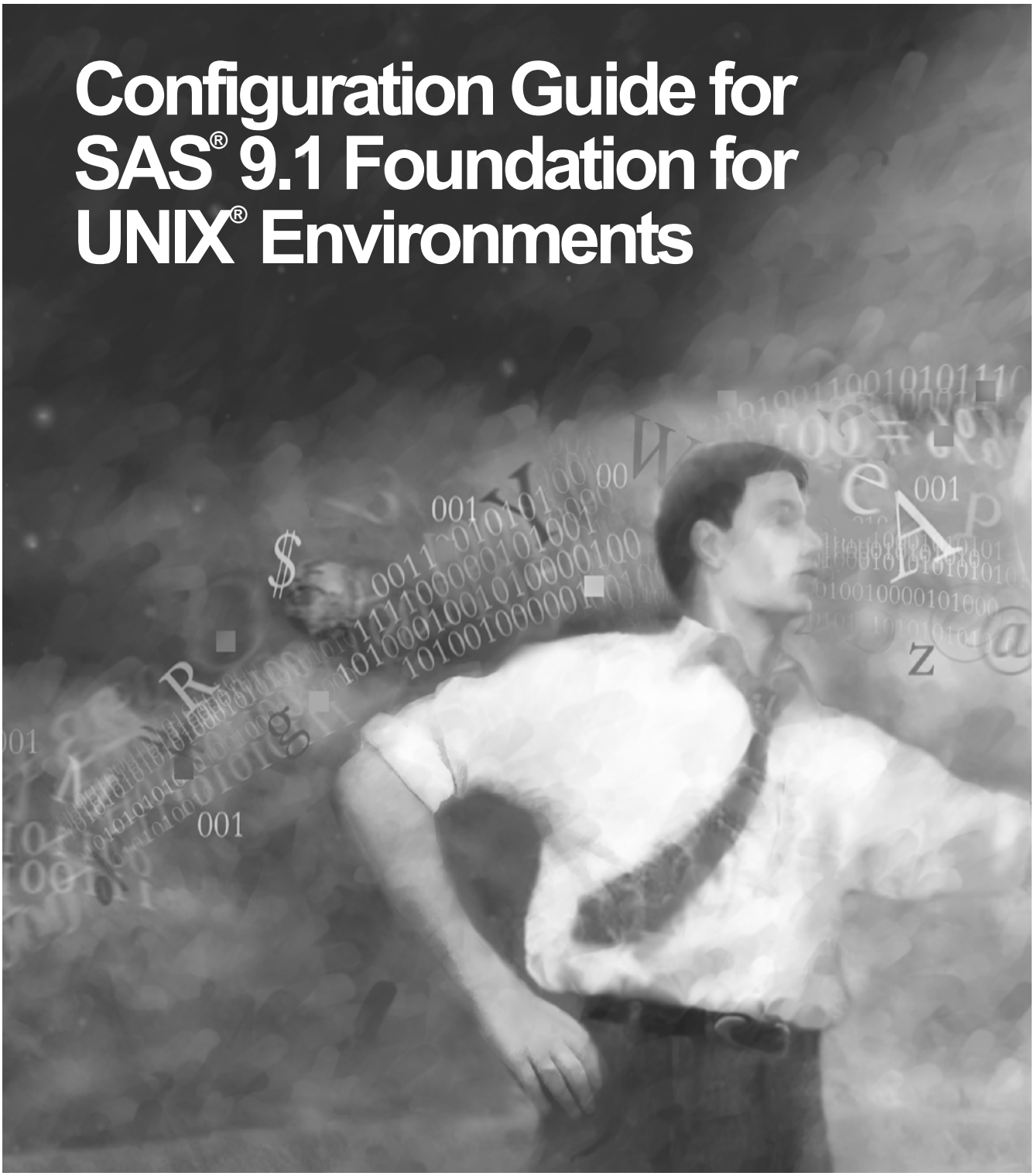
Configuration Guide for SAS® 9.1 Foundation for UNIX® Environments



The Power to Know®

Copyright Notice

Table of Contents

Chapter 1 – Introduction

Audience

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

This document describes the configuration instructions for SAS 9.1 Foundation, which is made up of server-side Base SAS and a variety of server-side SAS products (the exact products vary by customer). Information about the configuration of mid-tier and client-side products is available from your SAS Software Navigator.

The server-side configuration instructions contained in this document are for the configuration of a generic SAS server. If you wish to configure your server for more specific functions, such as a Metadata Server, Workspace Server, OLAP Server, or Stored Process Server, please refer to the *SAS 9.1 Intelligence Architecture: Planning and Administration Guide* located at `http://support.sas.com/91administration`.

Understanding This Book

This document conforms to the following conventions:

`Courier`	Courier type indicates commands, directory paths, file names, menu items, Internet addresses, etc.
Italics	Italic type indicates documentation references or key notes.
Bold	Bold type indicates important text or concepts.
UPPERCASE	Uppercase type indicates variable and option settings.
Dollar sign $ Pound sign #	A dollar sign $ or pound sign # at the beginning of an example indicates a sample UNIX command line.

Contacting SAS

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

In addition, a Web site dedicated to supporting the installation of SAS software exists at:

```
http://www.sas.com/installcenter
```

Accessing Release Documentation

Release documentation is included in your Installation Kit, consisting of Alert Notes, System Requirements, Installation Instructions and Configuration Guide. The latest versions of these enclosures are available on the SAS Technical Support Web page:

```
http://support.sas.com/installcenter/
```

Chapter 2 – Restricted Options

SAS 9.1 Foundation options can be "restricted" by a site administrator so that once they are set by the administrator, they may not be changed by a user. An option can be restricted globally, by group, and by user. To restrict an option it must be added to the appropriate SAS 9.1 Foundation configuration file and this file must have the permissions set by the administrator so that it cannot be updated by users. The option files are processed in the following order: global, group and user. If an option is specified in multiple files then the last occurrence gets used.

Global Restrictions

Create the file `!SASROOT/misc/rstropts/rsasv9.cfg` and add options to this file in the normal config file format.

Group Restrictions

Create a file of the following format:

`!SASROOT/misc/rstropts/groups/<groupname>_rsasv9.cfg`

and add options to this file in the normal config file format.

Example: For user `smith` in the group `staff`: the file name would be `staff_rsasv9.cfg`.

User Restrictions

Create a file of the following format:

`!SASROOT/misc/rstropts/users/<userid>_rsasv9.cfg`

and add options to this file in the normal config file format.

Example:
For user `smith`, the file name is `smith_rsasv9.cfg`.

Additional information

To verify that an option has been set correctly follow this example:

1. Assume the option -EMAILSYS=SMTP was specified in one of the restricted configuration files.
2. Submit the following code:

```
proc options restrict; run;
```

   The SAS log should then show a message similar to

```
Option Value Information For SAS Option EMAILSYS
    Option Value: SMTP
    Option Scope: SAS Session
    How option value set:  Site Administrator Restricted
```

The following describes the process when a user attempts to change the option value.

1. Assume the option -NOTHREADS was specified in one of the restricted configuration files.
2. Submit the following code:

```
options THREADS;
```

   The SAS log should then show a message similar to

```
  options THREADS;
           -----
            36
WARNING 36-12: SAS option THREADS is restricted by your Site
Administrator and cannot be updated.
```

Note: Only one Group Restrictions File will be read during SAS processing. The effective groupid of the SAS process that is running is used in the determination of which Group Restrictions File to use.

Note: If the effective userid of the SAS process that is running does not have a corresponding entry in the `/etc/passwd` file, then only the global restricted option and the group restricted options files will be read.

Note: If the effective groupid of the SAS process that is running does not have a corresponding entry in the `/etc/group` file, then only the global restricted option and the user restricted options files will be read.

Chapter 3 – Post-Installation Configuration for SAS/ACCESS Software

Important: The steps outlined in this chapter assume that the SAS Installation Representative at your site has installed SAS/ACCESS software and completed the first phase of SAS/ACCESS software configuration.

Refer to the *System Requirements* to determine if the combination of your operating system and the version or release of your DBMS is supported by the SAS/ACCESS interface you want to configure.

The first phase of SAS/ACCESS software configuration involves completing the steps in Chapter 2 of the Installation Instructions concerning how to perform SAS/ACCESS software configuration during the initial installation of SAS 9.1. However, SAS/ACCESS software configuration can be performed after the initial installation of SAS 9.1 Foundation and the SAS Installation Representative may not have completed the steps in Chapter 2 of the Installation Instructions. If so, then the SAS Installation Representative needs to complete the steps documented in Chapter 3 of the Installation Instructions to finish the first phase of SAS/ACCESS software configuration.

Once the first phase of SAS/ACCESS software configuration has been completed, you can then proceed with the instructions in this chapter.

Before beginning the second phase of SAS/ACCESS software configuration, you should determine the following information about your DBMS:

- The version or release of the DBMS client shared libraries installed on your operating system. This is important due to potential incompatibilities between DBMS versions or releases.
- The location of the DBMS client shared libraries. This is important so that SAS/ACCESS software can be loaded at execution time.

Refer to the following sections for detailed DBMS-specific instructions on configuring your environment to interface with your SAS/ACCESS software.

SAS/ACCESS Interface to DB2 Software

The SAS/ACCESS Interface to DB2 executable uses shared libraries, referred to in UNIX as shared objects. You must add the location of the shared libraries to one of the system environment variables, and, if necessary, indicate the DB2 version that you have installed at your site. You must also set the `INSTHOME` environment variable to your DB2 home directory before setting the environment variables as shown in the examples.

AIX	
Bourne Shell	`$ LIBPATH=$INSTHOME/lib:$LIBPATH` `$ export LIBPATH`
C Shell	`$ setenv LIBPATH $INSTHOME/lib:$LIBPATH`
HP-UX	
Bourne Shell	`$ SHLIB_PATH=$INSTHOME/lib:$SHLIB_PATH` `$ export SHLIB_PATH`
C Shell	`$ setenv SHLIB_PATH $INSTHOME/lib:$SHLIB_PATH`
Linux and Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$INSTHOME/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $INSTHOME/lib:$LD_LIBRARY_PATH`

SAS/ACCESS Interface to INFORMIX Software

For SAS 9.1, SAS/ACCESS Interface to INFORMIX software uses an ODBC interface to access Informix. Make sure Informix Connect 2.80 FC3 or higher is installed.

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 `ODBCINI`. Please refer to your ODBC driver's vendor documentation to find more specific information.

The ODBC drivers are ODBC API-compliant shared libraries, referred to in UNIX as shared objects. You must add the location of the shared libraries to one of the system environment variables so that ODBC drivers can be loaded dynamically at run time. You must also set the `INFORMIXDIR` environment variable to your Informix home directory before setting the environment variables as shown in the examples.

AIX	
Bourne Shell	`$ LIBPATH=$INFORMIXDIR/lib/cli:$INFORMIXDIR/lib/esql:$LIBPATH` `$ export LIBPATH`
C Shell	`$ setenv LIBPATH $INFORMIXDIR/lib/cli:$INFORMIXDIR/lib/esql:$LIBPATH`

HP-UX	

Bourne Shell	`$ SHLIB_PATH=$INFORMIXDIR/lib/cli:`
	`$INFORMIXDIR/lib/esql:/usr/lib/pa20_64:/opt/langtools/lib/pa20_64:`
	`$SHLIB_PATH`
	`$ export SHLIB_PATH`

C Shell	`$ setenv SHLIB_PATH INFORMIXDIR/lib/cli:`
	`$INFORMIXDIR/lib/esql:/usr/lib/pa20_64:/opt/langtools/lib/pa20_64:`
	`$SHLIB_PATH`

Tru64 UNIX and Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$INFORMIXDIR/lib/cli:$INFORMIXDIR/lib/esql:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $INFORMIXDIR/lib/cli:$INFORMIXDIR/lib/esql:$LD_LIBRARY_PATH`

SAS/ACCESS Interface to Microsoft SQL Server

Before you can use the SAS/ACCESS Interface to Microsoft SQL Server, the following products are required:

- Base SAS software
- SAS/ACCESS Interface to Microsoft SQL Server
- Microsoft SQL Server Version 7.0 or later

The SAS/ACCESS product contains the DataDirect Technologies Microsoft SQL Server ODBC driver component that is unloaded when you installed the SAS/ACCESS Interface to Microsoft SQL Server Product. The setup/configuration procedures are described below.

The DataDirect Microsoft SQL Server ODBC driver and its associated files are included in a tar file in the `sasroot/misc/dbi` directory. The name of the tar file varies by platform and can be found in the OS-specific sections below. Use the `tar` command to unpack the ODBC driver files into a location of your choosing:

```
$ cd target
$ tar xf xxxsqsvr.tar
```

This *`target`* directory becomes the `ODBCHOME` directory, which is used below to set up the paths to the shared libraries as well as the `odbc.ini` file below.

The `odbc.ini` system information file contains a list of possible data sources to connect to your Microsoft SQL Server servers. You must configure at least one data source in order to use the SAS/ACCESS Interface to Microsoft SQL Server. A sample `odbc.ini` file is located in the `ODBCHOME` directory as `odbc.ini.sample`. You will have to edit the `odbc.ini` file with a text editor to configure the data sources. After you configure your data sources, you must set the ODBCINI environment variable to the location and name of your `odbc.ini`:

- For Bourne Shell

```
ODBCINI=$ODBCHOME/odbc.ini
export ODBCINI
```

- For C Shell

```
setenv ODBCINI $ODBCHOME/odbc.ini
```

The DataDirect Microsoft SQL Server ODBC drivers are ODBC API-compliant shared libraries, referred to in UNIX as shared objects. You must include the full path to the shared libraries in the shared library path as shown below so that the ODBC drivers can be loaded dynamically at run time. Also note that you may have to include your DBMS shared library path as described in the DBMS-specific section. You must also set the `ODBCHOME` environment variable to your ODBC home directory before setting the environment variables as shown in the example code below.

Note: The ODBC home directory is the path you specified when you installed the SAS/ACCESS to Microsoft SQL Server Product.

The tar file which contains the ODBC driver is named as follows:

- AIX - `r64sqsvr.tar`
- HP-UX - `h64sqsvr.tar`
- HP-UX for the Itanium Processor Family Architecture - `h6isqsvr.tar`
- Solaris - `s64sqsvr.tar`

Set LD_LIBRARY_PATH to point to the ODBC driver shared libraries as shown in the following examples.

AIX, HP-UX, HP-UX for the Itanium Processor Family Architecture, and Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$ODBCHOME/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $ODBCHOME/lib:$LD_LIBRARY_PATH`

SAS/ACCESS Interface to ODBC Software

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 `ODBCINI`. Please refer to your ODBC driver's vendor documentation to find more specific information.

The ODBC drivers are ODBC API-compliant shared libraries, referred to in UNIX as shared objects. You must add the location of the shared libraries to one of the system environment variables so that ODBC drivers can be loaded dynamically at run time. You must also set the `ODBCHOME` environment variable to your ODBC home directory before setting the environment variables as shown in the examples.

Tru64 UNIX and Linux	
Bourne Shell	`$ LD_LIBRARY_PATH=$ODBCHOME/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $ODBCHOME/lib:$LD_LIBRARY_PATH`
Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$ODBCHOME/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH  $ODBCHOME/lib:${LD_LIBRARY_PATH}`
AIX	
Bourne Shell	`$ LIBPATH=$ODBCHOME/lib:$LIBPATH` `$ export LIBPATH`
C Shell	`$ setenv LIBPATH  $ODBCHOME/lib:${LIBPATH}`
HP-UX and HP-UX for the Itanium Processor Family Architecture	
Bourne Shell	`$ SHLIB_PATH=$ODBCHOME/lib:$SHLIB_PATH` `$ export SHLIB_PATH`
C Shell	`$ setenv SHLIB_PATH  $ODBCHOME/lib:${SHLIB_PATH}`

SAS/ACCESS Interface to ORACLE Software

The SAS/ACCESS Interface to ORACLE executable uses shared libraries, referred to in UNIX as shared objects. You must add the location of the shared libraries to one of the system environment variables and, if necessary, indicate the Oracle version that you have installed at your site. You must also set the `ORACLE_HOME` environment variable to your Oracle home directory before setting the environment variables as shown in the examples.

AIX	
Bourne Shell	`$ LIBPATH=/usr/ucb:$ORACLE_HOME/lib:$LIBPATH` `$ export LIBPATH`
C Shell	`$ setenv LIBPATH=/usr/ucb:$ORACLE_HOME/lib:$LIBPATH`
HP-UX and HP-UX for the Itanium Processor Family Architecture	
Bourne Shell	`$ SHLIB_PATH=$ORACLE_HOME/lib:$SHLIB_PATH` `$ export SHLIB_PATH`
C Shell	`$ setenv SHLIB_PATH $ORACLE_HOME/lib:$SHLIB_PATH`
Tru64 UNIX and Linux	
Bourne Shell	`$ LD_LIBRARY_PATH=/usr/ucblib:$ORACLE_HOME/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH /usr/ucblib:$ORACLE_HOME/lib:$LD_LIBRARY_PATH`
Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$ORACLE_HOME/lib:/usr/ucblib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $ORACLE_HOME/lib:/usr/ucblib:$LD_LIBRARY_PATH`

SAS/ACCESS Interface to PeopleSoft Software

SAS/ACCESS Interface to PeopleSoft software requires that a `libname` statement be executed before running it. This `libname` statement produces a `libref` to the database where the PeopleSoft data resides.

Following is an example of the `libname` statement:

```
libname psdb oracle user=userid pass=pass
   path='dbpath';
```

SAS/ACCESS Interface to R/3 Software

SAS/ACCESS Interface to R/3 software requires extensive installation setup before it can be used. Refer to the *Installation Instructions for SAS/ACCESS 9.1 Interface to R/3* included in your SAS software order for detailed installation instructions and configuration information.

SAS/ACCESS Interface to SAP BW Software

SAS/ACCESS Interface to SAP BW software requires extensive installation setup before it can be used. Refer to the *Installation Instructions for SAS/ACCESS 9.1 Interface to SAP BW* included in your SAS software order for detailed installation instructions and configuration information.

SAS/ACCESS Interface to SYBASE Software

1. In SAS 9.1, the administrator or user must install a Sybase-stored procedure on the target Sybase server. Two files have been included in the `!SASROOT/misc/dbi` directory to assist in the installation:
   - `sas-spcp.txt` is a text file containing instructions on how to do the installation
   - `sas-spdf.txt` is the actual stored procedure script.

   The process utilizes two Sybase facilities, `defncopy` and `isql`.

2. The SAS/ACCESS Interface to SYBASE executable uses shared libraries, referred to in UNIX as shared objects. You must add the location of the shared libraries to one of the system environment variables and, if necessary, indicate the Sybase version that you have installed at your site. You must also set the `SYBASE` environment variable to your Sybase home directory before setting the environment variables as shown in the examples.

AIX	
Bourne Shell	`$ LIBPATH=$INSTHOME/lib:$LIBPATH` `$ export LIBPATH`
C Shell	`$ setenv LIBPATH $INSTHOME/lib:$LIBPATH`
HP-UX	
Bourne Shell	`$ SHLIB_PATH=$SYBASE/lib:/lib:$SHLIB_PATH` `$ export SHLIB_PATH`
C Shell	`$ setenv SHLIB_PATH $SYBASE/lib:/lib:$SHLIB_PATH`
Tru64 UNIX, Linux, and Solaris	
Bourne Shell	`$ LD_LIBRARY_PATH=$SYBASE/lib:/lib:$LD_LIBRARY_PATH` `$ export LD_LIBRARY_PATH`
C Shell	`$ setenv LD_LIBRARY_PATH $SYBASE/lib:/lib:$LD_LIBRARY_PATH`

SAS/ACCESS Interface to Teradata Software

FastExporting

For optimal reads of large tables, SAS/ACCESS can perform FastExporting. To perform FastExporting, the Teradata FastExport Utility must be present on the system where you install SAS.

As needed, modify your library path environment variable to include the directory containing `sasaxsm.sl` (HP-UX) or `sasaxsm.so` (Solaris and AIX). These shared objects are delivered in the `$SASROOT/sasexe` directory. You may copy these modules where you wish, but ensure that the directory you copy them into is in the appropriate shared library path environment variable. On Solaris, the library path variable is LD_LIBRARY_PATH. On HP/UX, it is SHLIB_PATH. On AIX, it is LIBPATH. Also, make sure that the Teradata FastExport utility, `fexp`, has its directory included in the PATH environment variable. This utility is usually installed in the `/usr/bin` directory.

The FastExport Utility is not required; SAS/ACCESS reads large tables quite efficiently without it. For further information, see the DBSLICEPARM option in your SAS/ACCESS to Teradata documentation. Contact NCR if you want to obtain the Teradata FastExport Utility.

Chapter 4 – Post-Installation Configuration for SAS/ASSIST Software

This chapter describes how to add a master profile to SAS/ASSIST software. You can use a master profile to override the default SAS settings. 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 the *SAS/ASSIST Software System Administrator's Guide*.

Adding a Master Profile

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 to which all users of SAS/ASSIST software will have read access.

   All users with write access to this directory will automatically have write access to the master profile in SAS/ASSIST software. Select a name that conforms to the naming conventions of 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 pathname in the `SASHELP.QASSIST` catalog. Save it as `SASHELP.QASSIST.PARMS.SOURCE`. The location of the master profile will now be known by SAS/ASSIST software.

2. Create the master profile.

   The first time SAS/ASSIST software is started, a master profile is created if `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 software and selecting:

   `Setup`, then
   `Profiles`, and then
   `Master/group ...`

   If you have write access to the SAS library containing the master profile, you can specify default values. New users will use these default values when 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.

You can run SAS/ASSIST software in two different styles - Workplace or Block Menu. The Block Menu can be New style or Old style. You can control this using the profile options below.

Run Workplace:

```
SAS/Assist style:          Workplace
```

Run Block Menu New style:

```
SAS/Assist style:          Block Menu
Save selections on end:    Yes
Menu Style:                New
```

Run Block Menu Old style:

```
SAS/Assist style:          Block Menu
Save selections on end:    Yes
Menu Style:                Old
```

By setting the default values in the master profile, you can control if users should use the New or Old style of SAS/ASSIST software. In addition, there are many other profile options. For more information on these options, refer to the *SAS/ASSIST Software System Administrator's Guide*.

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 status.

   Select `Setup...Master/Group`

   then `Tools...Create Group Profile`.

   To add users to a group profile, select `Tools...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 9.1.

Chapter 5 – Post-Installation Configuration for SAS/CONNECT Software

TCP/IP is the access method supported for UNIX environments and their derivatives. Refer to the publication *Communications Access Methods for SAS/CONNECT and SAS/SHARE Software* for information on the access methods supported by other systems. This document can be found at `http://support.sas.com/documentation/onlinedoc`.

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.

The script files are installed into the `!SASROOT/misc/connect` directory by default. The following line has been included in the `sasv9.cfg` 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 `sasv9.cfg` file and update the `SASSCRIPT` option with the new directory location.

Chapter 6 – Post-Installation Configuration for Enterprise Miner Server Software

Configuring Enterprise Miner Server Software

Setup Default Data Library

Create a data library on the server to which Enterprise Miner Client software users have read and write access. This data library should be a different directory from the SASROOT location, and ideally, on a different disk. To create the data library, make or designate a directory on an available disk and set appropriate permissions and ownership to allow remote users read and write access.

Provide Information to Configure Enterprise Miner Client Software

Provide the following information to users of Enterprise Miner Client software to complete the configuration steps necessary for Enterprise Miner Client software:

- the machine name and/or IP address of the server,
- the SASROOT location for SAS 9.1 Foundation installed on the server, and
- the directory path of the default data library you created on the server.

Note: Do not use an NFS mount point.

Enterprise Miner Server software is invoked from the Enterprise Miner Client via SAS/CONNECT software. For more information on running Enterprise Miner software, refer to *Getting Started with Enterprise Miner Software*.

Chapter 7 – Post-Installation Configuration for SAS Integration Technologies Software

If you received SAS Integration Technologies software and have completed the installation of SAS 9.1, you have successfully installed the SAS server components of SAS Integration Technologies software. The *SAS Client-Side Components* CDs that are included in your SAS software order contain SAS Integration Technologies client components and documentation for SAS Integration Technologies software.

User Authentication

You are required to complete the steps from the section "Configuring User Authentication" in the *Installation Instructions*. This allows SAS Integration Technologies software to authenticate a client's identity and check a client's authority to access resources.

Chapter 8 – Post-Installation Configuration for National Language Support (NLS)

This chapter contains information on post-installation configuration for Asian and European language support.

Important: Before invoking a localized SAS 9.1 Foundation image from a UNIX shell, you must ensure that the UNIX locale environment variable LANG is set appropriately for the language of the SAS version you want to run. The exact values to set will vary depending on your operating system support. To list the locales supported on your operating system, enter the following command:

```
$ locale -a
```

For example, to invoke a Japanese version of SAS 9.1 Foundation in the HP-UX Korn shell environment, enter the following command:

```
$ LANG=ja_JP.SJIS; export LANG
```

For more information on setting locale environment variables, consult the documentation for your operating system.

Chinese, Japanese, and Korean DBCS Support

This section explains how to

- change the default settings for the DBCSLANG and DBCSTYPE system options
- specify Asian font catalogs.

Note: The DBCSLANG and DBCSTYPE system options described in the next section should be used to set the DBCS encoding for Asian character sets only. The LOCALE and ENCODING system options described in the SAS Help System are used to set locale for European languages.

Also, be aware that full-screen products are NOT supported in 9.1 SAS for the following UNIX platforms and languages:

- Tru64 UNIX: Korean, Simplified Chinese and Traditional Chinese
- HP-UX IPF: Japanese, Korean, Simplified Chinese, and Traditional Chinese
- AIX: Korean, Simplified Chinese, and Traditional Chinese

Changing the Default DBCSLANG and DBCSTYPE Option Settings

When you install SAS 9.1 Foundation and choose to load NLS language translations, the installation automatically sets default values for the DBCSLANG and DBCSTYPE system options based on the language selection and platform. For example, if you install Primary Japanese on the Solaris operating system, the configuration file (`!SASROOT/nls/ja/sasv9.cfg`) sets DBCSLANG to `JAPANESE` and DBCSTYPE to `EUC`.

If you need to change the default settings, edit the configuration file. For example, edit the configuration file to change the DBCSTYPE value to `SJIS`.

Changing the Configuration File for Unicode Server

To run the Unicode Server, you need to edit the configuration file for your system with the following changes:

1. Remove the DBCSLANG and the DBCSTYPE options from the configuration file.
2. Add the ENCODING option and set the value to UTF8 (`ENCODING=UTF8`).
3. To define a default locale other than English, add the LOCALE option and set the value to your desired locale setting (`LOCALE=`*`default-locale`*).

Setting System Fonts with X Resource Files

SAS 9.1 Foundation may not have the correct font settings for your locale by default. To ensure that the correct fonts are defined for the SAS System, you must add them to your X Resource files.

Japanese X Resource template files containing DBCS font settings are located in `!SASROOT/X11/resource_files`, as follows:

- `./Resource_CDE.ja` - for the CDE environment
- `./Resource_LNX.ja` - for Linux
- `./Resource_Sun.ja` - for Solaris
- `./Resource_DEC.ja` - for Compaq Tru64 UNIX
- `./Resource_HP.ja` - for HP-UX
- `./Resource_IBM.ja` - for AIX
- `./Resource_ReflX.ja` - for ReflectionX users

Simplified Chinese X Resource template files containing DBCS font settings are located in `!SASROOT/X11/resource_files`, as follows:

- `./Resource_HP.zh` - for HP-UX
- `./Resource_LNX.zh` - for Linux
- `./Resource_Sun.zh` - for Solaris

Traditional Chinese X Resource template files containing DBCS font settings are located in `!SASROOT/X11/resource_files`, as follows:

- `./Resource_HP.zt` - for HP-UX
- `./Resource_HP.zt.euc` - for HP-UX
- `./Resource_LNX.zt` – for Linux
- `./Resource_Sun.zt` – for Solaris
- `./Resource_Sun.zt.big5` – for Solaris

Korean X Resource template files containing DBCS font settings are located in `!SASROOT/X11/resource_files`, as follows:

- `./Resource_HP.ko` – for HP-UX
- `./Resource_LNX.ko` – for Linux
- `./Resource_Sun.ko` - for Solaris

To apply the X Resources in these template files, copy the appropriate template to one of the following locations, renaming it to `SAS` (in all uppercase):

- `/usr/lib/X11/app-defaults` (on most UNIX systems)
- `/usr/openwin/lib/X11/app-defaults` (on Solaris)
- `$HOME` (your home directory)

For example, on a Solaris system, you would use the following COPY command:

```
$ cp !SASROOT/X11/resource_files/Resource_CDE.ja  /usr/openwin/lib/X11/app-defaults/SAS
```

In the example, `!SASROOT` refers to the root directory of your SAS 9.1 Foundation installation.

For more details, refer to the *SAS 9.1 National Language Support (NLS) User's Guide*.

Asian Font Catalogs

With the exception of Traditional Chinese fonts, Asian fonts reside in the SASHELP.FONTS catalog. To use Traditional Chinese fonts, you can specify them either in the configuration file or in your SAS session.

Specifying the Font Catalog in the Configuration File for Traditional Chinese Fonts

When you run a Traditional Chinese localization, the configuration file contains the GFONT definition for the location of the ZT font catalog in the UNIX DBCS directory. However, when you run the English version with DBCSLANG=TAIWANESE, you must either set GFONT in your SAS session or you must modify the DBCS configuration file to define the GFONT definition for the ZT catalog, as follows

```
-set gfontx !SASROOT/nls/zt/font-name
```

In this statement

- *x* represents a value from 0-9
- *font-name* represents the name of the font catalog you want to use.

Specifying the Font Catalog in a SAS Session for Traditional Chinese Fonts

To specify the font catalog in a SAS session, submit the following LIBNAME statement:

```
libname gfontx !SASROOT/nls/zt/font-name
```

In this statement

- *x* represents a value from 0-9
- *font-name* represents the name of the font catalog you want to use.

European Language Support

The following sections explain different methods for configuring your system for locale, describe how to set up your local session to transfer data to a remote session, and provide a list of `devmap` and `keymap` values that match the locales on your operating system. (As mentioned earlier in this chapter, the LOCALE and ENCODING system options are used to set locale for European languages. These system options are documented in the SAS Help System.)

Configuring Your System for Locale

If you want to configure your SAS session for a locale other than the default locale, you have various methods from which to choose to reconfigure. This section explains those methods.

Changing the Default LOCALE Option Setting

When you install SAS 9.1 Foundation and choose to load NLS language translations, the installation automatically sets the LOCALE system option to the default value for the language installed. The LOCALE system option is set in the system configuration file for each language installed.

For example, `!SASROOT/nls/fr/sasv9.cfg` sets LOCALE to `French_France` by default.

Note: The English version does not set the locale in the configuration file by default.

If you want to change the default locale setting for SAS, you can set the LOCALE system option to the appropriate language in your system configuration file.

For example, you can edit `!SASROOT/nls/fr/sasv9.cfg` to change `-locale French_France` to `-locale French_Canada`.

Running SAS in a Different Locale

To set the locale for SAS 9.1 at your site, add the LOCALE system option to your configuration file. You can find a list of locale values in the *SAS 9.1 National Language Support (NLS) User's Guide*.

When you read or write a file, SAS expects the data in the external files to be in the session encoding. To specify a different encoding, refer to the documentation for the ENCODING system option in the FILENAME, INFILE, or FILE statements in the *SAS 9.1 National Language Support (NLS) User's Guide*.

When the LOCALE system option is set, the ENCODING system option will be set to an encoding that supports the language for the locale. SAS 9.1 Foundation expects user data to be in the encoding that matches the ENCODING option. If you prefer an encoding other than the most common encoding for the locale, you can also set the ENCODING system option in the configuration file.

When the ENCODING option is set, the TRANTAB option will always be set to match the ENCODING system option. The transport format trantabs (translation tables), set by the TRANTAB option, are used by the CPORT and CIMPORT procedures to transfer SAS data files. These trantabs are also used by the UPLOAD and DOWNLOAD procedures for transferring files and catalogs, remotely submitting code to the server, and returning logs and listings to the client.

The Output Delivery System (ODS) will create output using the encoding that matches the ENCODING system option. If you would like your output created using a different encoding, please refer to the documentation for the Output Delivery System.

For more information, refer to the *Base SAS 9.1 Procedures Guide* for documentation about PROC CPORT and PROC CIMPORT. Refer to the *SAS/CONNECT 9.1 User's Guide* for documentation on PROC UPLOAD and PROC DOWNLOAD.

Additional Information

Depending on the applications you run, additional setup may be required for your system. Refer to the following sections for more information about configuring your system to run with alternate locales.

Locale Setup on the Remote Server

Note: The `%LS( )` macro is new in Release 9.1. This macro replaces the functionality of the Locale Setup Window that was used in previous releases. References to "SAS System 9" in the following section refer to all releases of SAS software from SAS System 9 forward.

If you are running SAS System 9 as both your client and server sessions, it is not usually necessary to run the `%LS( )` macro to do any further locale setup. The locale of a server should be compatible with the locale of your client session; otherwise, your data may be corrupted.

If your SAS System 9 client is connecting to a session running a release of SAS prior to SAS System 9, you can use the `%LS( )` macro to set up the remote SAS environment for data transfer. As the Locale Setup Window did in previous releases, the `%LS( )` macro copies the host-to-host translation tables from the LOCALE catalog into SASUSER.PROFILE. The `%LS( )` macro does not set the encoding for the SAS session.

If you use SAS/CONNECT to connect to a remote SAS server, you will need to set up the server session for the locale that the SAS client is using. You must set up the server *after* signing on to the remote session from the client.

The following examples show how to set locale for remote connections:

- **Connecting SAS System 9-to-SAS System 9:** Use the LOCALE option at startup. The LOCALE option value of the SAS client and server sessions should be the same. For example,

```
sas -locale Danish_Denmark
```

- **Connecting SAS System 9 and a previous release of SAS:**
    - SAS System 9 receives the data: Use the LOCALE option on the SAS System 9 side at start up.

      Example:

```
sas -locale Spanish_Spain
```

    - Previous release receives the data: Start SAS System 9 with the LOCALE option at start up.

      Example:

```
sas –locale Spanish_Spain
```

      Then use the `%LS( )` macro in SAS System 9 to set up the host-to-host translation tables on the previous release after connection is established. **Example -** Submit the following code from the Program Editor:

```
%ls(locale=Spanish_Spain, remote=on);
```

Devmaps and Keymaps for SAS/GRAPH Software

If you are running SAS/GRAPH software and you want to display non-ASCII characters, you will need to set the appropriate devmaps and keymaps to match your current encoding. The devmap and keymap entries are located in the SASHELP.FONTS catalog. To get the correct devmaps and keymaps for your encoding, you should use the %LSGRAPH macro. %LSGRAPH automatically sets up your environment for you by

- copying the devmap and keymap entries that match your encoding to the GFONT0.FONTS catalog
- changing the name of the entry to the name DEFAULT so the devmaps and keymaps will be loaded for you.

The following example uses %LSGRAPH to set the correct devmap and keymap (LAT2) for a Polish user on a UNIX platform:

```
libname gfont0 'your-font-library';
%lsgraph(LAT2);
```

Here is a list of the devmaps and keymaps that match the locales on your platform:

Locale	Devmap and Keymap Name		Locale	Devmap and Keymap Name
Arabic_Algeria	arab		German_Switzerland	lat9
Arabic_Bahrain	arab		Greek_Greece	grek
Arabic_Egypt	arab		Hebrew_Israel	hebr
Arabic_Jordan	arab		Hungarian_Hungary	lat2
Arabic_Kuwait	arab		Icelandic_Iceland	lat1
Arabic_Lebanon	arab		Italian_Italy	lat9
Arabic_Morocco	arab		Italian_Switzerland	lat9
Arabic_Oman	arab		Latvian_Latvia	lat6
Arabic_Qatar	arab		Lithuanian_Lithuania	lat6
Arabic_SaudiArabia	arab		Norwegian_Norway	lat9
Arabic_Tunisia	arab		Polish_Poland	lat2
Arabic_UnitedArabEmirates	arab		Portuguese_Brazil	lat1
Bulgarian_Bulgaria	cyrl		Portuguese_Portugal	lat1
Byelorussian_Belarus	cyrl		Romanian_Romania	lat2
Croatian_Croatia	lat2		Russian_Russia	cyrl
Czech_CzechRepublic	lat2		Serbian_Yugoslavia	cyrl
Danish_Denmark	lat9		Slovak_Slovakia	lat2
Dutch_Belgium	lat1		Slovenian_Slovenia	lat2
Dutch_Netherlands	lat1		Spanish_Argentina	lat1
English_Australia	lat1		Spanish_Bolivia	lat1
English_Canada	lat1		Spanish_Chile	lat1
English_HongKong	lat9		Spanish_Colombia	lat1
English_India	lat9		Spanish_CostaRica	lat1
English_Ireland	lat9		Spanish_DominicanRepublic	lat1
English_Jamaica	lat1		Spanish_Ecuador	lat1
English_NewZealand	lat1		Spanish_ElSalvador	lat1
English_Singapore	lat9		Spanish_Guatemala	lat1

English_SouthAfrica	lat1		Spanish_Honduras	lat1
English_UnitedKingdom	lat9		Spanish_Mexico	lat1
English_UnitedStates	lat1		Spanish_Nicaragua	lat1
Estonian_Estonia	lat6		Spanish_Panama	lat1
Finnish_Finland	lat9		Spanish_Paraguay	lat1
French_Belgium	lat9		Spanish_Peru	lat1
French_Canada	lat1		Spanish_PuertoRico	lat1
French_France	lat9		Spanish_Spain	lat9
French_Luxembourg	lat9		Spanish_UnitedStates	lat1
French_Switzerland	lat9		Spanish_Urugay	lat1
German_Austria	lat9		Spanish_Venezuela	lat1
German_Germany	lat9		Swedish_Sweden	lat9
German_Liechtenstein	lat9		Turkish_Turkey	lat5
German_Luxembourg	lat9		Ukrainian_Ukraine	cyrl

Chapter 9 – Post-Installation Configuration for SAS OLAP Server Software

SAS OLAP Server includes client components that are used outside of your SAS installation. These components are available on the SAS Client-Side Components CD, Volume 1, and are described below. For more information on using SAS OLAP Cube Studio and SAS OLAP Server Monitor, see the *SAS OLAP Server Administrators Guide* in the SAS 9.1 Help and Documentation. For more information on the Open OLAP Client, see the online help for SAS OLAP Server. The online help also contains more information on the post-installation configuration for V8 SAS OLAP Server.

Open OLAP Client for SAS/MDDB Server 3.0

SAS OLAP Server Software includes an OLE DB provider, Open OLAP Server. The Open OLAP Server allows you to access, update, and manipulate MDDB data on your SAS System from OLE DB- and ADO-compliant applications on Windows platforms.

If you will be using the Open OLAP Server to access SAS MDDBs, you only need to install the Open OLAP Client. The component should be installed on the Windows platform where your OLE DB-compliant applications will run.

SAS OLAP Cube Studio

SAS OLAP Cube Studio, a component of SAS OLAP Server, is designed for the IT professional responsible for building and maintaining OLAP cubes in a corporate environment. SAS OLAP Cube Studio integrates with SAS Management Console and SAS ETL Studio to provide the tools needed to maintain the OLAP environment.

If you will be creating and maintaining SAS OLAP cubes, you need to install SAS OLAP Cube Studio. The component should be installed on the Windows platform you will use to create your cubes.

SAS OLAP Server Monitor for SAS Management Console

SAS OLAP Server Monitor is a plug-in component for SAS Management Console. You use SAS OLAP Server Monitor to monitor the status of your running SAS OLAP Servers.

If you need to monitor the status of your SAS OLAP Servers, you need to install SAS OLAP Server Monitor. The component should be installed on the same Windows platform as SAS Management Console.

Chapter 10 – Post-Installation Configuration for Risk Dimensions Software

Starting the Risk Dimensions Application

A UNIX script file called `sasrisk` is located in your `SASROOT/bin` directory. Append your `SASROOT/bin` directory name to your system PATH environment variable, and use `sasrisk` to start up the Risk Dimensions software.

Chapter 11 – Post-Installation Configuration for SAS/SECURE Software

SAS/SECURE software includes client components that non-SAS System client applications can use to communicate with a SAS server in a secure environment. To use encryption between a non-SAS System client and a SAS server with SAS/SECURE software licensed, you must install the SAS/SECURE client components on the client machine. The SAS/SECURE client components are available on the SAS/SECURE CD accessible through the SAS Software Navigator.

Note: *This install is not necessary if the SAS System is your client. The SAS System installs the components that it needs as part of the SAS System install process.*

SAS/SECURE Client for Windows

The SAS/SECURE components needed by Windows clients can be installed by running the SAS Software Navigator to access the SAS/SECURE CD. The `secwin.exe` executable available in the SECUREWINCLT folder installs the files necessary for the IOM Bridge for COM to use the CryptoAPI algorithms.

SAS/SECURE Client for Java

The SAS/SECURE components for Java clients provide encryption support for Java applications. You can incorporate this support into applications that are written using the following components:

- SAS/SHARE driver for JDBC,
- SAS/CONNECT driver for Java, and
- IOM Bridge for Java.

The SAS/SECURE components needed by Java clients can be installed by running the SAS Software Navigator to access the SAS/SECURE CD. The SECUREJAVA folder contains two JAR files that enable Java clients to use the CryptoAPI algorithms:

- `sas.rutil.jar` - should be copied to the location where the client you are running gets started.
- `sas.core.jar` - included in case you do not already have one however, this will most likely not be needed.

Chapter 12 – Post-Installation Configuration for SAS/SHARE Software

User Authentication

You are required to complete the steps from the section "Configuring User Authentication" in the *Installation Instructions for the SAS 9.1 Foundation for UNIX Environments*. This allows SAS/SHARE software to authenticate a client's identity and check a client's authority to access resources.

System Configuration for the TCP/IP Communications Method

We suggest each SAS/SHARE server that runs on a network node 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/SHARE server has the following form:

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

The server name must be one to eight 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/SHARE server for Marketing and Sales
```

The server name is specified with the `SERVER=` option in the `LIBNAME` statement, in the `OPERATE`, and in the `SERVER` procedure. If a server name is not defined in the services file, you must specify "`__<port#>`", two consecutive underscores followed by the port number (e.g., `server=__5012`).

Client Components

SAS/SHARE software includes client components that are used outside of your SAS 9.1 Foundation installation. SAS/SHARE client components are available on the *SAS Client-Side Components* CDs included in your SAS software order. The SAS/SHARE client components are described below.

SAS/SHARE Data Provider

The SAS/SHARE Data Provider enables you to access, update, and manipulate SAS data using OLE DB- and ADO-compliant applications on Windows platforms.

SAS ODBC Driver

The SAS ODBC Driver enables you to access, update, and manipulate SAS data from ODBC-compliant applications on Windows platforms.

SAS/SHARE Driver for JDBC

The SAS/SHARE Driver for JDBC enables you to write applets, applications, and servlets that access and update SAS data. The Java Tools package that includes the SAS/SHARE driver for JDBC also includes the SAS/CONNECT driver for Java. If you are writing Java programs using these interfaces, you may also want to use the tunnel feature. This optional feature can be used with the Java applets you write to solve some common configuration problems.

SAS/SHARE SQL Library for C

The SAS/SHARE SQL Library for C provides an application programming interface (API) that enables your applications to send SQL queries and statements through a SAS/SHARE server to data on remote hosts.

NLS Information

Sites that develop or support international applications that use SAS/SHARE software should refer to Chapter 9, “Post-Installation Configuration for National Language Support (NLS).”

Chapter 13 – Usage of Host Sort Routines

This chapter provides instructions for making host sort routines available to SAS 9.1. The only supported host sort routine is SyncSort. To use host sort routines with SAS 9.1, complete the following steps:

1. Install the host sort library on your system by following the instructions provided by the vendor. Ensure that the host sort routine works outside of SAS 9.1.

2. Make the host sort library available to SAS 9.1 by following the instructions in the following section, "Making Host Sort Routines Available."

3. Submit an options statement in a SAS session to specify the host sort routine by following the instructions in the section "Using Host Sort Routines in a SAS Session."

Note: For information on using host sort routines in a SAS session once they are available, please refer to the *SAS 9.1 Companion for UNIX Environments*.

Making Host Sort Routines Available

This section describes the system-specific instructions for making host sort routines available to SAS 9.1.

For AIX

Use either of the following two methods.

Create symbolic links to the host sort libraries from one of the directories searched by default, such as `/usr/lib`, as shown in the following example for SyncSort:

```
$ ln -s /usr/local/syncsort/lib/libsyncsort.a /usr/lib
```

or:

Set the environment variable `LIBPATH` to the directory containing the host sort library, as shown in the following example:

Note: If you are running SAS programs through a batch facility, make sure the environment variables described below are set correctly.

Using Bourne Shell

```
$ LIBPATH=/usr/local/syncsort/lib:$LIBPATH
$ export LIBPATH
```

Using C Shell

```
$ setenv LIBPATH /usr/local/syncsort/lib:$LIBPATH
```

For Tru64 UNIX and Solaris

Use either of the following two methods:

Create symbolic links to the host sort libraries from one of the directories searched by default, such as `/usr/lib` as shown in the following example:

```
$ ln –s /usr/local/cosort/lib/libsyncsort.so /usr/lib
```

or:

Set the environment variable `LD_LIBRARY_PATH` to the directory containing the host sort library as shown in the following example:

Note: If you are running SAS programs through a batch facility, make sure the environment variables described below are set correctly.

Using Bourne Shell

```
$ LD_LIBRARY_PATH=/usr/local/syncsort/lib:$LD_LIBRARY_PATH
$ export LD_LIBRARY_PATH
```

Using C Shell

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

For HP-UX

Use either of the following two methods:

Create symbolic links to the host sort libraries from one of the directories searched by default, such as /usr/lib, as shown in the following example:

```
$ ln –s /usr/local/syncsort/lib/libsyncsort.sl /usr/lib
$ ln –s /usr/local/syncsort/lib/libmfsyncsort.sl /usr/lib
```

or:

Set the environment variable `SHLIB_PATH` to the directory containing the host sort library as shown in the following example:

Note: If you are running SAS programs through a batch facility, make sure the environment variables described below are set correctly.

Using Bourne Shell

```
$ SHLIB_PATH=/usr/local/syncsort/lib:$SHLIB_PATH
$ export SHLIB_PATH
```

Using C Shell

```
$ setenv SHLIB_PATH /usr/local/syncsort/lib:$SHLIB_PATH
```

support.sas.com

SAS is the world leader in providing software and services that enable customers to transform data from all areas of their business into intelligence. SAS solutions help organizations make better, more informed decisions and maximize customer, supplier, and organizational relationships. For more than 25 years, SAS has been giving customers around the world The Power to Know®. Visit us at **www.sas.com**.

The Power to Know.