Administrator Guide for SAS® 9.1.3 Foundation for Microsoft® Windows® for 64-Bit Itanium-based Systems

Using the Administrator Guide

This guide is divided into two parts with different objectives –

- "Part I: Understanding SAS 9.1.3 Foundation" explains what administrators need to know about SAS 9.1.3 Foundation's components.
- "Part II: Installation and Deployment Instructions" provides step-by-step details about SAS 9.1.3 Foundation's wizards and tools.

Your comments about the guide's structure and contents are welcome.

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Administrator Guide for SAS® 9.1.3 Foundation on Microsoft® Windows® for 64-Bit Itanium-based Systems

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Administrator Guide for SAS® 9.1.3 Foundation
on Microsoft® Windows® for 64-Bit Itanium-based Systems

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Other Sources of Installation Information

This document provides installation instructions for SAS 9.1.3 Foundation, which is made up of server-side Base SAS and a variety of server-side SAS products (the exact products vary by customer). Information about the installation of mid-tier and client-side products is available in your SAS Installation Kit

The server-side configuration instructions contained in this document are for the configuration of a generic SAS server. For information about configuring OLAP, workspace and stored process servers, please see *SAS Integration Technologies: Server Administrator's Guide*. For information about setting up a metadata server, please see *SAS 9.1.3 Intelligence Platform: System Administration Guide*. This material can be found at `http://support.sas.com/documentation/configuration/index.html`.

Part I: Understanding SAS 9.1.3 Foundation

Using the SAS Log

If you view the SAS log (as a part of the installation log or separate from the installation), please note that SAS 9.1.3 and SAS 9.1.3 Foundation are displayed in the log as SAS 9.1 TS1M3.

Close Anti-virus and Firewall Software

Before you begin an installation of SAS Foundation, it is recommended that you close your anti-virus and firewall software. Some anti-virus and/or firewall configurations can prevent an application from installing successfully. If you are unable to close the anti-virus or firewall software, make sure that your configuration allows you to install software and to update the registry. If your SAS installation fails and you have mandatory anti-virus or firewall software running, please check with your system administrator.

Documentation for Installing SAS 9.1.3

In SAS 9.1.3 Foundation, the System Requirements and installation guides are available as printable Adobe PDFs. They can be found in these two locations:

- the **Documentation for Installing and Configuring SAS** CD inside the lid of your Installation Kit
- Install Center, which is part of the SAS Web site. The SAS Install Center is located at `http://support.sas.com/documentation/installcenter/913/kit/index.html`

System Requirements

There are six major sections listed in the System Requirements Table of Contents:

- Software Requirements
- Hardware Requirements
- Additional Features
- Space Requirements
- Specific Product Requirements
- Graphics Hardware and Software Compatibility

The System Requirements can be reviewed before or after you run the System Requirements Wizard.

Installation and Configuration Guides

There are three installation guides focused at different audiences. All three can be found on the **Documentation for Installing and Configuring SAS** CD and on the Install Center Web site.

1. As an administrator, you will be interested in this *Administrator Guide*.

2. Your end users who will install SAS interactively will be interested in the *User Installation Guide*. In order to assist these users, you should also familiarize yourself with the information in that document.

3. The *Post-Installation Guide* is intended for anyone who needs to tune the behavior of specific SAS products or solutions after installation.

For updates to materials on the **Documentation for Installing and Configuring SAS** CD (as well as other useful installation-related information), please visit the SAS Install Center:
`http://support.sas.com/documentation/installcenter/913/kit/index.html`

Two Starting Points for Deployment of Windows SAS

For an administrator, managing software deployment to multiple computers is an increasingly challenging task. End users often have varying needs. While some users may be capable of installing the software interactively, others may not. As the number of machines increases, so does the desire to keep software installations consistent and manageable. Often, you may not have easy access to end user computers, or it may be too inefficient to install the software independently on each machine.

Additionally, these computers may require operating system updates, which in turn may require several reboots before the installation process for SAS software even begins. To avoid interrupting users, you may need to install the software when the user is not using the machine.

To install SAS 9.1.3 Foundation in its simplest form, you can run the installation from the **SAS Setup Disk**. This AutoPlay method is introduced below and described in more detail in "Installing SAS from the SAS Setup Disk" on page 17.

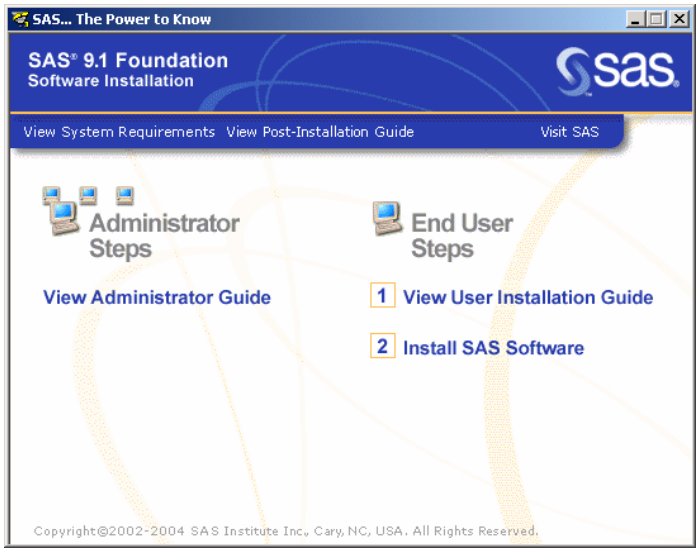
If your SAS 9.1.3 software installation is intended for multiple platforms, or if your software mix requires post-installation configuration, the SAS Software Navigator (SSN) would be your best choice. The SSN is designed for this type of deployment across a multiplatform and/or multi-machine environment. For more information, please see "The SAS Software Navigator" on page 3.

Whichever starting point you use for your Windows environment, SAS 9.1.3 Foundation, this guide describes the interactive use of SAS Setup, and follows with a discussion of how the tool can be used in unattended or Quiet Mode (where applicable).

In a software update, these tools ensure that newer files will be placed in the same locations as their predecessors. For the user, the result is a streamlined wizard sequence in which certain windows are skipped. In addition, when new software is installed, SAS Setup checks to see if updates are required. The Setup tool then applies any needed software as part of the installation.

AutoPlay on the SAS Setup Disk

The SAS AutoPlay, which is launched when you insert the **SAS Setup Disk**, is the simplest method for installing SAS 9.1.3 Foundation.



The AutoPlay menu displays links that you need to begin your installation. The links under the heading End User Steps include "View User Installation Guide" and "Install SAS Software."

After the System Requirements Wizard runs, you can perform your installation of SAS 9.1.3 Foundation by clicking `Install SAS Software` under End User Steps.

SAS Setup will ask for your SAS Installation Data (SID) file, which is sent to your site's SAS Installation Representative by e-mail. The Customer Key and Order number can be found in the SAS Installation Kit on the SAS Order Information sheet.

Follow the steps in the window dialogs presented by SAS Setup to complete your installation of SAS 9.1.3 Foundation. For descriptions of the remaining steps in SAS Setup, please see "SAS Setup Wizard Dialogs" on page 18.

The SAS Software Navigator

For an administrator with multiplatform and/or configuration responsibilities, the SAS Software Navigator (SSN) serves as a better starting point than the more streamlined AutoPlay on the **SAS Setup Disk**. The SSN was written in Java, to take advantage of the platform independence offered by that programming language.

In addition to supporting the installation tools described in this chapter, the SAS Software Navigator provides access to online installation and configuration documentation, installation qualification tests, and links to the Install Center, SAS Technical Support, and the installation steps for other platforms.

Note: *If you use the SAS Software Navigator to install any of your software on a Microsoft Windows for 64-Bit Itanium-based Systems machine, you* ***must*** *deploy that software from a SAS Software Depot. Refer to the* User's Guide for SAS Software Navigator, *specifically Chapter 2, "Creating a SAS Software Depot," for more information.*

Administrators who install SAS across a multiplatform and/or multi-machine environment should also refer to the *SAS Intelligence Platform: Planning and Administration Guide* and the *SAS Intelligence Platform Installation Guide* located at `http://support.sas.com/documentation/configuration/index.html`

Classifying Your End Users

Before deploying SAS software, you should identify the various classes of end users that you will support. End users can be divided into three classes:

1. Client Users

   Client users install a minimal set of components on their local PCs, but run the majority of their SAS Software from a network image that you create.

2. Personal Users with Network Access

   Personal Users with network access are users who install all SAS software that they will use on their local PCs from a network image that you create.

3. Personal Users without Network Access

   Personal Users who do not have access to the network must install all SAS software that they will use on their local PCs using their own set of CDs.

Client User Model

Advantages of this model:

- The amount of disk space required to run SAS is minimized.
- Any configuration changes can be done on the server and inherited by all of the clients. Operations such as updating a SAS Installation Data file (including SETINIT) can be managed more efficiently.

Disadvantages of this model:

- All of the clients are dependent on the server to operate. If this server goes down, none of the clients will be able to run SAS.
- There is a strong network dependency for all of the clients. Performance may be hindered due to the amount of network traffic and any additional load on the SAS Server.

Personal User Model

Advantages of this model:

- Each copy of SAS is unique and has no dependencies. There are no dependencies on the network or on any one server. The server is used only as a location from which to perform an installation.
- In most cases, personal installations yield the best performance, since all of the files are local to the user's system

Disadvantages of this model:

- All SAS System files are present on each computer that has SAS installed. A large amount of disk space is required so that SAS can run independently.
- Updates such as renewed SAS Installation Data (including SETINIT) are not automatically inherited by end users. When updates are performed, the server must be updated and then SAS Setup must be run again to propagate these changes to all of the individual computers.

CD Distribution

The advantage of this model is that CDs containing Customer-Specific Data can be provided to users for an installation, regardless of the user's access to a network or server. This gives an Administrator more control over the products available to users.

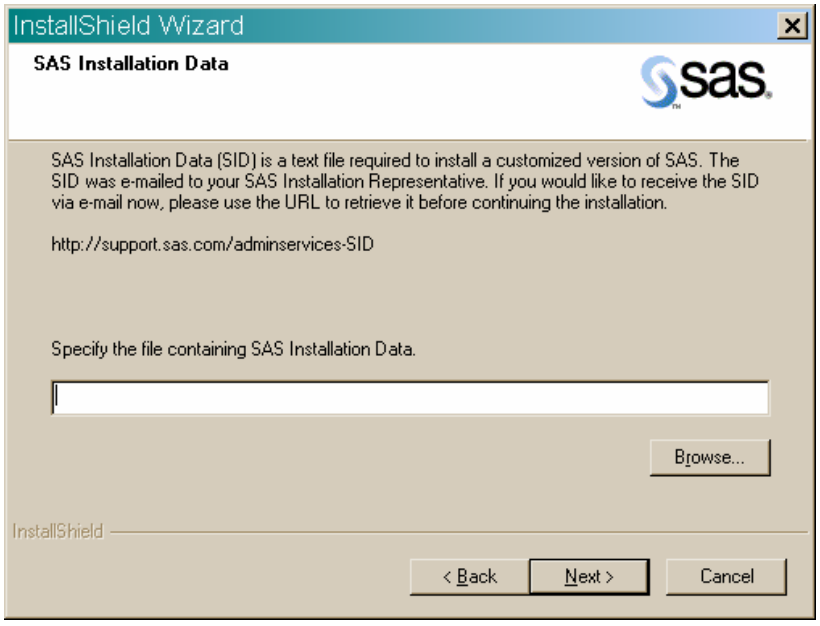
The disadvantage of this model is that CDs created this way must be passed around to users, or multiple copies must be made for each user to be able to install SAS.

Retrieving and Using SAS Installation Data

The SAS Installation Data file includes your company's SETINIT and installation process customization parameters. The SAS Installation Data file is required to install SAS Software.

You can retrieve your SAS Installation Data from a File if you previously saved the SAS Installation Data file that you received via e-mail. At the time of your SAS software order, your designated installation representative receives an e-mail from SAS that includes a text file attachment. This attachment contains your SAS Installation Data file, along with instructions about saving the data to disk.

After the data is saved to disk, both the SAS Setup and the SAS Software Navigator can find the SAS Installation Data file.



The SAS Installation Data window appears right after the Welcome window.

Administrator-Created Images

There are two ways to create images, depending on whether you are providing for client or personal installations.

Creating an Image for Client Users

To provide a SAS installation that can be run by client users, SAS for 64-bit Windows can be installed to a 64-bit Windows system with Terminal Services. Use an administrator log-on when installing to a Windows system with Terminal Services

Creating an Image for Personal Users

This section assumes that you have retrieved SAS Installation Data. The material here describes the creation of a network image to support Personal Users.

Personal Users are users of SAS Software who will install all components that they will use on their local PCs. (If your end users will run the software from the network, see Creating an Image for Client Users above.)

To create a network image that Personal users can install from, copy the contents of each CD to the same directory on the network.

For example, if you want to create an installable SAS image on `F:\SAS9.1.3\install\sas` and your CD drive is `D:`, execute the xcopy command for the following SAS System CDs:

- **SAS Setup** CD
- **Software Disk 1**
- **Software Disk 2**
- **Software Disk 3**
- **SAS Shared Components**

```
xcopy /s D:\*.* F:\SAS9.1.3\install\sas
```

Note: *If you have the **SAS/SECURE** CD, copy only the `securwin1.cab` file to your installable image:*

```
Xcopy /s D:\secure1.cab F:\SAS9.1.3\sas
```

If other files are copied from this CD, the AutoPlay will not function properly. In addition, the file should be copied to the SAS folder within the image, not just to the root of the image.

If you are performing an upgrade, copy your SAS 9.1.3 software into a new folder so the earlier SAS 9 material is preserved.

Retrieving and Using SAS Installation Data

The SAS Installation Data file includes your company's SETINIT and installation process customization parameters. The SAS Installation Data file is required to install SAS Software.

You can retrieve your SAS Installation Data from a file (if, for example, you previously saved the SAS Installation Data file that you received via e-mail).

At the time of your SAS software order, your designated installation representative receives an e-mail from SAS that includes a text file attachment. This attachment contains your SAS Installation Data file, along with instructions about saving the data to disk.

After the data is saved to disk, both SAS Setup and the SAS Software Navigator can find the SAS Installation Data file.

If you use the SAS Software Navigator to install SAS, the SAS Installation Data window appears right after the "Select the type of deployment you want to perform" window.

SAS Setup

SAS Setup™ performs the actual installation of the software, and must be run on every machine where the SAS Software will run.

SAS Setup may be run in one of three modes:

1. Interactive Mode (***recommended***)
   Requires that a user be present to respond to prompts.

2. Record Mode
   Prepares a quiet record file for use with Quiet Mode. This mode is run by the administrator, and interactively records the component selections in the quiet record file. Record Mode defaults all other responses, and allows the administrator to edit these directly in the quiet record file.

3. Quiet Mode
   Uses a quiet record file (created in Record Mode) to run SAS Setup in an unattended fashion. Quiet Mode is intended for use in any context that does not require a user to be present at the machine. This can be useful when used in a login script, in conjunction with management packages or with any other in-house solution used for managing software on your PCs.

The next section covers interactive use of SAS Setup, to familiarize you with the prompts a user would normally encounter. The following section discusses automation of the responses to these prompts using Record Mode and Quiet Mode. For large-scale enterprise deployment, Record Mode and Quiet Mode are highly recommended.

Interactive Use of SAS Setup

SAS Setup is accessible for interactive use from AutoPlay on the **SAS Setup Disk** or the SAS Software Navigator by selecting the option `Install The SAS Software Foundation`. This wizard can also be run by one of the following commands, depending on the type of end user:

- Personal Users: `<Source Path>\SAS\SETUP.EXE`
- CD-ROM Users: `<CD Drive>:\SAS\SETUP.EXE`

In these examples, *`Source Path`* is the network location you specified where you copied the CD images.

The text below does not cover every dialog a user will encounter, but focuses on some of the more important ones.

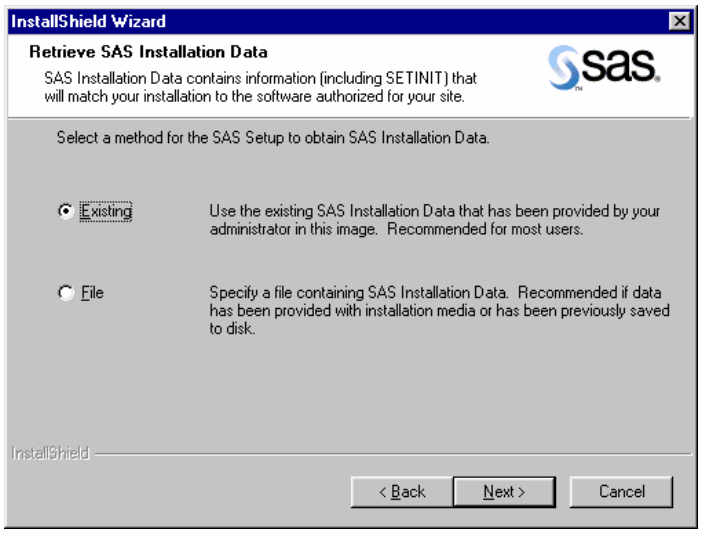
Providing the SAS Installation Data

This section applies only to users installing the software locally (either from a network image you have created or from CD-ROM).

The SAS Installation Data file is required for your Personal Users to complete the final installation of SAS software. Personal Users installing interactively depend upon you to provide them with the SAS Installation Data file needed to complete the installation.

If you have created a network image of the CDs to be installed by users, you can provide the SAS Installation Data by copying the file to the `<Target path>\SAS\core\sasinst` directory in the network image, for example, `F:\SAS9.1.3\install\sas\core\sasinst`. Then make a copy of your SAS Installation Data file and then rename the copy of the file to `sid.txt`.

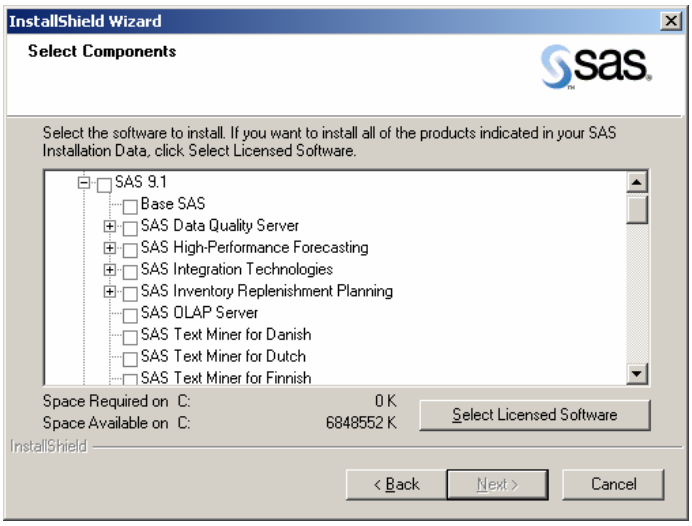
As a result, when your end users run SAS Setup interactively, they will be prompted with the options “Existing” and “File” for retrieving SAS Installation Data for their installation.



SAS Setup will default to the Existing option, since your end users will most often use the existing SAS Installation Data that you placed in the network or CD image. The File option is provided in the event that you have saved your SAS Installation Data to a separate disk location, and would like to instruct your users to access the data from that location.

Selecting the Software to Install

Users will be prompted for the software to install. They will have an opportunity to select from the software that you placed in the network image.



From the Select Components dialog, interactive users are able to specify the software that they would like to install to their local machines.

By default, the Select Components window opens with all your licensed software selected. The window uses your SAS Installation Data file to determine the software for which you are licensed, and selects only those components. You can click the Select Licensed Software button to return to the default setting.

Any non-licensed components that you placed into the network image when you created it will also be available for installation to the user here.

Using Record Mode with SAS Setup

SAS Setup prompts for many user responses during interactive use. When using SAS Setup in Quiet Mode, these responses are too numerous to be specified on a single Quiet Mode command line. Instead, they are specified in a file, which is created using Record Mode.

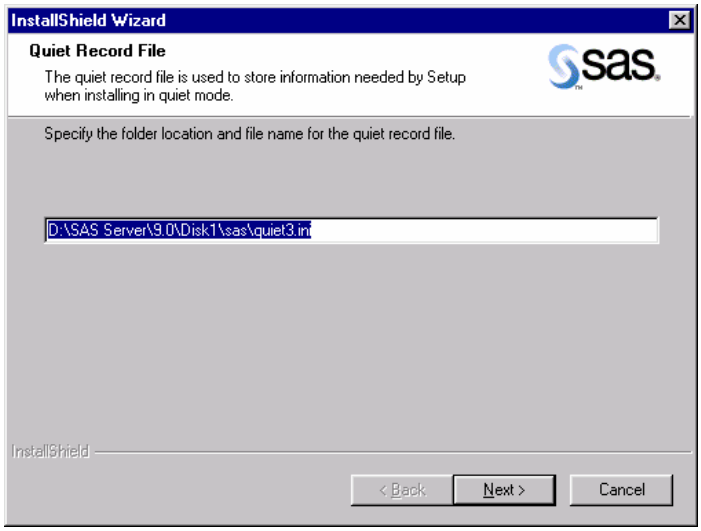
To launch SAS Setup in Record Mode, issue the following command (without the parenthetical comment):

```
<Source Path>\setup.exe -zrecord
```

For example: `(F:\SAS9.1.3\install\sas\sas\setup.exe -zrecord`

You will be prompted to provide the SAS Installation Data. For more information, refer to the section Providing the SAS Installation Data on page 7.

SAS Setup will prompt you for the location where your quiet record file will be placed.

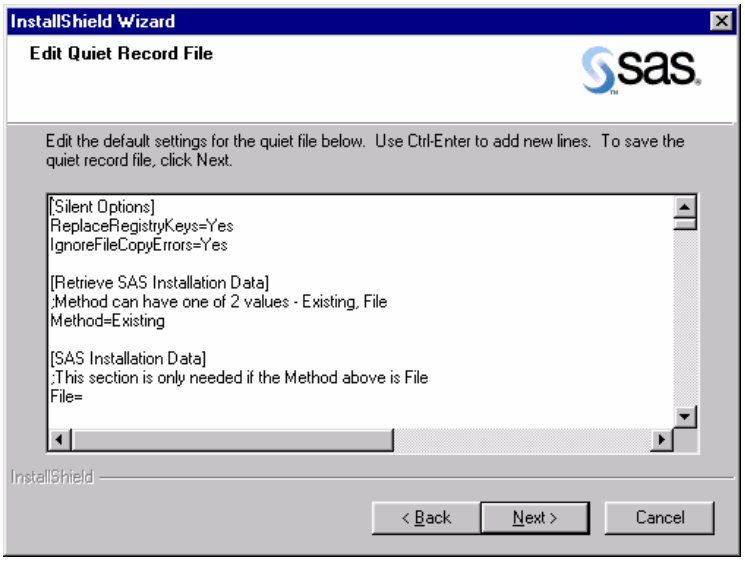


It is recommended that you choose the default, which places the file in the main directory of the network image you will be installing from. Remember this quiet record file location, as it will be needed for running SAS Setup in Quiet Mode.

You will then be prompted to select the software components that you want this quiet record file to select during Quiet Mode. Refer to the earlier section, Selecting the Software to Install on page 8.

Editing the Quiet Record File in Record Mode

After selecting the software to install, SAS Setup will present you with the Quiet Mode quiet record file it has created for you.



The quiet record file presented here contains the software you have selected, along with the default settings for other values needed for the final installation. It is important that you review this file completely. For example, you may want to change the destination path where the software will be installed.

Do not edit any settings below the warning line. If you want to change the selected components while in Record Mode, click the Back button to return to the *Select Components* dialog and make new selections. Otherwise, you must record a new quiet record file to change these settings. Changes made to this information by any other means could invalidate the quiet record file.

After you finish editing the quiet record file and click Next, Record Mode will finish. (If you prefer, you can complete Record Mode, and edit the file later in your favorite text editor.)

You now have a quiet record file for use with Quiet Mode, which is addressed in the next section.

Using Quiet Mode with SAS Setup

For large-scale enterprise deployment, it would be impractical to require an administrator or user at each machine during installation. To meet this need, SAS Setup supports Quiet Mode.

Quiet Mode works in conjunction with Record Mode (see above) to provide a way to install without requiring the presence of a user. To familiarize yourself with the prompts the wizard would normally present to the user, review the section Interactive Use of SAS Setup on page 7.

To run SAS Setup in Quiet Mode, a quiet record file must have been created using Record Mode (see above), and a single command line run on each machine on which you will run the SAS software.

The source path of the command to be run will be the location where you copied the CDs. For example, if you copied all of the CDs to a directory named `sas`, the command would be `<Source Path>\sas\SETUP.EXE`

The command-line arguments to SAS Setup are the same, independent of the source path used above. Usage is shown below:

Usage

```
"...\SAS\SETUP.EXE" -s -f2"<full path to log file>" -
zquietfile?"<full path to quiet file>"
```

For example:

```
F:\SAS9.1.3\install\sas\Setup.exe -s -f2"C:\TEMP\QUIET.LOG"
-zquietfile?"F:\SAS9.1.3\install\sas\quiet.ini"
```

Note: The `-f2` option specifies where the log file should be created. Use this switch to specify a valid location where you have write permission. Without a valid location and write permission, Setup may terminate with no indication of failure.

This command can be used in the login script for your target users, in a Microsoft SMS package, or in any other method that allows it to be run on the end user's machine without requiring their presence.

Checking Status in Quiet Mode

Just as important as installing quietly is determining the success or failure of the Quiet Mode installation. While Quiet Mode is working, you can open your Windows Task Manager and view the Processes tab. If a Setup is running, you will see `IDriver.exe` and `setup.exe` among the processes.

After Quiet Mode finishes, SAS Setup provides the results of the Quiet Mode execution in two ways:

1. Log File specified with the –f2 argument

   Provides Quiet Mode success or failure code. Refer to “Troubleshooting” on page 24 for more information.

2. SAS Setup Log File

   Provides a detailed account of the actions that were performed by the tool. This file is designed to assist with troubleshooting a Quiet Mode session.

The SAS Setup Log File in Quiet Mode

The log file provides you with much more detail about the actions that took place during the execution of the tool. This file is helpful when troubleshooting Quiet Mode.

A sample log file follows:

```
BEGIN: C:\DOCUME~1\Administrator\LOCALS~1\Temp\{68624FB8-2512-46B5-9664-
64366DCCB3EB}\SASSETUP.LOG
10-15-2003 19:08:00: SETUP: Running in quiet mode.
10-15-2003 19:08:00: ----------------------------------------------
10-15-2003 19:08:00: VERSION: The SAS System 9.1 Setup v9.1.001
10-15-2003 19:08:07: DETECT: Start examining system
10-15-2003 19:08:07: VERSION: 10-15-2003 19:08:07
10-15-2003 19:08:07: SYSINFO: Pentium
10-15-2003 19:08:07: SYSINFO: FPU Detected
10-15-2003 19:08:07: VERSION: 5.1
10-15-2003 19:08:07: SYSINFO: Windows XP
10-15-2003 19:08:07: SYSINFO: NT WorkStation
```

```
10-15-2003 19:08:07: SYSINFO: XVGA - 1024x768
10-15-2003 19:08:07: SYSINFO: 65536 colors
10-15-2003 19:08:07: DETECT: Finished examining system
10-15-2003 19:08:13: ACTION: Setup Type PERSONAL
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Begin processing
  SAS Installation Data: F:\SAS9.1.3\install\sas\core\sasinst
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Processing
  indexfile.txt
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Begin streaming
  file
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: End streaming file
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Data streamed to
  file C:\DOCUME~1\Administrator\LOCALS~1\Temp\{68624FB8-2512-46B5-
  9664-64366DCCB3EB}\.\indexfile.txt
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Processing
  tletter.txt
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Begin streaming
  file
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: End streaming file
10-15-2003 19:08:13: CUSTDATA_PKG:ProcCustomerData: Data streamed to
  file C:\DOCUME~1\Administrator\LOCALS~1\Temp\{68624FB8-2512-46B5-
  9664-64366DCCB3EB}\.\tletter.txt
```

The SAS Setup log file is created after any SAS installation is performed, and is always named `SASSETUP.LOG`.

The SAS Setup log file can be found in the destination directory for the SAS software installation, if the installation succeeded. If the installation failed, `SASSETUP.LOG` will be found under the TEMP directory.

Updating Your SAS Installation

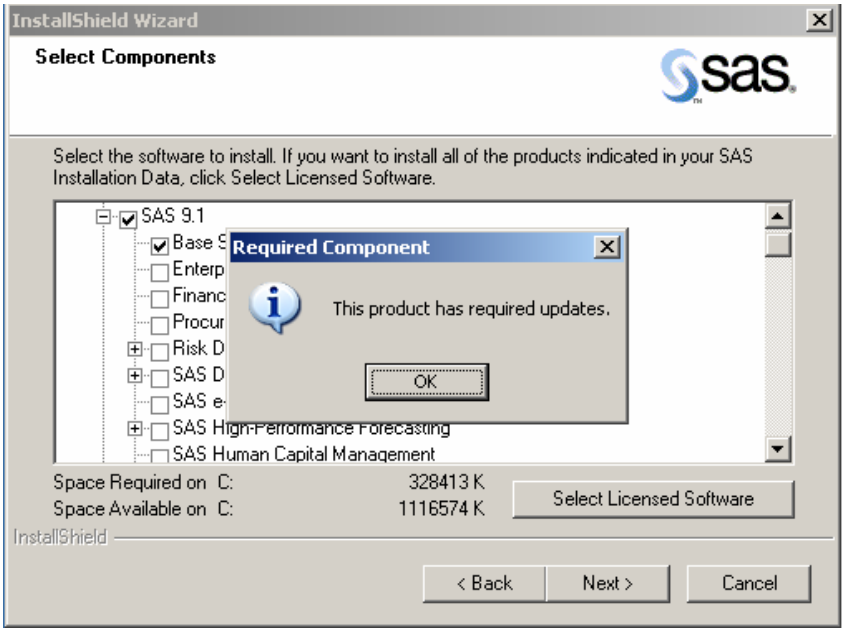
If you have installed SAS 9.1 or SAS 9.1.2, there are some options to consider as you plan for your installation of SAS 9.1.3.

In the case of a Personal installation, there can be only one SAS 9.1 release (SAS 9.1, SAS 9.1.2, or SAS 9.1.3) installed per PC. It is not possible to maintain your current SAS software on the same computer with your new SAS software. However, if multiple server images would be useful in your organization, it is possible to maintain more than one SAS installation image on a single machine.

Here is a table that describes the upgrade options available for several SAS installation types:

For SAS 9.1.2	you can upgrade to SAS 9.1.3.
For SAS 9.1	you can upgrade to SAS 9.1.2 & SAS 9.1.3.
For SAS 9.0	you can install SAS 9.1 or 9.1(.x) on the same system.
For SAS 8.x	you can install SAS 9.0 and/or SAS 9.1(.x) on the same system.

Pre-production software must be uninstalled before you install the production quality version of that software.



In any type of SAS software update, SAS Setup will not allow you to deselect the name of a SAS product for which an update is required.

In addition, certain windows in SAS Setup are skipped during an update, since Setup expects that an update will use the established locations for data and temporary files.

Three Types of SAS 9.1.3 Updates

In the case of a server installation, there are three installation paths that can be followed:

1. New Personal Server
2. New Client Server
3. Update Client Server

Depending on the update path you choose and your previous server installation(s), your current SAS 9.1 and 9.1.2 software can be updated to SAS 9.1.3, or these previous SAS installations can be maintained.

If you create a new personal server image and you plan to perform update deployments from that server, make sure that all products currently used will be updated. The updated server must contain a product set that matches the personal image on the respective systems that will be used to run the server installation.

Quiet Update Requirements

For quiet updates to be successful, you must update the server image that was used originally for recording quiet installations.

In addition, you will need to record a new `quiet.ini` file. Due to upgrade considerations, recording a `quiet.ini` file on a system that already has SAS 9.1 or SAS 9.1.2 installed is not recommended, as this may limit the product selection process.

For more information on quiet installations, please see “Using SAS Setup in Quiet Mode” on page 22.

Part II: Installation and Deployment Instructions

Using the SAS 9.1.3 Foundation Installation Tools

For an administrator, there are many challenges in performing a large enterprise-wide deployment of system updates and SAS software. With SAS 9.1.3 Foundation Windows installation tools, you can overcome these challenges and meet the needs of end users. These tools include the SAS Software Navigator and SAS Setup.

Using the tools, you can perform all these installation roles:

- Deploy operating system updates and SAS software to thousands of machines quietly, using the software management system of your choice (SMS, Tivoli, network login script, etc).
- Support interactive Personal Users who will install a local image of SAS to their PC.
- The SAS Software Navigator provides direct access to the interactive functionality available in the installation tools.

Quiet Mode may be used with SAS Setup to install system components and SAS software without requiring a user to be present at the machine.

Using these tools together, you can meet the challenges of SAS deployment within your organization.

Install the JRE File First

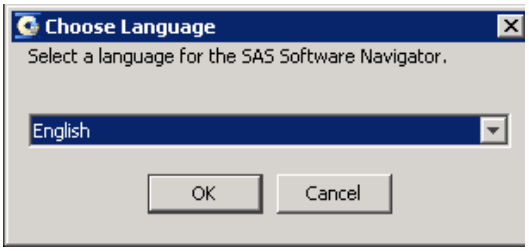
Your JRE (Java Runtime Environment) file must be installed before any other SAS files are installed on your PC.

This section describes the steps required to install the JRE. Administrators respond to the dialogs as each window is presented.

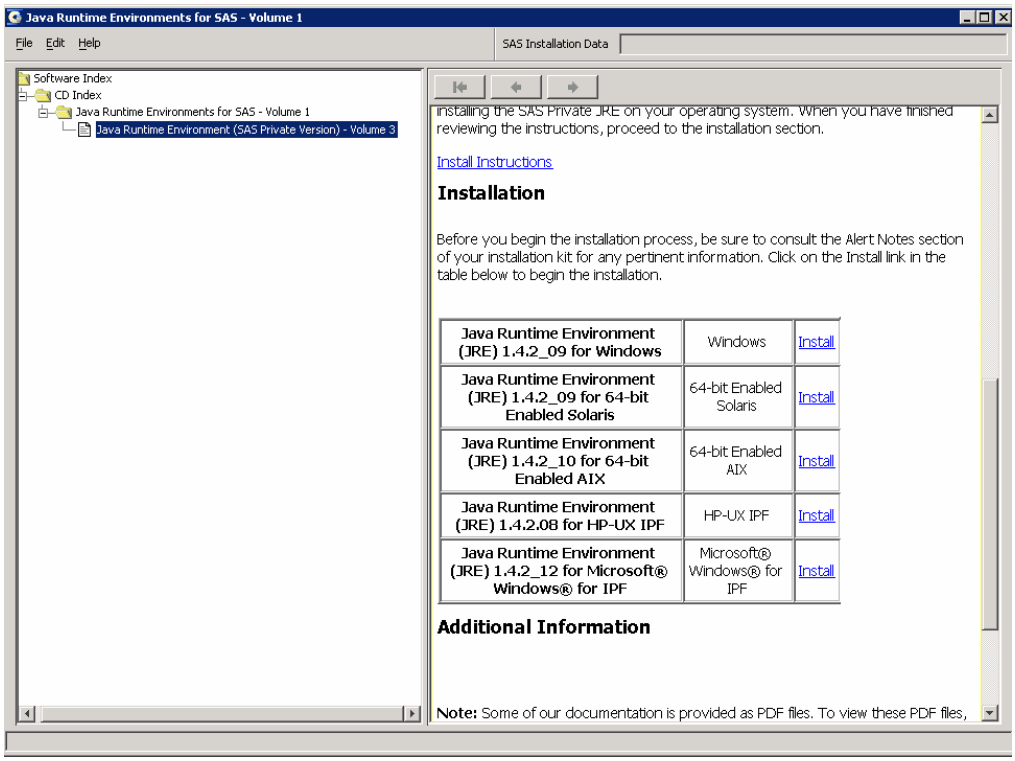
Most of the dialogs described below offer directions printed here in bold text. These represent the quickest method for deployment. The indented dialog description represents a window that may not be a part of your installation.

Find the CD labeled **Java Runtime Environments for SAS – Volume 1** in the in the media container(s) inside your installation kit. Insert the disk in your CD-ROM drive.

If the SAS Software Navigator does not autoplay, execute `setup.exe` in the root of the CD.

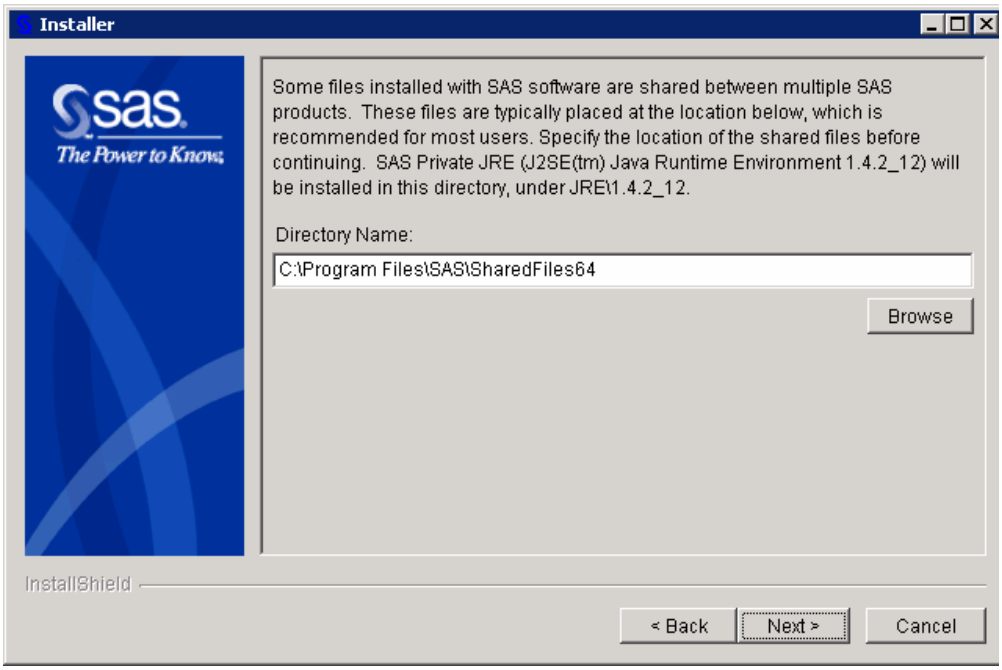


Read *Choose Language*
Select a language in the pull-down window.
Click OK.
Or, click Cancel to exit the SAS Software Navigator.

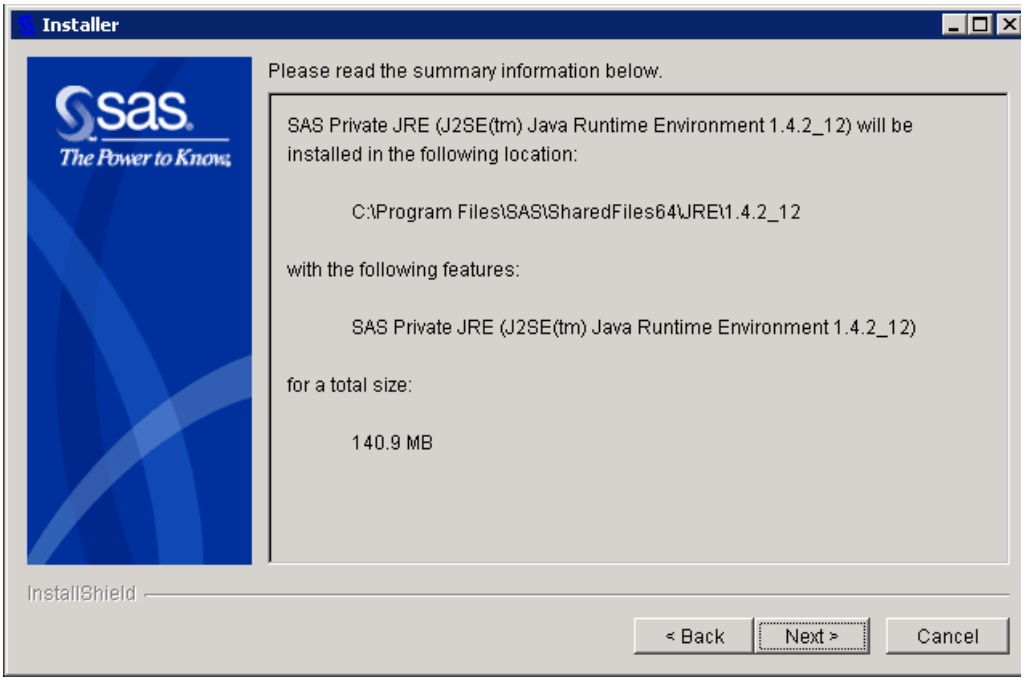


Read *Java Runtime Environment (SAS Private Version) – Volume 3*
Scroll down to find "Java Runtime Environment (JRE) 1.4.2_12 for Microsoft® Windows® for IPF."
Click Install.

Read *Welcome to the InstallShield Wizard for SAS Private JRE (J2SE™ Java Runtime Environment 1.4.2_12)*
Click Next.
Or, click Cancel to exit the SAS Software Navigator.



Read the dialog that begins, "Some files installed with SAS software are shared between multiple SAS products" if the InstallShield Wizard presents this window.
Click Next to accept the default install directory.
Or, enter a different path name, or click Browse to select a different directory, or click Back to return to the previous dialog, or click Cancel to exit InstallShield Wizard.



Read the dialog with the heading "Please read the summary information below."
Review the summary, and if it is accurate, click Next.
Or, click Back to return to the previous dialog, or click Cancel to exit InstallShield Wizard.

The InstallShield Wizard presents the dialog window "Installing SAS Private JRE (J2SE™ Java Runtime Environment 1.4.2_12). Please wait."
Wait as the software installs.
Or click Cancel to exit InstallShield Wizard.

The InstallShield Wizard presents the dialog window "The InstallShield Wizard has successfully installed SAS Private JRE (J2SE™ Java Runtime Environment 1.4.2_12). Choose Finish to exit the wizard.
Click Finish.

Installing SAS from the SAS Setup Disk

While there are several ways to launch an enterprise deployment of SAS 9.1.3 Foundation, the **SAS Setup Disk** can be used for an installation of SAS 9.1.3 Foundation in its simplest form.

If you want to install SAS 9.1.3 Foundation using the **SAS Setup Disk**, follow these steps:

1. Make sure that you are logged in as the Administrator.
2. Locate the **SAS Setup Disk** in the media container(s) inside your installation kit.

   Note: If the SAS Software Navigator is running from the **SAS Software Navigator Disk** (distributed in the installation kit), close this application by clicking the 'X' in the upper right-hand corner. In order for the **SAS Setup Disk** to autoplay, the SAS Software Navigator must be closed.
3. Insert the **SAS Setup Disk** in your CD-ROM drive.

SAS Autoplay launches from the **SAS Setup Disk**. The Autoplay menu displays links that you need to continue your installation.

Run the SAS Setup Wizard

Follow these steps to perform your installation of SAS 9.1.3 Foundation.

1. Return to the SAS Software Navigator.
2. Under End User Steps, click on `Install SAS 9.1 Foundation`.
3. SAS Setup begins with a Welcome screen. Click `Next` on this screen.
4. Retrieve your SAS Installation Data file.

The SAS Installation Data (SID) file is sent to your SAS Installation Representative in the SAS Installation Kit. It can be found on the SAS Order Information sheet.

There is also an e-mail that contains the SAS Order Information with an attached text file. The title of the e-mail is SAS Software Order xxxxxx. It contains an attachment file called `sas91_xxxxxx.txt`. The e-mail includes not only the text file but also the SAS Installation Key and the Order Number.

You can use the .txt file to update the SAS Installation Data by selecting `File` from the installation screen.

To complete your installation of SAS 9.1.3 Foundation, follow the steps in the window dialogs presented by SAS Setup. These are described in the section below.

Using the SAS Setup Wizard

SAS Setup is a tool designed for the installation of SAS software on an end user's system.

Setup can be run from a "Client User" image to create SAS clients, or from the CD or "network location" to create a Personal copy of SAS.

Starting the SAS Setup Wizard

There are two ways to start the SAS Setup Wizard:

1. From the SAS Software Navigator, choose `SAS 9.1 Foundation` and then choose `Install SAS 9.1 Foundation`.
2. Launch the command `<drive>:SAS\setup.exe`

Three Ways to run SAS Setup

SAS Setup can be run in three ways to deploy SAS:

Interactive

This type of installation allows a user to follow a step-by-step approach with the help of the SAS Setup Wizard. The user reads questions on each Wizard window and the answers dictate how SAS will appear on their system. This type of installation results in a working SAS System on the system where the user ran SAS Setup.

Record Mode

This type of Setup is designed for Administrators who want to deploy SAS using Quiet Mode. This Setup type gives an administrator the ability to generate and customize a Quiet Mode INI file that Setup can use to install SAS in an unattended fashion. No SAS files are copied during this type of installation. Only a single text file (`Quiet Mode INI file`) is generated.

Quiet Mode

This Setup type is driven by a Quiet Mode INI file, which contains information on how SAS should be installed on a system. An administrator can use Quiet Mode as a deployment tool to install SAS on any number of machines in an organization simultaneously without having to visit each one. The result of running SAS Setup in Quiet Mode is a fully functional SAS System.

More information is available in the chapters Using SAS Setup in Quiet Mode on page 22.

SAS Setup Wizard Dialogs

This section describes the steps required to install and run SAS. Administrators respond to the dialogs as each window is presented.

Most of the dialogs described below offer directions printed here in bold text. These represent the quickest method for deployment. Indented dialog descriptions represent windows that may not be a part of your installation.

All Setup windows are listed below according to the order in which SAS Setup presents them, with the exception of the dialogs that can appear more than once. These are grouped on page 20.

Read *Welcome to the SAS Setup Wizard*
Click Next.
Or, click Cancel to exit the SAS Setup Wizard.

Read *Retrieve SAS Installation Data*
Select Existing, unless you plan to specify a different file, or expect to provide the SAS Installation Data later.
Most users can use the network location provided by an administrator. However, if your SAS Installation Data is in a different location, select File to enter that location on the *SAS Installation Data* window. More information on that window can be found below.
Click Next.
Or, click Back to view the previous window, or click Cancel to exit Setup.

Read *SAS Installation Data*
Type the location of the file where your SAS Installation Data can be found, or click Browse to locate the file.
If the SAS Installation Data cannot be found in the location specified, you will receive an error message.
Click Next
Or, click Back to view the *Retrieve SAS Installation Data* window, or click Cancel to exit Setup.

Read *SAS Installation Data Not Found*, if Setup displays this window.
Click Okay

Read *Language Selections*, if Setup displays this window.
Click Select All to choose all the languages that are available to you, or select Clear All to deselect the chosen listings.
Click Next.
Or, click Back to view the previous window, or click Cancel to exit Setup.

Read *Default Language*, if Setup displays this window.
Click the box next to the language that you want to select for your default language. The window displays all the languages chosen on the *Language Selections* window.
Click Next.
Or, click Back to view the *Language Selections* window, or click Cancel to exit Setup.

Read *SAS Shared Files*, if Setup displays this window.
Some files that are installed by Setup are shared between multiple SAS products. Most users can use the location listed in the dialog. If your shared files are located in another folder, click Browse to specify the location of the shared files.
Click Next.
Or, click Back to view the previous window, or click Cancel to exit Setup.

Read *Choose Destination Location*
Click Next to install SAS in the destination folder listed in the dialog.
Or, click Browse to choose a different folder. Click Back to view the previous window, or click Cancel to exit Setup.

Read *Specify Data Files Folder*
By default, the Windows user profile directory is created in the location shown in this dialog. If you select this default choice for the Windows directory, multiple users can use SAS on the same computer.
Personal data folders are created automatically.
Click Next to accept the default directory, or click Browse to specify a different directory.
Click Back to view the *Choose Destination Location* window, or click Cancel to exit Setup.

Read *Specify Temporary Files Folder*
As SAS processes your data, temporary files are created.
Click Next to select the folder listed in the dialog as the location for these temporary files.
Or, click Browse to specify a different folder. Click Back to view the *Specify Data Files Folder* window, or click Cancel to exit Setup.

Read *Select Components*
This window displays all the components that can be installed, so you can select the software for this installation.
Click Select Licensed Software to install all of the products indicated in your SAS Installation Data (or to return to the default setting).
By default, the window opens with all your licensed software selected. The window uses your SAS Installation Data file to determine the software for which you are licensed, and selects only those components.
To make changes to the list, you can select components that you want to install, and deselect the components that you do not want to install.
Click Next.
Or, click Back to view the previous window, or click Cancel to exit Setup.

Read *Start Copying Files*
At this point in the installation, Setup has enough information to start copying the program files.
Click Next if you are satisfied with the settings.
Or, if you want to review or change any settings, click Back to return to the *Select Components* window.
Click Cancel to exit Setup.

There are two alternatives for the final dialog in the sequence:

Read *SAS Setup Complete* if Setup displays this window.
At this point, Setup has installed the SAS software. If you want to launch the SAS System now, click that checkbox. If you want to view the Post-Installation Guide now, click that checkbox.
Click Finish.

Read *SAS Setup Complete* if Setup displays this window.
At this point, Setup has copied all the required files to your computer. However, some files could not be updated because they are in use. These will be updated automatically when you reboot your computer.
Click on one of the two radio buttons:

- Yes, I want to restart my computer now.
- No, I will restart my computer later.

If you choose to reboot, close all open applications and remove any floppy disks from the disk drives.
Verify that all virus-scanning software has been disabled after the computer restarts.
Click Finish.

Dialogs Used More than Once in Setup

The following three dialogs appear as needed during SAS Setup Wizard procedures:

Read *Setup Status*
This dialog is displayed while Setup performs the requested operations. No action is required.
If you click Cancel, you will exit Setup, and the program will not be installed.

Read *Exit Setup*
Setup can be completed later, but if you quit Setup now, the program will not be installed. Click No to resume Setup, or click Yes to quit.

Read *Choose Folder*
This window is used to browse for an available folder. Navigate through the nested folders until you find the correct one for your installation.
Click OK to select the folder.
Or, click Cancel to return to the previous window.

Using SAS Setup in Quiet Mode

Quiet Setup allows the selections for an installation to be made ahead of time and then used later when the SAS System is installed on other machines. Using Quiet Setup can save system administrators a lot of time when they are installing software on multiple machines. Please follow the steps below and read the help dialogs before attempting to record an installation.

Considerations

The most common problem encountered during Quiet Setup is an out-of-space situation. Before beginning the setup, make sure there is enough free disk space on the machine where the SAS System is being installed.

Due to the nature of Quiet Setup, mistakes cannot be rectified immediately. Correcting errors involves updating the quiet data file and re-installing, which can be time-consuming.

Quiet Setup cannot recover from a reboot, so make sure each machine meets the minimum system requirements before attempting to run a Quiet Setup.

A Quiet record file can be generated by running the SAS System setup in Quiet Record mode. This will create a data file that can be used for any setup running in quiet mode.

Recording a Quiet Record File

Quiet Record mode creates a data file in a directory you specify that contains responses to any dialogs that may be presented during an interactive setup.

To begin recording a quiet record file, submit this command and follow the instructions on your screen:

```
<drive letter and full path to SAS setup.exe file>setup.exe -zrecord
```

For example: `F:\SAS9.1.3\install\sas\setup.exe –zrecord`

For more information, refer to the section Using Record Mode with SAS Setup on page 9.

Editing the Quiet Record File

This section explains each of the editable values in the quiet record file. Many of the values have standard defaults if they are left blank and each default is described below.

Do not edit any settings below the warning line. If you want to change the selected components while in Record Mode, click the Back button to return to the *Select Components* dialog and make new selections. Otherwise, you must record a new quiet record file to change these settings. Changes made to this information by any other means could invalidate the quiet record file.

Silent Options

ReplaceRegistryKeys=Yes/No
This value is used to indicate if file extensions should be registered for the current version of SAS that is being installed. This would only apply if an earlier version of SAS was installed on the computer.

Retrieve SAS Installation Data

Method=Existing/File
This value indicates where the setup should retrieve SAS Installation Data. The more common setting is Existing, since this data is retrieved when the SAS Server image is created.

SAS Installation Data

File=
This value refers to the location where the SAS Installation Data file was saved. It should be set only if the Retrieve SAS Installation Data Method was set to "File."

Language Values

The following language codes are used to select which languages to install and to indicate the default language:

- 1d=English with DBCS support
- cs=Czech
- de=German
- en=English
- es=Spanish (Castilian)
- fr=French
- hu=Hungarian
- it=Italian
- ja=Japanese
- ko=Korean
- pl=Polish
- ru=Russian
- sv=Swedish
- zh=Chinese (Simplified)

Language Selections

Language1=??
Language2=??
...
Each selected language must be listed on a separate line using the format: *LanguageX=??. X* is a sequential number starting at 1, and *??* is the two-character language code for the selected language.

Default Language

Default=??
The two-character language code is used to specify a single default language.

Destination Location

Location=
This is the location where SAS will be installed. If this value is left blank, Setup will use the default location under Program Files. If this value is set to a drive letter that does not exist on the target computer, Setup will abort.

Data Files Folder

Folder=
This is the location where personal user data files will be stored. If this value is left blank, Setup will use a default location in the user's Local Settings area.

Temporary Files Folder

Folder=
This is the location where temporary files will be stored. If this value is left blank, Setup will use a default location in the user's temporary location.

Using a Quiet Record File

To use a previously generated quiet record file to run a Quiet Setup, run the following command from the SAS directory:

```
<drive letter and full path to SAS setup.exe
   file>setup.exe -s
-f2<drive letter and full path to the log file>
-zquietfile?<drive letter and full path to the quiet file>
```

Example:

```
"F:\SAS9.1.3\install\sas\setup.exe" –s
-f2c:\temp\quiet.log
-zquietfile?"F:\SAS9.1.3\install\sas\quiet.ini"
```

When using a quiet record file, it is important to force the creation of a log file. Without a log file, the quiet installation may fail. Create the log file by using the -f2 option as follows:

```
setup –s -f2<path and filename of the log file>
```

The f2 option specifies where the log file should be created. Use this switch to specify a valid location where you have write permission. Without a valid location and write permission, the Quiet Record process may terminate with no indication of failure.

Troubleshooting

Check to make sure that there is no space between -f2 and the next argument.

The log will help in the troubleshooting of failed installations as it will display a ResponseResult code. Common ResponseResult codes are as follows:

0	Success
-1	General error
-2	Invalid mode
-4	Not enough memory available
-5	File does not exist
-7	Unable to write to the log file
-51	Cannot create the specified folder
-52	Cannot access the specified file or folder

Renewing Your SAS Software

SAS software is licensed on a calendar basis. In order to run your licensed software, you must supply the SAS Installation Data file, which includes information about the software in your license (SETINIT) and other installation process customization parameters. Your SAS Installation Data file must be updated when the license period has expired, and/or there has been a change in the SAS software product bundle covered by the license.

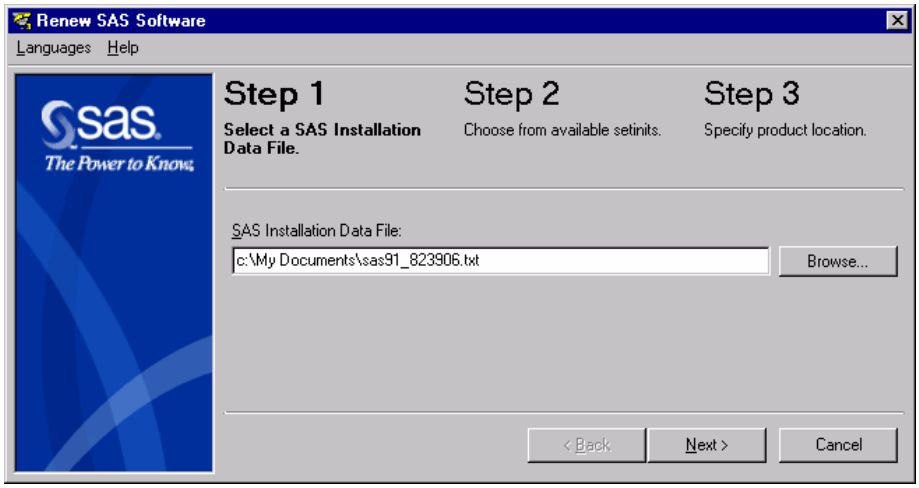
SAS Installation Data

When your organization orders SAS software or renews the SAS software license, your designated installation representative receives an e-mail from SAS that includes a single text file attachment. This attachment contains your SAS Installation Data, along with instructions about saving the data to disk. It is recommended that you save this e-mail and attachment on your hard drive, or to another location that is backed up regularly.

The SAS Installation Data File is commonly saved as `sas91_xxxxxx.txt` in `My Documents`. After you save the data to disk, the File option can be used during installation to provide the data's disk location. Alternatively, the Renew SAS Software tool can be used if your organization already has SAS software installed.

The Renew SAS Software Tool

Note: The Renew SAS Software tool can be used to update Personal images only.



Running the Tool

The Renew SAS Software tool validates the SAS Installation Data file to ensure that it contains valid information about the software in your license (SETINIT) and other installation process customization parameters. To begin, click `Start > Programs` (or `All Programs` on WinXP) > SAS > `SAS 9.1 Utilities` > `Renew SAS Software`.

If the Renew SAS Software tool cannot be reached from the Start menu, there are two other ways to reach it:

1. Open Windows Explorer (Click on the `Start` button, select `run` from the menu and type `Explorer`). Go to the following directory:
   `c:\Program Files\SAS\SAS 9.1\core\sasinst\sasrenew`.

Double-click on `sasrenew.exe` to start the Renew SAS Software tool. Click `Next`, and `Ok` on the `SAS 9.1 Verify SAS Installation Data` window.

2. Insert the **Software Disk 1** CD and go to the following directory: `<CD Drive>:\sas\core\sasinst\sasrenew`. Double-click on `sasrenew.exe` to start the Renew SAS Software tool.

In either case, the default location for the `!sasroot` directory is `C:\Program Files\SAS\SAS 9.1`.

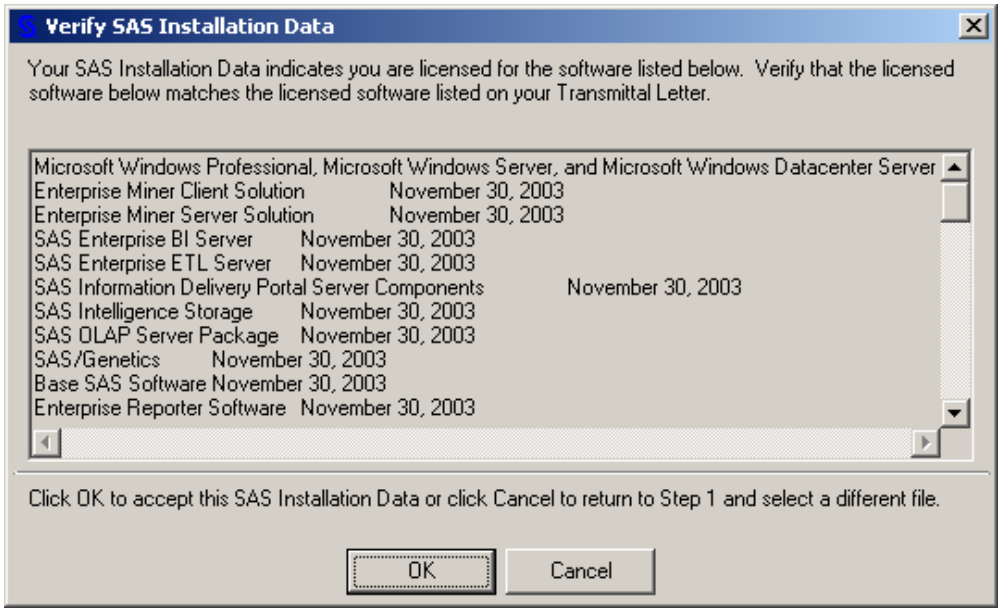
Renew SAS Software Windows

Type the pathname in the SAS Installation Data File field.
Or, click Browse to select the file.
Click Next to move to Step 2.
Or, click Cancel to exit Renew SAS Software.

If the SID file that you selected contains the proper information, the next window that appears will be Verify SAS Installation Data.

Note: If the list box in this window is blank, there is a problem with your SID file. A new one must be obtained. You can request a resend of the SID via e-mail from the following location:
`http://support.sas.com/documentation/installcenter/913/kit/index.html`

Check the SAS Installation Data field listings that are associated with the SID you selected.
Click OK to accept this SAS Installation Data and move to Step 2.
Or, click Cancel to return to Step 1 where a different file can be chosen.



The Verify SAS Installation Data window appears the first time that you click Next in Step 1 and anytime you change the location of the SID file. The top line in the list box shows the platforms where this SAS Installation Data file can be installed. Expiration dates can be checked in this window as well.

Note: If a Windows 64-bit platform is included on the top line of the list box, the SID must be installed on a 64-bit platform only.

The Step 2 window lists all the available SETINITs in the SAS Installation Data File. In most cases, there will only be one available.

Confirm that the SETINIT is correct for the system you are updating.
If multiple SETINITs are listed, select the correct SETINIT for the system you are updating.
Click Next to move to Step 3.
Or, click Back to view Step 1, or click Cancel to exit Renew SAS Software.

There are two fields to complete in Step 3: The first field shows where SAS 9.1.3 Foundation was installed, and the second field shows the location of the SAS config file. The default location for SAS 9.1.3 Foundation is `C:\Program Files\SAS\SAS 9.1`.

The default location for the SAS config file is the same as your SAS installation folder, so the second field in this window is grayed out.

If your SAS installation and your SAS config file are stored in separate locations, uncheck the "Same as above" checkbox and click Browse to find the proper folder. Click OK to continue.
Or, click Cancel to stop browsing and return to the Step 3 window.

Note: If the fields in Step 3 are blank, click Browse to locate the proper folder. Click OK to continue or Cancel to return to the Step 3 window. Blank fields can indicate a problem with the installation. If the Renew SAS Software tool is unable to finish, please check your `sassetup.log` file located in your `!sasroot` directory for errors that may have occurred during your SAS installation. The default directory for `!sasroot` is `c:\Program Files\SAS\SAS 9.1`.

Click Renew when you are satisfied with locations listed in the two fields.
Or, click Browse to select other locations, or click Back to view Step 2, or click Cancel to exit Renew SAS Software.

In the next window, the Renew SAS Software tool displays either a message that indicates success, or one that refers you to a log file so you can diagnose any problems.

Troubleshooting

Review the following usage notes for errors that you might encounter when using the Renew SAS Software tool.

Error: The SAS config folder is not valid.

When you run Step 3 of the Renew SAS Software tool (Specify product location), the following error message might appear:

```
Renew SAS Software - sas91_xxxxxx.txt
The SAS config folder is not valid. Please verify the folder.
```

To work around this issue, perform the following five steps to point to the correct configuration folder:

1. Click OK.
2. Uncheck the "Same as above" box.
3. Click Browse on the Folder for SAS config file and point to the correct folder.
4. Click Renew.
5. If the "Same as above" box was not checked initially, try checking it to use the default location.

For more information, see the following Usage Note:
http://support.sas.com/techsup/unotes/SN/010/010659.html

An error occurred applying the setinit file

The SAS Renew Software tool does not verify the operating system name before attempting to apply the SETINIT, causing the following error message to appear:

```
Renew SAS Software – SAS91_xxxxxx.txt
An error occurred applying the setinit file. Please refer to the
log file for additional information C:\Program Files\SAS\SAS
9.1\setinit.log.

Click OK. Your SAS Software has not been renewed yet.
You may renew at a later time.

Are you sure you want to exit?  Yes or No.  If you select No,
change the folder location, then click Renew to complete or
Cancel to exit.
```

Open the `setinit.log` to see why this is happening. If the problem is due to the wrong operating system, the `setinit.log` will look like this:

```
NOTE: The OSNAME= option specifies 'WIN     ' but the current
operating system name is 'NET_SRV'.
ERROR: This non-match is not allowed and the setinit stream will
not be applied.
ERROR: Cannot change the site validation data.
NOTE: The SAS System stopped processing this step because of
errors.
```

If this problem is due to an incorrect release of SAS, the `setinit.log` will look like this:

```
Error: Will not attempt to apply setinit because the current
release of 9.1 and the release= option value of 9.0 do not match.
```

To correct this file, obtain a new SAS Installation Data file with the correct operating system or release of SAS. Note that the system names might vary depending on the operating systems involved.

The `setinit.log` file is located in the `!sasroot` directory. The default directory for `!sasroot` is `C:\Program Files\SAS\SAS 9.1`.

For more information, refer to the following usage notes:
http://support.sas.com/techsup/unotes/SN/010/010790.html
http://support.sas.com/techsup/unotes/SN/010/010814.html

The current date of xxxxx is past the final expiration date for your SAS System, which is xxxxx.

After the Renew SAS Software tool finishes and you receive the message "`The setinit was successfully applied`," you may receive the following error message when you try to start a SAS 9.1.3 session:

```
ERROR: The current date of xxxxx is past the
final expiration date for your SAS system, which is xxxxx.
Please contact your SAS Software Representative to obtain your
updated SETINIT information.
ERROR: Initialization of SETINIT information from SASHELP failed.
FATAL: Unable to initialize the options subsystem.
ERROR:   (SASXKINI): PHASE 3 KERNEL INITIALIZATION FAILED. UNABLE
TO INITIALIZE THE SAS KERNEL
```

To work around this issue, perform the following steps:

1. Obtain a current SAS Installation Data file from your SAS Installation Representative.
2. Rerun the Renew SAS Software tool and point to the correct SID file.

If you have a personal installation, you need to obtain your SAS Installation Data file and run the Renew SAS Software Tool. There are two ways to do this:

1. Click `Start` > `Programs` (or `All Programs` on WinXP) > SAS > `SAS 9.1 Utilities` > `Renew SAS Software`.
2. Click `Start` > `Run`, and follow these steps:
   A. Type `Explorer` and click `OK`.
   B. Go to the `!sasroot` directory (default location `C:\Program Files\SAS\SAS 9.1\`).
   C. Go to the `core\sasinst\sasrenew\` directory and run `sasrenew.exe`.

If you have a Client installation, your administrator will have to update the SAS Installation Data on the server.

For more information, refer to the following usage note:
`http://support.sas.com/techsup/unotes/SN/010/010792.html`

The SAS folder is not valid

When you run Step 3 (Specify product location) of the Renew SAS Software tool using SAS 9.1.3, the following error message might appear:

```
Renew SAS Software - sas91_xxxxxx.txt
Error: The SAS folder is invalid. Please verify the folder.
```

To work around this issue, perform the following steps to point to the correct folder where SAS was installed:

1. Click `OK`.
2. Click `Browse` on the Folder where SAS 9.1.3 was installed and point to the correct folder.
3. Click `Renew`.

Important: When you install SAS 9.1.3, make sure that you are logged in as the Administrator. Make sure there are no applications running in the background, especially anti-virus programs.

For more information, refer to the following usage note:
`http://support.sas.com/techsup/unotes/SN/010/010791.html`

Installing the SAS System on a Windows Terminal Server

Introduction

Since the introduction of Terminal Services in Windows NT Server 4.0 Terminal Server Edition, it has become more important for a single enterprise server to have the ability to support separate instances of an application by multiple remote users. When a user is running an application in a Terminal Server Client session, the application executes on the server running Terminal Services. Terminal Services allow connections via a thin client to a server desktop. The user interface, such as keyboard input and the application window, is managed on the client and communicated to the Terminal Server.

SAS System Licensing for Terminal Services

You must have the appropriate server class authorization code to install the SAS System on a server with Terminal Services. This is required because all processing of SAS and all data access originates on the server.

SAS System Support for Terminal Services

The SAS System provides support for Terminal Services by using a unique data files folder and temporary files folder for each SAS user. The SAS System references these locations in the configuration file, sasv9.cfg, with the identifiers SASUSER and WORK respectively. The identifiers contain a variable path for the SASUSER and WORK file locations. During the invocation of the SAS System, these variables are determined by the operating system and will be unique for each SAS user. In previous releases of the SAS System, the SASUSER location has been set to a variable path like the example below:

```
/* Setup the default SAS System user profile folder      */
-SASUSER "!USERPROFILE\Personal\My SAS Files\V9"
```

`!USERPROFILE` points to the environment variable `USERPROFILE`. You can view the value of `USERPROFILE` by typing `set USERPROFILE` at a Windows NT command shell (`cmd.exe`).

In order to adequately support new versions of Windows Terminal Server such as Windows 2000, `?CSIDL_PERSONAL` has replaced `!USERPROFILE`. Although `!USERPROFILE` is still recognized by SAS, it is not recommended for Windows 2000 Server Family Terminal Services. The variable path `?CSIDL_PERSONAL` points to the value stored in the following registry key:

```
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion
\Explorer\Shell Folders\Personal
```

In this release, `SASUSER` will be configured similar to the example below:

```
/* Setup the default SAS System user profile folder       */
-SASUSER "?CSIDL_PERSONAL\Personal\My SAS Files\9.1"
```

The SAS user's work location, `WORK`, is defined in the configuration file by using the variable path `!TEMP`. This variable points to the environment variable path `TEMP` determined by the Terminal Server operating system and will be unique for each concurrent Terminal Server session.

SAS System Setup will make the necessary changes to `sasv9.cfg` to support Terminal Services based on the detection of Terminal Services and the user's selections for unique data files and temporary files folders.

SAS System Requirements for Microsoft Windows Terminal Services

Be sure to follow the hardware and software requirements for each Terminal Services platform before installing the SAS System. Microsoft Windows Terminal services require Microsoft Windows NT Server 4.0 Terminal Server edition with Service Pack 4.

Preparing for SAS System Setup in a Terminal Server Environment

To properly install the SAS System on a server with Terminal Services, the following steps must be performed:

1. Log on as an administrator to the Terminal Server to which the SAS System will be installed.

2. Install mode is required for installing applications on Windows Terminal Servers. There are two ways to place the system in install mode:

   - The first method is to use the `Add/Remove Programs` Control Panel icon and select `Install`. You will be asked to change the user option. Be sure to select the option that allows all users to begin with common application settings.

   - The second method is to type `change user /install` at a Windows NT command prompt (`cmd.exe`). A message will inform you if the install mode is set correctly.

3. Installation of the SAS System on Terminal Servers may require system reboots. In order to minimize user interruption, ***have all users log off of the terminal server before installation***. A remote terminal session can be used to install SAS software to a Terminal Server, but it is not a recommended practice due to the potential for reboots.

Before you proceed with this installation, it is recommended that you close your anti-virus and firewall software. If you keep those types of software running, you increase the possibility that one or more reinstallations of SAS software will be necessary, since certain anti-virus and/or firewall configurations can prevent an application from installing successfully.

If you are unable to close the anti-virus or firewall software, make sure that your configuration allows you to install software and to update the registry. If your SAS installation fails and you have mandatory anti-virus or firewall software running, please check with your system administrator.

If a reboot is required, you will have to reestablish the connection to the Terminal Server after the reboot is complete. After logging on to the Terminal Server session, the SAS System Setup should restart and continue the installation. If the setup does not restart, start the SAS System Setup and it will resume where it left off before the reboot.

Installing the SAS System

Installing the SAS System on a server with Terminal Services is very similar to installing SAS on any server. The key differences are managed by the install, including configuring the SAS System for a Terminal Services environment. There are several important steps to follow during the install:

1. When the Setup prompts for the Data Files Folder, be sure to accept the default value provided by Setup. By accepting the default value for this dialog, Setup will be instructed to use a variable path for the SASUSER location in the configuration file, ensuring a separate SASUSER folder for each user of SAS.

2. When the Setup prompts for the Temporary Files Folder, be sure to accept the default value provided by Setup. By accepting the default value for this dialog, Setup will be instructed to use a variable path for the WORK location in the configuration file, ensuring a separate WORK folder for each user of SAS.

Note if the SAS System will be installed on a server that has had SAS 9.1.3 Foundation installed before, the SASUSER and WORK locations will default to the previously selected values stored in the registry. These may not be the correct locations to ensure a separate SASUSER and WORK folder. The sasv9.cfg file can be modified after the install to correct for this. Refer to the section SAS System Support for Terminal Services on page 30 to correct sasv9.cfg.

Configuration and Performance Considerations

The following are additional steps to perform after installing the SAS System on a server with Terminal Services.

1. For optimal SAS System performance, it is recommended that the server have at least 32MB of memory available per concurrent user.

2. You can increase this amount based on the number of Terminal Server Client sessions running the SAS System and the amount of available memory on the server with Terminal Services.

The WORK Directory

The WORK directory can be set to a common location because a work subdirectory is created for each SAS session that is a unique name. The WORK directory can also have the specifications ?CSIDL_PERSONAL or !USERPROFILE. This is an option if you wish to keep track of which work directories belong to specific users.

This configuration is also useful if your users are spread across multiple drives and you have a significant amount of hard drive space on each drive. The amount of drive spin is reduced, which is a key factor in performance. If drive space is at a premium or if you have very fast hard drives, then a common work directory may be to your advantage.

Your choice of strategy will depend on your computer hardware and your RAID settings. For example, a RAID 0 drive is much faster than a comparable RAID 5 drive, but may not be as fast as spreading the work directories across multiple drives. You should not place any permanent data sets on a Raid 0 drive because these drives have no redundancy.

Memory

Since memory is important in performance, the system should have as much as possible. Memory is much faster than your hard drive in manipulating temporary files and other system operations. When computer memory is exhausted, the operating system is forced to use a swap file on your hard drive to store information read into memory. Therefore, increasing memory can increase performance a great deal.

As your user community increases on the server, more memory will be consumed. Prepare for this by making sure the machine has plenty of upgrade capability.

How to Remove or Uninstall SAS Software

For an end user, the process of removing or uninstalling SAS software works just as it does for any other Windows software. The user clicks on `My Computer`, then `Control Panel`, and then `Add/Remove Programs`. Select `SAS 9.1.3` from the list to remove SAS from your computer.

For a server installation, there is no similar automated way to remove SAS software. The directory containing the server installation must be deleted. Since no registry keys are created, the files are the only items that have to be removed.

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