



# SAS<sup>®</sup> Visual Analytics 7.3: Installation and Configuration Guide (Non-distributed SAS<sup>®</sup> LASR<sup>™</sup>)

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**SAS® Visual Analytics 7.3: Installation and Configuration Guide (Non-distributed SAS® LASR™)**

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# Using This Book

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## Audience

This book documents the installation and initial configuration of SAS Visual Analytics for a non-distributed SAS LASR Analytic Server for a traditional, on-premises deployment. This book does not include deploying any other SAS product beyond SAS Visual Analytics for a non-distributed SAS LASR Analytic Server. If you are upgrading, see the [SAS Guide to Software Updates](#).

Although the majority of figures in this guide are from a Microsoft Windows deployment, the experience is mostly identical on Linux. Differences in the deployment between operating systems are noted.

For documentation about deploying SAS Visual Analytics for a distributed SAS LASR Analytic Server on an analytics cluster or converting your SAS LASR Analytic Servers to run in distributed mode, see the [SAS Visual Analytics: Installation and Configuration Guide \(Distributed SAS LASR\)](#).

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## Documentation Conventions

### SAS Installation Directory

The phrase *SAS installation directory* refers to a host path. (The SAS installation directory is sometimes referred to as SAS Home.) For example: `c:\Program Files\SASHome`.

### SAS Configuration Directory

The phrase *SAS configuration directory* refers to a host path that includes a configuration name and level. For example: `c:\SAS\Config\Lev1`.

For more information, see “[Overview of the Configuration Directory Structure](#)” in *[SAS Intelligence Platform: System Administration Guide](#)*.



## 1

# Deploying SAS Visual Analytics (Non-distributed LASR)

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## What Is Covered in This Document?

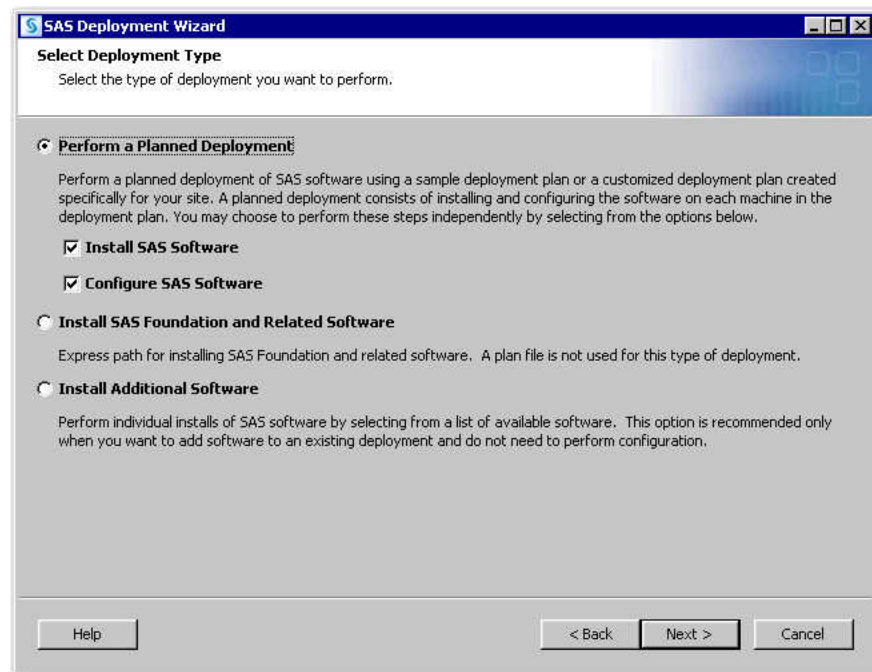
This document is designed to help you quickly and efficiently deploy SAS Visual Analytics with a non-distributed SAS LASR Analytic Server on a single machine.

You use a program provided by SAS called the *SAS Deployment Wizard* to perform the actual installation and initial configuration of SAS Visual Analytics. The deployment wizard is an easy-to-use program that prompts you for the necessary information to automatically install and configure SAS Visual Analytics.

**Note:** The deployment wizard prompts you for information that might require input from your site's IT team. Some of the answers that you provide (such as user names and passwords) should be recorded because you (or someone at

your site) will need this information later to use and administer SAS Visual Analytics.

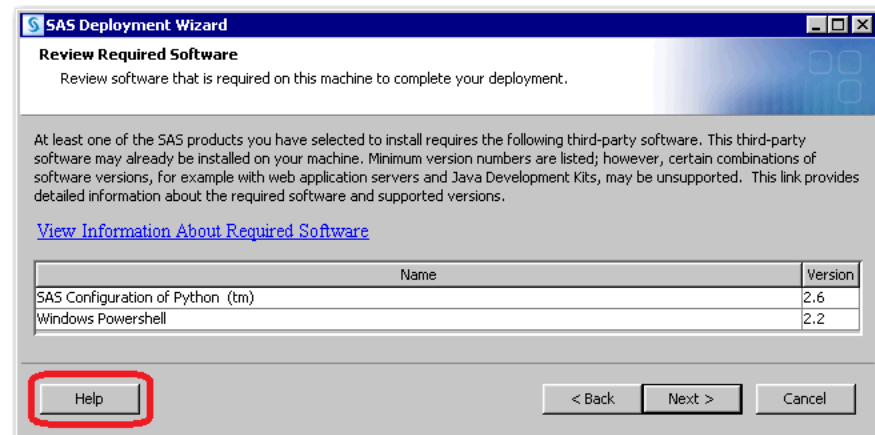
**Figure 1.1** Example of a SAS Deployment Wizard Page



This document gives you step-by-step instructions to successfully deploy SAS Visual Analytics. If you find that you require more information about the deployment wizard configuration prompts, you can do the following:

- Click the **Help** button on the wizard page for the prompt in question.

**Figure 1.2** Location of the Help Button on a SAS Deployment Wizard Page



- See the *SAS Visual Analytics: Installation and Configuration Guide (Distributed SAS LASR)*, available at <http://support.sas.com/documentation/solutions/va/index.html>.

If you find that you need more information about using the deployment wizard itself, see the *SAS Deployment Wizard and SAS Deployment Manager: User's Guide*, available at <http://support.sas.com/documentation/installcenter/en/ikdeploywizug/66034/PDF/default/user.pdf>.



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## SAS Visual Statistics Installation Instructions

If SAS Visual Statistics is part of your order, then when you perform the steps in this document for installing and configuring SAS Visual Analytics, you are also installing and configuring SAS Visual Statistics.

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## Upgrading a Pre-Existing SAS Visual Analytics Deployment

If you already have a SAS Visual Analytics deployment and you want to upgrade it to a later version, see [Appendix 1, “Upgrading SAS Visual Analytics \(Non-distributed LASR\),”](#) on page 75.

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## Deployment Process Overview

The following list summarizes the steps required to install and configure SAS Visual Analytics on a single machine:

- 1 [Create a SAS Software Depot.](#)
- 2 [Check for documentation updates.](#)
- 3 [Prepare your environment.](#)
- 4 [Install and configure SAS Visual Analytics.](#)
- 5 [Perform post-deployment steps.](#)
- 6 [Add SAS Visual Analytics users to the system.](#)
- 7 [Validate your SAS Visual Analytics deployment.](#)
- 8 [Set ulimits.](#)

Subsequent sections in this guide provide the step-by-step instructions that you need to complete these tasks.

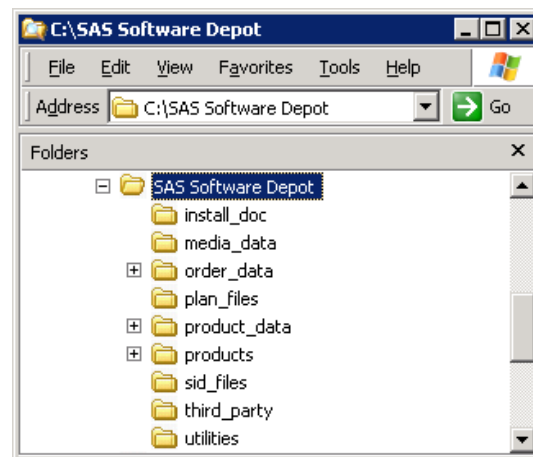
Although the majority of figures in this guide are from a Microsoft Windows deployment, the experience is mostly identical on Linux. Differences in the deployment between operating systems are noted.

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## Step 1: Create a SAS Software Depot

SAS Visual Analytics must be installed from a SAS Software Depot, which is a repository for your SAS software media. If you already have a SAS Software Depot, skip to [“Step 3: Prepare Your Environment”](#) on page 8.

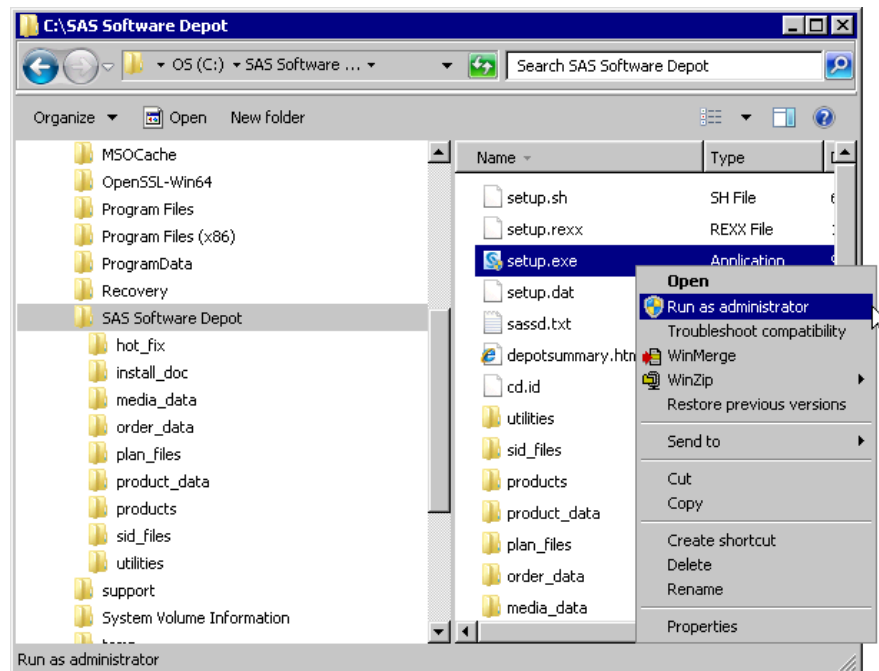
Figure 1.3 Windows Explorer Displaying a SAS Software Depot



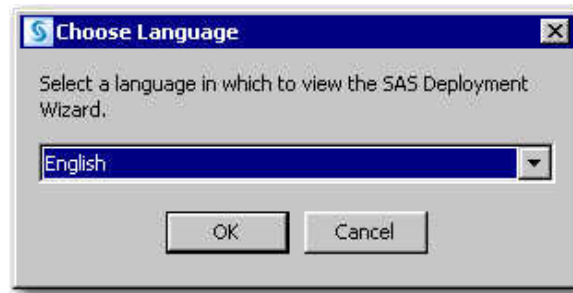
**Note:** If you receive your SAS Visual Analytics order by electronic software download (ESD), refer to your software order e-mail (SOE) for instructions on how to download your SAS order and create a SAS Software Depot. If you have already downloaded your SAS order, your SAS Software Depot is automatically created for you. Proceed to [“Step 2: Check for Documentation Updates”](#) on page 8.

If your installation media is in DVD format, create a SAS Software Depot by following these steps:

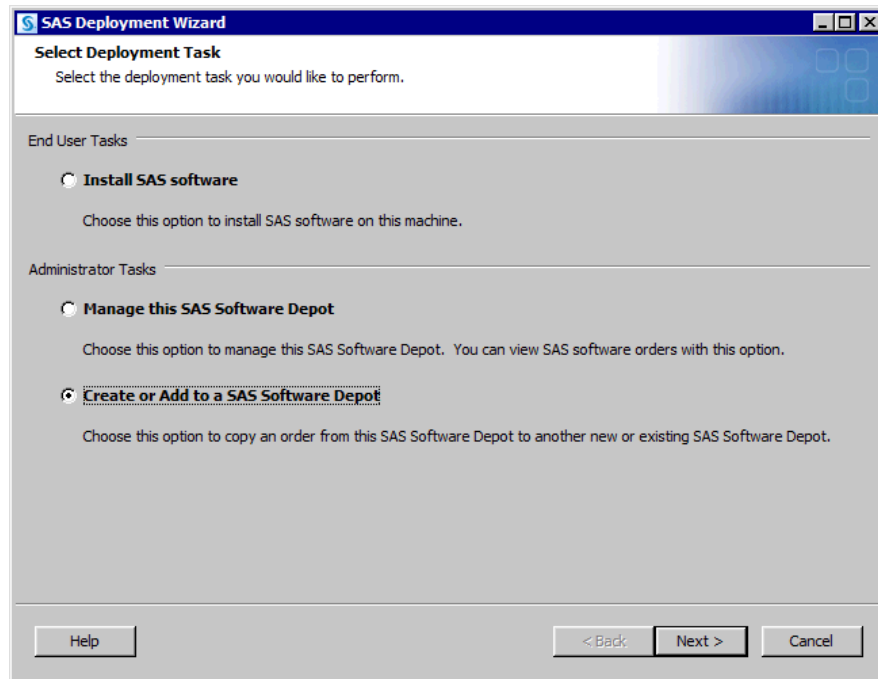
- 1 Insert Disk 1 into your DVD drive.
- 2 If the SAS Deployment Wizard does not automatically launch, open the DVD in Windows Explorer, right-click `setup.exe`, and select **Run as administrator**.



- 3 When prompted, select your language, and click **OK**.



- 4 On the Select Deployment Task page of the SAS Deployment Wizard, select **Create or Add to a SAS Software Depot**.



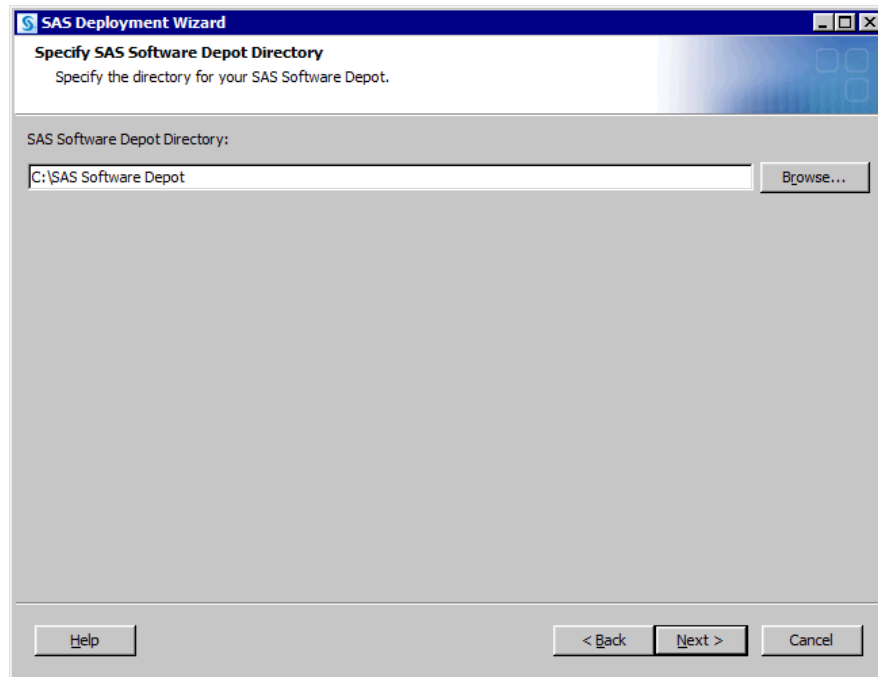
- 5 On the Specify Order Details page, click **Next**.

The screenshot shows the 'Specify Order Details' window of the SAS Deployment Wizard. The window title is 'SAS Deployment Wizard'. The main heading is 'Specify Order Details' with a subtext 'Edit the description and add notes for this order to aid with future tracking.' Below this, there is a text area for 'Order number' containing '012265', a text area for 'Description' containing 'EBI+Platform Suite for SAS', and a larger text area for 'Notes'. A blue hyperlink reads 'Click to see the contents of your order that correspond with the SAS Products to Install below'. Below the hyperlink, a list titled 'SAS Products to Install:' contains seven items: 1. SAS Foundation, 2. Report Fonts for Clients, 3. SAS Add-in for Microsoft Office, 4. SAS BI Dashboard, 5. SAS BI Dashboard Help and Documentation, 6. SAS BI Report Services, and 7. SAS BI Web Services for .NET. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button.

- 6 On the Specify Order Options page, select **Include complete order contents**, and click **Next**.

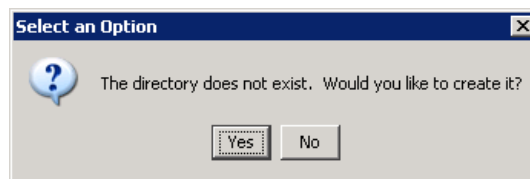
The screenshot shows the 'Specify Order Options' window of the SAS Deployment Wizard. The window title is 'SAS Deployment Wizard'. The main heading is 'Specify Order Options' with a subtext 'Specify the contents of the order'. There are two radio button options: 'Include complete order contents' (which is selected) and 'Subset order contents'. Below the 'Include complete order contents' option, it says 'Install all the products that come with this order. This is the suggested option.' Below the 'Subset order contents' option, it says 'Install only selected SAS Foundation products based on any combination of selected platforms/operating systems, products, and languages. Each of the following checkboxes represent a selection dialog that will follow this one where you can select products based on what's available in the order.' There are three checkboxes: 'By product platform/operating system', 'By SAS Foundation products', and 'By product languages', all of which are checked. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button.

- 7 On the Specify SAS Software Depot Directory page, specify the location where you want to create your SAS Software Depot, and click **Next**. The location can be on the local machine or it can be on a network drive.

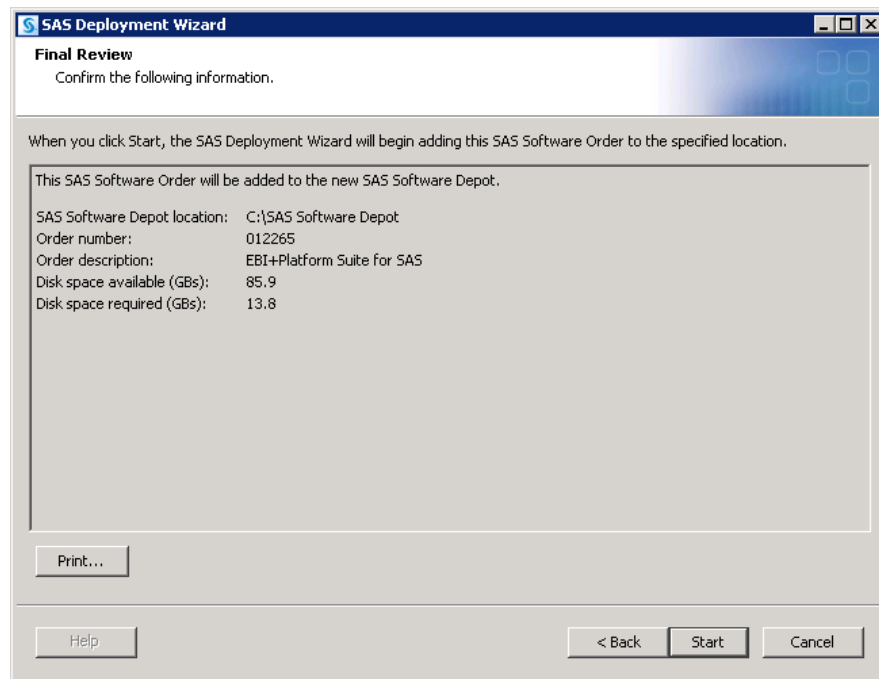


- 8 If the directory that you specify does not exist, the wizard prompts you. If you want it to create the directory for you, click **Yes**.

**Note:** Your SAS Software Depot directory has a maximum length of 50 characters. Do not use special characters in the pathname.



- 9 On the Final Review page, click **Start** to create the SAS Software Depot.



---

## Step 2: Check for Documentation Updates

It is very important to check for late-breaking installation information in SAS Notes and to review the system requirements for your SAS software.

- [SAS Notes](#)
- [System Requirements--SAS Visual Analytics 7.3 \(Distributed or Non-distributed LASR\)](#)
- [System Requirements--SAS Visual Analytics 7.3 and SAS Visual Statistics 7.3](#)

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## Step 3: Prepare Your Environment

### Overview of Prepare Your Environment

Before you can deploy your SAS software, you need to prepare your *server* machine. This includes:

- [Review your pre-installation checklist.](#)
- [Set up required operating system user accounts.](#)
- [Create the required operating system group.](#)
- [Install third-party software required by SAS Visual Analytics.](#)

## Review Your Pre-Installation Checklist

Your SAS software order contains a pre-installation checklist that gives a comprehensive list of actions that you must do to prepare your system before deploying SAS Visual Analytics.

The checklist is located in your SAS Software Depot in the `plan_files` directory. Checklists are bundled with deployment plans, topology diagrams, and other documents. All of these are available on [support.sas.com](https://support.sas.com). We recommend that you store your deployment plans in your SAS Software Depot in the `plan_files` directory.

## Set Up User Accounts

User accounts that are needed for your SAS deployment can be either local accounts on the machine on which you are deploying SAS, or domain accounts that have access to the machine. Although you can use your own account names, SAS recommends using the names that are listed in the following table. If you choose to use different account names, be sure to record the names (and passwords) for future reference.

**Table 1.1** Pre-installation Checklist for User Accounts

User Account	Operating System	Recommended User ID User Rights Needed
SAS Installer	Both	<code>my-domain\sas</code> or <code>my-machine\sas</code>
	Windows	Log on as a batch job
	Linux	The group that you designate as the <i>primary</i> group for the SAS installer must contain the SAS Spawnd Servers account.
SAS Spawnd Servers	Both	<code>my-domain\sassrv</code> or <code>my-machine\sassrv</code>
	Windows	Log on as a batch job
	Linux	Member of a group that is the <i>primary</i> group for the SAS installer. (This group does not have to be the primary group for the SAS Spawnd Servers account.)

User Account	Operating System	Recommended User ID User Rights Needed
SAS First User*	Both	<i>my-domain\sasdemo</i> or <i>my-machine\sasdemo</i>
	Windows	<b>Log on as a batch job</b>
	Linux	
SAS LASR Administrator **	Both	<i>my-domain\saslasradm</i> or <i>my-machine\saslasradm</i>
	Windows	<b>Log on as a batch job</b>
	Linux	

\* The SAS Deployment Wizard automatically assigns the *Log on as a batch job* right to the SAS Spawnd Servers account and SAS First User account.

\*\* Not required but recommended when validating your deployment.

The accounts that are listed in the preceding table are recommended and used for the following purposes:

- SAS Installer is used to install SAS. After you create the account, log on to the machine with this account to perform the deployment. It is recommended that this account remain available for future SAS maintenance and updates.
- SAS Spawnd Servers is the process owner for SAS Stored Process Servers and SAS Pooled Workspace Servers on the machine. During the SAS deployment, the SAS Deployment Wizard prompts you to enter the account name and password for this account.
- SAS First User is used for demonstration purposes. This account is often referred to as *sasdemo*. During the SAS deployment, the SAS Deployment Wizard prompts you to specify the account name for this account. The SAS First User account is not a required account. However, it is used for the purposes of this installation guide.

## Set Up an Operating System Group

### Set Up the SAS Server Users Group (Windows)

To run SAS on Windows, users must have the **Log on as a batch job** right on the machine that hosts the server. We recommend that you create a group on the server, add SAS users to the group, and then assign that group the **Log on as a batch job** right.

**Note:** The SAS Deployment Wizard automatically assigns the **Log on as a batch job** right for the SAS Spawnd Servers account and SAS First User account.



To create the SAS Server Users group and assign the `Log on as a batch job` right, do the following:

- 1 Click **Start**. In the **Search programs and files** field, enter `Computer Management`, and select it from the **Start** menu when it appears.
- 2 Expand **Local Users and Groups**.
- 3 Right-click **Groups**, and select **New Group**.
- 4 Name the group “SAS Server Users,” and click **Create**.
- 5 Assign the **Log on as a batch job** right to the new SAS Server Users group. Click **Start**. In the **Search programs and files** field, enter `Local Security Policy`, and select it from the **Start** menu when it appears.
- 6 In the left pane of the Local Security Policy window, expand **Local Policies**, and click **User Rights Assignment**.
- 7 In the right pane under the **Policy** column, double-click **Log on as a batch job**. This displays the Log on as a batch job Properties dialog box.
- 8 On the **Local Security Setting** tab, click **Add User or Group**. In the **Enter the object names to select** field, enter `SAS Server Users`, and click **Check Names** to select the **SAS Server Users** group. Then, click **OK** to return to the Log on as a Batch Job Properties dialog box. Verify that the new group that you created appears in the text box on the **Local Security Setting** tab.
- 9 Click **OK** to close the dialog box and return to the Local Security Policy window.

In the future, any new SAS users that you add to your SAS system can be granted the `Log on as a batch job` right by adding them to the SAS Server Users group in Windows. Because the SAS Server Users group was assigned the `Log on as a batch job` right, it is not necessary to explicitly assign this right to users in the Local Security Policy window.

### Set Up the sas Group (Linux)

To run SAS on Linux, you should create an operating system group (`sas`) and make it the *primary* group for the Linux SAS installer user. The SAS Spawnd Servers account should be made a member of the `sas` group. (Members of this group are given access to certain directories and files created by the SAS Deployment Wizard.)

For information about creating groups and adding user accounts, see your Linux documentation.

## Download and Install Required Third-Party Software

SAS Visual Analytics requires that your machine have the following third-party software installed:

- Windows PowerShell

Windows PowerShell is a configuration management and task automation framework from Microsoft that is required by SAS Visual Analytics.

Later, you are prompted for the Windows PowerShell installation path here: [Step 18 on page 21](#).

- Python

Python is a general-purpose programming language required by SAS Information Retrieval Studio.

Later, you are prompted for the Python installation path here: [Step 17 on page 21](#).

**Note:** For more information about Python, see [Installation Note 50147](#).

- JUnit

To run certain test suites, the SAS Deployment Tester requires JUnit, which is an open-source framework for writing and running tests in the Java programming language.

Later, you are prompted for the JUnit installation path here: [Step 56 on page 42](#).

If you need any of this software, you can download it from [SAS Support for Additional Software Products](#).

Note the location where this third-party software resides on your machine. (See the following table.)

**Table 1.2** Pre-installation Checklist for Third-Party Software

Third-Party Software	Default Installation Path	Actual Installation Path
Windows PowerShell	C:\Windows \System32\WindowsPowerShell v1.0	
Python	C:\Python27	
JUnit	C:\junit\junit-4.8.1.jar	

## Step 4: Install and Configure SAS

To install and configure SAS Visual Analytics, you use a standard *deployment plan*. A deployment plan is similar to a recipe that tells the SAS Deployment Wizard how to install your software order.

Later in this topic, you are asked to choose between two standard deployment plans that are labeled **SAS Visual Analytics, two machines**. The first machine contains the SAS Visual Analytics server tier, middle tier, and clients. The second machine contains administrative clients. These two plans differ only in that one plan is used for a Windows server and middle tier, and the other plan is used for a Linux server and middle tier.

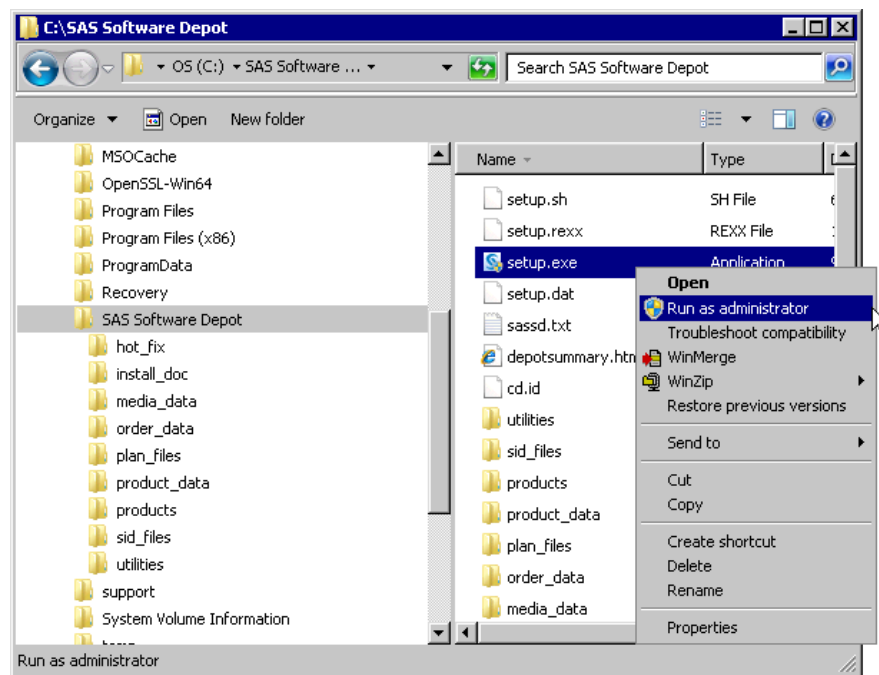
This topic describes how to deploy SAS Visual Analytics on the server and middle tier machine. If you want to deploy on additional *client* machines, then rerun the deployment wizard on one or more additional machines, making sure

to select **Step 4: Clients** on the [Select Deployment Step and Products to Install](#) page on page 17.

**Note:** Actually, these deployment plans can accommodate additional machines if you want to cluster your SAS Metadata Server (Step 2) or your middle tier (Step 3). For more information, see [SAS Visual Analytics: Installation and Configuration Guide \(Distributed SAS LASR\)](#).

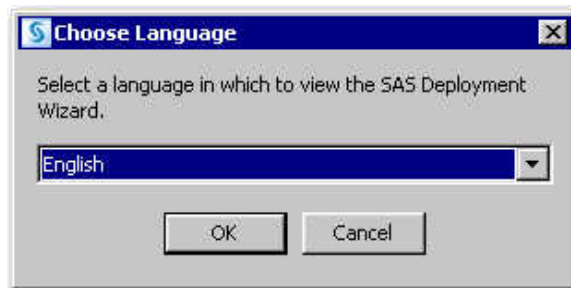
To install and configure SAS Visual Analytics on a single machine, follow these steps:

- 1 Log on to the machine using the SAS installer account that you created earlier or using an account that is a member of the Windows Administrators group.
- 2 Temporarily disable all encryption, anti-virus, anti-malware, anti-spyware, and firewall software. These types of programs can interfere with the deployment process and block files as they are being copied and extracted.
- 3 On Windows, start Windows Explorer, and navigate to the highest-level directory in your SAS Software Depot. Right-click **setup.exe**, and select **Run as administrator**. On Linux, navigate to the highest-level directory in your SAS Software Depot, and run **setup.sh**.





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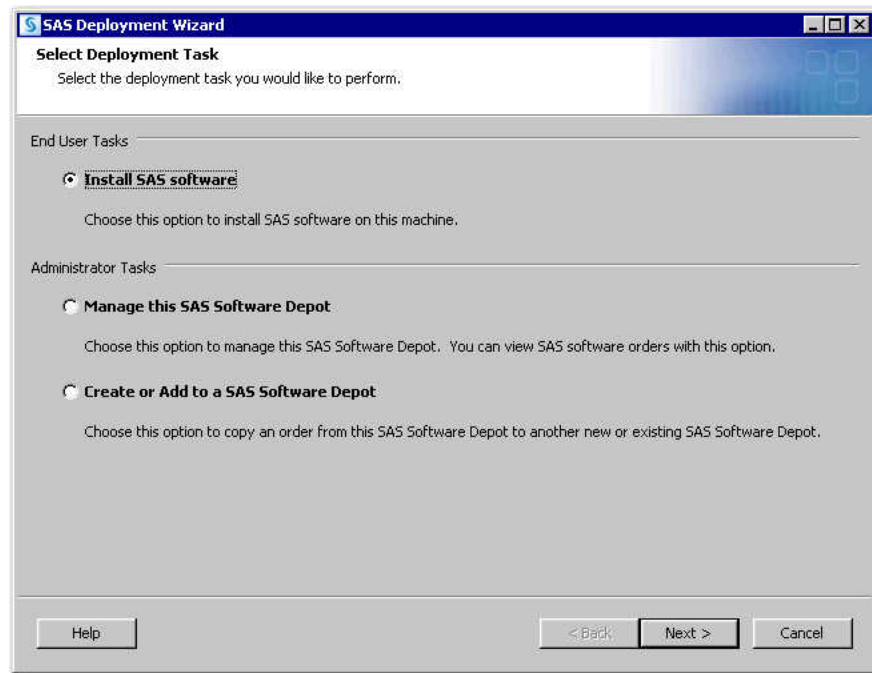


#### Choose Language

- From the drop-down list, select the language that you want the deployment wizard to use when it displays text, and click **OK**.



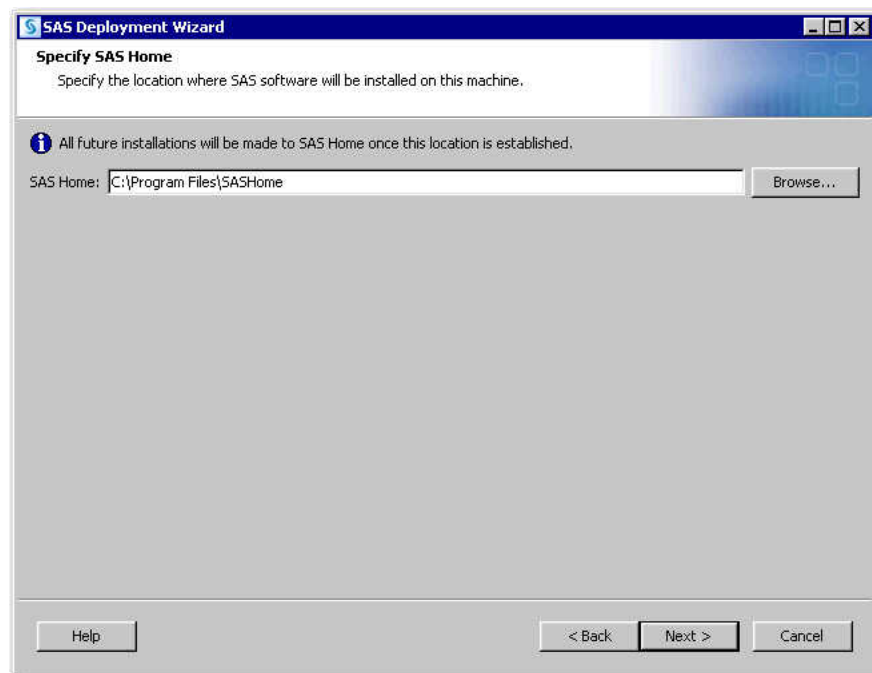
5



### Select Deployment Task

- Select **Install SAS Software**, and click **Next**.

6

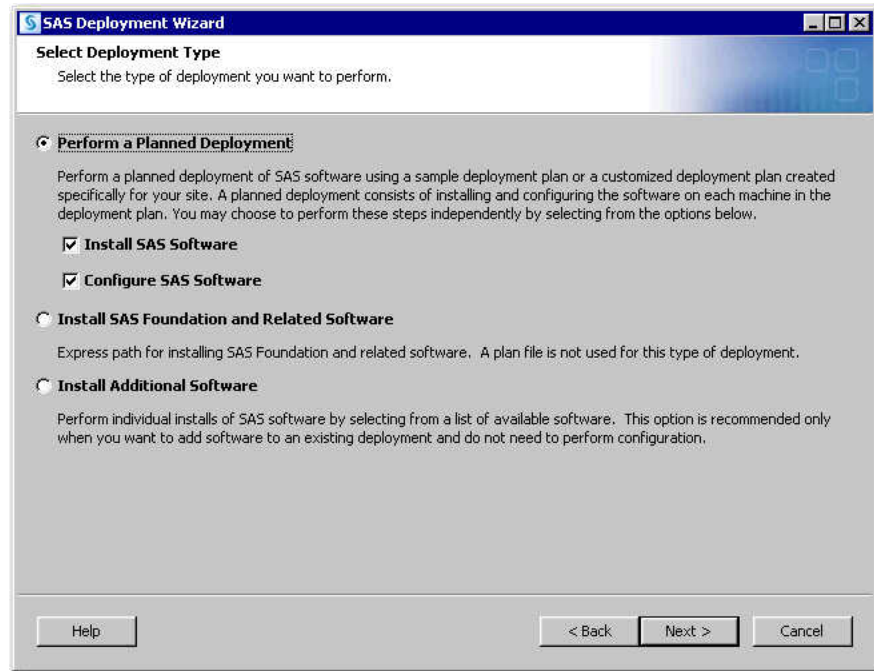


### Specify SAS Home

- If you want to specify a different location where SAS is installed other than the default location, enter this path in **SAS Home**. Click **Next**.

Although your SAS installation directory (which the wizard refers to as SAS Home) and SAS configuration directories can share the same parent directory, one directory *cannot* reside inside another. Also, the SAS installation directory should *not* be a directory within your SAS Software Depot.

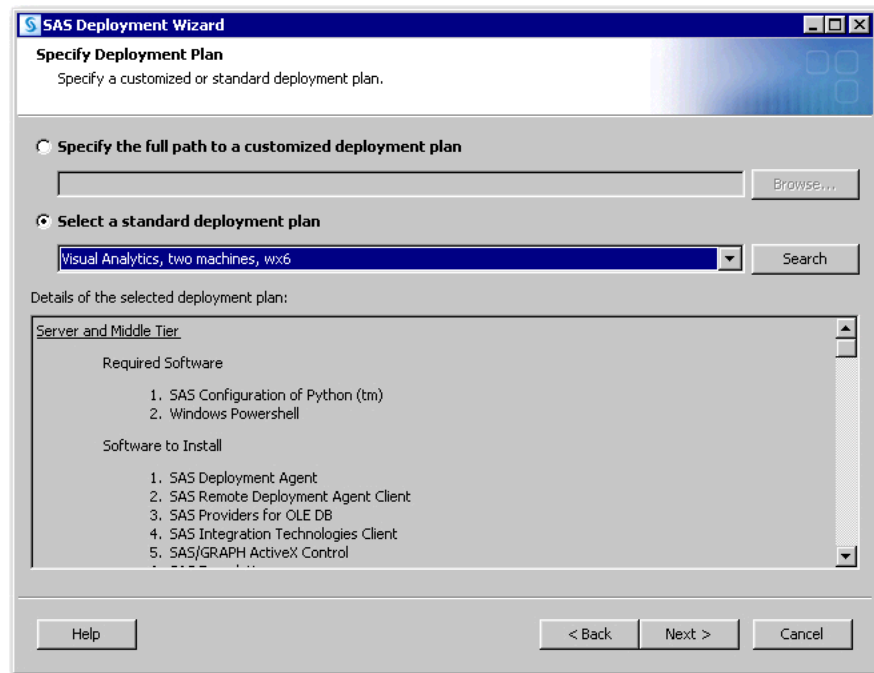
7



### Select Deployment Type

- Confirm that **Perform a Planned Deployment**, **Install SAS Software**, and **Configure SAS Software** are all selected. Click **Next**.

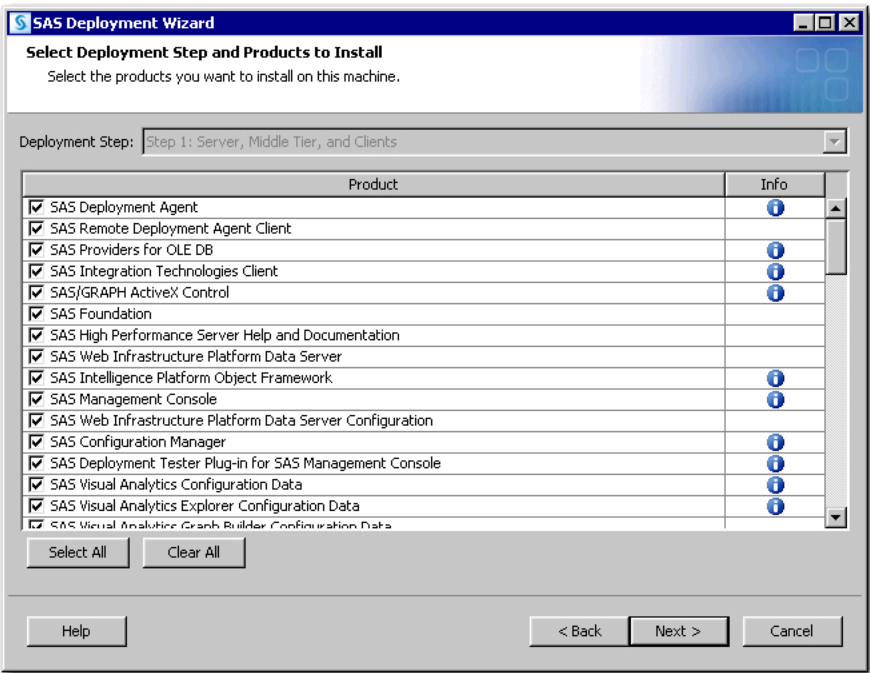
8



### Specify Deployment Plan

- Choose **Select a standard deployment plan**.
- On Windows, from the drop-down menu, select **SAS Visual Analytics, two machines, wx6**.
- On Linux, from the drop-down menu, select **SAS Visual Analytics, two machines, lax and wx6**. Click **Next**.

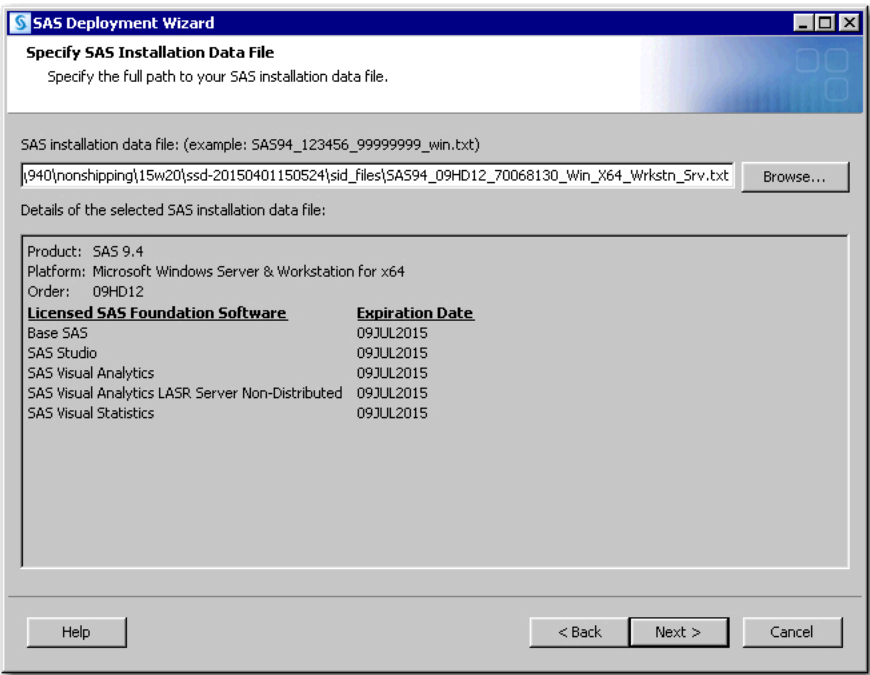
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#### Select Deployment Step and Products to Install

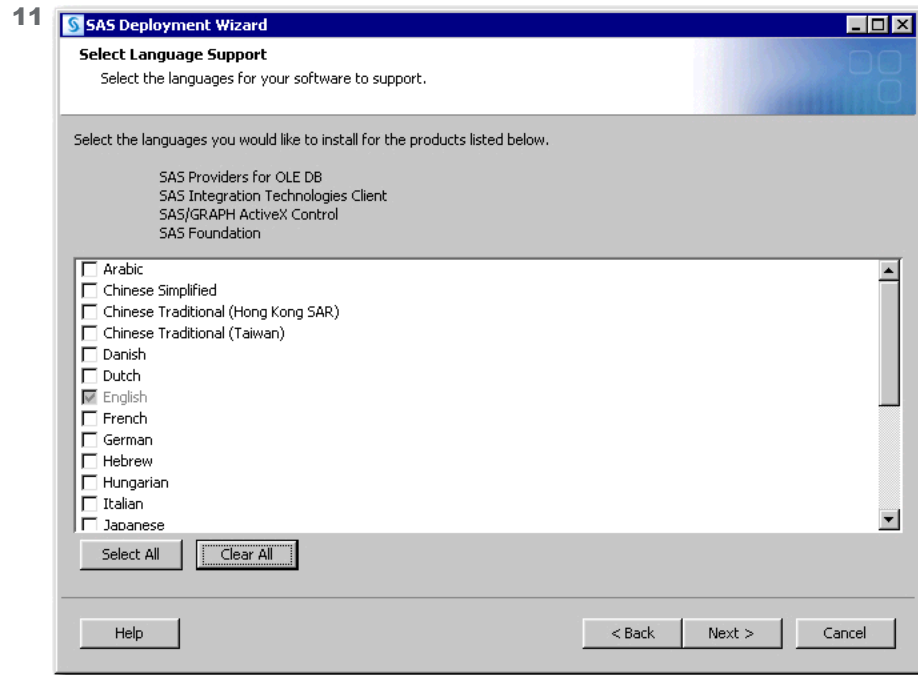
- In **Deployment Step**, make sure that **Step 1: Server, Middle Tier, and Clients** is selected. Click **Next**.

10



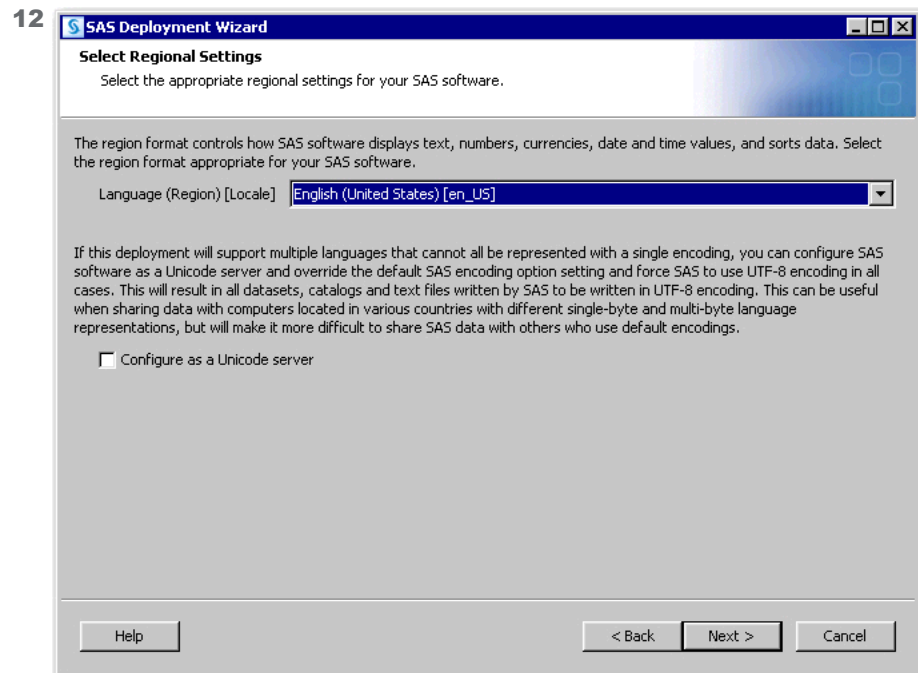
#### Specify SAS Installation Data File

- Click **Browse**, locate your SAS installation data file, and then click **Next**.



#### Select Language Support

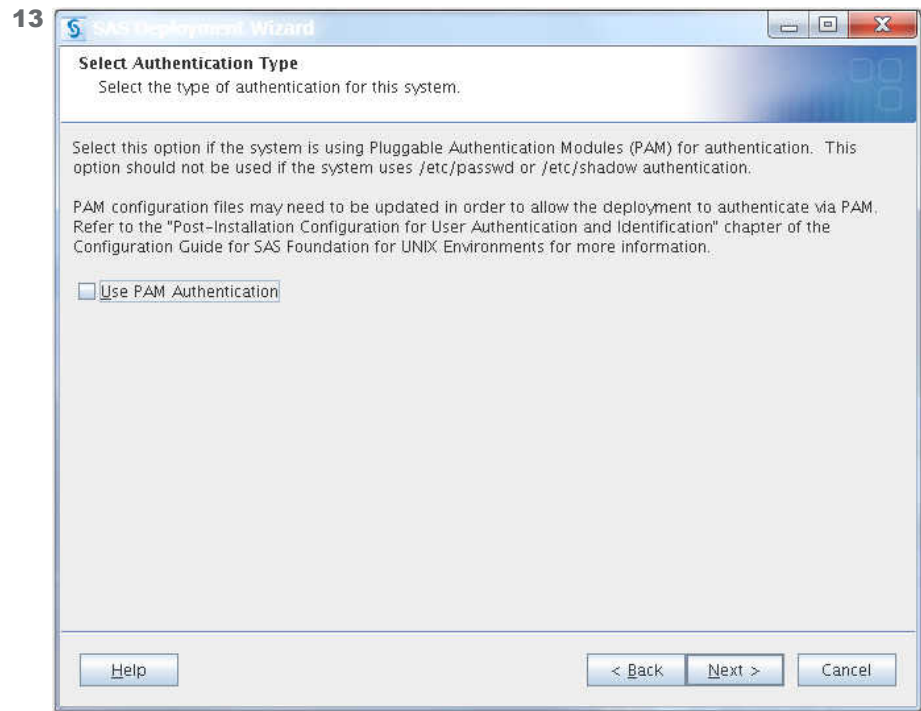
- Click **Clear All**. (English remains selected as the default language.)
- Add any additional languages that you want SAS software to support, and then click **Next**.



#### Select Regional Settings

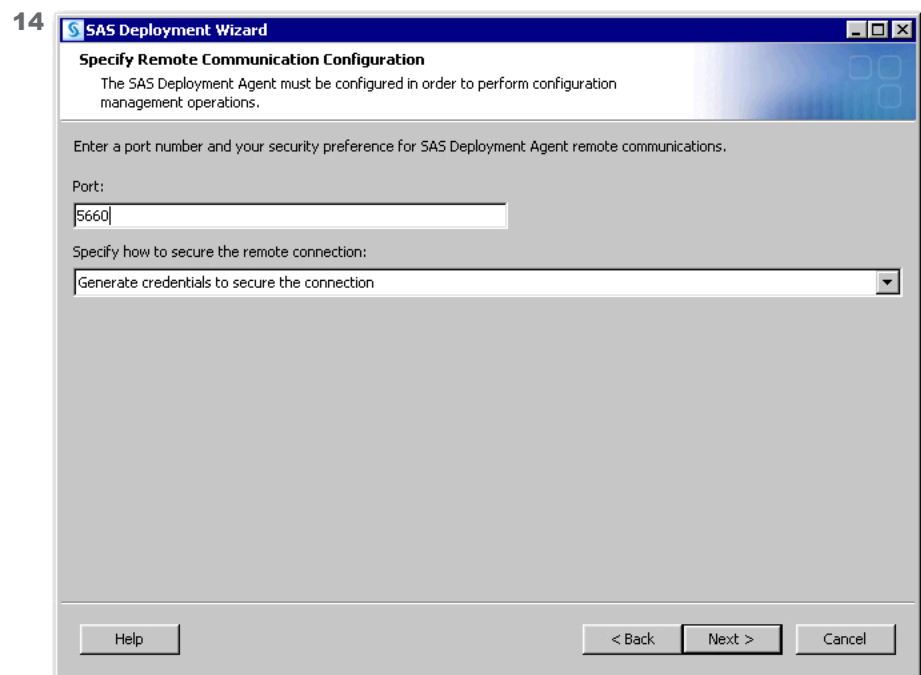
- Accept the default value of English (United States), or select a different language, region, and locale in **Language (Region) [Locale]**. Click **Next**.





#### Select Authentication Type (Linux only)

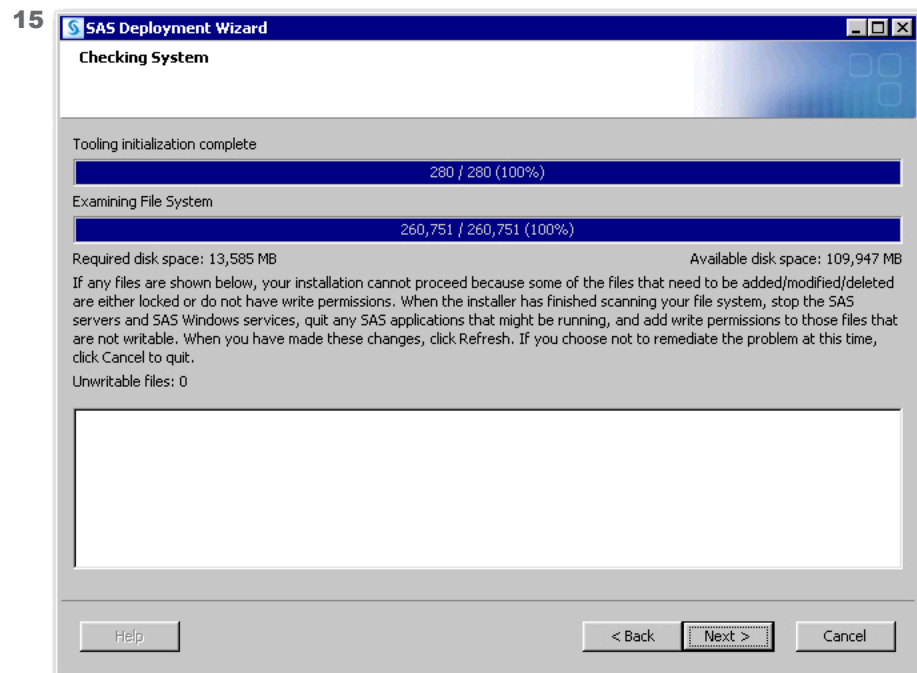
- Do not change any of the default values displayed on this page. Click **Next**.



**Note:** Generally speaking, you should not change any port values unless a port is already used by another application. See your pre-installation checklist for the complete list of ports that SAS Visual Analytics requires. For more information, see [“Review Your Pre-Installation Checklist”](#) on page 9.

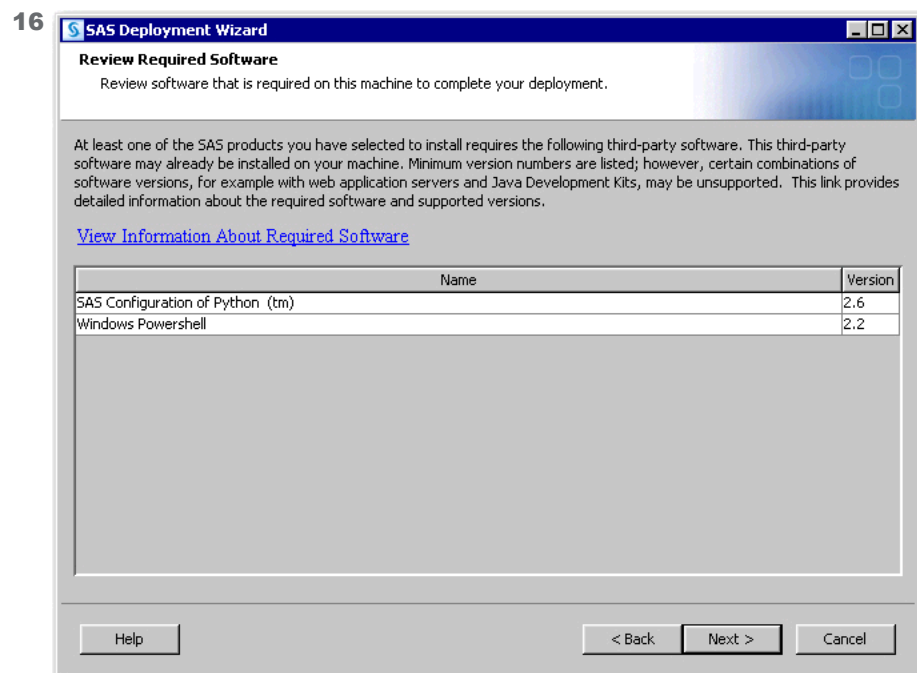
## Specify Remote Communication Configuration

- Do not change the default information that is displayed on this page. Click **Next**.



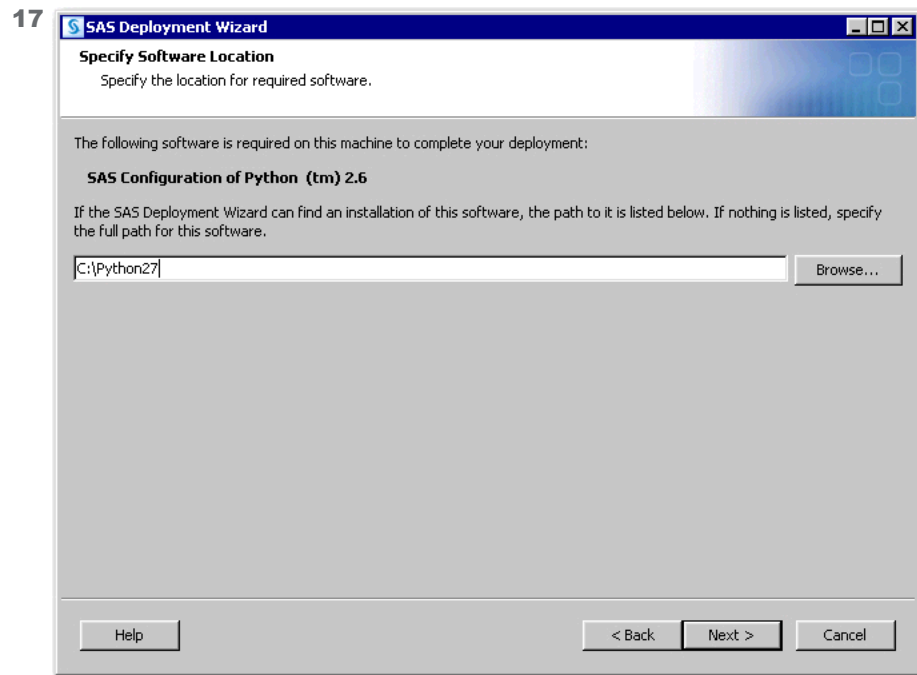
## Checking System

- Wait while the SAS Deployment Wizard checks your system. When it is finished, click **Next**.



## Review Required Software

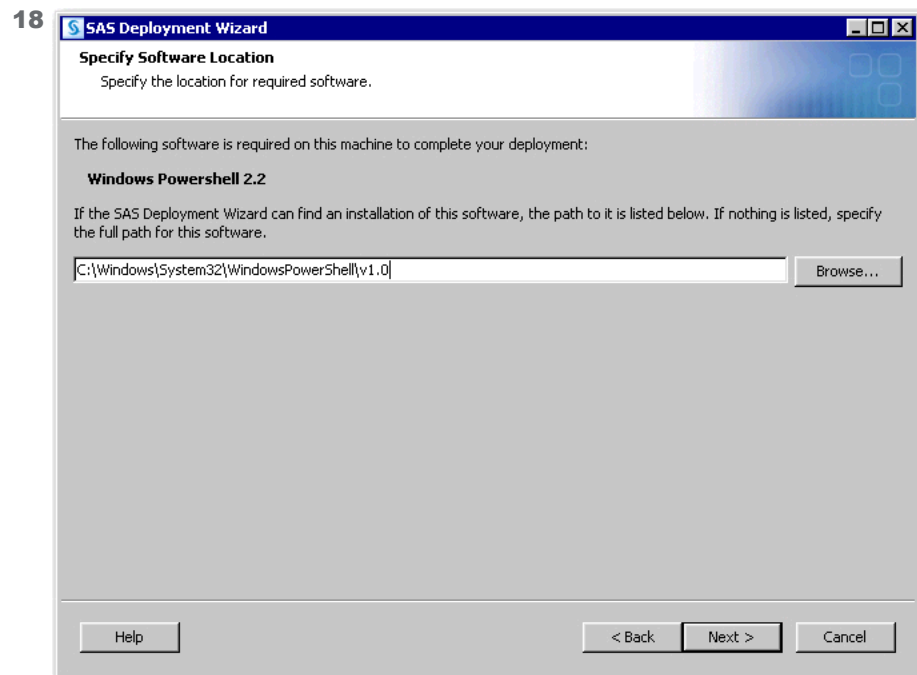
- Review the list of third-party software that is required for the SAS software that you are installing on the current machine. Click **Next**.



#### Specify Software Location

- Click **Next**.

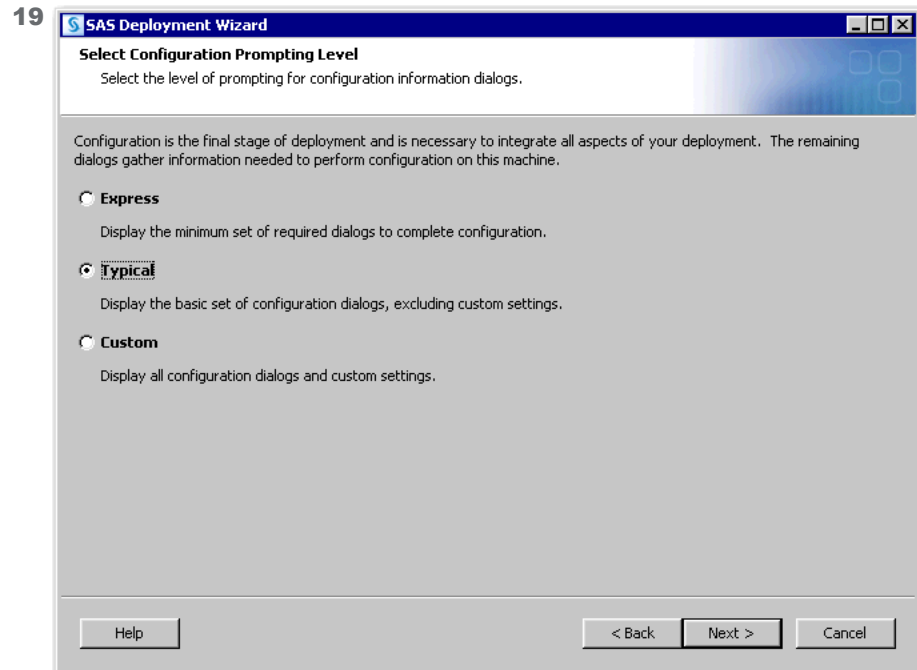
If the path is incorrect, the wizard does not proceed. In this case, enter the correct path where the third-party software is installed that you recorded in [Table 1.2 on page 12](#). Click **Next**.



#### Specify Software Location

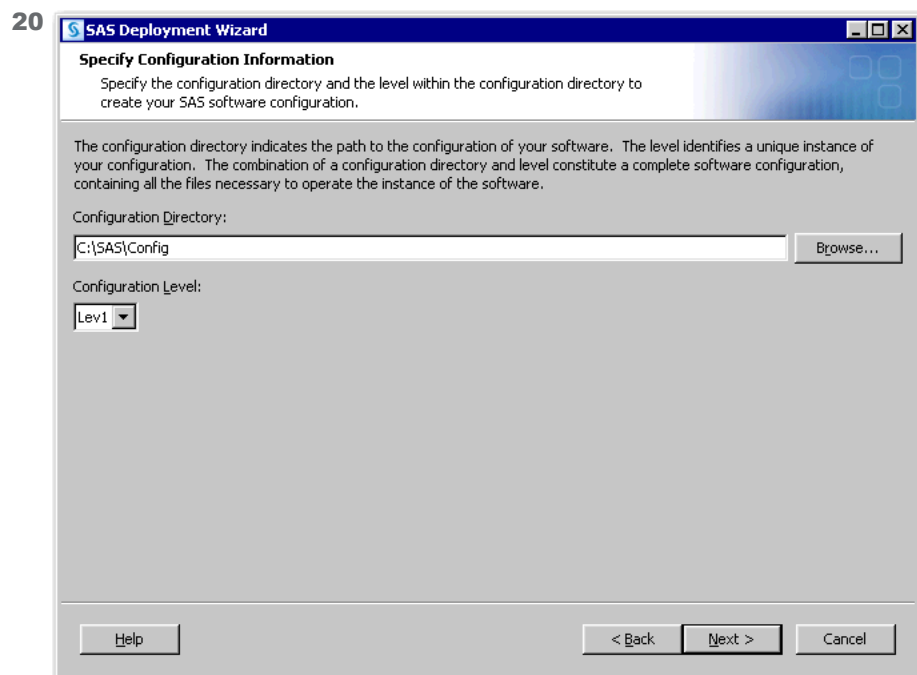
- Click **Next**.

If the path is incorrect, the wizard does not proceed. In this case, enter the correct path where the third-party software is installed that you recorded in [Table 1.2 on page 12](#). Click **Next**.



### Select Configuration Prompting Level

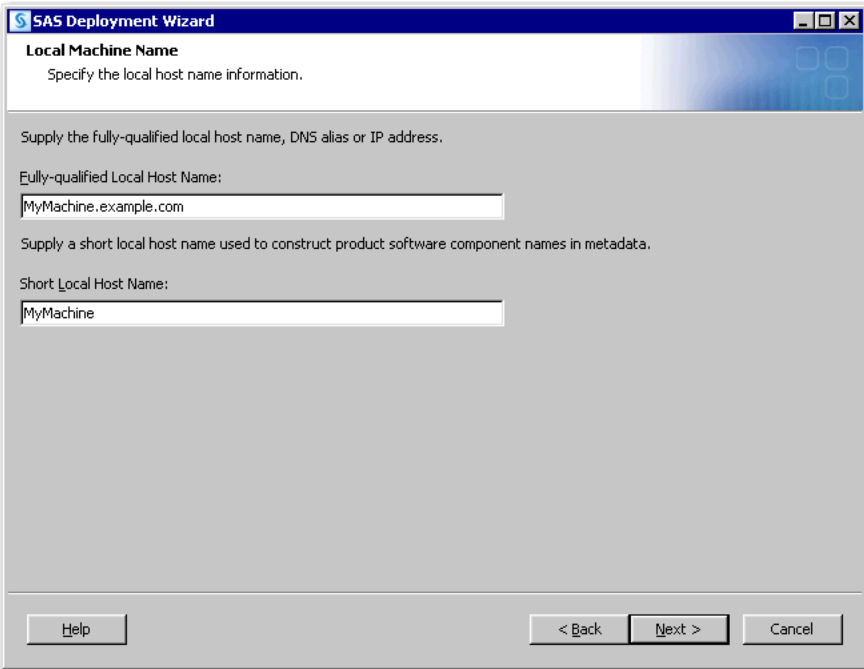
- Make sure that **Typical** is selected, and click **Next**.



### Specify Configuration Information

- Do not change the default information that is displayed on this page, unless you want the SASConfigdir to reside in a location different folder. Click **Next**.

21

The screenshot shows the 'Local Machine Name' step of the SAS Deployment Wizard. The window title is 'SAS Deployment Wizard'. The main heading is 'Local Machine Name' with the instruction 'Specify the local host name information.' Below this, a text box labeled 'Fully-qualified Local Host Name:' contains the text 'MyMachine.example.com'. Another text box labeled 'Short Local Host Name:' contains the text 'MyMachine'. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', along with a 'Cancel' button on the far right.

### Local Machine Name

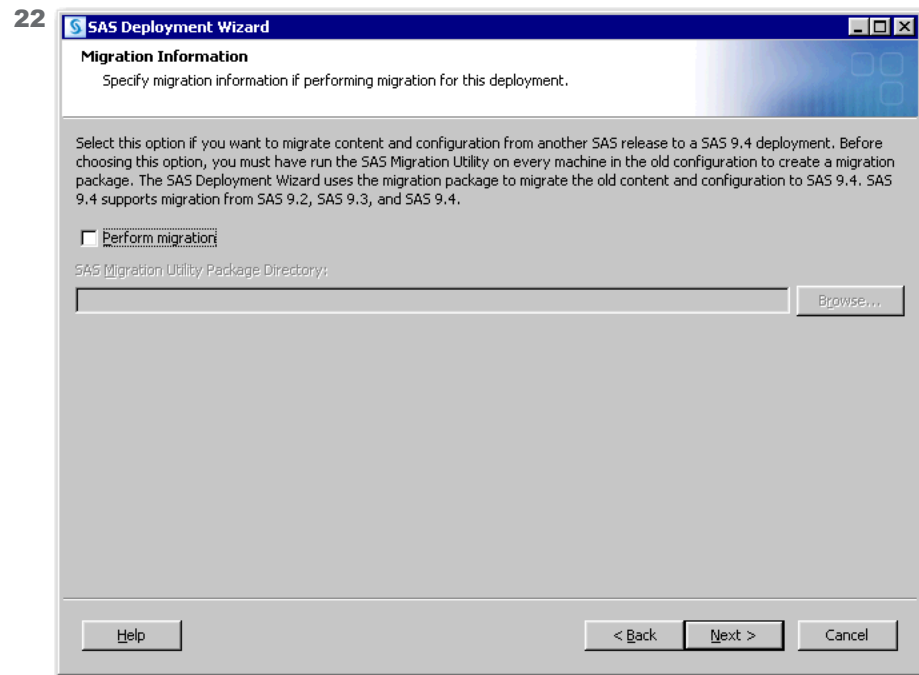
- In **Fully-qualified Local Host Name**, enter the complete name of the local host.

The fully qualified local host name typically takes the form of the local host name plus the domain name server (for example, MyMachine.example.com).

**TIP** If you do not know the domain name server used at your site, check with your system administrator.

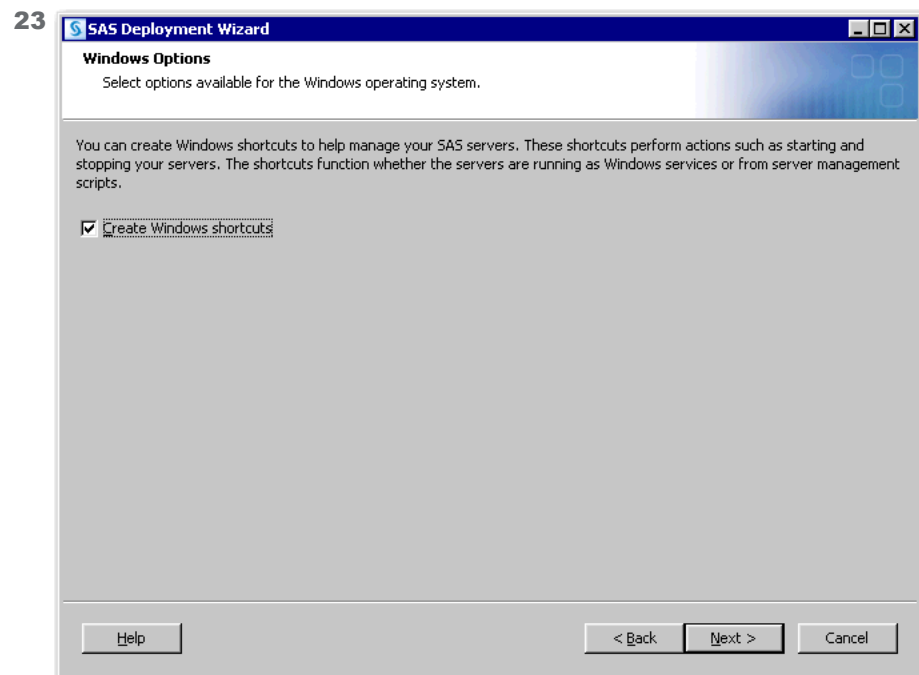
- In **Short Local Host Name**, enter a short host name.

The short local host name is the abbreviated, more common method of referring to the host, usually only a single word (for example, MyMachine).



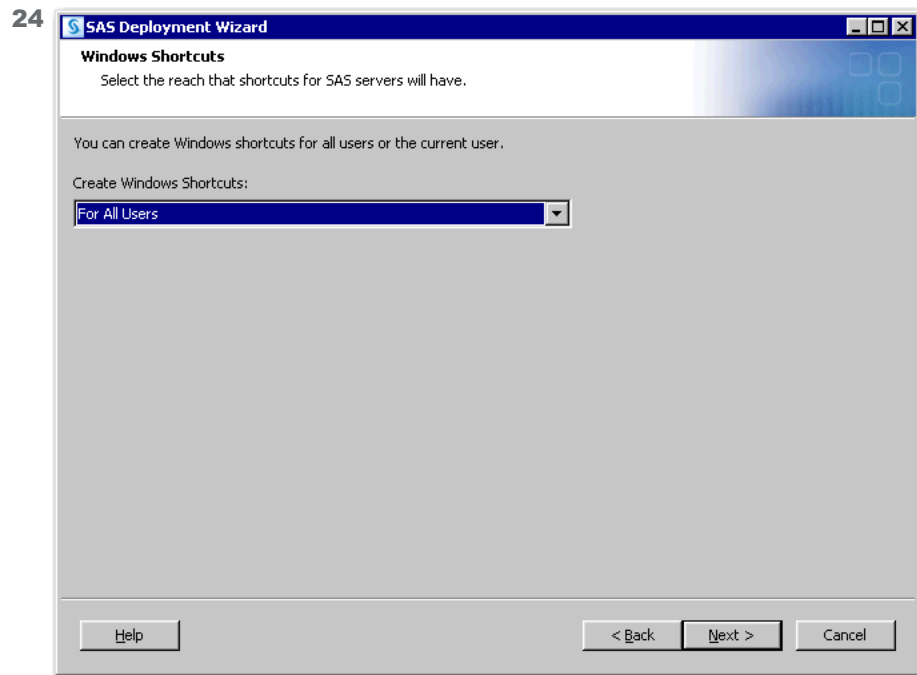
### Migration Information

- Do *not* select **Perform migration**. Click **Next**.



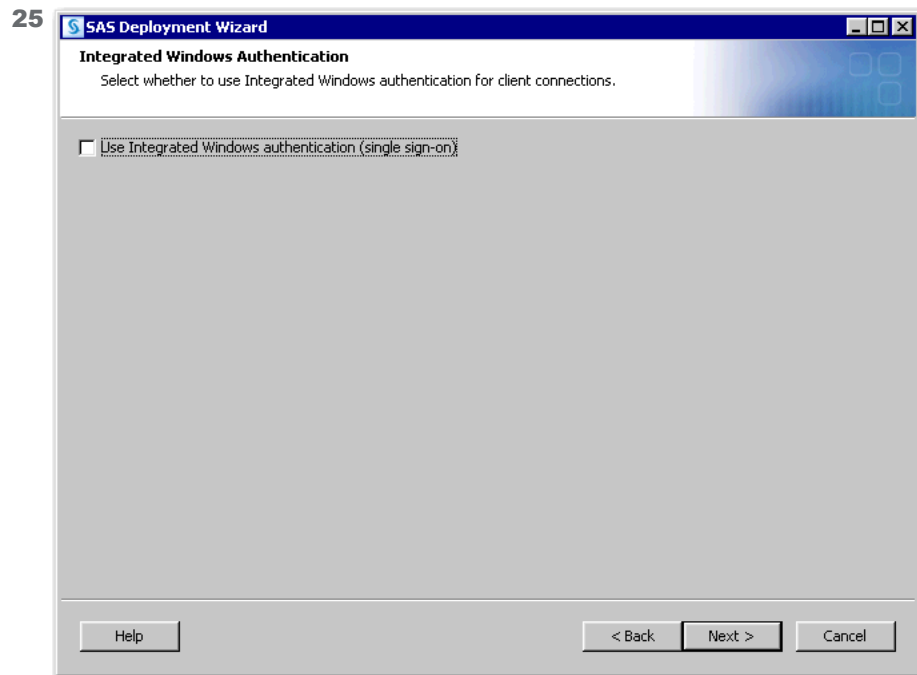
### Windows Options (Windows only)

- Do not change any of the default values displayed on this page. Click **Next**.



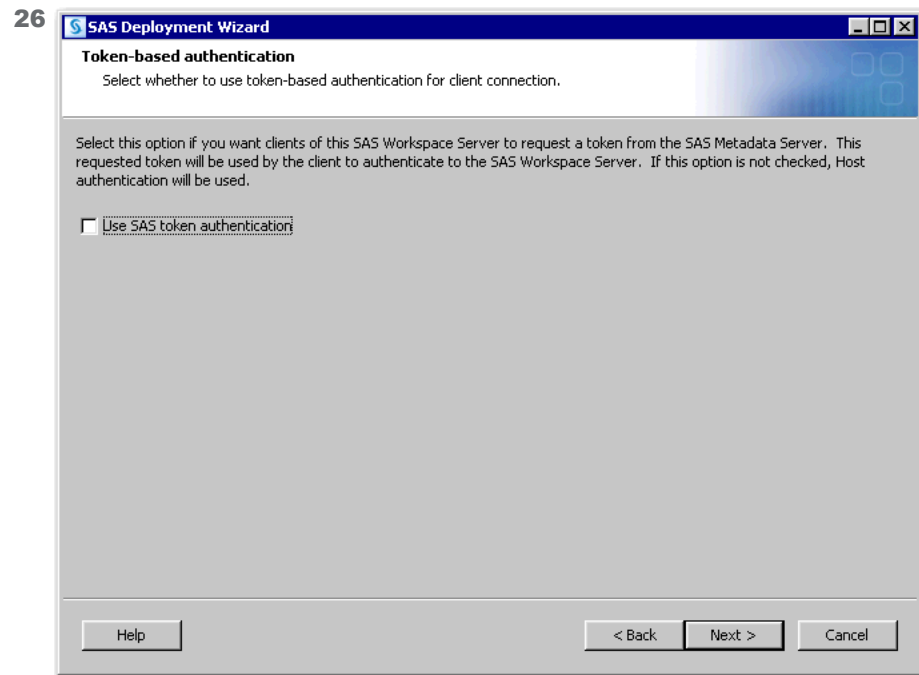
#### Windows Shortcuts (Windows only)

- In **Create Windows Shortcuts**, make sure that **For All Users** is selected. Click **Next**.



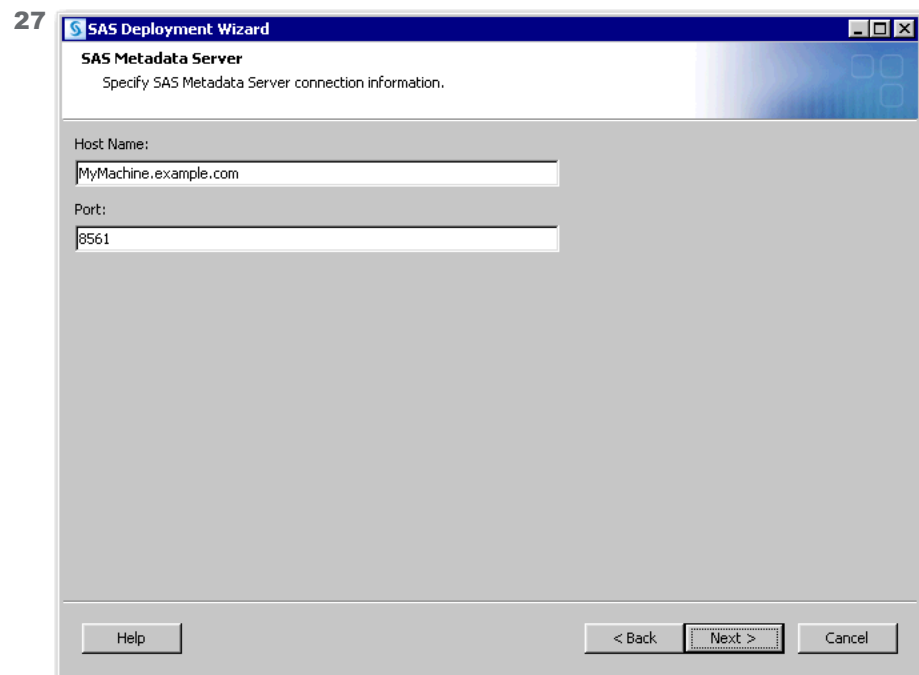
#### Integrated Windows Authentication

- Do *not* select **Use Integrated Windows authentication**, unless your system administrator has already set up Integrated Windows Authentication in your computing environment. Click **Next**.



#### Token Based Authentication

- Do *not* select **Use SAS token authentication**. Click **Next**.

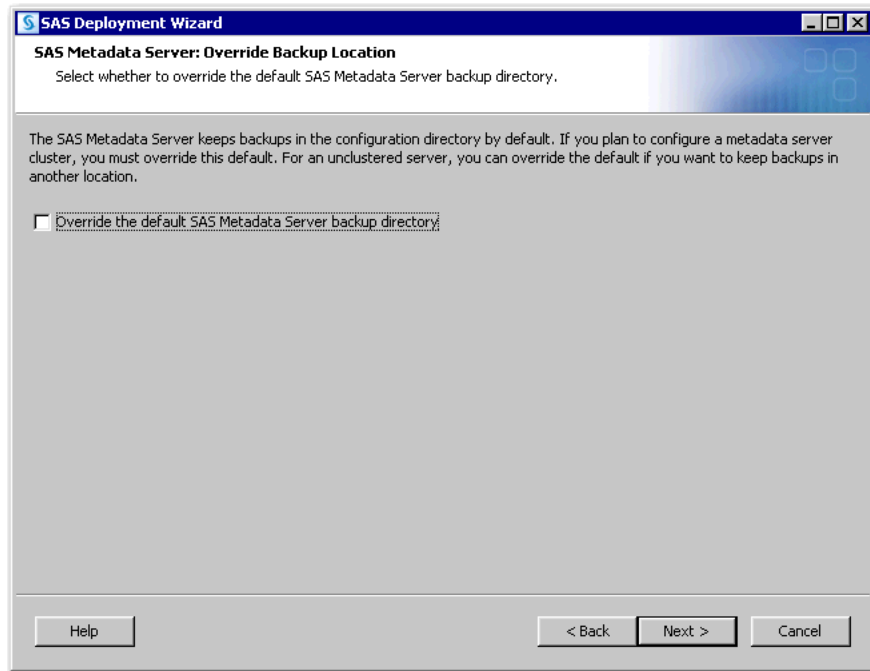


#### SAS Metadata Server

- Do not change the default information that is displayed on this page. Click **Next**.



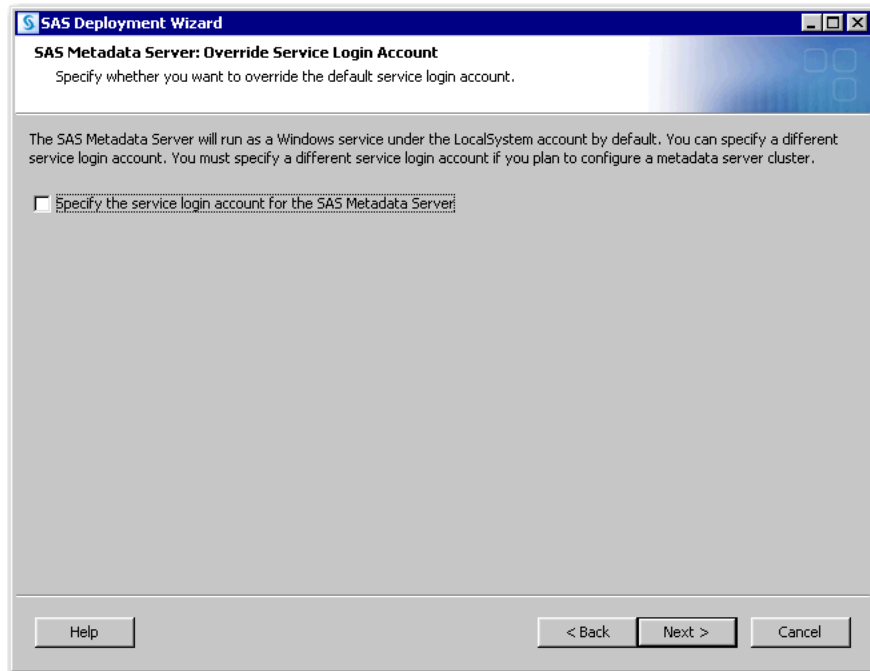
28



#### SAS Metadata Server: Override Backup Location

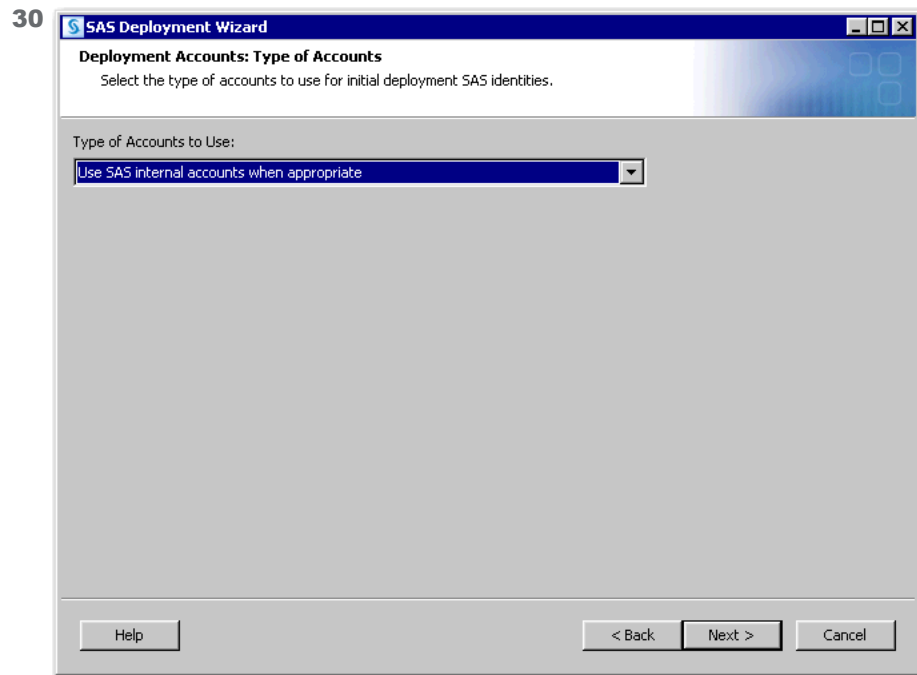
- Do not change the default information that is displayed on this page. Click **Next**.

29



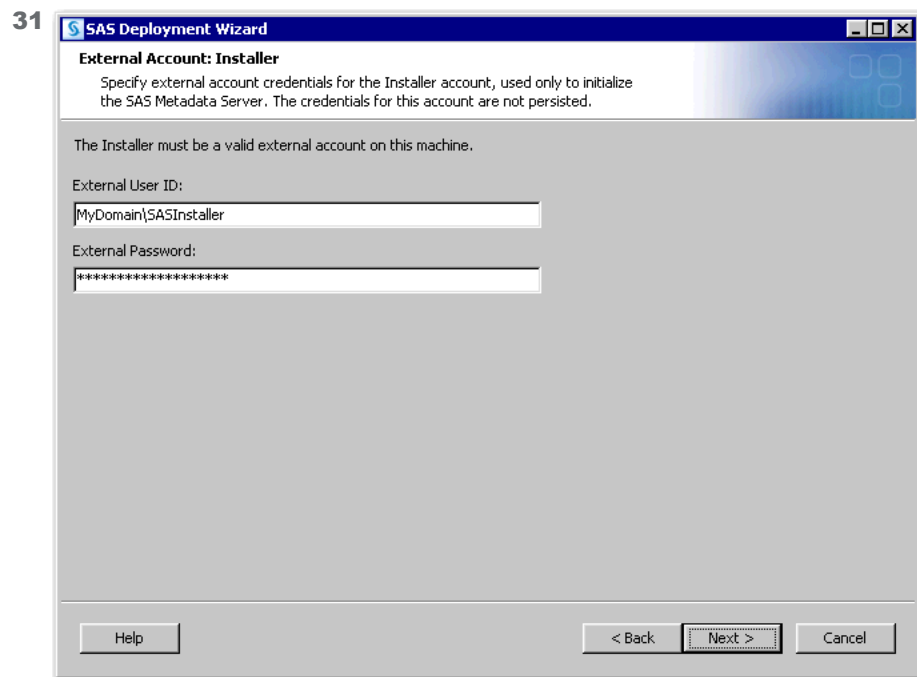
#### SAS Metadata Server: Override Service Login Account (Windows only)

- Do not change the default information that is displayed on this page. Click **Next**.



#### Deployment Accounts: Type of Accounts

- Do not change the default information that is displayed on this page. Click **Next**.

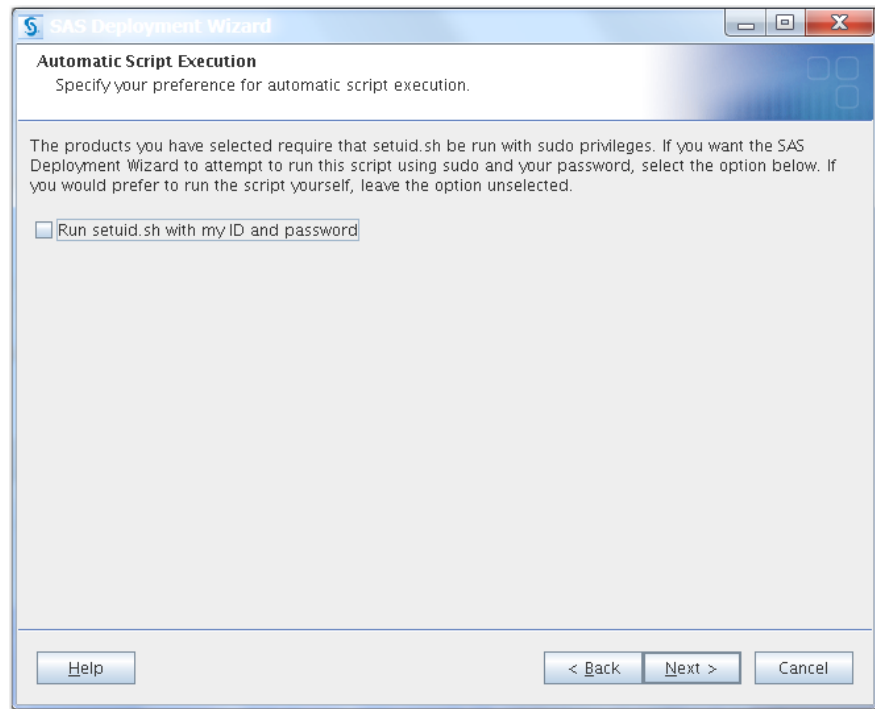


#### External Account: Installer

- In the relevant fields, enter the user ID and password for the Installer account that you are using to install and configure SAS. (This should be the user account under which you are currently logged on.)

Prefix the user ID with either the domain or machine name (for example, *domain\user-ID* or *machine-name\user-ID*). Click **Next**.

32

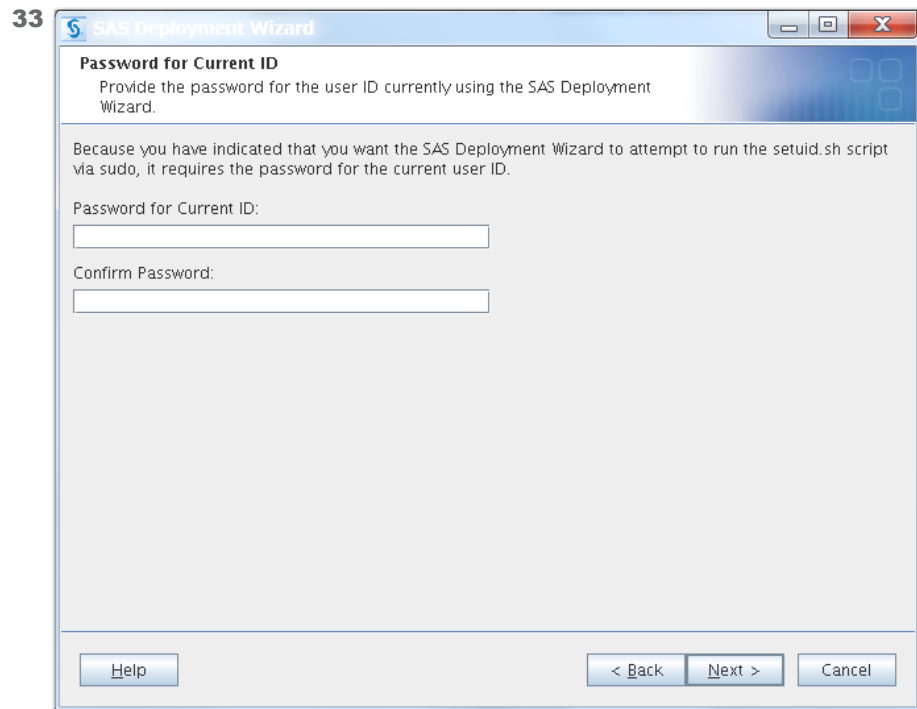


#### Automatic Script Execution (Linux only)

- Select **Run setuid.sh with my ID and password** for the deployment wizard to attempt to run the script with the credentials that you provide.

You see this page on Linux for SAS products that require that you run the `setuid.sh` script with `sudo` privileges. If you select this option, you are asked on a subsequent page for the `sudo` password (if you are deploying a metadata server, you have already provided this information). As it installs your software, the deployment wizard attempts to run the script with the credentials that you provided.

If you do not select this option, you will have to run `setuid.sh` manually during installation (and configuration if you have chosen to configure) is complete. Note that `setuid.sh` must be run as root in order to complete successfully. If you have any concerns with the SAS Deployment Wizard running as root or you do not know the `sudo` information for the machine that you are installing on, you should not select this option. For more information, see [Step 100 on page 66](#).

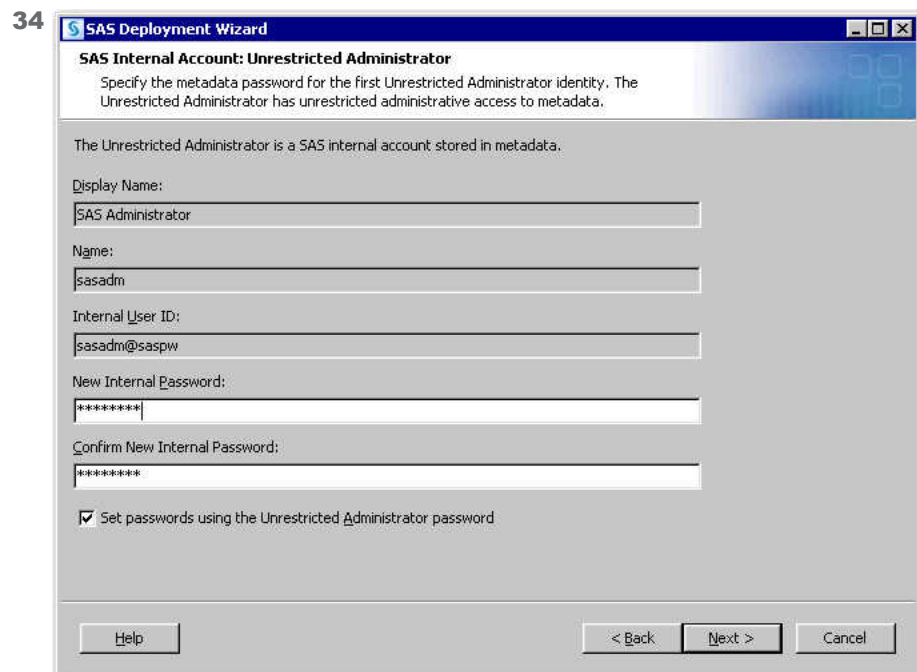


#### Password for Current ID (Linux only)

- In **Password for Current ID**, enter the password for the current user ID.

On Linux, this page appears if you have indicated on the previous page that you want the SAS Deployment Wizard to run the `setuid.sh` script via `sudo`. If you have any concerns about the SAS Deployment Wizard running as root or you do not know the `sudo` information for the machine on which you are installing, you should go back and change your previous selection.

- In **Confirm Password**, re-enter the password.



## SAS Internal Account: Unrestricted Administrator

- Enter and confirm the password that will be used for an internal sasadm@saspw account.

**Note:** Remember and record this password because you will need it in the future.

- Select **Set passwords using the Unrestricted Administrator password** if you want to reuse this password for the internal metadata server accounts and SAS Web Infrastructure Data Server accounts during this deployment.

For more information, see “Reducing the Number of Password Prompts” in the [SAS Visual Analytics: Installation and Configuration Guide \(Distributed SAS LASR\)](#).

- Click **Next**.

35

The screenshot shows the 'SAS Deployment Wizard' window with the title 'SAS Internal Account: Trusted User'. The window contains the following text and fields:

Specify the metadata password for the Trusted User identity. The Trusted User is a privileged service account that can act on behalf of other users on a connection to the metadata server.

The Trusted User is a SAS internal account stored in metadata.

Display Name:  
SAS Trusted User

Name:  
sastrust

Internal User ID:  
sastrust@saspw

New Internal Password:  
\*\*\*\*\*

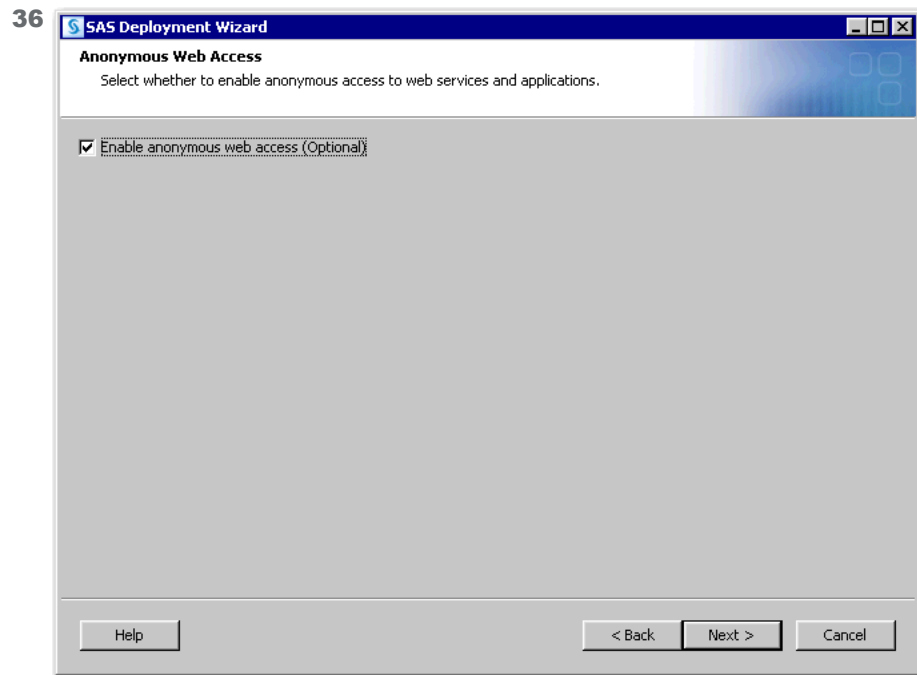
Confirm New Internal Password:  
\*\*\*\*\*

At the bottom, there are three buttons: 'Help', '< Back', and 'Next >' (which is highlighted), and a 'Cancel' button.

## SAS Internal Account: Trusted User

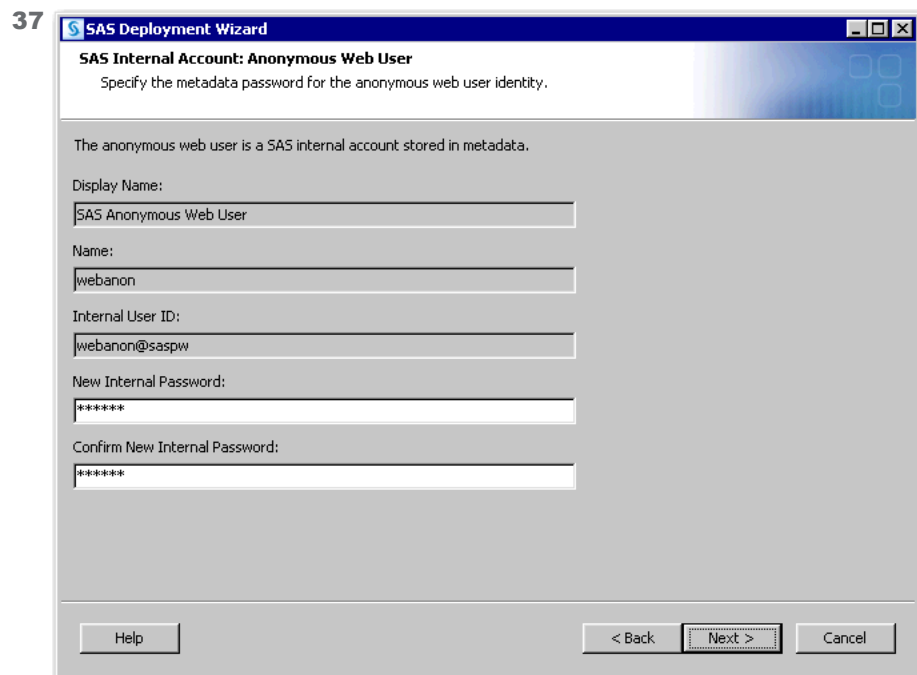
- Enter and confirm the password that will be used for the internal sastrust@saspw account. Click **Next**.

**Note:** Remember this password as you will need it in the future.



### Anonymous Web Access

- Make sure that **Enable anonymous web access** is selected. Click **Next**.



### SAS Internal Account: Anonymous Web User

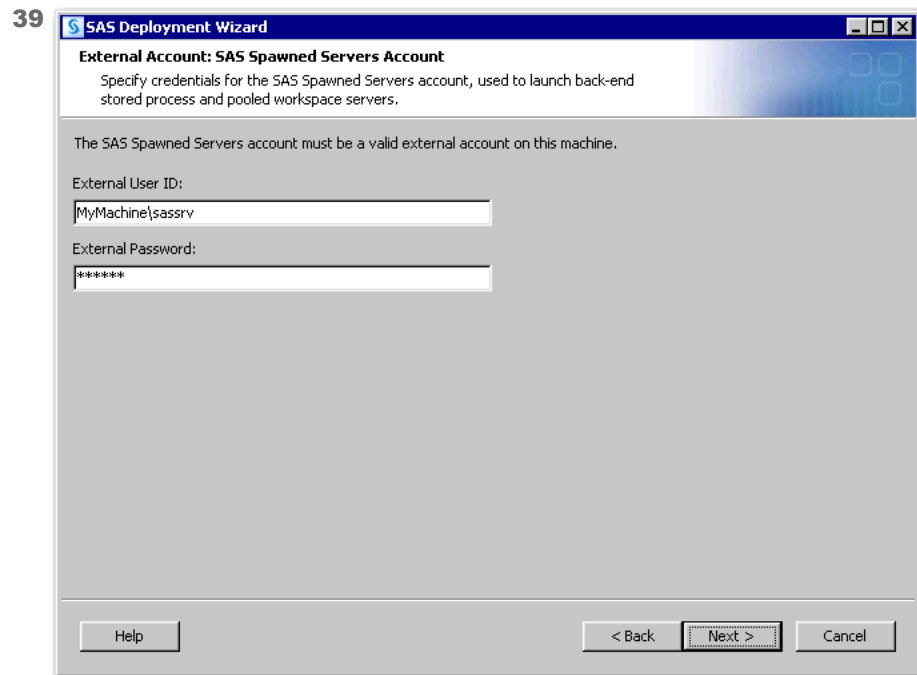
- Enter and confirm the password that will be used for an internal webanon@saspw account. Click **Next**.

**Note:** Remember this password as you will need it in the future.



#### SAS Visual Analytics: Allow Guest Access

- Do not change any of the default values displayed on this page. Click **Next**.

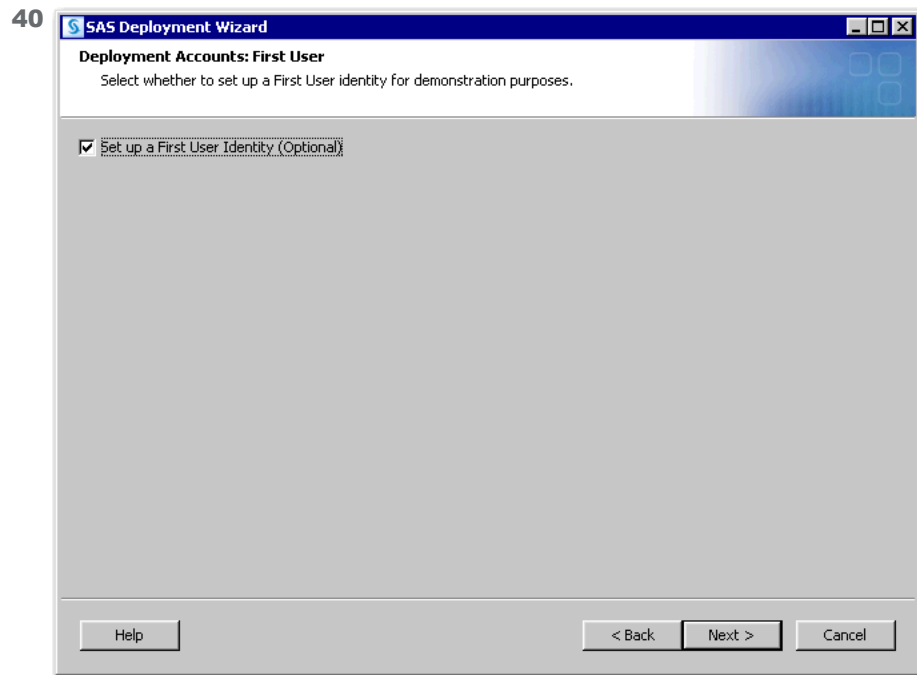


#### External Account: SAS Spawnd Servers Account

- In the relevant fields, enter the user ID and password for the SAS Spawnd Servers account.

**Note:** Remember this password as you will need it in the future.

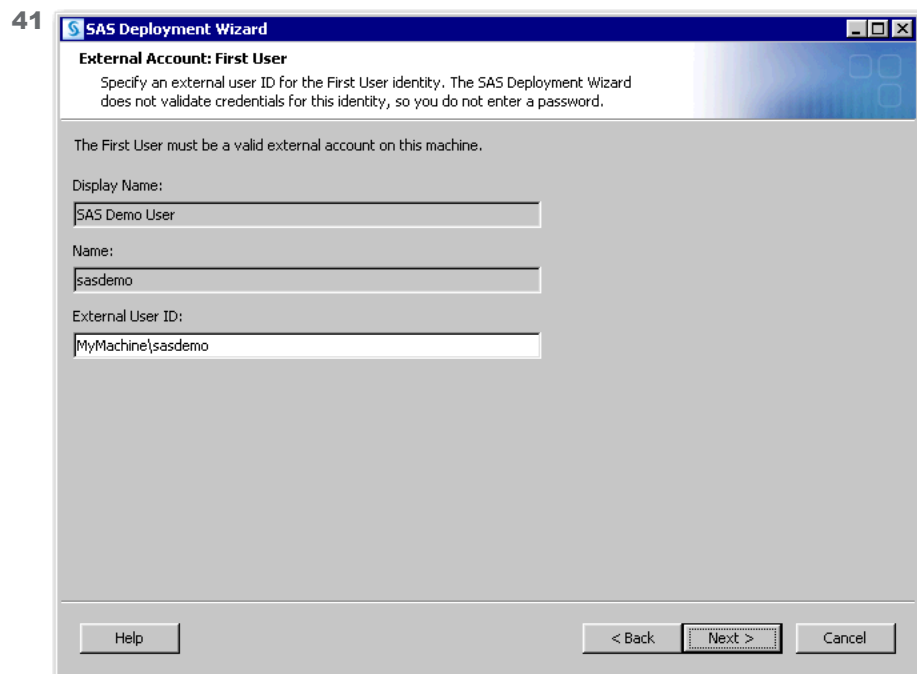
Prefix the user ID with either the domain or machine name (for example, *domain\user-ID* or *machine-name\user-ID*). Click **Next**.



#### Deployment Accounts: First User

- Select **Set up a First User Identity**. Click **Next**.

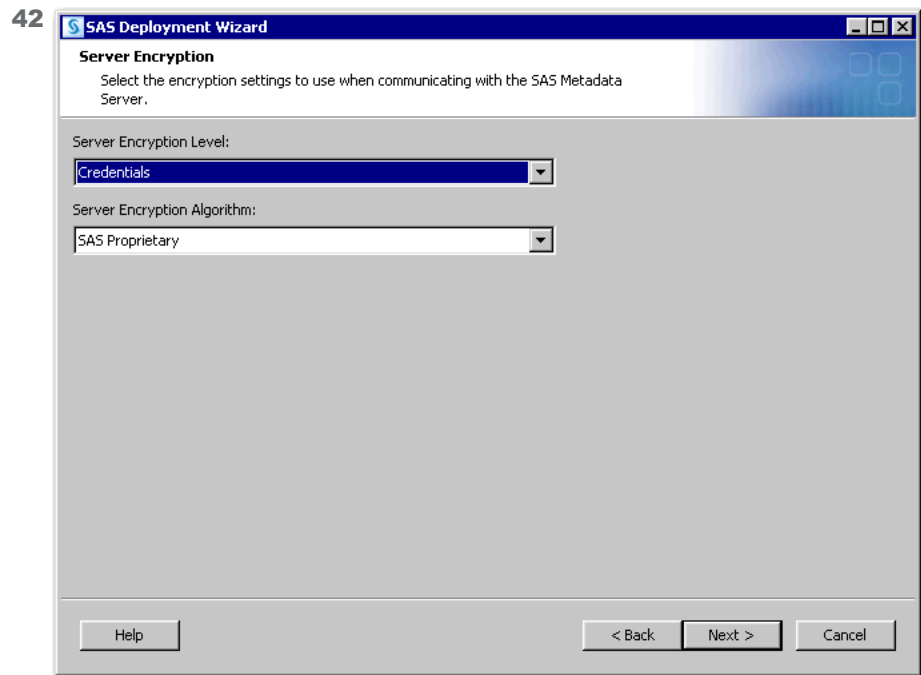
The SAS First User account, which is often referred to as `sasdemo`, is used for demonstration purposes. Although it is not required, the SAS First User account can be used to validate your deployment.



#### External Account: First User

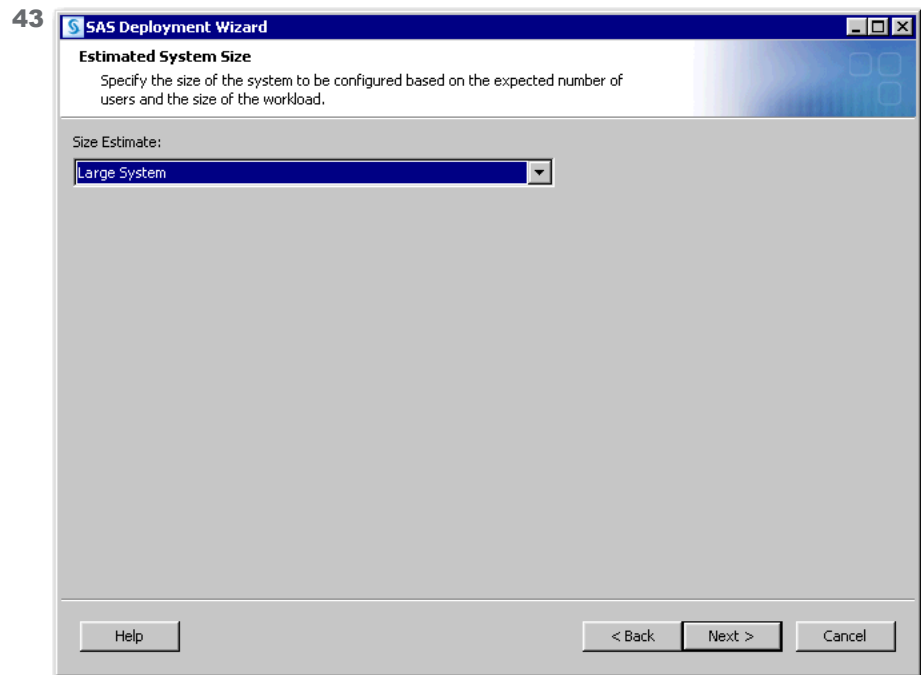
- In **External User ID**, enter the user ID for the SAS First User account. Prefix the user ID with either the domain or machine name (for example, `domain\user-ID` or `machine-name\user-ID`). Click **Next**.





### Server Encryption

- Do not change the default information that is displayed on this page. Click **Next**.



### Estimated System Size

- In **Size Estimate**, select **Large System**, and click **Next**.

For more information, see [“Initial Sizing and Tuning Configuration Options for Deployments” in SAS Web Applications: Tuning for Performance and Scalability](#).

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**SAS Deployment Wizard**

**E-mail Server**  
Specify e-mail server information.

An unauthenticated SMTP e-mail server is used to send alert e-mail messages when the SAS Metadata Server encounters problems.

Host Name:  
mailhost.example.com

Port:  
25

Help < Back Next > Cancel

#### E-mail Server

- In **Host Name**, enter the host name for an SMTP e-mail server at your site. SAS uses this server to send e-mail alerts for system-related issues to an administrator. Click **Next**.

**TIP** If you do not know the name of the SMTP e-mail server at your site, check with your system administrator.

45

**SAS Deployment Wizard**

**E-mail Addresses**  
Specify the e-mail addresses that will be used when communicating with the system administrator.

Sender E-mail Address:  
noreply@mailhost.fyi.sas.com

Recipient E-mail Address:  
admin@example.com

Specify whether your e-mail server requires authentication. You will be prompted for e-mail server credentials if you select this option.

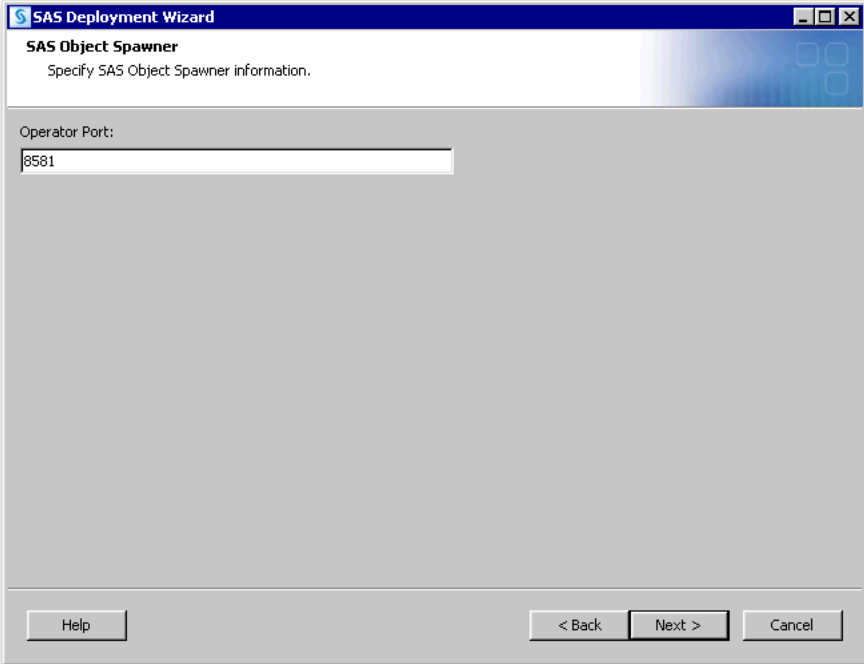
☐ E-mail server requires authentication

Help < Back Next > Cancel

## E-mail Addresses

- In **Recipient E-mail Address**, enter a valid e-mail address that the SAS can use to send e-mail alerts for system-related issues. Click **Next**.

46

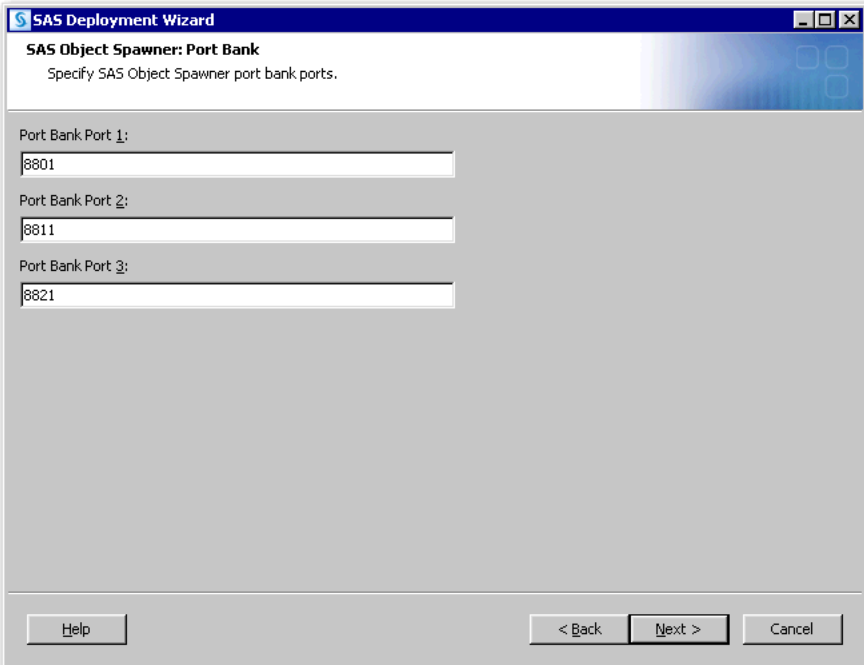


The screenshot shows the 'SAS Deployment Wizard' window with the 'SAS Object Spawner' tab selected. The subtitle is 'Specify SAS Object Spawner information.' There is a single text input field labeled 'Operator Port:' containing the value '8581'. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

## SAS Object Spawner

- Do not change the default information that is displayed on this page. Click **Next**.

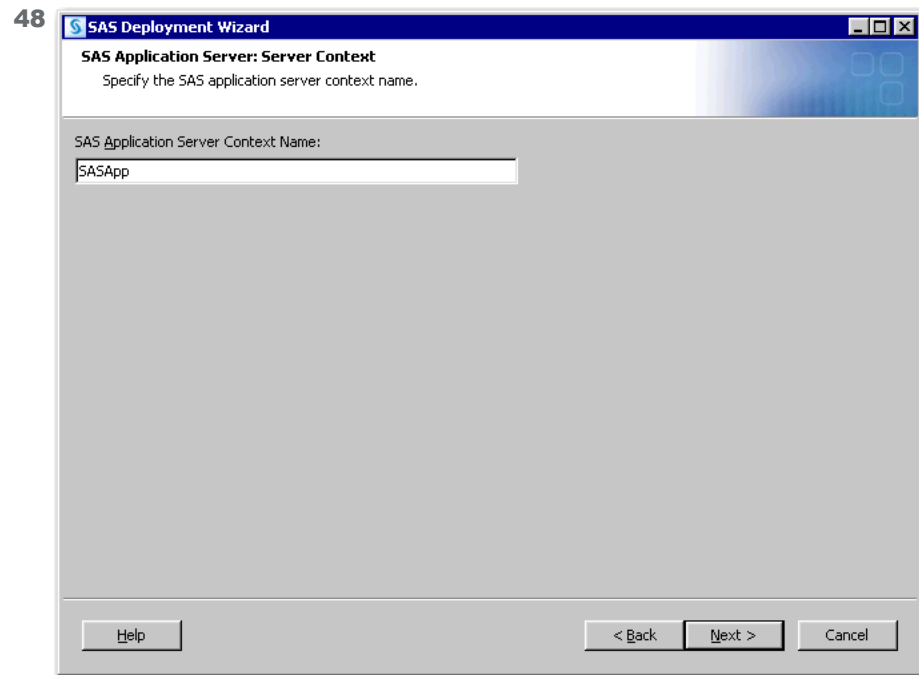
47



The screenshot shows the 'SAS Deployment Wizard' window with the 'SAS Object Spawner: Port Bank' tab selected. The subtitle is 'Specify SAS Object Spawner port bank ports.' There are three text input fields: 'Port Bank Port 1:' with '8801', 'Port Bank Port 2:' with '8811', and 'Port Bank Port 3:' with '8821'. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

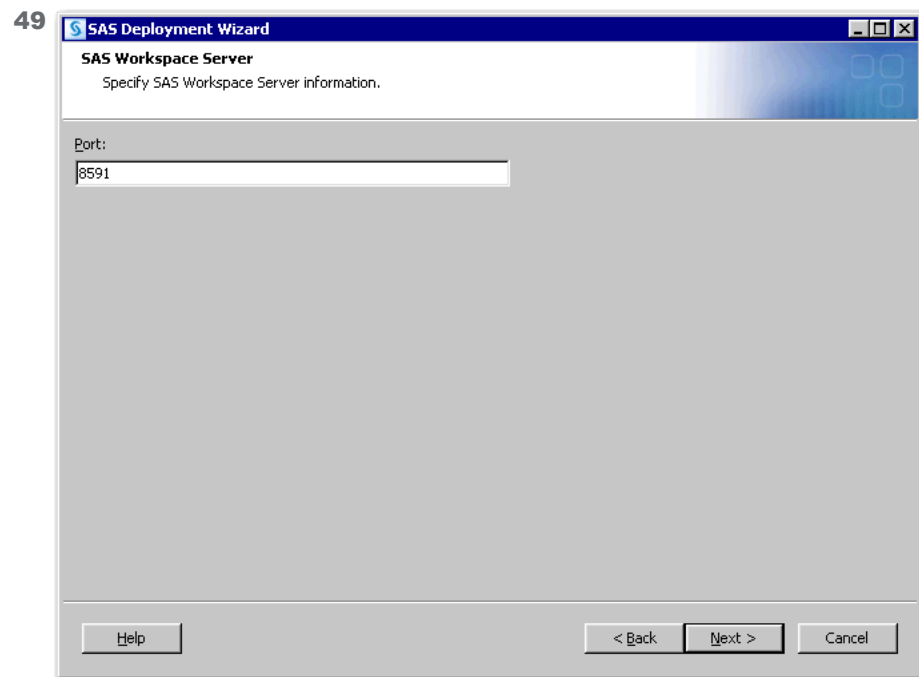
## SAS Object Spawner: Port Bank

- Do not change the default information that is displayed on this page. Click **Next**.



#### SAS Application Server: Server Context

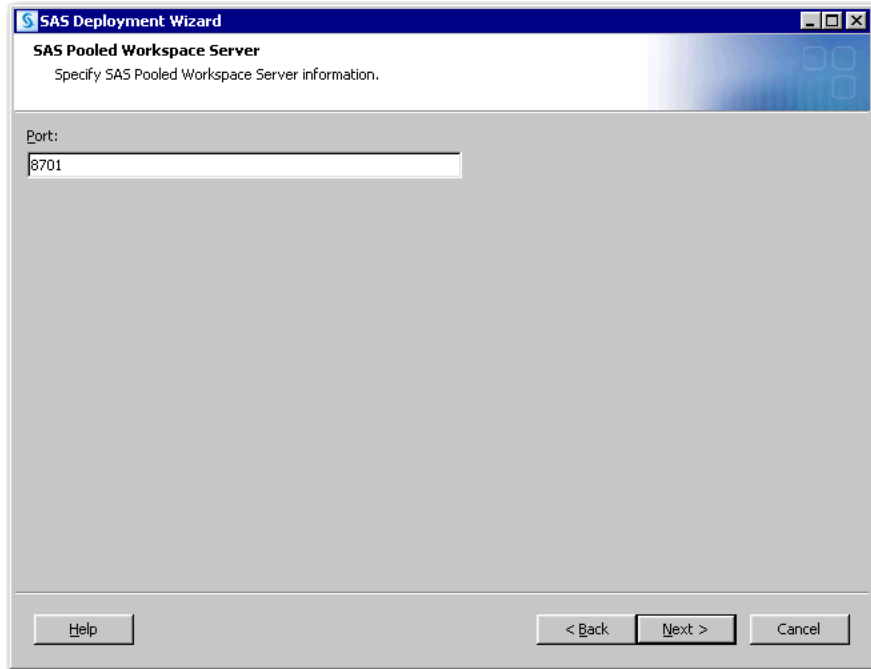
- Do not change the default information that is displayed on this page. Click **Next**.



#### SAS Workspace Server

- Do not change the default information that is displayed on this page. Click **Next**.

50

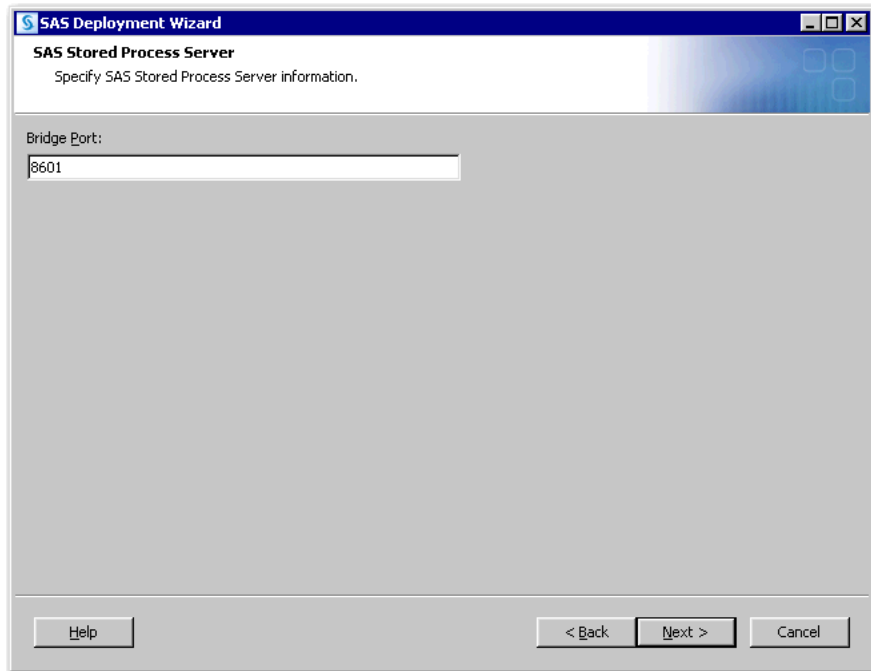


The screenshot shows the 'SAS Deployment Wizard' window with the title 'SAS Pooled Workspace Server'. Below the title bar, it says 'Specify SAS Pooled Workspace Server information.' There is a text input field labeled 'Port:' containing the value '8701'. At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

#### SAS Pooled Workspace Server

- Do not change the default information that is displayed on this page. Click **Next**.

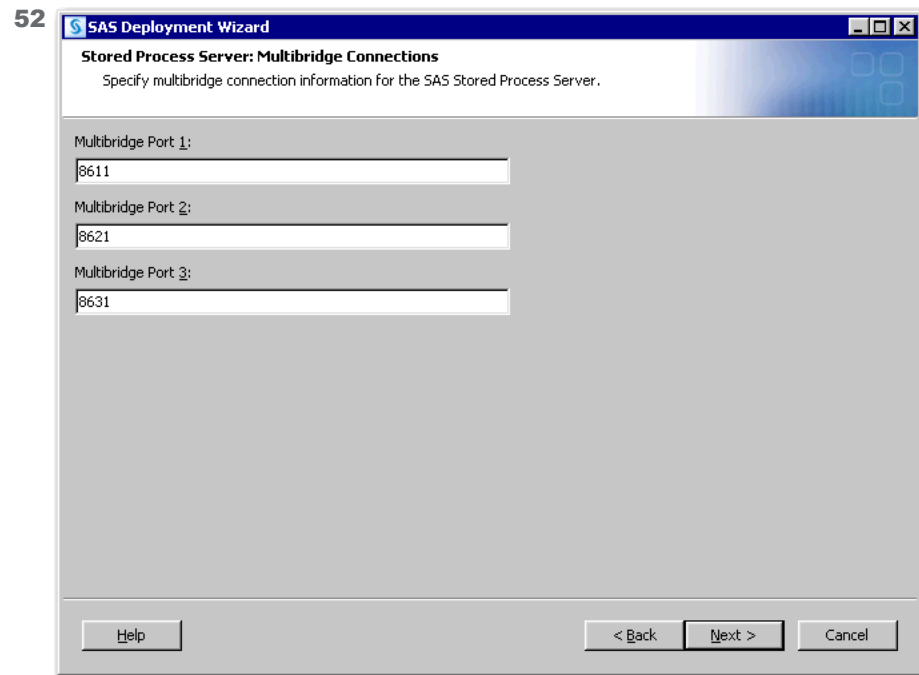
51



The screenshot shows the 'SAS Deployment Wizard' window with the title 'SAS Stored Process Server'. Below the title bar, it says 'Specify SAS Stored Process Server information.' There is a text input field labeled 'Bridge Port:' containing the value '8601'. At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

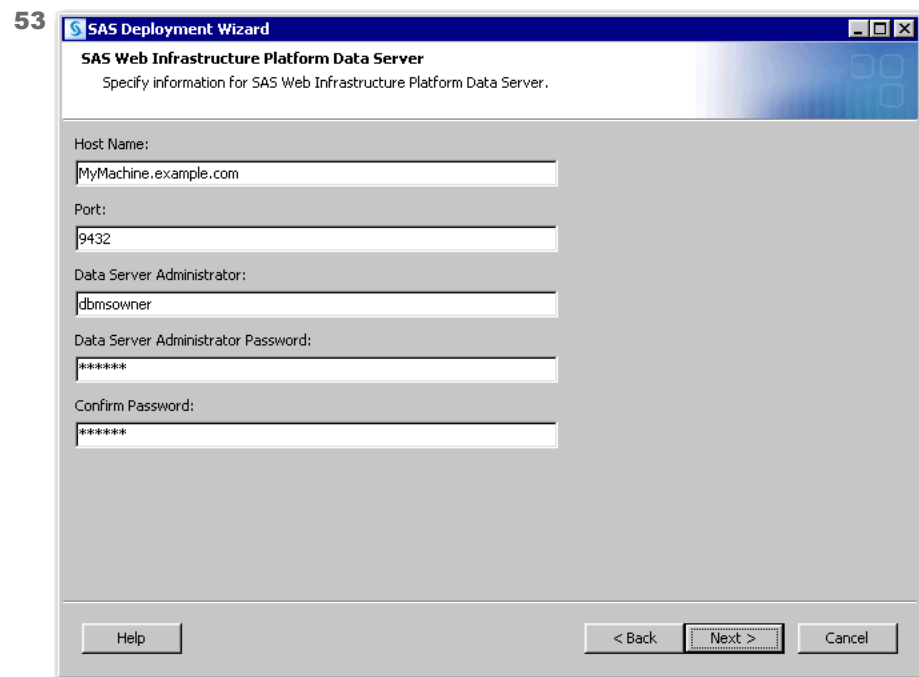
#### SAS Stored Process Server

- Do not change the default information that is displayed on this page. Click **Next**.



### SAS Stored Process Server: Multibridge Connections

- Do not change the default information that is displayed on this page. Click **Next**.

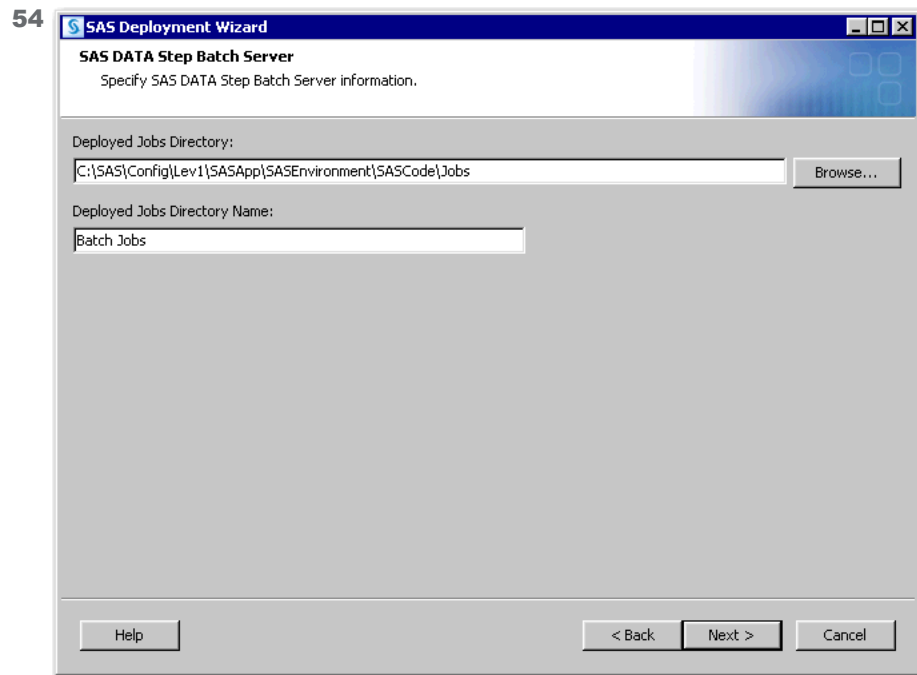


### SAS Web Infrastructure Platform Data Server

- Enter and confirm a password that SAS will create for the dbmsowner user ID. Click **Next**.

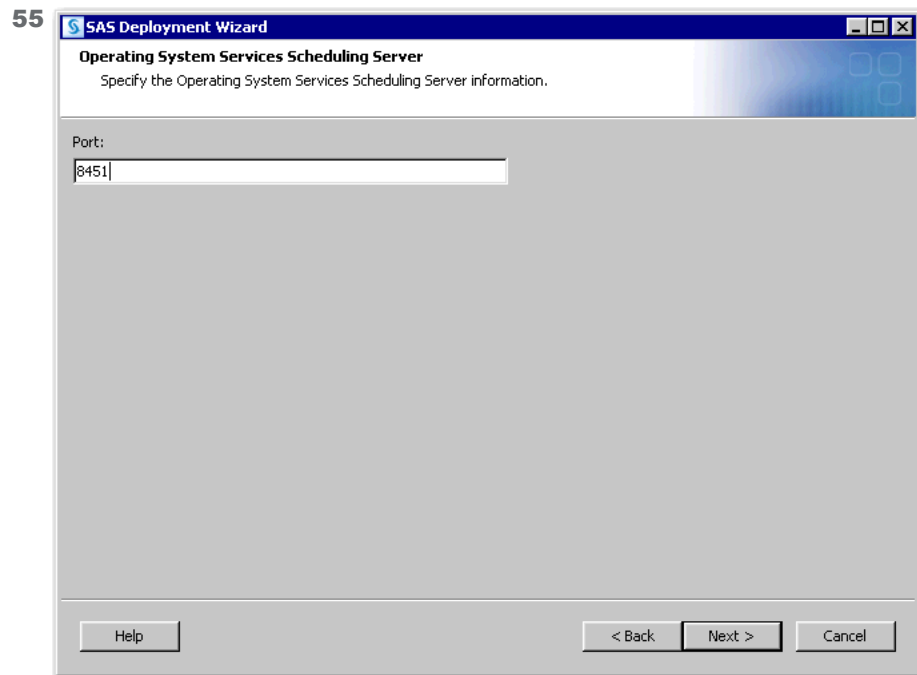
**Note:** Remember this password as you will need it in the future.

- Do not change the default information that is displayed on this page.



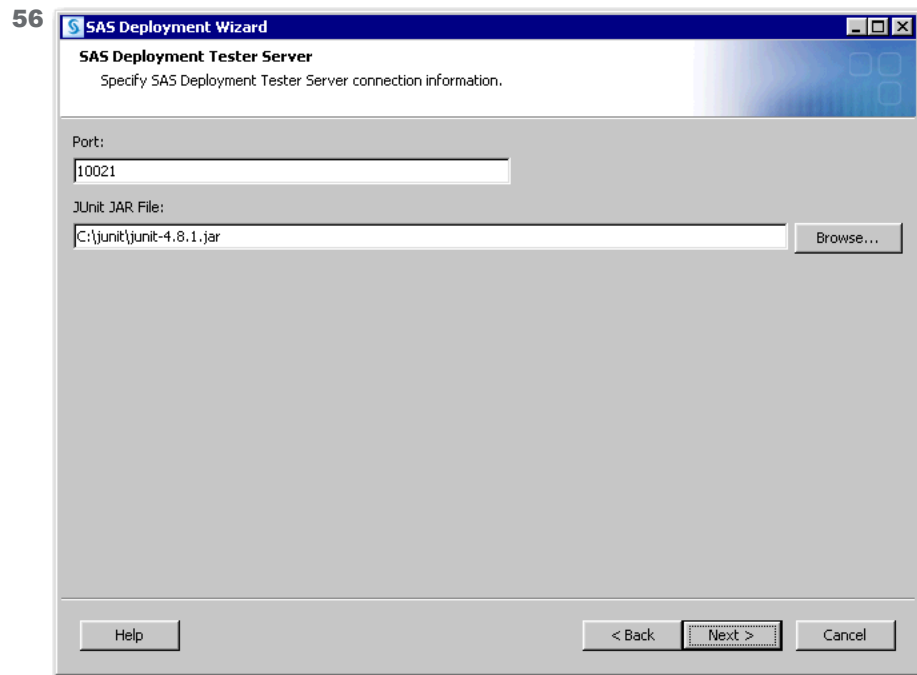
#### SAS DATA Step Batch Server

- Do not change the default information that is displayed on this page. Click **Next**.



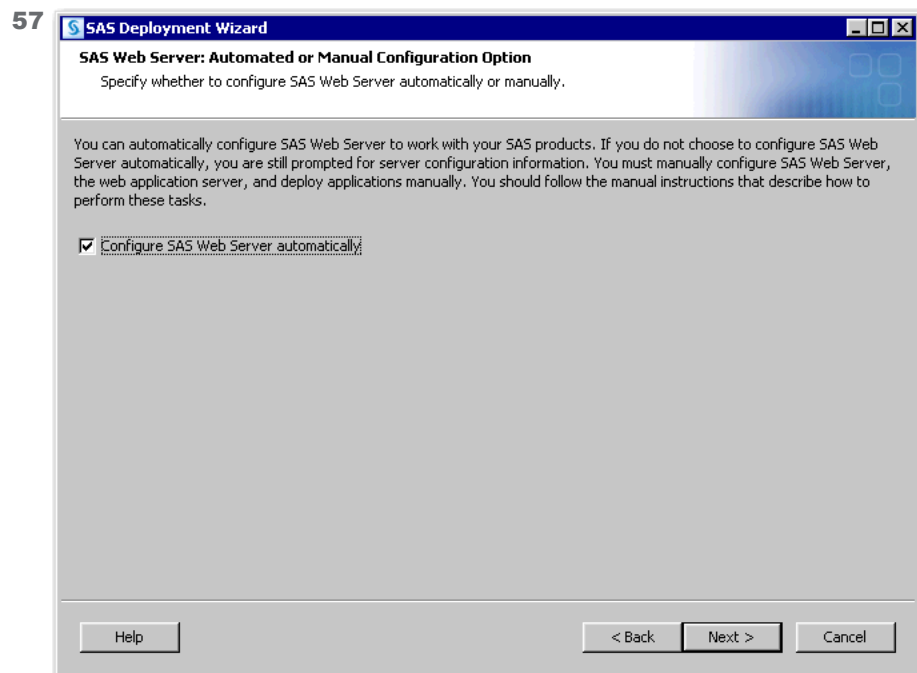
#### Operating System Services Scheduling Server

- Do not change the default information that is displayed on this page. Click **Next**.



#### SAS Deployment Tester Server

- Do not change the default port information that is displayed on this page.
- In **JUnit JAR File**, enter the JAR file path (for example, `c:\junit\junit-4.8.1.jar`) or click **Browse** to select it. Click **Next**.



#### SAS Web Server: Automated or Manual Configuration Option

- Do not change the default information that is displayed on this page. Click **Next**.



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**SAS Deployment Wizard**

**SAS Web Server: Configuration**  
Specify SAS Web Server configuration options.

If you are using a UNIX system and you specify ports lower than 1024 in the fields below, you must restart your server manually outside of the SAS Deployment Wizard as root.

HTTP Port:  
80

HTTPS Port:  
443

Configured Protocol:  
HTTP Protocol

Administrator Mail Address:  
admin@example.com

Buttons: Help, < Back, Next >, Cancel

### SAS Web Server: Configuration

- Do not change the default information that is displayed on this page. Click **Next**.

59

**SAS Deployment Wizard**

**SAS Web Server: Server Process for Handling Responses**  
Specify the User and Group that the web server uses for processes that respond to requests. This user must not be root.

User Name:  
sassrv

Group Name:  
sas

Buttons: Help, < Back, Next >, Cancel

### SAS Web Server: Server Process for Handling Responses (Linux only)

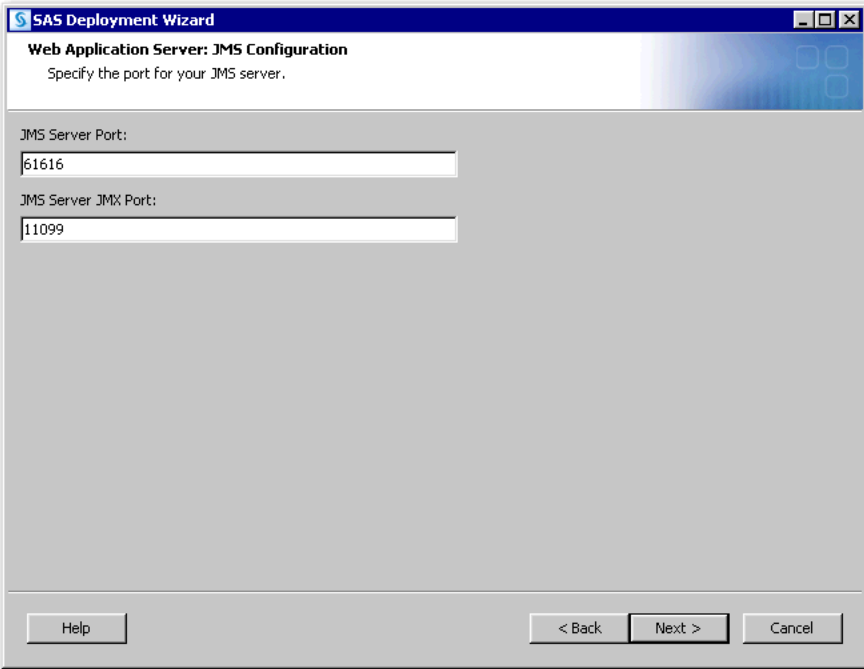
- In **User Name**, enter the host system user name for the HTTPD response processes. Do not use the numeric user ID.

On Linux, when the HTTPD listener process is run as root, it forks a set of child processes that handle the requests and respond to the client. For

security reasons, these child processes must run with a more limited user ID and group ID.

- In **Group Name**, enter the host system group name for the HTTPD response processes. Do not use the numeric group ID.

60



SAS Deployment Wizard

Web Application Server: JMS Configuration

Specify the port for your JMS server.

JMS Server Port:  
61616

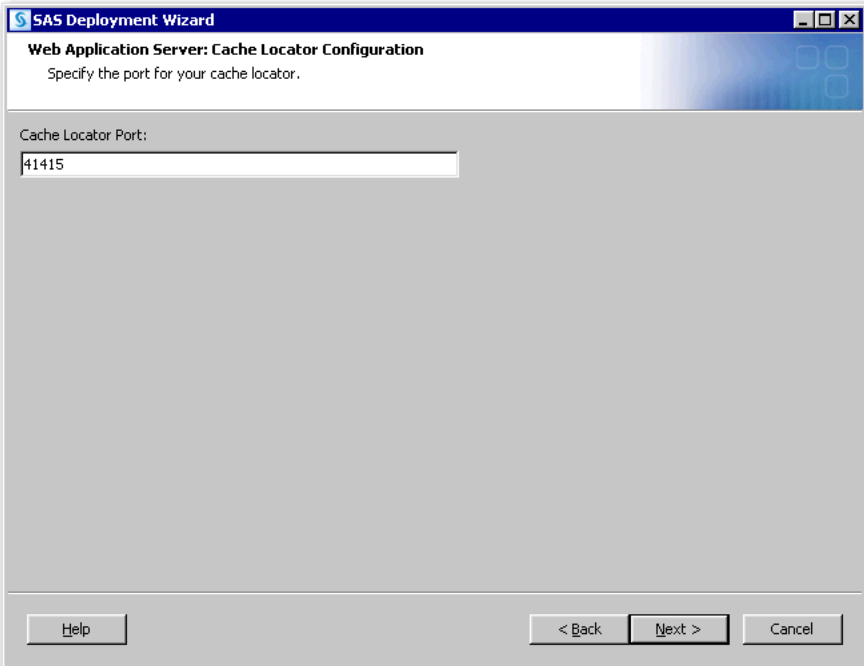
JMS Server JMX Port:  
11099

Help < Back Next > Cancel

#### SAS Web Application Server: JMS Configuration

- Do not change the default information that is displayed on this page. Click **Next**.

61



SAS Deployment Wizard

Web Application Server: Cache Locator Configuration

Specify the port for your cache locator.

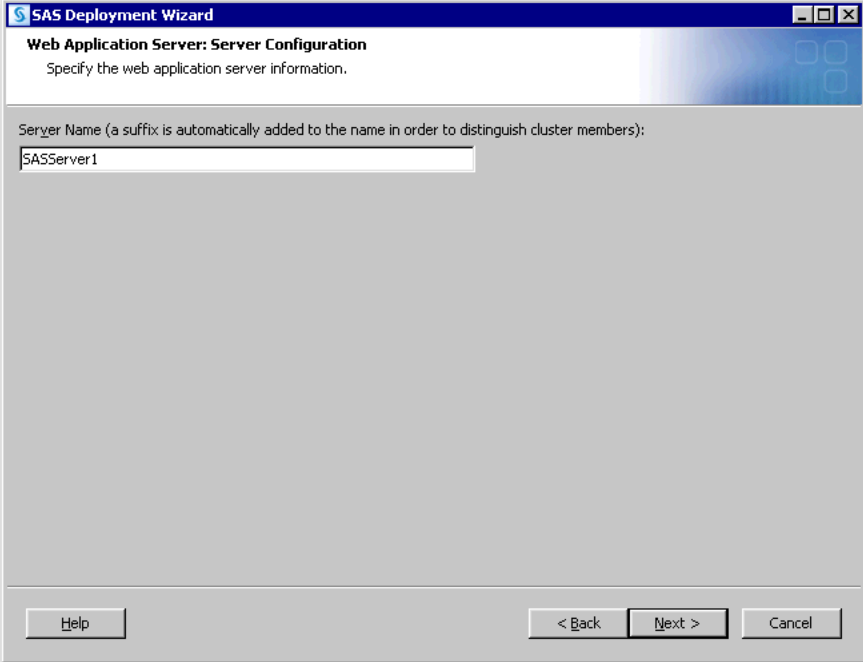
Cache Locator Port:  
41415

Help < Back Next > Cancel

## SAS Web Application Server: Cache Locator Configuration

- Do not change the default information that is displayed on this page. Click **Next**.

62

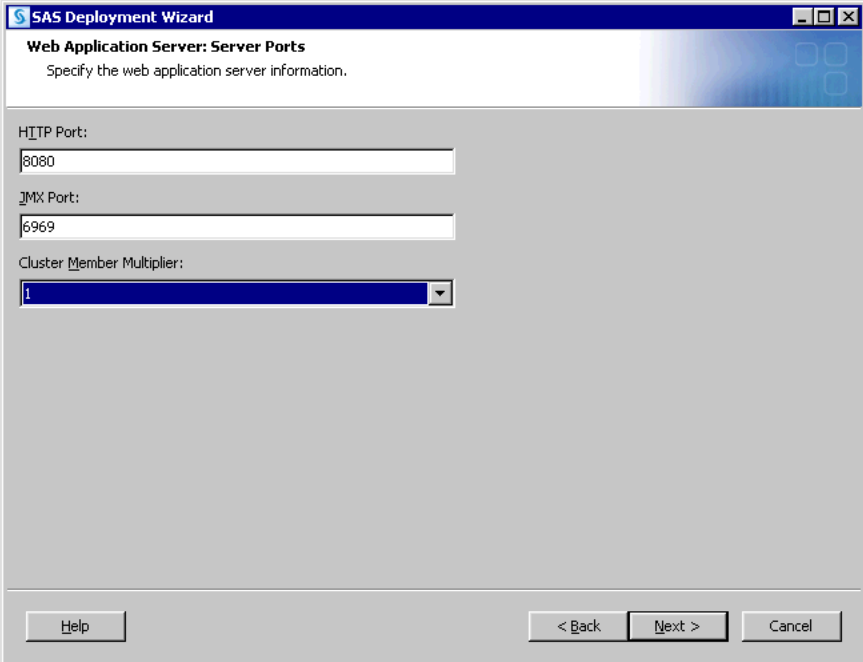


The screenshot shows the 'SAS Deployment Wizard' window with the title 'Web Application Server: Server Configuration'. Below the title bar, it says 'Specify the web application server information.' The main area contains a label 'Server Name (a suffix is automatically added to the name in order to distinguish cluster members):' followed by a text input field containing 'SASServer1'. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

## SAS Web Application Server: Server Configuration

- Do not change the default information that is displayed on this page. Click **Next**.

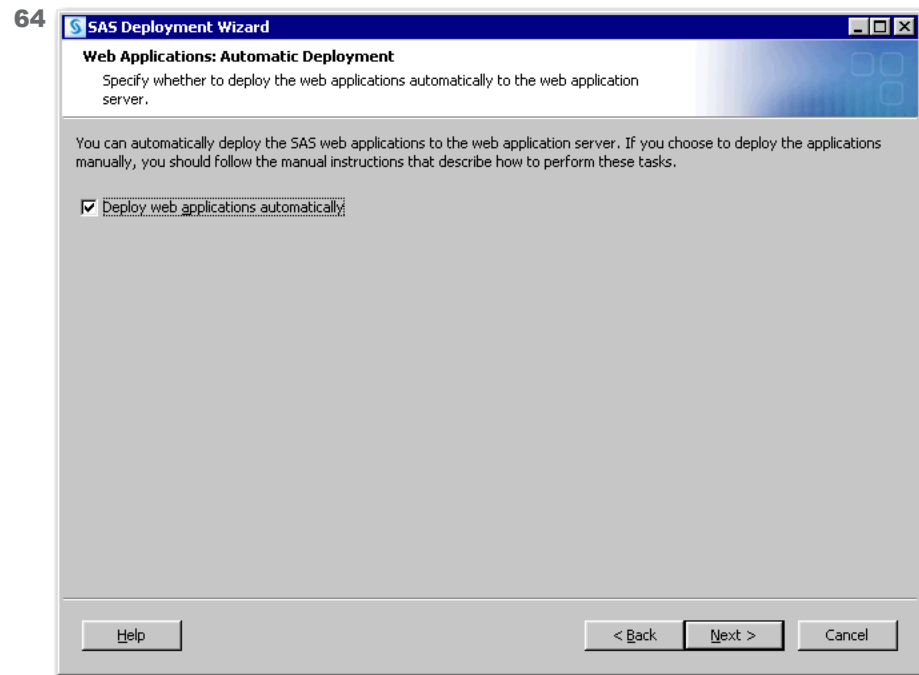
63



The screenshot shows the 'SAS Deployment Wizard' window with the title 'Web Application Server: Server Ports'. Below the title bar, it says 'Specify the web application server information.' The main area contains three labels with corresponding input fields: 'HTTP Port:' with a text field containing '8080', 'JMX Port:' with a text field containing '6969', and 'Cluster Member Multiplier:' with a dropdown menu showing '1'. At the bottom, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

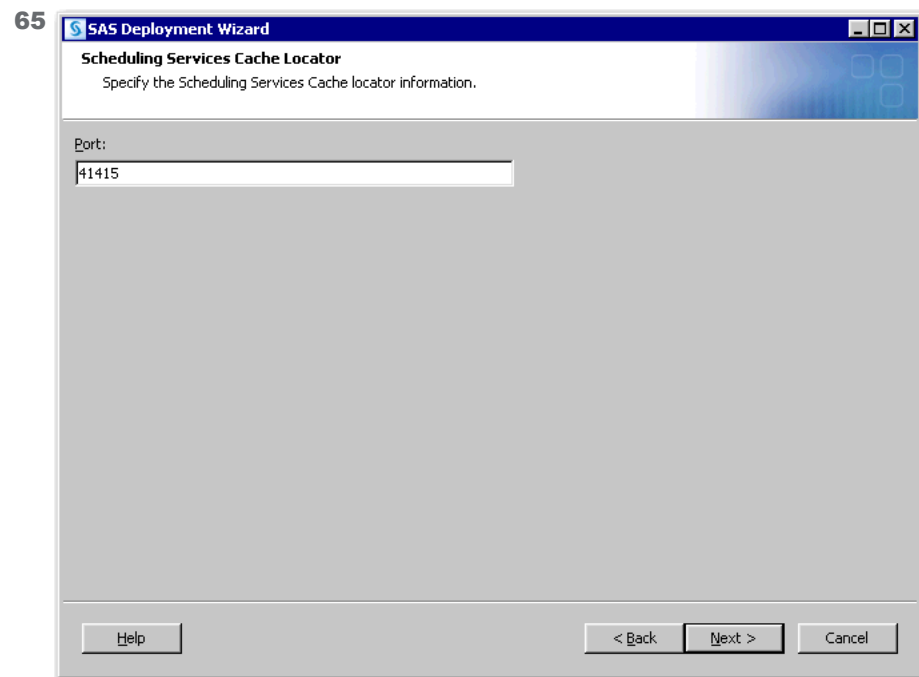
## SAS Web Application Server: Server Ports

- Do not change the default information that is displayed on this page. Click **Next**.



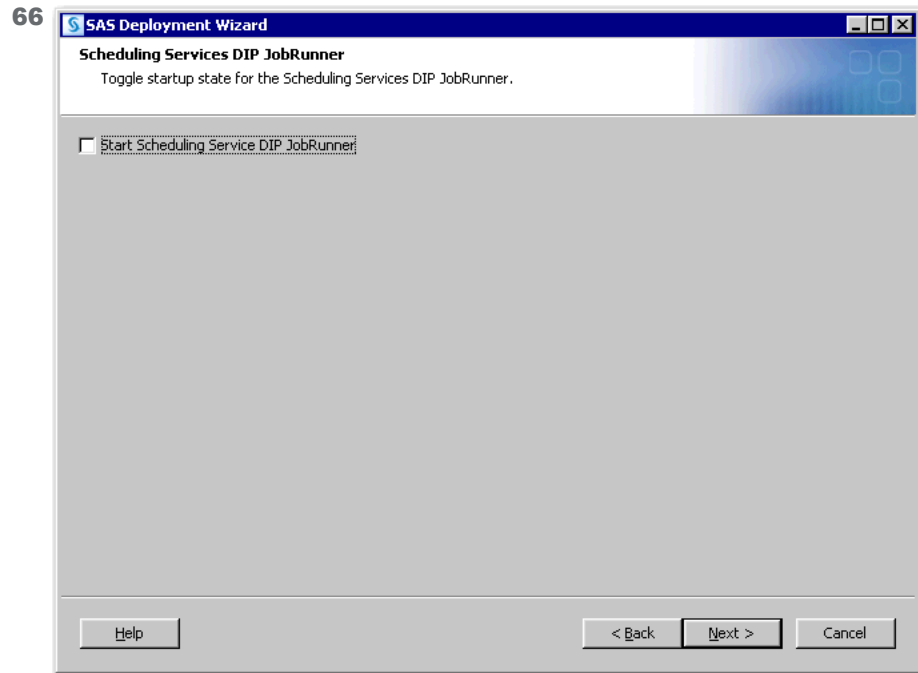
#### Web Applications: Automatic Deployment

- Do not change the default information that is displayed on this page. Click **Next**.



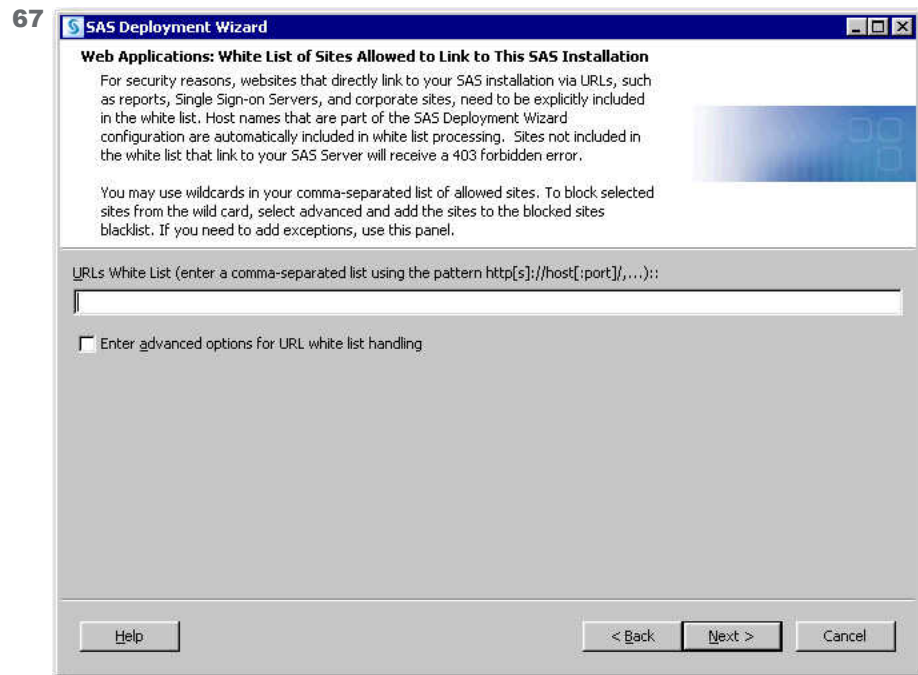
#### Scheduling Services Cache Locator

- Do not change the default information that is displayed on this page. Click **Next**.



#### Scheduling Services DIP JobRunner

- Do not change the default information that is displayed on this page. Click **Next**.



#### Web Applications: White List of Sites Allowed to Link to this SAS Installation

- In **URLs White List**, enter a comma-delimited list of additional known hosts and domains to trust in the following form:

`http|https://host[:port]|domain/, ...`

For example:

`https://myserver:443/,http://example.com`

For security reasons, you must list any host name URLs for any site that could redirect browsers to your solution. This might include corporate sites linking to your solution for reporting purposes or single sign-on servers.

For example, if `https://corporatePortal.company.com/` links to your server, then enter `https://corporatePortal.company.com/` as one entry. This field enables you to add additional known hosts and domains to a preset list automatically created by the SAS configuration process.

The valid URLs whitelist can include just a list of host names to trust. The valid URLs whitelist can also include wildcards such as `'*'` for host name and domain.

For more information, see [“Configuring the Cross Domain Proxy Servlet through a Whitelist” in SAS Intelligence Platform: Middle-Tier Administration Guide](#).

- Select **Enter advanced options for URL white list handling** to display an additional page in which you can specify advanced options for the filter.

68

**SAS Deployment Wizard**

**SAS Web Application Themes**  
Specify information for SAS Web Application Themes

Host Name:  
MyMachine.example.com

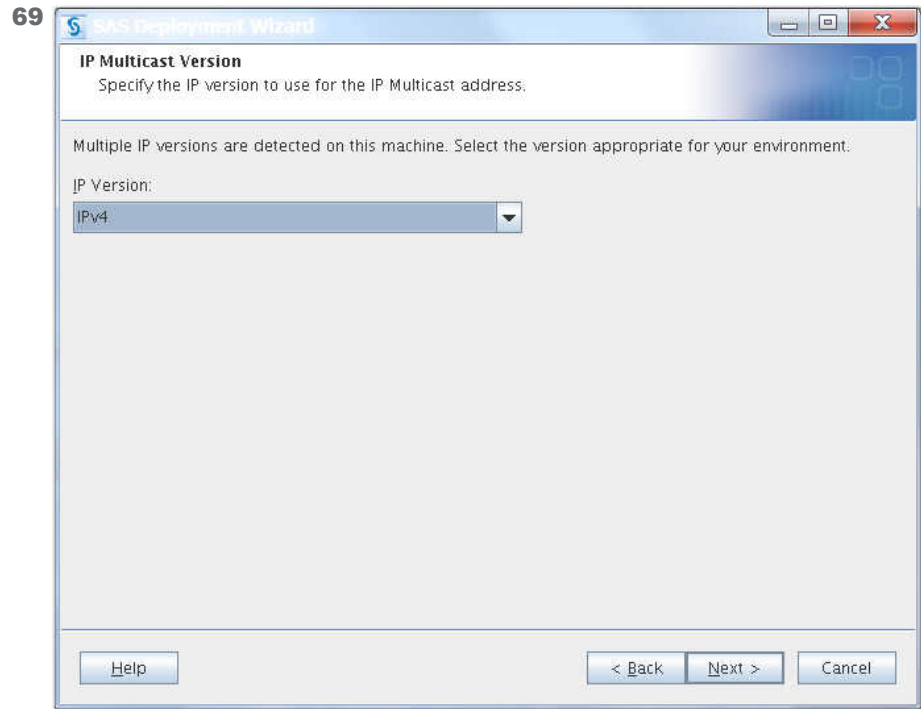
Port:  
80

Configured Protocol:  
HTTP Protocol

Help    < Back    Next >    Cancel

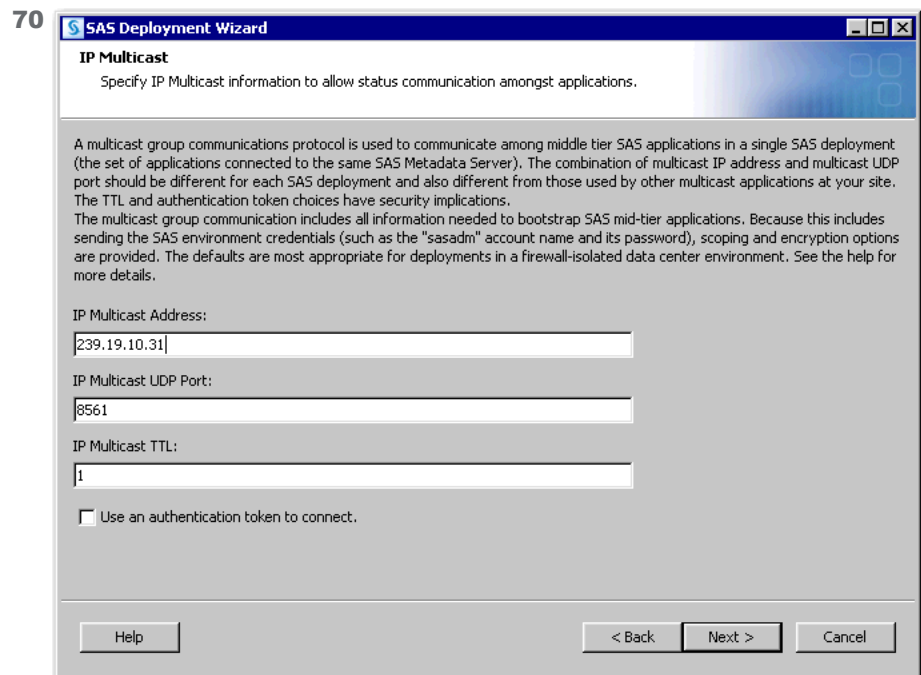
#### SAS Web Application Themes

- Do not change the default information that is displayed on this page. Click **Next**.



#### IP Multicast Version (Linux only)

- Do not change the default information that is displayed on this page. Click **Next**.



#### IP Multicast

- Do not change the default information that is displayed on this page. Click **Next**.

71

**SAS Deployment Wizard**

**SAS Content Server: Repository Directory**  
Specify the SAS Content Server repository directory.

Repository Directory:

☒ Start initial node as clustered. See Help for more details.

### SAS Content Server: Repository Directory

- Do not change the default information that is displayed on this page. Click **Next**.

72

**SAS Deployment Wizard**

**SAS Web Infrastructure Platform Database: JDBC Properties**  
Specify the connection information for the SAS Web Infrastructure Database JDBC connection.

Database Name:

User ID:

Password:

Confirm Password:

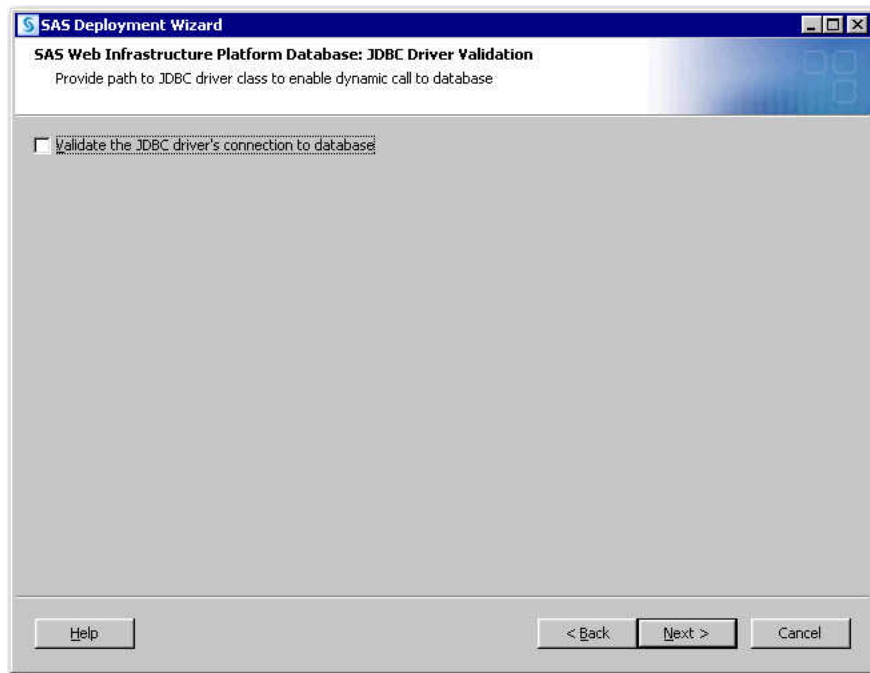
### SAS Web Infrastructure Platform Database: JDBC Properties

- Enter and confirm a password that SAS will create for the SharedServices user ID. Click **Next**.

**Note:** Remember this password as you will need it in the future.



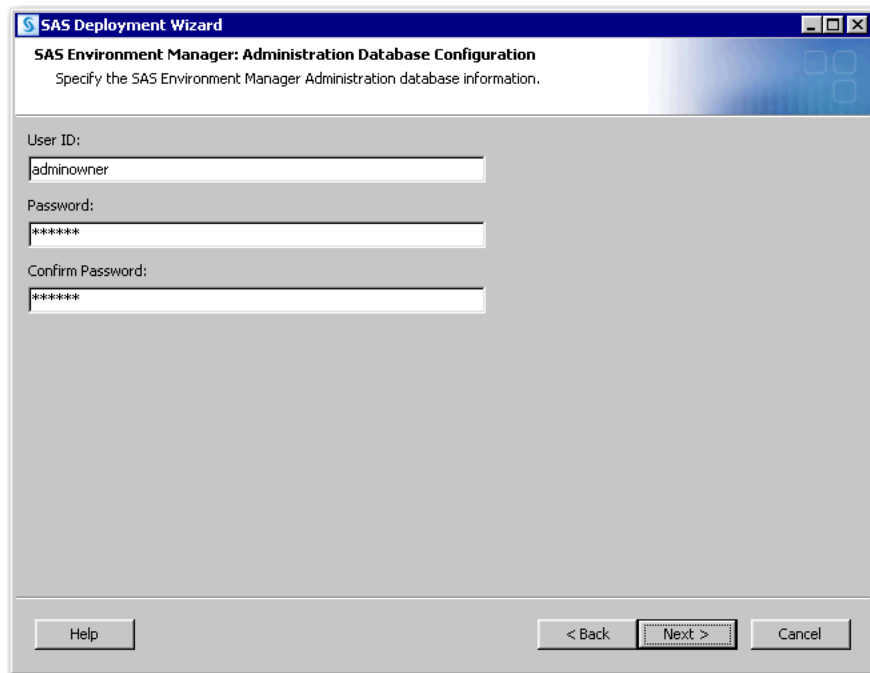
73



#### SAS Web Infrastructure Platform Database: JDBC Driver Validation

- Do not change the default information that is displayed on this page. Click **Next**.

74



#### SAS Environment Manager: Administration Database Configuration

- Enter and confirm a password that SAS will create for the adminowner user ID. Click **Next**.

**Note:** Remember this password as you will need it in the future.

- Do not change the default user ID information that is displayed on this page.

**75** **SAS Deployment Wizard**

**SAS Internal Account: SAS Environment Manager Service Account**  
Specify the metadata password for the service identity for SAS Environment Manager Service.

The SAS Environment Manager Service Account is a SAS internal account stored in metadata.

Display Name:  
SAS Environment Manager Service Account

Name:  
sasevs

Internal User ID:  
sasevs@saspw

SAS Environment Manager Service Account Password:  
\*\*\*\*\*

Confirm Password:  
\*\*\*\*\*

Help < Back Next > Cancel

#### SAS Internal Account: SAS Environment Manager Service Account

- Enter and confirm a password that SAS will create for the SAS Environment Manager service account (sasevs@saspw). Click **Next**.

**Note:** Remember this password as you will need it in the future.

The password must contain at least six characters. Make sure that you enter the same password that was specified in any previous SAS Environment Manager configuration prompts.

**76** **SAS Deployment Wizard**

**SAS Environment Manager: Configuration**  
Specify the server information to administer the SAS Environment Manager.

HTTP Port:  
7080

HTTPS Secure Port:  
7443

Administrator E-mail Address:  
admin@example.com

Help < Back Next > Cancel

## SAS Environment Manager: Configuration

- Do not change the default information that is displayed on this page. Click **Next**.

77

**SAS Deployment Wizard**

**SAS Environment Manager: Database Configuration**  
Specify the SAS Environment Manager database information.

Database Name:  
EVManager

Database User:  
EVManager

Database User Password:  
\*\*\*\*\*

Confirm Password:  
\*\*\*\*\*

Database Encryption Passphrase:  
\*\*\*\*\*

Confirm Database Encryption Passphrase:  
\*\*\*\*\*

Help < Back Next > Cancel

## SAS Environment Manager: Database Configuration

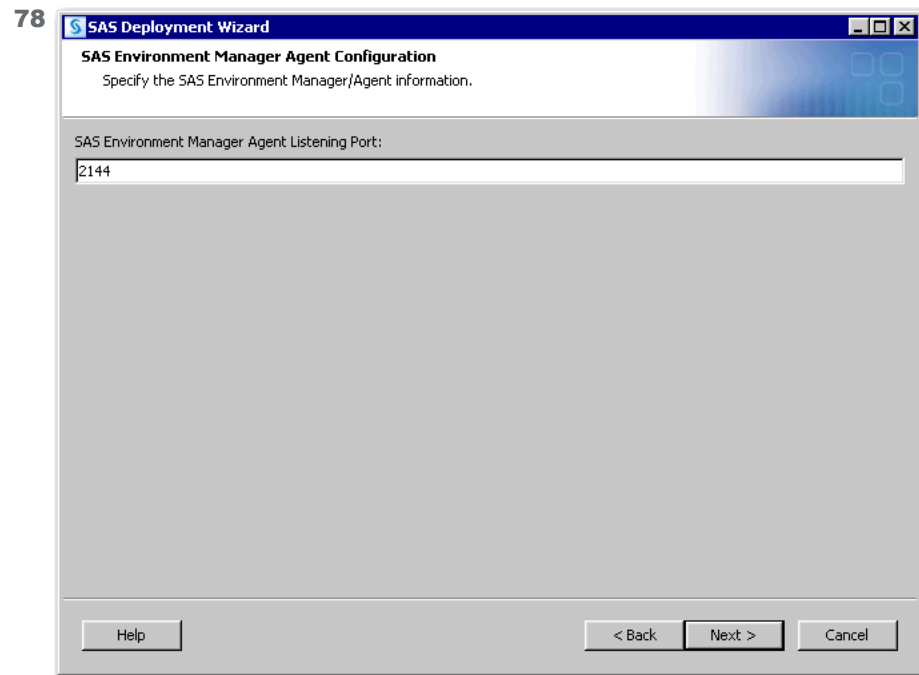
- Enter and confirm a password and an encryption passphrase that the deployment wizard will use when creating credentials for the EVManager user ID. Click **Next**.

**Note:** Remember this password and passphrase as you will need them in the future.

The password must contain at least six characters.

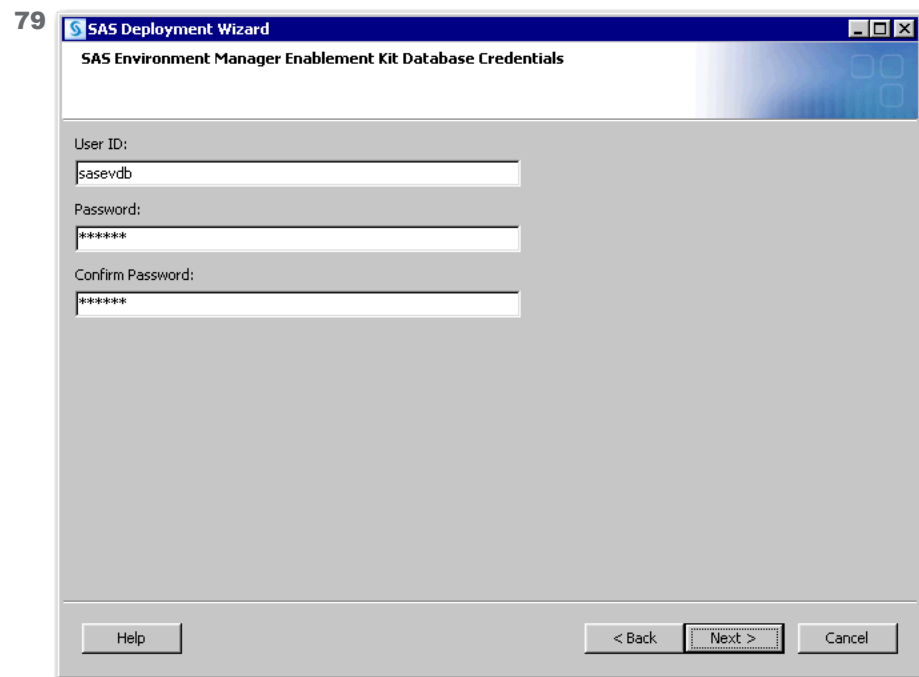
The passphrase must be at least eight characters long and can contain letters and numbers only.

- Do not change the user ID information that is displayed on this page.



#### SAS Environment Manager Agent Configuration

- Do not change the default information that is displayed on this page. Click **Next**.



#### SAS Environment Manager Enablement Kit Database Credentials

- Enter and confirm a password that SAS will create for the default SAS Environment Manager Enablement Kit user ID. Click **Next**.

**Note:** Remember this password as you will need it in the future.

- Do not change the user ID information that is displayed on this page.

80

**SAS Deployment Wizard**

**SAS Flex Application Themes**  
Specify information for SAS Flex Application Themes

Host Name:  
MyMachine.example.com

Port:  
80

Configured Protocol:  
HTTP Protocol

Help < Back Next > Cancel

#### SAS Flex Application Themes

- Do not change the default information that is displayed on this page. Click **Next**.

81

**SAS Deployment Wizard**

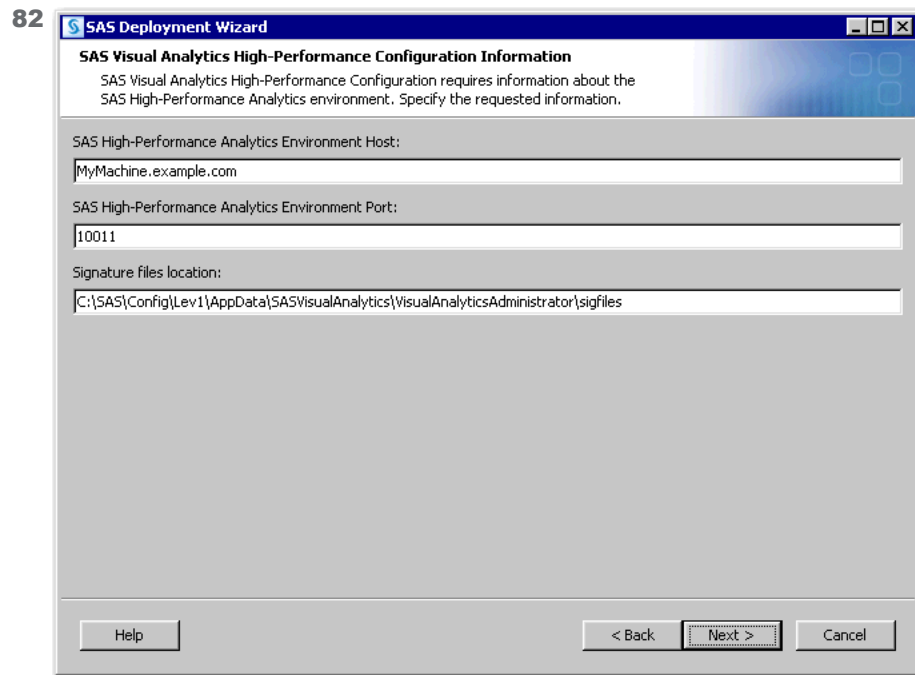
**SAS Visual Analytics Data Provider**  
SAS Visual Analytics High-Performance Configuration requires information about the data provider to be used with SAS Visual Analytics. Specify the requested information.

SAS Visual Analytics High-Performance Data Provider:  
Non-distributed LASR

Help < Back Next > Cancel

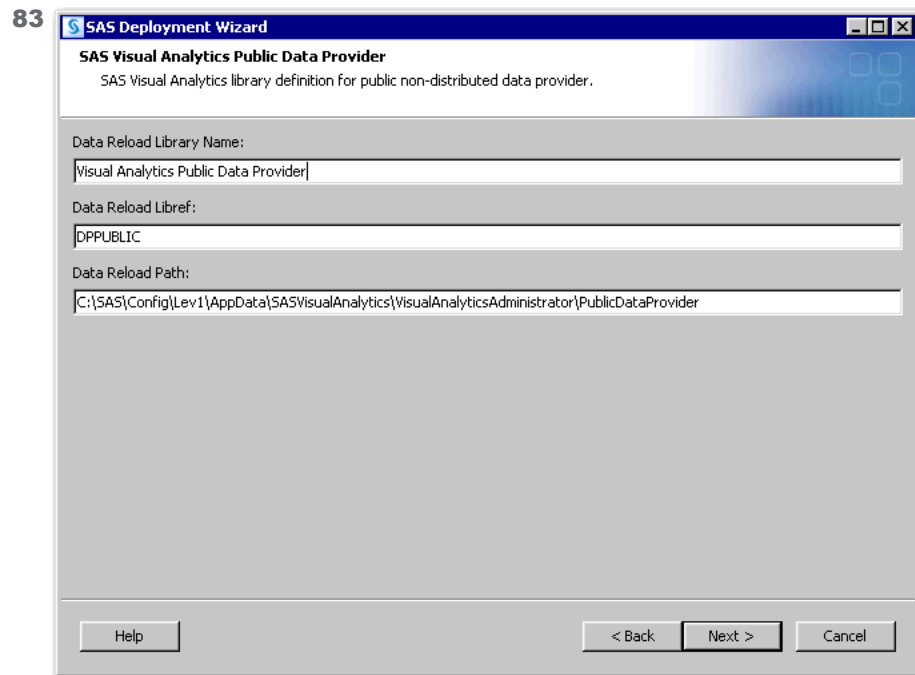
#### SAS Visual Analytics Data Provider

- This configuration page appears only when your SAS order also contains a license for the distributed SAS LASR Analytic Server.
- In **SAS Visual Analytics High-Performance Data Provider**, select **Non-distributed LASR**, and click **Next**.



### SAS Visual Analytics High-Performance Configuration Information

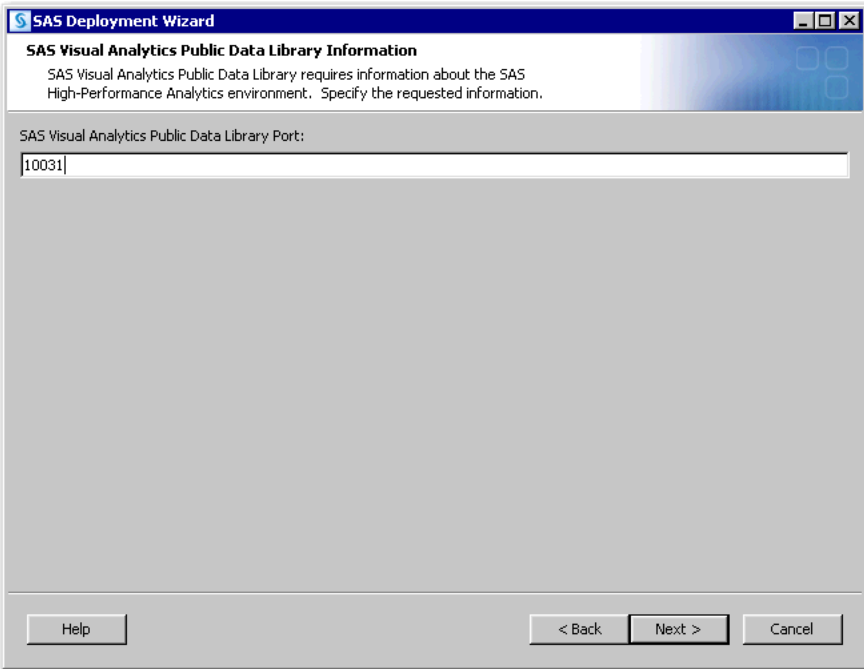
- Do not change any of the default values displayed on this page. Click **Next**.



### SAS Visual Analytics Public Data Provider

- Do not change any of the default values displayed on this page. Click **Next**.

84



**SAS Visual Analytics Public Data Library Information**

SAS Visual Analytics Public Data Library requires information about the SAS High-Performance Analytics environment. Specify the requested information.

SAS Visual Analytics Public Data Library Port:

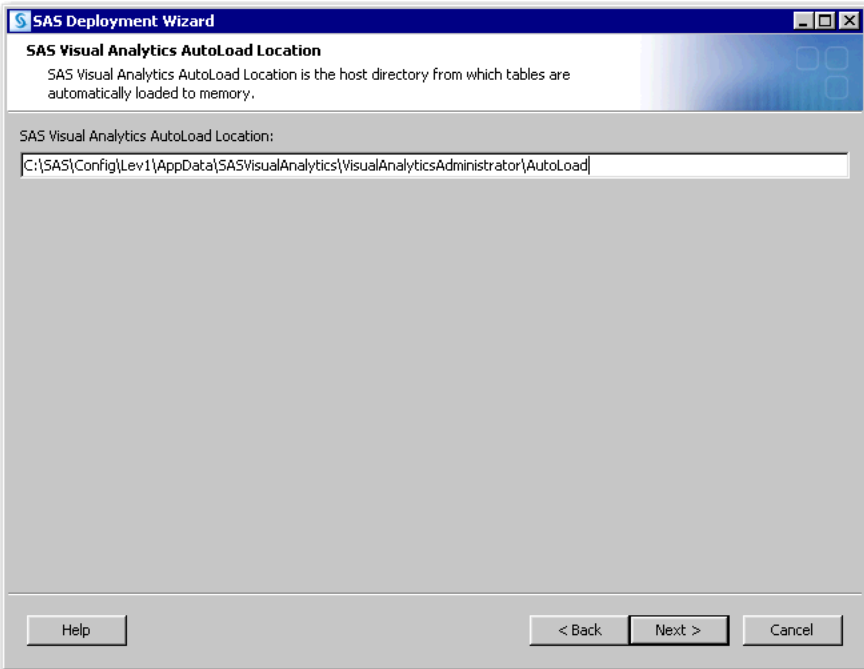
10031

Help < Back Next > Cancel

#### SAS Visual Analytics Public Data Library Information

- Do not change any of the default values displayed on this page. Click **Next**.

85



**SAS Visual Analytics AutoLoad Location**

SAS Visual Analytics AutoLoad Location is the host directory from which tables are automatically loaded to memory.

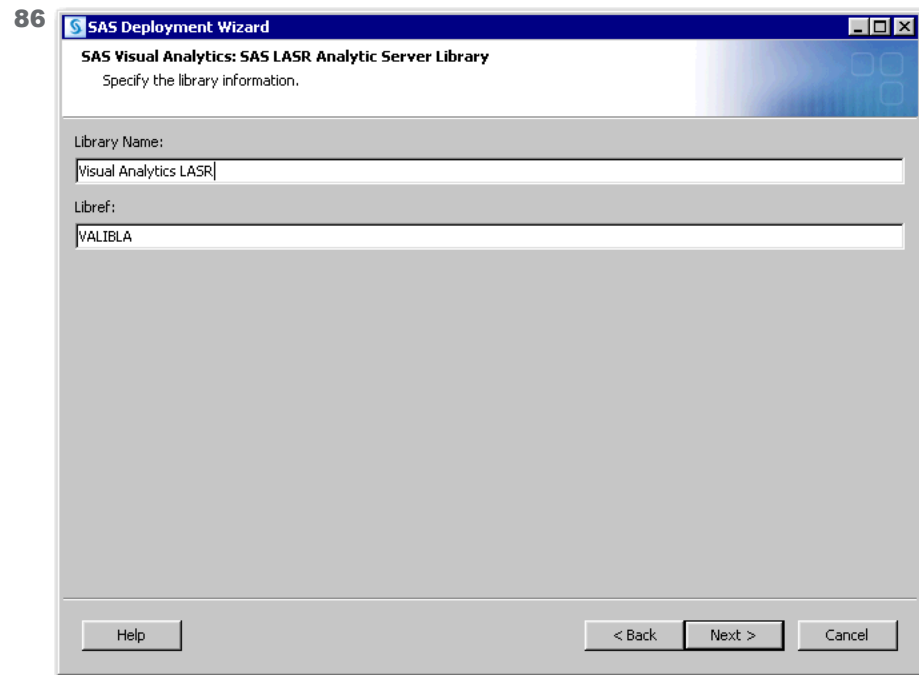
SAS Visual Analytics AutoLoad Location:

C:\SAS\Config\Lev1\AppData\SASVisualAnalytics\VisualAnalyticsAdministrator\AutoLoad

Help < Back Next > Cancel

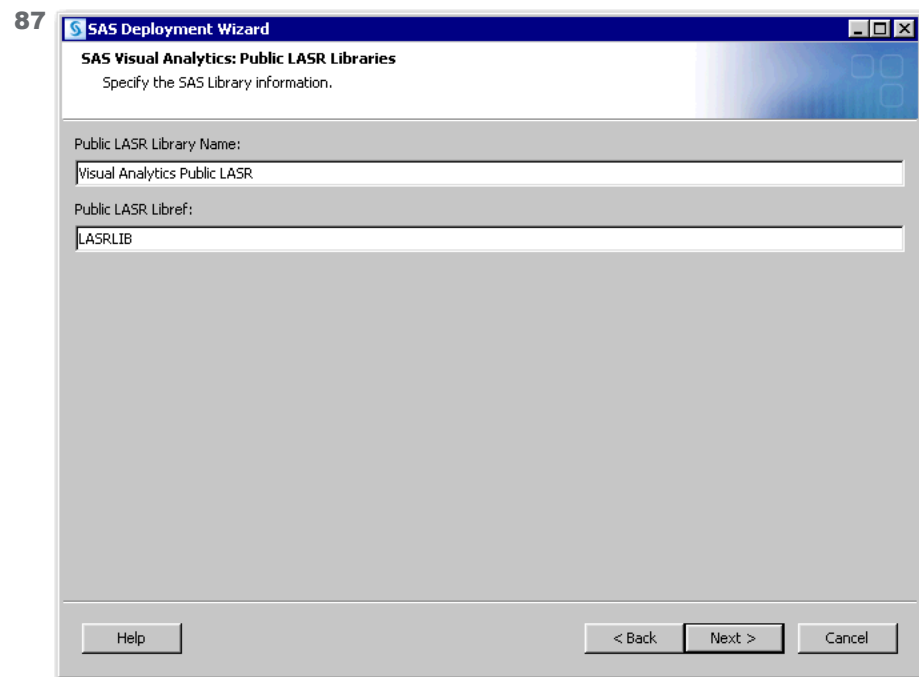
#### SAS Visual Analytics AutoLoad Location

- Do not change any of the default values displayed on this page. Click **Next**.



#### SAS Visual Analytics: SAS LASR Analytic Server Library

- Do not change any of the default values displayed on this page. Click **Next**.

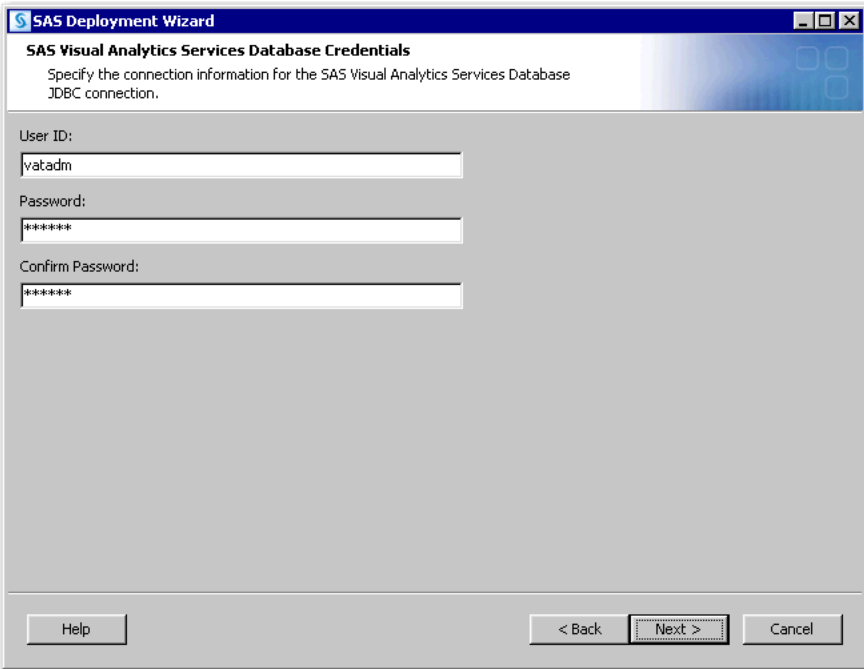


#### SAS Visual Analytics: Public LASR Libraries

- Do not change any of the default values displayed on this page. Click **Next**.



88



**SAS Deployment Wizard**

**SAS Visual Analytics Services Database Credentials**  
Specify the connection information for the SAS Visual Analytics Services Database JDBC connection.

User ID:  
vatadm

Password:  
\*\*\*\*\*

Confirm Password:  
\*\*\*\*\*

Help < Back Next > Cancel

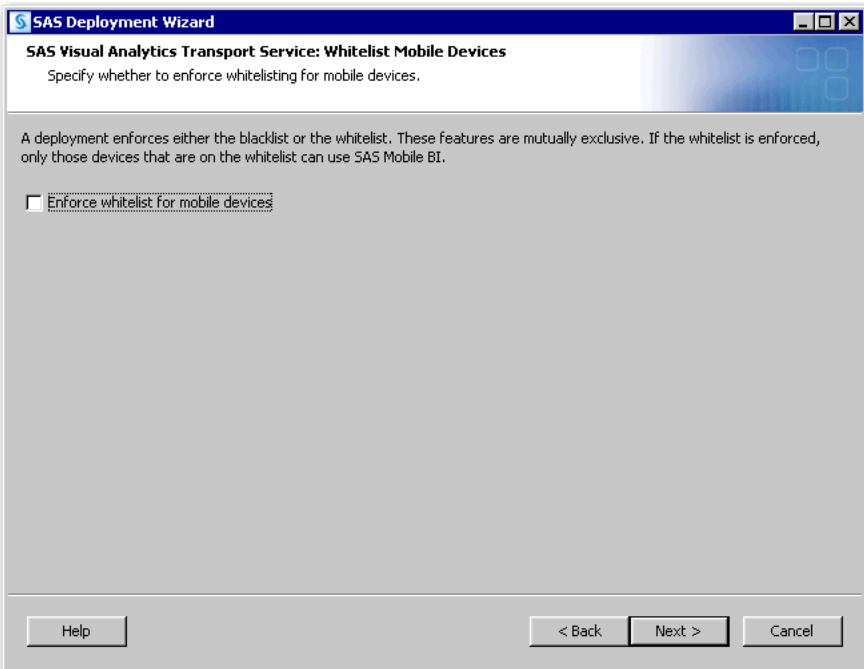
#### SAS Visual Analytics Services Database Credentials

- Enter and confirm the password to be used for the vatadm account. Click **Next**.

**Note:** Remember this password as you will need it in the future.

- Do not change the user ID information that is displayed on this page.

89



**SAS Deployment Wizard**

**SAS Visual Analytics Transport Service: Whitelist Mobile Devices**  
Specify whether to enforce whitelisting for mobile devices.

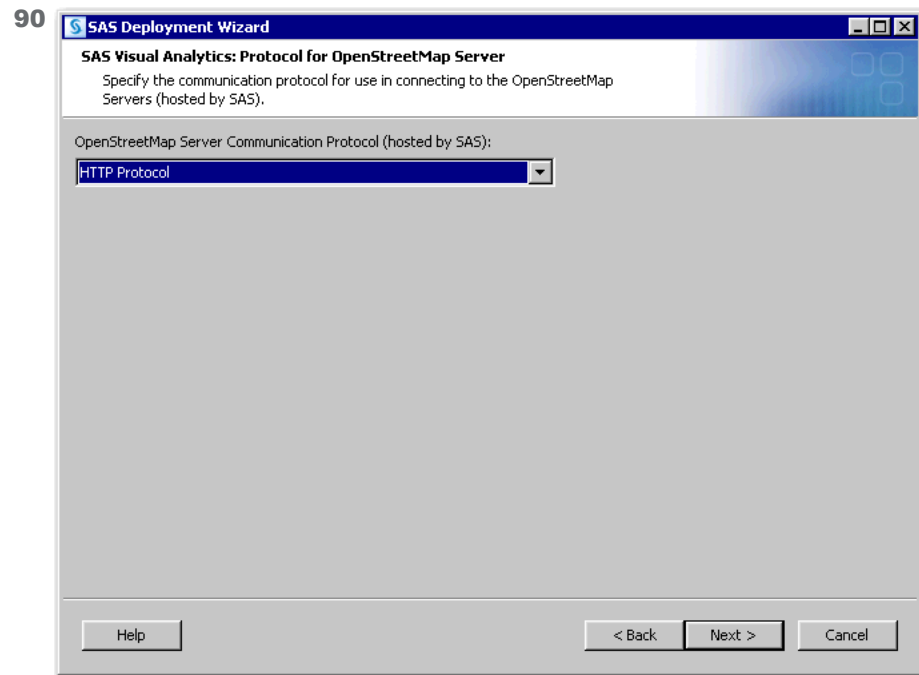
A deployment enforces either the blacklist or the whitelist. These features are mutually exclusive. If the whitelist is enforced, only those devices that are on the whitelist can use SAS Mobile BI.

☐ Enforce whitelist for mobile devices

Help < Back Next > Cancel

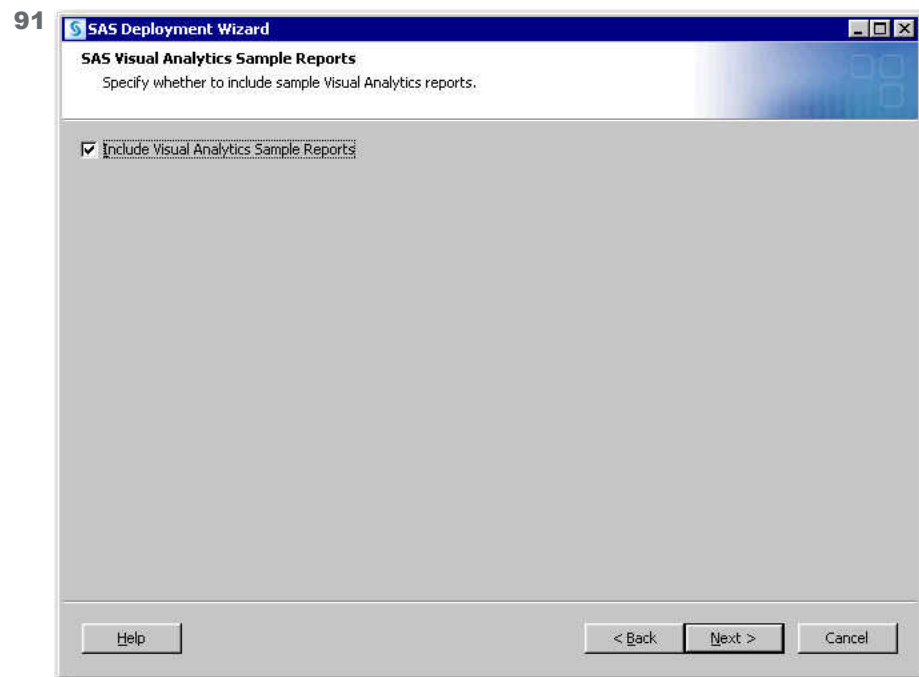
#### SAS Visual Analytics Transport Service: Whitelist Mobile Devices

- Do not change any of the default values displayed on this page. Click **Next**.



#### SAS Visual Analytics: Protocol for OpenStreetMap Server

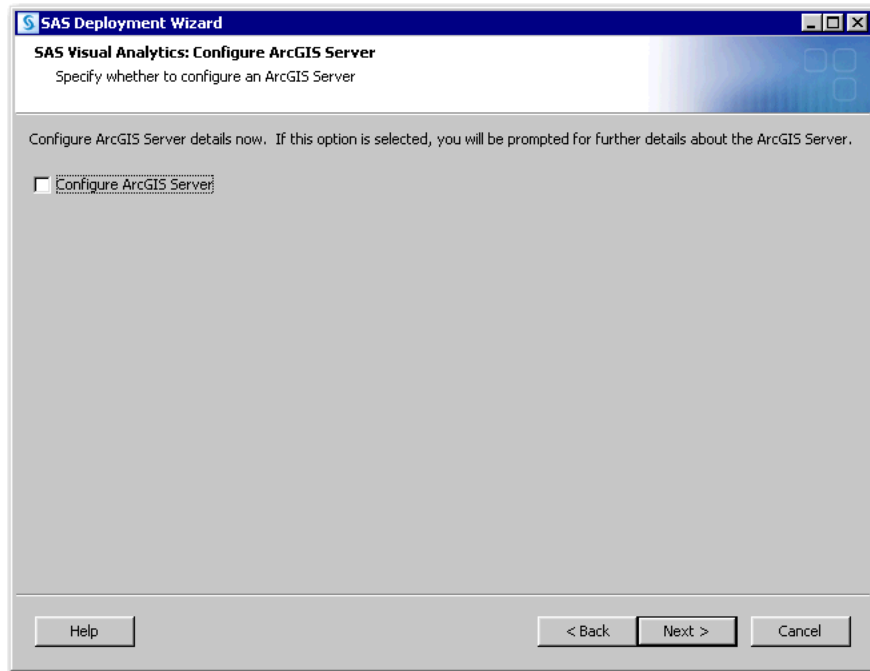
- Do not change any of the default values displayed on this page. Click **Next**.



#### SAS Visual Analytics Sample Reports

- Click **Next**.

92



#### SAS Visual Analytics: Configure ArcGIS Server

- Do not change any of the default values displayed on this page. Click **Next**.

93



#### SAS Visual Analytics: Access to Geo Map Server URLs

- Do not change the default information that is displayed on this page. Click **Next**.

94

**SAS Deployment Wizard**

**SAS Visual Data Builder Database Credentials**

Specify the connection information for the SAS Visual Data Builder Database JDBC connection.

User ID:  
vdbadm

Password:  
\*\*\*\*\*

Confirm Password:  
\*\*\*\*\*

Help < Back Next > Cancel

#### SAS Visual Data Builder Database Credentials

- Enter and confirm the password to be used for the vdbadm account. Click **Next**.

**Note:** Remember this password as you will need it in the future.

- Do not change the user ID information that is displayed on this page.

95

**SAS Deployment Wizard**

**SAS Information Retrieval Studio**

Specify information for SAS Information Retrieval Studio.

Host Name:  
MyMachine.example.com

Port:  
10651

Service Name:  
SAS [Config-Lev1] Information Retrieval Studio

Help < Back Next > Cancel

#### SAS Information Retrieval Studio Port Numbers

- Do not change any of the default values displayed on this page. Click **Next**.

96

**SAS Deployment Wizard**

**Search Interface to SAS Content Feeder Configuration**  
Specify feeder information for Search Interface to SAS Content.

Index Loader Interval In Minutes:  
15

Help < Back Next > Cancel

### Search Interface to SAS Content Feeder Configuration

- Do not change any of the default values displayed on this page. Click **Next**.

97

**SAS Deployment Wizard**

**SAS Internal Account: Search Interface to SAS Content User**  
Specify the metadata password for the Search Interface to SAS Content User identity.

The Search Interface to SAS Content User is a SAS internal account stored in metadata.

Display Name:  
Search Interface to SAS Content User

Name:  
sassearch

Internal User ID:  
sassearch@saspw

New Internal Password:  
\*\*\*\*\*

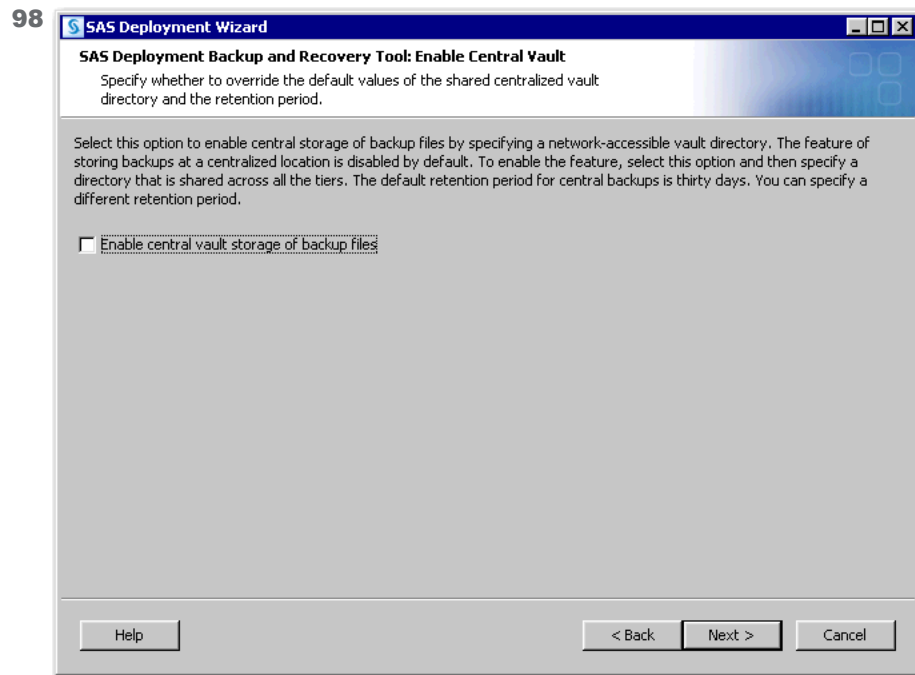
Confirm New Internal Password:  
\*\*\*\*\*

Help < Back Next > Cancel

### SAS Internal Account: Search Interface to SAS Content User

- Enter and confirm a metadata password for the internal user account (sassearch@saspw) that permits access to SAS content that is provided to SAS Information Retrieval Studio for indexing. The password must contain at least six characters. Click **Next**.

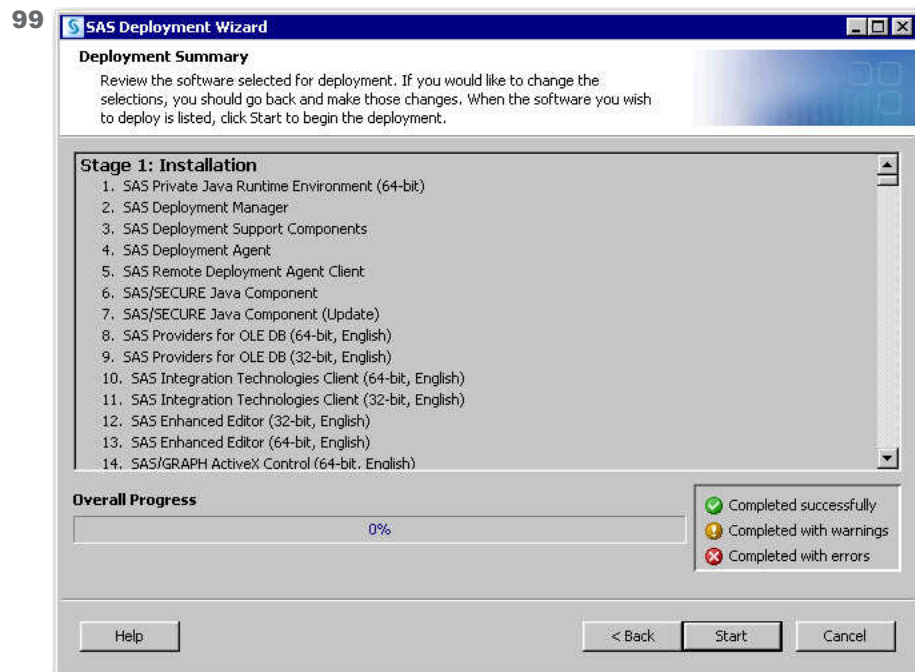
**Note:** Remember this password as you will need it in the future.



#### SAS Deployment Backup and Recovery Tool: Enable Central Vault

- Do not change the default information that is displayed on this page. Click **Next**.

**TIP** If you are deploying a SAS solution, you should refer to your solution-specific documentation to complete your deployment.



#### Deployment Summary

- Make one of the following choices:

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

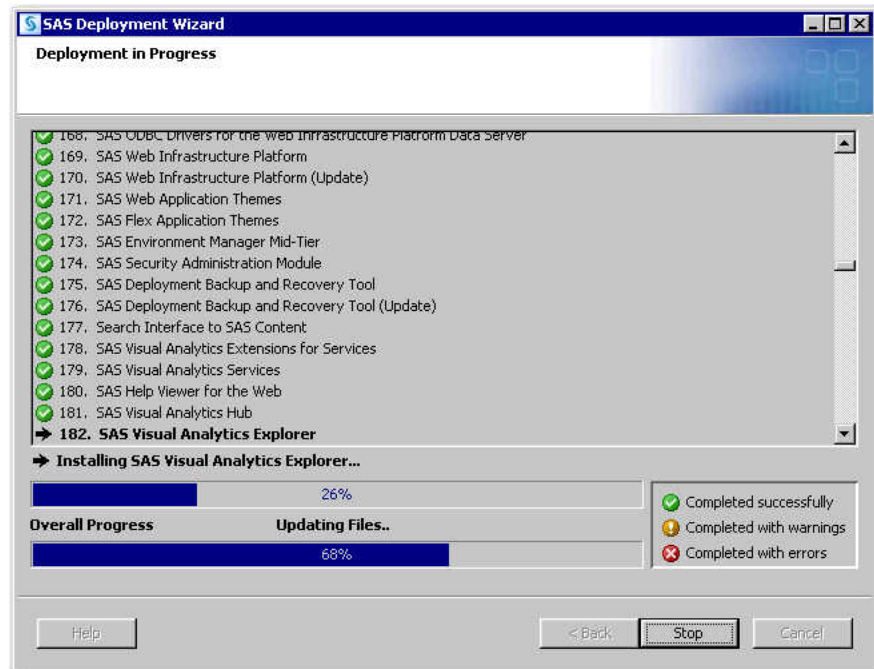
The deployment wizard launches the installation and configuration process and provides an ongoing status update.

- ❑ 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.

**CAUTION!** If you encounter a situation in which the deployment wizard reports a configuration failure, leave the error message displayed and do not continue. Consult additional documentation and, if necessary, contact SAS Technical Support. Moving past an error most often results in having to delete your deployment and start over.

On Linux, when you are installing the server tier, you will be instructed to run a script as root. 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.

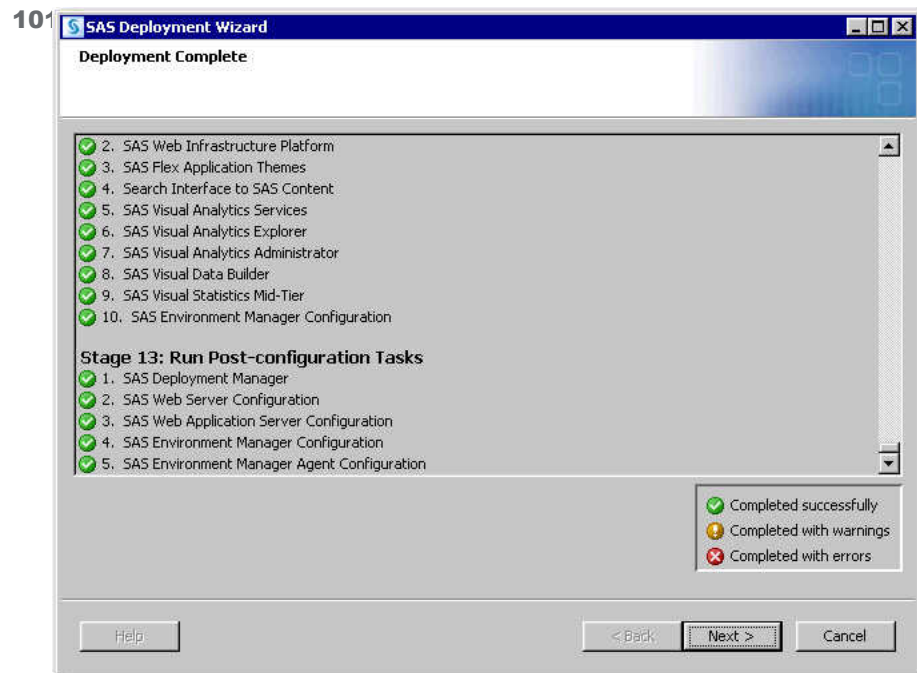
On Windows, the deployment wizard checks to make sure that your machine contains the minimum system requirements necessary to run SAS 9.4. Sometimes it is necessary to reboot your machine after the wizard has installed certain system components. When this occurs, after you log back on to the machine, the wizard continues to the next configuration step in your SAS deployment process.





#### Insufficient Permissions (Linux only)

- Keeping this dialog box displayed, run the `setuid.sh` script as root, and then click **Retry**.
- You will not see this dialog box if you chose earlier to run `setuid.sh` as `sudo` using your password. For more information, see [Step 32 on page 29](#).

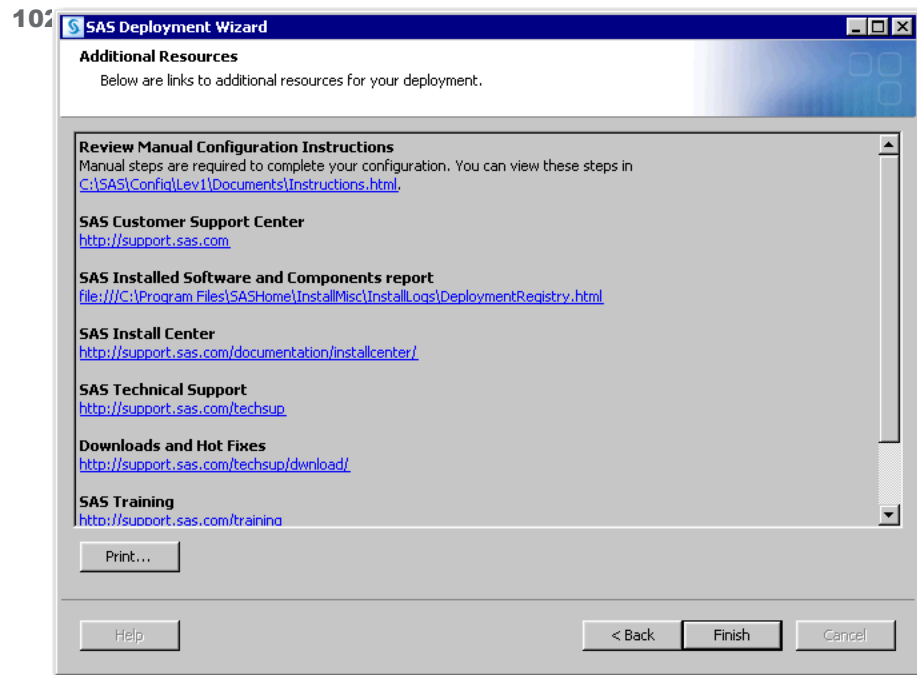


#### Deployment Complete

- Green check marks next to every item on this page indicate that your deployment completed successfully. Click **Next**.
- If your deployment was successful, then you are ready to perform the post-deployment steps that are documented in [“Step 5: Perform Post-Deployment Steps” on page 68](#).

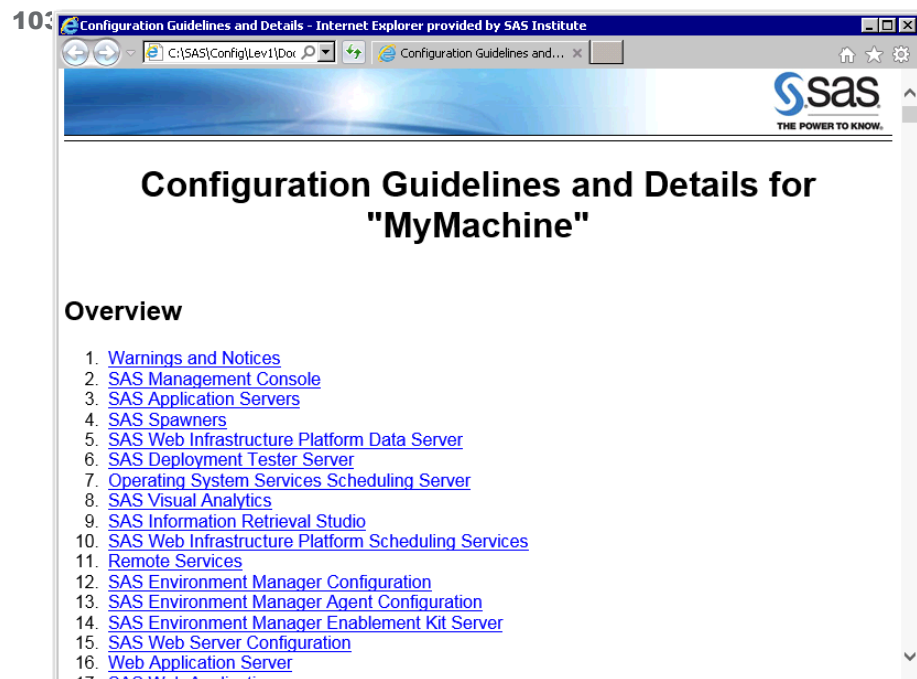


- If you received errors during your deployment, then contact SAS Technical Support at <mailto:support@sas.com>. Attach to your e-mail the files listed in “Review SAS Deployment Tool Documents, Reports, and Logs” in *SAS Intelligence Platform: Installation and Configuration Guide*.



#### Additional Resources

- Click **Finish** to close the SAS Deployment Wizard.



#### Configuration Guidelines and Details

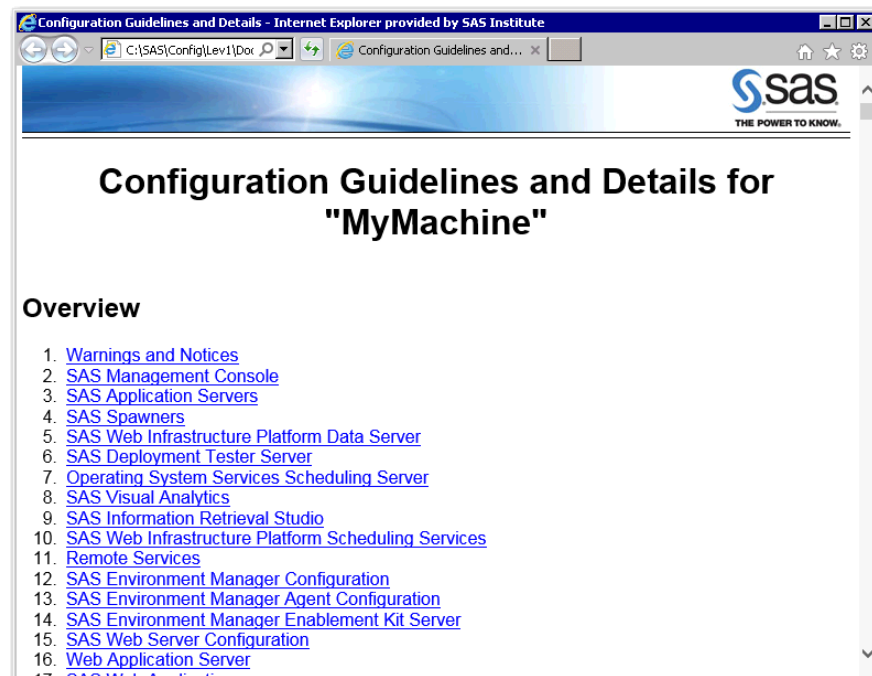
- To complete your SAS deployment, review Configuration Guidelines and Details and perform the steps listed.

Configuration Guidelines and Details (Instructions.html) is automatically generated by the deployment wizard and has post-installation steps specific to your SAS order that you must perform.

## Step 5: Perform Post-Deployment Steps

After your deployment has completed, there are some post-deployment steps specific for your SAS order that are documented in your Instructions.html file. Located in *SAS-configuration-directory\Documents*, Instructions.html provides the steps for checking that your SAS servers are running and that your web applications were properly deployed.

**Figure 1.4** Configuration Guidelines and Details (Instructions.html)



If you have not already done so, use Instructions.html and perform all the post-deployment steps that it contains.

Remember to restart any anti-virus, anti-malware, anti-spyware, and firewall software that you disabled to deploy SAS.

Proceed to “[Step 6: Add SAS Users](#)”

## Step 6: Add SAS Users

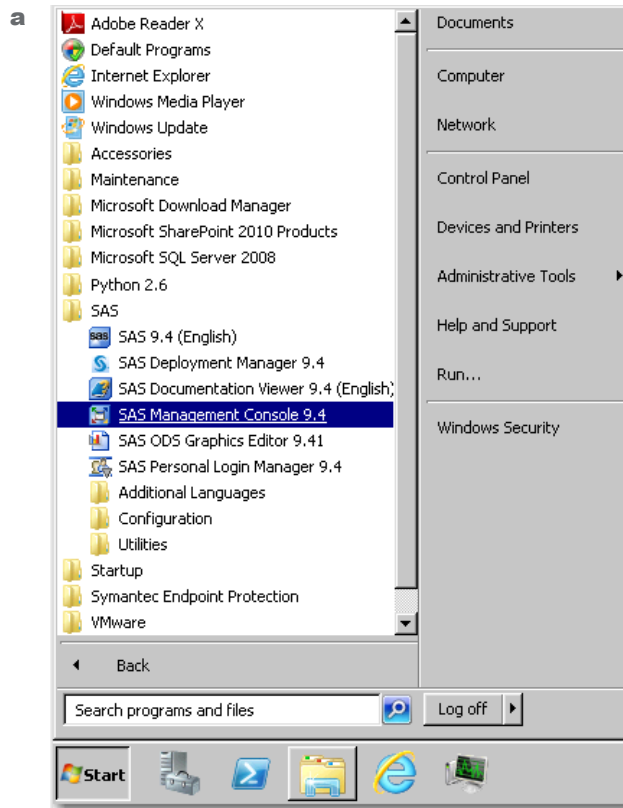
Now that you have deployed SAS and successfully validated that your software is working properly, it is time to add your SAS users to the SAS system. Adding host or domain accounts for SAS users to the SAS metadata gives each user a

SAS metadata identity. This enables SAS users to use the software and access SAS metadata objects.

For more information, see the [SAS Management Console: Guide to Users and Permissions](#).

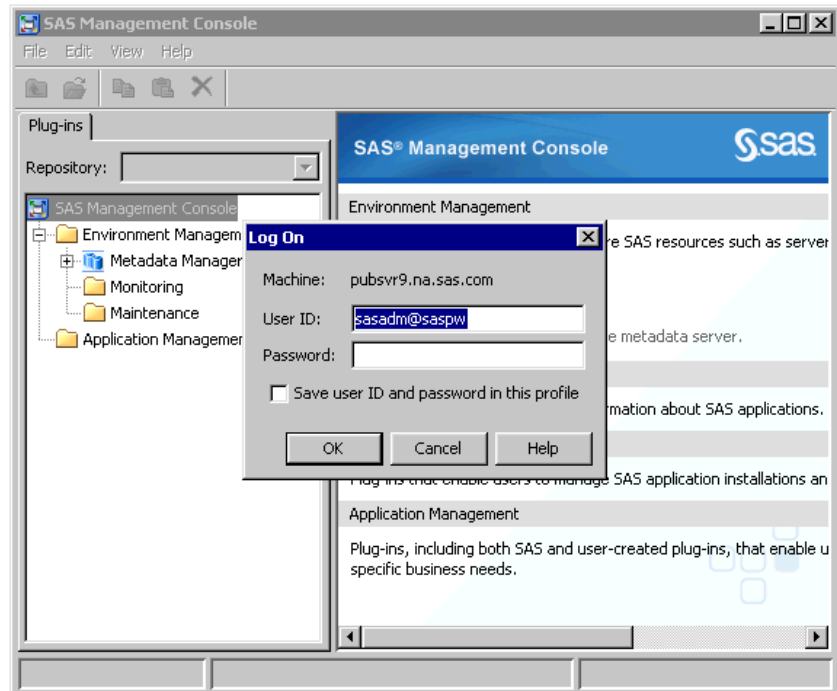
Perform the following steps to add SAS users to SAS metadata:

- 1 Grant the host or domain accounts for each user the required **Log on as a batch job** right. You can do this by adding the user accounts to the SAS Server Users group that was created in the section “[Set Up an Operating System Group](#)” on page 10.
- 2 Create a metadata identity for each user. Follow these steps using SAS Management Console:



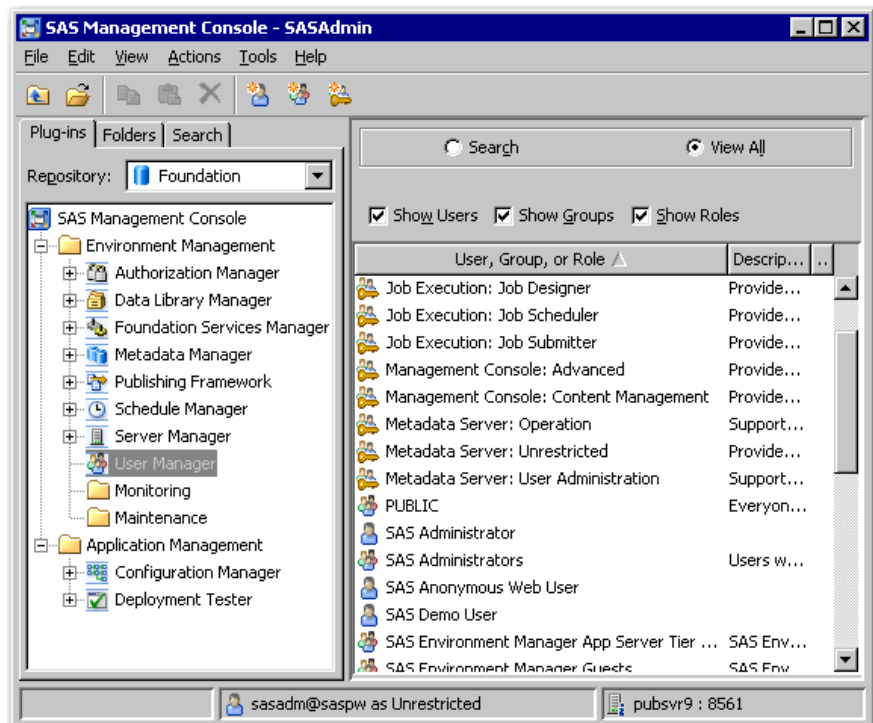
From the Windows **Start** menu, select **All Programs** ► **SAS** ► **SAS Management Console**.

b



In the Log On dialog box, enter the credentials for the SAS Unrestricted User (sasadm@saspw) and the password specified when you deployed SAS.

c



Select **User Manager**.

d Select **Actions** ► **New** ► **User**.

e

**New User Properties**

General | Groups and Roles | Accounts | Authorization

User External Identities

Name:

Display Name:

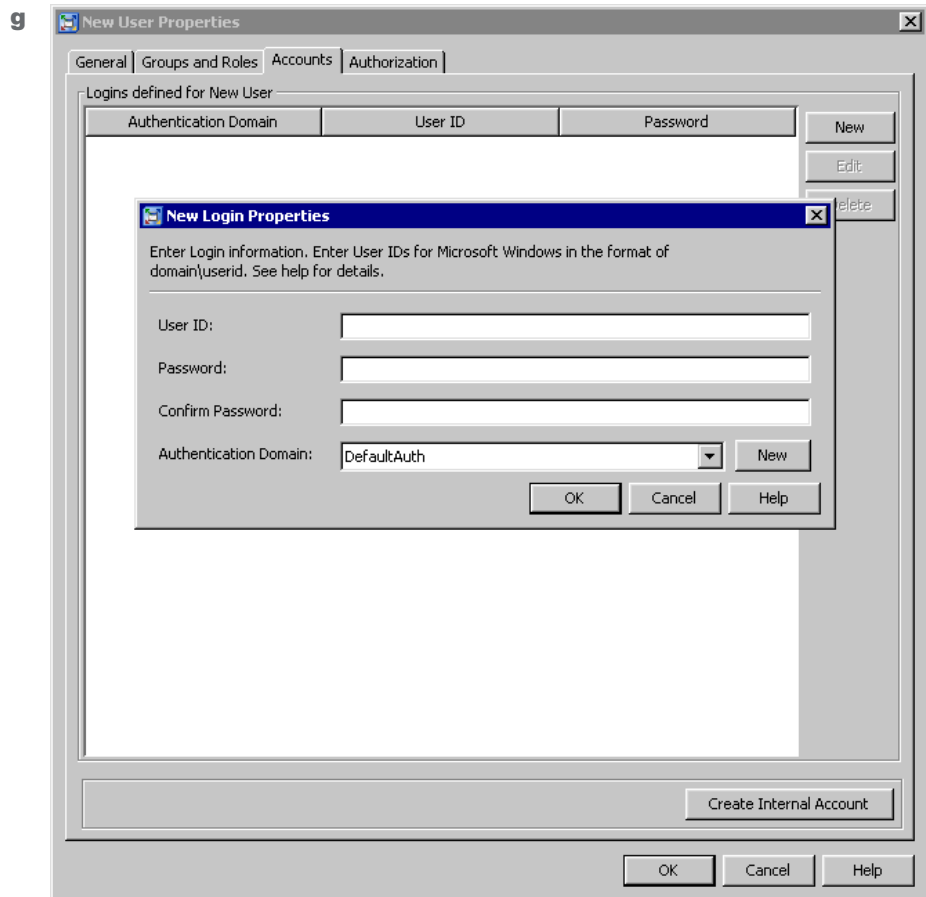
Job Title:

Description:

E-mail	Type	Address

In the **Name** text box, enter the name of the user.

- f Click the **Accounts** tab, and then click **New**.



Enter the fully qualified user ID (for example, *domain\user-ID* or *machine\user-ID*). Leave the **Password** field blank and keep the default value **DefaultAuth** for the **Authentication Domain** field.



- h Click **OK**.
- i Then, click **OK** again.



Proceed to “[Step 7: Validate Your SAS Visual Analytics Deployment](#)”.

## Step 7: Validate Your SAS Visual Analytics Deployment

Here are suggestions about how you can validate your non-distributed SAS Visual Analytics deployment using SAS Home (the modern viewer). The SAS Visual Analytics documentation is available at <http://support.sas.com/documentation/onlinedoc/va/>.

**Table 1.3** Suggestions for SAS Visual Analytics Validation (Modern Home Page)

Purpose	Actions	More Information
Create an account for use later in the validation.	<ol style="list-style-type: none"> <li>1 Log on as the SAS LASR Analytic Server installer and create a new administrator account (such as saslasradm).</li> <li>2 Assign the Windows user permission <b>Log on as a batch job</b> to the account.</li> </ol>	Operating system documentation
Create a SAS identity for use later in the validation.*	<p>In SAS Management Console:</p> <ol style="list-style-type: none"> <li>1 Define a SAS Visual Analytics Administrator (use the account created in the previous step (saslasradm)).</li> <li>2 Assign the administrator to the Visual Analytics Data Administrators group and the Visual Data Builder Administrators group.</li> <li>3 Give the administrator the necessary operating system permissions to write to the signature files directory.</li> </ol> <p>To find the signature files directory location, in SAS Management Console, select <b>Server Manager ► LASR Analytic Server ► Properties ► Options ► Advanced Options ► Additional Options</b>.</p>	<p>“Add Users” in the <a href="#">SAS Management Console: Guide to Users and Permissions</a></p> <p>“Adjust Group or Role Membership” in the <a href="#">SAS Management Console: Guide to Users and Permissions</a></p> <p>Operating system documentation</p>
Validate that SAS Home is running and valid logins are accepted.	Sign on to SAS Home as saslasradm (for example, <a href="http://myHost.example.com/SASVisualAnalyticsHub">http://myHost.example.com/SASVisualAnalyticsHub</a> ).	“Accessing SAS Visual Analytics” in the <a href="#">SAS Visual Analytics: User's Guide</a>
Start the Public LASR Analytic Server (to save a data query later in this topic).	<p>On SAS Home:</p> <ol style="list-style-type: none"> <li>1. Click the side menu icon  (next to SAS Home).</li> <li>2. Click <b>Administrator</b>.</li> <li>3. Select the check box next to <b>Public LASR Analytic Server</b>.</li> <li>4. Click the start button .</li> </ol>	“Operating Servers” in the <a href="#">SAS Visual Analytics: Administration Guide</a>
Demonstrate that SAS Visual Analytics Administrator is functional and able to communicate with the SAS LASR Analytic Server.	<p>In SAS Visual Analytics Administrator:</p> <ol style="list-style-type: none"> <li>1. Right-click <b>Public LASR Analytic Server</b>, and select <b>Load a Table</b> from the pop-up menu.</li> </ol>	“Load a Table” in the <a href="#">SAS Visual Analytics: Administration Guide</a>
Demonstrate that SAS Visual Analytics Explorer is functional.**	<p>On SAS Home:</p> <ol style="list-style-type: none"> <li>1. Click <b>Data Explorer</b>.</li> <li>2. In the SAS Visual Analytics Explorer window, click <b>Select a Data Source</b>.</li> <li>3. In the Open Data Source window, select a data source in the list, and click <b>Open</b>.</li> </ol>	“Create a New Exploration” in the <a href="#">SAS Visual Analytics: User's Guide</a>
Demonstrate that SAS Visual Data Builder is functional.*	<p>On SAS Home:</p> <ol style="list-style-type: none"> <li>1. Click <b>Data Preparation</b>.</li> <li>2. In the SAS Visual Data Builder window, click <b>New ► Data Query</b>.</li> </ol>	“Creating Data Queries” in the <a href="#">SAS Visual Analytics: User's Guide</a>

Purpose	Actions	More Information
Demonstrate that SAS Visual Analytics Designer is functional.	<p>On SAS Home:</p> <ol style="list-style-type: none"> <li>1. Click <b>Report Designer</b>.</li> <li>2. Click the <b>Data</b> tab.</li> <li>3. Click the  in the <b>Select a data source</b> field. The Add Data Source window is displayed.</li> <li>4. Select one or more data sources that begin with <b>VA_SAMPLE</b>, and click <b>Add</b>.</li> </ol>	<p>“Create a New Report” in the <a href="#">SAS Visual Analytics: User’s Guide</a></p>
Demonstrate that SAS Visual Analytics Graph Builder is functional.	<p>On SAS Home:</p> <ol style="list-style-type: none"> <li>1. Click <b>Report Designer</b>.</li> <li>2. On the <b>Objects</b> tab, click , and then select <b>Show or Hide Objects</b>.</li> <li>3. In the Show or Hide Objects window, verify that <b>Schedule Chart</b>, <b>Vector Plot</b>, and <b>Numeric Series Plot</b> are displayed in the list. (These custom report objects are available only with the graph builder.)</li> </ol>	<p>“Build a Custom Graph Object” in the <a href="#">SAS Visual Analytics: User’s Guide</a></p>
Demonstrate that SAS Mobile BI is operable.	<p>Deploy SAS Mobile BI.</p> <p>View a SAS Visual Analytics report on a mobile device.</p>	<p>“Viewing Reports on a Mobile Device” in the <a href="#">SAS Visual Analytics: User’s Guide</a></p>

\* SAS Visual Data Builder requires that a SAS identity be a member of the Visual Data Builder Administrators group. Members of the Visual Analytics Data Administrators group do not have access to SAS Visual Data Builder.

\*\* Some SAS orders do not contain SAS Visual Analytics Explorer.

## Step 8: Set ulimits

On the SAS middle tier system, set ulimit settings in `/etc/security/limits.conf` for the Installer user account that runs the SAS Web Application Server processes.

For example, here are ulimit settings added to `/etc/security/limits.conf` for the Installer user account, `sas`:

```
sas - nofile 150000
sas - nproc 100000
sas - stack 10240
```

The NPROC (max number of processes) changes do not take effect unless `/etc/security/limits.d/90-nproc.conf` (Red Hat Enterprise Linux 6) or `/etc/security/limits.d/20-nproc.conf` (Red Hat Enterprise Linux 7) is also changed.

For example, to allow 100,000 processes on Red Hat Enterprise Linux 6, make the following change to `/etc/security/limits.d/90-nproc.conf`:

```
sas soft nproc 100000
```



# Appendix 1

## Upgrading SAS Visual Analytics (Non-distributed LASR)

<i>Two Upgrade Options</i> .....	<b>75</b>
<i>User Accounts Password Checklist</i> .....	<b>75</b>
<i>Overview of Upgrading SAS Visual Analytics (Non-Distributed SAS LASR)</i> ..	<b>76</b>
<i>Upgrade SAS Visual Analytics (Non-Distributed SAS LASR)</i> .....	<b>78</b>

### Two Upgrade Options

You have two options for upgrading SAS Visual Analytics:

- SAS automatic migration tools  
For more information, see “Migrating SAS Visual Analytics” in the [SAS Visual Analytics: Installation and Configuration Guide \(Distributed SAS LASR\)](#).
- SAS Deployment Wizard (Update mode)  
For more information, see “[Overview of Upgrading SAS Visual Analytics \(Non-Distributed SAS LASR\)](#)”.

### User Accounts Password Checklist

During the upgrade process, the SAS Deployment Manager prompts you for passwords for various SAS user accounts. Use the following table to collect these passwords for use during your upgrade process:

**Table A1.1** *User Account Credentials Required to Upgrade SAS Visual Analytics*

<b>SAS User Account</b>	<b>Default User ID</b>	<b>Actual User ID</b>	<b>Actual Password</b>
SAS Internal Account: Unrestricted Administrator	sasadm@saspw		

SAS User Account	Default User ID	Actual User ID	Actual Password
SAS Internal Account: Trusted User	sastrust@saspw		
SAS Web Infrastructure Platform Database User	SharedServices		
SAS Internal Account: SAS Environment Manager Service Account	sasevs@saspw		
SAS Visual Analytics Services Database User	vatadm		
SAS Visual Data Builder Database User	vdbadm		
SAS Internal Account: Search Interface to SAS Content User	sassearch@saspw		

## Overview of Upgrading SAS Visual Analytics (Non-Distributed SAS LASR)

Follow these steps to upgrade SAS Visual Analytics using the SAS Deployment Wizard running in update mode:

**Note:** Upgrading to SAS Visual Analytics 7.3 is supported for versions 6.2 and later.

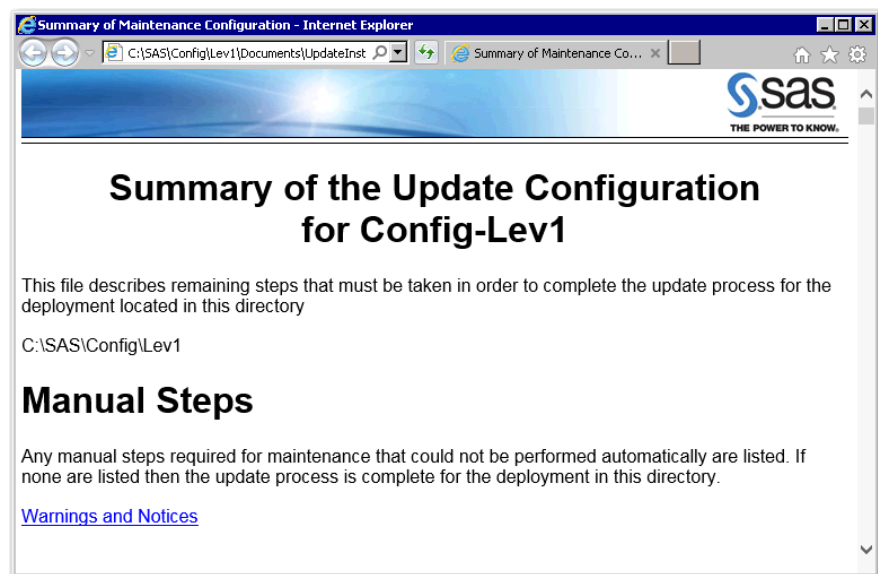
- 1 Properly back up your existing system.

**CAUTION!** The upgrade process writes over the existing system. If any problems are encountered, it might be necessary to recover the existing system from backup. Keep in mind that your existing system can be corrupted to the point of being unusable and unrecoverable. Backing up your system should include backing up your SAS Metadata Server. For more information, see [“Backing Up and Recovering the SAS Metadata Server”](#) in *SAS Intelligence Platform: System Administration Guide*.

- 2 Understand how the SAS Deployment Wizard upgrades SAS software.

See [“Adding, Updating, and Upgrading SAS Software”](#) in *SAS Intelligence Platform: Installation and Configuration Guide*.

- 3 Understand how your SAS Visual Analytics deployment will change.  
(In some releases, new SAS products are added during upgrades.)  
See [“SAS Visual Analytics” in SAS Guide to Software Updates](#).
- 4 Prepare your SAS Visual Analytics deployment.  
See [“Assessing the Effect on Products at Your Site” in SAS Guide to Software Updates](#).
- 5 Locate and familiarize yourself with your SAS software order.  
See [“Reviewing Your Software Order,” in the SAS Guide to Software Updates](#).
- 6 Gather the list of SAS user account credentials that you are required to upgrade.  
See [“User Accounts Password Checklist” on page 75](#).
- 7 Download your order and create a SAS Software Depot.  
See [“Step 1: Create a SAS Software Depot” on page 3](#).
- 8 Upgrade SAS Visual Analytics.  
See [“Upgrade SAS Visual Analytics \(Non-Distributed SAS LASR\)” on page 78](#).
- 9 Perform any manual post-upgrade deployment steps.  
See `UpdateInstructions.html`, which is located in the `Documents` subdirectory of your SAS configuration directory (for example, `C:\SAS\Config\Lev1\Documents`).  
  
If no manual steps are listed in `UpdateInstructions.html`, then the upgrade process is completed for the deployment in this configuration directory.



- 10 Validate your deployment.  
See [“Step 7: Validate Your SAS Visual Analytics Deployment” on page 72](#).

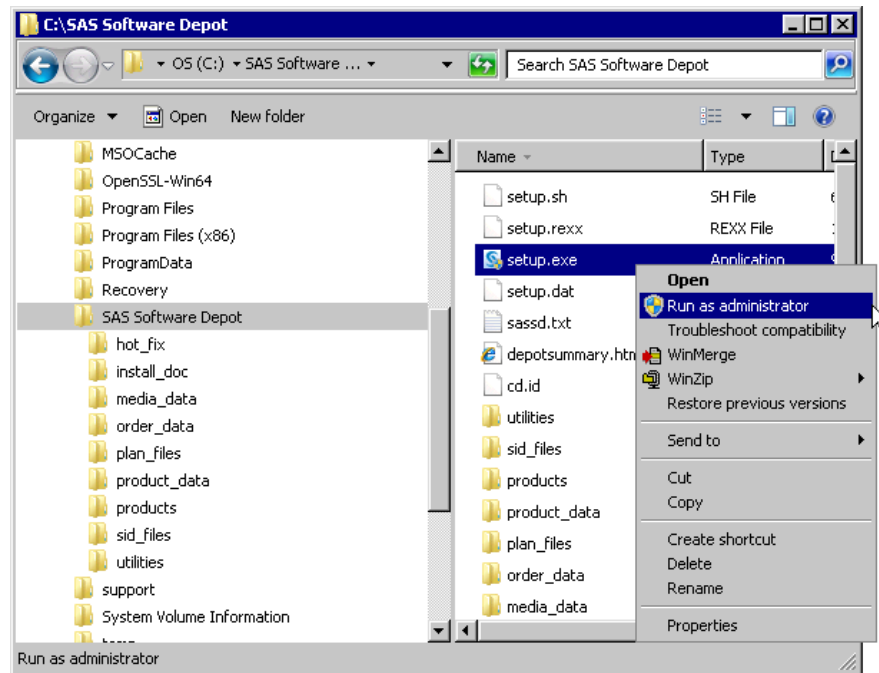
- 11 Before you begin using SAS Visual Analytics, check to see whether there are any new groups or capabilities that have been added to SAS metadata and whether any new metadata properties need to be manually updated.  
See [“SAS Visual Analytics” in SAS Guide to Software Updates](#).
- 12 Be sure to load your data sources into SAS LASR Analytic Server to enable reporting and exploration.

---

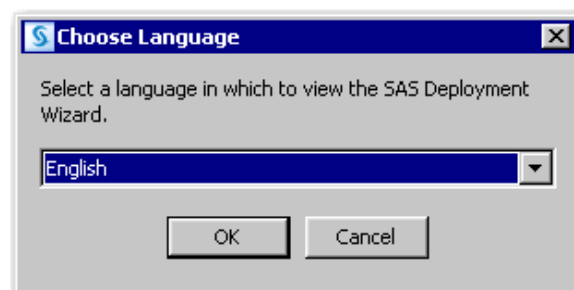
## Upgrade SAS Visual Analytics (Non-Distributed SAS LASR)

To upgrade SAS Visual Analytics with a non-distributed SAS LASR Analytic Server, follow these steps:

- 1 Make sure that you have the necessary SAS user account passwords discussed in [“User Accounts Password Checklist” on page 75](#). You are prompted for these passwords during the upgrade process.
- 2 Log on to the machine using the SAS installer account.
- 3 Shut down all SAS LASR Analytic Servers using the SAS Visual Analytics Administrator.  
For more information, see “Operating Servers” in the [SAS Visual Analytics: Administration Guide](#).
- 4 Shut down all active SAS sessions, daemons, spawners, and servers. It is important to shut down the SAS servers in the inverse order in which they were started. For more information, see [“Overview of Server Operation” in SAS Intelligence Platform: System Administration Guide](#).
- 5 On Windows, temporarily disable all encryption, anti-virus, anti-malware, anti-spyware, and firewall software. These types of programs can interfere with the upgrade process and block files as they are being copied and extracted.
- 6 On Windows, open Windows Explorer, and navigate to the highest-level directory in your SAS Software Depot. Right-click `setup.exe`, and select **Run as administrator**. On Linux, navigate to the highest-level directory in your SAS Software Depot, and run `setup.sh`.



7

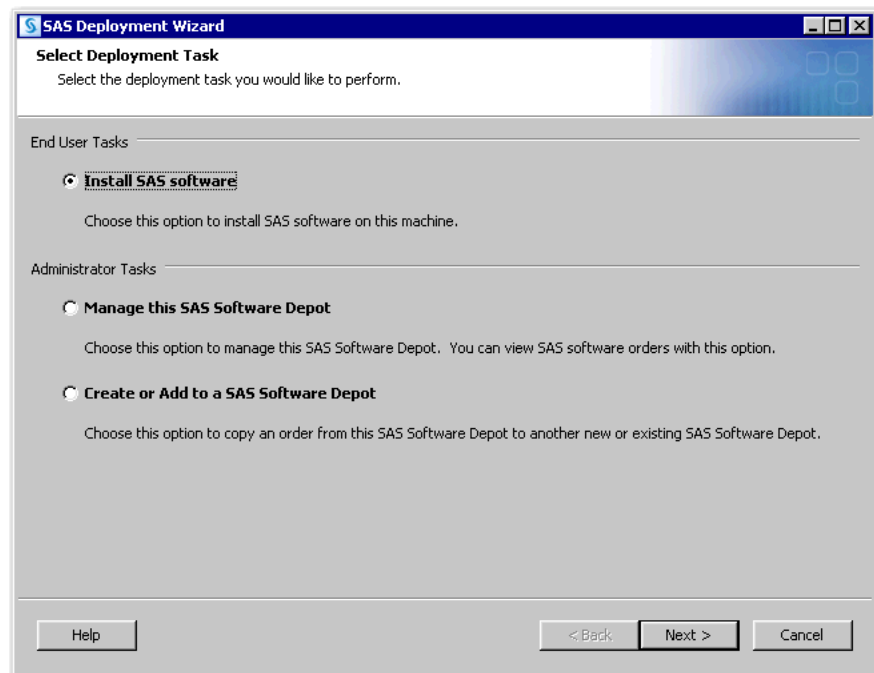


#### Choose Language

- From the drop-down list, select the language that you want the deployment wizard to use when it displays text, and click **OK**.



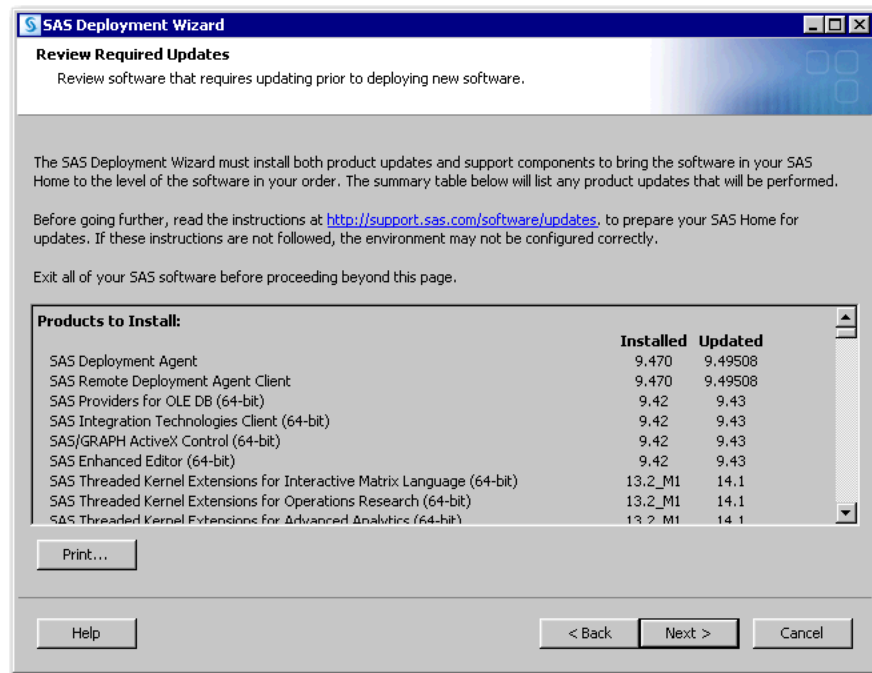
8



### Select Deployment Task

- Select **Install SAS Software**, and click **Next**.

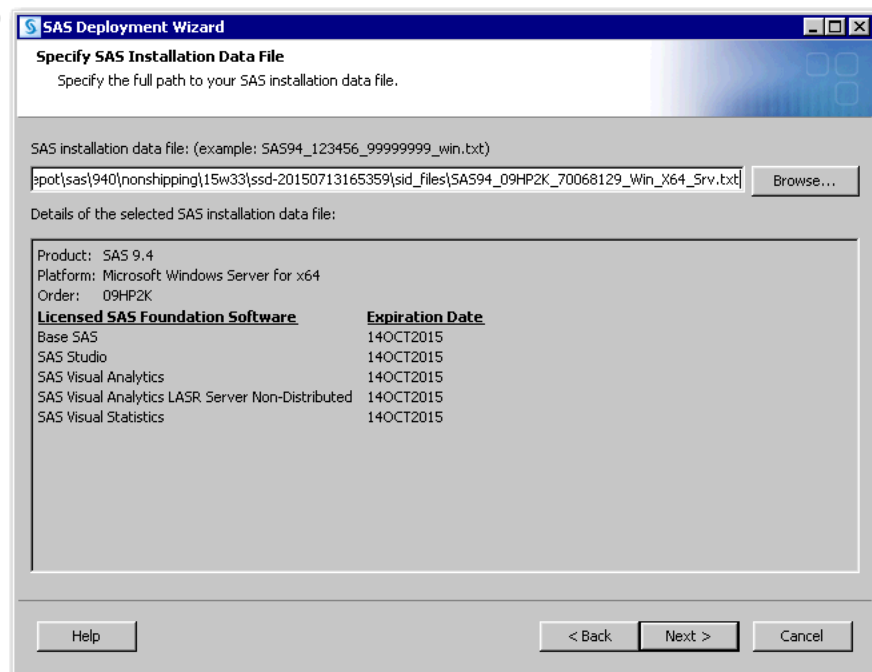
9



### Review Required Updates page

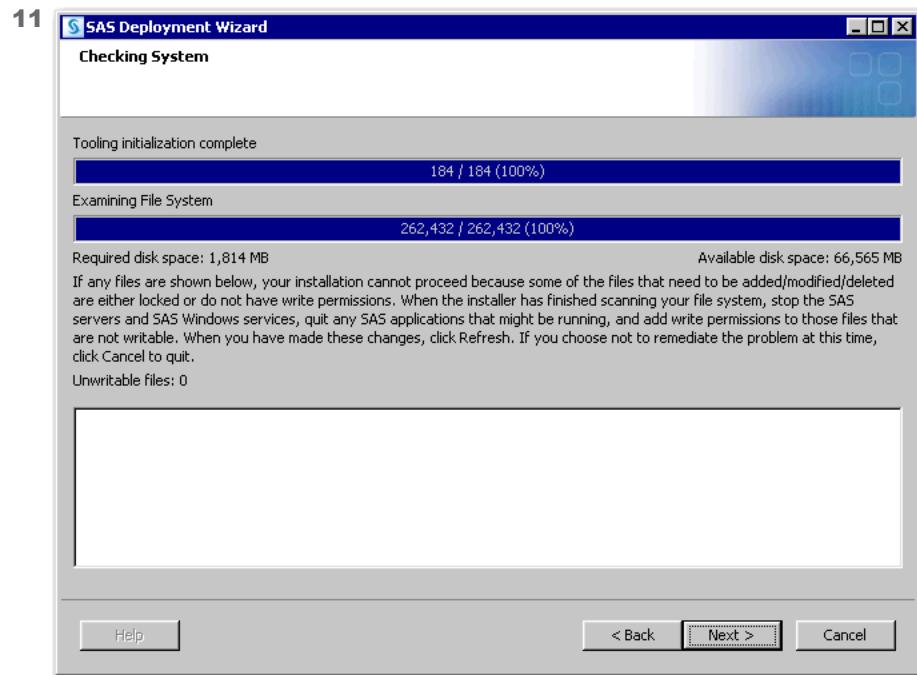
- Review the SAS products that the deployment wizard plans to upgrade, and click **Next**.

10



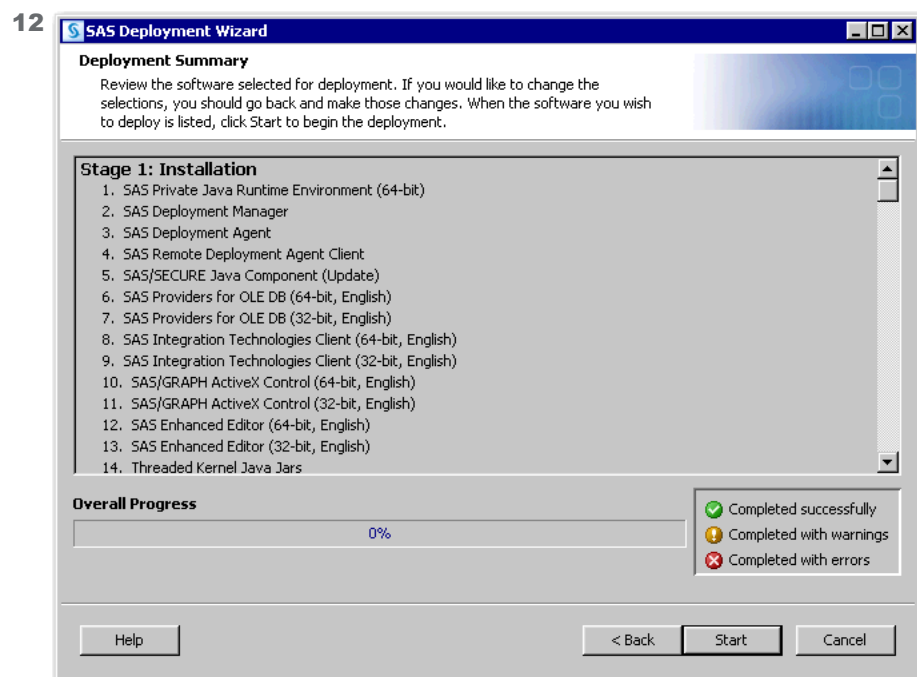
### Specify SAS Installation Data File

- Click **Browse**, locate your SAS installation data file, and then click **Next**.



### Checking System

- Wait while the SAS Deployment Wizard checks your system. When it is finished, click **Next**.
- If the wizard lists any files in the text box, then while the wizard is running, quit SAS and add Write permission to the files listed. When you are finished, click **Next**.



### Deployment Summary

- 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 that you have



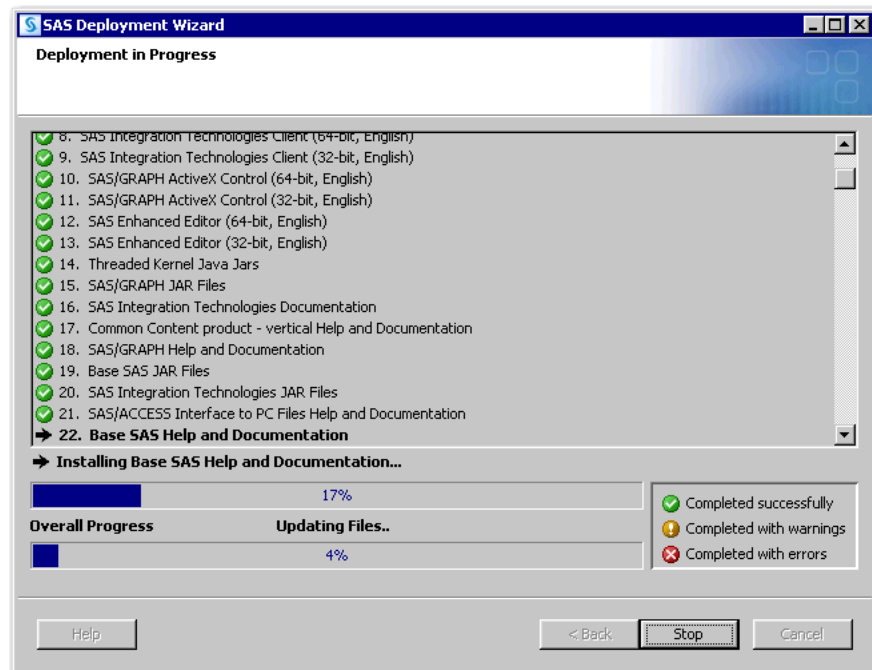
provided in previous pages before the wizard begins writing to your system.

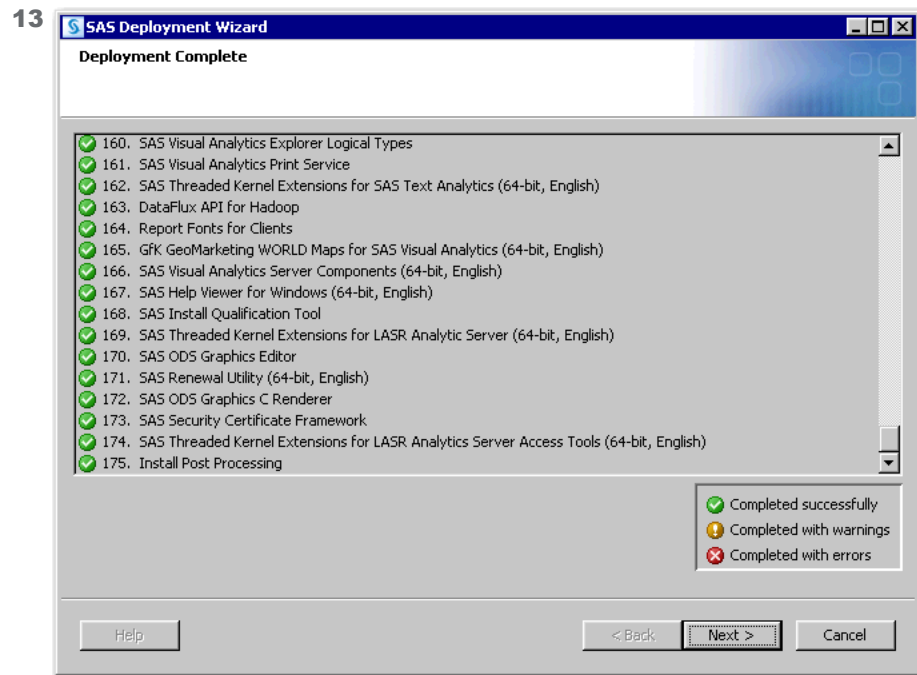
Make one of the following choices:

- ☐ Click **Start** to begin upgrading SAS files on the current machine.  
The deployment wizard launches the upgrade process and provides an ongoing status update.
- ☐ Click **Back** to navigate to earlier wizard pages to change upgrade information previously entered.
- ☐ Click **Cancel** to terminate the wizard session. Note that you will lose upgrade information previously entered.

On Linux, when you are upgrading the server tier, you will be instructed to run a script as root. As the message in the upgrade 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.

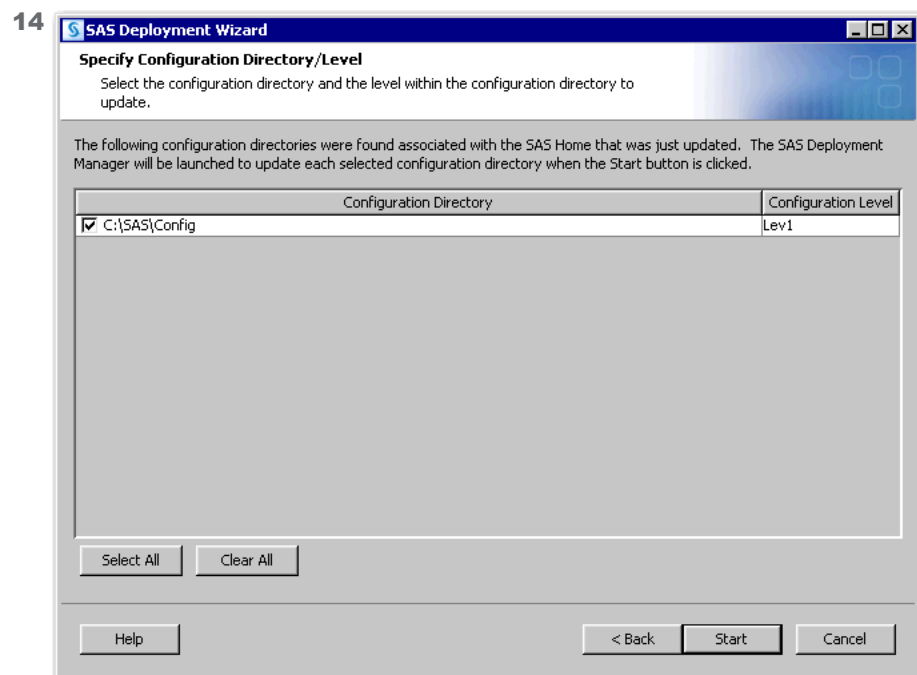
On Windows, the deployment wizard checks to make sure that your machine contains the minimum system requirements necessary to run SAS 9.4. Sometimes it is necessary to reboot your machine after the wizard has installed certain system components. When this occurs, after you log back on to the machine, the wizard continues to the next configuration step in your SAS deployment process.





#### Deployment Complete

- Green check marks next to every item on this page indicate that the installation phase of your upgrade completed successfully. Click **Next**.
- If you received errors during your installation, then contact SAS Technical Support at <mailto:support@sas.com>. Attach to your e-mail the files listed in “Review SAS Deployment Tool Documents, Reports, and Logs,” in the [Intelligence Platform: Installation and Configuration Guide](#).

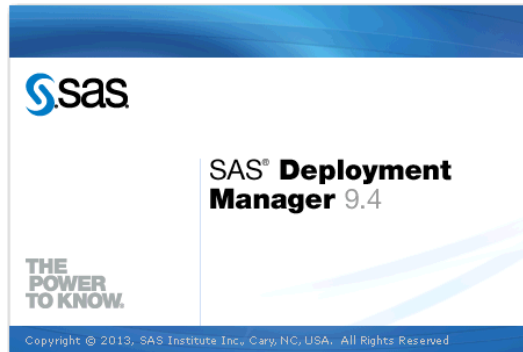


#### Specify Configuration Directory/Level page

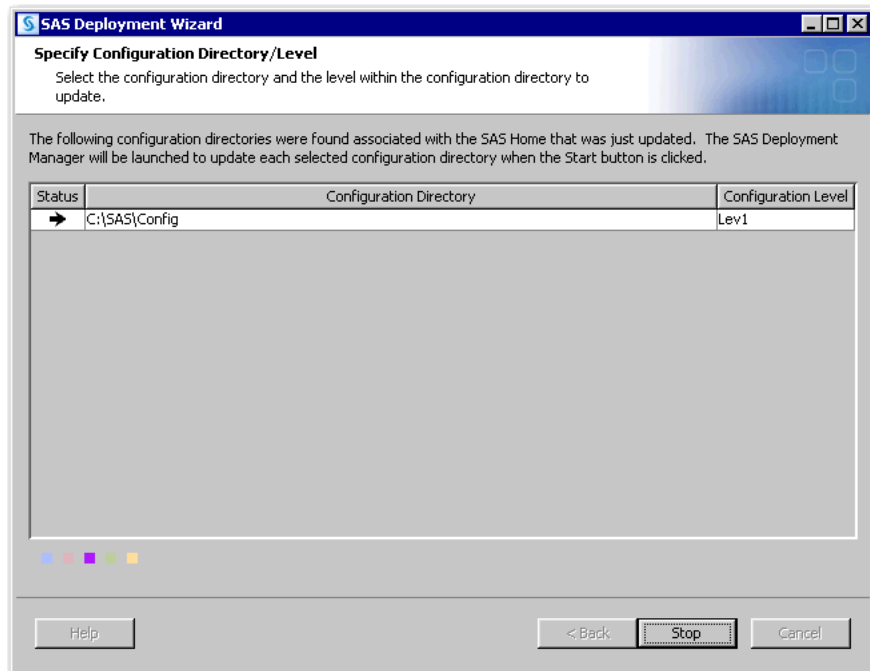
- Select the configuration directory that you want to upgrade (if more than one), and click **Start**.

The configuration phase of the upgrade process starts. You should see the splash page for the SAS Deployment Manager.

**Note:** The SAS Deployment Wizard page remains displayed while the SAS Deployment Manager performs the upgrade configuration.



The Specify Configuration Directory/Level page appears with a right-pointing arrow in its **Status** column and a progress indicator at the bottom.



**Note:** Do not close this SAS Deployment Wizard page while the SAS Deployment Manager is running.

15

**SAS Deployment Manager - C:\SAS\Config\Lev1**

**Specify Connection Information**  
Specify connection information to the SAS Metadata Server.

Host Name:  
pubsvr8.na.sas.com

Port:  
8561

User ID:  
sasadm@saspw

Password:  
\*\*\*\*\*

Help < Back Next > Cancel

#### Specify Connection Information page

- In **User ID**, enter the metadata identity for the SAS Unrestricted Administrator.  
**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).
- In **Password**, enter the metadata password for the SAS Unrestricted Administrator identity, and click **Next**.

16

**SAS Deployment Manager - C:\SAS\Config\Lev1**

**SAS Internal Account: Trusted User**  
Specify the metadata password for the Trusted User identity. The Trusted User is a privileged service account that can act on behalf of other users on a connection to the metadata server.

The Trusted User is a SAS internal account stored in metadata.

Display Name:  
SAS Trusted User

Name:  
sastrust

Internal User ID:  
sastrust@saspw

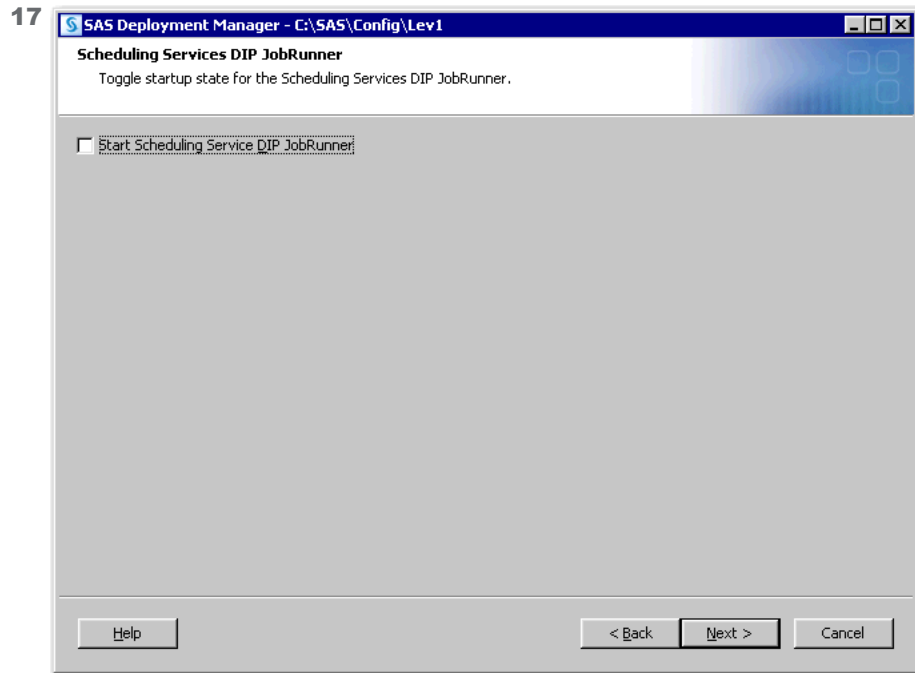
Internal Password:  
\*\*\*\*\*

Help < Back Next > Cancel

#### SAS Internal Account: Trusted User

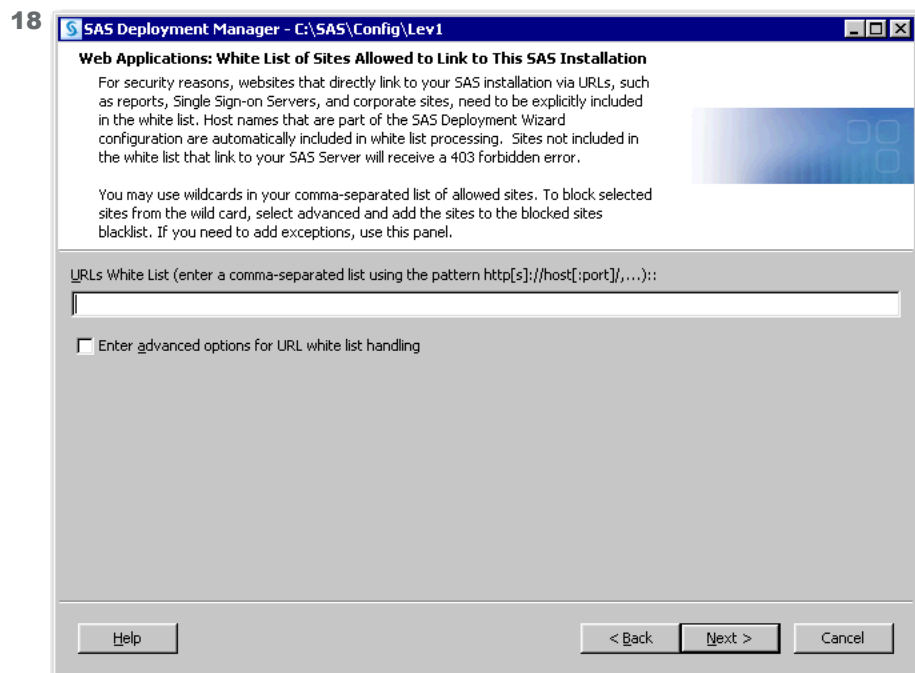
- In **Internal Password**, enter the metadata password for the SAS Trusted User account, and click **Next**.

**Note:** Refer to the information recorded in [Table A1.1](#) on page 75.



#### Scheduling Services DIP JobRunner

- Do not change the default information that is displayed on this page. Click **Next**.



#### Web Applications: White List of Sites Allowed to Link to this SAS Installation

- In **URLs White List**, enter a comma-delimited list of additional known hosts and domains to trust in the following form:

`http|https://host[:port] | domain/, ...`

For example:

`https://myserver:443/,http://example.com`

For security reasons, you must list any host name URLs for any site that could redirect browsers to your solution. This might include corporate sites linking to your solution for reporting purposes or single sign-on servers.

For example, if `https://corporatePortal.company.com/` links to your server, then enter `https://corporatePortal.company.com/` as one entry. This field enables you to add additional known hosts and domains to a preset list automatically created by the SAS configuration process.

The valid URLs whitelist can include just a list of host names to trust. The valid URLs whitelist can also include wildcards such as '\*' for host name and domain.

For more information, see [“Configuring the Cross Domain Proxy Servlet through a Whitelist” in SAS Intelligence Platform: Middle-Tier Administration Guide](#).

- Select **Enter advanced options for URL white list handling** to display an additional page in which you can specify advanced options for the filter.

19

SAS Deployment Manager - C:\SAS\Config\Lev1

**SAS Web Infrastructure Platform Database: JDBC Properties**

Specify the connection information for the SAS Web Infrastructure Database JDBC connection.

User ID:

Password:

Confirm Password:

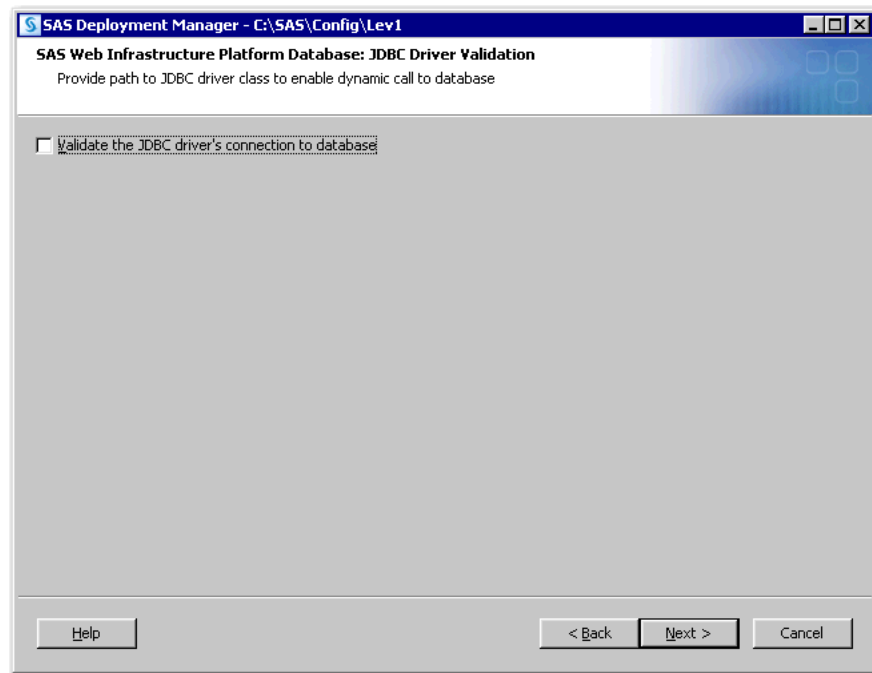
Help      < Back      Next >      Cancel

SAS Web Infrastructure Platform Database: JDBC Properties

- In **Password**, specify the password for the SAS Web Infrastructure Platform Database user, and click **Next**.

**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).

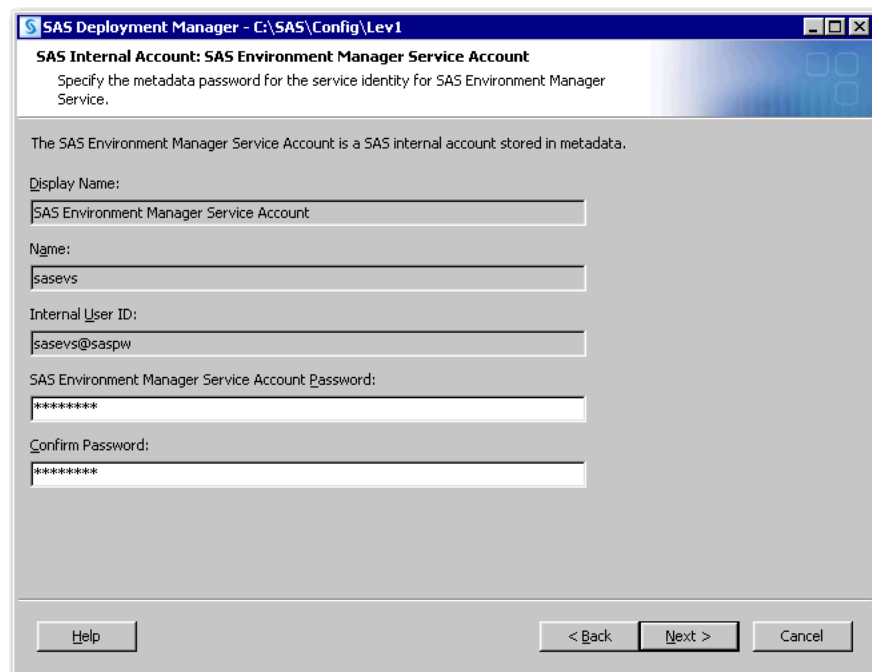
20



#### SAS Web Infrastructure Platform Database: JDBC Driver Validation

- Do not change the default information that is displayed on this page. Click **Next**.

21



#### SAS Internal Account: SAS Environment Manager Service Account

- In **SAS Environment Manager Service Account Password**, specify the metadata password for the SAS Environment Manager service account, and click **Next**.

**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).

22

**SAS Deployment Manager - C:\SAS\Config\Lev1**

**SAS Visual Analytics Services Database Credentials**  
Specify the connection information for the SAS Visual Analytics Services Database JDBC connection.

User ID:  
vatadm

Password:  
\*\*\*\*\*

Confirm Password:  
\*\*\*\*\*

Help < Back Next > Cancel

#### SAS Visual Analytics Services Database Credentials

- In **Password**, specify the password for the user account that SAS uses to create a JDBC connection to the SAS Visual Analytics Services database, and click **Next**.

**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).

23

**SAS Deployment Manager - C:\SAS\Config\Lev1**

**SAS Visual Analytics Sample Reports**  
Specify whether to include sample Visual Analytics reports.

☒ Include Visual Analytics Sample Reports

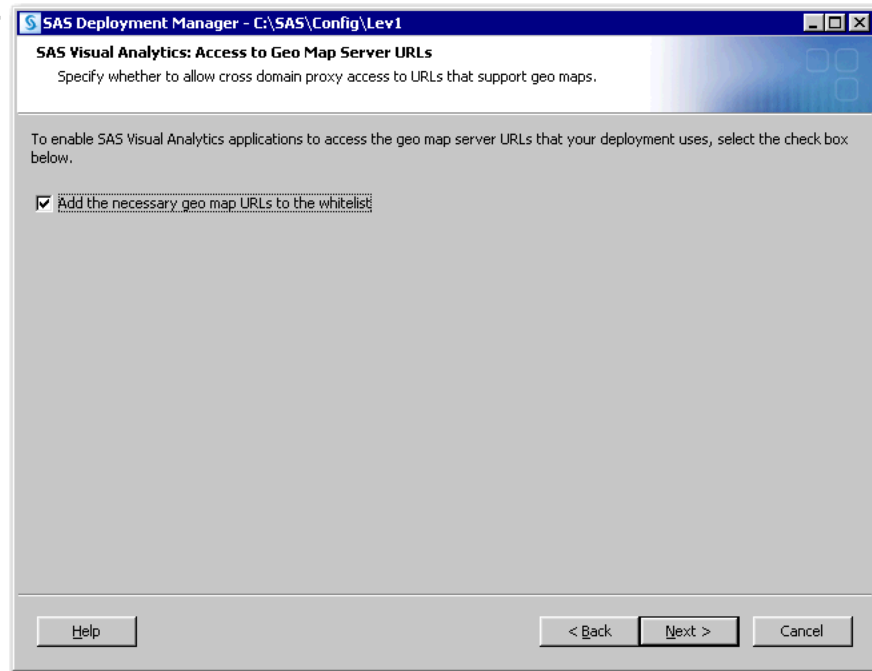
Help < Back Next > Cancel

#### SAS Visual Analytics Sample Reports

- Click **Next**.



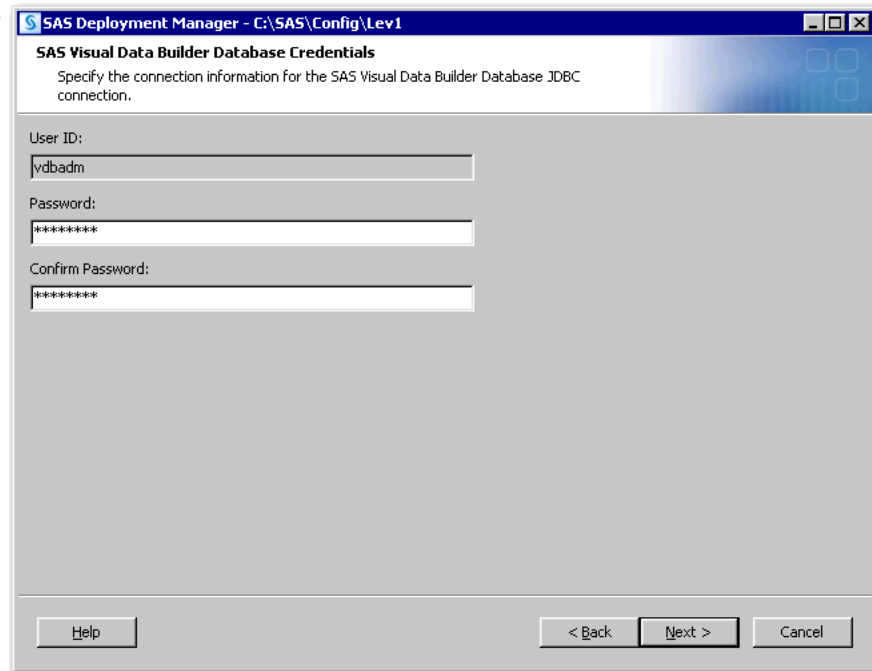
24



### SAS Visual Analytics: Access to Geo Map Server URLs

- Do not change the default information that is displayed on this page. Click **Next**.

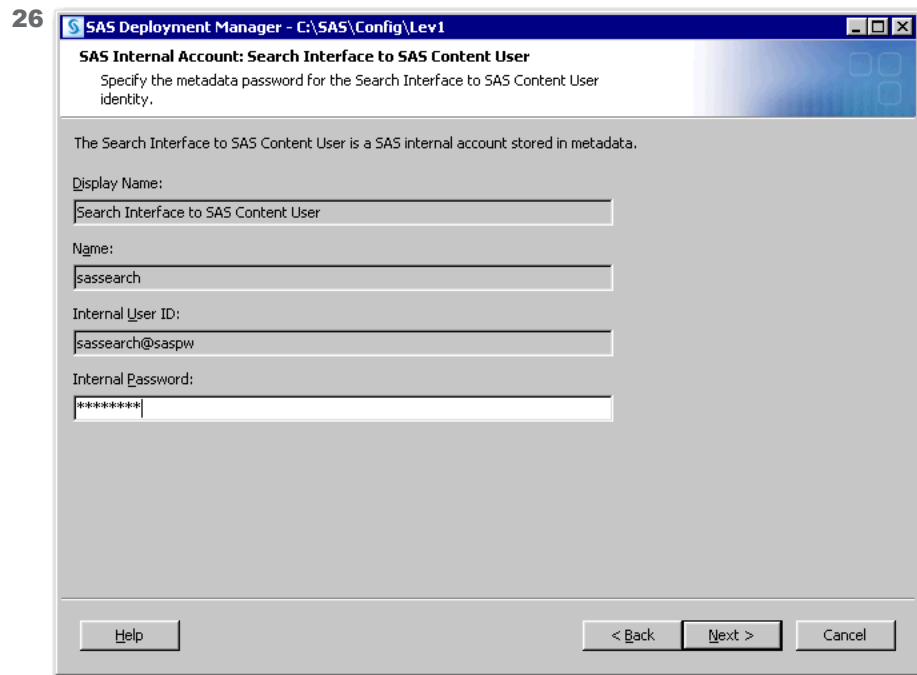
25



### SAS Visual Data Builder Database Credentials

- In **Password**, enter the password for the user account that SAS uses to create a JDBC connection to the SAS Visual Data Builder database, and click **Next**.

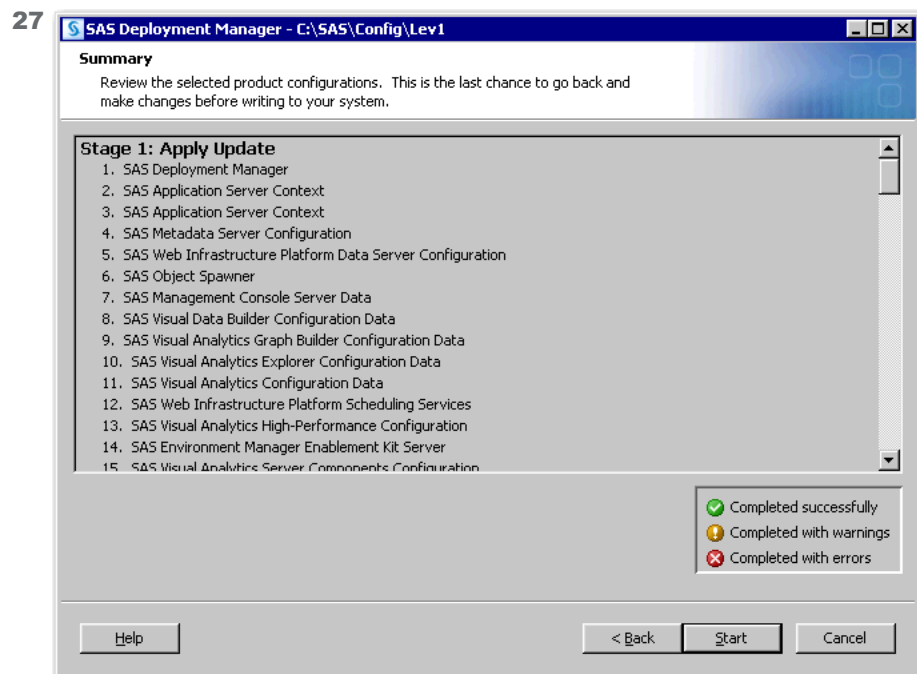
**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).



#### SAS Internal Account: Search Interface to SAS Content User

- In **Internal Password**, specify the metadata password for the internal user account that permits access to SAS content that is provided to SAS Information Retrieval Studio for indexing, and click **Next**.

**Note:** Refer to the information recorded in [Table A1.1 on page 75](#).



#### Summary (SAS Deployment Manager)

- When you see the Summary page, the SAS Deployment Manager has finished collecting upgrade configuration input. This is the last opportunity to go back and change any information that you have provided in

previous pages before the SAS Deployment Manager begins upgrading your system.

Make one of the following choices:

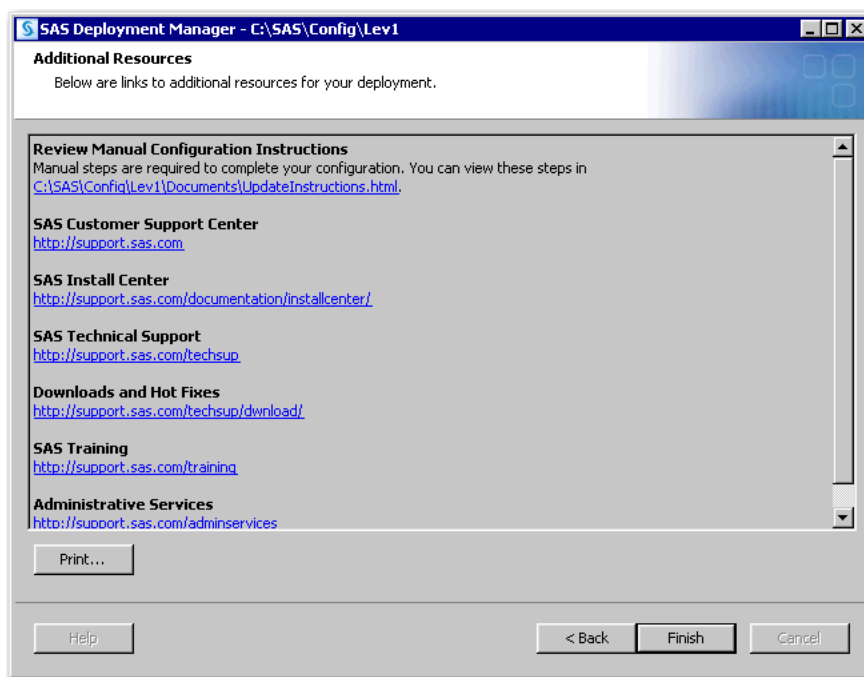
- ☐ Click **Start** to begin performing the upgrade on the current machine.  
The SAS Deployment Manager launches the upgrade process and provides an ongoing status update.
- ☐ Click **Back** to navigate to earlier SAS Deployment Manager pages to change upgrade information previously entered.
- ☐ Click **Cancel** to terminate the SAS Deployment Manager session.  
Note that you will lose upgrade information previously entered.

**CAUTION!** If you encounter a situation in which the SAS Deployment Manager reports a configuration failure, leave the error message displayed and do not continue. Consult additional documentation and, if necessary, contact SAS Technical Support. Moving past an error most often results in having to delete your deployment and start over.

On Linux, when you are upgrading the server tier, you will be instructed to run a script as root. As the message in the upgrade 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 deployment have setuid permissions and be owned by root.

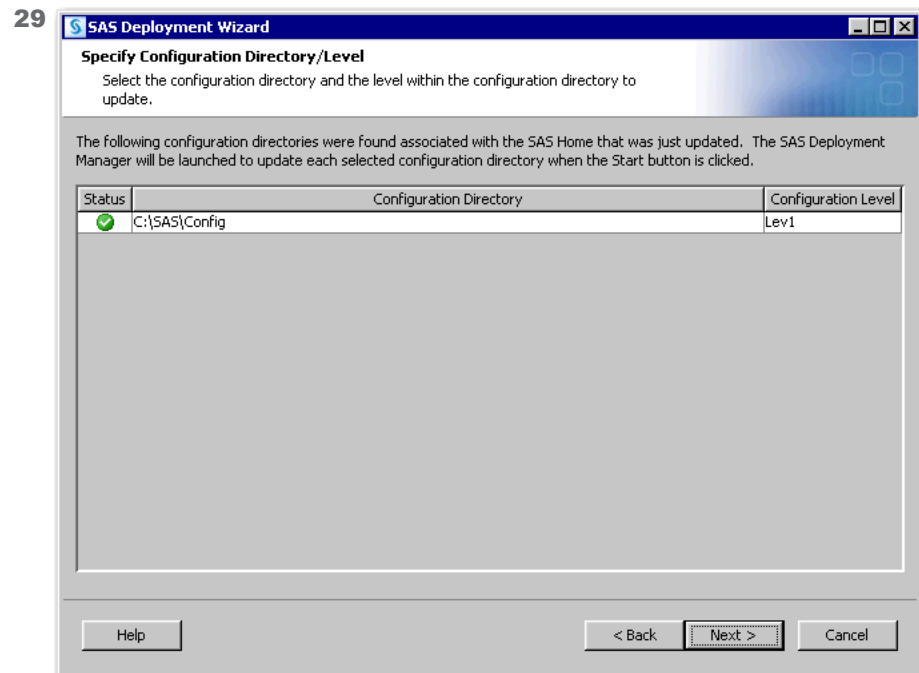
On Windows, the SAS Deployment Manager checks to make sure that your machine contains the minimum system requirements necessary to run SAS 9.4. Sometimes it is necessary to reboot your machine after the deployment manager has upgraded certain system components. When this occurs, the deployment manager prompts you to log back on to the machine and continues to the next step in your SAS upgrade process.

28



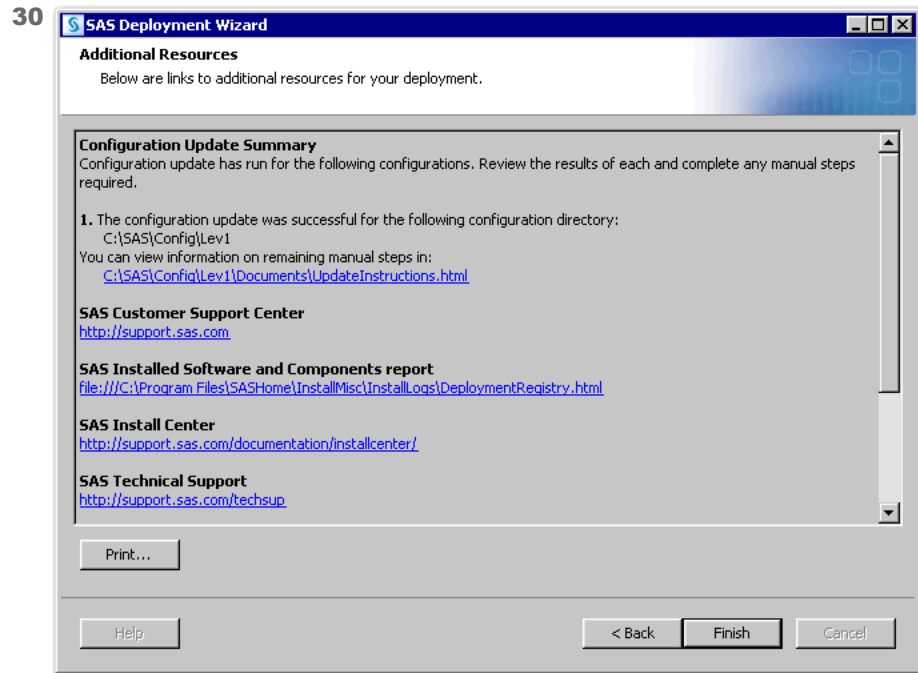
## Additional Resources (SAS Deployment Manager)

- Use the links displayed to review more information about your SAS deployment.
- Click **Finish** to close the SAS Deployment Manager.



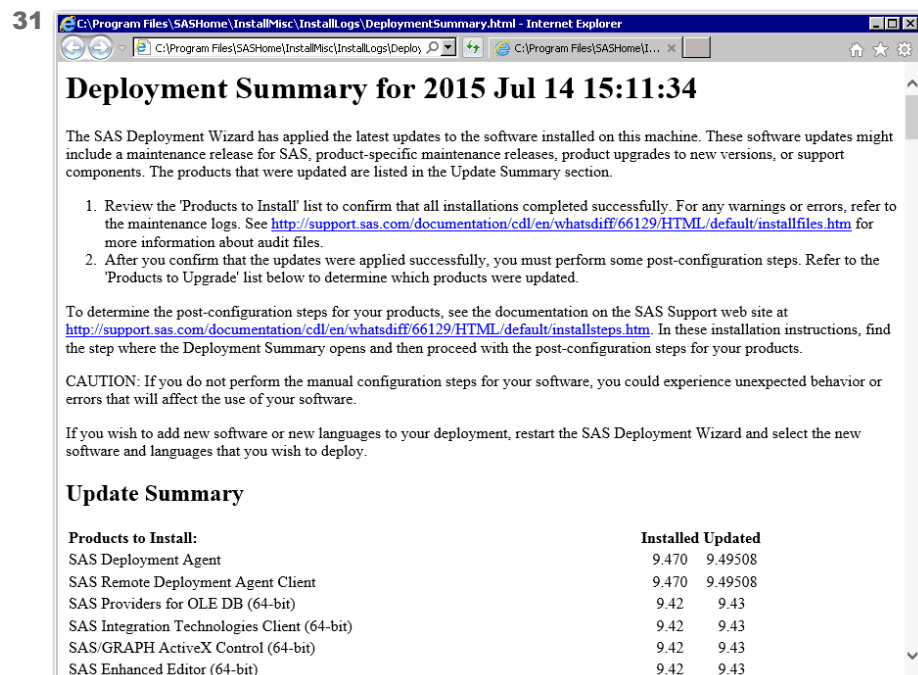
## Specify Configuration Directory/Level (Finished) page

- A green check mark indicates that your upgrade completed successfully. Click **Next**.
- If you received errors during your upgrade, then contact SAS Technical Support at <mailto:support@sas.com>. In your e-mail, attach the files listed in “Review SAS Deployment Tool Documents, Reports, and Logs” in *SAS Intelligence Platform: Installation and Configuration Guide*.



### Additional Resources

- Be sure to review `UpdateInstructions.html` to see if there are post-upgrade steps that you must perform.
- Click **Finish** to close the SAS Deployment Wizard.



### Deployment Summary report

- Review the Deployment Summary report for a list of SAS products that were upgraded and information about next steps.

32 Proceed to the step [Perform any manual post-upgrade deployment steps on page 77](#).



## Recommended Reading

Here is the recommended reading list for this title:

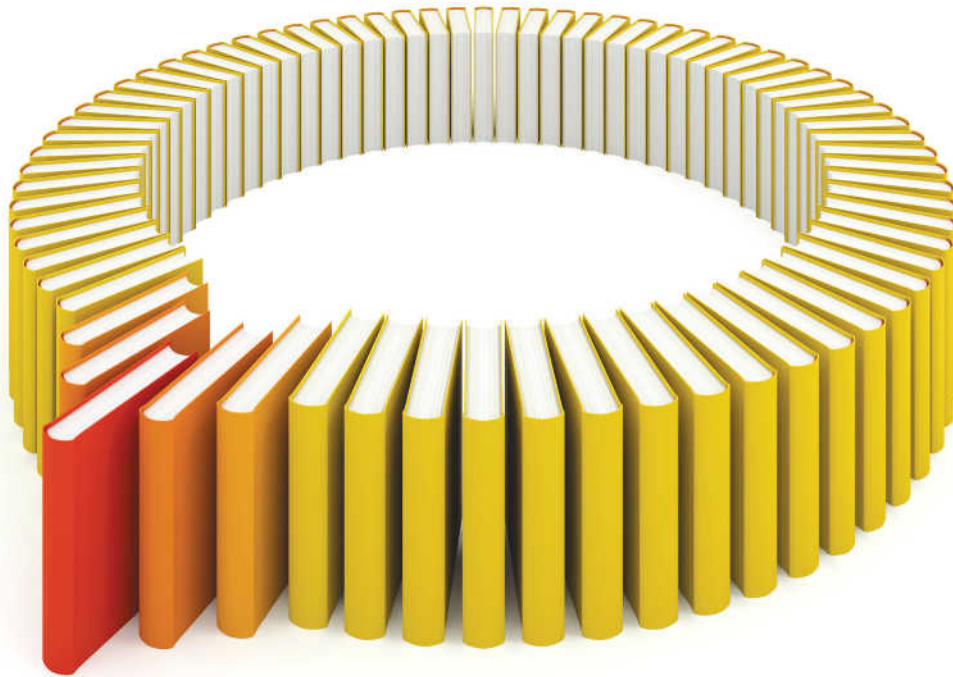
- [SAS Guide to Software Updates](#)
- [SAS LASR Analytic Server: Reference Guide](#)
- [SAS Visual Analytics: User's Guide](#)
- [System Requirements--SAS Visual Analytics 7.3 \(Distributed or Non-distributed LASR\)](#)
- [System Requirements--SAS Visual Analytics 7.3 and SAS Visual Statistics 7.3](#)
- [SAS Visual Analytics Tutorials](#)
- [SAS Visual Analytics on YouTube](#)
- SAS offers instructor-led training and self-paced e-learning courses to help you administer SAS Visual Analytics. For more information about the courses available, see [support.sas.com/admintraining](http://support.sas.com/admintraining).

For a complete list of SAS publications, go to [sas.com/store/books](http://sas.com/store/books). If you have questions about which titles you need, please contact a SAS Representative:

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Email: [sasbook@sas.com](mailto:sasbook@sas.com)  
Web address: [sas.com/store/books](http://sas.com/store/books)







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