

# Installation Instructions for the SAS® System Version 9 for UNIX® Environments

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# Chapter 1, Before You Install the SAS® System

## Audience

This document is intended for the SAS Representative, designated as the person responsible for installing and maintaining SAS software for UNIX systems at your site.

## Understanding This Book

This document contains instructions for installing and maintaining the SAS System on UNIX systems. This document conforms to the following conventions:

Monospace	Monospace type indicates commands, directory paths, filenames, Internet addresses, etc.
<i>Italics</i>	Italic type indicates documentation references or key notes.
<b>Bold</b>	Bold type indicates important text or concepts.
UPPERCASE	Uppercase type indicates variable and option settings.
Dollar sign \$ Pound sign #	A dollar sign \$ or pound sign # at the beginning of an example indicates a sample UNIX command line.
Exclamation !	An exclamation ! preceding a variable indicates an internal SAS variable. You must substitute the actual value of SAS variables in examples.

## Contacting SAS

If you need to contact SAS, refer to the *Service & Support* tab located in your Installation Kit for information about who to contact and how to contact them.

## Accessing Release Documentation

Release documentation is included in your Installation Kit, consisting of *Alert Notes*, *System Requirements*, and *Installation Instructions*. The latest versions of this documentation are available from the Web site:

<http://www.sas.com/installcenter>

## Installation Checklist

A typical SAS System installation involves the following steps. These steps are explained in detail in the remainder of this document. Please use a copy of this checklist as you complete all the steps listed to install the SAS System.

### Prerequisites

- Make sure the system on which you intend to install the SAS System is properly backed up.
- Familiarize yourself with the Installation Kit. Locate the *Transmittal Letter*, *Alert Notes*, *System Requirements*, *Installation Instructions*, *Service & Support* tab, and CD Set.

### Environment

- Review the *Alert Notes* to learn of any installation-related issues you should be aware of.
- Review the *System Requirements*. Verify that your system meets the minimum operating system version, memory, and disk space requirements.
- Make sure you have adequate free space in `/tmp` to load SAS Setup properly. You will need approximately 30 MB.
- If you use a proxy server to access the Internet, make sure the proxy information is properly defined on your system.
- Be sure you have appropriate permissions and privileges to install the SAS System. Make sure you can mount and unmount CD media on your system.

### Installation

- Review these *Installation Instructions*.
- Determine the type of installation you will perform.
- Identify a target directory where you want to install the SAS System. Make sure you have write access to the target directory.
- Determine from where you will obtain your SAS Installation Data.
- Make sure you have adequate free disk space to complete the installation. Refer to the *System Requirements* to determine disk space requirements.
- Mount the CDs appropriately for your operating system.
- Run SAS Setup and provide all the information required to complete the installation. Mount any additional CDs for which you are prompted.

**Post-Installation**

- Review your installation log files.
- Make the SAS System available for use.
- Run the SAS System.
- Make sure you have a Web browser available on your system. Refer to the *System Requirements* to determine Web browser requirements.
- Configure your Java Runtime Environment (optional).
- Configure user authentication to SAS System resources (optional).
- Make SAS/GRAPH Map Data Sets available for use.
  
-

# Chapter 2, Installing the SAS® System

This chapter describes how to use SAS Setup to install the SAS System. SAS Setup is provided on the *SAS Setup Disk*, as well as installed along with the SAS System. You must use SAS Setup to install and maintain the SAS System.



## Step 1 – Installation Requirements

All that is required to complete your installation is the proper CD Set to install from and your SAS Installation Data.

### CD Set

The CD Set refers to the set of CDs that make up your software order. It is found in the Installation Kit. A CD Set value is printed on the *SAS Setup Disk*, along with the date it was manufactured, to assist you in locating the correct set of CDs to complete your installation. The CD Set for the SAS System consists of the following:

- *SAS Setup Disk*
- Software Disks (one or more numerically labeled, such as *Software Disk 1*)
- Supplemental Disks (each individually labeled, such as *SAS Client-Side Components*)

When installing the SAS System, you should always begin with the *SAS Setup Disk*, and you will be prompted for any additional CDs required. Based on your software selections, you may not be prompted for all the CDs you received in your Installation Kit.

### SAS Installation Data

SAS Installation Data consists of customized installation information and customized product authorization information provided by SAS. Your SAS Installation Data is obtained either from the Internet or from an e-mail attachment.

By default, your SAS Installation Data resides on a secure server at SAS. SAS Setup will access this data if you supply your accompanying **SAS Installation Key** and **Order Number** at the appropriate prompts. You can find the SAS Installation Key and Order Number on the *Transmittal Letter*, or in the e-mail sent to the SAS Representative at your site.

SAS will send a Software Order E-mail to the SAS Representative at your site. This Software Order E-mail contains your SAS Installation Data in a text attachment. Instructions in the Software Order E-mail explain where and how to save the text attachment for later use.



## Step 2 – Verifying Your Environment

### Alert Notes

*Alert Notes* list any installation-related issues you should be aware of before installing or using SAS software. Review the *Alert Notes* in your Installation Kit and familiarize yourself with any issues before installing or using SAS software.

Product-specific Alert Notes are not included in your Installation Kit. You can access product-specific Alert Notes from the following Web site:

[http://www.sas.com/service/techsup/search/alert\\_search.html](http://www.sas.com/service/techsup/search/alert_search.html)

### System Requirements

This release of the SAS System supports specific releases and versions of various UNIX operating systems. Review the *System Requirements* in your Installation Kit and verify that your system meets the minimum operating system, memory, and disk space requirements before you begin installing the SAS System. Installation of the SAS System will not be successful if the system requirements have not been met.

### Temporary Space

SAS Setup uses up to 30 MB of temporary disk space in your `/tmp` directory to load its installation programs. After the installation is complete, this disk space is freed.

If SAS Setup detects that there is not enough space in `/tmp`, it will prompt you for an alternate location to be used to load the installation programs. When this situation occurs, the alternate location becomes the default target directory in which to install the SAS System. Therefore, you need to make sure that you specify an alternate location with adequate space for your entire installation, not just the installation programs.

You can check the available disk space in the `/tmp` directory using a command similar to the following:

```
$ df -k /tmp
```

### Proxy Information

**Attention:** Proxy information is required only if you choose to obtain SAS Installation Data from the Internet and your site uses a proxy server to access the Internet. Installing the SAS System using the Internet is optional.

If your site uses a proxy server to access the Internet, you need to verify that the system on which you intend to install the SAS System has your proxy information defined properly.

For proxy support of https requests, you need to make sure your `HTTPS_PROXY` environment variable is defined to your proxy server and port. The `HTTPS_PROXY` variable can be defined as either the host address or the IP address. For example, using Bourne shell, you can define `HTTPS_PROXY` as follows:

```
$ HTTPS_PROXY = "http://proxy.server.com:8080"; export HTTPS_PROXY
```

or:

```
$ HTTPS_PROXY = "127.0.0.1:8080"; export HTTPS_PROXY
```

If your proxy server requires basic authentication credentials, you can also define the `HTTPS_USERNAME` and `HTTPS_PASSWORD` environment variables. For example, using Bourne shell, you can define `HTTPS_USERNAME` and `HTTPS_PASSWORD` as follows:

```
$ HTTPS_USERNAME = "myaccount"; export HTTPS_USERNAME  
$ HTTPS_PASSWORD = "mypasswd"; export HTTPS_PASSWORD
```

## Privileges and Permissions

You do not necessarily need special privileges to install the SAS System. However, you need to determine what privileges or permissions you will need to mount CDs and write files to your intended target directory.

For instance, unusual permission problems result from installing as root across NFS-mounted file systems, because root is typically remapped to a non-root ID as a security precaution when creating or accessing NFS-mounted files.

Therefore, it is good practice to use a separate account to install and manage your SAS System installation. For example, you can set up an account called `sasadm` that has permissions that limit the account to installing and managing your SAS System installation only.

## Step 3 – Preparing for Installation

In preparation for your installation, you need to consider the following issues so you can provide appropriate responses to SAS Setup prompts.

**Attention:** You need to determine all of the following information prior to running SAS Setup.

### Installation Type

Determine the type of installation you will perform – create a new installation or update an existing installation.

New installation	This creates a new, independent installation of the SAS System. A new installation requires an empty directory location in which to install the SAS System.
------------------	---

**Existing installation** This updates an existing installation of the SAS System. Choose this type when you want to add software to your installation. Updating an existing installation requires that you specify the SASROOT directory of an existing installation of the same release of the SAS System; for example, adding Version 9 software to an existing Release 8.2 installation is **not valid**.

## Target Directory

Determine the target directory in which you intend to install the SAS System. Make sure you have write access to this target directory.

**New installation** You must choose a directory that is empty. You can choose a directory that does not already exist and SAS Setup will create it for you.

**Existing installation** You must specify the directory of an existing installation of the same release. Determine the full directory path of your existing SAS System installation.

## SAS Installation Data Source

Decide whether you plan to obtain your SAS Installation Data from the Internet or from an e-mail attachment.

**Internet** To obtain your SAS Installation Data from the Internet, locate your **SAS Installation Key** and **Order Number** from the *Transmittal Letter* or from the body of the Software Order E-mail sent to the SAS Representative.

**E-mail attachment** To obtain your SAS Installation Data from the e-mail attachment sent to the SAS Representative, follow the directions in the Software Order E-mail for saving the attachment to an accessible location on your system.

## Adequate Free Disk Space

1. Make sure you have adequate free disk space in the `/tmp` directory to load SAS Setup properly.
  - You will need approximately 30 MB of free space in `/tmp`.
  - This space is freed upon completion of SAS Setup.
2. Make sure you have enough free space in the target directory to install all the software for which you are licensed.
  - You can approximate the amount of disk space you will need by comparing the list of licensed software in the *Getting Started* section of the Installation Kit with the *System Requirements* document.

Please refer to the *Service & Support* tab if you need to contact SAS for help in finding any of this information.

## Step 4 – Mounting Installation CDs

### Mounting Instructions

Complete the following steps to properly mount the installation CDs. Use these instructions for mounting your *SAS Setup Disk* and any Software Disks you are prompted to mount.

1. If you are beginning an installation, locate the CD labeled *SAS Setup Disk* in your Installation Kit. Otherwise, locate the CD that SAS Setup has prompted you to mount.

- 2a. If your operating system uses an automatic mount feature (such as `vold` on the Solaris operating system):

To mount a CD, place the CD in the CD-ROM drive and close the tray. The CD will automatically be mounted.

To unmount a CD, issue the appropriate command (such as `eject`) or press the eject button on your CD-ROM drive.

Skip to Step 5 – Running SAS Setup.

- 2b. If you must manually mount CDs on your operating system:

Manually mounting a CD requires root privilege. Log in as `root` to manually mount the CD:

```
$ su root
```

If you already have a CD mounted in the CD-ROM drive you intend to use, unmount the CD before continuing. To manually unmount the CD, issue the `umount` command, for example:

```
# umount /cdrom
```

Insert the appropriate CD in your CD-ROM drive. SAS Setup will list the CD label and volume ID of the CD you are required to mount.

1. Create a local directory to serve as your mount point, for example:

```
# mkdir /cdrom
```

**Note:** The above examples assume your CD is mounted as `/cdrom`. You may choose another location and substitute that location appropriately in these instructions.

2. Mount the *SAS Setup Disk* or the Software Disk asked for in the media prompt using one of the following examples corresponding to your operating system. Substitute the actual device names where appropriate in the examples shown. This release of the SAS System supports ISO-9660 CD-ROM and Rockridge extensions where available.

The `mount` command follows this format:

```
# mount [options] device mount_point
```

where `[options]` are valid mount options for the operating system, `device` is the device name, and `mount_point` is the directory used as the mount point for the CD, for example:

### AIX

```
# mount -r -v cdrfs /dev/cd0 /cdrom
```

### Compaq Tru64 UNIX

```
# mount -rt cdfs -o noversion,rrip /dev/cd0 /cdrom
```

### HP-UX

```
# mount -r /dev/cd0 /cdrom
```

### Linux

```
# mount -r /dev/cd0 /cdrom
```

**Note:** Some Linux systems may require you to specify a file system type using the `-t` flag on the `mount` command.

### Solaris

```
# mount -r -F hsfs /dev/cd0 /cdrom
```

3. Although there is no harm in doing so, installing the SAS System does not require `root` privilege. You should exit your `root` session if you do not want to perform the installation as `root`.

```
# exit
```

## Remote Mounting

If your CD-ROM drive resides on another host, mount the CD using NFS by issuing a command similar to the following:

```
# mount -o ro <remotehost>:/<cd-rom-dir> /cdrom
```

where `<remotehost>` refers to the machine that owns the CD-ROM drive and `<cd-rom-dir>` is the actual mount point for the CD-ROM drive on the server. The commands for your host may differ.

**Note:** You may see unexpected behavior if you mount from an HP-UX CD-ROM drive to a host other than HP-UX.

## Copying the CDs to a Disk Location

You have the option of copying all of your installation CDs to a disk location prior to running SAS Setup. This avoids being prompted to mount each CD when it is needed. When you copy your CDs to a disk location, SAS Setup will automatically search the disk location for any additional CDs it requires and skips the prompt if it finds it.

To copy your installation CDs to a disk location, make sure you have adequate free disk space and copy the entire contents of each CD, retaining its file structure.

For example, suppose you have a *SAS Setup Disk* and two *Software Disks* in your Installation Kit. Copy the entire contents of each of the three CDs to a disk location as follows:

```
SAS Setup Disk → /cdrom/cd0
Software Disk 1 → /cdrom/cd1
Software Disk 2 → /cdrom/cd2
```

When you launch SAS Setup from `/cdrom/cd0`, you will not be prompted to mount your other installation CDs because SAS Setup will search the directory for the remaining CDs.

**Note:** In order for SAS Setup to find your copied CDs, the CD directories must be in the same parent directory (such as `/cdrom` in the above example).

## Step 5 - Running SAS Setup

### Method 1: Running SAS Setup from the Mounted *SAS Setup Disk*

Invoke SAS Setup from the mounted *SAS Setup Disk* as shown in the following examples. You **do not** have to change your working directory to the mounted CD or your target directory to launch SAS Setup.

```
$ /cdrom/SASSETUP
```

Some file systems may display SAS Setup as a VMS-style file or in lowercase. In these cases, invoke SAS Setup using:

```
$ /cdrom/SASSETUP.\;1
```

or:

```
$ /cdrom/sassetup
```

When you run SAS Setup from the *SAS Setup Disk*, you have the option of performing a new installation or updating an existing installation. You cannot run setup utilities from the *SAS Setup Disk*.

## Method 2: Running SAS Setup Directly from an Existing SAS System Installation

If you intend to update an existing installation or run setup utilities, you can run SAS Setup directly from the SASROOT directory as follows:

```
$ !SASROOT/sassetup
```

where !SASROOT refers to the root directory of your existing installation.

If you intend to perform a new installation, you must run SAS Setup from the *SAS Setup Disk*.

### Running SAS Setup in Quiet Mode

SAS Setup supports a quiet mode of operation where it will not prompt you for required information. This is accomplished by passing command-line flags to SAS Setup. There are three command-line flags required to run SAS Setup in quiet mode:

- `-source directory [directory...]` where *directory* is the location of the *SAS Setup Disk*. You can specify other directories if additional CDs are located in different locations.
- `-dest directory` where *directory* is the target directory of your SAS System installation.
- `-sid file` where *file* is the file specification of the file containing your SAS Installation Data.

For example, you can perform an installation in quiet mode from the mount points `/cdrom/cd0` and `/cdrom/cd1` to the target directory `/usr/local/SAS_9.0` using the SAS Installation Data saved in `/disk1/sas9012345.txt`, as follows:

```
$ /cdrom/cd0/SASSETUP -source /cdrom/cd0 /cdrom/cd1 \  
> -dest /usr/local/SAS_9.0 -sid /disk1/sas9012345.txt
```

### SAS Setup Help

To view help information, invoke SAS Setup using the `-help` command-line flag, as follows:

```
$ /cdrom/SASSETUP -help
```

or:

```
$ !SASROOT/sassetup -help
```

## Step 6 - Prompting Phase

The prompting phase presents a series of menus and prompts to gather all the necessary information to complete the installation.

## Conventions

The first screen you see when you run SAS Setup is the Welcome screen. It lists the conventions used in the installation program.

```

SAS System Installation Setup

Welcome to SAS Setup, the program used to install and maintain the
SAS System. SAS Setup guides you through a series of menus and prompts
to gather the information it requires to complete its tasks.

Some conventions used throughout SAS Setup are:
    * indicates which menu selection is the default choice
    [ ] indicates the default prompt or menu selection
    ( ) indicates a menu selection is not selectable
    ! starts a sub-shell on your system
    h displays help for a menu selection or prompt
    g goes back to a previous menu selection or prompt
    q quits SAS Setup at any point

SAS Setup is fully documented in the installation instructions included
in your Installation Kit.

Press <Enter> to continue...

```

## Primary Menu Options

Depending on where you launched SAS Setup from, you have the choice of performing a new installation, updating an existing installation, or running setup utilities to maintain an existing installation.

If you launched SAS Setup from the *SAS Setup Disk*, you will see the following choices in the SAS Setup Primary Menu:

```

Primary Menu
-----
1. Perform a New Installation
2. Update an Existing Installation
-----
g: Go back   q: Quit   h: Help
-----

```

If you launched SAS Setup from the SASROOT directory, you will see the following choices in the SAS Setup Primary menu:

```

Primary Menu
-----
1. Update an Existing Installation
2. Run Setup Utilities
-----
g: Go back   q: Quit   h: Help
-----

```

## Perform a New Installation

Performing a new installation requires an empty directory in which to install the SAS System. You can choose a directory that does not already exist and SAS Setup will create it for you. You can have as many SAS System installations on a system as you like, as each installation is independent of any others. A new installation is the recommended option for installing the SAS System.

## Update an Existing Installation

Updating an existing installation requires that you specify a valid SASROOT directory as the target directory. This option is typically chosen when adding software to an existing SAS System. The specified SASROOT directory must be the same release of the SAS System as the software you are adding; for example, adding Version 9 software to an existing Release 8.2 installation is **not valid**.

## Run Setup Utilities

Running Setup Utilities allows you to perform maintenance tasks to an existing SAS System installation, such as renewing your license information.

## SAS Installation Data Source

Your SAS Installation Data can be obtained from two sources. You must specify whether you want to obtain your SAS Installation Data from the Internet or from an e-mail attachment. You **must** obtain your SAS Installation Data to complete the installation.

```
Obtain SAS Installation Data
```

```
SAS Installation Data tailors the installation specifically for
your site. This data is supplied to you in two ways. Please
choose how to obtain your SAS Installation Data from one of the
options listed below.
```

```
SAS Installation Data Menu
```

- ```
-----
1. Obtain SAS Installation Data from the Internet
2. Obtain SAS Installation Data from a File or Directory
```

```
-----
g: Go back   q: Quit   h: Help
-----
```

### Obtain SAS Installation Data from the Internet

If you choose to retrieve your SAS Installation Data from the Internet, you will be prompted for your **SAS Installation Key** and **Order Number**, as follows:

```
You must provide your SAS Installation Key to retrieve your SAS Installation
Data. This information is found on the Transmittal Letter in your
Installation
Kit or in the Software Order E-mail sent to the SAS Representative. Please
enter
your SAS Installation Key.
-->
```

```
You must also enter your Order Number to retrieve the SAS Installation Data.
You can find your Order Number on the Transmittal Letter in your Installation
Kit or in the Software Order E-mail sent to the SAS Representative. Please
enter your Order Number.
-->
```

The SAS Installation Key is a mixed value, consisting of letters and digits, such as **BTL4-J73W-2MR9**, and the Order Number is a six-digit value, such as **963475**. You can find the SAS Installation Key and Order Number in the *Getting Started* section of the Installation Kit or in the Software Order E-mail.

### Obtain SAS Installation Data from a File Location

If you choose to retrieve your SAS Installation Data from a file location, you will be prompted for the saved file, as follows:

```
Enter the filename or directory path containing your SAS Installation Data.
-->
```

After entering your information, you will receive a confirmation that your SAS Installation Data was successfully retrieved or an appropriate error message.

```
SAS Installation Data retrieved successfully.
```

## Target Directory

The target directory location is where you want to install or have previously installed the SAS System. This location is also referred to as SASROOT. Make a note of the full directory path of your target directory so you can provide the information when prompted.

```
Specify Target Directory
```

```
Please enter the full directory path of the target location for the
installation of the SAS System. The directory you specify must be
empty for a new SAS System installation. If you specify a directory
that does not already exist, it will be created for you.
```

```
Target location path? [/usr/local/SAS 9.00]
```

```
-->
```

Make sure there is adequate free disk space available in the target directory. You can estimate the disk space requirements from the “Space Requirements” section listed in the *System Requirements*.

## Loading Options

You have the option of installing all licensed software or selectively installing software.

```
Load Software Menu
-----
 1. Load All Licensed Software (Recommended)
 2. Selectively Load Software
-----
g: Go back   q: Quit   h: Help
-----
```

### Load All Licensed Software

Based upon the installation type chosen, this option's behavior changes to fit your needs. Selecting this option for a new installation will load all the software that is licensed for your installation. Selecting this option when updating an existing installation will load only the licensed software that is not already installed.

We recommend you choose this option when you want to install all the software for which you are licensed. You should also choose this option when adding licensed software to your existing SAS System installation.

### Selectively Load Software

When you choose to selectively load software, you must manually choose all the software you wish to install from the *Selective Software Menu*.

We recommend this option only when you wish to install a subset of the software for which you are licensed. In most cases, you should choose *Load All Licensed Software*.

```
Selective Software Menu
-----
 1. Select National Language Support (NLS)
 2. Select Software Products
 3. Select Sample Programs
 4. Select SAS/GRAPH Map Data Sets
 5. Preview Current Selections
 6. Install Current Selections
 7. Reset Current Selections
-----
g: Go back   q: Quit   h: Help
-----
```

When you choose any of the selection items from the Selective Software Menu, you will see a selection screen similar to the one below. The screen shows you which software is selected, which software was previously installed, and which software you are licensed to run.

```

----- PRODUCTS Selection Screen ----- Page 1 of
2
  '*' = selected  '|' = previously installed  '+' = licensed
-----
--
  1 +Base SAS
  3 +IT Service Vision Server
  5 +SAS High-Performance Forecasting
  7 +SAS/ACCESS DB2
  9 +SAS/ACCESS ORACLE
 11 +SAS/ACCESS R/3
 13 +SAS/AF
 15 +SAS/CONNECT
 17 +SAS/ETS
 19 +SAS/GENETICS
 21 +SAS/GRAPH
  2 +Enterprise Miner Server
  4 +Risk Dimensions
  6 +SAS Integration Technologies
  8 +SAS/ACCESS ODBC
 10 +SAS/ACCESS PC File Formats
 12 +SAS/ACCESS SYBASE
 14 +SAS/ASSIST
 16 +SAS/EIS
 18 +SAS/FSP
 20 +SAS/GIS
 22 +SAS/IML
--> Enter 'n' to view the next page of selections <--

0 items selected totaling 0 MB / 3462 MB available
-----
--
  #: select item      -#: deselect item          n: next page      g: go
back
  #-#: select range  -#-#: deselect range        p: prev page      q: quit
  *: select all      -*: deselect all           <Enter>: continue  h: help
-----
--

```

To select an item, enter the numbers associated with the names you want to select separated by spaces (such as 1 3 4 12), ranges of items you want to select (such as 1-5 8-10), or all software (\*).

You may deselect items in the same manner, but with a minus (-) preceding the selection (such as -2 -9).

The note --> Enter 'n' to view the next page of selections <-- indicates there are multiple pages of selections. Enter 'n' to view the next page of selections and 'p' to return to a previous page.

When you are finished making selections, press **Enter** to return to the Selective Software Menu.

## NLS Selections

If there are any NLS localizations included, you will be asked if you want to select them for installation.

```

In addition to English, please select to install the NLS translations
for any of the following languages.

Press <Enter> to continue...

----- NLS Selection Screen ----- Page 1 of 1
  '*' = selected   '|' = previously installed   '+' = licensed
-----

1  Chinese (Simplified)           2  DBCS Asian Language Support
3  French                        4  Italian
5  Korean                        6  Primary Japanese encoding
7  Secondary Japanese encoding    8  Spanish (Castillian)

-----
# : select item          -# : deselect item          n : next page          g : go back
#-# : select range      -#-# : deselect range      p : prev page         q : quit
* : select all          -* : deselect all          <Enter> : continue    h : help
-----

```

**Note:** Asian languages will not function properly without DBCS Asian Language Support. If you select to install an Asian language (such as Japanese, Chinese, or Korean), you must also select to install DBCS Asian Language Support.

## SAS Open Metadata Server

If you have a SAS Open Metadata Server Repository configured and running, you can integrate your SAS System installation with it by completing the following set of prompts. You can also choose to continue the SAS System installation without completing the following set of prompts and integrate your SAS System installation with a SAS Open Metadata Server Repository at a later time. To integrate at a later time, follow the steps outlined in “Integrating with a SAS Open Metadata Server” in Chapter 4, “Maintaining Your SAS System Installation.”

```

Open Metadata Server Integration

You have the option of integrating this SAS System installation with an
existing SAS Open Metadata Server. You can perform this integration now or at a
later time. Would you like to integrate this installation with a SAS Open
Metadata Server now? [N]
-->

```

In order to integrate with an existing SAS Open Metadata Server, you must specify the IP address of the machine where the SAS Open Metadata Server exists. If you are not sure what the IP address is, you can open a separate process or window to find it. You can also enter an exclamation (!) mark to start a sub-process and search for the IP address.

```
Enter the IP address of the SAS Open Metadata Server on the network.  
-->
```

You must enter the port number you will use to communicate with the SAS Open Metadata Server.

```
Enter the Port number for communicating with the SAS Open Metadata Server.  
-->
```

You must enter the name of the SAS Open Metadata Server you will be integrating with.

```
Enter the SAS Open Metadata Server Repository Name. This identifies the  
Repository to use for storing information about this SAS installation.  
-->
```

You must create a default User ID and Password to use when connecting to the SAS Open Metadata Server.

```
Enter the default Metadata User ID to connect to the SAS Open Metadata Server  
from this SAS installation.  
-->  
  
Enter the Metadata Server Password for your default User ID.  
-->
```

## SAS/ACCESS Software Configuration

SAS/ACCESS software requires some post-installation configuration before it can be used. Part of this post-installation configuration can be completed during installation. If any SAS/ACCESS software selected for installation requires input from the installer, the following screen appears:

```
SAS/ACCESS Software Configuration  
  
SAS/ACCESS software requires post-installation configuration  
before you can use the software. Part of this configuration  
is identifying the DBMS version you are running for the  
selected SAS/ACCESS software products.  
  
You have the option of performing this configuration step during  
installation or at a later time after the installation is complete.  
  
If you choose to configure SAS/ACCESS software during installation,  
select the SAS/ACCESS software to configure from the list that  
follows and provide answers to the questions presented.
```

```
When your installation is complete, refer to the Installation
Instructions for details on how to complete your SAS/ACCESS software
configuration.
```

```
Would you like to configure your SAS/ACCESS software at this time? [Y]
-->
```

Answering Yes to the question in the above screen during installation is optional. If you choose to continue your SAS/ACCESS software configuration during installation, a screen similar to the following appears:

```
----- ACCESS Config Selection Screen ----- Page 1 of 1
'!' = selected
-----

1  SAS/ACCESS DB2                2  SAS/ACCESS ORACLE
3  SAS/ACCESS SYBASE

-----

#: select item          -#: deselect item          n: next page          g: go back
#-#: select range      #-#: deselect range        p: prev page          q: quit
*: select all          -*: deselect all          <Enter>: continue     h: help
-----
```

Choose the SAS/ACCESS software you want to configure, and you will be prompted for specific information about each of your choices, for example:

```
Enter the version or release of the ORACLE software installed
or mounted on your system. If your version of ORACLE
software does not exactly match the list below, choose the
version closest to, but not greater than the version of
your ORACLE software.
```

```
Choose the version or release of your ORACLE software:
-----
```

```
1  8.1.7.x
2  9.i
-----
g: Go back  q: Quit  h: Help
-----
```

If you choose to skip SAS/ACCESS software configuration during installation, you can complete it at a later time. Refer to Chapter 3, “Running SAS/ACCESS Software Configuration” for details.

Whether you choose to continue or skip SAS/ACCESS software configuration at this time, you must complete the configuration before you can use SAS/ACCESS software. Refer to Chapter 1, “Post-Installation Configuration for SAS/ACCESS Software” in the *Configuration Guide for the SAS System, Version 9 for UNIX Environments* to complete the configuration.

## Confirmation

Just before loading your selected software, SAS Setup completes some final checks to make sure it can properly load the software. SAS Setup also performs a final disk space check to make sure you have adequate free disk space to install. Finally, SAS Setup asks if you want to continue and install the selected software.

**Attention:** This prompt is the last opportunity to go back or exit SAS Setup without writing to your system. If you choose to continue and later exit the installation, you will need to delete files written to your system.

```

Final disk space requirements (in MB):
  Total Available Disk Space:      3249
  Required for Installation:       562
                                   -----
  Remaining after Installation:    2687

There is sufficient disk space for installation.

The interactive portion of SAS Setup is complete.  If you choose to
continue, SAS Setup will prompt you to mount the media it requires to
complete the installation.  If you choose not to continue, you can
return to the interactive portion of SAS Setup and change your
selections.

Do you wish to continue?  [Y]

```

## Step 7 - Software Loading Phase

All selected software is extracted from the CDs to the specified target directory during the software loading phase.

### Software Loading

Prior to extracting files, SAS Setup lists all the CDs you will be prompted to mount. The CDs are listed in the order in which they will be used. This list of CDs is compiled based on your software selections and may not contain all the CDs in your Installation Kit.

```

Based on your software selections, SAS Setup requires the following
CDs to complete the installation.  Make sure you can locate all the
CDs listed.

Label

```

```
-----  
Software Disk 1  
Software Disk 2
```

After displaying the list of required CDs, file extraction begins. Messages appear on the screen indicating that software is installing, for example:

```
Extracting Base SAS Software...
Extracting Base SAS Samples...
Extracting SAS/AF Software...
Extracting SAS/ASSIST Software...
Extracting SAS/CONNECT Software...
Extracting SAS/CONNECT Samples...
```

## Mounting Additional CDs

SAS Setup will prompt for all additional CDs it requires to complete the installation during the software loading phase if it does not find the CD mounted. You have several options on how to mount any additional CDs required.

- Enter an exclamation mark to start a Bourne sub-shell to mount and unmount your CD.
- Mount and unmount CDs from another window or process on your system.
- If your system is running an automount application, simply eject the current CD and insert the next CD.

Follow the same mount and unmount instructions used for the *SAS Setup Disk* for all additional CD mounts, as discussed previously in “Step 4 - Mounting Installation CDs”. SAS Setup will not prompt you for additional CD mounts if it finds installation CDs mounted in the same directory location.

SAS Setup displays a prompt for additional CDs that lists the CD it needs, for example:

```
Please mount the CD: Solutions Disk 1 (SLXP24)

To unmount the current CD, you can enter an exclamation mark !
at the prompt to start a Bourne sub-shell, or you can unmount it from
another process or window. Manually unmounting media requires
root privilege.

Provide the mount point for the CD at the prompt and press <Enter>.
[/cdrom]
-->
```

When you have mounted the requested CD, enter the mount point at the prompt and press **Enter**. If you cannot locate the requested CD, you must exit SAS Setup by entering **Q** at the media prompt. Exiting SAS Setup during the software loading phase will result in an incomplete installation and you will have to delete the SASROOT directory before running SAS Setup again.

## Step 8 - Automated Post-Processing Phase

Immediately following the software loading phase, SAS Setup performs tasks to configure the SAS System for use during the automated post-processing phase. Some examples of these

tasks are building help files, building the SAS registry file, and performing product-specific configuration.

Post-processing tasks are listed on the screen as they are run and saved to installation log files for later reference. A clear indication of the status of each post-processing task is listed so you can easily scroll through the list and search for

errors.

Following is a sample installation log file of post-processing tasks being executed:

```
-----  
Creating the SAS Script  
Please wait...  
  
SAS Script creation complete.  
  
-----  
Patching SAS executable files  
Please wait...  
  
Patching is complete.  
  
-----  
Applying SETINIT information  
Please wait...  
  
SETINIT application is complete.  
  
-----  
Building desktop data sets  
Please wait...  
  
Desktop configuration is complete.  
  
-----
```

Automated post-processing is the final step in the installation process. When post-processing is complete, SAS Setup prints a final installation status and exits. If errors were detected during installation, they are listed in the completion status. Following is a snapshot of the completion status that is reported:

```
SAS System Installation Setup is complete.  
  
Results:  
  Warnings: 0  
  Errors: 0  
  
Please review your installation log file, found in:  
  /usr/local/SAS_9.00/.install/logs/install_log_020313.000
```

## Step 9 - Reviewing Installation Log Files

All the files located in the `!SASROOT/.install` directory should be viewed only. Do not edit or delete these files. SAS Setup uses these files to determine the state of your SAS System installation for all subsequent tasks.

## Log Files

SAS Setup creates installation log files whenever it is run. These installation log files contain useful diagnostic information about any warnings or errors that may have occurred during the installation process. You should review the installation log files after the installation has completed. The installation log files reside in the following directories:

|                                        |                                                                                                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>!SASROOT/.install/logs</code>    | Contains most of the installation log files, including install logs, extraction logs, and post-processing logs.                                                                  |
| <code>!SASROOT/.install/logs_sh</code> | Contains some installation log files for SAS Setup when run from the <i>SAS Setup Disk</i> . These log files track the events of unloading the installation scripts from the CD. |
| <code>!SASROOT/.install/sas</code>     | Contains the log files for post-processing tasks that run the SAS System.                                                                                                        |

## History File

In addition to the installation log files, an install history file is created. The history file contains the history of the software that was installed during the installation process. The history file is updated whenever new software is installed. The history file is:

```
!SASROOT/.install/history
```

## Backup Files

SAS Setup saves versions of several files that may have been modified at your site, such as the config file and the news file. If you want to retrieve modifications to files that have been saved by SAS Setup, they can be found in:

```
!SASROOT/.install/backups
```

## Chapter 3, Setting Up the SAS® System

The post-installation phase includes tasks that must be performed after installation is complete. Perform these tasks after you have reviewed the installation log files to your satisfaction.

### Making the SAS System Available

Once you have installed the SAS System, you need to make it available to your users. You can use either of the following two methods to accomplish this.

#### Method 1: Symbolic Link

We recommend using this method in a multi-user environment.

Make a symbolic link from the SAS command (`sas`) to a directory that is already in your users' default search path by issuing a command similar to the following:

```
$ ln -s /usr/local/SAS_9.00/sas /usr/bin/sas
```

where `/usr/local/SAS_9.00` is your SASROOT directory and `/usr/bin` is a directory in the users' default search path.

#### Method 2: Startup Script

We recommend using this method only if you have a small number of users.

Edit each user's shell startup script so that the SASROOT directory is included in the search path. For example, for Bourne shell users, change the following line in `$HOME/.profile`:

```
$ PATH=/bin:/usr/bin:/usr/local/bin:.
```

to read:

```
$ PATH=/bin:/usr/bin:/usr/local/bin:/usr/local/SAS_9.00:.
```

where `/usr/local/SAS_9.00` is your SASROOT directory.



## Running the SAS System

When you have completed making the SAS System available for use, you can invoke it from the UNIX command line as follows:

```
$ sas <options>
```

where *<options>* are valid SAS command line options. Refer to your online documentation to find a list of valid SAS command line options.

Depending on your installation, you may have more than one invocation point available in which to run the SAS System. This can occur if you install NLS localizations, Risk Dimensions, or IT Service Vision Server Software. You must make any additional invocation points available to your users as you did in the section “Making the SAS System Available.”

If you install NLS localizations, SAS Setup will create invocation scripts automatically in the SASROOT directory that will launch the SAS System using the appropriate localizations. The invocation scripts allow you to look no further than the SASROOT directory to launch any localizations you install. For example, the invocation script for the French version of the SAS System is:

```
$ sas_fr
```

Below is a list of the valid languages and language

codes.

| Language              | Code |
|-----------------------|------|
| Arabic                | AR   |
| Chinese (Simplified)  | ZH   |
| Chinese (Traditional) | ZT   |
| Czech                 | CS   |
| Danish                | DA   |
| Dutch                 | NL   |
| English (Uppercase)   | EP   |
| Finnish               | FI   |
| French                | FR   |
| French/Canadian       | FC   |
| French (Swiss)        | FS   |
| German                | DE   |
| German (Swiss)        | DS   |
| Greek                 | EL   |
| Hebrew                | IW   |
| Hungarian             | HU   |

| Language                     | Code          |
|------------------------------|---------------|
| Italian                      | IT            |
| Japanese Primary Encoding    | JA            |
| Japanese Secondary Encoding* | JA.[EUC/SJIS] |
| Korean                       | KO            |
| Norwegian                    | NO            |
| Polish                       | PL            |
| Portuguese                   | PT            |
| Russian                      | RU            |
| Slovakian                    | SK            |
| Slovenian                    | SL            |
| Spanish (Castilian)          | ES            |
| Spanish (Latin American)     | EM            |
| Swedish                      | SV            |
| Thai                         | TH            |
| Turkish                      | TR            |

- \* EUC is the Japanese Secondary Encoding for HP-UX and AIX. SJIS is the Japanese Secondary Encoding for Solaris, Compaq Tru64 UNIX, and Linux.

In addition, DBCS Asian language support exists for language localizations that require it. If DBCS has been installed, SAS Setup will automatically create an invocation script in the SASROOT directory that will launch the SAS System with DBCS support. Within SASROOT, the invocation script file for DBCS is:

```
$ sas_dbcs
```

## Configuring SAS Software for Use with the Java Platform

Beginning with this release of the SAS System, a small number of new SAS System features will require the use of a Java Runtime Environment (JRE). For backward compatibility, no previously existing functionality in the SAS System will require a JRE. If you do not want to install a JRE, SAS will run, but you will not be able to take advantage of the new features that require a JRE. If you decide at a later time that you want to use the new features, you can install an appropriate JRE and configure the SAS System as described in the steps below.

The following new feature in this version of the SAS System requires a JRE:

- SAS/GRAPH support for the `javaimg` device

Complete the following steps to configure SAS software for use with the Java Platform:

1. Determine the version or release of a JRE that you need.

Refer to the *System Requirements* to determine the minimum version or release of a JRE required by the SAS System.

If you already have a JRE installed on your system, identify the version or release of the JRE and verify that it is what is required in the *System Requirements*.

2. Install and configure the JRE.

If you have not installed a version or release of a JRE that is required in the *System Requirements*, you need to install and configure a JRE now. You can install a supported JRE from the *Third Party Software* CD included in your Installation Kit. Follow the instructions that accompany the *Third Party Software* CD to complete the installation and configuration of a JRE.

**Note:** The *Third Party Software* CD is provided as a convenience to you. You also have the option of obtaining a copy of the JRE via the Internet from the URL documented in the *System Requirements*.

### 3. Define the shared library path.

In order to use Java shared libraries within SAS, you must make sure that the shared libraries are defined appropriately for your operating system. SAS locates the Java shared libraries using the following environment variables:

```
AIX          LIBPATH=$JAVA_HOME/jre/bin:$JAVA_HOME/jre/bin/classic:$LIBPATH

Compaq      LD_LIBRARY_PATH=$JAVA_HOME/jre/lib/alpha/classic:$JAVA_HOME/jre/lib/alpha/native_threads:
Tru64 UNIX  $JAVA_HOME/jre/lib/alpha:$JAVA_HOME/lib/alpha:$LD_LIBRARY_PATH

HP-UX      SHLIB_PATH=$JAVA_HOME/jre/lib:$JAVA_HOME/jre/lib/PA_RISC:
           $JAVA_HOME/jre/lib/PA_RISC/classic:$SHLIB_PATH

HP-UX      SHLIB_PATH=$JAVA_HOME/jre/lib:$JAVA_HOME/jre/lib/IA64:
Itanium     $JAVA_HOME/jre/lib/IA64/classic:$SHLIB_PATH

Linux      LD_LIBRARY_PATH=$JAVA_HOME/jre/lib/i386/server:$JAVA_HOME/jre/lib/i386:
           $JAVA_HOME/lib/i386:$LD_LIBRARY_PATH

Solaris    LD_LIBRARY_PATH=$JAVA_HOME/jre/lib/sparcv9/server:$JAVA_HOME/jre/lib/sparcv9:
           $JAVA_HOME/lib/sparcv9:$LD_LIBRARY_PATH
```

where `JAVA_HOME` is an environment variable defined as the home directory for the Java platform.

Make sure the environment variable is defined properly for users at your site. Users can define the environment variable in their login scripts, or it can be defined in system startup scripts or SAS invocation scripts.

In addition, the environment variable definition is added to the main SAS invocation script - `!SASROOT/SAS` - as a comment. You can edit the SAS invocation script and uncomment the example to define the environment variable for each invocation of SAS. Note that you must also add the definition for the `JAVA_HOME` environment variable.

## Accessing a Web Browser

This release of the SAS System requires access to a Netscape Web browser. The Netscape path should be set in each user's `PATH` environment variable, be set in the X Window resource/application default `SAS.helpBrowser`, or be set by choosing the `Tools` pull-down menu, then the `Options` menu option, and making changes in the `Preferences` windows after starting the SAS System.

Refer to the *System Requirements* for the supported versions of Netscape Communicator and Netscape Commander, as well as information for downloading the correct version.

**Note:** You may receive authorization failures using Netscape to view ODS output. These failures are corrected by completing the steps in the section "Configuring User Authentication."

## Configuring User Authentication

In order to authenticate a client's identity and check the client's authority to access resources, some setup is required by the `root` account. This setup changes the `setuid` permissions of files in `!SASROOT/utilities/bin` to `root`. You must configure user authentication if you are using the SAS/CONNECT spawner, SAS Integration Technologies software, or SAS/SHARE software. Configuring user authentication is recommended for users of SAS/IntrNet software. You can perform this task using either of the following methods.

### Method 1: Using SAS Setup

1. Log in to the root account.

```
$ su root
```

2. Run SAS Setup from `!SASROOT/sassetup`.
3. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
4. Select `Perform SAS System Configuration`.
5. Select `Configure User Authentication`.

### Method 2: Using the Command Line

```
$ su root
# cd !SASROOT/utilities/bin

# chown root sasauth sasperm sasrun sastcpd
# chmod 4755 sasauth sasperm sasrun sastcpd

# exit
```

## Running SAS/ACCESS Software Configuration

SAS/ACCESS software requires post-installation configuration before you can use the software. Post-installation configuration involves identifying the DBMS version or release you are running for the selected SAS/ACCESS software and setting the shared library path. To identify the DBMS version or release, follow the steps below. To set the shared library path, refer to Chapter 1, "Post-Installation Configuration for SAS/ACCESS Software" in the *Configuration Guide for the SAS System, Version 9 for UNIX Environments*.

Find out the following information about the DBMS:

- the version or release of the DBMS client libraries installed on your operating system, required due to incompatibilities among DBMS versions or releases, and
- the DBMS root directory of your client install, required so SAS/ACCESS software can find the DBMS shared libraries.

**Important:** Refer to the section “Specific Product Requirements” in the *System Requirements* to determine if the DBMS version or release is supported by the SAS/ACCESS software you want to configure.

Furthermore, determine if the combination of your operating system version or release, plus the DBMS version or release is supported by the SAS/ACCESS software you want to configure.

SAS/ACCESS software may require you to choose which DBMS version or release you want to access. To identify the DBMS version or release for your SAS/ACCESS software, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform Product-Specific Configuration`.
4. Select `SAS/ACCESS Configuration`.
5. Select the appropriate SAS/ACCESS software from the selection screen. Answer any questions that SAS Setup asks you. The post-processing will take place immediately and report any errors encountered. Refer to “SAS/ACCESS Product Configuration” in Chapter 2, “Installing the SAS System” for further information.

To complete the final step for SAS/ACCESS software configuration, refer to Chapter 1, “Post-Installation Configuration for SAS/ACCESS Software” in the *Configuration Guide for the SAS System, Version 9 for UNIX Environments*.

## Installing SAS/GIS Census Tract Maps

If you are licensed for SAS/GIS software, you will receive a separate *SAS/GIS Census Tract Maps* CD in your Installation Kit. The *SAS/GIS Census Tract Maps* CD contains Census Tract Maps, based on extractions from the U.S. Census Bureau TIGERLine files. Installation of these maps enables the `Build Census Tract Maps` utility in SAS/GIS software to create Census Tract Maps to the SAS System user’s specifications.

To install and configure the *SAS/GIS Census Tract Maps* CD, follow the steps below:

1. Review the *System Requirements* and make sure you have adequate free disk space to install the *SAS/GIS Census Tract Maps*. You will also need approximately 30 MB of free disk space in `/tmp` to complete the installation.
2. Locate the *SAS/GIS Census Tract Maps* CD and mount it according to the instructions in Chapter 2, “Step 4 – Mounting Installation CDs.”
3. Run SAS Setup from the *SAS/GIS Census Tract Maps* CD according to the instructions in Chapter 2, “Step 5 – Running SAS Setup.”

4. Complete the prompting phase by choosing a target location in which to install the SAS/GIS Census Tract Maps and by choosing which SAS/GIS Census Tract Maps you want to install.

**Note:** You are not required to specify your existing SASROOT directory as the target location for SAS/GIS Census Tract Maps. You may specify a separate directory or disk location.

SAS Setup will run to completion and report any errors encountered during installation. SAS Setup will automatically set the `-gismaps` configuration option during installation.

## Using SAS/GRAPH Software Map Data Sets

The SAS/GRAPH Map Data Sets provided on the CDs have been compressed to reduce the amount of disk space required to install them. SAS/GRAPH Map Data Sets are loaded in the `!SASROOT/maps` directory and must be uncompressed before you are able to use them.

If you chose to uncompress the maps during installation, they are ready for use now. If you are unsure if the maps were uncompressed during installation, you can check the `!SASROOT/maps` directory for files with a `.z`

extension.

If `.z` extension files exist, follow the steps below to uncompress them:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform SAS System Configuration`.
4. Select `Uncompress Map Data Sets`.

## Customizing Your News File

The SAS System is shipped with a news file whose contents are displayed on every SAS log. This news file is intended for sites to modify and provide site-specific information. To customize the news file, edit `!SASROOT/misc/base/news` and add any information you wish.

You can also disable the displaying of the news file on the SAS log by specifying the `NONNEWS` option.

## Chapter 4, Maintaining Your SAS® System Installation

This chapter describes tasks you can perform to maintain your SAS System installation. SAS Setup is automatically loaded along with your SAS System installation. Use SAS Setup to maintain your installation by choosing the `Run Setup Utilities` option from the SAS Setup Primary Menu. Each utility option available has help associated with it that explains its behavior.

Once the SAS System is installed at your site, you should not directly modify any files in the SASROOT directory. Because the SASROOT files will be overwritten during an update of the installation, any user modifications to files in SASROOT should be duplicated in a location other than SASROOT or the `!SASROOT/sascfg` directory. If you do modify SASROOT files, you will have to manually modify the SASROOT files to include your earlier changes. You can use duplicate files as a resource for this task.

### Renewing SAS Software

The SAS System is licensed on a periodic basis. You will receive new license information whenever you renew your existing SAS System license or add additional products to your license. The license information you receive is in the form of SAS Installation Data, which includes your SETINIT. You must apply your SAS Installation Data to the SAS System before your licensed software will run.

#### SAS Installation Data

At the time of your SAS software order, your designated SAS Installation Representative is sent an e-mail containing your SAS Installation Data as a text file attachment.

In addition to the e-mail, your SAS Installation Data is copied to a secure server at SAS for later retrieval. This gives you two options for retrieving your SAS Installation Data to renew your license.

Within the e-mail are instructions for saving the SAS Installation Data to disk. You will also find your **SAS Installation Key** and **Order Number** for retrieving SAS Installation Data over the Internet. Choose the option by which to obtain your SAS Installation Data and follow the steps below to apply it to the SAS System.

#### Installing Additional Software

If you are installing new software to your existing license, SAS Setup will automatically apply your SAS Installation Data when you install the software. Follow the directions in Chapter 2, "Installing the SAS System" for instructions on how to install SAS software.

## Renewing Your Installed SAS Software

If you just want to renew your license and apply your new SAS Installation Data to your existing SAS installation, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
1. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
2. Select `Renew SAS Software`.
3. Choose the appropriate source of your SAS Installation Data when prompted. If you choose the Internet, supply your **SAS Installation Key** and **Order Number**. If you choose the file option, enter the path of the saved e-mail attachment.
4. Your SAS Installation Data is applied immediately. SAS Setup will report if the task was completed successfully or not. If errors occur, a message is displayed indicating the log files you should check. If the SAS Installation Data applies successfully, you can enter `Q` to quit SAS Setup and run the SAS System normally.

If you have questions about your SAS Installation Data or encounter problems renewing your license, please refer to the *Service & Support* tab for information on contacting our Customer Service Department and SAS Technical Support.

## Managing the SAS Invocation Script

This release of the SAS System is invoked with a SAS invocation script - `!SASROOT/sas`. The invocation script launches the SAS System with the correct option settings based on how it is invoked. All other invocation scripts, such as NLS localization scripts, call the SAS invocation script.

You have the option of setting UNIX environment variables directly in the SAS invocation script. There are examples in the invocation script for you to follow. You can see these examples if you use the `cat` command to view the invocation script:

```
$ cat !SASROOT/sas
```

To change the SAS invocation script, edit the file and make your modifications. Although SAS Setup will automatically make a backup copy of the invocation script before creating a new one, we recommend that you make a copy of the modified invocation script in the following directory:

```
!SASROOT/.install/backups
```

You can restore a saved copy of the invocation script by copying it out of the `backups` directory and into the `SASROOT` directory. Or, you can recreate the default SAS invocation script by following the following steps:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in `SASROOT`.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform SAS System Configuration`.
4. Select `Recreate the SAS Invocation Script`.

## Restoring the Default Configuration File

A default system configuration file, `!SASROOT/sasv9.cfg`, is created during the installation of the SAS System. You can modify this configuration file to fit your needs. Refer to the *SAS Companion for UNIX Environments* for information on how to customize the SAS configuration file.

If you have modified your configuration file and want to restore the default version, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in `SASROOT`.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform SAS System Configuration`.
4. Select `Create New Config Files`.

## Listing Installed SAS Software

To list all SAS software installed in the current SAS System installation, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in `SASROOT`.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `List Previously Installed Software`.

## Running the Installation Validation Tool

The Installation Validation Tool verifies the existence of files loaded during installation by reporting missing or incorrectly sized files. The Installation Validation Tool runs automatically during installation, but may also be run at any time to verify your installation. There are two methods in which to run the Installation Validation Tool.

## Method 1: SAS Representative Running the Installation Validation Tool

The SAS Representative can run the Installation Validation Tool at any time by following the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform SAS System Configuration`.
4. Select `Run the Installation Validation Tool`.
5. Check the installation log file for a summary of the results or review the detailed report in the `.xml` file that SAS Setup lists on the screen.

This will create validation reports and logs in the `!SASROOT/.install/logs` directory.

## Method 2: User Running the Installation Validation Tool

A user of SAS can run the Installation Validation Tool at any time without needing write access to the SASROOT directory by passing the `-validate` and `-valoutdir` command flags to SAS Setup. These command flags redirect all log files and output to the specified directory. The user must have write access to the specified directory. An example of the command is:

```
$ !SASROOT/sassetup -validate -valoutdir <directory>
```

where `<directory>` is a directory to which the user has write access.

## Reviewing the Results of the Installation Validation Tool

After you run the Installation Validation Tool, a `validate_date.version` directory is created either in the SASROOT directory or in the output directory you specified, based on how you invoked the Installation Validation Tool (see the above two methods for invoking the Installation Validation Tool). You can review the results of the Installation Validation Tool by opening the `ipv.htm` file in a Web browser or by opening the `ipv.pdf` file in an Adobe Acrobat reader.

The contents of the `validate` directory are described in the following table:

|                           |                                                                                  |
|---------------------------|----------------------------------------------------------------------------------|
| <code>Data/</code>        | Directory containing XML files for each product                                  |
| <code>html/</code>        | Directory containing HTML files for each product                                 |
| <code>autoexec.sas</code> | SAS file used in producing PDF and HTML output from XML data                     |
| <code>index.xml</code>    | XML index file containing installation validation summary for installed software |

|              |                                                                             |
|--------------|-----------------------------------------------------------------------------|
| ipv.htm      | HTML file containing installation validation summary for installed software |
| ipv.pdf      | PDF file containing installation validation summary for installed software  |
| IPVindex.map | Intermediate file used to output XML to PDF and HTML                        |
| IPVprod.map  | Intermediate file used to output XML to PDF and HTML                        |
| ipv.log      | SAS log file created from running the <code>autoexec.sas</code> program     |
| ipvtoc.htm   | File containing HTML output table of contents                               |

## Integrating with a SAS Open Metadata Server

To optionally integrate your SAS System installation with a SAS Open Metadata Server, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform SAS System Configuration`.
4. Select `Integrate with SAS Open Metadata Server`.
5. Answer a series of prompts for information about integrating with a SAS Open Metadata Server. Refer to “SAS Open Metadata Server” in Chapter 2, “Installing the SAS System” for information about each prompt.

## Configuring SAS/GIS Census Tract Maps

SAS Setup will automatically configure SAS/GIS Census Tract Maps when you install them. However, if you want to change the location of your installed SAS/GIS Census Tract Maps, complete the following steps:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Perform Product Specific Configuration`.
4. Select `Specify SAS/GIS Census Tract Maps Location` to update your config file with the location of SAS/GIS Census Tract Maps.

## Running Technical Support Tools

Included in the Setup Utilities is an option to run Technical Support Tools. This option allows you to run tools that can assist you and SAS Technical Support in determining the state of your system and SAS System installation. To access the Technical Support Tools, follow the steps below:

1. Run SAS Setup from `!SASROOT/sassetup`. Make sure you have the appropriate privilege to update files in SASROOT.
2. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
3. Select `Run Technical Support Tools`.
4. Select the tool you want to run. Your selection is executed immediately and the results presented on the screen and saved to log files. You may choose to run as many tools as you want.

## Moving the SAS System to Another Location

If you need to move your installed SAS System to another disk location on your system, follow the steps below:

1. Make a backup of your system.
2. Identify the target directory where you want to move the SAS System and make sure there is adequate free disk space.
3. Copy the entire contents of your installed SAS System to the new target directory. This can be performed in different ways; however, you need to retain permissions and links. We recommend either of the following methods, depending on what your system has available.

### Method 1: Using the tar Command

Create a tar file containing the entire contents of your SAS System installation:

```
$ tar cf sas.tar sasroot
```

where `sasroot` refers to the root directory of your existing SAS System installation and `sas.tar` refers to the tar file you create.

Unpack the tar file in the desired target directory:

```
$ cd target
$ tar xf sas.tar
```

where `target` refers to the new target directory for the SAS System and `sas.tar` refers to the tar file you created containing the SAS System.

Or, you can combine these steps into a single command:

```
$ tar cf - sasroot | (cd target && tar xf -)
```

### Method 2: Using the cp Command

Recursively copy the entire contents of your installed SAS System to the new target directory:

```
$ cp -Rp sasroot target
```

where *sasroot* refers to the root directory of your existing SAS System installation and *target* refers to the new target directory for the SAS System.

**Note:** Not all systems correctly recreate symbolic and hard links when using `cp`. Please check the man page for `cp` on your system.

1. You need to patch SAS executables with the new target directory. You also need to recreate the SAS invocation script. Follow the steps below:
  - A. Run SAS Setup from the new target directory.
  - B. Select `Run Setup Utilities` from the SAS Setup Primary Menu.
  - C. Select `Perform SAS System Configuration`.
  - D. Select `Patch the SAS Executable Image`.
  - E. Select `Recreate the SAS Invocation Script`.
2. Some SAS software requires that you run installation post-processing tasks to reset paths in the config file or other programs. This software includes the following:
  - SAS/IntrNet software
  - SAS/GIS Census Tract Maps

You can accomplish the post-processing tasks from the `Run Setup Utilities` menu option.

3. Invoke the SAS System and make sure it works properly from the new target directory.
4. When satisfied that the SAS System runs properly, you can remove the prior version.

If you encounter problems moving the SAS System to another disk location, you can always re-install the SAS System from CDs into the new target directory. With this option, you will have to remake any modifications you made to your existing SAS System installation.

## Restoring Backed-up Files

SAS Setup automatically backs up several files that tend to be modified. You can see what files are backed up by looking in `!SASROOT/.install/backups`. If you need to restore one of these files, simply find where the file exists and copy it to the proper location. For example, if you wish to restore a prior copy of your configuration file, enter the following command:

```
$ cd !SASROOT
$ cp ../install/backups/sasv9.cfg_031302.000 sasv9.cfg
```

## Uninstalling Installed Software

You can uninstall the entire SAS System by deleting all the files within the SASROOT directory. If you have installed any components in a different location than SASROOT, such as SAS/GIS Census Tract Maps, you must delete them separately.

You cannot uninstall SAS software individually because SAS software integrates with other SAS software when it is installed. If you want to disable the use of particular software, you should request a different SETINIT file from SAS and apply it to your installed SAS System.

# Glossary

- **Automatic Post-Processing**  
An installation phase where specific configuration tasks are performed by SAS Setup.
- **Bourne sub-shell**  
A Bourne sub-shell is a separate process that inherits characteristics from its parent process, such as user name, file protection, permissions, etc.
- **CD Set**  
The set of CDs that make up your software order.
- **Configuration File**  
A file containing SAS System options that alter the default behavior of the SAS System. A configuration file is created during installation of the SAS System in `!SASROOT/sasv9.cfg`.
- **DBCS**  
Double-byte character set support in the SAS System.
- **History File**  
Control file used by SAS Setup containing a history of what components have been installed.
- **Hotfix**  
A replacement file that fixes a specific problem in the SAS System. Hotfix files can be downloaded from the Technical Support Web site.
- **Installation Kit**  
The Installation Kit contains the installation components of your software order. It contains the *Transmittal Letter*, *System Requirements*, *Alert Notes*, *Installation Instructions*, *Configuration Guide*, and installation CDs.
- **Invocation point**  
A file that launches an application. For example, the invocation point for the SAS System is `!SASROOT/sas`.
- **Localization**  
The translation of the SAS System into languages local to a country or region.
- **Mount point**  
A local directory that references a mounted CD.
- **National Language Support (NLS)**  
Localized components of the SAS System for various languages. National Language Support for the SAS System does not include installation messages, which are always presented in English.

- **Order Number**  
A number associated with your software order and used as input for downloading your current SAS Installation Data. Your Order Number is printed on the *Transmittal Letter* in your Installation Kit, as well as included in the Software Order E-mail sent to the SAS Representative at your site.
- **Proxy Server**  
A single server used by a company to communicate with other companies over the Internet.
- **Root account**  
The `root` account on UNIX is required to manually mount and unmount CDs.
- **SAS Installation Data**  
Data customized specifically for your site used to install and run the SAS System. You can obtain your SAS Installation Data from the Internet or from an e-mail attachment.
- **SAS Installation Key**  
The key assigned to your site that enables secure access to the Internet to download your current SAS Installation Data. Your SAS Installation Key is printed on the *Transmittal Letter* in your Installation Kit, as well as included in the Software Order E-mail sent to the SAS Representative at your site.
- **SASROOT**  
The root directory of the SAS System where all SAS files and subdirectories are loaded.
- **SAS Setup**  
The application used to install and maintain the SAS System. SAS Setup is supplied on the *SAS Setup Disk*, as well as installed along with the SAS System.
- **SETINIT**  
The SETINIT is supplied by the SAS Contracts Division and is used to authorize the SAS System at your site. The SETINIT is delivered as part of the SAS Installation Data.
- **Shared Library Path**  
The SAS System uses your shared library path to access executables for other third-party software. For example, if you have Oracle installed on your Solaris system, SAS/ACCESS Interface to ORACLE software uses the shared library path `LD_LIBRARY_PATH` to access Oracle files.
- **Software Updates**  
Replacement file containing fixes and enhancements to the SAS System. Software updates are included in your Installation Kit when appropriate.
- **Symbolic Link**  
A link to an existing file or directory. Once created, you can manipulate the link as if it were the original file. Symbolic links are created using the `ln -s` command.

- **Target Directory**  
The directory location where you intend to install the SAS System. This is also referred to as SASROOT.
- **TOC File**  
Control file used by SAS Setup as an index of installable components.
- **TS-Level**  
The Technical Support level assigned to a given release of the SAS System.

