Installation Instructions for the SAS® System under UNIX® Environments, Release 6.12 (TS050 and above)

Table of Contents

Chapter 1, Introduction

This document provides installation instructions for the SAS System, Release 6.12, for UNIX environments. The following systems are included in these instructions (the hardware platform is indicated in parentheses):

- ❑ AIX® (IBM RISC System/6000™)
- ❑ HP-UX (Hewlett Packard 9000 Precision Architecture)
- ❑ SunOS, Solaris 1 and Solaris 2 (Sun SPARC).

Note: For information specific to Solaris, see Appendix A, "Configuration Information for the SAS System under Solaris," before you start the installation.

Alert Notes are provided on your media and with your product package. These notes contain any corrections or additions to this document. You should read the Alert Notes before installing the SAS System. For more information on Alert Notes and other documentation included on your media, see "The SAS Manager Application" later in this chapter.

If you have licensed IT Service Vision software, refer to the *Installation Instructions for IT Service Vision* included with this software shipment before following any of the instructions in this document. The IT Service Vision installation instructions will guide you in installing the necessary components of the SAS System.

Using This Book

All system-dependent instructions are marked with a computer icon  in the left margin. Be sure to follow those instructions when they apply to your system.

Related Publications

The following is a list of related publications that contain information you may find useful:

- ❑ *SAS Companion for UNIX Environments: Language, Version 6, First Edition*
- ❑ *SAS Companion for UNIX Environments: User Interfaces, Version 6, First Edition*
- ❑ *SAS Consultant's Guide: Supporting the SAS System, First Edition*

SAS Institute provides many publications about products in the SAS System and how to use them on specific hosts. For a complete list of SAS publications, you should refer to the current *Publications Catalog*. The catalog is produced twice a year. You can order a free copy of the catalog by writing to the following address:

SAS Institute, Inc.
Book Sales Department
SAS Campus Dr.
Cary, NC 27513

The SAS Manager Application

The SAS Manager application is supplied with Base SAS software to help you install and maintain the SAS System in your environment. The SAS Manager primary menu contains the following options, which are briefly described:

- `Load Software From Media`

  installs everything included on the installation media. The configuration files are built and installation test streams are executed automatically. This option is recommended for any installation of the SAS System and maintenance.

- `Invoke Custom Installation and Utilities`

  contains menu items that enable you to customize your installation by selecting products and manually configuring the SAS System. Selecting this menu item also allows you to invoke the installation test streams. Use this option only when you need to customize your installation.

  From this menu you have the following options:

  - `Invoke Custom Installation Facility`

    enables you to select products to be installed and to manually configure the SAS System.

  - `Invoke Product Specific Configuration`

    enables you to perform post-installation configuration for products that require additional setup. The instructions for each product requiring post-installation configuration are provided in a corresponding appendix in this document.

  - `Invoke SAS Installation Utilities`

    provides tools for configuring and verifying the SAS System. This facility allows you to perform the following tasks:

    - create SAS configuration and autoexec files
    - apply special Technical Support fixes

- ❑ patch the SAS executable with the current installation directory (SASROOT)
- ❑ apply SAS SETINIT information
- ❑ run the SAS System installation test streams
- ❑ uncompress map data sets.

❑ `Invoke SAS Maintenance Utilities`

provides tools for promoting, staging, and deleting maintenance. Tools are also provided to manage catalogs.

Note: This option is not applicable to this release of the SAS System.

❑ `Exit SAS Installation Manager`

exits the SAS Manager application.

❑ `$SASROOT/doc`

contains text and PostScript versions of Alert Notes, System Requirements, and installation instructions. See the README file for information on how to browse and print these files.

Chapter 2, Installing the SAS® System on AIX®

This chapter provides instructions for installing the SAS System on AIX. Follow the steps outlined in this chapter, and then proceed to Chapter 5, "Making the SAS System Available to Users."

Extracting SAS Manager from the Tape or CD-ROM

You must extract the SAS Manager application from your distribution media before proceeding with the installation. This section explains how to extract the SAS Manager to begin the installation of the SAS System in the UNIX environment. You can install the SAS System in any location on the system with sufficient space. The installation requires that all SAS files exist in a directory named `sas612`, which is created for you and contains all files associated with the SAS System. SASROOT is the pathname for the location of the SAS files.

It is not necessary to have root privileges to install the SAS System. If the software is not installed as `root`, the SAS system administrator should install the software using either the administrator's userid or a userid created for the SAS System, such as SAS. To complete future installs, the system administrator requires read and write privileges on the SASROOT directory and its contents.

If you are installing the SAS System on an IBM RS/6000 system with an 8 mm tape, you must change the block size parameters on the 8 mm tape drive as described below:

To determine the status of the block size, issue the following command if your tape drive is local:

```
lsattr -l rmt0 -E
```

To determine the status of the block size, issue the following command if your tape drive is remote:

```
rsh hostname -l username /etc/lsattr -l rmt0 -E
```

Record the block size information that is displayed. If the block size is not set to `0`, you must change it for the installation. If you are using a local tape drive, issue the following command:

```
chdev -l rmt0 -a block_size=0
```

Note: You must have root privilege to issue this command.

If you are using a remote tape drive, issue the following command:

```
rsh hostname -l username /etc/chdev -l rmt0 -a block_size=0
```

You can also use the `smit` command to change these parameters. For more information about the `smit` command, refer to your system documentation.

Note: You can restore the original system parameters after you have completed the installation. Instructions for restoring the parameters are given at the end of the installation instructions provided in the section, "Performing a Default Installation of the SAS System," and in Appendix J, "Performing a Custom Installation of the SAS System."

The following steps show you how to extract the SAS Manager application. General and system-specific instructions are provided. You should follow the general instructions, as well as the instructions, if any, for your system. Your local systems administrator should be able to provide you with assistance with your hardware configuration and site.

Notes: These instructions use `/usr/local/sas612` as the pathname for the SASROOT directory. This pathname is an example. Substitute your installation directory, ending with `sas612` for this name in the instructions.

These instructions use `/dev/rmt0.1` as the name for a non-rewinding tape device. If you are installing from tape, verify the name of your tape device with your system administrator and substitute the correct name everywhere `/dev/rmt0.1` appears in the instructions.

These instructions assume a CD-ROM is mounted at `/cdrom`. If you are installing from CD-ROM and it is mounted in another location, substitute the correct location everywhere `/cdrom` appears in the instructions.

Complete the following steps:

1. Insert the media into the appropriate drive. Make sure the tape is rewound. Instructions for rewinding tape media are provided under, "For Local Tape Media," in this section.

   For Local Tape Media:

   Note: Tape media include 8 mm and 4 mm / DDS (DAT). Make sure that your device is a non-rewinding tape device.

If you are using a local tape drive (a drive attached to the computer on which you are installing), issue the following command:

```
tctl -f /dev/rmt0.1 rewind
```

For CD-ROM:

Note: This release of the SAS System supports ISO-9660 CD-ROM and Rockridge extensions where available.

To mount the CD-ROM, use the following command:

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

Notes:

- ❑ Refer to your system documentation for the correct `device` name.
- ❑ Mounting and unmounting a CD-ROM device requires root privileges. The remainder of the install process does not. After mounting the CD, you can return to the standard privilege set.

For Remote Tape Media:

If you are using a remote tape drive (a drive connected to a machine on your network other than the machine on which you are installing), issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by hostname. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username tctl -f /dev/rmt0.1 rewind
```

Note: To utilize the tape drive on a remote machine, the current user on the current machine must have remote access to the userid on the remote machine. This is typically accomplished by using a `.rhosts` file in the remote user's home directory. Please see your systems administrator or system documentation for further details.

2. Change to the directory where you want the SAS System installed by issuing a command similar to the following:

```
cd /usr/local
```

3. Enter one of the following commands to extract the installation programs. When you issue the `tar` command, the SAS System creates or appends to a `./sas612` subdirectory.

For Local Tape and CD-ROM Media:

Issue the appropriate command from the table below:

Media Type	Command
Tape	`tar xf /dev/rmt0.1`
CD-ROM	`tar xf /cdrom/sas_inst`

For Remote Tape Media:

Issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username -n dd\
if=/dev/rmt0.1 bs=20b | tar xf -
```

For more information regarding the use of the `tar` command, refer to your vendor documentation.

For Remote CD-ROM:

Issue the following command where `hostname` is the name of the host to which the CD-ROM is attached, and `username` is the name that you need to remote-login to the host specified by hostname. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username dd\
if=/cdrom/sas_inst\
bs=20b | tar xf -
```

Note: The files may appear in upper or lower case depending on the operating system on which the CD is mounted.

For more information regarding the use of the `tar` command, refer to your vendor documentation.

Performing a Default Installation of the SAS System or Additional Products

A *default installation* installs everything on the installation media (tape or CD-ROM) to the current directory. If you want to select which products are installed, or have greater control over the options used, use the custom installation discussed in Appendix J, "Performing a Custom Installation of the SAS System."

The instructions in this section are valid for new systems, product installations, and maintenance. To install the SAS System, complete the following steps:

1. Change directories to the SASROOT subdirectory by issuing a command similar to the following: `cd /usr/local/sas612`

2. Invoke the SAS Manager by typing `./sasmanager` at the prompt.

   Note: If you use `Control C (^C)` to exit the installation script, SAS Manager does not retain the information you supplied about media type and location.

3. From the SAS Manager Primary Menu, select Option 1, `Load Software From Media`.

4. You are prompted to indicate your installation media. Select `1` for tape or `2` for CD-ROM.

5. You are prompted for the location of the tape drive or CD-ROM.

   If you are installing from a local tape drive or CD-ROM, enter `local`.

   If your tape drive or CD-ROM is on a remote machine, type `remote`. You are then prompted for the hostname and a valid logname on the remote system. Type the requested information and press Return.

6. If you are installing from tape, you are prompted for a non-rewinding device name. If you are installing from CD-ROM, you are prompted for the pathname of the cdrom.

   Both prompts contain a default value. If the default is not correct, provide the correct pathname.

7. You are prompted for the correct pathname for your SETINIT program. The default path should be correct for most installations.

   Should you need to provide an alternate pathname for the SETINIT program, be sure **not** to use `setinit.sas`. If the install detects the existence of a `setinit.sas` file, it will rename it and your SETINIT may not be applied correctly.

   For Non-U.S. Customers Only
   Installations outside of the United States must manually update the SETINIT information with the paper SETINIT included with your installation materials before continuing with the installation.

8. You are given the chance to view the contents of the installation media. Type `Y` at the prompt to view the contents or `N` to continue without viewing the contents.

9. You are asked if you want to continue the installation. Press Return to continue, or type `N` at the prompt to stop the installation.

If you continue with the installation, the installation process then completes the following tasks:

- ❑ installs the SAS System on the selected file system with adequate space
- ❑ creates the SAS configuration files `config.sas612` and `autoexec.sas`
- ❑ applies new SETINIT information.
- ❑ applies Technical Support fixes supplied with the Usage Notes.

  Note: If you choose not to install any available Technical Support fixes, you will receive an error message that you can ignore.

- ❑ patches the SASROOT directory to the SAS executable.

  This is accomplished using a tool called `patchname` that "patches" the SAS binary with the installed directory. This allows the SAS application files to be located by the software at initialization time.

  Note: If you move the SAS System to another directory, you must run the `patchname` utility from the SAS Installation Utilities menu.

- ❑ executes the installation test streams. You will receive messages upon completion of the test as to the validity of the installation.

The installation is now complete except for product-specific configuration. If your installation includes products that need post-installation configuration, the Product Configuration menu appears. Be sure to complete any necessary post-installation configuration that is described in the corresponding product appendix in this document.

If you change your block size before beginning the installation process, you can restore the original parameters once you have completed the installation.

Note: For `<device>` in the following instructions, specify the abbreviated form, `rmt0` (assuming that your tape drive is drive `0`).

If you performed your installation from a local drive, issue the following command:

```
chdev -l <device> -a block_size=nnn
```

where `nnn` is the original setting that you recorded before changing the setting to `0`.

If you performed your installation from a remote drive, issue the following command:

```
rsh hostname -l username /ect/chdev -l <device> -a block_size=nnn
```

where `nnn` is the original setting that you recorded before changing the setting to `0`.

Chapter 3, Installing the SAS® System on HP-UX®

This chapter provides instructions for installing the SAS System on HP-UX. Follow the steps outlined in this chapter, and then proceed to Chapter 5, "Making the SAS System Available to Users."

Extracting SAS Manager from the Tape or CD-ROM

You must extract the SAS Manager application from your distribution media before proceeding with the installation. This section explains how to extract the SAS Manager to begin the installation of the SAS System in the UNIX environment. You can install the SAS System in any location on the system with sufficient space. The installation requires that all SAS files exist in a directory named `sas612`, which is created for you and contains all files associated with the SAS System. SASROOT is the pathname for the location of the SAS files.

It is not necessary to have root privileges to install the SAS System. If the software is not installed as `root`, the SAS system administrator should install the software using either the administrator's userid or a userid created for the SAS System, such as `SAS`. To complete future installs, the system administrator requires read and write privileges on the SASROOT directory and its contents.

Install the SAS System on a file system supporting 255-character file names. You will have difficulty installing the SAS System on a file system that supports only 14-character file names.

The following steps show you how to extract the SAS Manager application. General and system-specific instructions are provided. You should follow the general instructions, as well as the instructions, if any, for your system. Your local systems administrator should be able to provide you with assistance with your hardware configuration and site.

Notes: These instructions use `/usr/local/sas612` as the pathname for the SASROOT directory. This pathname is an example. Substitute your installation directory, ending with `sas612` for this name in the instructions.

These instructions use `/dev/rmt/4mn` as the name for a non-rewinding tape device. If you are installing from tape, verify the name of your tape device with your system administrator and substitute the correct name everywhere `/dev/rmt/4mn` appears in the instructions.

These instructions assume a CD-ROM is mounted at `/cdrom`. If you are installing from CD-ROM and it is mounted in another location, substitute the correct location everywhere `/cdrom` appears in the instructions.

Complete the following steps:

1. Insert the media into the appropriate drive. Make sure the tape is rewound. Instructions for rewinding tape media are provided under, "For Local Tape Media," in this section.

   For Local Tape Media:

   Note: Tape media include 8 mm and 4 mm/DDS (DAT). Make sure that your device is a non-rewinding tape device.

   If you are using a local tape drive (a drive attached to the computer on which you are installing), issue the following command:

   ```
   mt -t /dev/rmt/4mn rewind
   ```

   For CD-ROM:

   Note: This release of the SAS System supports ISO-9660 CD-ROM and Rockridge extensions where available.

   To mount the CD-ROM, use the following command:

   ```
   mount -r /dev/dsk/0d0 /cdrom
   ```

   Notes:

   - ❑ Refer to your system documentation for the correct device name.
   - ❑ Mounting and unmounting a CD-ROM device requires root privileges. The remainder of the install process does not. After mounting the CD, you can return to the standard privilege set.

For Remote Tape Media:

If you are using a remote tape drive (a drive connected to a machine on your network other than the machine on which you are installing), issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
remsh hostname -l username mt -t /dev/rmt/4mn rewind
```

Note: To utilize the tape drive on a remote machine, the current user on the current machine must have remote access to the userid on the remote machine. This is typically accomplished by using a `.rhosts` file in the remote user's home directory. See your systems administrator or system documentation for further details.

2. Change to the directory where you want the SAS System installed by issuing a command similar to the following:

```
cd /usr/local
```

3. Enter one of the following commands to extract the installation programs. When you issue the `tar` command, the SAS System creates or appends to a `./sas612` subdirectory.

For Local Tape and CD-ROM Media:

Issue the appropriate command from the table below:

Media Type	Command
Tape	`tar xf /dev/rmt/4mn`
CD-ROM	`tar xf /cdrom/SAS_INST`

For Remote Tape Media:

Issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
remsh hostname -l username -n dd\
if=/dev/rmt/4mn bs=20b | tar xf -
```

For more information regarding the use of the `tar` command, refer to your vendor documentation.

For Remote CD-ROM:

Issue the following command where `hostname` is the name of the host to which the CD-ROM is attached, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
remsh hostname -l username dd\
if=/cdrom/SAS_INST\
bs=20b | tar xf -
```

Note: The files may appear in upper or lower case depending on the operating system on which the CD is mounted.

For more information regarding the use of the `tar` command, refer to your vendor documentation.

Performing a Default Installation of the SAS System or Additional Products

A *default installation* installs everything on the installation media (tape or CD-ROM) to the current directory. If you want to select which products are installed, or have greater control over the options used, use the custom installation discussed in Appendix J, "Performing a Custom Installation of the SAS System."

The instructions in this section are valid for new systems, product installations, and maintenance. To install the SAS System, complete the following steps:

1. Change directories to the SASROOT subdirectory by issuing a command similar to the following:

   ```
   cd /usr/local/sas612
   ```

2. Invoke the SAS Manager by typing `./sasmanager` at the prompt.

   Note: If you use `Control C (^C)` to exit the installation script, SAS Manager does not retain the information you supplied about media type and location.

3. From the SAS Manager Primary Menu, select Option 1, `Load Software From Media`.

4. You are prompted to indicate your installation media. Select `1` for tape or `2` for CD-ROM.

5. You are prompted for the location of the tape drive or CD-ROM.

   If you are installing from a local tape drive or CD-ROM, enter `local`.

   If your tape drive or CD-ROM is on a remote machine, type `remote`. You are then prompted for the hostname and a valid logname on the remote system. Type the requested information and press Return.

6. If you are installing from tape, you are prompted for a non-rewinding device name. If you are installing from CD-ROM, you are prompted for the pathname of the cdrom.

   Both prompts contain a default value. If the default is not correct, provide the correct pathname of the device.

7. You are prompted for the correct pathname for your SETINIT program. The default path should be correct for most installations.

   Should you need to provide an alternate pathname for the SETINIT program, be sure **not** to use `setinit.sas`. If the install detects the existence of a `setinit.sas` file, it will rename it and your SETINIT may not be applied correctly.

   For Non-U.S. Customers Only

   Installations outside of the United States must manually update the SETINIT information with the paper SETINIT included with your installation materials before continuing with the installation.

8. You are given the chance to view the contents of the installation media. Type `Y` at the prompt to view the contents or `N` to continue without viewing the contents.

9. You are asked if you want to continue the installation. Press Return to continue, or type `N` at the prompt to stop the installation.

If you continue with the installation, the installation process then completes the following tasks:

- ❑ installs the SAS System on the selected file system with adequate space
- ❑ creates the SAS configuration files `config.sas612` and `autoexec.sas`
- ❑ applies new SETINIT information.
- ❑ applies Technical Support fixes supplied with the Usage Notes.

Note: If you choose not to install any available Technical Support fixes, you will receive an error message that you can ignore.

- ❑ patches the SASROOT directory to the SAS executable.

  This is accomplished using a tool called `patchname` that "patches" the SAS binary with the installed directory. This allows the SAS application files to be located by the software at initialization time.

  Note: If you move the SAS System to another directory, you must run the `patchname` utility from the SAS Installation Utilities menu.

- ❑ executes the installation test streams. You will receive messages upon completion of the test as to the validity of the installation.

The installation is now complete except for product-specific configuration. If your installation includes products that need post-installation configuration, the Product Configuration menu appears. Be sure to complete any necessary post-installation configuration that is described in the corresponding product appendix in this document.

Chapter 4, Installing the SAS® System on Solaris®

This chapter provides instructions for installing the SAS System on Solaris. Follow the steps outlined in this chapter, and then proceed to Chapter 5, "Making the SAS System Available to Users."

Extracting SAS Manager from the Tape or CD-ROM

You must extract the SAS Manager application from your distribution media before proceeding with the installation. This section explains how to extract the SAS Manager to begin the installation of the SAS System in the UNIX environment. You can install the SAS System in any location on the system with sufficient space. The installation requires that all SAS files exist in a directory named `sas612`, which is created for you and contains all files associated with the SAS System. SASROOT is the pathname for the location of the SAS files.

It is not necessary to have root privileges to install the SAS System. If the software is not installed as `root`, the SAS system administrator should install the software using either the administrator's userid or a userid created for the SAS System, such as `SAS`. To complete future installs, the system administrator requires read and write privileges on the SASROOT directory and its contents.

The following steps show you how to extract the SAS Manager application. General and system-specific instructions are provided. You should follow the general instructions, as well as the instructions for your system. Your local systems administrator should be able to provide you with assistance with your hardware configuration and site.

Notes: These instructions use `/usr/local/sas612` as the pathname for the SASROOT directory. This pathname is an example. Substitute your installation directory, ending with `sas612` for this name in the instructions.

These instructions use `/dev/nrst0` or `/dev/rmt/0mn` as the name for a non-rewinding tape device. If you are installing from tape, verify the name of your tape device with your system administrator and substitute the correct name everywhere `/dev/nrst0` or `/dev/rmt/0mn` appears in the instructions.

These instructions assume a CD-ROM is mounted at `/cdrom`. If you are installing from CD-ROM and it is mounted in another location, substitute the correct location everywhere `/cdrom` appears in the instructions.

Complete the following steps:

1. Insert the media into the appropriate drive. Make sure the tape is rewound. Instructions for rewinding tape media are provided under, "For Local Tape Media," in this section.

   For Local Tape Media:

   Note: Tape media include QIC 150, 8 mm and 4 mm / DDS (DAT). Make sure that your device is a non-rewinding tape device.

   If you are using a local tape drive (a drive attached to the computer on which you are installing), issue one of the following commands based on your operating platform:

OS Version	Rewind Command	Device	End of Command
SunOS 4.1.x (Solaris 1)	`mt -f`	`/dev/nrst0`	`rewind`
SunOS 5.x (Solaris 2)	`mt -f`	`/dev/rmt/0mn`	`rewind`

   For CD-ROM:

   Note: This release of the SAS System supports ISO-9660 CD-ROM and Rockridge extensions where available.

   To mount the CD-ROM, use one of the following commands:

OS Version	Command
SunOS Solaris 1	`mount -r -t hsfs /dev/sr0 /cdrom`
SunOS Solaris 2	`mount -r -F hsfs /dev/sr0 /cdrom`

   Notes:

   - Refer to your system documentation for the correct `device` name.
   - Mounting and unmounting a CD-ROM device requires root privileges. The remainder of the install process does not. After mounting the CD, you can return to the standard privilege set.

For Remote Tape Media:

If you are using a remote tape drive (a drive connected to a machine on your network other than the machine on which you are installing), issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username mt -f /dev/rmt/0mn rewind
```

Note: To utilize the tape drive on a remote machine, the current user on the current machine must have remote access to the userid on the remote machine. This is typically accomplished by using a `.rhosts` file in the remote user's home directory. See your systems administrator or system documentation for further details.

2. Change to the directory where you want the SAS System installed by issuing a command similar to the following:

```
cd /usr/local
```

3. Enter one of the following commands to extract the installation programs. When you issue the `tar` command, the SAS System creates or appends to a `./sas612` subdirectory.

For Local Tape and CD-ROM Media:

Issue the appropriate command from the table below:

Media Type	Command
SunOS Solaris 1 (Tape)	`tar xf /dev/nrst0`
SunOS Solaris 2 (Tape)	`tar xf /dev/rmt/0mn`
SunOS/Solaris 1 and 2 (CD-ROM)	`tar xf /cdrom/sas_inst`

For Remote Tape Media:

Issue the following command where `hostname` is the name of the host with the tape drive, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username -n dd\
if=/dev/rmt/0mn bs=20b | tar xf -
```

For more information regarding the use of the `tar` command, refer to your vendor documentation.

For Remote CD-ROM:

Issue the following command where `hostname` is the name of the host to which the CD-ROM is attached, and `username` is the name that you need to remote-login to the host specified by `hostname`. You can omit `-l username` if it is the same as your current user name.

```
rsh hostname -l username dd\
if=/cdrom/SAS_INST\
bs=20b | tar xf -
```

Note: The files may appear in upper or lower case depending on the operating system on which the CD is mounted.

For more information regarding the use of the `tar` command, refer to your vendor documentation.

Performing a Default Installation of the SAS System or Additional Products

A *default installation* installs everything on the installation media (tape or CD-ROM) to the current directory. If you want to select which products are installed, or have greater control over the options used, use the custom installation discussed in the next section, "Performing a Custom Installation of the SAS System."

Note: If you are installing on a Solaris 2 machine and want to perform a dual installation, you must first follow the instructions provided in Appendix J, "Performing a Custom Installation of the SAS System," and then follow the steps in Appendix A, "Configuration Information for the SAS System on Solaris." If you are installing on Solaris 1, a default installation will allow for the dual configuration.

The instructions in this section are valid for new systems, product installations, and maintenance. To install the SAS System, complete the following steps:

1. Change directories to the SASROOT subdirectory by issuing a command similar to the following:

   ```
   cd /usr/local/sas612
   ```

2. Invoke the SAS Manager by typing `./sasmanager` at the prompt.

   Note: If you use `Control C (^C)` to exit the installation script, SAS Manager does not retain the information you supplied about media type and location.

3. From the SAS Manager Primary Menu, select Option 1, `Load Software From Media`.

4. You are prompted to indicate your installation media. Select `1` for tape or `2` for CD-ROM.

5. You are prompted for the location of the tape drive or CD-ROM.

   If you are installing from a local tape drive or CD-ROM, enter `local`.

   If your tape drive or CD-ROM is on a remote machine, type `remote`. You are then prompted for the hostname and a valid logname on the remote system. Type the requested information and press Return.

6. If you are installing from tape, you are prompted for a non-rewinding device name. If you are installing from CD-ROM, you are prompted for the pathname of the cdrom.

   Both prompts contain a default value. If the default is not correct, provide the correct pathname of the device.

7. You are prompted for the correct pathname for your SETINIT program. The default path should be correct for most installations.

   Should you need to provide an alternate pathname for the SETINIT program, be sure **not** to use `setinit.sas`. If the install detects the existence of a `setinit.sas` file, it will rename it and your SETINIT may not be applied correctly.

   For Non-U.S. Customers Only

   Installations outside of the United States must manually update the SETINIT information with the paper SETINIT included with your installation materials before continuing with the installation.

8. You are given the chance to view the contents of the installation media. Type `Y` at the prompt to view the contents or `N` to continue without viewing the contents.

9. You are asked if you want to continue the installation. Press Return to continue, or type `N` at the prompt to stop the installation.

If you continue with the installation, the installation process then completes the following tasks:

- ❑ installs the SAS System on the selected file system with adequate space
- ❑ creates the SAS configuration files `config.sas612` and `autoexec.sas`
- ❑ applies new SETINIT information.
- ❑ applies Technical Support fixes supplied with the Usage Notes.

  Note: If you choose not to install any available Technical Support fixes, you will receive an error message that you can ignore.

- patches the SASROOT directory to the SAS executable.

  This is accomplished using a tool called `patchname` that "patches" the SAS binary with the installed directory. This allows the SAS application files to be located by the software at initialization time.

  Note: If you move the SAS System to another directory, you must run the `patchname` utility from the SAS Installation Utilities menu.

- executes the installation test streams. You will receive messages upon completion of the test as to the validity of the installation.

The installation is now complete except for product-specific configuration. If your installation includes products that need post-installation configuration, the Product Configuration menu appears. Be sure to complete any necessary post-installation configuration that is described in the corresponding product appendix in this document.

For Solaris 2 Only

If you are installing on a Solaris 2 system, the Solaris 2 support files are automatically put into place for you, overwriting the Solaris 1 files. If you want a dual installation of both Solaris 1 and Solaris 2, you must perform a custom installation.

Chapter 5, Making the SAS® System Available to Users

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 task:

- Edit each user's shell startup scripts so that the SASROOT directory is included in the search path.

  Note: Commands used to set your path environment variable may vary from these examples.

  For example, change the following line in `.profile` for Bourne Shell users:

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

  to read:

  ```
  PATH=/bin:/usr/bin:/usr/local/bin:/usr/local/sas612:.
  ```

- Make a link to the SAS command (`sas`) to a directory that is already in the search path by issuing a command similar to the following:

  ```
  ln -s /usr/local/sas612/sas /usr/bin/sas
  ```

Configuring the SAS System

Now that you have installed the SAS System, you should perform the configuration tasks described in this section. These include:

- the Support Application
- the man pages
- the maps data sets.

In addition, you can modify your default configuration file.

The Support Application is a menu-driven interface for the SAS Notes and sample libraries. Refer to *SAS Consultant's Guide: Supporting the SAS System, First Edition* for more information on the support application.

To invoke the application, run the script file `support` found in the `/usr/local/sas612/sas_notes` subdirectory, or include the program `usage.sas` into the program editor of the SAS Display Manager and submit the statements. The program `usage.sas` is found in the `/usr/local/sas612/sas_notes` subdirectory.

Release 6.12 includes *manual pages* (referred to as "man pages") that should be installed. Refer to your system documentation on how to install new man pages. The man pages are in the directory `/usr/local/sas612/utilities/man`.

The maps provided on the distribution tape have been compressed to reduce the amount of disk space required to install them. All compressed map data sets have a `.Z` extension. If you want to use the maps, you must first decompress them. This can be accomplished through the SAS Manager in the SAS Installation Utilities menu.

You may want to modify the default `config.sas612` file found in `/usr/local/sas612`. However, you can run the SAS System using the default configuration file. Refer to *SAS Companion for UNIX Environments: Language, Version 6, First Edition for* information on how to customize the `config.sas612` file for your site's needs.

Invoking SAS Software

To invoke the SAS System, change directories to your home directory or to the directory from which you want to invoke the SAS System, and enter the following command:

```
/usr/local/sas612/sas
```

If your system administrator has made the SAS System available, you can just type `sas`.

For Solaris 2 Only

If you have installed both Solaris 1 and Solaris 2 in the dual mode, see Appendix A, "Configuration Information for the SAS System under Solaris" for more information about installation. The invocation line under Solaris 2 is as follows:

```
/usr/local/sas612/sas.sol2 -config config.sas612.sol2
```

Running the SAS System with the X Window System

Release 6.12 includes a user interface based on the X Window system. On most systems, the SAS System functions correctly and completely without altering the files that manage the interface. However, if you want to customize the interface, these files allow you to do that.

The directory `/usr/local/sas/X11/bitmaps` contains the files for the various bitmaps used with the SAS System. Most sites will probably not need these. Bitmaps are used as icons in various SAS System products. These bitmaps are compiled into the SAS System when it is built.

Some sites, however, may prefer to load the files for these bitmaps at run-time instead of using the built-in bitmaps. This can be done by setting the `SAS.loadSASIcons` X resource to `True`.

The OSF/Motif Interface to Release 6.12 of the SAS System makes an attempt to recognize the type of X server on which the interface is displayed so that the proper key definitions can be established. Many X servers can be recognized by the vendor string supplied with the server. You can examine this string with the `xdpyinfo` client.

Many of the files in `/usr/local/sas612/X11/resource_files` contain the definitions used for the various X servers. You do not need to do anything with these files. However, users who want to customize the keys for an X server may find these files useful as a starting point.

The file `/usr/local/sas612/X11/resource_files/Resource_Defaults` documents the default values given to the SAS application resources that do not vary for different servers. Again, this file does not need to be installed, but is provided as a reference for those wanting to do their own customization of these interfaces.

For more information on the OSF/Motif Interface, refer to Chapter 3, "Using the OSF/Motif Interface to the SAS System," in *SAS Companion for UNIX Environments: User Interfaces*.

The XKeysymDB file

Some sites will need to update the `XKeysymDB` file when they install Release 6.12 of the SAS System. This section explains what this file is, who needs to update it, and how to update it.

The `XKeysymDB` file is a database of X keysym names, and is used by the OSF/Motif Interface to the SAS System, and many other X clients. Your site will already have a version of this file. However, it may not contain all of the vendor-defined keysym names that are used with the OSF/Motif Interface to the SAS System. The SAS version of the `XKeysymDB` file includes the keysyms defined by the various X server vendors, as well as the virtual keysyms used by OSF/Motif.

Sites running the Solaris operating system can find this file in `$OPENWINHOME/lib/XKeysymDB`. If OpenWindows has been installed in the default location, this path is `/usr/openwin/lib/XKeysymDB`. Sites not running Solaris can find this file in `/usr/lib/X11/XKeysymDB`.

Updating the XKeysymDB file

You need to install the Release 6.12 version of this file if you see warnings containing the phrase `unknown keysym` when you execute this release of the SAS System.

All Solaris sites with the OpenWindows environment need to install the `XKeysymDB` file. The version supplied by Sun does not include the OSF virtual keysyms, and many warnings are generated if the `XKeysymDB` file is not updated.

Other sites need to update the `XKeysymDB` file if the SAS System is executed on a system from one vendor, and displayed using an X server from a different vendor. For example, if you run Release 6.12 on an AIX system and display it on an HP workstation, you need the new `XKeysymDB` file to get the keysyms that are specific to the HP X server.

Using the XKeysymDB File

You can use the SAS System Release 6.12 version of the `XKeysymDB` file in either of the following ways:

- to replace the existing `XKeysymDB` file. (You must have root permission to perform this task.) The following explains the commands necessary to perform this task. When you enter the commands, replace the symbols `$SASROOT` and `$LIBDIR` with the directory names used on your system.

  The `$SASROOT` symbol indicates the directory where Release 6.12 of the SAS System is installed.

  The `$LIBDIR` symbol indicates the directory containing the `XKeysymDB` file. For Solaris systems, the directory should be `/usr/openwin/lib`. For most other systems, it is `/usr/lib/X11`.

  Once you have determined the values for these symbols, enter the following commands:

  ```
  cd $LIBDIR
  mv XKeysymDB XKeysymDB.old
  cp $SASROOT/X11/resource_files/XKeysymDB .
  ```

  If the new `XKeysymDB` file was installed correctly, you should no longer see any messages about `unknown keysyms` when you run Release 6.12 of the SAS System.

- to define the `XKEYSYMDB` environment variable to point to this version of the file. X clients, including the SAS System, can then use this one instead of the system version.

For example, if you have the SAS System, Release 6.12 installed in `/usr/local/sas612`, and you are using the C-Shell, you can define the environment variable with the following command:

```
setenv XKEYSYMDB /usr/local/sas612/X11/resource_files/XKeysymDB
```

If you are using the Bourne or Korn shells, you can issue the following command:

```
XKEYSYMDB=/usr/local/sas612/X11/resource_files/XKeysymDB
export XKEYSYMDB
```

Running the SAS System on Asynchronous Devices

Changes have been made to the files associated with running on ASCII terminals to accommodate the new products in Release 6.12 of the SAS System. There are also many changes in the terminfo addendum source files and terminfo tools in this release. These new files should be used by those sites running Release 6.12 of the SAS System. These changes support new products available with Release 6.12 and add support for new terminals. The modifications to the addendum source files and tools include the addition of declarations of control keys for the keys window, and a new required capability called 'deviceid' which is used to identify the main terminal name in compiled addendum files using an alias. (For example, 4105 instead of tek4105 - uses deviceid=tek4105.) For more information on the changes to the terminfo addendum source files, refer to Chapter 3, "Using the OSF/Motif Interface to the SAS System," in *SAS Companion for UNIX Environments: User Interfaces.*

Notes:

- IBM 3151 terminals:

  When using an IBM 3151 terminal, make sure control C (`^C`) is not used in a `stty` setting. The IBM 3151 emits a `^C` as the last byte of each function key sequence. The operating system will use the `^C` if it is used in a `stty` setting. For instance, if `intr` is set as `^C`, SAS will be interrupted when you press a function key.

- Wyse 50 terminals:

  When using a Wyse 50 terminal, do not use control A (`^A`) in a `stty` setting because it is used by the terminal as the first byte of all function key sequence emitted. Using `^A` in a `stty` setting may cause the function keys to be ignored.

- Frame and SAS/INSIGHT software:

  Neither of these is supported on an ASCII terminal. These are only supported on UNIX devices supporting full windowing systems (X Windows, and so on).

- Gwindow support:

  Gwindow support is offered on the following devices: Tek4105, Tek4205, VT286, VT330, and VT340.

Chapter 6, The Directory Structure of the SAS® System

The following subdirectories are created when the SAS System is installed:

Note: The `$SASROOT` symbol indicates the directory where Release 6.12 of the SAS System is installed.

`$SASROOT/doc`
contains text and PostScript versions of Alert Notes, System Requirements, and installation instructions. See the README file for information on how to browse and print these files.

`$SASROOT/.install`
contains configuration information about the current SAS installation. *Do not* remove or change the contents of this directory, as doing so will result in incorrect behavior for future sessions of the Installation Manager program, and inhibit SAS Institute Technical Support's ability to diagnose any problems that may arise.

`$SASROOT/sasexe`
contains the executable SAS software files for all of your products.

`$SASROOT/sashelp`
contains the SAS help files and catalogs.

`$SASROOT/sasmsg`
contains the SAS message files.

`$SASROOT/saspgm`
contains miscellaneous files for several products.

`$SASROOT/sasautos`
contains the SAS macro files.

`$SASROOT/X11`
contains bitmaps, X resource files, and SAS native help files.

`$SASROOT/terminfo`
contains terminfo files for running the SAS System on ASCII based terminals.

`$SASROOT/maps`
contains the map data sets if you have SAS/GRAPH software.

`$SASROOT/misc`
contains miscellaneous files such as product-specific online documentation, and scripts for use with SAS/CONNECT and SAS/GRAPH drivers.

`$SASROOT/samples`
: contains the Sample Library programs.

`$SASROOT/sastest`
: contains the installation test stream programs.

`$SASROOT/utilities`
: contains three subdirectories: `bin` contains useful tools such as the `patchname` command, `cleanwork`, `untic`, `unticadd`, and so on; `man` contains the SAS man pages that you can make available on your system; and `src` contains source code examples for SAS/SHARE authentication routines.

`$SASROOT/sas_notes`
: contains the Technical Support application as well as usage note information.

`$SASROOT/solaris2`
: contains files specific to Solaris 2. All files in other directories and subdirectories are shared and are identical between the two versions of the SPARC system.

Appendix A, Configuration Information for the SAS® System on Solaris

The information in this appendix applies to Solaris-based machines only (SunOS or SPARC). Throughout this appendix, SunOS 4.1 and SunOS 5.x are referred to as Solaris 1 and Solaris 2 respectively.

The distribution media containing Base SAS software also includes a product called Solaris 2 Support. This product contains files that have been modified to support the SAS System on Solaris 2. (Only a small number of the files SAS Institute ships need to be changed to support Solaris 2.) If you are installing the SAS System to run on a Solaris-based platform, you have the following installation options:

- You can install on a Solaris 1-based system.

  If you perform a default installation on a Solaris 1-based system, the Solaris 2 files are loaded, but not configured. From this installation, you can run the SAS System under Solaris 1 only.

- You can install on a Solaris 2-based system.

  If you perform a default installation on a Solaris 2-based system, the Solaris 2 files are loaded and the installation program overwrites the Solaris 1 files, leaving an installation that runs under Solaris 2 only.

  If you performed a customized installation on Solaris 2 for both production and maintenance releases, you must invoke the Solaris 2 Specific Installation menu as described later in this section.

- You can perform a dual installation on a Solaris platform.

  You can set up the SAS System so that both Solaris 1 and Solaris 2 are supported from a single server. (The server could be running either operating system.) This is called a *dual install*. It is more complicated to set up and manage than two single installations; however, the disk savings make it a valid option at sites running both versions of Solaris.

  Note: To perform a dual installation on a Solaris 2 machine, you must use the Custom Installation menu.

To customize your SAS System on a Solaris machine, complete the following steps:

Note: The following steps assume that you have already completed Steps 1-10 in Appendix J, "Performing a Custom Installation of the SAS System."

1. From the SAS Installation Manager primary menu, select Option 2 `Invoke Product Specific Configuration`.

2. If the Solaris 2 support files have been installed, choose `Solaris 2 Installation` from the Product Specific Configuration menu.

   When you select `Solaris 2 Installation`, the following menu appears:

```
Solaris 2 Specific Installation:
 *1.   Overwrite Solaris 2 files on Solaris 1 image
  2.   Delete Solaris 2 files from installed image
  3.   Dual install Solaris 2 with Solaris 1 image
  4.   Generate Dual install config.sas612.sol2 file
  5.   Go Back
  (Enter h for help)
  Action ? [1]
```

3. Select the appropriate action from this menu based on the following descriptions:

   `Overwrite Solaris 2 files on Solaris 1 image`

   Select this option when you are installing for a Solaris 2 machine. Once you choose this option, you cannot run this copy of the SAS System under Solaris 1. This is the same as selecting the default install.

   `Delete Solaris 2 files from installed image`

   Select this option to remove the Solaris 2 support files. You cannot run this copy of the SAS System under Solaris 2 if you choose this option. This is necessary if you used the default install under Solaris 1 and decided that you had no need for the Solaris 2 support files.

   `Dual install Solaris 2 with Solaris 1 image`

   Select this option to run this copy of the SAS System under both Solaris 1 and Solaris 2. This option also generates the Solaris 2 configuration file, `config.sas612.sol2`.

   `Generate Dual install config.sas612.sol2 file`

   Select this option to create a `config.sas612` file (if one does not exist) for running under Solaris 1 and a `config.sas612.sol2` file for running under Solaris 2.

`Go Back`

Select this option to return to the Product Specific Configuration menu.

Performing a Dual Installation

A dual installation implies that other machines will be accessing the SAS binaries over a network file system such as NFS or AFS, so it is important to have consistent pathnames on all machines. The SAS binary is modified onsite to include its installed directory. In a dual installation, the Solaris 2 SAS binary is not patched with this information, you must do this manually.

This is accomplished through the use of the patchname command located in SASROOT/utilities/bin. From the SASROOT directory, this can be accomplished with the command:

```
./utilities/bin/patchname sas.sol12 <the_SASROOT_pathname>
```

For example, if SAS is installed in /usr/local/sas612 the command would be:

```
./utilities/bin/patchname sas.sol12  /usr/local/sas612
```

You may have to patch the Solaris 1 SAS binary as well, if your network file system setup is different on some clients. Not having the SAS binary correctly patched is the most common problem in setting up a dual install.

The dual installation also requires that Solaris 2 users use a separate config file, config.sas612.sol2. Remember that in order to invoke the SAS System on a Solaris 2 machine, you must use the -config option. For more information on this option, refer to Chapter 6 in *SAS Companion for UNIX Environments: Language.*

Warning: While it is easy for a savvy UNIX user or administrator to reconfigure the dual installation directory structures, location of config files, file naming conventions and the like, doing so will result in making it impossible for SAS Institute add-on products or patches to be applied automatically. In situations where you are compelled to make such changes to the SAS structure on disk, it is highly recommended for supportability reasons that you perform two distinct installations of the SAS System, one for Solaris 2 and the other for SunOS 4.1.x.

Appendix B, SAS/ACCESS® Interface Installation

For each SAS/ACCESS interface that you want to use at your site, you must execute an installation process specific to your Data Base Management System (DBMS). The installation process creates an image by performing a link using object files and libraries provided by the SAS/ACCESS interface and by your DBMS. Before executing the installation procedure, read this appendix so you can provide the correct information during the installation.

Notes: Refer to the System Requirements document provided in your installation package to determine if the combination of your operating system and the version of your DBMS is supported by the SAS/ACCESS interface you are installing.

Throughout this appendix, SunOS 4.x and SunOS 5.x are referred to as Solaris 1 and Solaris 2 respectively.

When to Install a SAS/ACCESS Product

If you are installing your SAS/ACCESS interface for the first time, you must always execute the SAS/ACCESS installation. There are two exceptions to this:

- ❑ You are running Solaris 2, installing SAS/ACCESS to SYBASE and SQL Server, and using SYBASE Open Client Release 10.0 or later
- ❑ You are installing SAS/ACCESS to DB2 for UNIX Systems on AIX.

For more information about these operating system and DBMS version combinations, refer to "Installing SAS/ACCESS Interface to SYBASE," or "Installing SAS/ACCESS to DB2 for UNIX Systems" later in this appendix.

If you have previously installed your SAS/ACCESS interface, there are two situations under which you may need to reinstall the software.

- ❑ If you have installed a new version of your DBMS, you may need to execute the SAS/ACCESS installation again to ensure that the interface uses the new version of your DBMS libraries. However, if you have upgraded to a new release of your DBMS and are not experiencing problems with your SAS/ACCESS interface, you do not need to reinstall the software.
- ❑ If you are installing a maintenance version of the SAS System for UNIX environments, you may have to reinstall your SAS/ACCESS interface to ensure that you receive any maintenance bug fixes. Refer to the Alert Notes in your SAS System installation package, and read any that are for your particular SAS/ACCESS interface. If you must reinstall, there will be an Alert Note describing this.

Overview of Installing a SAS/ACCESS Product

Installing SAS/ACCESS software is a menu-driven process. To invoke the SAS/ACCESS installation main menu, complete the following steps:

1. Select `Invoke Custom Installation and Utilities` from the SAS installation main menu.

2. Select `Invoke Product Specific Configuration` from the SAS System Custom Installation and Utilities menu.

3. Select `SAS/ACCESS Installation` from the Product Specific Configuration menu.

You may also see the following two menus during your SAS/ACCESS installation:

- The Select Destination Media menu appears if you have not already encountered this menu elsewhere in the SAS System installation process. For more information about this menu, refer to Appendix J, "Performing a Custom Installation of the SAS System."

- The Select Production/Staged Maintenance Level menu lets you install SAS/ACCESS interfaces at either the 6.12 production level, or the 6.12 staged maintenance level. This menu appears only when it is appropriate. This menu does not appear for promoted maintenance. For more information about staged and promoted maintenance, refer to "Maintenance Overview," in Chapter 2, "The SAS Manager Application."

Every menu allows you to go back to the previous menu and to get help from the online Help system. The selections you make, and the information displayed are logged to the general SAS installation log file.

The installation program determines the operating system at your site. If it is unable to determine it, you are prompted to select the operating system for your site.

The SAS/ACCESS Interface Selection menu is the main installation menu. It displays the names of available SAS/ACCESS interfaces, from which you select the one that you want to install. Before beginning the installation process, you should know the following information about the DBMS you selected:

- the version of the DBMS installed on your system, which is required due to incompatibilities between DBMS versions. If you choose a version of the DBMS other than the one you have installed, the installation will fail or the SAS/ACCESS interface will give unpredictable results.

- the DBMS root directory, which is required so that the installation procedure can find the DBMS libraries that are required for linking the SAS/ACCESS product.

After you select the interface you want to install, the next menu lists the various DBMS versions supported on your operating system. You must select the appropriate one for your site. You are then prompted for the DBMS root directory. If available, a default value obtained from a DBMS-specific environment variable is provided.

After you provide the requested information, the SAS/ACCESS interface is linked with the on-site DBMS libraries. If the link is successful, the new image is tested. For the test to run successfully, the environment variables required by the DBMS must be set to the proper values.

Installing SAS/ACCESS Interface to SYBASE and SQL Server Software

Read the following section if you are installing SAS/ACCESS to SYBASE and SQL Server on a Solaris 2 system using SYBASE Open Client Release 10.0 or later. Read the second section if you are running a different operating system or release of SYBASE.

Installing on Solaris 2 and SYBASE Open Client Release 10.0 or later

You can install the SAS/ACCESS Interface to SYBASE and SQL Server as a new installation if this is the first time you have installed it on your system, or as an upgraded installation.

If you are performing a new installation and you are using SYBASE Open Client Release 10.0 or later with the SAS/ACCESS interface to SYBASE and SQL Server, you do not have to execute the installation facility for the interface. However, because the SYBASE executable uses shared object libraries, you must add the location of the SYBASE shared libraries to your system's `LD_LIBRARY_PATH` environment variable before executing the SAS/ACCESS Interface to SYBASE and SQL Server. These libraries are located in `$SYBASE/lib`, where the `SYBASE` variable is defined as the root directory of the SYBASE installation. Execute the following C-shell command to add this path to your `LD_LIBRARY_PATH` variable:

```
setenv LD_LIBRARY_PATH $LD_LIBRARY_PATH:$SYBASE/lib
```

For Bourne Shell, execute the following:

```
LD_LIBRARY_PATH=$SYBASE/lib:$LD_LIBRARY_PATH
EXPORT LD_LIBRARY_PATH
```

If you have previously installed the SAS/ACCESS Interface to SYBASE and SQL Server using a release of SYBASE Open Client prior to Release 10.0, and you are upgrading the interface to use SYBASE Open Client 10.0 or later, you do not need to perform an installation. Instead, if you are performing a product installation or a promoted installation, you can upgrade by submitting the following copy command:

```
cp $SASROOT/sasexe/dbi/sassyb10 $SASROOT/sasexe/dbi/sassyb
```

Otherwise, if you are performing a staged maintenance installation, you can upgrade by submitting the following copy command:

```
cp $SASROOT/maint/sasexe/dbi/sassyb10 \ $SASROOT/maint/sasexe/dbi/sassyb
```

In addition, you must update your `LD_LIBRARY_PATH` variable as described above.

Installing on any Combination of Operating System and SYBASE Release Other Than Solaris 2 and SYBASE Release 10.0 or later

Complete the following steps to install SAS/ACCESS Interface to SYBASE and SQL Server:

1. Select `SAS/ACCESS interface to SYBASE` from the SAS/ACCESS interface selection menu.

2. Select a release of SYBASE Open Client DB-Library.

   The menu displayed can vary depending on the operating system on which you are installing the software. Choose the SYBASE Open Client release you have installed. Refer to the System Requirements document in your installation package for information about which versions of SYBASE are supported.

3. Enter the SYBASE root directory.

   After you select a release of SYBASE, you are prompted for the SYBASE root directory. A default value is displayed with the value of the environment variable `SYBASE`. If `SYBASE` is not assigned a value, no default is displayed and you are required to type in the path to the SYBASE root directory.

4. Review your selections and enter `Y` (Yes) or `N` (No).

   All the SYBASE related selections that you have made are displayed, allowing you to review your selections before linking.

   - Enter `N` at the continue prompt if you selected a wrong release or supplied the wrong SYBASE root directory. You are returned to the SAS/ACCESS interface selection menu so that you can make your selections again.

   - Enter `Y` at the continue prompt if you are satisfied with all your selections. This starts the linking process. The message `Please wait` is displayed. On Solaris systems, `ranlib executing` appears prior to linking.

   If the link is not successful, you are notified of the failure. The most common cause for link failure is missing object files or libraries. In this case, the name of the module that could not be found is displayed. If it is a missing SYBASE library, ensure that you specified the correct SYBASE root directory value.

5. After successful linking, the image is tested by invoking the SAS System. If the test is successful, you are notified that the SAS/ACCESS Interface to SYBASE has installed successfully. You can either go back to the previous menu or select another SAS/ACCESS interface for installation.

   If the testing is not successful, you can be notified of any of the following problems:

   - the SAS System fails at invocation

     This can be caused by a problem with your SAS System installation.

   - unable to invoke SYBASE

     The SYBASE products required for your configuration may not be installed correctly or the environment for SYBASE is not set correctly.

   - for Solaris 2, `LD_LIBRARY_PATH` is not set correctly.

   - some other problem that is specific to your site.

   If you are having problems, look at the SAS log file of the test program for more information. The path and name of the log file are displayed.

Installing SAS/ACCESS Interface to INGRES Software

To successfully install the SAS/ACCESS Interface to INGRES, you must have access to INGRES either through a server or client installation. Refer to the System Requirements document provided in your installation package to find the exact releases supported by SAS/ACCESS under the different operating systems.

Complete the following steps to install the SAS/ACCESS Interface to INGRES:

1. Select `SAS/ACCESS interface to INGRES` from the SAS/ACCESS interface menu.

2. Select a version of INGRES.

   The SAS/ACCESS Interface to INGRES is capable of supporting INGRES Version 6 and CA-OpenIngres 1.1/06. Due to incompatibilities between releases, you are asked to be specific about which release you are running.

3. Enter the INGRES root directory.

   A default value is displayed. This value is the value of the environment variable `II_SYSTEM`. If `II_SYSTEM` is not assigned a value, no default is displayed, and you are required to type in the path to the INGRES root directory. The installation application sets `II_SYSTEM` to the path that you specify.

4. Review your selections and enter `Y` (Yes) or `N` (No).

   All the INGRES related selections that you have made are displayed, allowing you to review your selections before linking.

   - Enter `N` at the continue prompt if you specified the wrong INGRES root directory. You are returned to the SAS/ACCESS interface selection menu so that you can make your selections again.

   - Enter `Y` at the continue prompt if you are satisfied with all your selections. This starts the linking process. The message `Please wait` is displayed. On Solaris systems, `ranlib executing` appears prior to the linking.

   If the link is not successful, you are notified about the failure. The most common cause for link failure is missing object files or libraries. In this case, the name of the module that could not be found is displayed. If it is a missing INGRES library, make sure that you specified the correct INGRES root directory value.

5. After successful linking, the image is tested by invoking the SAS System. If the test is successful, you are notified that the SAS/ACCESS Interface to INGRES has installed successfully. You can either go back to the previous menu or select another SAS/ACCESS interface to install.

   If the testing is not successful, you can be notified of any of the following problems:

   - ❑ the SAS System fails at invocation

     This can be caused by a problem with your SAS System installation.

   - ❑ unable to invoke INGRES

     The INGRES products required for your configuration may not be installed correctly, or the environment for INGRES is not set correctly.

   - ❑ some other problem that is specific to your site.

     If you are having problems, look at the SAS log file of the test program for more information. The path and name of the log file are displayed.

Installing SAS/ACCESS Interface to ODBC Software on HP-UX

Before you can use the SAS/ACCESS Interface to ODBC on HP-UX, the following products are required:

- ❑ Base SAS software
- ❑ SAS/ACCESS Interface to ODBC software
- ❑ ODBC Driver for your database
- ❑ Client software for your database connection.

An ODBC driver for the data source from which you want to access data is also required. These drivers are often available from the DBMS vendor and other third party ODBC driver developers. The driver you choose may require additional DBMS software in order to access the data.

You may have to edit the .odbc.ini file in your home directory with a text editor to configure data sources. Some ODBC driver vendors may allow system administrators to maintain a centralized copy by setting the environment variable.

The ODBC drivers are ODBC API-compliant dynamic link libraries, referred to in UNIX as shared objects. You must include the full path to the dynamic link libraries in the SHLIB_PATH so that ODBC drivers can be loaded dynamically at run time.

For more information about SAS/ACCESS Interface to ODBC software, refer to SAS Technical Report P-262, *SAS/ACCESS Interface to ODBC: SQL Procedure Pass Through Facility*. For more information about ODBC, refer to *Microsoft ODBC 2.0 Programmer's Reference and SDK Guide*, or consult your ODBC driver vendor.

Installing SAS/ACCESS Interface to ORACLE Software

Refer to the System Requirements document provided in your installation package to find the exact releases supported by SAS/ACCESS software under the different operating systems.

Note: To run the SAS/ACCESS Interface to ORACLE at your site, you must define the environment variable `SASORA` to be `V7` for an ORACLE Version 7 client install. If you do not set Version 8 variables correctly, errors are returned from the SAS System. For example, the following C shell command must be executed when you want to use the SAS/ACCESS Interface to ORACLE to access an ORACLE7 server:

```
setenv SASORA V7
setenv TWO_TASK oracle_alias
```

For Bourne shell, execute the following command:

```
SASORA=V7
export SASORA
TWO_TASK=oracle_alias
export TWO_TASK
```

Note: The ORACLE environment variable `TWO_TASK` must also be set to a valid ORACLE alias name (i.e., oracle_alias) defined in the tnsnames.ora file.

For Non-U.S. Customers Only

Complete the following steps if you are running ORACLE PRO*C 1.3 for HP-UX 9.x. (This configuration is not available in the U.S.)

1. Create a backup of the object file distributed with the SAS/ACCESS Interface to ORACLE that supports ORACLE PRO*C 1.4 as shown in the example below.

   For Promoted Maintenance:

   ```
   cp $SASROOT/saspgm/dbi/obj/orasqlv6036.o\
   $SASROOT/saspgm/dbi/obj/orasqlv6036.o.bak
   ```

   For Staged Maintenance:

   ```
   cp $SASROOT/maint/saspgm/dbi/obj/orasqlv6036.o\
   $SASROOT/maint/saspgm/dbi/obj/orasqlv6036.o.bak
   ```

2. Replace the PRO*C 1.4 object with the PRO*C 1.3 object as shown in the example below.

   For Promoted Maintenance:

   ```
   cp $SASROOT/saspgm/dbi/obj/orasqlv13.o\
   $SASROOT/saspgm/dbi/obj/orasqlv6036.o
   ```

   For Staged Maintenance:

   ```
   cp $SASROOT/maint/saspgm/dbi/obj/orasqlv13.o\
   $SASROOT/maint/saspgm/dbi/obj/orasqlv6036.o
   ```

3. Follow the installation procedure outlined in the following section. Select `6.0.36.5 or later` to link this product on HP-UX.

Complete the following steps to install the SAS/ACCESS Interface to ORACLE:

1. Select `SAS/ACCESS interface to ORACLE` from the SAS/ACCESS interface menu.

2. Select a version of ORACLE.

   The SAS/ACCESS Interface to ORACLE is capable of supporting ORACLE Version 6 and ORACLE Version 7 installations. Due to incompatibilities between releases, you are asked to be specific about which release you are running. Refer to the Systems Requirement document in your installation package to find out which releases of ORACLE are supported.

3. Select whether you want to use the pre-linked image shipped with Release 6.12 of the SAS System and enter `Y` (Yes) or `N` (No).

   - ❑ Enter `N` at the continue prompt if you do not want to use the pre-linked image shipped with Release 6.12 of the SAS System and then continue to Step 4.

   - ❑ Enter `Y` at the continue prompt if you want to use the pre-linked image shipped with Release 6.12 of the SAS System. You will receive a message that the pre-linked image was copied, and then skip to Step 6.

4. Enter the ORACLE root directory.

   After you select a release of ORACLE, you are prompted for the ORACLE root directory. A default value is displayed. This value is the value of the environment variable `ORACLE_HOME`. If `ORACLE_HOME` is not assigned a value, a default is not provided and you are required to type in the path to the ORACLE root directory.

5. Review your selections and enter `Y` (Yes) or `N` (No).

   All of the ORACLE related selections that you have made are displayed, allowing you to review your selections before continuing with the linking.

   - ❑ Enter `N` at the continue prompt if you selected a wrong release or specified the wrong ORACLE root directory. You are returned to the SAS/ACCESS interface selection menu so that you can make your selections again.

   - ❑ Enter `Y` at the continue prompt if you are satisfied with all your selections. This starts the linking process. The message `Please wait` is displayed. On Solaris systems, `ranlib executing` appears prior to linking.

   If the link is not successful, you are notified about the failure. The most common cause for link failure is missing object files or libraries. In this case, the name of the module that could not be found is displayed. If it is a

missing ORACLE library, make sure that you specified the correct ORACLE root directory value.

6. After successful linking, or copying of the pre-linked image, the image is tested by invoking the SAS System. If the test is successful, you are notified that the SAS/ACCESS Interface to ORACLE has installed successfully. You can either go back to the previous menu or select another SAS/ACCESS interface to install.

   If the testing is not successful, you can be notified of any of the following problems:

   - the SAS System fails at invocation.

     This can be caused by a problem with your SAS System installation.

   - unable to invoke ORACLE.

     The ORACLE products required for your configuration may not be installed correctly, or the environment for ORACLE is not set correctly.

   - `SASORA` environment variable is not set correctly.

   - `TWO_TASK` environment variable is not set correctly.

   - for Solaris 2, `LD_LIBRARY_PATH` is not set correctly.

   - some other problem that is specific to your site.

   If you are having problems, look at the SAS log file of the test program for more information. The path and name of the log file are displayed.

Installing SAS/ACCESS Interface to INFORMIX Software

Refer to the Systems Requirements document provided in your installation package to find the exact releases of INFORMIX supported by SAS/ACCESS software for UNIX environments. Complete the following steps to install the SAS/ACCESS Interface to INFORMIX:

1. Select `SAS/ACCESS to INFORMIX` from the SAS/ACCESS interface menu.

2. Select a version of INFORMIX.

   The SAS/ACCESS Interface to INFORMIX is capable of supporting different versions of INFORMIX software. Due to incompatibilities between releases, you are asked to be specific about which release you are running. Refer to the Systems Requirements document in your installation package to determine which releases of INFORMIX are supported.

3. Enter the INFORMIX root directory.

   A default value may appear at the prompt. This is the value of the environment variable `INFORMIXDIR`. If `INFORMIXDIR` is not assigned a value, no default is displayed and you are required to type in the path to the INFORMIX root directory. The installation application sets `INFORMIXDIR` to the path that you specify.

4. Review your selections and enter `Y` (Yes) or `N` (No).

   All of the INFORMIX related selections that you have made are displayed, allowing you to review your selections before continuing with the linking.

   - Enter `N` at the continue prompt if you specified the wrong INFORMIX root directory. You are returned to the SAS/ACCESS interface selection menu so that you can make your selections again.

   - Enter `Y` at the continue prompt if you are satisfied with all your selections. This starts the linking process. The message `Please wait` is displayed. On Solaris systems, `ranlib executing` appears prior to linking.

   If the link is not successful, you are notified about the failure. The most common cause for link failure is missing object files or libraries. In this case, the name of the module that could not be found is displayed. If it is a missing INFORMIX library, make sure that you specified the correct INFORMIX root directory value in Step 2.

5. After successful linking, the image is tested by invoking the SAS System. If the test is successful, you are notified that the SAS/ACCESS interface to INFORMIX has installed successfully. You can either go back to the previous menu or select another SAS/ACCESS interface to install.

   If the testing is not successful, any of the following can be the problem:

   - problems invoking the SAS System.

     This can be due to a problem with your SAS System installation.

   - unable to invoke INFORMIX.

     The INFORMIX products required for your configuration may not be installed correctly, or the environment for INFORMIX is not set correctly.

   - some other problem that is specific to your site.

     If you are having problems, look at the SAS log file of the test program for more information. The path and name of the log file appears on your display.

Installing the SAS/ACCESS Interface to DB2 for UNIX Systems Software

The SAS/ACCESS Interface to DB2 for UNIX Systems is supported on the AIX operating system.

You must bind the application package `DB2.SASDB2` to your database whether or not you decide to custom install the SAS/ACCESS Interface to DB2 for UNIX Systems. Binding an application is a DB2 procedure that is performed using the DB2 Command Line Processor. Binding is not a SAS procedure but simple instructions on how to do this are provided at the end of this section. If you have specific questions regarding the BIND, contact your Database Administrator.

A pre-linked SAS/ACCESS Interface to DB2 image is shipped with Release 6.12 of the SAS System and the custom install link is not required. However, you will still need to set the LIBPATH environment variable as follows, as well as binding the application package at the end of this section.

Make sure the LIBPATH environment points to `INSTHOME` before you invoke the SAS System. This is required since the SAS DB2 for UNIX Systems engine executable needs to know the path to the DB2 for UNIX Systems shared library at your site. If `$INSTHOME` is not already part of your LIBPATH, set the LIBPATH environment variable as follows:

For Bourne Shell, execute the following command:

```
LIBPATH=$INSTHOME/lib:$LIBPATH
export LIBPATH
```

For C Shell, execute the following command:

```
setenv LIBPATH $INSTHOME/lib:$LIBPATH
```

Note: INSTHOME is a DB2 for UNIX Systems environment variable that should be set to the DB2 home or root directory where the DB2 "shared" library libdb2.a is located (usually `/usr/lpp/db2_02_02_0000`). If `$INSTHOME` is not set, see your DBA for more information.

If you have chosen to perform the custom install link, complete the following steps to install the SAS/ACCESS Interface to DB2 for UNIX Systems:

1. Select `SAS/ACCESS Interface to DB2` from the SAS/ACCESS interface menu.

   A message indicating that this is an optional install is displayed.

2. You are prompted to choose whether or not to continue with the install. Select `Y` to continue with the installation, or `N` to exit.

   If you select `Y`, make sure you have LIBPATH set correctly as described previously, and do a bind before you try to use the interface.

3. Enter the DB2 for UNIX Systems root/home directory. This is usually `/usr/llp/db2_02_02_0000`.

4. Review the DB2 for UNIX Systems root/home directory.

   If you are satisfied with the root/home directory, enter `Y`. The message `Linking...Please wait` is displayed.

   If you specified an incorrect root/home directory, enter `N` and you are returned to the SAS/ACCESS Interface Selection menu so you can make your selections again.

After successful linking, the image is tested by invoking the SAS System.

To use the SAS/ACCESS Interface to DB2 for UNIX Systems, you must bind the application package DB2.SASDB2 to any databases with which you intend to use the interface. The package is contained in SASDB2.BND. To do the bind, issue the following commands from the DB2 command line processor:

```
CONNECT TO <database name>
```

Promoted maintenance:

```
BIND <SASROOT directory>/sas612/saspgm/dbi/obj/sasdb2.bnd
```

Staged maintenance:

```
BIND <SASROOT directory>/sas612/maint/saspgm/dbi/obj/sasdb2.bnd
```

You can then grant execute privilege on the DB2.SASDB2 package to your users. For example, if you want all users to be able to use the SAS/ACCESS Interface to DB2 for UNIX Systems, issue the following command:

```
GRANT execute on package DB2.SASDB2 to public
```

Output of a Sample SAS/ACCESS Interface Installation

The following is the output from a sample installation of the SAS/ACCESS Interface to ORACLE7 Server Release 7.1.4.1, executed on a Solaris system. Start the SAS installation process by typing `sasmanager` in the SASROOT directory.

```
$ sasmanager

SAS System Installation Manager

Menu conventions: * means default; ( ) around an item means
it's not selectable.

Prompting conventions: [ ] indicates the default.

You can quit this script at any time by typing ^C (Control-C)
or whatever is defined as the interrupt key on your system.

For more information, see the SAS System Installation Manual.

Mon Aug 14 17:05:33 EDT 1995
```

```
SAS System Installation Manager:

*1. Load Software from Media...
 2. Invoke Custom Installation and Utilities...
 3. Exit SAS Installation Manager
 (Enter h for help)
 Action ? [1] 2

SAS System Custom Installation and Utilities:

*1. Invoke Custom Installation Facility...
 2. Invoke Product Specific Configuration...
 3. Invoke SAS Installation Utilities...
 (4. Invoke SAS Maintenance Utilities...)
 5. Go Back
 (Enter h for help)
 Action ? [1] 2

Product Specific Configuration:

*1. SAS/ACCESS Installation
 2. SAS/CPE Installation
 3. Solaris 2 Installation
 4. Go Back
 (Enter h for help)
 Action ? [1]

SAS/ACCESS Installation

This installation will ask several questions and then link the
SAS/ACCESS interface with the DBMS libraries installed at your
site.

If you have never installed your SAS/ACCESS interface before,
you must perform this installation before you can use
SAS/ACCESS.

If you have previously installed your SAS/ACCESS interface and
have recently upgraded to a new release of your DBMS, you do
not have to reinstall the SAS/ACCESS interface unless you are
experiencing problems with your SAS/ACCESS application.

If you are installing a maintenance release of the SAS System,
it may not be necessary to reinstall your SAS/ACCESS interface.
Refer to Appendix B, SAS/ACCESS Interface Installation in the
'Installation Instructions, SAS System, 6.12 Release, under
UNIX' for more information."

Select the SAS/ACCESS interface you want to install:

*1. SAS/ACCESS Interface to ORACLE
 2. SAS/ACCESS Interface to INGRES
 3. SAS/ACCESS Interface to SYBASE
 4. SAS/ACCESS Interface to INFORMIX
 5. SAS/ACCESS Interface to DB2
 6. Go back to previous menu
 (Enter h for help)
 Action ? [1]

Installing SAS/ACCESS interface to ORACLE at Production level

Select the version of ORACLE you are using:

*1. ORACLE Version 7: Release 7.0.15 or later
 2. ORACLE Version 7: Release 7.2.2.3 or later
 3. Go back to previous menu
 (Enter h for help)
```

```
 Which option? [1]
 ---------------USE PRELINKED IMAGE?--------------------------
 If you wish to use pre-linked SAS/ACCESS to ORACLE V7 images
 you can skip the onsite link by entering "Y" to the prompt
 below.  Otherwise continue with the onsite link by
 entering "N."
 ------------------------------------------------------------
 What is the DBMS root/home directory?
 [/usr/local/dbi3/oracle/v7/7.1.4.1.0]

SAS/ACCESS Interface to ORACLE for Solaris 1

The values you selected:

ORACLE Version 7: Release 7.0.15 or later with or without NLS support
ORACLE root Directory: /usr/local/dbi3/oracle/v7/7.1.4.1.0

Continue? [Y/N]? [Y]

Running ranlib....ranlib complete.

Linking......Please wait !

The on-site link for SAS/ACCESS Interface to ORACLE was successful.

Beginning to test SAS/ACCESS Interface to ORACLE...

Executed '/disk3/dbi4/sas/sas612/sastest/testorl'

SAS/ACCESS Interface to ORACLE tested successfully.

Select the SAS/ACCESS interface you want to install:

1. SAS/ACCESS Interface to ORACLE
*2. SAS/ACCESS Interface to INGRES
3. SAS/ACCESS Interface to SYBASE
4. SAS/ACCESS Interface to INFORMIX
5. SAS/ACCESS Interface to DB2
6. Go back to previous menu
(Enter h for help)
Action ? [2] 6

Product Specific Configuration:
1. SAS/ACCESS Installation
*2. SAS/CPE Installation
3. Solaris 2 Installation
4. Go Back
(Enter h for help)
Action ? [2] 4
```

```
SAS System Custom Installation and Utilities:

1. Invoke Custom Installation Facility...
2. Invoke Product Specific Configuration...
*3. Invoke SAS Installation Utilities...
(4. Invoke SAS Maintenance Utilities...)
5. Go Back
(Enter h for help)
Action ? [3] 5

SAS System Installation Manager:

1. Load Software from Media...
2. Invoke Custom Installation and Utilities...
*3. Exit SAS Installation Manager
(Enter h for help)
Action ? [3] 3
```

Appendix C, Post-Installation Setup for SAS/ASSIST® Software

This appendix describes how to add an optional master profile to SAS/ASSIST software. A master profile can be used to override the default settings as sent by SAS Institute. This allows you to provide a customized setup for SAS/ASSIST software. With the master profile you can control the profile options of all SAS/ASSIST users from one central place. For information on the profile options, refer to *SAS/ASSIST Software: Changes and Enhancements, Version 6*.

Complete the following steps to add a master profile to SAS/ASSIST software:

1. Specify the location of the master profile by creating a new directory that all users of SAS/ASSIST software will have read-access to.

   All users with write-access to this directory will automatically also have write access to the master profile in SAS/ASSIST software. Select a name that conforms to the naming conventions at your installation. The name of this new directory must be stored in an entry in the SASHELP library. This requires that you have write access to the SASHELP library.

   On line 1 of the Program Editor window of the SAS Display Manager System, type the physical pathname of the master profile directory. Execute the `Save` command to store this in the SASHELP.QASSIST catalog. Save it as `sashelp.qassist.parms.source`. The location of the master profile is now known by SAS/ASSIST software.

2. Create the master profile.

   The first time SAS/ASSIST software is started a master profile is created if the SASHELP.QASSIST.PARMS.SOURCE contains the name of an existing physical pathname, and the person who starts SAS/ASSIST software has write-access to this physical pathname.

3. Customize the master profile by starting SAS/ASSIST and selecting `SETUP ... Master/group...`

   If you have write-access to the SAS library containing the master profile you can specify default values for your installation. These values will be used by new users as they start SAS/ASSIST software.

   Note: If you restrict values by typing `R` in `Status`, users will not be allowed to change the values you define.

SAS/ASSIST contains a new menu bar and a new saving mechanism that are controlled using the profile options below.

```
Run old style:

Save selections on end:    No
Menu Style:                Old

Run new style:

Save selections on end:    Yes
Menu Style:                New
```

By setting the default values in the master profile you can control if users should use the new or old style SAS/ASSIST. In addition, there are many other profile options. For more information on these options, refer to *SAS/ASSIST Software: Changes and Enhancements, Version 6.*

4. Create Group profiles.

   From the master profile it is possible to create group profiles to allow groups of users to have different setups. The master profile controls group profiles and user profiles when a user is not a member of any group. All users are indirectly controlled by the master profile when option values are set to a restricted (R) status.

   From `Setup...Master/Group`, select `Locals...Create Group Profile`. To add users to a group profile, select `Locals...Update User Group`. By default the userid is found in the macro variable `&SYSJOBID`. This value is set in the option Userid in the master profile (option type System Administration). Change the value if your site uses another variable to keep the userid. If the value name starts with &, it is a macro variable, otherwise it is an environment variable, which is set before the start of SAS.

Profile Changes and Enhancements

To enhance the profile feature for Query and Reporting, some changes have been made to the profile structure. A new profile option, `Query exit`, has been added to the user profile in `Type:Query`. Another new profile option, `Additional Information`, has been added to `Type:Query Manager`. This enables users who are running queries against SAS data to obtain customized information about the data they are accessing.

Converting User Profiles from a Previous Release

There are many ways to convert your user profile. One is to simply note any changes you have made to your user profile, exit SAS/ASSIST software, delete the profile, SASUSER.PROFILE.PASSIST.SLIST, and re-invoke SAS/ASSIST software. A profile with the new format will be created. You can now update your new profile with the option values you noted in your original profile.

Another way you can convert your user profile is to use a conversion program that is provided with this release. In the Program Editor window, type and submit the following to convert to the new structure:

```
proc display cat=sashelp.qassist.profconv.scl; run;
```

The SAS Administrator may want to ensure that all users of SAS/ASSIST software convert their user profiles soon after the new release is installed. This can be done using the Master Profile (see the section, "Adding a Master profile" for information on creating a master profile). You will take advantage of the SAS/ASSIST start program, a profile option that runs a program when SAS/ASSIST software is invoked. The program must be a SOURCE entry; therefore you must save the code in a source entry in a library that is accessible by all users such as SASHELP.

In this example, the source is saved in SASHELP.QASSIST.PROFCONV.SOURCE. If you currently have a SAS/ASSIST start program that is used globally you can add the code in that program. If individual users have their own SAS/ASSIST start programs, it may be best to have them simply type and submit the code in the Program Editor. Complete the following steps:

1. Type the following in the Program Editor window:

   ```
   proc display cat=sashelp.qassist.profconv.scl; run;
   ```

2. Select `Save As...Write to Object` from the `File` pull-down menu.

3. Enter the following destination object name:

   ```
   SASHELP.QASSIST.PROFCONV.SOURCE
   ```

4. Select `OK`.

5. After the Master Profile has been created, open it and select `Type: General`

6. Specify the following: (The `R` status forces the user's profile to be updated)

Cmd Option	***Value***	***Status***
SAS/ASSIST start program	*SASHELP.QASSIST.PROFCONV. SOURCE*	*R*
Type of start program	*Catalog*	*R*

Note: Once the conversion program has run, it can run again and again without effect. The administrator will have to leave these values in place until he feels confident that all users have used SAS/ASSIST software. The users will see a pop-up window indicating the above profile value change when they first access SAS/ASSIST software after the new release is installed and this technique is implemented. You may want to let them know to expect it. Existing users are notified that this option value has been changed when SAS/ASSIST software is invoked.

When the administrator is confident that all users have invoked SAS/ASSIST software in the new release, he should clear the value specified for the SAS/ASSIST start program and make it available to the user. Specify the following:

Cmd Option	***Value***	***Status***
SAS/ASSIST start program		*U*
Type of start program	*Catalog*	*U*

The U status enables users to enter their own values for these options.

A pop-up window indicating these profile changes may be displayed. You can choose to accept the changes and update your profile.

Note: If you currently have a SAS/ASSIST start program that is used globally, you can add the above code to that program. If individual users have their own SAS/ASSIST start programs, it may be best to have them type and submit the code in the Program Editor.

Converting Existing Master and Group Profiles

To convert the master profile, type the following in the Program Editor and then submit it:

```
%let lib=/sas/assist/parms;
proc display cat=sashelp.qassist.profconv.scl; run;
```

To convert group profiles, type the following in the Program Editor and then submit it:

```
%let lib=/sas/assist/parms/groups;
%let cat=catalog.grpname;
proc display cat=sashelp.qassist.profconv.scl; run;
```

Note: It is possible that some or all group profiles are stored in the same physical location as the master profile as sown in the above example. If you have multiple group profiles stored in the same physical location, you do not need to submit the %let lib= statement repeatedly. For example, if you have groups GRP1, GRP2, GRP3 all stored in sasabc.sas430.groups in the ASSIST catalog, you can submit the following to convert all three groups:

```
%let lib=/sas/assist/parms/groups;
%let cat=assist.grp1;
proc display cat=sashelp.qassist.profconv.scl; run;
%let cat=assist.grp2;
proc display cat=sashelp.qassist.profconv.scl; run;
%let cat=assist.grp3;
proc display cat=sashelp.qassist.profconv.scl; run;
```

Appendix D, Post-Installation Setup for SAS/CONNECT® Software

This appendix describes the use of the sample script files shipped with SAS/CONNECT software, lists supported software for access methods available for UNIX environments, and outlines configuration procedures for those access methods that require additional configuration.

TELNET, TCP/IP, and APPC are the access methods supported for UNIX environments and their derivatives. Refer to *SAS/CONNECT Software: Usage and Reference, Version 6, Second Edition* and *SAS Software: Changes and Enhancements, Release 6.12* for information on the access methods supported by other systems.

Storing and Locating SAS/CONNECT Script Files

SAS/CONNECT software ships several sample script files that are used to establish a connection to a remote SAS session. The `SASSCRIPT` configuration option points to the location of the SAS/CONNECT script files. The `SASSCRIPT` option is used by SAS/ASSIST software and can be used by user-written SCL applications.

For UNIX environments, the script files are installed into the `!SASROOT/MISC/CONNECT` directory by default. The following line has been included in the `CONFIG.SAS` file in order to define the default script file location:

```
-SASSCRIPT !sasroot/misc/connect
```

If you want to move the script files to another directory, you must edit the `CONFIG.SAS` file and update the `SASSCRIPT` option with the new directory location.

System Configuration for the TELNET and TCP Access Methods

Using the TELNET or TCP access method, a UNIX user can connect to any supported platform that meets the following criteria:

- ❑ is on the TCP/IP network
- ❑ is running a release of the SAS System with the corresponding access method support
- ❑ has SAS/CONNECT software licensed.

With the TCP access method, one of the supported TCP/IP products must be installed on any node, local or remote, that you want to use with SAS/CONNECT software.

For the TELNET access method, a supported TCP/IP package must be installed on the local node. The remote node does not have to run a supported TCP/IP product, but must run some TCP/IP product to make the node accessible using TELNET.

The TELNET and TCP/IP access methods supplied with SAS/CONNECT software run with the TCP/IP services that are native to the UNIX operating system. There are no additional requirements.

System Configuration for the APPC Communications Access Method

The following sections provide reference information for establishing an environment to use SNA LU6.2 APPC (Advanced Program-to-Program Communications) communications within your SAS applications under HP-UX, Solaris and AIX.

Notes: Currently, a client-side implementation is available for use with either SAS/CONNECT or SAS/SHARE software.

The information included in these sections is included on the install media in the `!SASROOT/MISC/CONNECT` and `!SASROOT/MISC/SHARE` directories. Refer to the `README` file in these directories for more information.

System Configuration for the APPC Communications Access Method under HP-UX

Software Requirements

- ❑ 9.x version of HP-UX operating system
- ❑ Release 3 or later of SNAplusAPI and SNAplusLink tested with Release 3/Dart 16 components. Recommended patches at Release 3/Dart 16: PHNE_4773, PHNE_5314, PHNE_5374

SAS System Configuration

System Options

`COMAMID=APPC`

specifies that the APPC access method should be used for communication between SAS/CONNECT local and remote sessions or SAS/SHARE user and server sessions. This option may be specified in the SAS command, in a SAS configuration file, or in an OPTIONS statement.

`REMOTE=remote-session-id`

specifies the logical unit (LU) to use in establishing a SAS/CONNECT remote session. To establish a remote session on another workstation, the value of this option in the local session on this workstation should be a partner lu_alias.

When the remote session is on MVS, the value of this option should be the name of the APPC/MVS scheduler LU.

When the remote session is on CMS, the value of this option should be the name of the AVS (APPC/VM VTAM Support) private gateway LU for the VM system.

When the remote session is on VSE, the value of this option should be the name of the VTAM APPL ID (ABCNAME) that has been set up for APPC LU6.2 communications.

When the remote session is on OS/2 or Windows the value of this option should be name of the control point LU configured on the remote workstation.

In all cases, the value of this option must be the same in the local and remote sessions. This option may be specified in the SAS command, in a SAS Configuration file, or in an OPTIONS statement.

Environment Variables

The following SAS environment variables may be specified globally in a SAS configuration file or on the SAS invocation command line with the following syntax:

```
-SET <variable> <value>
```

Note: The variable name must be specified in uppercase letters.

APPC_LU

specifies the name of the local lu_alias to use. This name must match an LU alias established during configuration. This variable is required unless a default local APPC LU has been defined. A macro-variable analog exists for runtime specifications.

APPC_MODE

specifies the communication mode to use that represents the set of networking characteristics defined during configuration. The default name is SASAPPC. The mode name, whether you specify it with the APPC_MODE variable or allow it to default to SASAPPC, must be defined in both the local and remote environments. A macro variable exists for runtime specification.

APPC_SECURE

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. The value of this variable can be a "userid.password" string, _PROMPT_, or _NONE_. By specifying _PROMPT_, you will be prompted for a userid and password for the remote partner, which provides more security than specifying a readable "userid.password" string. The default is _NONE_, which causes no security userid or password to be presented to the remote partner. APPC/MVS, CMS, and VSE require security presentation while OS/2 and Windows do not unless security has been explicitly defined. A macro variable exists for runtime specification.

APPC_SURROGATE_LUNAME

specifies which LU to use for a SAS/CONNECT remote session on MVS. If this variable is not defined, the MVS remote session dynamically selects an LU from the pool of LUs defined on MVS for this purpose.

APPC_PARTNER_COUNT

specifies the number of simultaneous partners that this local session will have at any one time. This estimate permits better allocation of memory resources for internal control block usage.

Macro Variables

The following SAS macro variables can be specified with the following SAS syntax:

```
%let <variable>=value;
```

APPCSEC

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. This macro variable may be used in lieu of the APPC_SECURE environment variable, and takes precedence.

APPCLU

specifies the name of the local lu_alias to use. This macro variable may be used in lieu of the APPC_LU environment variable, and takes precedence.

APPCMODE

specifies the communication mode to use that represents the set of networking characteristics defined during configuration. This macro variable may be used in lieu of the APPC_MODE environment variable, and takes precedence.

HP-UX Configuration and Management

SNAplusLink

The SNAplusLink product allows three types of connectivity: Synchronous Data Link Control (SDLC), Qualified Logical Link Control (QLLC), and Token Ring (TR). To use SNAplus over QLLC link, either X.25/9000 Link for the Series 700 or X.25/9000 Link for the Series 800 must have been installed and configured before you install and configure SNAplus. To use SNAplus over a TR link, either HP Token Ring/9000 for the Series 700 or HP Token Ring/9000 for the Series 800 must have been installed and configured before you install and configure SNAplus.

Before installing SNAplus with the installation script, you must first decide whether SNAplus software will function in a standalone or a client/server environment. In a standalone environment, all functionality is isolated to a single HP workstation. In a client/server environment, client HP workstations running SNAplus Presentation Services products (SNAplusAPI) can access server HP workstations running SNAplusLink where the physical link resides. Configuration related files that are created automatically by the installation script are sna.ini, com.cfg, com.sec, and sna.net (client/server environment).

To configure SNAplusLink, use the snapconfig program. This program allows you to configure the link (SDLC,QLLC,TR), connection (logical path), and local node (PU 2.1).

SNAplusAPI

SNAplusAPI APPC can be configured with the snapconfig program. This program allows you to configure APPC modes, remote APPC LUs, and local APPC LUs.

Management

The SNAplus control daemon controls the SNAplusLink product (local nodes, links, and connections) and manages communication among SNAplus products and product components. The SNAplus control daemon must be started on each machine on the LAN (and on each standalone computer) before you can use any SNAplus products installed on that machine. To start the SNAplus control daemon issue the command `snapstart daemon` at the HP-UX command prompt.

The snapmanage program allows you to start and stop SNAplus products (SNAplusLink local nodes, links, and connections), view the status and monitor the use for SNAplus products, and control logging and tracing.

Sample Configuration

The following sample configuration snapshot was created using the `snaptextcfg` command. It is a subset of the information produced so as to limit the output to APPC specifics with T/R connection.

```
;
*****************************************************************

; SNAplus Binary to Text Configuration Utility
; Copyright (C) 1993 Hewlett-Packard Company
; Binary Configuration   = /usr/lib/sna/com.cfg
; Security File          = /usr/lib/sna/com.sec
; File version           = 100.20
;
*****************************************************************

;
*****************************************************************

; Diagnostics Record (Mandatory)

;
*****************************************************************

[DIAGNOSTICS]

connection          = ""              ; Name of network mgt connection
UCF_user            = ""              ; User ID for UCF commands
error_log           = "/usr/lib/sna/sna.err"
                                      ; Error log file
audit_log           = "/usr/lib/sna/sna.aud"
                                      ; Audit log file
audit_level         = 6               ; Detailed problem analysis
send_overfl         = No              ; Send RTM when response counter max
send_end            = No              ; Send RTM at end of session
stop_timer          = screen          ; Data first reaches the screen
boundary_1          = 0.5             ; RTM histogram time boundaries
boundary_2          = 1.0
boundary_3          = 2.0
```

```
boundary_4          = 5.0
pc_error_log        = "sna.err"        ; PC client error log file
pc_audit_log        = "sna.aud"        ; PC client audit log file

;
*************************************************************

; Local Node Record

;
*************************************************************

[NODE]

name                = "NODE1"          ; Local Node Name
description         = "Node for APPC"  ; Description of Local Node
network             = "SASNET01"       ; Node Network Name

;
*************************************************************

; APPC Local LU Record

;
*************************************************************

[APPC_LOCAL_LU]

alias               = "LOCLU001"       ; LU Alias
node                = "NODE1"          ; Local Node
description         = "Local LU/CP"    ; Text description of LU
net_name            = "SASNET01"       ; LU Network Name
LU_name             = "LOCLU001"       ; Name of LU
LU_number           = 0                ; LU Number
session_lim         = 254              ; Session Limit
default_LU          = Yes              ; LU in pool of Default LUs
local_use           = Yes              ; LU can be used locally
syncpoint           = No               ; LU supports syncpoint sessions
conv_sec            = No               ; LU uses conversation level security
partner_LU          = "PARTLU01"       ; List of Partner LUs and Modes
partner_LU          = "PARTLU02"
partner_LU          = "PARTLU03"
partner_LU          = "PARTLU04"

;
*************************************************************

; Token Ring Connection Record

;
*************************************************************

[TR_CONN]

name                = "TRCON"          ; Name of connection
node                = "NODE1"          ; Name of node
description         = "Token Ring connection"
                                       ; Description
remote_end          = peer             ; Remote end is peer
link_role           = negotiable       ; Station behaves as negotiable
activation          = initially        ; Initially active
node_send           = "05D.FF815"      ; Node id to send
node_rcv            = "017.00000"      ; Node id to receive
control_point       = "SASNET01.LOCALCP"
                                       ; Fully qualified control point name
remote_address      = 400031740001     ; Address of remote TR network
remote_sap          = 04               ; Remote SAP address
```

```
retry_limit          = 10               ; Retry limit
rcv_ack_limit        = 10               ; Receive acknowledgment threshold
send_ack_limit       = 10               ; Unacknowledged send threshold
max_btu              = 4096             ; Maximum BTU length
link                 = "TOKEN"          ; link

;
*************************************************************

; APPC Mode Record

Note: Be generous in defining session limits. Define enough
sessions so that session limits will never be reached. As a
APPC API limitation, if session limits are reached, the next
time a conversation/session is requested, the APPC layer will
not return to the application layer until a session is
available. This indefinite waiting condition may cause you to
think that SAS is not responding or that it is in a loop when
in fact the underlying APPC layer is waiting for a session to
become available.

;
*************************************************************

[APPC_MODE]

name                 = "SASAPPC"        ; Mode name
mode_ID              = 4                ; Unique Mode ID
description          = "APPC Mode"      ; Description
connection           = "TRCON"          ; Connection used by this mode
priority             = high             ; Mode is High Priority
session_limit        = 12               ; Mode Session Limit
MCW                  = 12               ; Min Conwinner Sessions
partner_MCW          = 0                ; Partner Min Conwinner Sessions
auto_act             = 0                ; Auto activated sessions
min_sendRU           = 256              ; Min Send RU size
max_sendRU           = 4096             ; Max Send RU size
send_pace            = 10               ; Send Pacing count
min_rcvRU            = 256              ; Min Receive RU size
max_rcvRU            = 4096             ; Max Receive RU size
rcv_pace             = 10               ; Receive Pacing count

;
*************************************************************

; APPC Remote LU Record

;
*************************************************************

[APPC_REMOTE_LU]

alias                = "PARTLU01"       ; LU Alias
description          = "MVS remote LU"  ; Text description of LU
net_name             = "SASNET01"       ; LU Network Name
LU_name              = "PARTLU01"       ; Name of LU
SSCP_Alias           = "PARTLU01"       ; SSCP LU Alias
parallel_sess        = Yes              ; Parallel Sessions supported
conv_sec             = Yes              ; LU uses conversation level security
preval_sec           = No               ; LU can prevalidate security
session_sec          = none             ; No Session Level Security

;
*************************************************************

; APPC Remote LU Record
```

```
;
*************************************************************

[APPC_REMOTE_LU]

alias               = "PARTLU02"        ; LU Alias
description         = "MVS Surrogate LU"; Text description of LU
net_name            = "SASNET01"        ; LU Network Name
LU_name             = "PARTLU02"        ; Name of LU
SSCP_Alias          = "PARTLU02"        ; SSCP LU Alias
parallel_sess       = Yes               ; Parallel Sessions supported
conv_sec            = Yes               ; LU uses conversation level security
preval_sec          = No                ; LU can prevalidate security
session_sec         = none              ; No Session Level Security

;
*************************************************************

; APPC Remote LU Record

;
*************************************************************

[APPC_REMOTE_LU]

alias               = "PARTLU03"          ; LU Alias
description         = "Windows remote LU" ; Text description of LU
net_name            = "SASNET01"          ; LU Network Name
LU_name             = "PARTLU03"          ; Name of LU
SSCP_Alias          = "PARTLU03"          ; SSCP LU Alias
parallel_sess       = Yes                 ; Parallel Sessions supported
conv_sec            = Yes                 ; LU uses conversation level security
preval_sec          = No                  ; LU can prevalidate security
session_sec         = none                ; No Session Level Security

;
*************************************************************

; APPC Remote LU Record

;
*************************************************************

[APPC_REMOTE_LU]

alias               = "PARTLU04"       ; LU Alias
description         = "OS/2 remote LU" ; Text description of LU
net_name            = "SASNET01"       ; LU Network Name
LU_name             = "PARTLU04"       ; Name of LU
SSCP_Alias          = "PARTLU04"       ; SSCP LU Alias
parallel_sess       = Yes              ; Parallel Sessions supported
conv_sec            = Yes              ; LU uses conversation level security
preval_sec          = No               ; LU can prevalidate security
session_sec         = none             ; No Session Level Security

;
*************************************************************

; APPC Remote LU Record

;
*************************************************************

; Token Ring Link Record
```

```
;
*************************************************************

[TR_LINK]
name                = "TOKEN"          ; Name of LU
description         = "Token Ring link"; Text description of LU
device_name         = "sna_TR"         ; Name of device file for link
port_number         = 0                ; Adapter port

;
*************************************************************

; Token Ring Link Usage Record

;
*************************************************************

[TR_USAGE]
node                = "NODE1"          ; Node name
link                = "TOKEN"          ; Link name
incoming            = Yes              ; Incoming calls accepted
max_conn            = 1                ; Maximum number of connections
local_sap           = 04               ; Local SAP address
```

SAS Specifics

An example SAS configuration file (config.sas) containing APPC specific environment variable options for client-side execution is listed below:

```
-set APPC_LU         local-LU-alias
-set APPC_MODE       mode-name
-set APPC_SECURE     _PROMPT_
```

where `local-LU-alias` and `mode-name` is a defined and configured local LU and mode profile respectively.

The following is an example SAS/CONNECT signon:

```
options comamid=appc remote=partner-LU-alias;
signon;
```

where `partner-LU-alias` is a defined and configured remote partner LU.

The following is an example LIBNAME start to connect to a SAS/SHARE server:

```
options comamid=appc;
libname xxxx 'remote.data' server=partner-LU-alias;
```

where `partner-LU-alias` is a defined and configured remote partner LU.

Note: If the server is running on a CMS system that is connected to your system through a global VTAM gateway, you must use a two-level server name specification as follows:

```
server=gateway.serverid
```

where `gateway` is defined to the CMS system and is locally defined as a partner-LU-alias.

References

- *HP-UX SNAplus Installation Guide* (J2220-61021)
- *HP-UX SNAplusLink Administrator's Guide* (J2220-61023)
- *HP-UX SNAplusAPI Administrator's Guide* (J2223-61008)
- *HP-UX SNAplus Diagnostics Guide* (J2220-61022)
- *Installing and Administering X.25/9000* (36940-90018)
- *Installing and Administering Token Ring/9000* (J21625-61001)
- *IBM SNA: Technical Overview*
- *IBM SNA: Formats*

System Configuration for the APPC Communications Access Method under Solaris

Software Requirements

- Solaris Version 2.x
- SunSoft's SunLink SNA Peer-to-Peer software Version 8.0 or later. The following patches are recommended for Version 8.0:
  - 102146
  - 102147
  - 102229.

SAS System Configuration

System Options

`COMAMID=APPC`

specifies that the APPC access method should be used for communication between SAS/CONNECT local and remote sessions or SAS/SHARE user and server sessions. This option can be specified in the SAS command, in a SAS configuration file, or in an OPTIONS statement.

`REMOTE=remote-session-id`

specifies the unique session name to use in establishing a SAS/CONNECT remote session. The unique session name is defined in the MODE definition in the configuration file. It uniquely binds a mode_name, partner LU, and local LU together. The SunLink APPC package does not put any naming restrictions on the `unique_session_name` parameter; however, to function in a SAS environment, the `unique_session_name` parameter must be the same name as the partner LU name in order to guarantee that the remote= value is the same in both the local and remote sessions.

When the remote session is on MVS, the value of this option should be the name of the APPC/MVS scheduler LU.

When the remote session is on CMS, the value of this option should be the name of the AVS (APPC/VM VTAM Support) private gateway LU for the VM system.

When the remote session is on VSE, the value of this option should be the name of the VTAM APPL ID (ACBNAME) that has been set up for APPC LU6.2 communications.

When the remote session is on OS/2 or Windows the value of this option should be name of the control point LU configured on the remote workstation.

In all cases, the value of this option must be the same in the local and remote sessions. This option can be specified in the SAS command, in a SAS Configuration file, or in an OPTIONS statement.

Environment Variables

The following HP environment variables can be specified globally in a SAS configuration file or on the SAS invocation command line with the following syntax:

```
-SET <variable> <value>
```

Note: The variable name must be specified in uppercase letters.

`APPC_GATEWAY`

specifies the name of the peer-to-peer gateway that you will attach to. The gateway provides the SNA stack for connecting to an SNA network. If you are working in a standalone environment and your gateway is the same name as your machine name, you do not have to specify this option. By default, SAS will use the gethostname() Unix function to obtain the machine name where SAS is executing and then use it as the gateway name.

During SunLink SNA Peer-to-Peer configuration, you will enter the gateway name either in a `local /etc/appcs` file or in the NIS/NIS+ database. A macro variable exists for runtime specifications.

APPC_SECURE

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. The value of this variable can be a `userid.password` string, `_PROMPT_`, or `_NONE_`. By specifying `_PROMPT_`, you are prompted for a userid and password for the remote partner, which provides more security than specifying a readable `userid.password` string. The default is `_NONE_`, which causes no security userid or password to be presented to the remote partner. APPC/MVS, CMS, and VSE require security presentation while OS/2 and Windows does not unless security has been explicitly defined. A macro variable exists for runtime specifications.

APPC_SURROGATE_LUNAME

specifies which LU to use for a SAS/CONNECT remote session on MVS. If this variable is not defined, the MVS remote session dynamically selects an LU from the pool of LUs defined on MVS for this purpose.

APPC_PARTNER_COUNT

specifies the number of simultaneous partners that this local session will have at any one time. This estimate permits better allocation of memory resources for internal control block usage.

Macro Variables

The following SAS macro variables can be specified with the following SAS syntax:

```
%let <variable>=value;
```

APPCSEC

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. This macro variable may be used in lieu of the `APPC_SECURE` environment variable, and takes precedence.

APPCGATE

specifies the name of the peer-to-peer gateway that you will attach to. This macro variable may be used in lieu of the `APPC_GATEWAY` environment variable, and takes precedence.

Solaris 2.x/Sun Link Configuration and Management

I. Install and configure link components such as SDLC or LLC drivers

For example, if a token ring connection is desired, you will have to install and configure the SunLink Token Ring Interface/SBus software.

II. Making Peer-to-Peer gateway part of your network

Update or add the gateway(s) to your network by running install.maps. The install.maps script modifies the `/etc/appcs` file to identify which workstations are running SunLink SNA Peer-to-Peer gateways. The format of the `/etc/appcs` file is as follows:

```
gateway_name  host_name:host_gateway_name
```

Remember the gateway name that you choose. It must be presented to SAS via the `APPC_GATEWAY` environment variable or APPCGATE macro variable so that SAS (local transaction program) can attach to the specified Peer-to-Peer gateway.

If you are running NIS / NIS+, you can also use install.maps to update the NIS / NIS+ databases to include your new gateway configurations.

Other SunLink components

If the `sunlink_mapper` daemon and the snacommd daemon are not already running or not started automatically, then you must start them. The `sunlink_mapper` daemon allows client TPs to find the SunLink SNA Peer-to-Peer gateway on the network. The snacommd daemon manages and controls access to the DLC drivers protocol stacks.

III. Setup configuration file

The following is a sample configuration:

```
#*************************************************************

# PU definition                                               *
# When this verb is not specified, a system default is used.  *
#*************************************************************

:DEFINE_PU:

pu_name = XXXPU000, network_name = SASNET01, contents_id = 01234567

#*************************************************************

# Node definition                                             *
# When this verb is not specified, a system default is used.  *
# Note:                                                       *
# node_id is the control point name for my workstation -- it is  *
# important since it will be used during XID negotiation      *
#*************************************************************

:DEFINE_NODE:
pu_name = XXXPU000; node_id = LOCALCP

#*********************************************************
# Local LU definition (1 for each local lu)               *
# This LU corresponds to LOCLU001 defined in VTAM.        *
# 'pu_name' is sifted down from ':DEFINE_NODE:'.          *
#*********************************************************
```

```
:DEFINE_LOCAL_LU:

fql_lu_name      = SASNET01.LOCLU001

lu_local_address = 1                # must be non-zero even for independent

lu_name          = LOCLU001
lu_session_limit = 512              # session limit

#*************************************************************
# Partner LU definition                                      *
# This is actually one of the sub-systems of VTAM.           *
# A local LU can't communicate with the sub-system of VTAM unless*
#   the partner LU (sub-system) is defined for the local LU.  *
# 'pu_name' and 'lu_local_address' are sifted down from      *
#   ':DEFINE_LOCAL_LU:'                                      *
#*************************************************************

:DEFINE_PARTNER_LU:

fql_plu_name     = SASNET01.PLUNAM01
u_plu_name       = PLUNAM01
parallel_session = yes
lu_is_dependent  = no
initiate_type    = INITIATE_ONLY

#*************************************************************
# Mode definition (1 for each mode)                          *
# This is actually one of the MODENAME in VTAM or CICS.      *
# A local LU can't communicate with the sub-system of VTAM over  *
#   a specific mode name unless (1) the partner LU (sub_system)  *
#   is defined for the local LU and (2) the mode name is defined *
#   for the partner LU.                                      *
# A transaction program uses (unique_session_name) in the    *
#    allocate verb to establish a conversation between the local *
#    LU and partner LU over the mode name                    *
# 'pu_name', 'lu_local_address', and 'fql_plu_name' are sifted   *
#    down from ':DEFINE_PARTNER_LU:'.                        *
#*************************************************************

:DEFINE_MODE:
mode_name               = SASAPPC
unique_session_name     = PLUNAM01   # remote partner name
snd_pac_window          = 0
rcv_pac_window          = 0
snd_max_ru_size         = 256
rcv_max_ru_size         = 256
sync_level              = none
auto_activate_limit     = 0
session_limit           = 30
min_conwinner_limit     = 15
min_conloser_limit      = 15

#*************************************************************
# Partner LU definition                                      *
# This is actually one of the sub-systems of VTAM.           *
# A local LU can't communicate with the sub-system of VTAM unless*
#   the partner LU (sub-system) is defined for the local LU.  *
# 'pu_name' and 'lu_local_address' are sifted down from      *
#   ':DEFINE_LOCAL_LU:'.                                     *

#*************************************************************

:DEFINE_PARTNER_LU:

fql_plu_name     = SASNET01.PLUNAM02
```

```
u_plu_name       = PLUNAM02
parallel_session = yes
lu_is_dependent  = no
initiate_type    = INITIATE_ONLY

#*****************************************************************
# Mode definition (1 for each mode)                              *
# This is actually one of the MODENAME in VTAM or CICS.          *
# A local LU can't communicate with the sub-system of VTAM over  *
#   a specific mode name unless (1) the partner LU (sub_system)  *
#   is defined for the local LU and (2) the mode name is defined *
#   for the partner LU.                                          *
# A transaction program uses (unique_session_name) in the        *
#    allocate verb to establish a conversation between the local *
#    LU and partner LU over the mode name                        *
# 'pu_name', 'lu_local_address', and 'fql_plu_name' are sifted   *
#    down from ':DEFINE_PARTNER_LU:'.                            *

#*****************************************************************

:DEFINE_MODE:
mode_name               = SASAPPC
unique_session_name     = PLUNAM02
snd_pac_window          = 0
rcv_pac_window          = 0
snd_max_ru_size         = 256
rcv_max_ru_size         = 256
sync_level              = none
auto_activate_limit     = 0
session_limit           = 30
min_conwinner_limit     = 15
min_conloser_limit      = 15

#*****************************************************************
# Partner LU definition                                          *
# This is actually one of the sub-systems of VTAM.               *
# A local LU can't communicate with the sub-system of VTAM unless *
#   the partner LU (sub-system) is defined for the local LU.     *
# 'pu_name' and 'lu_local_address' are sifted down from          *
#   ':DEFINE_LOCAL_LU:'.                                         *

#*****************************************************************

:DEFINE_PARTNER_LU:

fql_plu_name     = SASNET01.PLUNAM03
u_plu_name       = PLUNAM03
parallel_session = yes
lu_is_dependent  = no
initiate_type    = INITIATE_ONLY

#*****************************************************************
# Mode definition (1 for each mode)                              *
# This is actually one of the MODENAME in VTAM or CICS.          *
# A local LU can't communicate with the sub-system of VTAM over  *
#   a specific mode name unless (1) the partner LU (sub_system)  *
#   is defined for the local LU and (2) the mode name is defined *
#   for the partner LU.                                          *
# A transaction program uses (unique_session_name) in the        *
#    allocate verb to establish a conversation between the local *
#    LU and partner LU over the mode name                        *
# 'pu_name', 'lu_local_address', and 'fql_plu_name' are sifted   *
#    down from ':DEFINE_PARTNER_LU:'.                            *

#*****************************************************************

:DEFINE_MODE:
mode_name            = SASAPPC
```

```
   unique_session_name  = PLUNAM03   # remote partner name
   snd_pac_window       = 0
   rcv_pac_window       = 0
   snd_max_ru_size      = 256
   rcv_max_ru_size      = 256
   sync_level           = none
   auto_activate_limit  = 0
   session_limit        = 30
   min_conwinner_limit  = 15
   min_conloser_limit   = 15

   #*****************************************************************
   # Partner LU definition                                          *
   # This is actually one of the sub-systems of VTAM.               *
   # A local LU can't communicate with the sub-system of VTAM unless*
   #   the partner LU (sub-system) is defined for the local LU.     *
   # 'pu_name' and 'lu_local_address' are sifted down from          *
   #   ':DEFINE_LOCAL_LU:'.                                         *

   #*****************************************************************

   :DEFINE_PARTNER_LU:

   fql_plu_name     = SASNET01.PLUNAM04
   u_plu_name       = PLUNAM04
   parallel_session = yes
   lu_is_dependent  = no
   initiate_type    = INITIATE_ONLY

   #*****************************************************************
   # Mode definition (1 for each mode)                              *
   # This is actually one of the MODENAME in VTAM or CICS.          *
   # A local LU can't communicate with the sub-system of VTAM over  *
   #   a specific mode name unless (1) the partner LU (sub_system)  *
   #   is defined for the local LU and (2) the mode name is defined *
   #   for the partner LU.                                          *
   # A transaction program uses (unique_session_name) in the        *
   #    allocate verb to establish a conversation between the local *
   #    LU and partner LU over the mode name                        *
   # 'pu_name', 'lu_local_address', and 'fql_plu_name' are sifted   *
   #    down from ':DEFINE_PARTNER_LU:'.                            *

   #*****************************************************************

   :DEFINE_MODE:
   mode_name            = SASAPPC
   unique_session_name  = PLUNAM04   # remote partner name
   snd_pac_window       = 0
   rcv_pac_window       = 0
   snd_max_ru_size      = 256
   rcv_max_ru_size      = 256
   sync_level           = none
   auto_activate_limit  = 0
   session_limit        = 30
   min_conwinner_limit  = 15
   min_conloser_limit   = 15


#*****************************************************************


#*****************************************************************

   # DLC definition (1 for each dlc)                              *
   # Currently, only one dlc per APPC gateway.                    *

#*****************************************************************
```

```
   :DEFINE_DLC:

   dlc_name                 = DLC0
   dlc_driver_name          = /dev/llc2
   port_driver_name         = tr0
   dlc_type                 = llc         # logical link control
   maxdata                  = 265         # MAXDATA value
   retries                  = 32
   local_sap                = 04

   block_number             = 05D         # MUST be first of xid parameters
   id_number                = FF813
   role                     = negotiable  # or primary, negotiable
   tx_rx_capability         = alternating # or simultaneous
   include_control_point    = yes         # xid control vector
   include_link_station_name = no         # xid control vector
   linkid                   = 0
   xtwait                   = 10


#*************************************************************

   # ALS definition (1 for each als)                          *
   # Currently, only one als per APPC gateway.                *

#*************************************************************

   :DEFINE_ALS:

   dlc_name        = DLC0
   pu_name         = XXXPU000
   als_name        = XXALS000
   remote_mac_addr = 400031740001
   remote_sap      = 04

#*************************************************************
   # DB_MSG definition                                        *
   # No field is necessary. Defaults (shown below) are used for *
   #   those fields that are unspecified.                     *

#*************************************************************

   :DB_MSG:

   db_pc                  = no
   db_mail                = no
   db_buf                 = no
   db_dev                 = no
   db_api_verb            = no
   db_character_set       = iso
   db_record_size         = long
   file_mode              = create
   file_name              = '/local/u/saspad/appc.trc'
   db_tp_info             = yes
   db_max_trc_sz          = 0     # unlimited (in MB)
```

IV. Start SNA APPC subsystem

As root issue `/opt/SUNWconn/snap2p/p2p_etc/bin/startp2p gateway_name config_file` from the Unix command prompt.

SAS Specifics

The following is an example SAS configuration file (config.sas) containing APPC specific environment variable options for client-side execution:

```
-set APPC_GATEWAY    gateway
-set APPC_SECURE     _PROMPT_
```

where `gateway` is the name of the peer-to-peer gateway that is configured either in a local `/etc/appcs` file or in the NIS/NIS+ database.

The following is an example SAS/CONNECT signon:

```
options comamid=appc remote=unique_session_name;
signon;
```

where `unique_session_name` is defined in the configuration file under the MODE definition.

The following is an example LIBNAME statement to connect to a SAS/SHARE server:

```
options comamid=appc;
libname xxxx 'remote.data' server=unique_session_name;
```

where `unique_session_name` is defined in the configuration file.

Note: If the server is running on a CMS system that is connected to your system through a global VTAM gateway, you must use a two-level server name specification as follows:

```
server=gateway.serverid
```

where `gateway` is defined to the CMS system and is locally defined as a `unique_session_name`.

References

- ❏ *SunLink SNA Peer-to-Peer 8.0 and SunLink SNA Peer-to-Peer RunTime 8.0 Installation Guide*
- ❏ *SunLink SNA Peer-to-Peer 8.0 and SunLink SNA Peer-to-Peer RunTime 8.0 Administrator's Guide*
- ❏ *SunLink HSI/S 2.0 Installation and Administration Guide*
- ❏ *SunLink TRI/S 3.0 Installation Guide*
- ❏ *SunLink FDDI/S 2.0 Installation Guide*
- ❏ *IBM SNA: Technical Overview*
- ❏ *IBM SNA: Formats*

System Configuration for the APPC Communications Access Method under AIX

Software Requirements

- AIX version 3.2.5
- AIX SNA Server/6000 version 2.1.1

SAS System Configuration

System Options

`COMAMID=APPC`

specifies that the APPC access method should be used for communication between SAS/CONNECT local and remote sessions or SAS/SHARE user and server sessions. This option can be specified in the SAS command, in a SAS configuration file, or in an OPTIONS statement.

`REMOTE=remote-session-id`

specifies the logical unit (LU) to use in establishing a SAS/CONNECT remote session. To establish a remote session on another workstation, the value of this option in the local session on this workstation should be a partner LU name.

When the remote session is on MVS, the value of this option should be the name of the APPC/MVS scheduler LU.

When the remote session is on CMS, the value of this option should be the name of the AVS (APPC/VM VTAM Support) private gateway LU for the VM system.

When the remote session is on VSE, the value of this option should be the name of the VTAM APPL ID (ACBNAME) that has been set up for APPC LU6.2 communications.

When the remote session is on OS/2 or Windows the value of this option should be name of the control point LU configured on the remote workstation.

In all cases, the value of this option must be the same in the local and remote sessions. This option can be specified in the SAS command, in a SAS Configuration file, or in an OPTIONS statement.

Environment Variables

The following SAS environment variables can be specified globally in a SAS configuration file or on the SAS invocation command line with the following syntax:

```
-SET <variable> <value>
```

APPC_NET

specifies the network name to utilize in order to form the fully qualified partner LU name in APPN environments. This name is required to exploit APPN connections in the absence of explicitly configured partner LU profiles. A macro-variable analog exists for runtime specification.

APPC_MODE

specifies the communication mode to use that represents the set of networking characteristics defined during configuration. The default name is SASAPPC. The mode name, whether you specify it with the APPC_MODE variable or allow it to default to SASAPPC, must be defined in both the local and remote environments. A macro-variable analog exists for runtime specification.

APPC_SECURE

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. The value of this variable can be a userid.password string, _PROMPT_, or _NONE_. By specifying _PROMPT_, you are prompted for a userid and password for the remote partner, which provides more security than specifying a readable "userid.password" string. The default is _NONE_, which causes no security userid or password to be presented to the remote partner. APPC/MVS, CMS, and VSE require security presentation while OS/2 does not unless you have established a user profile on the OS/2 workstation with Communications Manager or with User Profile Management. A macro-variable analog exists for runtime specification.

APPC_SURROGATE_LUNAME

specifies which LU to use for a SAS/CONNECT remote session on MVS. If this variable is not defined, the MVS remote session dynamically selects an LU from the pool of LUs defined on MVS for this purpose.

Macro Variables

The following SAS macro variables can be specified with the following SAS syntax:

```
%let <variable>=value;
```

APPCNET

specifies the network name to utilize in order to form the fully qualified partner LU name in APPN environments. This macro variable can be used in lieu of the APPC_NET environment variable, and takes precedence.

APPCMODE

specifies the communication mode to use that represents the set of networking characteristics defined during configuration. This macro variable can be used in lieu of the APPC_MODE environment variable, and takes precedence.

APPCSEC

specifies a userid and password for the remote partner where a secured SAS/CONNECT remote session is to be established or a secured SAS/SHARE server is running. This macro variable can be used in lieu of the APPC_SECURE environment variable, and takes precedence.

SNA Server/6000 Configuration

Various configuration tasks must be completed before APPC connectivity within SAS can be utilized. If SNA APPC is utilized by other applications at your site, it may be that the necessary tasks have already been performed. If not, the degree of configuration required is dependent on the capabilities of your SNA network. More specifically, if your SNA network supports APPN, no partner logical unit, location, and side information profiles need be configured.

At a minimum, node, control point, data link control, link station, and mode profiles are required. The node profile is created when the SNA Server/6000 product is installed, and defines a set of modifiable default parameters that establish operational controls. A control point definition is required to define local SNA aspects regarding PU/LU functionality, including APPN characteristics. Data link control and link station profiles define transport layer attributes including network interface type as well as local control and remote link station characteristics. Mode profiles are required for each mode name in the set of possible presentations between all potential remote partners. That is, any mode name to be utilized in a session establishment request must be defined to both the local and remote LUs.

The profile definitions are utilized during session setup to establish flow control parameters such as request unit sizes and pacing limits as well as to control maximum session limits. If your SNA network does not support APPN, partner logical unit, location, and side information profiles must be configured for each potential partner.

The following are sample configuration files:

```
sna:
    prof_name                                       = "sna"
    max_sessions                                    = 200
    max_conversations                               = 200
    restart_action                                  = once
    rrm_enabled                                     = no
    dynamic_inbound_partner_lu_definitions_allowed = yes
    standard_output_device                          = "/dev/console"
    standard_error_device                           = "/var/sna/sna.stderr"
    nmvt_action_when_no_nmvt_process                = reject
    trusted_group_ids                               = {system}
    comments                                        = ""

control_pt:

    prof_name                                       = "node_cp"
    xid_node_id                                     = "*"
    network_name                                    = "SASNET01"
    control_pt_name_alias                           = "P0CP1001"
    control_pt_name                                 = "P0CP1001"
    control_pt_node_type                            = appn_end_node
    max_cached_trees                                = 500
    max_nodes_in_topology_database                  = 500
    route_addition_resistance                       = 128
    comments                                        = ""

partner_lu6.2:

    prof_name                                       = "P0LU2001"
    fq_partner_lu_name                              = "SASNET01.P0LU2001"
    partner_lu_alias                                = "P0LU2001"
    session_security_supp                           = no
    parallel_session_supp                           = yes
    conversation_security_level                     = none
    comments                                        = "partner_lu6.2_location:"
    prof_name                                       = "P0LU2001"
    fq_partner_lu_name                              = "SASNET01.P0LU2001"
    partner_location_method                         = owning_cp
    fq_partner_owning_cp_name                       = "SASNET01.P00U1000"
    local_node_is_network_server_for_len_node      = no
    fq_node_server_name                             = "SASNET01.P00U1000"
    local_lu_name                                   = ""
    link_station_profile_name                       = ""
    comments                                        = ""

side_info:

    prof_name                                       = "P0LU2001"
    local_lu_or_control_pt_alias                    = "P0CP1001"
    partner_lu_alias                                = ""
    fq_partner_lu_name                              = "SASNET01.P0LU2001"
    mode_name                                       = "MODE001"
    remote_tp_name_in_hex                           = no
    remote_tp_name                                  = ""
    comments                                        = ""

link_station_token_ring:

    prof_name                                       = "TR3174"
    use_control_pt_xid                              = yes
    xid_node_id                                     = "*"
    sna_dlc_profile_name                            = "TR3174"
    stop_on_inactivity                              = no
    time_out_value                                  = 0
    LU_registration_supported                       = no
    LU_registration_profile_name                    = ""
```

```
    link_tracing                                = no
    trace_format                                = long
    access_routing_type                         = link_address
    remote_link_name                            = ""
    remote_link_address                         = 0x400000000001
    remote_sap                                  = 0x04
    call_out_on_activation                      = yes
    verify_adjacent_node                        = no
    net_id_of_adjacent_node                     = "SASNET01"
    cp_name_of_adjacent_node                    = "P00U1000"
    xid_node_id_of_adjacent_node                = "*"
    node_type_of_adjacent_node                  = learn
    solicit_sscp_sessions                       = yes
    activate_link_during_system_init            = yes
    activate_link_on_demand                     = no
    cp_cp_sessions_supported                    = yes
    cp_cp_session_support_required              = no
    adjacent_node_is_preferred_server           = yes
    initial_tg_number                           = 0
    restart_on_normal_deactivation              = no
    restart_on_abnormal_deactivation            = no
    restart_on_activation                       = no
    TG_effective_capacity                       = 4300800
    TG_connect_cost_per_time                    = 0
    TG_cost_per_byte                            = 0
    TG_security                                 = nonsecure
    TG_propagation_delay                        = lan
    TG_user_defined_1                           = 128
    TG_user_defined_2                           = 128
    TG_user_defined_3                           = 128
    comments                                    = ""

sna_dlc_token_ring:

    prof_name                                   = "TR3174"
    datalink_device_name                        = "tok0"
    force_timeout                               = 120
    user_defined_max_i_field                    = no
    max_i_field_length                          = 30729
    max_active_link_stations                    = 100
    num_reserved_inbound_activation             = 0
    num_reserved_outbound_activation            = 0
    transmit_window_count                       = 8
    dynamic_window_increment                    = 1
    retransmit_count                            = 8
    receive_window_count                        = 8
    priority                                    = 0
    inact_timeout                               = 48
    response_timeout                            = 4
    acknowledgement_timeout                     = 1
    link_name                                   = ""
    local_sap                                   = 0x04
    retry_interval                              = 60
    retry_limit                                 = 20
    dynamic_link_station_supported              = no
    trace_base_listen_link_station              = no
    trace_base_listen_link_station_format       = long
    dynamic_lnk_solicit_sscp_sessions           = yes
    dynamic_lnk_cp_cp_sessions_supported        = yes
    dynamic_lnk_cp_cp_session_support_required  = no
    dynamic_lnk_TG_effective_capacity           = 4300800
    dynamic_lnk_TG_connect_cost_per_time        = 0
    dynamic_lnk_TG_cost_per_byte                = 0
    dynamic_lnk_TG_security                     = nonsecure
    dynamic_lnk_TG_propagation_delay            = lan
    dynamic_lnk_TG_user_defined_1               = 128
    dynamic_lnk_TG_user_defined_2               = 128
    dynamic_lnk_TG_user_defined_3               = 128
    comments                                    = ""
```

```
mode:

    prof_name                                   = "MODE001"
    mode_name                                   = "MODE001"
    max_sessions                                = 5000
    min_conwinner_sessions                      = 5000
    min_conloser_sessions                       = 0
    auto_activate_limit                         = 0
    max_adaptive_receive_pacing_window          = 16
    receive_pacing_window                       = 7
    max_ru_size                                 = 1024
    min_ru_size                                 = 256
    class_of_service_name                       = "#CONNECT"
    comments                                    = ""
```

SAS Specifics

The following is an example SAS configuration file (`config.sas`) containing APPC specific environment variable options for client-side execution:

```
set APPC_MODE       mode-name
set APPC_SECURE     _PROMPT_
```

where `mode-name` is a defined and configured LU 6.2 mode profile.

The following is an example SAS/CONNECT signon:

```
options comamid=appc remote=partner-LU;
signon;
```

where `partner-LU` is a defined and configured partner LU or network name augmented in order to form an APPN fully qualified partner LU name.

The following is an example LIBNAME statement to connect to a SAS/SHARE server:

```
options comamid=appc;
libname xxxx 'remote.data' server=partner-LU;
```

where `partner-LU` is a defined and configured partner LU profile or is network name augmented (through the APPC_NET environment variable or APPCNET macro variable) in order to form an APPN fully-qualified partner LU name.

Note: If the server is running on a CMS system that is connected to your system through a global VTAM gateway, you must use a two-level server name specification as follows:

```
server=gateway.serverid
```

where `gateway` is defined to the CMS system and is locally defined as a `partner_lu_alias`.

References

- AIX SNA Server/6000 Command Reference (SC31-7100)
- AIX SNA Server/6000 Diagnosis Guide and Messages (SC31-7101)
- AIX SNA Server/6000 User's Guide (SC31-7002)
- AIX SNA Server/6000 Transaction Program Reference (SC31-7003)
- AIX SNA Server/6000 Configuration Reference (SC31-7014)

Appendix E, Post-Installation Instructions for SAS/CPE® Software or IT Service Vision® Software

Please refer to the *Installation Instructions for IT Service Vision* included in your customer package for any post-installation instructions for your SAS System.

Appendix F, Configuration Instructions for SAS/SHARE® Software

The information in this appendix is also included on the installation tape as SASROOT/misc/share/README.

Set SAS System Option to Specify the TCP/IP Access Method

The SAS system option COMAMID= specifies which access method SAS/SHARE software should use for communication. Specify COMAMID=TCP to use the TCP/IP access method, which is the only access method available for use with this release of SAS/SHARE software for UNIX environments.

Configuration for the TCP/IP Communications Method

Each SAS server that runs on a network node must be defined as a service in the file /etc/services or /etc/inet/services on that node. Each entry in this file associates a service name with the port number and protocol used by that service. An entry for a SAS server has the following form:

```
<server name>     <port number>/tcp       # <comments>
```

The server name must be 1-8 characters in length. The first character must be a letter or underscore; the remaining seven characters can include letters, digits, underscores, the dollar ($) sign, or the at (@) sign.

An entry for a server whose name is MKTSERV might look like the following:

```
mktserv        5000/tcp    # SAS server for Marketing and Sales
```

The server name is specified with the SERVER= option in the LIBNAME statement, and the OPERATE procedure in user and server administrator programs.

System Configuration for the APPC Communications Access Method

See "System Configuration for the APPC Communications Access Method," in Appendix D, "Post-Installation Setup for SAS/CONNECT Software," for information on establishing an environment to use SNA LU6.2 APPC (Advanced Program-to-Program Communications) communications within your SAS applications under HP-UX, Solaris and AIX.

Appendix G, Using Syncsort with the SAS® System for UNIX® Environments

Syncsort is a sort routine that may be purchased from Syncsort, Inc. You can use Syncsort as an alternate sorting algorithm to the one provided by the SAS System. To use Syncsort with the SAS System, complete the following steps:

1. Install the Syncsort library on your system by following the instructions provided by Syncsort, Inc.

2. Make the Syncsort library available to the SAS System by following the instructions in the following section, "Making Syncsort Available."

3. Submit an options statement in a SAS session to specify the Syncsort routine by following the instructions in the section "Using Syncsort in a SAS Session."

Making Syncsort Available

This section describes the machine-specific instructions for making Syncsort available to the SAS System.

For Solaris 1 Only

Use one of the following methods to specify the full path of the Syncsort library:

- Specify the `-sortlib` option when invoking the SAS System, giving the full pathname of the Syncsort library as shown in the following example:

```
sas -sortlib /usr/local/syncsort/lib/libsyncsort.so.1.0.5
```

- Submit the following option statement from the SAS System program editor:

```
OPTIONS SORTLIB=<syncsort library>
```

where `<syncsort library>` is the full pathname of the Syncsort library as shown in the following example:

```
OPTIONS SORTLIB="/usr/local/syncsort/lib/libsyncsort.so.1.0.5";
```

For Solaris 2 Only

You must place the Syncsort library in one of the directories searched by default, such as `/usr/lib`, **or** set the environment variable `LD_LIBRARY_PATH` to the directory containing the Syncsort library. Set this environment variable before invoking the SAS System, as shown in the following example:

```
setenv LD_LIBRARY_PATH /usr/local/syncsort/lib
```

Note: The above example uses C-Shell syntax, therefore the syntax will vary for Bourne Shell and K-Shell users.

For HP-UX Only

The SAS System does not support the shared library that Syncsort provides for HP-UX machines. You must obtain the archive library for HP-UX from Syncsort, Inc.

Complete the following steps to make Syncsort available to the SAS System. These steps need to be followed each time a new Syncsort library and archive library become available.

1. Change directories to `!SASROOT/saspgm/base/c/cntl`. There is a file called `syncsort.make` in this directory. This file contains the following text:

```
SYNCARLIB = /usr/local/syncsort/lib/libsyncsort.a
sassyncs: ../obj/sassyncs.o $(SYNCARLIB)
  /bin/ld -o ../obj/sassyncs ../obj/sassyncs.o $(SYNCARLIB) \
  -HF -a archive -R80000 -N -lc -e mcn_main
```

2. Set `SYNCARLIB` to the pathname of the archive library.

Note: If this file is being created, make sure there is a TAB character in front of the `/bin/ld` command, rather than blanks.

3. At the system prompt, enter the command `make -f syncsort.make`

   Once the make has completed, you should have an appendage called `sassyncs` in the `!SASROOT/saspgm/base/c/obj` directory.

4. Add the following statement to your congig.sas612 file:

```
-PATH !SASROOT/saspgm/base/c/obj
```

For AIX (RS/6000) Only

If your version of Syncsort has a structure for `syncsort/lib` that contains `libsyncsort.a` but not `libsyncsort.o`, then you will need to create the library `libsyncsort.o` using `libsyncsort.a`. Submit the following command:

```
ar x libsyncsort.a libsyncort.o
```

You must place the Syncsort library in the directory `/usr/local/syncsort/lib` where it will be found by default, or set the environment variable `LIBPATH` to the directory containing the Syncsort library. Set this environment variable before invoking the SAS System, as shown in the following example:

```
setenv LIBPATH <syncsort lib location>:/usr/lib:/lib
```

where `<syncsort lib location>` is the full pathname of the Syncsort library.

Note: The above example uses C-shell syntax, therefore the syntax will vary for Bourne Shell and K-Shell users.

Using Syncsort in a SAS Session

Once Syncsort is available, use the `SORTPGM=HOST` or `SORTPGM=BEST` options statements to tell the SAS System when to use the Syncsort routine.

Note: The options statements throughout this section specify the syntax to submit to the SAS System. You can also specify these options as command line options and options in the `config.sas` file. Refer to *SAS Companion for UNIX Environments: Language* for more information on setting options.

Submit one of the following options statements in a SAS session:

- `OPTIONS SORTPGM=HOST;`

  tells the SAS System to always use Syncsort.

- `OPTIONS SORTPGM=BEST;`

  tells the SAS System to choose the best sorting method in a given situation, the SAS System sort or Syncsort.

There are two options that define how the SAS System chooses the "best" sort algorithm. The following examples use the syntax of an options statement that needs to be submitted to the SAS System:

- `-sortcut <n>` , where `n` specifies a number of observations.

  ```
  OPTIONS SORTPGM=BEST SORTCUT=500;
  ```

  `-sortcut` tells the SAS System to choose Syncsort if the number of observations is greater than the number you specify, and to use the SAS System sort if the number of observations is equal to or less than the number specified.

- `-sortcutp <size>[kKmM]`, where `<size>` specifies a file size in either kilobytes or megabytes.

  ```
  OPTIONS SORTPGM=BEST SORTCUTP=40M;
  ```

  `-sortcutp` tells the SAS System to choose Syncsort if the size of the data being sorted exceeds the size you specify, and to use the SAS System sort if the size of the data is equal to or smaller than the size you specify.

If these options are not defined or these options are set to zero, the SAS System chooses the SAS System sort routine. If you specify both options and either condition is met, the SAS System chooses the Syncsort routine.

Syncsort creates all temporary files in the `SASWORK` directory. You can change this directory by using the option `sortdev <dir>`, where `<dir>` is the directory in which you want the temporary files to be created. For example, submit the following statement if you want the temporary files to be created in `/tmp`:

```
OPTIONS SORTPGM=BEST SORTCUT=500 sortdev="/tmp";
```

The Syncsort option `sortanom t` prints timing and resource information after each phase of a sort. The following is an example of this option:

```
OPTIONS SORTPGM=HOST SORTANOM=t;
```

Appendix H, Invoking SAS/TUTOR® Software

SAS/TUTOR software can be invoked directly from the SAS System.
To access the SAS/TUTOR courses, complete the following steps:

1. Invoke the SAS System.

2. Select `Online Training` from the `Help` pull-down menu in the Program Editor window.

Appendix I, Using SETINIT to Extend

When you receive the SAS System, the licensing information is pre-initialized for Base SAS software and any additional software you purchased. When you contract to renew the license on the SAS System or to add new products, a paper SETINIT provides you with the licensing information.

Note: You should not change the licensing information unless you are logged in under the userid of the owner of the SAS System. You designated who owns these files when you installed the SAS System.

Creating the SETINIT.SAS File

1. Create or modify a file named `setinit.sas`.

   Note: The `setinit.sas` file that was used to apply your initial SETINIT is located in the SASROOT directory. You can use this file as a template.

   The following is an example of the `setinit.sas` file:

```
PROC SETINIT RELEASE='6.12';
SITEINFO NAME='YOUR COMPANY NAME'
SITE=123456789
OSNAME='PLATFORM NAME'
RECREATE
BIRTHDAY='DDMMYYYY'D
EXPIRE='DDMMYYYY'D
PASSWORD=123456789;
CPU MODEL='  ' MODNUM='  ' SERIAL='  ';
EXPIRE 'BASE' INSIGHT'
'DDMMYYYY'D;
SAVE;
RUN;
```

2. After you have created the `setinit.sas` file, invoke the SAS System as follows:

```
sas -setinit setinit.sas
```

3. Check the `setinit.log` file for the following lines:

   - `NOTE: Siteinfo data have been updated.`

     indicates that the SETINIT applied correctly.

   - `NOTE: No update of the secondary setinit since either the password was omitted or zero, or the SEC statement was omitted.`

     indicates that the secondary SETINIT information was not updated. This is normal.

Should you need to provide an alternate pathname for the SETINIT program, be sure **not** to use `setinit.sas`. If the install detects the existence of a `setinit.sas` file, it will rename it and your SETINIT may not be applied correctly.

For More Information

If you need more information about applying your SETINIT, refer to *SAS Companion for UNIX Environments: Language.*

If you have questions about your SETINIT data, please call our Customer Services Department at (919) 677-8003 between 9:00 a.m. and 8:00 p.m. Eastern Standard Time.

If you encounter problems applying your SETINIT, please call our Technical Support Division at (919) 677-8008 between 9:00 a.m. and 8:00 p.m. Eastern Standard Time. Ask the Technical Receptionist for a UNIX consultant. Please have your site number ready when you call.

Appendix J, Performing a Custom Installation of the SAS® System

A *custom installation* allows you to choose which products are installed, and which options are used to install them. The instructions in this section are valid for new systems and product installations.

To install the SAS System, complete the following steps:

1. Change directories to the SASROOT subdirectory by issuing a command similar to the following:

   ```
   cd /usr/local/sas612
   ```

2. Invoke the SAS Manager by typing `./sasmanager` at the prompt.

3. From the SAS Manager Installation Menu, select Option 2 `Invoke Custom Installation and Utilities.`

   The SAS System Custom Installation and Utilities menu appears.

4. Select Option 1 `Invoke Custom Installation Facility`.

   The SAS System Custom Installation Facility menu appears.

5. Select Option 1 `Select Source Media.`

   Be prepared to answer the following questions:

   - ❑ Is the source for this installation tape or CD-ROM?
   - ❑ Is the tape/CD-ROM local or remote? (For example, is the device attached to the local computer or another computer on the network).

     If your media are remote, you are also asked for the hostname and the username on the remote system.
   - ❑ What is the pathname of the device? (For a tape the path might be `/dev/xxx`. For a CD-ROM the pathname might be the mounted directory, such as `/cdrom`.)

6. Select Option 2 `Select Destination Media`

   You have the choice of installing the SAS System to any of the following:

   - `Disk Image`

     Choose this option when your destination is a disk.

   - `Distribution Disk Image`

     Choose this option when you want to build an image of the SAS System for distribution where each product is stored in an archive format.

   - `Tape` (includes QIC, 8 mm, and 4 mm)

     Choose this option when your destination is a tape.

     Be prepared to answer the following questions:

     - Is the source for this installation tape or CD-ROM?
     - Is the tape/CD-ROM local or remote? (Is the device attached to the local computer or another computer on the network?)

       If your media are remote, you are also asked for the hostname and the username on the remote system.

     - What is the pathname of the device? (For a tape the path might be `/dev/xxx`. For a CD-ROM the pathname might be the mounted directory, such as `/cdrom`.)

   Note: You may want to install the SAS System to more than one destination on your system. Normally, you complete an entire installation, including product-specific customizations, before installation to a different destination. SAS Manager remembers the destination between invocations. Therefore, when running SAS Manager to load to a destination that is different from the previous one, you must choose `Select Destination Media` from the SAS Custom Installation Facility to specify the new destination.

7. Select Option 3 `Show Current Installation Settings` to show the current SASROOT directory as well as the source and destination settings. This includes remote information if either the source or destination is remote. This step is optional.

8. Select Option 4 `View media contents` to display the contents of the source media. This step is optional.

9. Select Option 5 `Install All Products from Source to Destination` to install all of the products and files, or Option 6 `Perform Custom Installation` to install only those files you select to install.

   For new installations, you are asked to supply the correct pathname for your SETINIT program. The default path should be correct for most installations.

   If you select Option 5, you see a message saying `Installing SAS Products`. Selecting this option is not the same as performing a default installation because the SAS Utilities are not automatically run for you.

   Alternatively, you can select Option 6 `Custom installation` to select the products you want to install. For information about each option on the Custom Installation menu, see "The Custom Installation Menu" later in this chapter.

10. After the products are installed, select the `Go Back` option until you return to the SAS System Custom Installation and Utilities menu.

11. From the SAS System Custom Installation and Utilities menu, select Option 2 `Invoke Product Specific Configuration` to display a list of products that need additional setup. Choose each product by its corresponding number and follow the directions. See the appropriate appendix for additional information on product-specific configurations.

    Note: If none of the products you installed require additional setup, select `Go Back` from the Product Specific Configuration menu to return to the Custom Installation and Utilities menu.

12. From the SAS System Custom Installation and Utilities menu, select Option 3 `Invoke SAS Installation Utilities`. After running this option, you must perform the tasks represented by Options 1 and 3 on this menu to complete the installation.

    - ❑ Option 1 creates a `config.sas612` and `autoexec.sas` file.
    - ❑ Option 2 applies special Technical Support fixes that are supplied with the SAS Notes. Select this option to unload special, high priority fixes that are currently not available via the normal maintenance channel. Utilize this option when you are directed to do so by SAS Institute Technical Support.
    - ❑ Option 3 runs `patchname`, a utility that patches the SAS executable with the current installation.
    - ❑ Option 4 applies the SAS SETINIT information.

      For more information about SETINIT, see Appendix I, "Using SETINIT to Extend SAS Software Products," or refer to *SAS Companion for UNIX Environments: Language, Version 6, First Edition*.

- Option 5 runs the System Integrity test to verify that the SAS System installed correctly. This step is optional, but recommended. You will receive messages upon completion of the test as to the validity of the installation.

- Option 6 uncompresses the maps data sets. This step is optional.

- Option 7 returns you to the main menu.

You have completed the installation of the SAS System.

For AIX (RS/6000) Only

If you changed your block size before beginning the installation process, you can restore the original parameters once you have completed the installation.

Note: For `<device>` in the following instructions, specify the abbreviated form, `rmt0` (assuming that your tape drive is drive `0`).

If you performed your installation from a local drive, issue the following command:

```
chdev -l <device> -a block_size=nnn
```

where `nnn` is the original setting that you recorded before changing the setting to `0`.

If you performed your installation from a remote drive, issue the following command:

```
rsh hostname -l username /ect/chdev -l <device> -a block_size=nnn
```

where `nnn` is the original setting that you recorded before changing the setting to `0`.

The Custom Installation Menu

This section explains each of the options on the Custom Installation menu. This menu appears when you select Option 6 as previously described in Step 9 in the previous section, "Performing a Custom Installation of the SAS System."

The Custom Installation menu contains the following options:

- `Choose Licensing files`
- `Choose SAS Notes`
- `Choose International Support`
- `Choose Products`
- `Choose Samples`
- `Choose Maps`
- `Clear All Selections`
- `Preview Selections`
- `Install Current Selections`
- `Go Back`

Each of these options is described in the following sections.

Choose Licensing files

Select Option 1 `Licensing files` to install the SAS System licensing files. These files are required to run the SAS System.

If you are installing the SAS System for the first time or installing a new product, you must install the licensing files. Failure to do so may result in errors when running the installation test streams, and errors when attempting to execute the SAS System.

Note: If you are installing maintenance or usage notes, or if you are re-installing a product, you may not need to re-install the licensing files.

Choose SAS Notes

Select Option 2 `Choose SAS Notes` to install the SAS Notes. SAS Notes are supplied by Technical Support and come with an application that allows you to view them. SAS Notes provide the following information:

- a list of known problems
- explanations of work-arounds for known problems
- general information for running SAS software
- help for troubleshooting error messages.

Choose International Support

Select Option 3 `Choose International Support` to display the available languages that you can choose to install. International support is available only for sites receiving a language other than English on their media.

Choose Products

Select Option 4 `Choose Products` to select the products you want to install. The following menu is displayed:

```
Custom Selection of Products:
* 1. Select All Products
  2. Select Individual Products
  3. Clear Current Product Selections
  4. Go Back
   (Enter h for help)
  Action ? [1]
```

The following is a brief explanation of each option on the menu:

`Select All Products`

selects all of the products on the installation media for installation.

`Select Individual Products`

prompts you for the number of products you want to install. Leave a blank between each number. You can also specify ranges of numbers such as `1-19`, indicating you want to install products 1 through 19.

`Clear Current Product Selections`

clears all of your selections, enabling you to select different products.

`Go Back`

returns you to the Custom Selection Install menu.

Choose Samples

Select Option 5 `Choose Samples` to choose the samples that you want to install by product. The following menu is displayed:

```
Custom Selection of Samples:
* 1. Select All Samples
  2. Select Individual Samples
  3. Clear Current Sample Selections
  4. Go Back
   (Enter h for help)
  Action ? [1]
```

The following is a brief explanation of each option on the menu:

`Select All Samples`

selects all of the samples on the installation media for installation.

`Select Individual Samples`

prompts you for the number of samples you want to install. Leave a blank between each number. You can also specify ranges of numbers such as `1-19`, indicating you want to install samples 1 through 19.

`Clear Current Sample Selections`

clears all of your selections, enabling you to select different samples.

`Go Back`

returns you to the Custom Selection Install menu.

Choose Maps

Select Option 6 `Choose Maps` to choose which map data sets to install. The following menu is displayed:

```
Custom Selection of Maps:
* 1. Select All Maps
  2. Select Individual Maps
  3. Clear Current Map Selections
  4. Go Back
   (Enter h for help)
  Action ? [1]
```

The following is a brief explanation of each option on the menu:

`Select All Maps`

selects all of the maps on the installation media for installation.

`Select Individual Maps`

prompts you for the number of maps you want to install. Leave a blank between each number. You can also specify ranges of numbers such as `1-19`, indicating you want to install maps 1 through 19.

`Clear Current Map Selections`

clears all of your selections, enabling you to select different maps.

`Go Back`

returns you to the Custom Selection Install menu.

Clear All Selections

Select Option 7 `Clear All Selections` to clear all current product, sample, maps, and SAS Notes selections. This option also removes the selection of licensing files.

Preview Selections

Select Option 8 `Preview Selections` to display a list of the files you have selected for installation.

Install Current Selections

Select Option 9 `Install Current Selections` when you are satisfied with your selections and are ready to install the SAS System.

For new installations, you are asked to supply the correct pathname for your SETINIT program. The default path should be correct for most installations.

Go Back

Select Option 10 `Go Back` to return to the SAS Custom Installation Facility.

Appendix K, Post-Installation Setup for the SQL Query Window

To successfully use the sample table named `EMPLOYEE` listed in the SQL Query Window online documentation, (and in the *SAS Guide to the SQL Query Window, Usage and Reference, Version 6, First Edition*), you must execute a program called RUNSAMPL.

1. To run the program, you must first submit a libname statement in the Program Editor window to assign the SAMPLE libname to the sample library as shown in the following example:

   ```
   libname sample '/SAS$ROOT/samples/base';
   ```

   where `SASROOT` is the subdirectory in which the SAS System is installed. Check with your SAS Administrator for the location of the SAS System.

2. Include the RUNSAMPL program in the Program Editor Window by entering the following statement at a command line:

   ```
   include '/SAS$ROOT/samples/base/runsampl.sas';
   ```

   where `SASROOT` is the subdirectory in which the SAS System is installed. Check with your SAS Administrator for the location of the SAS System.

3. Submit the program.

Appendix L, Selecting the Default Language for NLS Installations

Introduction

National Language Support involves installation of language-specific message files, catalogs, and in some cases, SAS executables. It is recommended that you use the default installation of the SAS System and additional products. See the below section, "Using Help in an NLS Environment" for information on accessing translated help.

Performing a Quick Install

The procedure for the default installation is outlined in chapters 2-4 of this document. Select the chapter that is appropriate for the hardware environment at your site.

Once the product set is installed and patches are applied, you will be prompted to select the default language for the production level. Once a default language has been selected, the installation scripts will:

- ❑ if DBCS is installed, rename the SAS executable to sas.nodbcs and create a link from the DBCS-specific executable sas.dbcs to sas.
- ❑ copy the file config.sas612 to config.sas612.english
- ❑ link the config.sas612 to a language-specific configuration file.

There are slight differences between Japanese and other non-English language installations. These differences are outlined in this appendix.

Installing NLS Products Using a Custom Install

Note: See Appendix J, "Performing a Custom Installation of the SAS System," for more information on custom installations.

The following is a detailed example of a typical custom install for NLS:

1. Change directory into SASROOT as shown in the following example:

```
cd /usr/local/sas612
```

2. Run ./sasmanager.
3. Select Option 2, `Invoke Custom Installation and Utilities`

4. Select Option 1, `Invoke Custom Installation Facility`

5. Select Option 1, `Select Source Media....` You are prompted with a series of questions concerning your media. See Appendix J for more information.

6. Select Option 2, `Select Destination Media...` and take the default answers supplied by the install.

7. Select Option 6, `Perform Custom Installation...`

8. Select Option 1, `Choose Licensing Files...`

9. Select Option 2, `Choose SAS Notes...`

10. Select Option 3, `Choose International Support...` and select all of the languages you want to install onto your system.

    Later in the install, you are asked to pick one of the languages to be the default. However, you can run SAS with any of the languages you choose here at any time. Choosing Option 5, `Choose All Languages on Source Media` provides the most flexibility. When you are finished selecting languages, select `Go Back` to return to the Custom Installation menu.

11. Select Option 4, `Choose Products...` and select the products you want to load. You can load either all or some of the products. When you are finished selecting products, select Option 4, `Go Back` to return to the Custom Installation menu.

12. Select Option 5, `Choose Samples....` This is similar to the `Choose Products` selection. Make your sample selections and then select `Go Back` to return to the Custom Installation menu.

13. Select Option 6, `Choose Maps...` This is also similar to the `Choose Products` selection. Make your map selections and then select `Go Back` to return to the Custom Installation menu.

14. Select Option 9, `Install Current Selections` to actually install what you selected in the previous steps. This will take a while. When the process is finished, all selected products are installed on to your system. Now, post-processing for installed NLS products is required.

15. Select Option 10, `Go Back` to return to the SAS Custom Installation Facility menu.

16. Select Option 7, `Go Back` to return to the SAS System Custom Installation and Utilities menu.

17. Select Option 3, `Invoke SAS Installation Utilities...`

    Note: For now, Option 2 is skipped so that the config file for English is created before you proceed to create NLS configurations.

18. Select Option 1, `Create SAS config and autoexec files...`

19. Select Option 2, `Apply Special Tech Support Fixes (supplied with SAS Notes)`.

20. Select Option 3, `Patch SAS Binary With Installed Directory`

21. Select Option 4, `Apply SAS Setinit Information`

22. Select Option 5, `Invoke SAS Installation Tests`

23. If you selected any maps from the Custom Installation menu, select Option 6, `Uncompress Maps Datasets`

24. Select Option 7, `Go Back` to return to the SAS System Custom Installation and Utilities menu.

25. Select Option 2, `Invoke Product Specific Configuration`

26. Select `National Language Support (NLS) Configuration`. You are prompted with a list of languages. Select the language you want as the default the next time you invoke the SAS System.

    You can change your default language later by using sasmanager, returning to this menu, and selecting another language.

27. Select Option 5, `Desktop Installation`. Though not a part of NLS, you need to run this option in order to use the Desktop functions. See Appendix M, "Installing SAS Desktop" for more information.

Japanese Installations

Once the patches have been applied to the SAS System and additional products, the following prompt is displayed:

```
Choose the default language for the production level:
* 1. Japanese and DBCS files
  2. Japanese SJIS and DBCS files
  3. DBCS without language files
  4. English
  5. Cancel
(Enter h for help)
Which option? (1)
```

Option 1, `Japanese and DBCS files`, installs Japanese files (such as localized message files, localized catalogs etc.) in the primary encoding (EUC in this case) and executables for Double Byte Character Set (DBCS) support. Note that the specific encoding format that is used is host-dependent.

Option 2, `Japanese SJIS and DBCS files`, installs Japanese files (such as localized message files, localized catalogs etc.) in an alternate encoding (SJIS in this case) and executables for Double Byte Character Set (DBCS) support. Note that the specific encoding format that is used is host-dependent.

Option 3, `DBCS without language files`, installs only the executables for Double Byte Character Set (DBCS) support. For this option, no language-specific files are installed.

Option 4, `English`, sets up the default English environment without any language-specific files.

Option 5, `Cancel`, aborts the selection of a language for the production level. In this case, the SAS executables and configuration files remain the English version.

Other Non-English Installations

Once the patches have been applied to the SAS System and additional products, the following prompt is displayed:

```
Choose the default language for the production level:
* 1. <Language>
  2. English
  3. Cancel
(Enter h for help)
Which option? (1)
```

Option 1, `<Language>` installs the language-specific message files, catalogs, and if applicable, executables, and set up the SAS environment as described in the Introduction to this appendix.

Option 2, `English`, sets up the default English environment without any language-specific files.

Option 3, `Cancel`, aborts the selection of a language for the production level. In this case, the SAS executable and configuration files remain the English version.

Using Help in an NLS Environment

There are two methods of accessing the SAS Help system. The default method is the HELPLUS graphical user interface. The alternate method is through the character-based terminal (CBT) help system.

Note that few if any of the HELPLUS source files have been translated to non-English languages, but some of the CBT-based files have been translated.

By default, the SAS System is set up to use HELPLUS. This is indicated in the configuration file `config.sas612.<language>` by the line:

```
-helpenv helplus
```

To force the help system to the CBT-based system, change the `HELPENV` option to:

```
-helpenv sas
```

Remember that only some of the help files have been translated.

Appendix M, Installing SAS® Desktop

The distribution media containing Base SAS software also includes the product, SAS Desktop. In its default form, SAS Desktop provides a new graphical interface to the SAS System. SAS Desktop is also used by SAS/EIS and SAS/Warehouse Administrator software. SAS Desktop is automatically installed unless you are performing a custom installation. If you are performing a custom installation, follow the instructions in this appendix.

Installing SAS Desktop creates five indexed data sets that are needed by the desktop. SAS Desktop should be installed after all other products have been installed as the observations in the data sets can vary depending on what other SAS products are installed at the site.

Complete the following steps to install SAS Desktop:

Note: The following steps assume that you have already completed Steps 1-10 in Appendix J, "Performing a Custom Installation of the SAS System."

1. Select Option 3, `Invoke SAS Installation Utilities...` then Option 1, `Create SAS Config and Autoexec Files...` and then Option 7, `Go Back` from the SAS System Custom Installation and Utilities menu.

2. From the SAS System Custom Installation and Utilities menu, select Option 2 `Invoke Product Specific Configuration`.

3. From the Product Specific Configuration menu, select Option 5 `Desktop Installation`.

Government Notice

If you are a government site, a file containing information specific to your site is extracted during the product installation phase of the installation procedure. Assuming you have installed the SAS System at /usr/local, the file can be located in:

```
/usr/local/sas612/misc/notice
```

Note: It is important that you read this file, and that you make other users at your site aware of this information. To have the government notice automatically display in the SAS log, issue the following UNIX command:

```
cat /usr/local/sas612/misc/notice >> /usr/local/sas612/misc/base/news
```

This will append the government notice file onto the existing news file. The default configuration file uses the `-news` option to specify that this file is displayed in the log after each invocation of the SAS System.