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

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 Methods

SAS supports two methods 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.

• Physical media (DVDs)
  Physical media that are provided by SAS contain all of the installation materials that are needed to install an order.

With either 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), receives the physical installation media or 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.
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:

SAS® ESD Software Order Email

You received this Software Order Email (SOE) because you have purchased a license for SAS Software Order 09HY4W and you chose to receive your software via Electronic Software Delivery (ESD). The depot created during the download process will include the required licensing files.

Note: Any evaluation or newly licensed products that are listed will run on a temporary SAS installation data file (SID file), a license file that consists of customized installation and product authorization information, to allow you to use the software before the invoice is paid (if applicable). For licensed products, you will receive a full-term SAS installation data file after full payment is received.

If any site information or order information is incorrect, or SAS should not be sending you email, please contact Contracts Support at 1-800-727-0025 (press option 3).
### Table 1.1 Pre-Installation Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
</table>
| ☐ Make sure that your machine meets all system requirements. | Review the SAS system requirement that is appropriate for your operating system available. See [http://support.sas.com/resources/sysreq/index.html](http://support.sas.com/resources/sysreq/index.html).

For example, the machine from which you are downloading the SAS installation software must have the following:

- 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](http://support.sas.com/resources/sysreq/index.html).

- 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. |
| ☐ Check for new hot fixes. | 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](http://ftp.sas.com/techsup/download/hotfix/hotfix.html). |
| ☐ Ensure that your operating system supports the version of SAS that you are preparing to install. | 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](http://support.sas.com/supportos/list) page at [http://support.sas.com/supportos/list](http://support.sas.com/supportos/list). |
| ☐ Create a SAS Installer user account on your machine. | Always use the SAS Installer user (for example, sas) to deploy SAS and to apply future hot fixes, updates, and product add-ons. |
| ☐ Create an operating system group on your machine. | This operating system group (for example, sasgroup) should be the primary group for the SAS Installer user. 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). |
| ☐ Create a SAS directory on your machine. | SAS requires a location on your machine where the following can be stored:

- 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

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:

```
/opt/sas9.4/
dlm/
depot/
install/
```
<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure that the SAS directory meets all requirements.</td>
<td>The SAS directory must meet these requirements:</td>
</tr>
<tr>
<td></td>
<td>• Allow the SAS Installer user Read, Write, and Execute permissions.</td>
</tr>
<tr>
<td></td>
<td>• The mounted file system that contains the SAS directory must permit execution of binaries. (The -noexec option must not be set.)</td>
</tr>
<tr>
<td></td>
<td>• The SAS directory and its children do not contain whitespace characters or special characters in their names.</td>
</tr>
<tr>
<td>Have sudo or root user access to your machine.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>For more information, see “Deploying SAS Foundation” on page 33.</td>
</tr>
<tr>
<td>Decide which languages your SAS 9.4 products must support.</td>
<td>The Select Language Support page of the SAS Deployment Wizard 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.</td>
</tr>
<tr>
<td>Decide which locale (or regional) setting to use and whether to configure your machine as a Unicode server.</td>
<td>The Select Regional Settings page of the SAS Deployment Wizard enables you to select the locale for your SAS software. 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. The Select Regional Settings page of the SAS Deployment Wizard 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. Note: If you plan to configure your machine as a Unicode server, your operating system must use UTF-8 encoding.</td>
</tr>
<tr>
<td>Locate your Software Order Email.</td>
<td>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.</td>
</tr>
</tbody>
</table>

Chapter 2
Setting Up Your SAS Profile

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.
Note: You are not required to set up a SAS profile if you are installing from physical media (DVDs). Proceed to Chapter 3, “Creating Your SAS Software Depot,” on page 11.

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. You are not required to set up a SAS profile if you are installing from physical media (DVDs). Proceed to Chapter 3, “Creating Your SAS Software Depot,” on page 11.

2. Open a web browser and point it to http://support.sas.com/documentation/installcenter/94/ unix/.

The SAS Knowledge Base / Install Center page is displayed.

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

The My Profile page is displayed.
4. 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.

5. Using your email program, locate the email from SAS with a subject line similar to **Please Activate your SAS Profile**.

6. Click the link in the email, and, using your web browser, follow the instructions to create a password for your SAS profile.

7. 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.

Creating Your SAS Software Depot

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.

How you create your SAS Software Depot depends on what software order distribution method you are using: Electronic Software Delivery (ESD) or physical media (DVDs).

- If you are using ESD, take these 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.

4. If you are using physical media, take these steps:
   1. Mount the DVD that contains your SAS software order.
   2. Run a program called the SAS Deployment Wizard to 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.

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.

6. Enter your email address and password, and click Login.

You are returned to the Downloads page.

7. Select SAS Download Manager.

The SAS Download Manager window is displayed.
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](image)

9. 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.

![Opening dialog box](image)

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

![Save file](image)
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.

11. Close your web browser.
12. From the UNIX command line, run the download file (for example, /opt/sas9.4/dlm/esdclient_94360_lax_xx_web_1).

   Note: You might need to turn on the execute bit (for example, chmod 744 esdclient_94360_lax_xx_web_1).

   The command begins uncompressing the download manager installation files.

   You should see output similar to the following:

   Verifying archive integrity... All good.
   Uncompressing SAS Download Manager..............................................
   ................................................................................
   ................................................................................
   ................................................................................
   ................................................................................
   ................................................................................
   ................................................................................
   ................................................................................
   ................................................................................
   ............................................

   When the files are uncompressed, the Choose Language dialog box is displayed.

   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.
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.

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.
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 27.

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**Create a Depot from DVDs**

To create your SAS Software Depot from your software order on DVDs, follow these steps:

1. 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.

2. As the SAS Installer user (for example, sas), log on to the machine on which you want to install SAS.

3. Mount the DVD that contains your SAS software order.

4. At the root of the mounted file system, run setup.sh.

   You should see output similar to the following:
Preparing the SAS Deployment Wizard...
Launching the SAS Deployment Wizard...

The Choose Language dialog box is displayed.

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 Select Deployment Task page is displayed.

5. Select **Create or Add to a SAS Software Depot** and click **Next**.
The Specify Order Details page is displayed.

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.

6. Return to the Specify Order Details page of the deployment wizard and click **Next**.

The Specify Order Options page is displayed.
7. Make sure that **Include complete order contents** is selected and click **Next**.

The Specify SAS Software Depot Directory page is displayed.

Enter the location where you want to create your SAS Software Depot (for example, `/opt/sas9.4/depot`), and click **Next**.

If you have not yet created the depot directory, you see the following alert box.
Click **Yes**, to have the deployment wizard create the directory automatically for you.

The Final Review page is displayed.

![Final Review Wizard](image)

8. 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 create your software depot, click **Start**.

The Adding SAS Software Order page is displayed with the estimated time it will take to create the software depot.
Wait until the SAS Software Order Added page is displayed.

9. **Click Next.**

   Another instance of the SAS Software Order Added page is displayed.
10. Click Finish.

11. Make sure that the files contained in your SAS Software Depot are owned by your SAS Installation user and have the correct permissions. (Your user ID is referred to as the SAS Installation user.)

In the following example, \texttt{sas} is the SAS Installation user, and \texttt{sasgroup} is the SAS installation group:

\begin{verbatim}
  cd /opt/sas9.4/depot
  chmod -R 755 .
  chown -R sas:sasgroup .
\end{verbatim}

12. If you want to verify the integrity of your SAS Software Depot, proceed to “Checking Your SAS Software Depot” on page 27.

---

### 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.
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:
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.

Chapter 4
Deploying SAS Foundation

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.
4. 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.
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:

   ```bash
   ./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.

![Specify SAS Installation Data File](image)

- **SAS installation data file** (example: SAS94_123456_999999999999999.txt)
- **Details of the selected SAS installation data file**:
  - **Product**: SAS 9.4
  - **Platform**: Linux for X64
  - **Order**: 094Y4W

<table>
<thead>
<tr>
<th>Licensed SAS Foundation Software</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS</td>
<td>12Nov2016</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle</td>
<td>12Nov2016</td>
</tr>
<tr>
<td>SAS/QGRAPH</td>
<td>12Nov2016</td>
</tr>
<tr>
<td>SAS/STAT</td>
<td>12Nov2016</td>
</tr>
</tbody>
</table>

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.

![Select Language Support](image)

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 33.)

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 55.

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.
```

Chapter 5
Validating Your SAS Foundation Deployment

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:


   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:
   ```bash
   ./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 (LNX64) 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:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>real time</td>
<td>0.08</td>
</tr>
<tr>
<td>cpu time</td>
<td>0.02</td>
</tr>
</tbody>
</table>

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

```sas
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):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>real time</td>
<td>1.10</td>
</tr>
<tr>
<td>cpu time</td>
<td>0.00</td>
</tr>
</tbody>
</table>

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4. Quit the SAS command line session by entering the following command:

   \texttt{endsas;}

   You should see output similar to the following:

   

   \begin{verbatim}
   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
   \end{verbatim}

---

\section*{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:

1. Change to \texttt{SAS-installation-directory/SASHome/deploymntreg/}.

   Here is an example:

   \texttt{cd /opt/sas9.4/install/SASHome/deploymntreg}

2. Enter the following command:

   \texttt{SAS-installation-directory/SASHome/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java -jar sas.tools.viewregistry.jar}

   Here is an example:

   \texttt{/opt/sas9.4/install/SASHome/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java -jar sas.tools.viewregistry.jar}

   An HTML report is created in \texttt{SAS-installation-directory/SASHome/deploymntreg/}.

3. Load the report in your web browser.

   Here is an example:

   \texttt{/usr/bin/firefox /opt/sas9.4/install/SASHome/deploymntreg/DeploymentRegistry.html &}

   You should see a report similar to the following:
<table>
<thead>
<tr>
<th>Host</th>
<th>Product Code</th>
<th>Version</th>
<th>Display Name</th>
<th>Display Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>lax</td>
<td>tablesrvtk</td>
<td>9.4</td>
<td>SAS Table Server Base Components</td>
<td>9.4_M3</td>
</tr>
<tr>
<td>lax</td>
<td>securestrong</td>
<td>9.4</td>
<td>SAS/SECURE Toolkit Libraries from RSA (R)</td>
<td>9.4_M3</td>
</tr>
<tr>
<td>lax</td>
<td>graph</td>
<td>9.4</td>
<td>SAS/GRAFPH</td>
<td>9.4_M3</td>
</tr>
<tr>
<td>lax</td>
<td>base</td>
<td>9.4</td>
<td>Base SAS</td>
<td></td>
</tr>
</tbody>
</table>
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 27.

- **inappropriate operating environment**
  
  Review the SAS system requirement appropriate for your operating system available at [http://support.sas.com/resources/sysreq/index.html](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](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 33.

**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](http://support.sas.com) for solutions. For more information, see [http://support.sas.com/kb/49/799.html](http://support.sas.com/kb/49/799.html).
Opening a SAS Technical Support Track

If you are unable to resolve a SAS Foundation issue, the next step is to go to the SAS Technical Support website and open a track on the issue.

To open a Technical Support track, follow these steps:

1. Point your web browser to http://support.sas.com/ctx/supportform/createForm.
   You are directed to the SAS Technical Support Form page.

2. Click Log in.
   The SAS Login page is displayed.
3. Enter your email address, password, and click **Login**.

You are returned to the SAS Technical Support Form page with your basic information filled in from your SAS profile.

4. Verify your basic information, and enter additional information such as product, product release, SAS release, and operating system. When you are finished, click **Next**.

The Problem Description form is displayed.
5. Enter the following:

- a subject and a description of the product in the required fields.
- any relevant error or warning messages. And describe any diagnostic steps taken or SAS Notes referenced.
- any screen captures that are attached to the form as graphic files.

When you are finished, click **Next Page**.

The Problem Description form page is displayed with all of your information entered.
6. If you need to change anything, click **Return to Editing**. Otherwise, Click **Submit**. A confirmation page is displayed.
Recommended Reading

- SAS Intelligence Platform: Installation and Configuration Guide
- SAS Installation Note 39379: Documentation and Frequently Asked Questions for the SAS Software Depot
- SAS Note 38236: Validating SAS Software Depots on UNIX Using the SAS Software Depot Checker
- SAS Guide to Software Updates

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

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