



SAS[®] 9.4 Foundation and Related Software: Installation Guide for UNIX

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SAS® 9.4 Foundation and Related Software: Installation Guide for UNIX

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SAS 9.4 Foundation and Related Software: Installation Guide for UNIX

Audience

The information in this document can be used by a SAS System Administrator to install SAS Foundation on a UNIX machine.

Chapter 1

Introduction

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What Is SAS Foundation and Related Software?

SAS Foundation refers to the superset of all SAS software that can be deployed with Base SAS, such as SAS/ACCESS and SAS/GRAPH. Therefore, the list of products that constitute SAS Foundation can vary between SAS software orders. In your case, SAS Foundation is the collection of SAS products that was ordered by your company for your site.

Related software consists of SAS products that are neither part of SAS Foundation nor the third-party software your order might require. Related software can be graphical user interfaces, tools, or programming environments that enable you to effectively use SAS products. SAS ODS Graphics Editor and SAS/IML Studio are examples of related software.

Basic Deployment Type

When you install SAS Foundation, you are performing a basic deployment. Unlike planned deployments, basic deployments do not require a deployment plan.

SAS Software Distribution Method

SAS supports the following method for distributing SAS software orders:

- Electronic Software Delivery (ESD)

The SAS ESD process enables users to receive an order over the Internet from the SAS support website.

With this distribution method, you build a SAS Software Depot from which you install SAS Foundation.

What Is Covered in This Document?

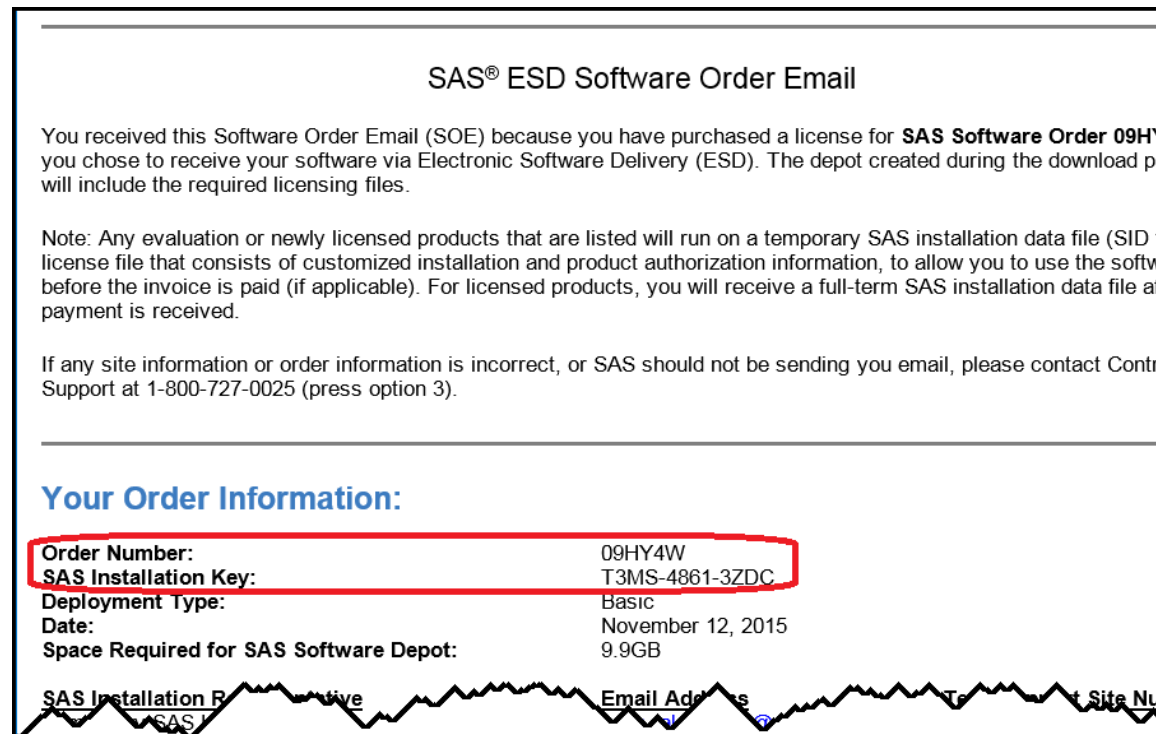
This document assumes that you and your SAS representative have decided what software you need and on what machine you will install the software. So this document begins with pre-installation and continues through the installation, and configuration tasks that you must perform for a *basic* deployment of SAS Foundation and related software on a UNIX machine.

This document is written for the SAS system administrator—the person who oversees the entire process of deploying SAS. The administrator receives the software order email (SOE), downloads the order, and installs and configures SAS.

Software Order Email (SOE)

SAS sends an email to your site representative to provide details about your SAS software order. This email is referred to as the *software order email (SOE)*. The SOE contains two pieces of information that are critical for deploying SAS: your SAS order number and SAS installation key. You will need this information later in the deployment process.

Figure 1.1 Software Order Email



Overview of Deploying SAS Foundation

There are five steps required to deploy SAS Foundation:

1. Complete the Pre-Installation Checklist.
2. Set up a SAS profile.
3. Create a SAS Software Depot.
4. Install SAS.
5. Validate your SAS deployment.

Step One: Complete the Pre-Installation Checklist

Before you continue, complete all of the tasks listed on the pre-installation checklist:

Table 1.1 Pre-Installation Checklist

Task	Description
<input type="checkbox"/> Make sure that your machine meets all system requirements.	<p>Review the SAS system requirement that is appropriate for your operating system available. See http://support.sas.com/resources/sysreq/index.html.</p> <p>For example, the machine from which you are downloading the SAS installation software must have the following:</p> <ul style="list-style-type: none"> • Internet access Your machine must access the SAS download website. • a windowing environment Make sure that a windowing environment such as the Common Desktop Environment or X11 is installed. • certain UNIX packages and libraries Check the system requirements. • adequate disk space Just before creating a depot, the SAS Download Manager presents you with an estimate of the amount of disk space required for your download.
<input type="checkbox"/> Check for new hot fixes.	<p>Critical hot fixes that were released after the current maintenance release are automatically installed when you run the SAS Deployment Wizard. Additional hot fixes might be available for your products. To determine whether there are additional hot fixes for your products, see http://ftp.sas.com/techsup/download/hotfix/hotfix.html.</p>
<input type="checkbox"/> Ensure that your operating system supports the version of SAS that you are preparing to install.	<p>SAS 9.4 Foundation and related software can run on specific versions of the UNIX operating system. To find out if your machine supports the current release, go to the Supported Operating Systems page at http://support.sas.com/supportos/list.</p>
<input type="checkbox"/> Create a SAS Installer user account on your machine.	<p>Always use the SAS Installer user (for example, sas) to deploy SAS and to apply future hot fixes, updates, and product add-ons.</p>
<input type="checkbox"/> Create an operating system group on your machine.	<p>This operating system group (for example, sasgroup) should be the primary group for the SAS Installer user.</p> <p>Members of this group are given access to certain directories and files that are created by the SAS Deployment Wizard (the program used to install and configure SAS).</p>

Task	Description
<input type="checkbox"/> Create a SAS directory on your machine.	<p>SAS requires a location on your machine where the following can be stored:</p> <ul style="list-style-type: none"> • The SAS Download Manager (the program used to download SAS installation files) • Downloaded SAS installation files (referred to as a SAS Software Depot) • SAS software installation <p>SAS recommends that you designate one directory to serve as a parent for three subdirectories. These subdirectories contain each piece of SAS software. Here is an example:</p> <pre> /opt/sas9.4/ dlm/ depot/ install/ </pre>
<input type="checkbox"/> Make sure that the SAS directory meets all requirements.	<p>The SAS directory must meet these requirements:</p> <ul style="list-style-type: none"> • Allow the SAS Installer user Read, Write, and Execute permissions. • The mounted file system that contains the SAS directory must permit execution of binaries. (The <code>-noexec</code> option must <i>not</i> be set.) • The SAS directory and its children do not contain whitespace characters or special characters in their names.
<input type="checkbox"/> Have sudo or root user access to your machine.	<p>SAS provides a script (<code>setuid.sh</code>) with which to set certain SAS installation files with <code>setuid</code> permissions and root ownership. The <code>setuid.sh</code> script must be run as root in order to complete successfully.</p> <p>For more information, see “Deploying SAS Foundation” on page 31.</p>
<input type="checkbox"/> Decide which languages your SAS 9.4 products must support.	<p>The Select Language Support page of the <i>SAS Deployment Wizard</i> enables you to select all languages that your SAS 9.4 products support. By default, all supported languages are selected. To save download time and disk space, you should select only the languages that you plan to use.</p>
<input type="checkbox"/> Decide which locale (or regional) setting to use and whether to configure your machine as a Unicode server.	<p>The Select Regional Settings page of the <i>SAS Deployment Wizard</i> enables you to select the locale for your SAS software.</p> <p>The locale of your operating system must match the locale that you plan to select during installation. The locale setting controls how SAS 9.4 formats text, numbers, currencies, date-time formats, and data (sorting) in the user interface.</p> <p>The Select Regional Settings page of the <i>SAS Deployment Wizard</i> also enables you to configure your machine as a Unicode server. Unicode is useful if your deployment supports multiple languages. However, UTF-8 encoding can cause problems when sharing SAS data with sites that use default encodings.</p> <p><i>Note:</i> If you plan to configure your machine as a Unicode server, your operating system must use UTF-8 encoding.</p>
<input type="checkbox"/> Locate your Software Order Email.	<p>Your “Software Order Email (SOE)” contains two pieces of important information that you will need later when you download your SAS software: your SAS order number and your SAS installation key.</p>

Proceed to [Chapter 2, “Setting Up Your SAS Profile,” on page 7](#).

Chapter 2

Setting Up Your SAS Profile

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Deployment Process Overview: Step Two

This chapter describes how to set up a profile on the SAS Technical Support website.

Setting up a profile is the second of five steps in deploying SAS Foundation.

1. Complete the Pre-Installation Checklist.
- ⇒ **2. Set up a SAS profile.**
3. Create a SAS Software Depot.
4. Install SAS.
5. Validate your SAS deployment.

Overview of Setting Up a Profile on the SAS Technical Support Website

Setting up your profile on the SAS Technical Support website, support.sas.com, consists of the following steps:

1. Using a web browser, go to support.sas.com and provide the necessary information.
2. Click the link in a confirmation email that SAS sends to you.
3. Complete your SAS profile by providing a password.
4. Using your new SAS profile, verify that you can log on to support.sas.com.

Set Up a Profile on the SAS Technical Support Website

You must create a SAS profile before you can download your SAS software order.

If you have not yet set up a profile on the SAS Technical Support website (support.sas.com), follow these steps:

1. Open a web browser and point it to <http://support.sas.com/documentation/installcenter/94/unx/>.

The SAS Knowledge Base / Install Center page is displayed.

The screenshot shows the SAS Knowledge Base / Install Center page. The top navigation bar includes the SAS logo, a search bar, and links for 'Log in' and 'Create profile'. The 'Create profile' link is highlighted with a red box and an arrow. The main content area is titled 'KNOWLEDGE BASE / INSTALL CENTER' and features a sidebar with a 'KNOWLEDGE BASE' menu. The main content area displays 'Documentation for installing SAS® 9.4 in UNIX operating environments' and includes sections for 'Electronic Software Delivery' and 'Physical Software Delivery'. A list of numbered items is provided, with the first item being '1. Verify the system requirements:' followed by several links for system requirements for different operating systems.

2. In the upper right corner of the page, click **Create profile**.

The My Profile page is displayed.

Required Information

Preferred language for
"My Profile"

First Name *

Last Name *

Email *

We value your [privacy](#) and will not sell, rent or lease your information to others.

Company/Organization *

Country *

Affiliation with SAS

I agree to the [terms of use and legal information](#) *

Yes, I would like to opt-in to receive occasional emails from SAS Institute Inc. and its affiliates about SAS products, events, free white papers, special offers on training and publications, etc. All personal information will be handled in accordance with the SAS Privacy Statement. ([learn more](#))

* required fields

Create Profile

3. Enter the required information and select the check box for agreeing to terms of use. When you finish, click **Create Profile**.

The My Profile Activation page appears. An email will have been sent to the address that you specified when you created your SAS profile.

You should receive a *"Please activate your SAS Profile"* email from us in the next few minutes.

To Activate Your Profile: Open email, click on the enclosed link and create a password.

If you do not receive this email, look in your email junk folder.

Ensure SAS emails are not blocked by your mailserver - [Add sas.com to your list of safe sender domains](#).

If you have trouble creating your SAS Profile, email SASProfileHelp@sas.com.

4. Using your email program, locate the email from SAS with a subject line similar to **Please Activate your SAS Profile**.
5. Click the link in the email, and, using your web browser, follow the instructions to create a password for your SAS profile.
6. Using your web browser, return to <http://support.sas.com/documentation/installcenter/94/unx/>. On the upper right corner of the page, click **Log in** to verify that you can log in to the Install Center.
7. Proceed to [Chapter 3, "Creating Your SAS Software Depot,"](#) on page 11.

Chapter 3

Creating Your SAS Software Depot

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Deployment Process Overview: Step Three

This chapter describes how to create a SAS Software Depot.

Creating your SAS Software Depot is the third of five steps in deploying SAS Foundation.

1. Complete the Pre-Installation Checklist.
2. Set up a SAS profile.
- ⇒ **3. Create a SAS Software Depot.**
4. Install SAS.
5. Validate your SAS deployment.

Overview of Creating Your SAS Software Depot

Before you can install SAS, you must have a SAS Software Depot to install from. A *SAS Software Depot* is a file system that consists of SAS installation files that represent one or more orders. The depot is organized in a specific format that is meaningful to the SAS Deployment Wizard, which is the program that you use to install SAS.

Perform the following steps:

1. Use a web browser to download and install a program called the SAS Download Manager.
2. Run the download manager to simultaneously download your SAS order and create your SAS Software Depot.

3. Change permission and ownership of your SAS Software Depot directories.

After you create your software depot, you can use the SAS Software Depot Checker Utility to check that your SAS Software Depot is valid.

Download Your Software Order and Create a Depot

To download your software order and use the SAS Download Manager to create your SAS Software Depot, follow these steps:

1. Make sure that you know your SAS order number and the SAS installation key, both of which are contained in your “[Software Order Email \(SOE\)](#)” on page 2.

You will be asked for this information later.

2. Make sure that you have completed the [Pre-Installation Checklist](#) on page 4.

Note: If you plan to move your SAS software order to another machine running a different operating system after you download it, please read the following SAS Note available at <http://support.sas.com/kb/38/258.html>.

3. As the SAS Installer user (for example, sas), log on to the machine on which you want to install SAS.
4. Open a web browser and point it to <http://support.sas.com/downloadmgr>.

The Downloads page is displayed.

The screenshot shows the SAS Download Manager interface. At the top, it says "All Downloads" in blue. Below that is the main heading "Downloads" and the sub-heading "SAS Download Manager". There are three tabs: "Version / Release", "A - Z", and "Release Date". The "Version / Release" tab is selected. Below the tabs, there is a list of downloads. The first item is "SAS 9", which is expanded to show "SAS Download Manager Release 1.67 - OCT 2015 Windows, UNIX, Mac, z/OS".

5. If you are not already logged in to the website, do so now by clicking **Log in**. (If you are logged in, skip to step 7.)

The SAS Login page is displayed.

Note: If you have not already set up a SAS Profile, see [Chapter 2, “Setting Up Your SAS Profile,”](#) on page 7.

Already Have a Profile?

Email:

Password:

Keep me logged in

[Login](#)

[🔒 Forgot Password?](#)

[🔍 Need Help?](#)

[💬 Chat Unavailable](#)

6. Enter your email address and password, and click **Login**.
You are returned to the Downloads page.

[All Downloads](#)

Downloads

SAS Download Manager

Version / Release | A - Z | Release Date

- SAS 9
 - [SAS Download Manager](#) Release 1.67 - OCT 2015 Windows, UNIX, Mac, z/OS

7. Select **SAS Download Manager**.
The SAS Download Manager window is displayed.

SAS Download Manager						
Platform	Description	Request Download	Size	Uncompressed	Release Date	ReadME
64-bit enabled AIX	SAS Download Manager	esdclient_94360_r64_xx_web_1	117MB	537MB	2015-10	pdf txt
64-bit enabled Solaris	SAS Download Manager	esdclient_94360_s64_xx_web_1	89MB	537MB	2015-10	pdf txt
HP-UX IPF	SAS Download Manager	esdclient_94360_h6i_xx_web_1	109MB	537MB	2015-10	pdf txt
Linux for x64	SAS Download Manager	esdclient_94360_lax_xx_web_1	68MB	537MB	2015-10	pdf txt
Macintosh	SAS Download Manager	esdclient_94360_mac_xx_web_1.dmg	15MB	537MB	2015-10	pdf txt
Microsoft® Windows® for x64	SAS Download Manager	esdclient_94360_wx6_xx_web_1.exe	43MB	537MB	2015-10	pdf txt
Solaris for x64	SAS Download Manager	esdclient_94360_sax_xx_web_1	83MB	537MB	2015-10	pdf txt
Windows	SAS Download Manager	esdclient_94360_win_xx_web_1.exe	43MB	537MB	2015-10	pdf txt
z/OS	SAS Download Manager	esdclient_94360_mvs_xx_web_1.zos	17MB	537MB	2015-10	pdf txt

8. Click the **Request Download** link that is appropriate for your operating system.

The SAS License Agreement for Download window is displayed.

SAS License Agreement for Download ✕

SAS Institute Inc.

License Agreement for Corrective Code or Additional Functionality

PLEASE CAREFULLY READ THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT ("AGREEMENT") BEFORE YOU CLICK ON THE "ACCEPT" BUTTON. BY CLICKING ON THE "ACCEPT" BUTTON YOU, ON BEHALF OF CUSTOMER, AS DEFINED BELOW, ARE AGREEING TO THESE TERMS, AND SAS, AS DEFINED BELOW, WILL AUTHORIZE YOU TO DOWNLOAD THE CODE, AS DEFINED BELOW. YOU REPRESENT AND WARRANT THAT YOU HAVE FULL AUTHORITY TO BIND CUSTOMER TO THIS AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, CLICK ON THE "DO NOT ACCEPT" BUTTON.

You are downloading software code ("Code") which will become part of a software product ("Software") that is currently licensed from SAS Institute Inc. or one of its subsidiaries ("SAS") under a separate software license agreement ("Software License Agreement"). The legal entity that entered into the Software License Agreement with SAS is defined as "Customer." The Code is designed either to correct an error in the Software or to add functionality to the Software. The Code is governed by the Software License Agreement and this Agreement. If you are not an authorized user under the Software License Agreement, you may not download the Code.

In addition to the terms of the Software License Agreement, the following terms apply to the Code:

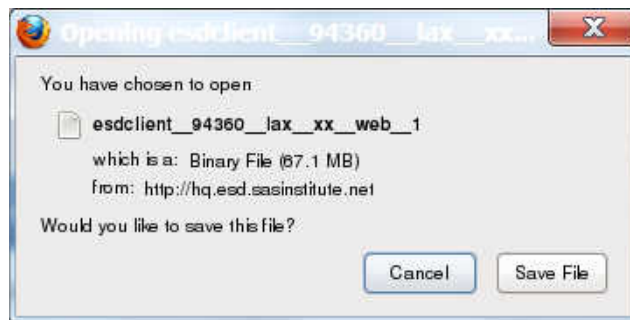
- **EXPORT/IMPORT RESTRICTIONS.** SAS hereby notifies you that United States export laws and regulations apply to the Software. Both parties agree to comply with these and other applicable export and import laws and regulations. You may not download or otherwise export, reexport, import, or distribute the Software or any underlying information or technology except in full compliance with all laws and regulations of the United States of America and in full compliance with any

Accept
Do Not Accept

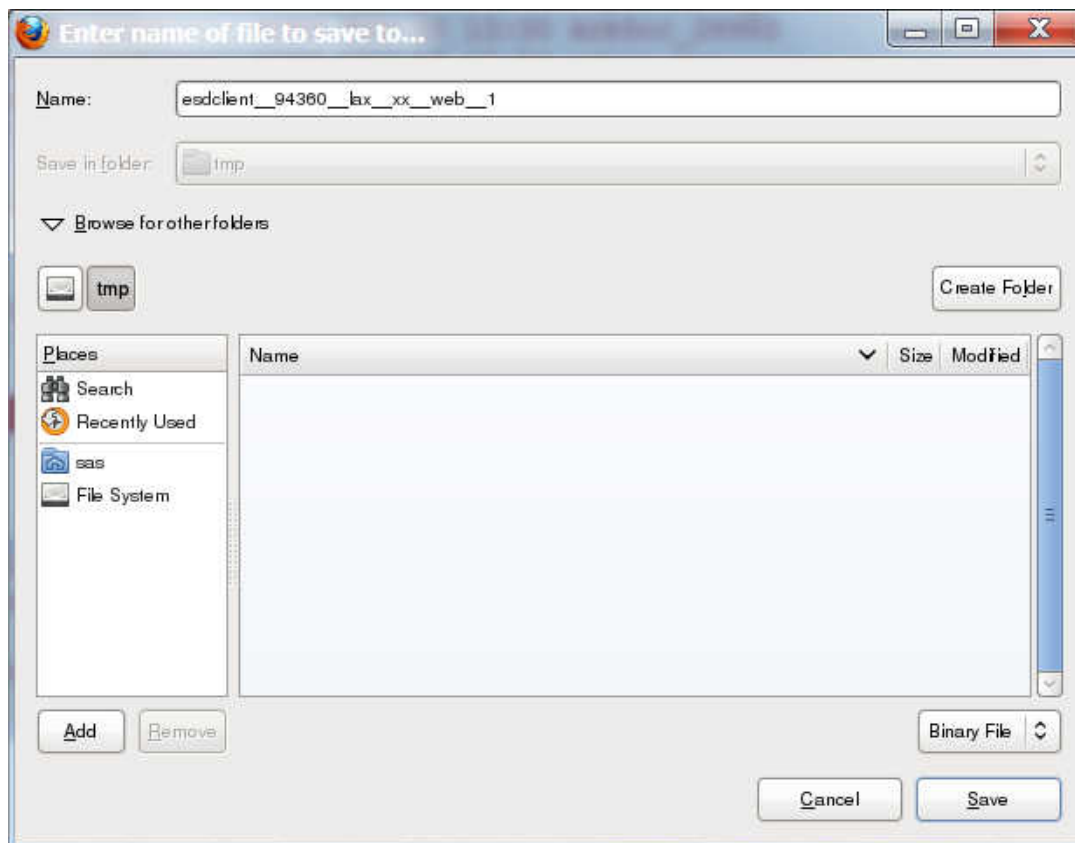
- Review the license agreement and click **Accept**.

Your web browser should prompt you to save the download file.

For example, in Firefox, you see the Opening dialog box.



- Save the file on your machine to a subdirectory under your SAS directory, such as `/opt/sas9.4/dlm`.

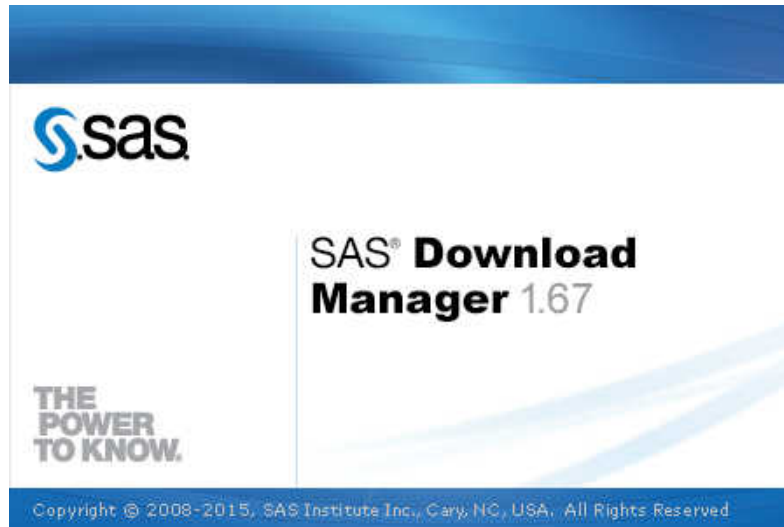


Your web browser should give you some indication that the file has been saved and the download is finished.

For example, in Firefox, you see the Downloads dialog box and a Downloads Complete message.

13. Select the language that you want the download manager to use when it displays text, and click **OK**.

The download manager splash screen is displayed.



The **Order Information** window is displayed.

The image shows a screenshot of the "SAS Download Manager" window. The title bar reads "SAS Download Manager". The main window has a header "Order Information" with the instruction "Specify your order information.". Below this, there are two input fields: "Order Number:" followed by a text box, and "SAS Installation Key:" followed by three separate text boxes separated by hyphens. To the right of these boxes is a button labeled "Paste From Clipboard". At the bottom of the window, there are three buttons: "Help", "< Back", and "Next >", and a "Cancel" button on the far right.

14. Referring to your SAS order email, enter your SAS order number and SAS installation key and click **Next**.

TIP You speed up entry of the SAS installation key by copying the key from your SAS order email, and clicking the **Paste from Clipboard** button.

The Specify Order Details window is displayed.

The screenshot shows the 'Specify Order Details' dialog box in the SAS Download Manager. The window title is 'SAS Download Manager'. The dialog has a blue header with the title and standard window controls (minimize, maximize, close). Below the header, there is a section titled 'Specify Order Details' with a subtitle: 'Edit the description and add notes for this order to aid with future tracking.' A paragraph of text explains that the user must install software from a SAS Software Depot and that this is the first step in creating one or adding software to one from media. It mentions that users can create a custom description and notes to differentiate orders. Below this text are three input fields: 'Order number:' with the value '09HY4W', 'Description:' with the value 'Base, SAS/STAT, SAS/GRAPH, SAS/ACCESS for Oracle -- Linux x86, 64', and 'Notes:' which is currently empty. A blue hyperlink is provided: 'Click to see the contents of your order that correspond with the SAS Products to Include below'. Below the link, there is a section titled 'SAS Products to Include in the SAS Software Depot:' followed by a list box containing two items: '1. BASE Infrastructure to support Hadoop' and '2. Base SAS'. At the bottom of the dialog, there are four buttons: 'Help', '< Back', 'Next >', and 'Cancel'.

15. You have the option to **Click to see the contents of your order that correspond with the SAS Products to Include below.**

When you click this link, the SAS Order Information page is displayed.

The following information is essential for the installation and support of your software from SAS. Please take special note of the **SAS installation key** below which may be required during the installation process.

Your Order Information:

Order Number:	09HY4W
SAS Installation Key:	T3MS-4861-3ZDC
Deployment Type:	Basic
Date:	November 12, 2015
Space Required for SAS Software Depot:	9.9GB

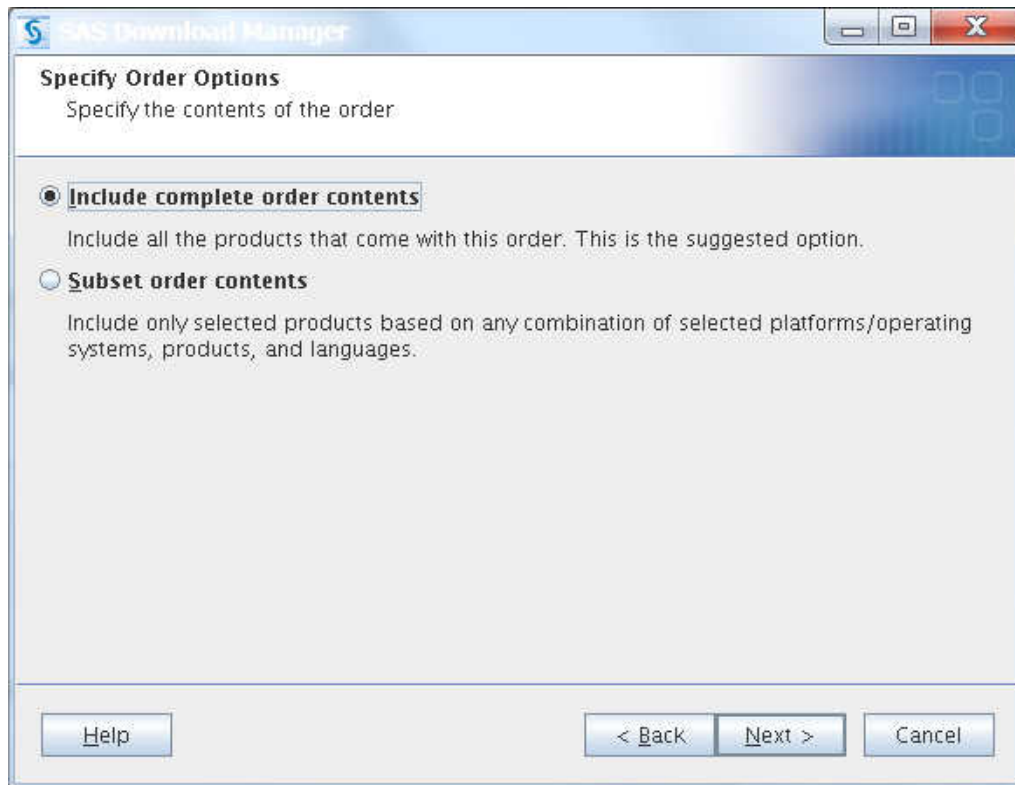
<u>SAS Installation Representative</u>	<u>Email Address</u>	<u>Tech Support Site Number</u>
Temporary SAS User	ahmed.smith@example.com	70068118

Information for Tech Support Site 70068118:

Site Name:	Base, Stat, Graph, Access Ora -- Linux x86, 64
Tech Support Site Number:	70068118

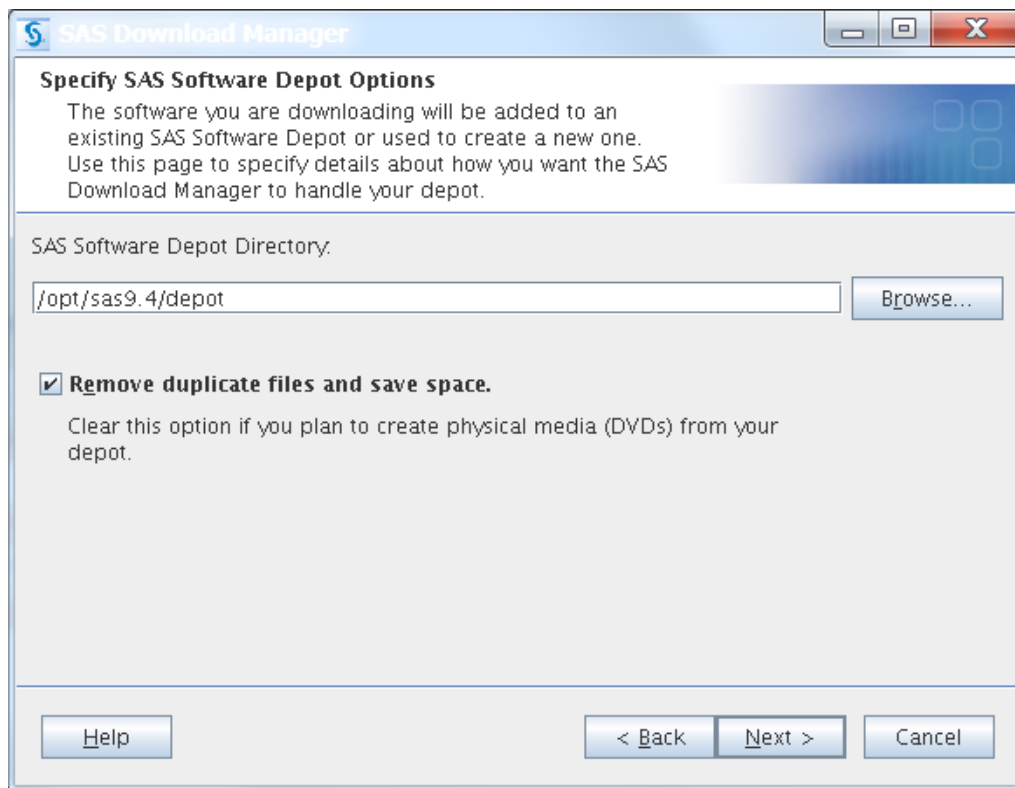
16. Return to the Specify Order Details window of the download manager and click **Next**.

The Specify Order Options window is displayed.



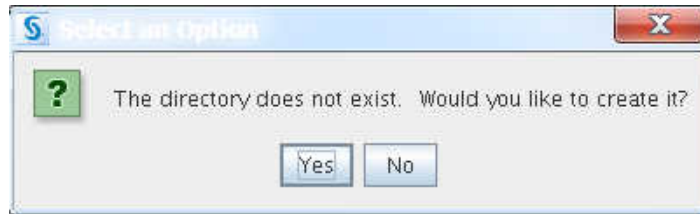
17. Make sure that **Include complete order contents** is selected and click **Next**.

The Specify SAS Software Depot Options window is displayed.

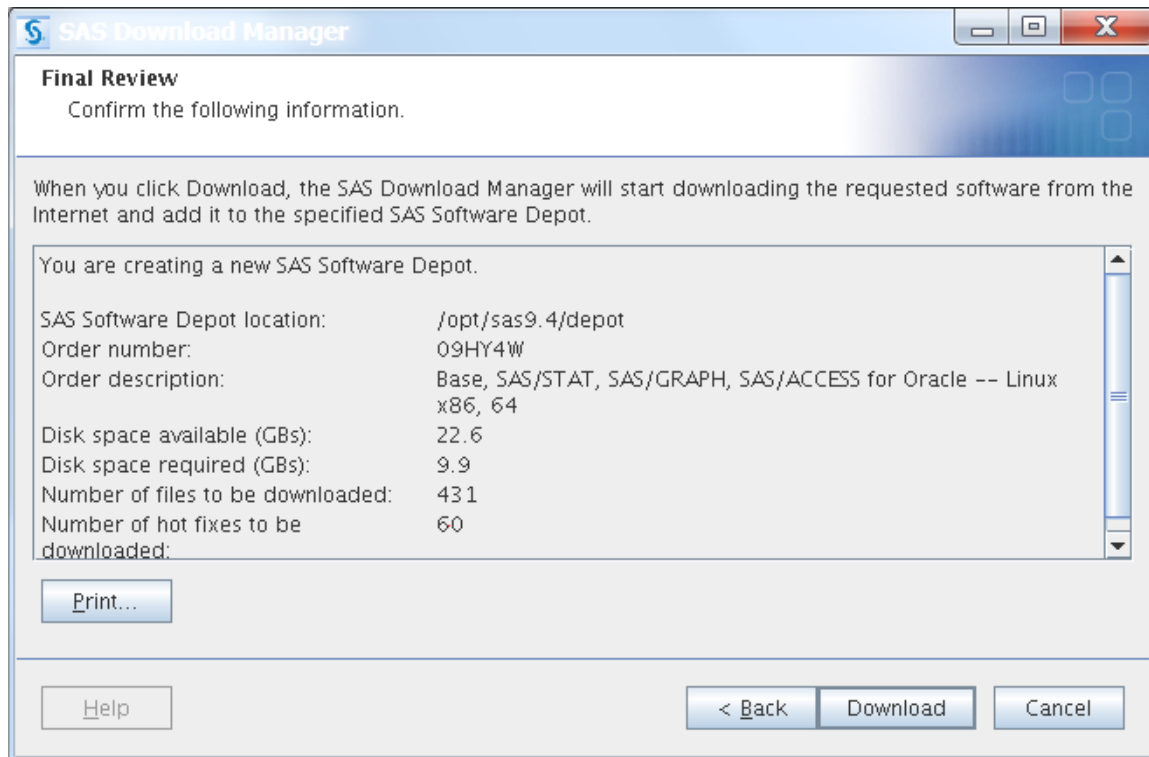


18. Enter the location (for example, `/opt/sas9.4/depot`) where you want to download your SAS Software Depot. Make sure that **Remove duplicate files and save space** is selected. Click **Next**.

If you have not yet created the SAS Software Depot directory, you see the following alert box.



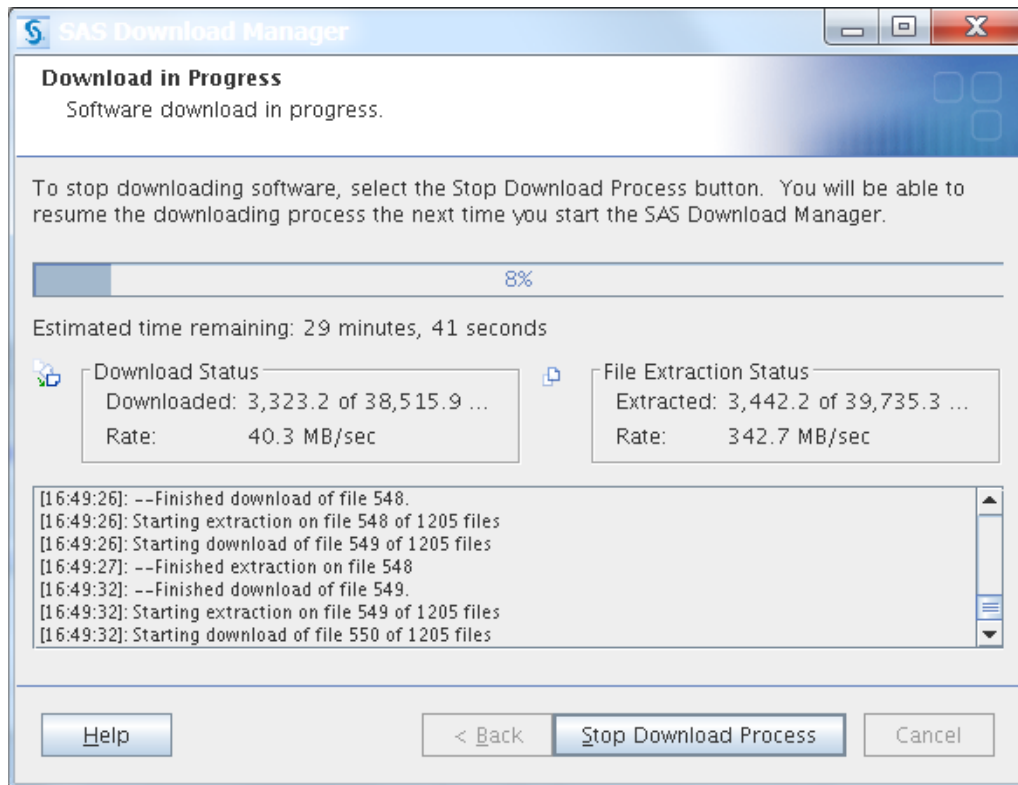
Click **Yes**, to have the download manager create the directory automatically for you. The Final Review window is displayed.



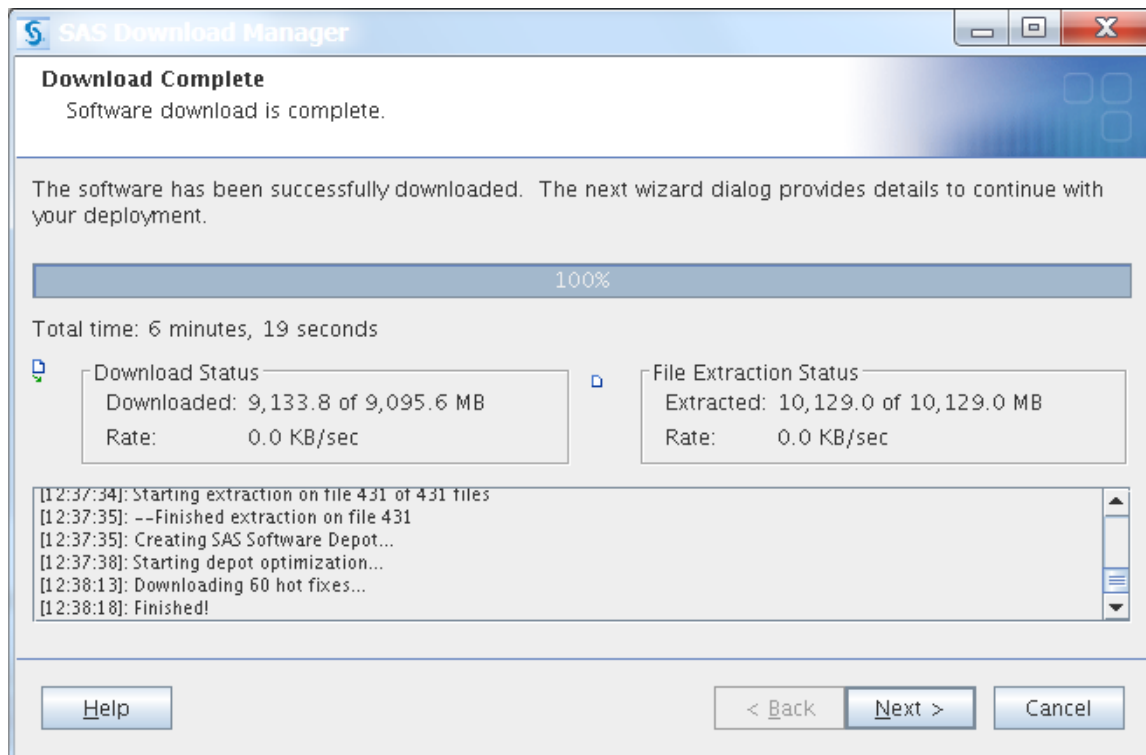
19. Review the information displayed in the window. If you want to change any earlier choices that you made, click **Back**.

When you are ready to start your download, click **Download**.

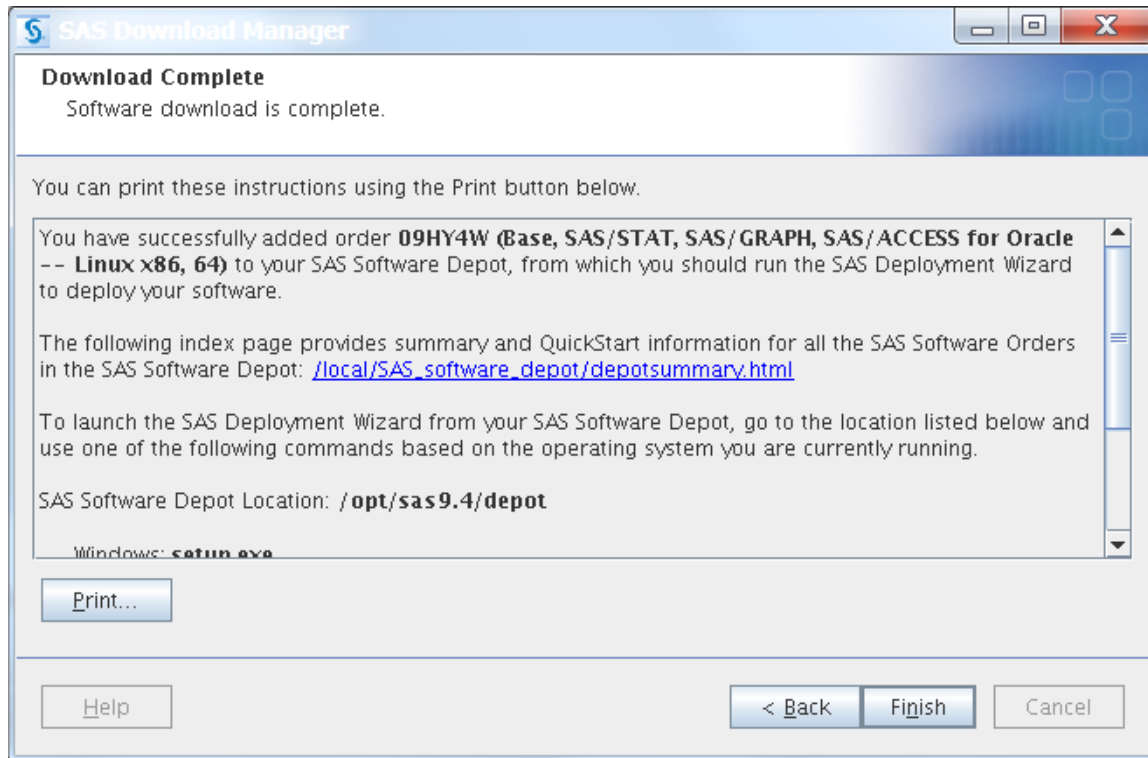
The Download in Progress window is displayed with the estimated time it takes to complete the software download.



Wait until the Download Complete window is displayed.



20. Click **Next**.



A second Download Complete window is displayed. It identifies the software order that you added to your new SAS Software Depot, and confirms the directory that contains your depot.

21. Click **Finish**.
22. Make sure that the SAS installation files that you have just downloaded—referred to as a SAS Software Depot—are owned by your user ID and have the correct permissions. (Your user ID is referred to as the SAS Installation user.)

In the following example, **sas** is the SAS Installation user, and **sasgroup** is the SAS installation group:

```
cd /opt/sas9.4/depot
chmod -R 755 .
chown -R sas:sasgroup .
```

23. If you want to verify the integrity of your SAS Software Depot, proceed to “Checking Your SAS Software Depot” on page 23.

Checking Your SAS Software Depot

Overview of Checking Your SAS Software Depot

SAS provides a utility with which you can verify the integrity of your SAS Software Depot. The SAS Software Depot Checker Utility scans your depot and identifies any missing files. For each file that it finds, the depot checker attempts to validate its size, checksum, and date-and-time stamp.

The depot checker attempts to fix any problems that it encounters and lists the results of its various validation tests. You have the option of printing the results, saving them to a file, or viewing them in a web browser.

Figure 3.1 Depot Checker Results Displayed in a Web Browser

```

SAS Software Depot Check Utility version 9.4
Date: 2015 Nov 12 13:31:29
UserID: sas
Depot Location: /opt/sas9.4/depot

Checking depot path and loading order information...
Orders found in Depot: [09HY4W]
Order information has been loaded.

Scanning the depot and building file lists...
Scan completed. 12,760 files found.

The following files are missing:
All files are present.

The following files have the wrong file size:
All files have the correct file size.

The following files have incorrect file permissions:
All files have the correct permissions.

The following depot metadata files are missing:
All depot metadata files are present.

The following are problems with the depot optimization files:
Depot optimization files are correct.

The following files have an incorrect checksum:
All files had the correct checksum.

Processing complete. 12,760 files have been checked.

```

Check Your SAS Software Depot

To run the SAS Software Depot Checker Utility, follow these steps:

Note: It is recommended that you use the same user account with which the SAS Software Depot was created to run the SAS Software Depot Checker Utility.

1. In your SAS Software Depot, locate the `utilities/depotchecker` directory.
2. Enter the following command:

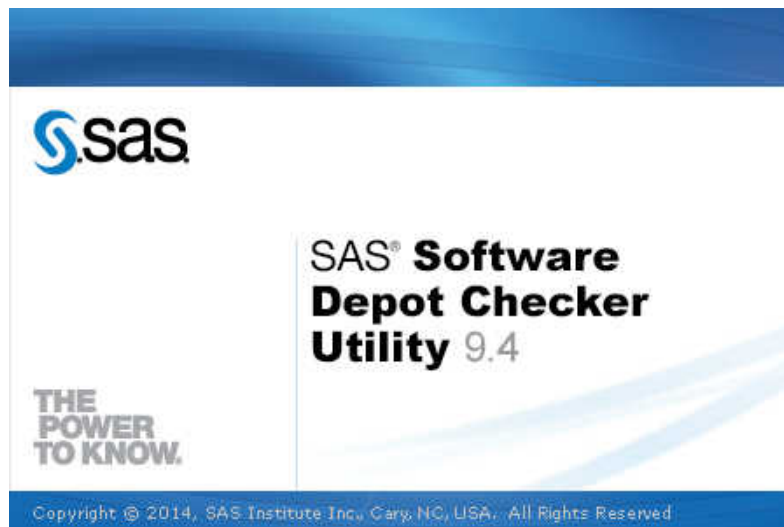
```
./SASDepotCheck.sh
```

The Choose Language dialog box is displayed.

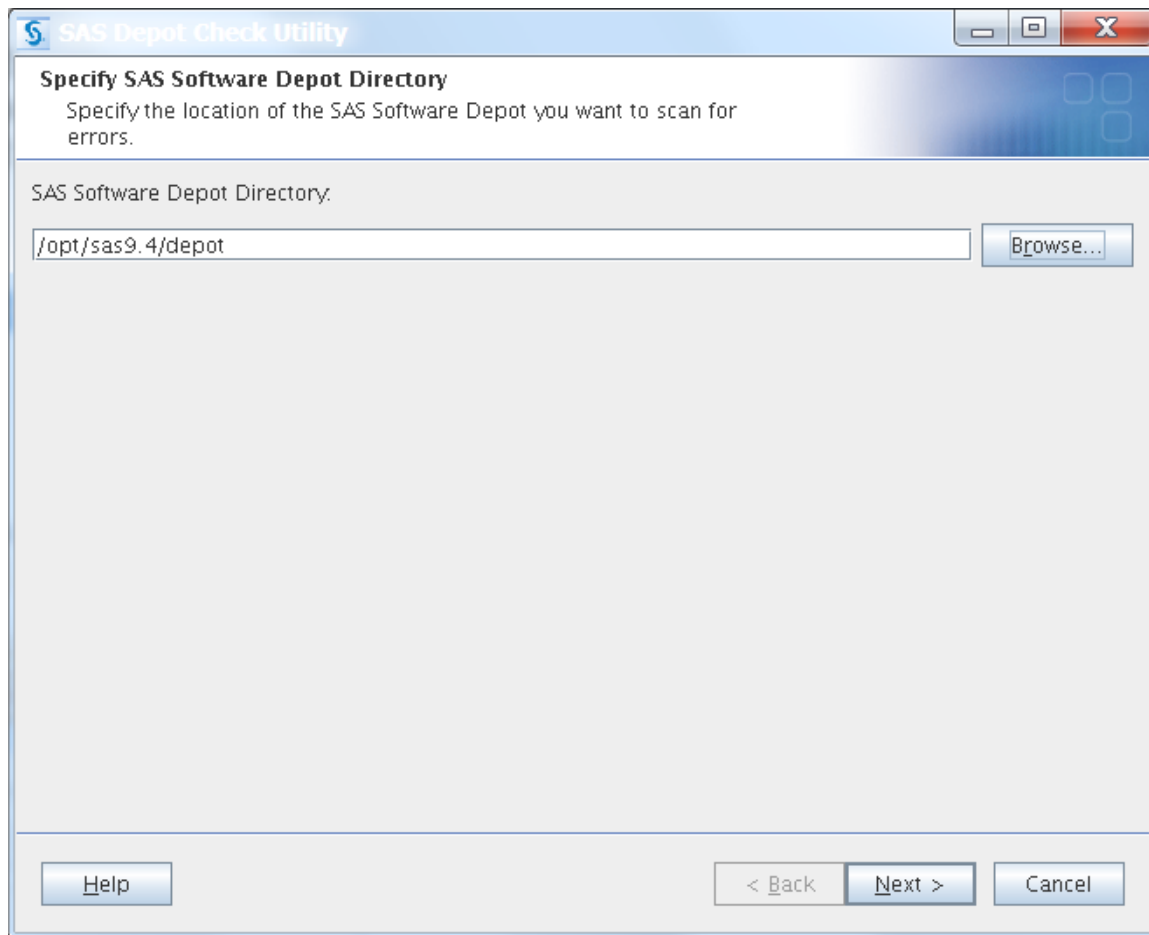


3. From the drop-down list, select the language that you want the depot checker to use when it displays text, and click **OK**.

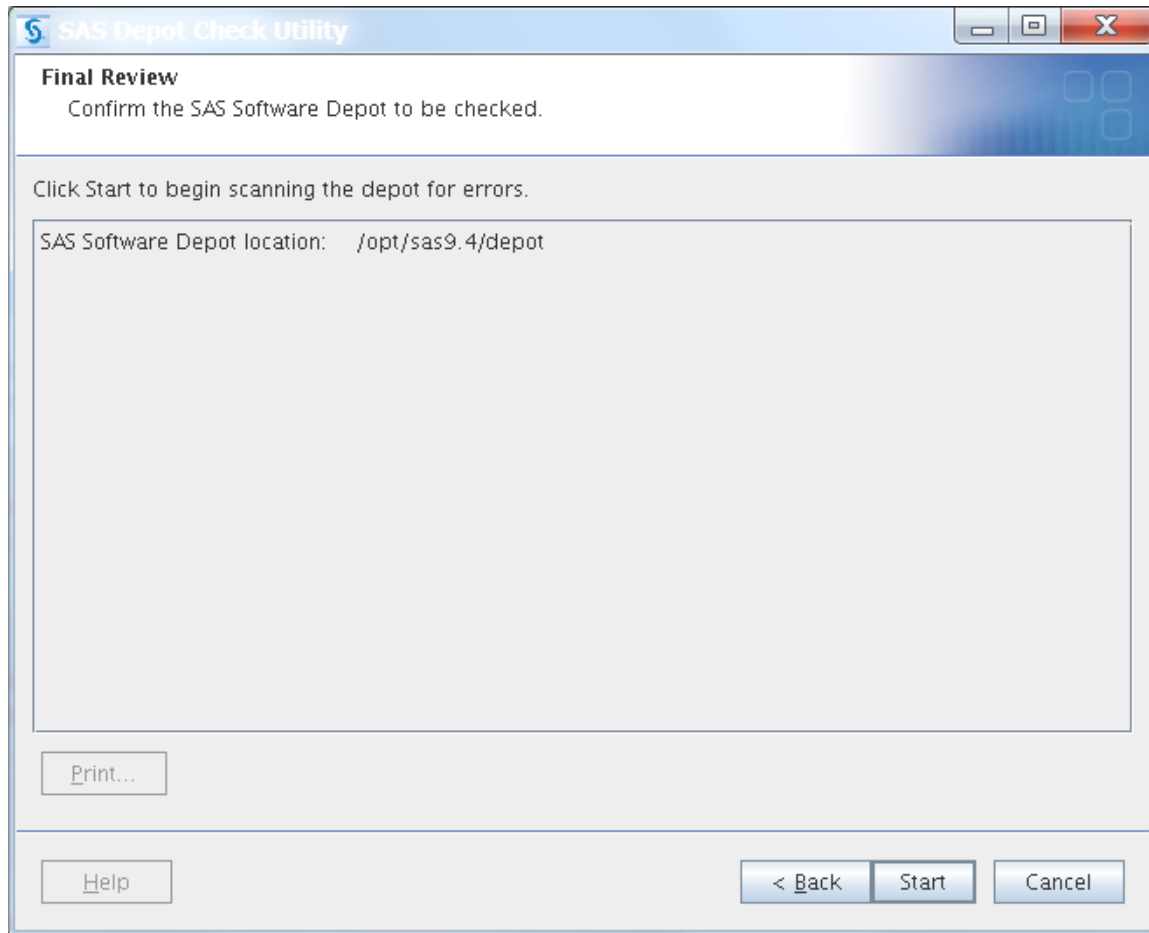
You should see a welcome page similar to the following:



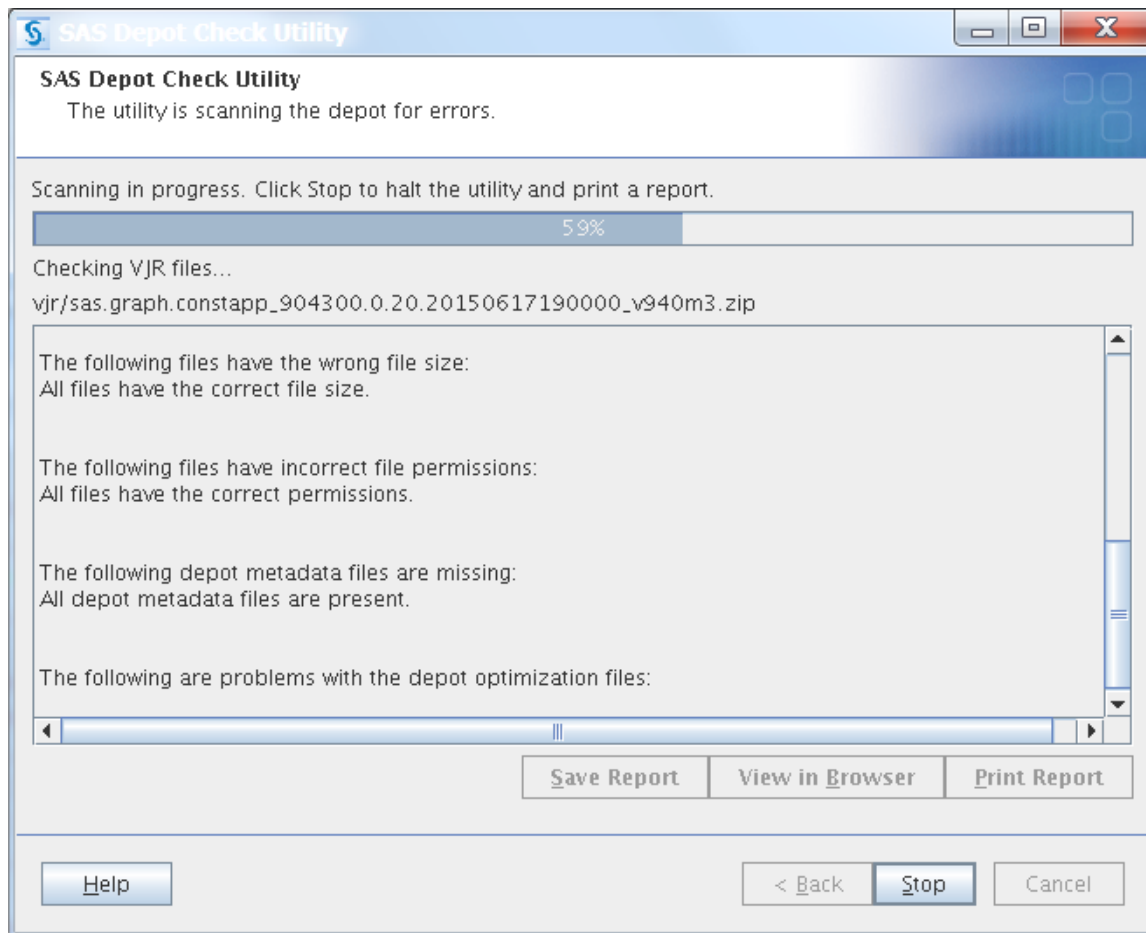
The Specify SAS Software Depot Directory window is displayed.



4. Make sure that the correct path to your depot is displayed in **SAS Software Depot Directory** and click **Next**.

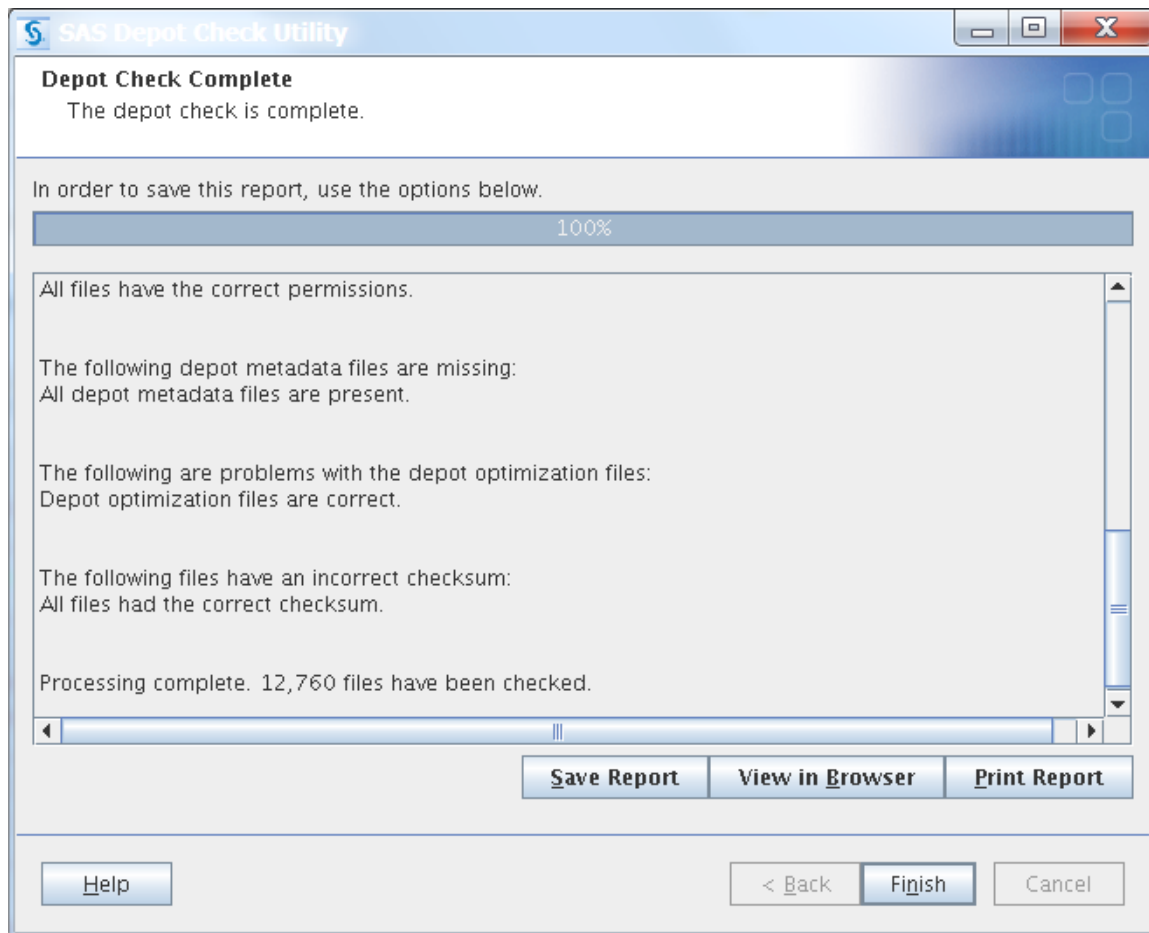


5. On the Final Review window, click **Start**.
The depot checker begins scanning your depot.
The SAS Depot Check Utility window is displayed.



The time required to complete the scan depends on the size of your depot.

When the scan is complete, you see the Depot Check Complete window that is similar to the following:



6. Select one of the following options and then click **Finish**:
 - **Save Report** writes the results of the depot checker scan to a text file.
 - **View in Browser** launches a web browser and displays the results of the depot checker scan.
 - **Print Report** prints the results of the depot checker scan.
7. Proceed to [Chapter 4, “Deploying SAS Foundation,”](#) on page 31.

Chapter 4

Deploying SAS Foundation

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Install and Configure SAS	32

Deployment Process Overview: Step Four

This chapter describes how to use the SAS Deployment Wizard to install and initially configure SAS.

Installing and configuring SAS is the fourth of five steps in deploying SAS Foundation.

1. Complete the Pre-Installation Checklist.
2. Set up a SAS profile.
3. Create a SAS Software Depot.
- ⇒ **4. Install SAS.**
5. Validate your SAS deployment.

Deploying SAS Foundation

Before you begin installing the SAS Foundation software, be sure to do the following:

- SAS provides a script (`setuid.sh`) with which to set certain SAS installation files with `setuid` permissions and root ownership. The `setuid.sh` script must be run as root in order to complete successfully. You have three options for running `setuid.sh`:
 - Set up `sudo` for the SAS Installer before running the deployment wizard. You will not be prompted for the `sudo` password.

The wizard that runs under the installer account will have `sudo` privileges to run `setuid.sh`.
 - Provide the `sudo` password when prompted by the deployment wizard, and allow the wizard to run `setuid.sh` as `sudo`.
 - When the wizard is finished, run `setuid.sh` as root yourself.

Note: If sudo access is not provided to the deployment wizard, then your SAS Studio Basic Server will not start automatically after deployment.

- If either the SAS Download Manager or the SAS Deployment Wizard is running, stop both programs.
- Make sure that the computer is connected to a reliable power source. Do not rely on battery power during this process.

Install and Configure SAS

You install and initially configure SAS by running the SAS Deployment Wizard.

To install and configure SAS:

1. Make sure that you have completed the [Pre-Installation Checklist on page 4](#).
2. Log in to your machine as the SAS Installer user (for example, sas).

This can be your regular account, but you must use this same account in the future if you want to add, modify, or remove SAS software.

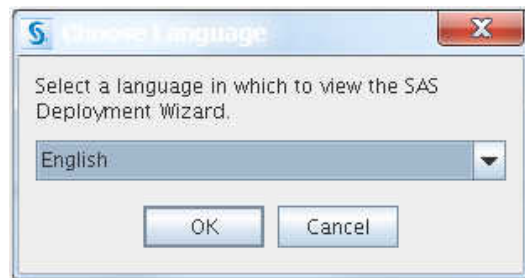
3. Change to the location where the SAS installation files (referred to as the SAS Software Depot) were downloaded (for example, `/opt/sas9.4/depot`).
4. Enter the following command:

```
./setup.sh
```

You see output similar to the following:

```
Preparing the SAS Deployment Wizard...
Launching the SAS Deployment Wizard...
```

The Choose Language dialog box is displayed.

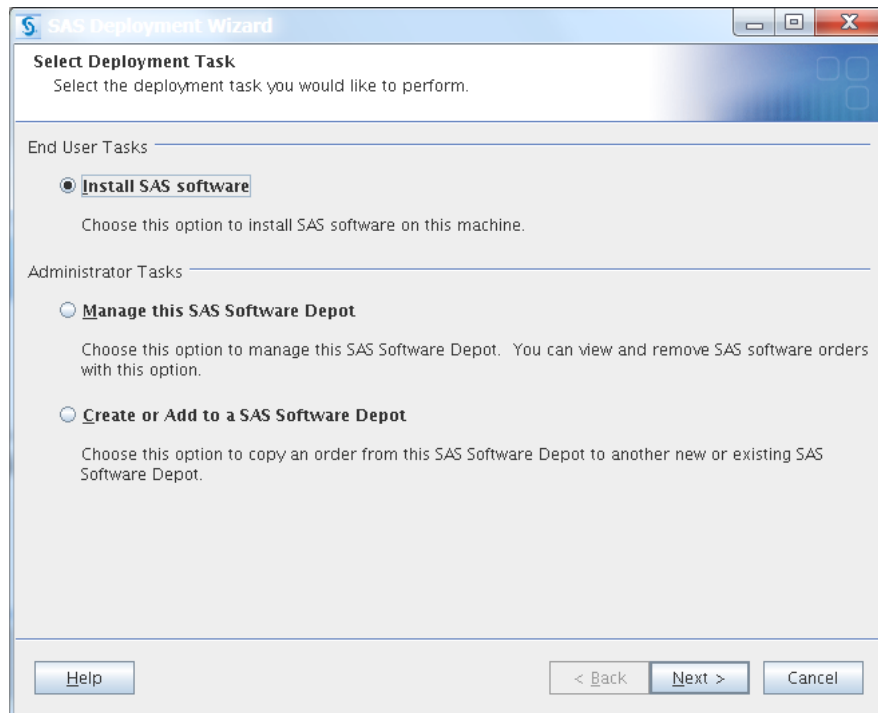


5. Select the language that you want the SAS Deployment Wizard to use when it displays text, and click **OK**.

The download wizard splash screen is displayed.

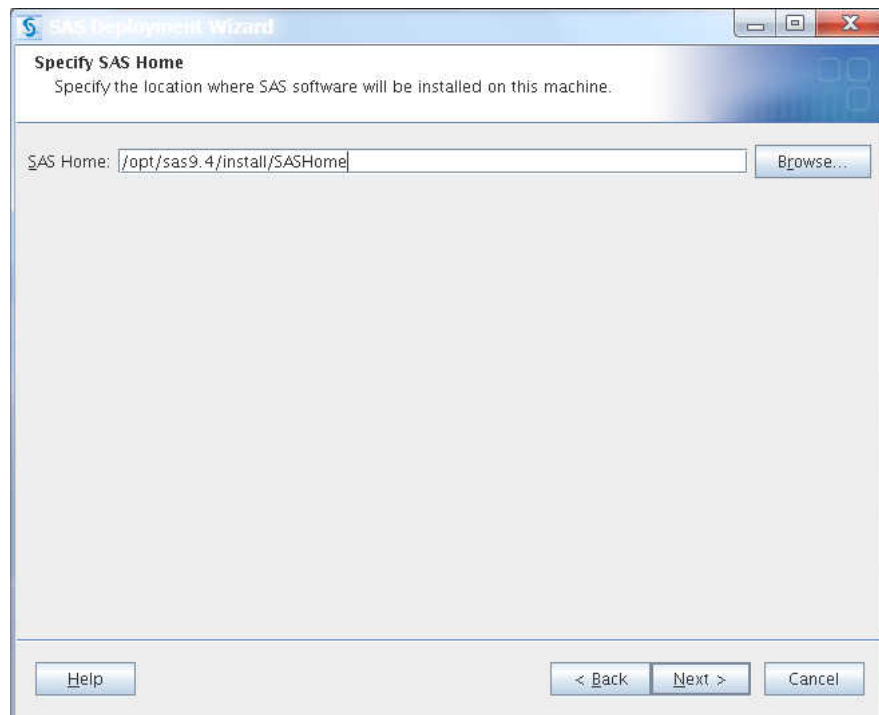


Next, the Select Deployment Task page is displayed.



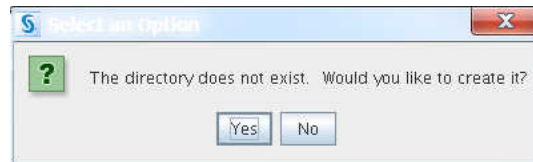
6. Make sure that **Install SAS Software** is selected, and click **Next**.

The Specify SAS Home page is displayed.

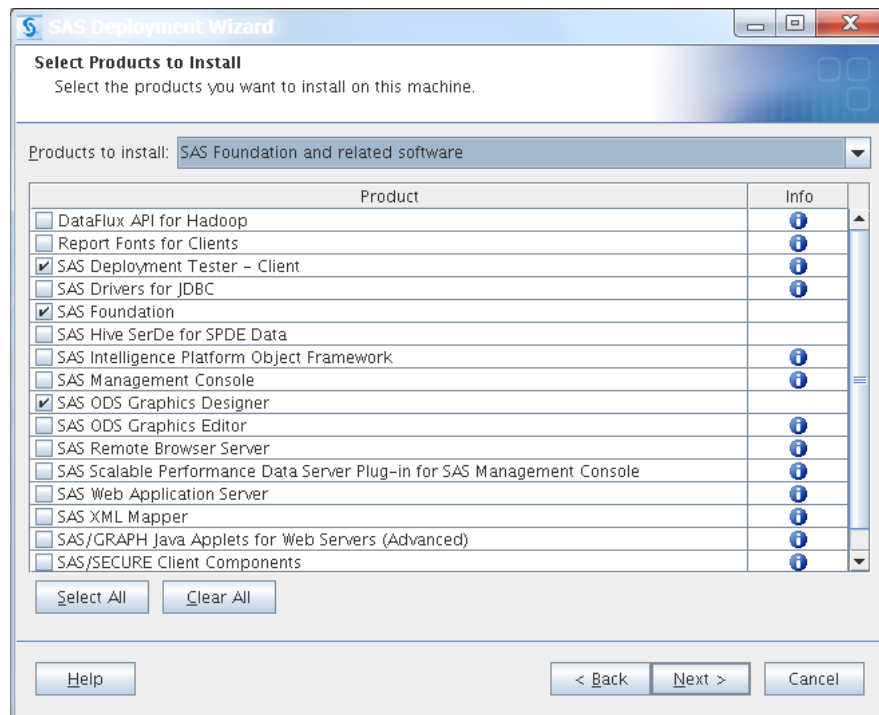


7. Enter the path where you want the deployment wizard to install SAS (for example, `/opt/sas9.4/install/SASHome`). Click **Next**.

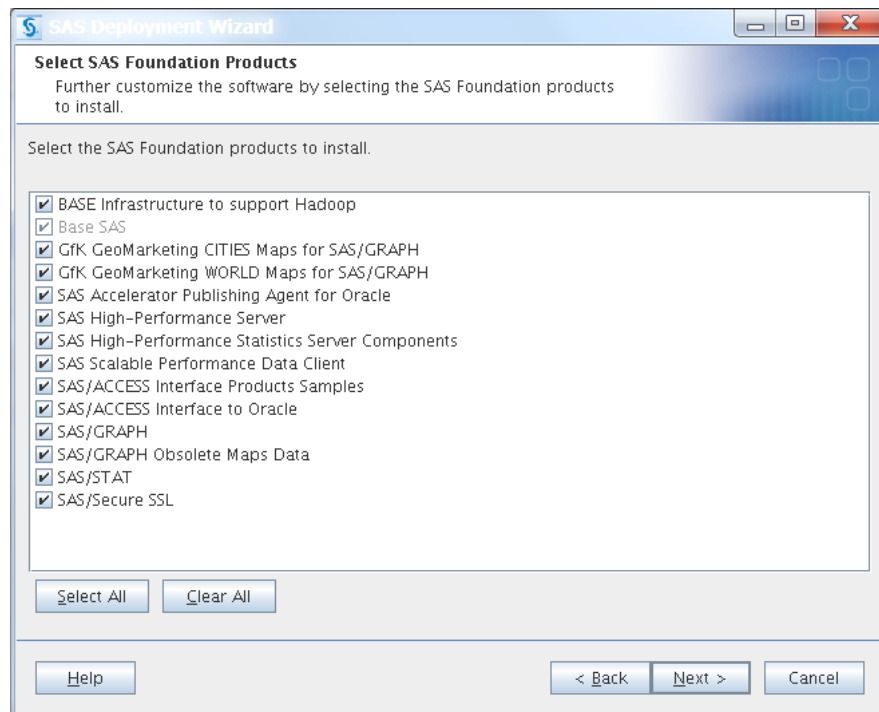
If you have not yet created the SAS installation directory, you see the following alert box.



Click **Yes**, to have the deployment wizard create the directory automatically for you. The Select Products to Install page is displayed.

8. Click **Next**.

TIP We recommend that you do not change the default settings on this page. The Select SAS Foundation Products page is displayed.

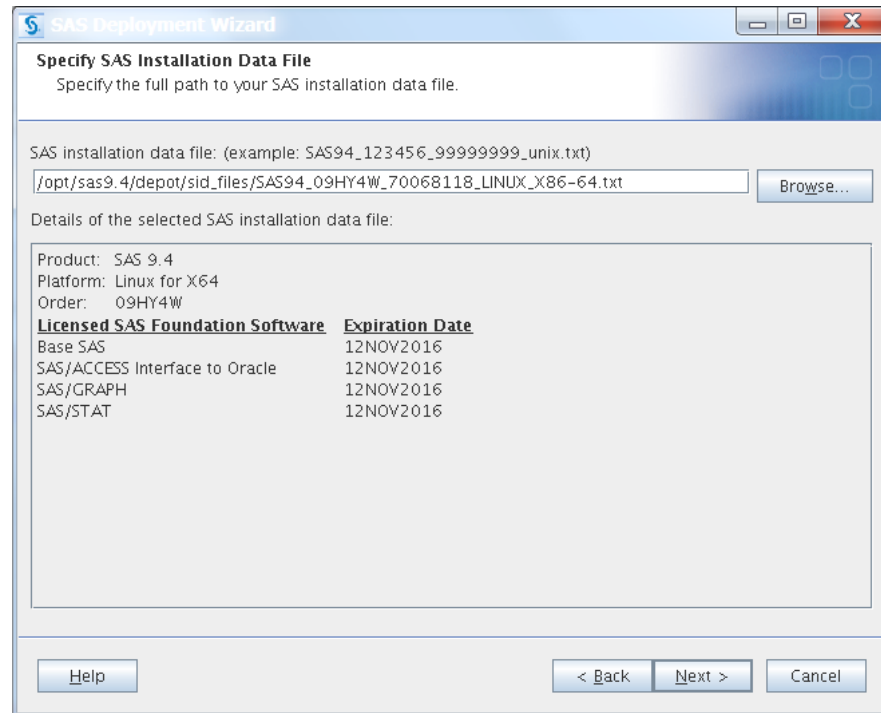


TIP We recommend that you do not change the default settings on this page.

Note: Included in your SAS 9.4 M5 order are procedures that enable you to take advantage of additional functionality that is provided by SAS Viya. In order to use these procedures, you must have a SAS Viya license.

9. Click **Next**.

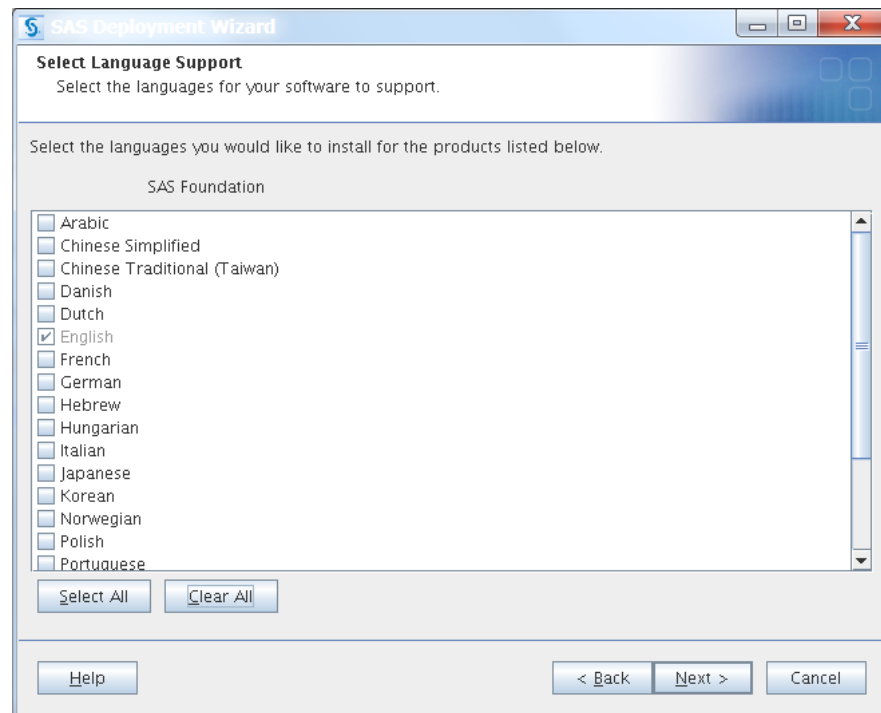
The Specify SAS Installation Data File page is displayed.



10. If your order has more than one SID file, be sure to select the one that includes the SAS Foundation products that you want to install.

Click **Next**.

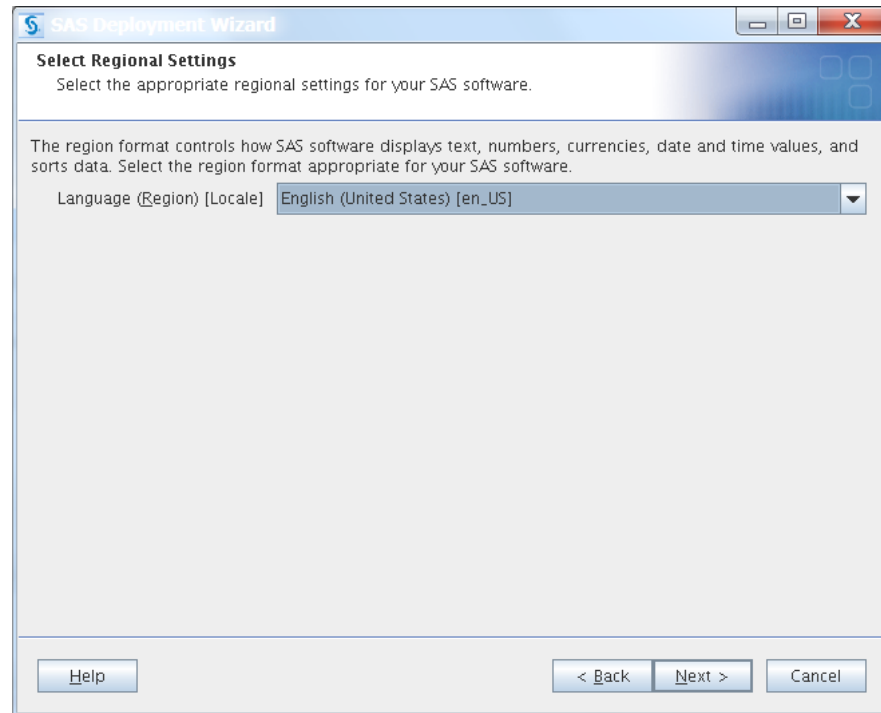
The Select Language Support page is displayed.



11. Select the languages for your SAS software to support:

- a. Click **Clear All**. (English remains selected as the default language.)
- b. Add any additional languages that you want SAS software to support.
By default, SAS attempts to support all languages for which your machine's operating system is configured.
- c. Click **Next**.

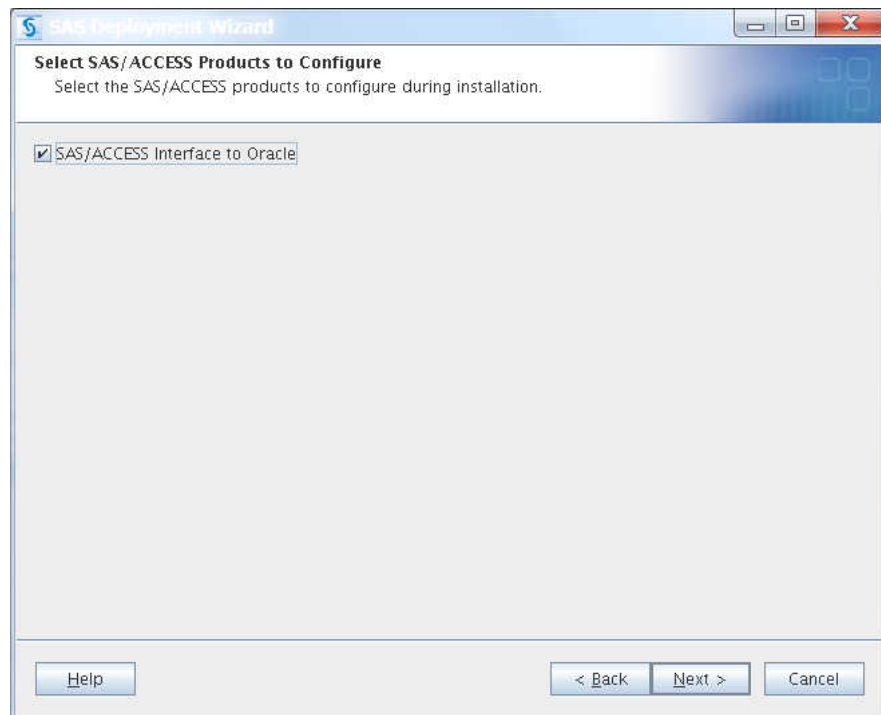
The Select Regional Settings page is displayed.



12. Select the language, region, and locale settings that affect how SAS displays text, numbers, currencies, dates, and times and how SAS sorts data. Then click **Next**.

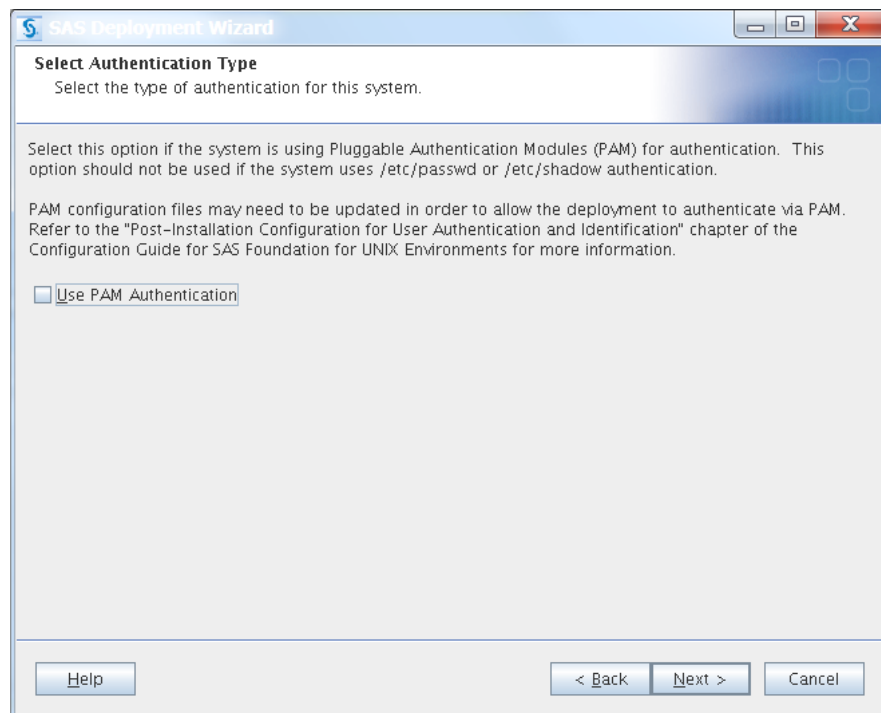
At this point in the installation, you might see different SAS Foundation products to configure.

For example, you might see an offering such as SAS/ACCESS for Oracle.



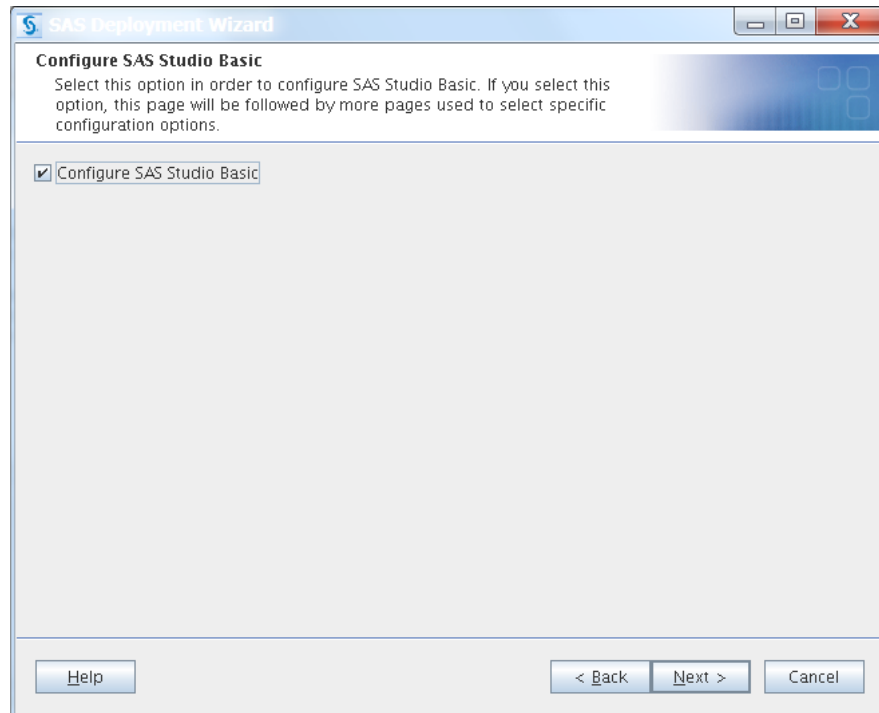
13. Supply the necessary information, and click **Next**.

The Select Authentication Type page is displayed.



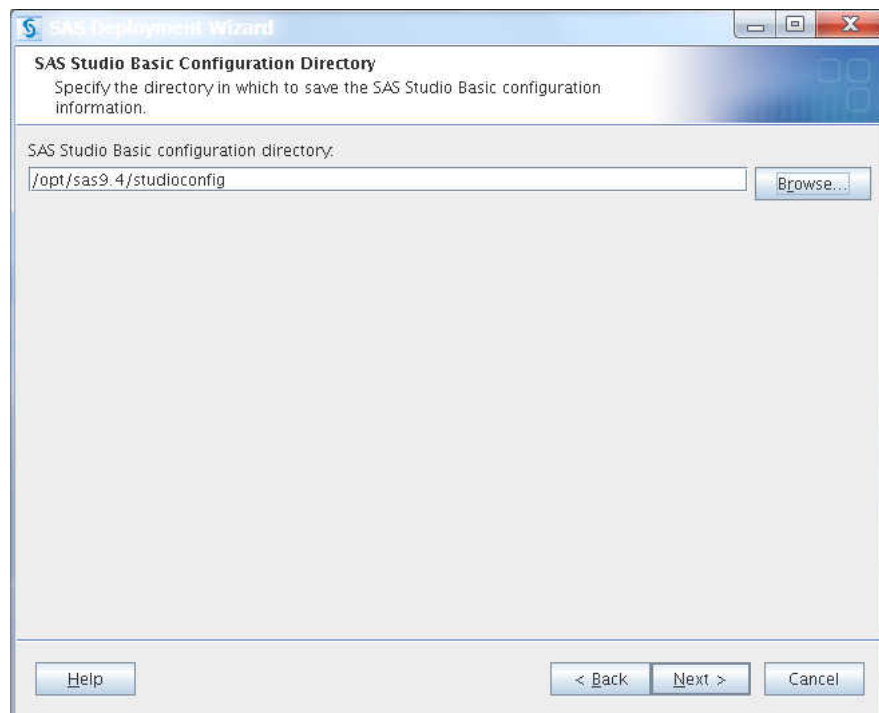
14. Click **Next**.

The Configure SAS Studio Basic page is displayed.



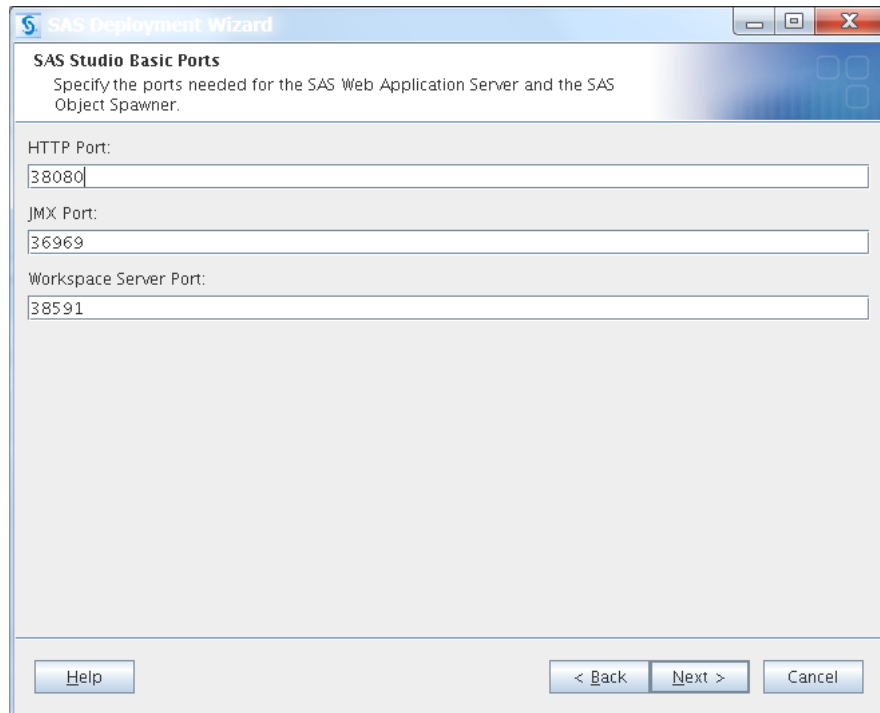
15. Click **Next**.

The SAS Studio Basic Configuration page is displayed.



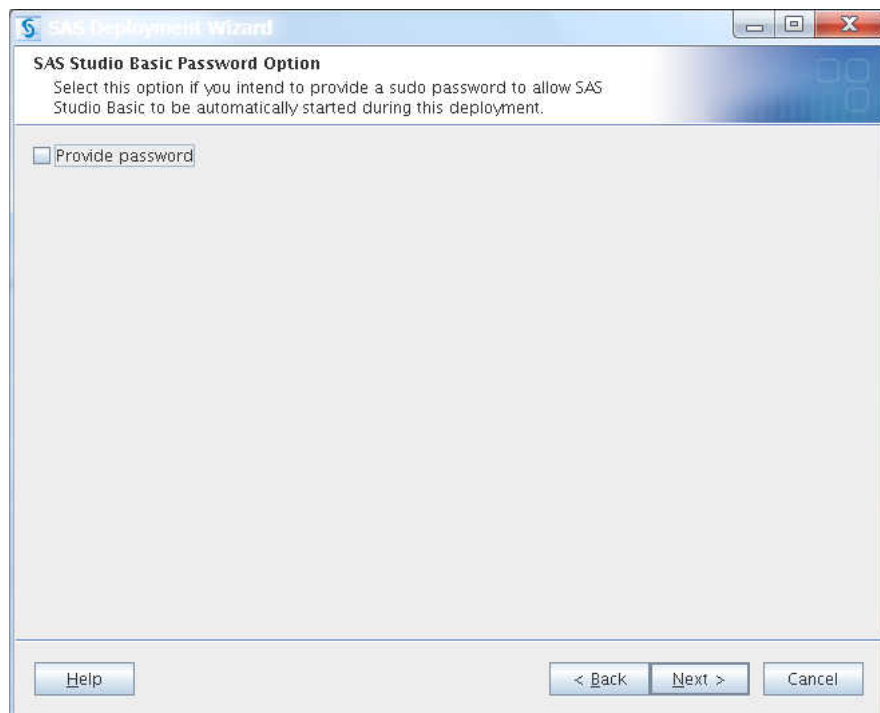
16. Enter a path (for example, `/opt/sas9.4/studioconfig`), and click **Next**.

The SAS Studio Basic Ports page is displayed.



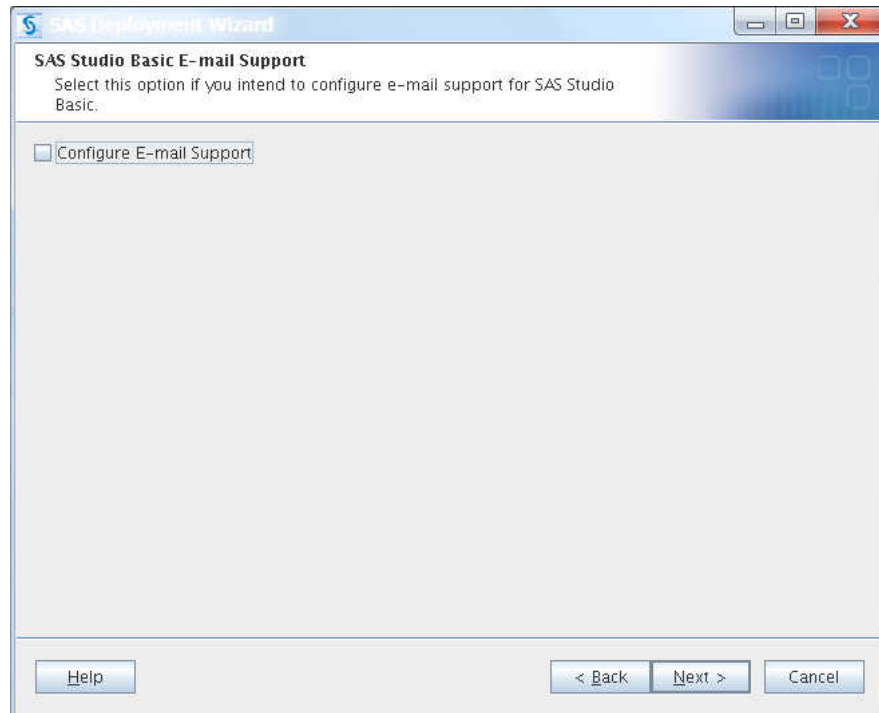
17. Click **Next**.

The SAS Studio Basic Password page is displayed.



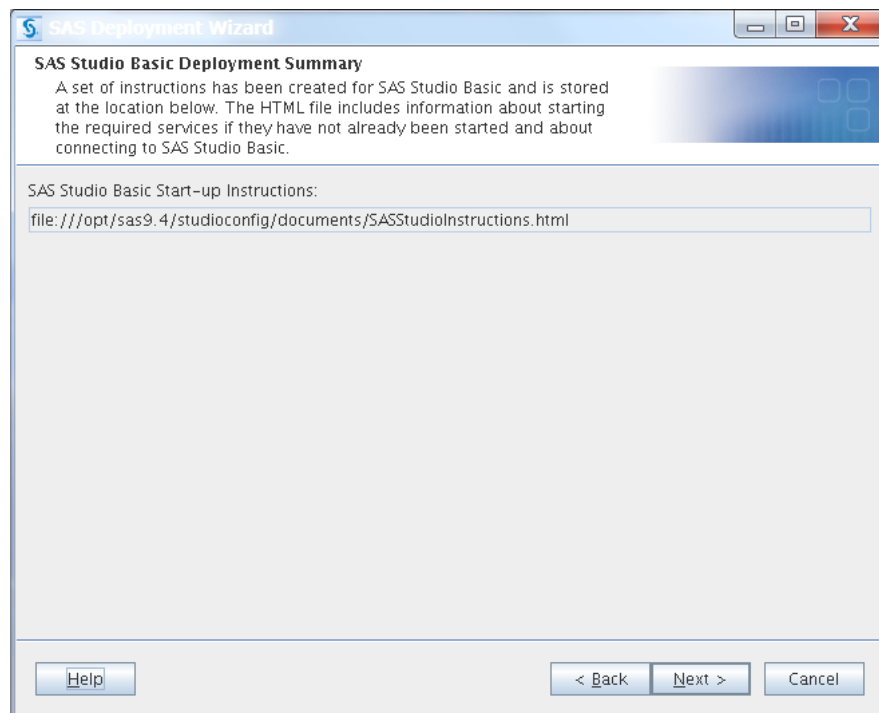
18. If you have decided to allow the deployment wizard to use sudo to run the `setuid.sh` script, select **Provide password** and click **Next**. Otherwise, click **Next** only. (For more information about why sudo access is needed, see [“Deploying SAS Foundation”](#) on page 31.)

The SAS Studio Basic E-mail Support page is displayed.



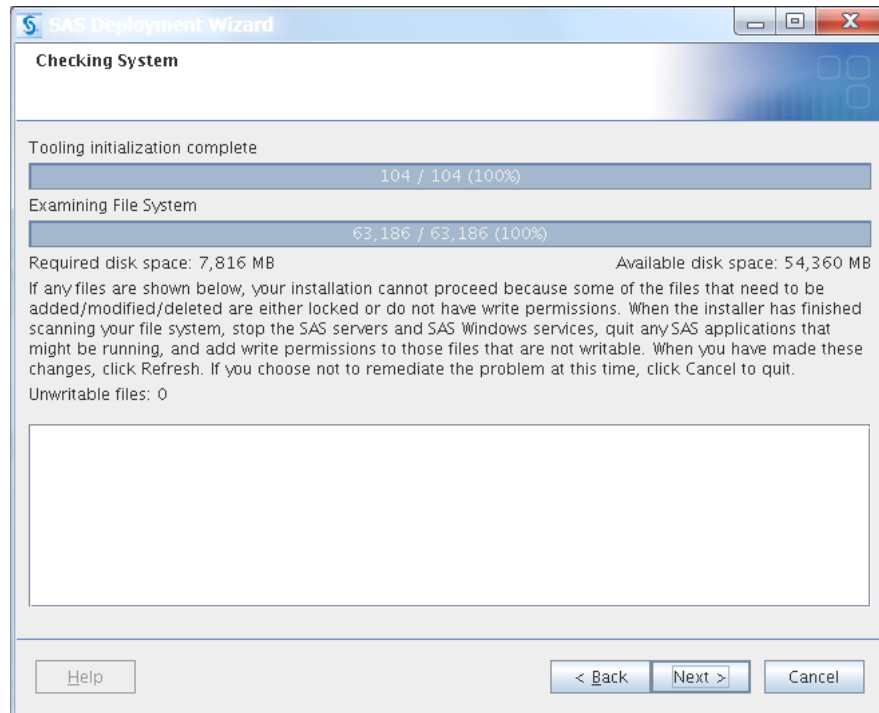
19. Click **Next**.

The SAS Studio Basic Deployment Summary page is displayed.



20. Click **Next**.

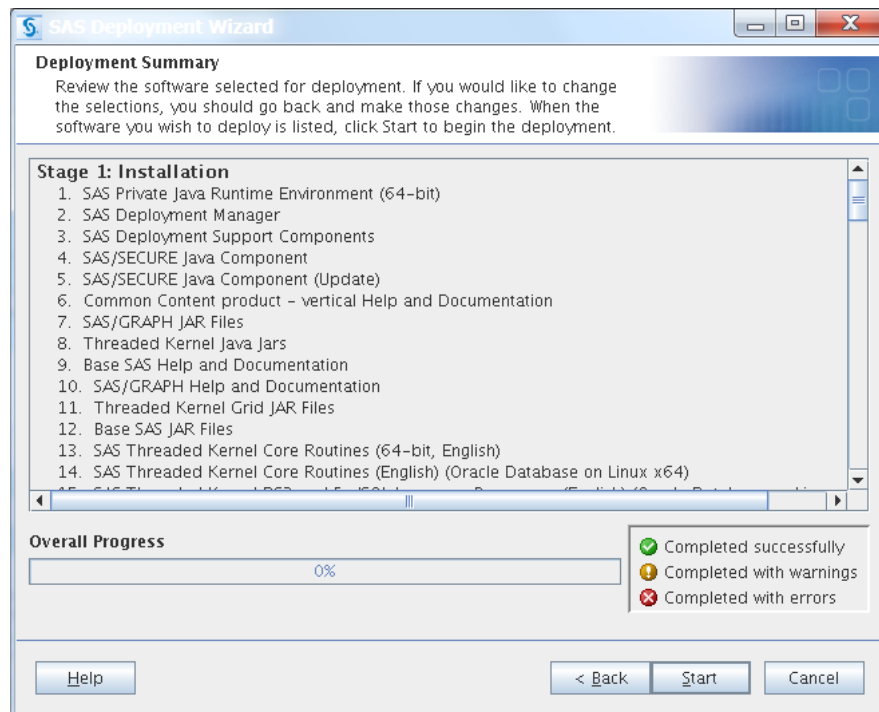
The deployment wizard scans your machine to determine whether any pre-existing SAS files are locked or do not have Write permission. The wizard also checks whether there is adequate disk space to install SAS.



21. When the scan is completed, if no action is required, 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, or clear the lock on any affected files. When you finish, click **Next**.

The Deployment Summary page is displayed.

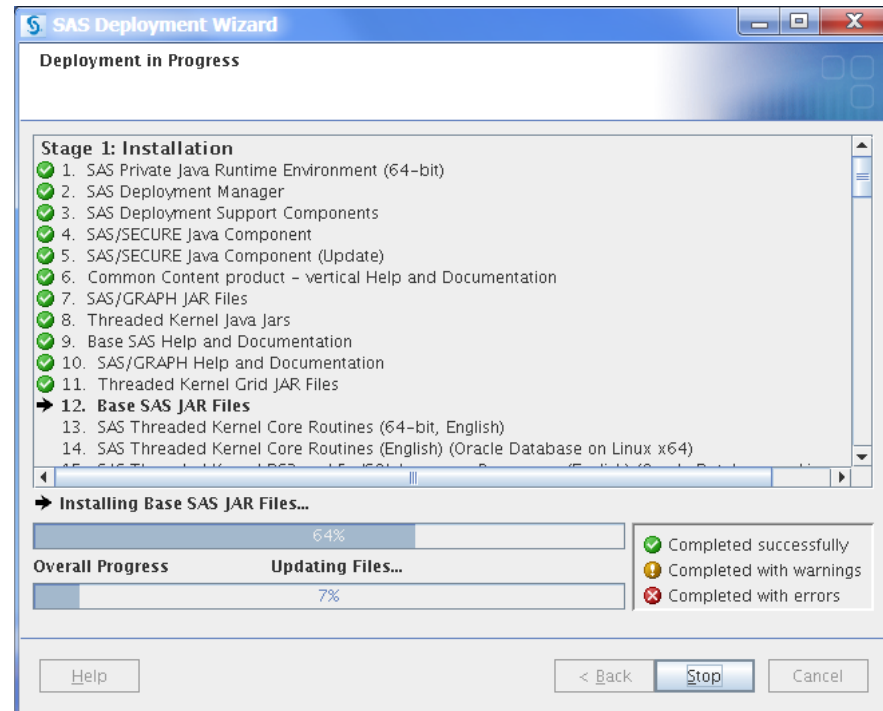


22. Review the summary of software that the deployment wizard will install.

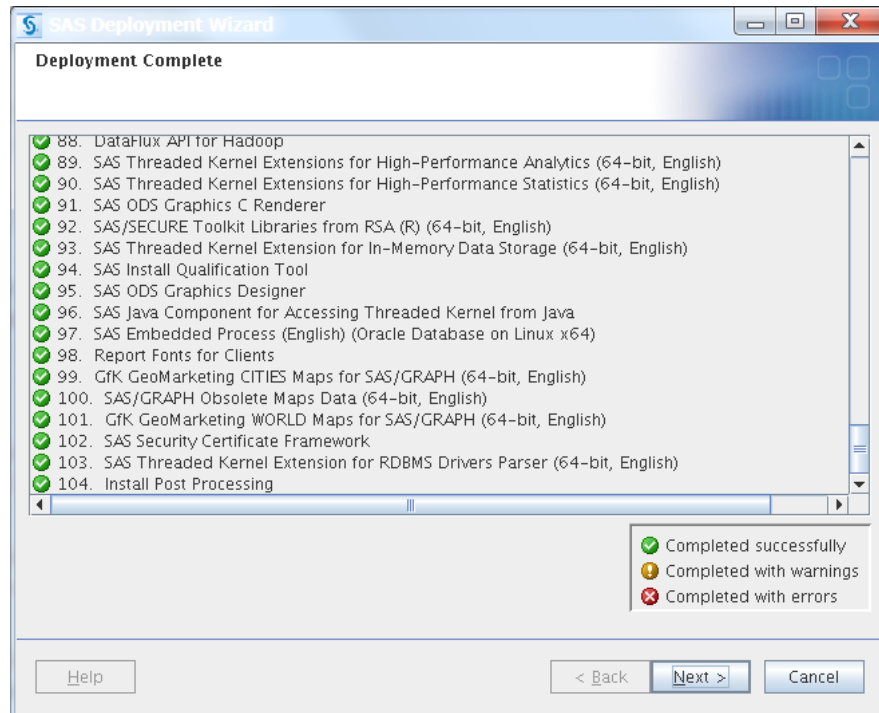
This is the last opportunity to go back and change any information that you have provided in previous pages before the wizard begins installing SAS. Make one of the following choices:

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

If you click **Start**, the Deployment in Progress page is displayed.



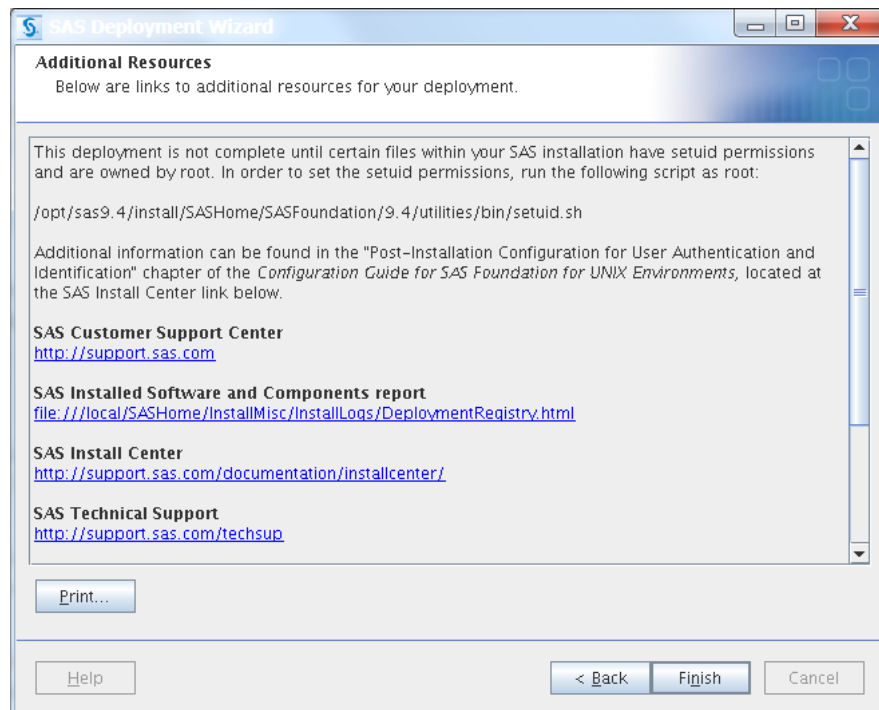
When the deployment wizard has finished installing SAS, the Deployment Complete page is displayed.



23. The Deployment Complete page displays the installation results for each SAS product.

- Green check marks next to every item on this page indicate that your installation completed successfully. Click **Next**.
- If you received errors during your installation, review “[Troubleshooting a SAS Deployment](#)” on page 53.

The Additional Resources page is displayed.



24. Use the links displayed to review more information about your SAS deployment.

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

25. If you did not set up sudo for the SAS Installer or provide the sudo password when prompted by the deployment wizard, you must run the `setuid.sh` script with sudo or be logged in as the root user as shown below.

Enter the following command:

```
sudo SAS-installation-directory/SASFoundation/9.4/  
utilities/bin/setuid.sh
```

Output similar to the following indicates that `setuid.sh` ran successfully:

```
Performing the User Authentication setup step required by SAS.  
Attempting to setuid bit and change ownership of files:  
sasperm sasauth elssrv, to root  
User Authentication setup has successfully completed.
```

26. Proceed to [Chapter 5, “Validating Your SAS Foundation Deployment,”](#) on page 47.

Chapter 5

Validating Your SAS Foundation Deployment

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Run SAS Programs to Test Your Deployment	48
Run the JAVAINFO Procedure	48
Create a Deployment Registry Report	50

Deployment Process Overview: Step Five

This chapter describes how to make sure that your SAS deployment is properly installed. Validating your deployment is the final step in deploying SAS Foundation.

1. Complete the Pre-Installation Checklist.
 2. Set up a SAS profile.
 3. Create a SAS Software Depot.
 4. Install SAS.
 - ⇒ 5. **Validate your SAS deployment.**
-

Overview of Validating Your SAS Foundation Deployment

This section describes tasks that you can perform to ensure that SAS is properly installed and configured:

- Run two SAS programs to test your deployment.
- Run the JAVAINFO procedure.
- Create a deployment registry report to see an inventory of what has been deployed on your machine.

Run SAS Programs to Test Your Deployment

Run two programs to validate your SAS deployment: SAS IQ and SAS OQ.

For more information, see [SAS Qualification Tools: User's Guide](#).

Run the JAVAINFO Procedure

Run PROC JAVAINFO to test that the SAS Private Java Runtime Environment is functional.

To run PROC JAVAINFO:

1. Change the directory to *SAS-installation-directory/SASHome/SASFoundation/9.4*.

Here is an example:

```
cd /opt/sas9.4/install/SASHome/SASFoundation/9.4
```

2. Enter the following command to start SAS in command-line mode:

```
./sas -nodms
```

You should see output similar to the following:

```
NOTE: Copyright (c) 2002-2012 by SAS Institute Inc., Cary, NC, USA.
```

```
NOTE: SAS (r) Proprietary Software 9.4 (TS1M3)
```

```
    Licensed to Base, SAS/STAT, SAS/GRAPH, SAS/ACCESS for Oracle
```

```
    -- Linux x86, 64, Site
```

```
    70068118.
```

```
NOTE: This session is executing on the Linux 2.6.32-279.5.2.el6.x86_64 (LIN  
X64) platform.
```

```
NOTE: Updated analytical products:
```

```
    SAS/STAT 14.1
```

```
NOTE: Additional host information:
```

```
Linux LIN X64 2.6.32-279.5.2.el6.x86_64 #1 SMP Tue Aug 14 11:36:39 EDT 2012  
x86_64 Red Hat Enterprise Linux Server release 6.3 (Santiago)
```

You are running SAS 9. Some SAS 8 files will be automatically converted by the V9 engine; others are incompatible. Please see <http://support.sas.com/rnd/migration/planning/platform/64bit.html>

PROC MIGRATE will preserve current SAS file attributes and is recommended for converting all your SAS libraries from any SAS 8 release to SAS 9. For details and examples, please see <http://support.sas.com/rnd/migration/index.html>

This message is contained in the SAS news file, and is presented upon initialization. Edit the file "news" in the "misc/base" directory to display site-specific news and information in the program log. The command line option "-nonews" will prevent this display.

```
NOTE: SAS initialization used:
      real time          0.08 seconds
      cpu time           0.02 seconds
```

1?

3. Check to see that the SAS Private Java Runtime Environment is functional, by entering the following commands:

```
proc javainfo; run;
```

You should see output similar to the following:

```
PFS_TEMPLATE = /opt/sas9.4/install/SASHome/SASFoundation/9.4/misc/tkjava/
qrpfstpt.xml
java.class.path =
/opt/sas9.4/install/SASHome/SASVersionedJarRepository/eclipse/plugins/
sas.launcher.jar
java.class.version = 51.0
java.runtime.name = Java(TM) SE Runtime Environment
java.runtime.version = 1.7.0_76-b13
java.security.auth.login.config =
/opt/sas9.4/install/SASHome/SASFoundation/9.4/misc/tkjava/sas.login.config
java.security.policy = /opt/sas9.4/install/SASHome/SASFoundation/9.4/misc/
tkjava/sas.policy
java.specification.version = 1.7
java.system.class.loader = com.sas.app.AppClassLoader
java.vendor = Oracle Corporation
java.version = 1.7.0_76
java.vm.name = Java HotSpot(TM) 64-Bit Server VM
java.vm.specification.version = 1.7
java.vm.version = 24.76-b04
sas.app.class.path =
/opt/sas9.4/install/SASHome/SASVersionedJarRepository/eclipse/plugins/
tkjava.jar
sas.ext.config =
/opt/sas9.4/install/SASHome/SASFoundation/9.4/misc/tkjava/sas.java.ext.config
tkj.app.launch.config = /local/SASHome/SASVersionedJarRepository/picklist
user.country = US
user.language = en
```

```
NOTE: PROCEDURE JAVAINFO used (Total process time):
      real time          1.10 seconds
      cpu time           0.00 seconds
```

3?

- Quit the SAS command line session by entering the following command:

```
endsas ;
```

You should see output similar to the following:

```
NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time          33:45.73
      cpu time           0.14 seconds
```

Create a Deployment Registry Report

Using the Java Runtime Environment that is supplied with SAS, you can create a report of the SAS deployment registry. This report is an inventory of what SAS products and components have been deployed on your machine.

To create a deployment registry report:

- Change to *SAS-installation-directory/SASHome/deploymntreg/*.

Here is an example:

```
cd /opt/sas9.4/install/SASHome/deploymntreg
```

- Enter the following command:

```
SAS-installation-directory/SASHome/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java
-jar sas.tools.viewregistry.jar
```

Here is an example:

```
/opt/sas9.4/install/SASHome/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java
-jar sas.tools.viewregistry.jar
```

An HTML report is created in *SAS-installation-directory/SASHome/deploymntreg/*.

- Load the report in your web browser.

Here is an example:

```
/usr/bin/firefox /opt/sas9.4/install/SASHome/deploymntreg/DeploymentRegistry.html &
```

You should see a report similar to the following:

SAS Deployment Registry Report - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SAS Deployment Registry Report

file:///opt/sas9.4/install/SASHome/deplymntreg/Depk

SAS Installed Software And Components

SASHOME: /opt/sas9.4/install/SASHome

Host: lax
Product Code: tablesrvtk
Version: 9.4
Display Name: SAS Table Server Base Components
Display Version: 9.4_M3

Host: lax
Product Code: securestrong
Version: 9.4
Display Name: SAS/SECURE Toolkit Libraries from RSA (R)
Display Version: 9.4_M3

Host: lax
Product Code: graph
Version: 9.4
Display Name: SAS/GRAPH
Hot Fix Entry: Hotfix V74001
Display Version: 9.4_M3

Host: lax
Product Code: base
Version: 9.4
Display Name: Base SAS

Appendix 1

Troubleshooting SAS Foundation

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Opening a SAS Technical Support Case	54

Troubleshooting a SAS Deployment

Installation errors can happen. Most installation errors are due to one of these reasons:

- corrupted installation files

Run the SAS Depot Checker Utility to assess the integrity of the files in your SAS Software Depot. If you find errors, download depot again. Then, attempt the installation again.

For more information, see “[Checking Your SAS Software Depot](#)” on page 23.

- inappropriate operating environment

Review the SAS system requirement appropriate for your operating system available at <http://support.sas.com/resources/sysreq/index.html>.

- unfulfilled system requirements

Review the SAS system requirements appropriate for your operating system available at <http://support.sas.com/resources/sysreq/index.html>.

- processes on the computer that interfere with the installation

Shut down all unnecessary processes on the machine, and re-install SAS.

For more information, see [Chapter 4, “Deploying SAS Foundation,”](#) on page 31.

TIP Two SAS logs, `SDW_date-installed_time-installed.log` and `IT_date-time-stamp.log`, are helpful for troubleshooting a failed SAS deployment. Using the error message text from these logs, you can search <http://support.sas.com> for solutions. For more information, see <http://support.sas.com/kb/49/799.html>.

Opening a SAS Technical Support Case

If you are unable to resolve your issue, the next step is to open a case with SAS Technical Support. See this [knowledge article](#) for instructions on opening a case in the SAS Customer Service Portal.