9.2/SAS_Software_Depot/utilities/smu/myhost.properties
-davtier -replace
```

The properties file contains either the **SMU.DAV.*** properties or the **SMU.WFS.XythosHome** property. The **SMU.WFS.XythosHome** property causes the migration utility to extract DAV content using a Xythos-specific mechanism that is more efficient than using standard DAV extraction with the **SMU.DAV.*** properties.

-replace is specified to make sure that any output from a previous migration utility session—that might have used the same properties file—is overwritten. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

Run the Migration Utility Using a Properties File

An alternative to supplying SAS Software Migration Utility invocation options on the command line is to provide these options in the form of a properties file. You do this by creating a file containing values for the various migration utility properties you want to use and saving this file in the same directory where the migration utility batch or script file resides. For information about product-specific properties, see "Review Product-Specific SAS Migration Utility Properties" on page 20.

Note: SAS supplies a migration utility template file (smu.properties.template) that provides examples for how to use various properties. You can find this file in your SAS Software Depot in the **smu** subdirectory underneath **utilities**. △

When you run the migration utility, you reference your properties file with the **-properties** command-line option. For example:

```
smu -s -a -properties "C:\SAS Software Depot\utilities\smu\mid_tier.properties" -replace
```

The migration utility enables you to use a combination of properties and command-line options. For example:

```
smu -s -a -analyze -profile myhost
-properties "C:\SAS Software Depot\utilities\smu\mid_tier.properties" -replace
```

In migration utility properties files, when specifying Windows paths or domains as a part of a user ID, you must escape any backslashes (\) with another backslash character. For example:

```
SMU.config.dir=C:\\SAS\\config\\913BIPlatform\\Lev1
SMU.user=mydomain\\sasadm
```

The migration utility recognizes the pound sign (#) as the comment character, when it is used as the first character in a line.

Below is the listing of a sample migration utility properties file with comments that describe each property:

Note: Migration utility properties are case-sensitive. △

```
# Sample smu.properties file
#
# Specifies the absolute path of the SAS 9.1.3 configuration
# directory that the migration utility reads from.  This
# should usually be the "Lev" directory.  It usually contains
# a SASMain, Data, and product directories.
#
SMU.config.dir=C:\\SAS\\MetadataServer\\Lev1
SMU.config.dir=/users/sas/SAS/913BIPlatform/Lev1



# Specifies the path to sas.exe that is used by the SAS 9.1.3
# Metadata Server. Required if SMU.SASHOME is not used.
#
```

```
SMU.SASROOT=C:\\Program Files\\SAS\\SAS 9.1
SMU.SASROOT=/usr/local/SAS/SAS_9.1


# Specifies the pathname to the top-level directory where SAS
# 9.1.3 products are installed.
#
SMU.SASHOME=C:\\Program Files\\SAS
SMU.SASHOME=/usr/local/SAS


# The metadata server host. This must be defined for the
# migration utility to run successfully.  The port defaults to
# 8561.  If a different metadata port was used, this must be
# set to the correct port.
#
SMU.host.metadata=metadata.example.com
#SMU.port.metadata=8561


# The metadata server administrative user and password.  This
# must be an unrestricted user so all data can be read for
# metadata extraction.  The password should be encoded using the
# {sas001} method.  Use proc pwencode to get the encoded password.
#
#
#SMU.user=mydomain\\adminuser
SMU.user=adminuser
SMU.password=


# A workspace profile is acceptable as an alternative to providing
# the host, port, user and password (if the password is in the
# profile).  This can be just the profile name, which will look in
# the default location and the current working directory, or a full
# path to the profile.
#
#SMU.profile=MyServer


# Specifies the absolute path to the directory where migration
# utility should write its output.  If the directory does not
# exist, migration utility creates it for you.
#
# SMU.Output.Dir=/home/sas/smu_packages/metadata_tier
SMU.Output.Dir=C:\\SMU_packages\\metadata_tier


# Causes the migration utility to extract any WebDAV content that
# it locates.  Use either the SMU.DAV.* properties or the
# SMU.WFS.XythosHome property.  If you want to re-use this
# properties file, we recommend that you not use SMU.isdavtier
# but instead specify -davtier on the smu command line.
#
```

```
#SMU.isdavtier=true


# Specifies the absolute path where the Xythos Web File Server
# is installed.  Specifying this property will cause the WebDAV
# content to be extracted using a Xythos-specific mechanism that
# is more efficient than using standard DAV extraction.
#
#SMU.WFS.XythosHome=C:\\Program Files\\SAS\\xythos\\2.2
#SMU.WFS.XythosHome=/usr/local/SAS/xythos/2.2


# The host where the Xythos server is running.  This is
# used to help migrate items in a Xythos DAV server to
# the SAS Content Server.  If this is omitted, the
# migration process will use a best guess as to which
# server represents the Xythos server.
#
#SMU.xythoshost=davnode.example.com


# The port the Xythos server is listening on.  This
# was 8300 in 9.1.3 by default.  If your site used
# a different port, specify it here.  This property
# is used to help migrate items in a Xythos DAV server
# to the SAS Content Server.  If this is omitted, the
# default value of 8300 is assumed.
#
#SMU.xythosport=8301




# If a non-Xythos WebDAV server is being used at a site, (such as
# Apache HTTP Server) and extraction of the content is desired,
# these properties will configure that extraction.
#
# A user with sufficient read permission to extract the desired
# content.
#
#SMU.DAV.User=
#SMU.DAV.Password=


# The DAV URL for the root of the WebDAV data.
#
#SMU.DAV.URL=http://davnode.example.com:8300/sasdav


# Explicitly sets the machine host name on which the migration utility
# is running.  Use for machines that have multiple network interfaces
# or a dynamic name.  Specify a fully qualified host name for the machine.
#
# SMU.localhost=myserver.example.com
```

```
# The Analytics Platform core install directory.  The value provided
# here is the default installation path.  If your AP was installed to
# a different location set this value to your path.
#
# If you're migrating Analytics Platform applications, you'll also need
# to enable their migration by setting SMU.apcore.migration.is_enabled
# to true.
#
#SMU.apcore.dir=C:\\Program Files\\SAS\\SASAPCore
#SMU.apcore.migration.is_enabled=false


# This property is used by the SDW to verify the version of the migration
# utility that was used to create a migration package vs. the one in the
# install package.
#
# DO NOT CHANGE THIS VALUE.
#
SMU.version=1.0
```

APPENDIX

2
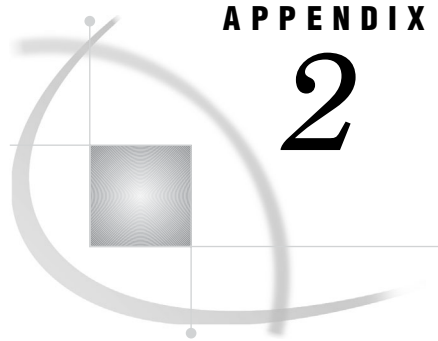
Product-Specific SAS Migration Utility Properties

Product-Specific SAS Migration Utility Properties Overview

Some SAS 9.1.3 products have unique properties that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. Consult the topics in this section for migration utility properties that your SAS 9.1.3 product might depend on.

Note: For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**. △

SAS Analytics Platform Application Properties

The following tables describe unique properties for the SAS Analytics Platform applications that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**.

The following table describes the SMU.apcore.dir property:

Table A2.1 SMU.apcore.dir Property

Property	SMU.apcore.dir
Example	SMU.apcore.dir=C:\\Program Files\\SAS\\SASAPCore
When to Use	To specify the SAS Analytics Platform applications installation directory.

The following table describes the SMU.apcore.migration.is_enabled property:

Table A2.2 SMU.apcore.migration.is_enabled Property

Property	SMU.apcore.migration.is_enabled
Example	SMU.apcore.migration.is_enabled=true
When to Use	Set to true, when migrating SAS Analytics Platform applications.

SAS BI Dashboard Properties

The following table describes a unique property for the SAS BI Dashboard that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use this property, add it to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the bidashmid.install.dir property:

Table A2.3 bidashmid.install.dir Property

Property	bidashmid.install.dir
Examples	bidashmid.install.dir=C:\\Program Files\\SAS\\SAS 9.1\\mySASBIDashboard\\3.1
	bidashmid.install.dir=/usr/local/SAS/SAS_9.1/my_SASBIDashboard/3.1
When to Use	When SAS BI Dashboard is not installed in the standard location, which is *SAS-installation-directory***\SASBIDashboard\3.1**.

SAS Grid Control Server Properties

The following table describes a unique property for the SAS grid control server that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use this property, add it to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the SMU.grid.appservers property:

Table A2.4 SMU.grid.appservers Property

Property	SMU.grid.appservers
Example	SMU.grid.appservers=SASMain,SASApp,SASApp2
When to Use	When multiple SAS grids are defined in a single metadata server.
	Multiple grids are indicated by the presence of more than one grid monitoring server with each referencing different machines. Use SAS.grid.appservers to identify which SAS Application Servers (and their logical grid servers) should be migrated with the grid monitoring server that references this machine.
	SMU.grid.appservers contains a comma-separated list of SAS Application Server names that should be migrated with this machine. The default value is a NULL string.

SAS Information Delivery Portal Properties

The following tables describe unique properties for the SAS Information Delivery Portal that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. You can specify the following properties to identify or override the location of the portal WAR file. The default name is Portal.war and its default location is *SAS-configuration-directory***Lev**n**\web\webapps**. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the javaportal.war.dir property:

Table A2.5 javaportal.war.dir Property

Property	javaportal.war.dir
Examples	javaportal.war.dir=C:\\SAS\\Lev1\\myweb\\mywebapps
	javaportal.war.dir=/config/SAS/Lev1/myweb/mywebapps
When to Use	When the Portal.war file for the SAS Information Delivery Portal is not in the standard location, which is *SAS-configuration-directory***web\webapps** (where *SAS-configuration-directory* is the value of the SMU.config.dir property).

The following table describes the javaportal.war.file property:

Table A2.6 javaportal.war.file Property

Property	javaportal.war.file
Examples	javaportal.war.file=C:\\Config\\mySAS\\Lev1\\web\\mywebapps\\myPortal.war
	javaportal.war.file=/config/SAS/Lev1/web/mywebapps/myPortal.war
When to Use	When the Portal.war file for the SAS Information Delivery Portal is not in the standard location, which is *SAS-configuration-directory***\web\webapps** (where *SAS-configuration-directory* is the value of the SMU.config.dir property), or when the WAR file does not have the default name, which is Portal.war.

The following table describes the javaportal.install.dir property:

Table A2.7 javaportal.install.dir Property

Property	javaportal.install.dir
Examples	javaportal.install.dir=C:\\Program Files\\SAS\\myWeb\\myPortal2.0.1
	javaportal.install.dir=/SAS/myWeb/myPortal2.0.1
When to Use	When the installation directory for SAS Information Delivery Portal is not in the standard location, which is *SASHOME-directory***\web\webapps** (where *SASHOME-directory* is the value of the SMU.SASHOME property).

SAS Marketing Automation SAS Tier Properties

The following tables describe unique properties for SAS Marketing Automation for the SAS tier that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the emasvrproces.install.dir property:

Table A2.8 emasvrproces.install.dir Property

Property	emasvrproces.install.dir
Examples	emasvrproces.install.dir=C:\\Program Files\\mySAS\\SAS 9.1\\Mktauto\\Cmacros
	emasvrproces.install.dir=/mySAS/SAS_9.1/myMktauto/myCmacros
When to Use	If the SAS Marketing Automation compiled macros are installed in a different directory than the default installation directory. Be sure to specify an absolute file system path.

The following table describes the emasvrproces.appserver.context.directory property:

Table A2.9   emasvrproces.appserver.context.directory Property

Property	emasvrproces.appserver.context.directory
Examples	emasvrproces.appserver.context.directory=C:\\SAS\\Config\\Lev1\\mySASMain
	emasvrproces.appserver.context.directory=/SAS/Config/Lev1/mySASMain
When to Use	If the SAS Application Server context directory differs from the default SAS Application Server directory (SASMain).

The following table describes the emasvrproces.appserver.autoexec.directory.and.name property:

Table A2.10   emasvrproces.appserver.autoexec.directory.and.name Property

Property	emasvrproces.appserver.autoexec.directory.and.name
Examples	emasvrproces.appserver.autoexec.directory.and.name= C:\\SAS\\Config\\Lev1\\mySASMain\\my_appserver_autoexec.sas
	emasvrproces.appserver.autoexec.directory.and.name= /SAS/Config/Lev1/mySASMain/my_appserver_autoexec.sas
When to Use	If the SAS Application Server autoexec file is relocated from its default location under the application server context directory, or it is renamed from its default value of appserver_autoexec.sas, or both. Note that the property value should be an absolute file system path and filename of the autoexec file (including its .sas extension) that performs a %include of MarketingOptimization_autoexec.sas.

The following table describes the emasvrproces.mamisc.directory property:

Table A2.11   emasvrproces.mamisc.directory Property

Property	emasvrproces.mamisc.directory
Examples	emasvrproces.mamisc.directory=C:\\mySAS\\Config\\myMAMisc
	emasvrproces.mamisc.directory=/mySAS/Config/myMAMisc
When to Use	If the Marketing Automation MAMisc directory is relocated from its default location under the application server Data directory, or it is renamed from its default value of MAMisc, or both. Note that the property value should be an absolute file system path and filename of the MAMisc directory.

The following table describes the emasvrproces.generate.detailreports property:

Table A2.12   emasvrproces.generate.detailreports Property

Property	emasvrproces.generate.detailreports
Example	emasvrproces.generate.detailreports=false
When to Use	Set to false if you do not want detailed analysis reports regarding your SAS Marketing Automation data and metadata generated by the SAS Migration Utility in analyze mode.
	The valid values are true (default) or false. (The migration utility interprets any other value as true.)

SAS Marketing Automation SAS Middle-Tier Properties

The following tables describe unique properties for SAS Marketing Automation for the SAS middle tier that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**.

The following table describes the emacore.install.dir property:

Table A2.13   emacore.install.dir Property

Property	emacore.install.dir
Examples	emacore.install.dir=C:\\Program Files\\mySAS\\SASMarketingAutomationCore
	emacore.install.dir=/mySAS/SASMarketingAutomationCore
When to Use	If the SAS Marketing Automation Core middle tier is installed in a different directory than the default installation directory. Be sure to specify an absolute file system path.

The following table describes the emacore.ear.directory.and.name property:

Table A2.14 emacore.ear.directory.and.name Property

Property	emacore.ear.directory.and.name
Examples	emacore.ear.directory.and.name= C:\\mySAS\\Config\\Lev1\\Web\\Webapps\\sas.analytics.crm.ma.core.ear emacore.ear.directory.and.name= /mySAS/Config/Lev1/Web/Webapps/sas.analytics.crm.ma.core.ear
When to Use	If the SAS Marketing Automation Core middle-tier EAR file is either relocated from its default location under the web/webapps directory or it is renamed from its default value of sas.analytics.crm.ma.core.ear, or both. Be sure to specify an absolute file system path and be sure to include the complete filename including the .ear extension.

SAS Marketing Optimization SAS Tier Properties

The following tables describe unique properties for SAS Marketing Optimization for the SAS tier that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the mktopt.install.dir property:

Table A2.15 mktopt.install.dir Property

Property	mktopt.install.dir
Examples	mktopt.install.dir=C:\\Program Files\\mySAS\\SAS 9.1\\Mktopt\\Ucmacros mktopt.install.dir=/mySAS/SAS_9.1/Ucmacros/Mktopt
When to Use	If the SAS Marketing Optimization uncompiled macros are installed in a different directory than the default installation directory. Be sure to specify an absolute file system path.

The following table describes the mktopt.appserver.context.directory property:

Table A2.16 mktopt.appserver.context.directory Property

Property	mktopt.appserver.context.directory
Examples	mktopt.appserver.context.directory=C:\\SAS\\Config\\Lev1\\mySASMain mktopt.appserver.context.directory=/SAS/Config/Lev1/mySASMain
When to Use	If the SAS Application Server context directory differs from the default SAS Application Server directory (SASMain).

The following table describes the mktopt.appserver.autoexec.directory.and.name property:

Table A2.17 mktopt.appserver.autoexec.directory.and.name Property

Property	mktopt.appserver.autoexec.directory.and.name
Examples	mktopt.appserver.autoexec.directory.and.name= C:\\SAS\\Config\\Lev1\\mySASMain\\my_appserver_autoexec.sas mktopt.appserver.autoexec.directory.and.name= /SAS/Config/Lev1/mySASMain/my_appserver_autoexec.sas
When to Use	If the SAS Application Server autoexec file is relocated from its default location under the application server context directory or it is renamed from its default value of appserver_autoexec.sas, or both. Note that the property value should be an absolute file system path and filename of the autoexec file (including its .sas extension) that performs a %include of MarketingOptimization_autoexec.sas.

The following table describes the mktopt.autoexec.directory.and.name property:

Table A2.18 mktopt.autoexec.directory.and.name Property

Property	mktopt.autoexec.directory.and.name
Examples	mktopt.autoexec.directory.and.name= C:\\SAS\\Config\\Lev1\\mySASMain\\myMarketingOptimization_autoexec.sas mktopt.autoexec.directory.and.name= /SAS/Config/Lev1/mySASMain/myMarketingOptimization_autoexec.sas
When to Use	If the SAS Marketing Optimization autoexec file is relocated from its default location under the application server context directory or it is renamed from its default value of MarketingOptimization_autoexec.sas or both. Note that the property value should be an absolute file system path and filename of the Marketing Optimization autoexec file (including its .sas extension) that runs when the workspace server is invoked to execute SAS Marketing Optimization code.

The following table describes the mktopt.properties.autocopy property:

Table A2.19 mktopt.properties.autocopy Property

Property	mktopt.properties.autocopy
Example	mktopt.properties.autocopy=false
When to Use	Set to false if you do not want certain SAS Marketing Optimization property and macro variable values to automatically propagate when migrating to SAS 9.2 or SAS Marketing Optimization 5.3. The valid values are true (default) or false. (The migration utility interprets any other value as true.)

The following table describes the mktopt.generate.detailreports property:

Table A2.20 mktopt.generate.detailreports Property

Property	mktopt.generate.detailreports
Example	mktopt.generate.detailreports=false
When to Use	Set to false if you do not want detailed analysis reports regarding your SAS Marketing Optimization data and metadata generated by the SAS Migration Utility in analyze mode.
	The valid values are true (default) or false. (The migration utility interprets any other value as true.)
	Note: When this property is false, you are still able to run the SAS Marketing Optimization analysis tool from an interactive SAS session to generate reports that are specific to SAS Marketing Optimization. For more information, contact your SAS representative. △

The following table describes the mktopt.detailreports.home property:

Table A2.21 mktopt.detailreports.home Property

Property	mktopt.detailreports.home
Example	mktopt.detailreports.home=mo
When to Use	Specify **mo** if you want your migration analysis reports to be generated in a subdirectory under the Marketing Automation configuration directory. The migration utility places your reports in a subdirectory named **analysis_data** (for example, **C:\SAS\Config\Lev1\SASMain\Data\MarketingOptimization\analysis_data**).
	By default, the migration utility writes Marketing Automation analysis reports to the **mktopt/analysisReport** subdirectory under its output directory (specified by SMU.Output.Dir).
	The valid values are: smu (default) or mo. (The migration utility interprets any other value as smu.)

The following table describes the mktopt.numeric.measures.autorename property:

Table A2.22 mktopt.numeric.measures.autorename Property

Property	mktopt.numeric.measures.autorename
Example	mktopt.numeric.measures.autorename=true
When to Use	Set to true if during the migration utility analysis phase you want to automatically rename numeric measure names in the datastore that exceed the 26-character length limit imposed by SAS 9.2 and Marketing Optimization 5.3.
	The valid values are true or false (default). (The migration utility interprets any other value as false.)

Usage notes:
- Automatic renaming is possible only if it is determined that simple truncation of numeric measure names whose length exceeds 26 characters does not result in duplicate names and does not result in a name that occurs as a string within a character attribute.

□ Automatic renaming is an "all or none" feature. If it is requested, all numeric measure names exceeding 26 characters in length must be unique and must not appear as a string within other character attributes after truncation in order for automatic renaming to proceed. Otherwise, no numeric measures will be automatically renamed. Selective or partial automatic renaming is not supported.

□ If truncation would yield duplicate names or a string that occurs within a character attribute, automatic renaming will not be performed, regardless of the setting of this property. In other words, this property does not act as an override. In this case, it will be necessary to manually rename numeric measure names whose length exceeds 26 characters to conform to the 26-character length restriction.

□ Migration of SAS Marketing Optimization 5.1 to SAS Marketing Optimization 5.3 will not be allowed to proceed until all numeric measure names have been found to conform to the 26-character length restriction.

SAS Marketing Optimization SAS Middle Tier Properties

The following tables describe unique properties for SAS Marketing Optimization for the SAS middle tier that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/ migration/utilitynotes**.

The following table describes the mktoptmid.install.dir property:

Table A2.23   mktoptmid.install.dir Property

Property	mktoptmid.install.dir
Examples	mktoptmid.install.dir=C:\\Program Files\\mySAS\\SASMarketingOptimizationServer
	mktoptmid.install.dir=/mySAS/SASMarketingOptimizationServer
When to Use	If the SAS Marketing Optimization Server middle tier is installed in a different directory than the default installation directory. Be sure to specify an absolute file system path.

The following table describes the mktoptmid.war.directory.and.name property:

Table A2.24 mktoptmid.war.directory.and.name Property

Property	mktoptmid.war.directory.and.name
Examples	mktoptmid.war.directory.and.name=C:\\mySAS\\Config\\Lev1\\Web\\Webapps\\sas.analytics.mo.server.war
	mktoptmid.war.directory.and.name=/mySAS/Config/Lev1/Web/Webapps/sas.analytics.mo.server.war
When to Use	If the SAS Marketing Optimization Server middle-tier WAR file is relocated from its default location under the web/webapps directory or it is renamed from its default value of sas.analytics.mo.server.war, or both. Be sure to specify an absolute file system path and be sure to include the complete filename, including the .war extension.

SAS OLAP Web Viewer Properties

The following tables describe unique properties for the SAS OLAP Web Viewer that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**.

The following table describes the webolapviewr.war.dir property:

Table A2.25 webolapviewr.war.dir Property

Property	webolapviewr.war.dir
Examples	webolapviewr.war.dir=C:\\My Config\\SAS\\SASWebOlapViewerforJava\\3.1
	webolapviewr.war.dir=/my_config/SAS/SASWebOlapViewerforJava/3.1
When to Use	When SAS OLAP Web Viewer is not configured in the standard location, which is *SAS-configuration-directory***web\webapps**. If you specify webolapviewr.war.dir, all instances in the specified location are processed.

The following table describes the webolapviewr.war.file property:

Table A2.26 webolapviewr.war.file Property

Property	webolapviewr.war.file
Examples	webolapviewr.war.file=C:\\Program Files\\SAS\\SASWebOlapViewerforJava\\3.1\\SASWebOlapViewerforJava.war
	webolapviewr.war.file=/usr/local/SAS/SAS_9.1/SASWebOlapViewerforJava/3.1/SASWebOlapViewerforJava.war
When to Use	When multiple instances of SAS OLAP Web Viewer are deployed, but you want to migrate one instance only. By default, the SAS Migration Utility bases the configuration on all valid instances found. To override this behavior, you can specify the fully qualified location of the SAS OLAP Web Viewer WAR file for the utility to use. If you specify webolapviewr.war.file, only the specified instance is processed.

SAS Web Report Studio Properties

The following tables describe unique properties for SAS Web Report Studio that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**.

The following table describes the citationweb.war.dir property:

Table A2.27 citationweb.war.dir Property

Property	citationweb.war.dir
Examples	citationweb.war.dir=C:\\My Config\\SAS\\SASWebReportStudio\\3.1
	citationweb.war.dir=/my_config/SAS/SASWebReportStudio/3.1
When to Use	When SAS Web Report Studio is not configured in the standard location, which is *SAS-configuration-directory***\web\webapps**.

The following table describes the citationweb.war.file property:

Table A2.28 citationweb.war.file Property

Property	citationweb.war.file
Examples	citationweb.war.file=C:\\Program Files\\SAS\\SASWebReportStudio\\3.1\\SASWebReportStudio.war
	citationweb.war.file=/usr/local/SAS/SAS_9.1/SASWebReportStudio/3.1/SASWebReportStudio.war
When to Use	When migrating multiple instances of SAS Web Report Studio, the SAS Migration Utility, by default, bases the resulting configuration on the first instance found. To override this behavior, you can specify the fully qualified location of the SAS Web Report Studio WAR file or folder for the utility to use.

Xythos Properties

The following tables describe unique properties for Xythos that the SAS Migration Utility uses when creating a migration analysis report, or later in the process when the utility builds a migration package. To use these properties, add them to your migration utility properties file. For more information, see "Run the Migration Utility Using a Properties File" on page 149.

Note: If you are using a WebDAV server other than Xythos, then specify the SMU.DAV.* properties. For more information, see the SMU.DAV.* properties in "Run the Migration Utility Using a Properties File" on page 149 . △

For the latest SAS Migration Utility properties list, see **http://support.sas.com/migration/utilitynotes**.

The following table describes the SMU.WFS.XythosHome property:

Table A2.29 SMU.WFS.XythosHome Property

Property	SMU.WFS.XythosHome
Example	SMU.WFS.XythosHome=C:\\Program Files\\SAS\\xythos\\2.2
	SMU.WFS.XythosHome=/usr/local/SAS/xythos/2.2
When to Use	Use when you need to migrate Xythos content. SMU.WFS.XythosHome specifies the absolute path where the Xythos Web File Server is installed. Specifying this property causes the migration utility to extract WebDAV content using a mechanism that is specific to Xythos, which is more efficient than using standard WebDAV extraction.

The following table describes the SMU.xythoshost property:

Table A2.30 SMU.xythoshost Property

Property	SMU.xythoshost
Example	SMU.xythoshost=davnode.example.com
When to Use	SMU.xythoshost identifies the machine on which the Xythos server is running. Use when migrating items in a Xythos DAV server to the SAS Content Server.

The following table describes the SMU.xythosport property:

Table A2.31 SMU.xythosport Property

Property	SMU.xythosport
Example	SMU.xythosport=8301
When to Use	SMU.xythosport identifies the port on which the Xythos server is listening. If your site uses a different port than the default (8300), then use SMU.xythosport.
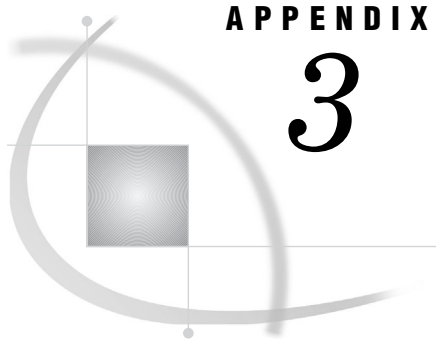
APPENDIX

3

Recommended Reading

Recommended Reading

Here is the recommended reading list for this title:

- □ *SAS Enterprise Miner: Migration Guide*
- □ *Special Considerations for Customers Upgrading to SAS 9.2*
- □ *SAS Intelligence Platform: Overview*
- □ *SAS Intelligence Platform: Installation and Configuration Guide*
- □ *SAS Intelligence Platform: System Administration Guide*
- □ *SAS Intelligence Platform: Security Administration Guide*
- □ *SAS Intelligence Platform: Web Application Administration Guide*
- □ *SAS Intelligence Platform: Application Server Administration Guide*
- □ *SAS Intelligence Platform: Desktop Application Administration Guide*
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Glossary

authentication
the process of verifying the identity of a person or process within the guidelines of a specific authorization policy.

authentication domain
a SAS internal category that pairs logins with the servers for which they are valid. For example, an Oracle server and the SAS copies of Oracle credentials might all be classified as belonging to an OracleAuth authentication domain.

connection profile
a client-side definition of where a metadata server is located. The definition includes a computer name and a port number. In addition, the connection profile can also contain user connection information.

deploy
to install an instance of operational SAS software and related components. The deployment process often includes configuration and testing as well. See also migrate.

deployment plan
information about what software should be installed and configured on each machine in a SAS deployment. A deployment plan is an XML file that is used as input to the SAS Deployment Wizard. There are two types of deployment plans: standard and custom. A standard deployment plan describes a common configuration. Standard plans are stored by default in the SAS Software Depot. A custom deployment plan is created by a SAS representative specifically for a site.

Integrated Windows authentication
a Microsoft technology that facilitates use of authentication protocols such as Kerberos. In the SAS implementation, all participating components must be in the same Windows domain or in domains that trust each other.

Internet Protocol Version 6
a protocol that specifies the format for network addresses for all computers that are connected to the Internet. This protocol, which is the successor of Internet Protocol Version 4, uses hexadecimal notation to represent 128-bit address spaces. The format can consist of up to eight groups of four hexadecimal characters, delimited by colons, as in FE80:0000:0000:0000:0202:B3FF:FE1E:8329. As an alternative, a group of consecutive zeros could be replaced with two colons, as in FE80::0202:B3FF:FE1E:8329. Short form: IPv6 See also IP address and Internet Protocol Version 4.

IPv6
See Internet Protocol Version 6.

IWA
See Integrated Windows authentication.

metadata identity
a metadata object that represents an individual user or a group of users in a SAS metadata environment. Each individual and group that accesses secured resources on a SAS Metadata Server should have a unique metadata identity within that server.

middle tier
in a SAS business intelligence system, the architectural layer in which Web applications and related services execute. The middle tier receives user requests, applies business logic and business rules, interacts with processing servers and data servers, and returns information to users.

migrate
to populate a new deployment of SAS software with the content, data, or metadata (or a combination of these) from an existing deployment. Migrating might include upgrading to a new software release, converting data or metadata, or other changes to ensure compatibility.

object spawner
a program that instantiates object servers that are using an IOM bridge connection. The object spawner listens for incoming client requests for IOM services. When the spawner receives a request from a new client, it launches an instance of an IOM server to fulfill the request. Depending on which incoming TCP/IP port the request was made on, the spawner either invokes the administrator interface or processes a request for a UUID (Universal Unique Identifier).

planned deployment
a method of installing and configuring a SAS business intelligence system. This method requires a deployment plan that contains information about the different hosts that are included in the system and the software and SAS servers that are to be deployed on each host. The deployment plan then serves as input to an installation and configuration tool called the SAS Deployment Wizard.

promotion
the process of copying selected metadata and associated content within or between planned deployments of SAS software. This process is repeatable for a particular deployment. See also migration.

SAS Application Server
in the SAS Intelligence Platform, a logical entity that represents the SAS server tier. This logical entity contains specific servers (for example, a SAS Workspace Server and a SAS Stored Process Server) that execute SAS code. A SAS Application Server has relationships with other metadata objects. For example, a SAS library can be assigned to a SAS Application Server. When a client application needs to access that library, the client submits code to the SAS Application Server to which the library is assigned.

SAS authentication
a form of authentication in which the target SAS server is responsible for requesting or performing the authentication check. SAS servers usually meet this responsibility by asking another component (such as the server's host operating system, an LDAP provider, or the SAS Metadata Server) to perform the check. In a few cases (such as SAS internal authentication to the metadata server), the SAS server performs the check for itself. A configuration in which a SAS server trusts that another component

has pre-authenticated users (for example, Web authentication) is not part of SAS authentication.

SAS data set
a file whose contents are in one of the native SAS file formats. There are two types of SAS data sets: SAS data files and SAS data views. SAS data files contain data values in addition to descriptor information that is associated with the data. SAS data views contain only the descriptor information plus other information that is required for retrieving data values from other SAS data sets or from files that are stored in other software vendors' file formats.

SAS Deployment Manager
a cross-platform utility that manages SAS deployments. The SAS Deployment Manager supports functions such as updating passwords for your SAS deployment, rebuilding SAS Web applications, and removing configurations.

SAS Deployment Wizard
a cross-platform utility that installs and initially configures many SAS products. Using a SAS installation data file and, when appropriate, a deployment plan for its initial input, the wizard is designed to prompt the customer for all the remaining input at the start of the session so that the customer does not have to monitor an entire deployment.

SAS Foundation Services
a set of core infrastructure services that programmers can use in developing distributed applications that are integrated with the SAS platform. These services provide basic underlying functions that are common to many applications. These functions include making client connections to SAS application servers, dynamic service discovery, user authentication, profile management, session context management, metadata and content repository access, activity logging, event management, information publishing, and stored process execution. See also service.

SAS Management Console
a Java application that provides a single user interface for performing SAS administrative tasks.

SAS Metadata Server
a multi-user server that enables users to read metadata from or write metadata to one or more SAS Metadata Repositories. The SAS Metadata Server uses the Integrated Object Model (IOM), which is provided with SAS Integration Technologies, to communicate with clients and with other servers.

SAS OLAP Server
a SAS server that provides access to multidimensional data. The data is queried using the multidimensional expressions (MDX) language.

SAS Pooled Workspace Server
a SAS Workspace Server that is configured to use server-side pooling. In this configuration, the SAS object spawner maintains a collection of workspace server processes that are available for clients.

SAS Software Depot
a file system that consists of a collection of SAS installation files that represents one or more orders. The depot is organized in a specific format that is meaningful to the SAS Deployment Wizard, which is the tool that is used to install and initially configure SAS. The depot contains the SAS Deployment Wizard executable, one or more deployment plans, a SAS installation data file, order data, and product data.

SAS Stored Process Server
a SAS IOM server that is launched in order to fulfill client requests for SAS Stored Processes.

SAS Workspace Server
a SAS IOM server that is launched in order to fulfill client requests for IOM workspaces.

SAS/CONNECT server
a server that provides SAS/CONNECT services to a client. When SAS Data Integration Studio generates code for a job, it uses SAS/CONNECT software to submit code to remote computers. SAS Data Integration Studio can also use SAS/CONNECT software for interactive access to remote libraries.

SAS/SHARE server
the result of an execution of the SERVER procedure, which is part of SAS/SHARE software. A server runs in a separate SAS session that services users' SAS sessions by controlling and executing input and output requests to one or more SAS libraries.

server context
a SAS IOM server concept that describes how SAS Application Servers manage client requests. A SAS Application Server has an awareness (or context) of how it is being used and makes decisions based on that awareness. For example, when a SAS Data Integration Studio client submits code to its SAS Application Server, the server determines what type of code is submitted and directs it to the correct physical server for processing (in this case, a SAS Workspace Server).

servlet
a Java program that runs on a Web server. Servlets can be considered a complementary technology to applets, which run in Web browsers. Unlike applet code, servlet code does not have to be downloaded to a Web browser. Instead, servlets send HTML or other appropriate content back to a browser or to another type of Web-based client application.

servlet container
an execution environment for Java servlets that contains a Java Virtual Machine. The servlet container also provides other services for servlets and for the Web applications that those servlets are part of. For example, the servlet container converts HTTP requests that are sent by clients to Java objects that servlets can work with, and it converts the output of servlets to HTTP responses. An example of a popular servlet container is the JBoss server.

single sign-on
an authentication model that enables users to access a variety of computing resources without being repeatedly prompted for their user IDs and passwords. For example, single sign-on can enable a user to access SAS servers that run on different platforms without interactively providing the user's ID and password for each platform. Single sign-on can also enable someone who is using one application to launch other applications based on the authentication that was performed when the user initially logged on.

spawner
See object spawner.

SSO
See single sign-on.

trusted user
a privileged service account that can act on behalf of other users on a connection to the metadata server.

unrestricted user
> a special user of a metadata server who can access all metadata on the server (except for passwords, which an unrestricted user can overwrite but cannot read). An unrestricted user can also perform administrative tasks such as starting, stopping, pausing, and refreshing the metadata server. You are an unrestricted user if your user ID is listed in the adminUsers.txt file and is preceded by an asterisk.

upgrade
> a type of software update that introduces new functionality. An upgrade generally involves a new release number. See also hot fix.

Web application
> an application that is accessed via a Web browser over a network such as the Internet or an intranet. SAS Web applications are Java Enterprise Edition (JEE) applications that are delivered via Web application archive (WAR) files. The applications can depend on Java and non-Java Web technologies.

Web authentication
> a configuration in which users of Web applications and Web services are verified at the Web perimeter and the metadata server trusts that verification.

Web Distributed Authoring and Versioning
> a set of extensions to the HTTP protocol that enables users to collaboratively edit and manage files on remote Web servers. Short form: WebDAV.

WebDAV server
> an HTTP server that supports the collaborative authoring of documents that are located on the server. The server supports the locking of documents, so that multiple authors cannot make changes to a document at the same time. It also associates metadata with documents in order to facilitate searching. The SAS business intelligence applications use this type of server primarily as a report repository. Common WebDAV servers include the Apache HTTP Server (with its WebDAV modules enabled), Xythos Software's WebFile Server, and Microsoft Corporation's Internet Information Server (IIS).

workspace
> in the IOM object hierarchy for a SAS Workspace Server, an object that represents a single session in SAS.

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