

TS-609

***Minimum Requirements for using SAS/ACCESS®
Software for Relational Databases in the UNIX®
Environment***

***Technical Support Division
UNIX Systems Interface***

***SAS Institute, Inc.
SAS Campus Drive
Cary, N.C. 27513***

Abstract

This paper documents the necessary steps and clarifies the issues involved with the minimum requirements when using SAS/ACCESS Software for Relational Databases in Unix environments.

Introduction

These minimum requirements includes the three different types of environments where SAS/ACCESS most likely would be used: 1) LOCAL: SAS and the relational database system (RDBMS) are on the same UNIX node. 2) REMOTE: SAS and the RDBMS are on the same UNIX platform but are on different nodes. 3) REMOTE: SAS and the RDBMS are on different UNIX platforms.

The SAS/ACCESS product, in general, consists of three procedures: PROC ACCESS, PROC DBLOAD and PROC SQL Pass-Through. However, all three of these procedures may not be available for every RDBMS on every UNIX platform. Users should be familiar with what procedures their SAS/ACCESS product supports for their platform. The SAS System Requirements for your operating system should provide the details of your SAS/ACCESS product.

Your Database Administrator should be able to review the information that follows for you specific RDBMS and provide you with the set-up and environment you need to use SAS/ACCESS with your RDBMS: Oracle®, Informix®, Ingres®, Sybase®, DB2®.

The scenarios, discussion and necessary steps that follow used different references to the operating systems, HP/UX®, SunOS®, and RS6000 AIX®. The scenarios were developed with SAS V6 and SAS V7. In later SAS releases, the minimum requirements may vary slightly.

ORACLE

To access Oracle using SAS/ACCESS Interface to Oracle at a user's site, the customer needs the following software for the platform where SAS is installed:

1. the SAS System (required)
2. the SAS/ACCESS Interface to Oracle (required)
3. the Oracle RDBMS (version 6 or version 7) (required)
4. Oracle SQL*Net drivers (version 2) (optional)

Refer to the System Requirements specific for your operating system for a list of certified RDBMS versions for your operating system, SAS software and the hardware requirements .

scenario 1: Example where SAS and Oracle are installed on the same operating system platform on the same machine:

SAS node = RS6000 AIX 4.2.1 [SAME O.S.]
Oracle node = RS6000 AIX 4.2.1 [SAS NODE = ORACLE NODE]

1. User installs Oracle RDBMS version certified for the RS6000 AIX release. Oracle SQL*Net drivers are not required to be purchased and installed.
2. User installs SAS certified for the RS6000 AIX release on same node where Oracle is installed.
3. User installs SAS/ACCESS Interface to Oracle and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Oracle and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is available at SAS 6.12 and 7.00.

The prelinked image, sasorav7exe, is shipped with SAS 6.12 and was linked with Oracle V7 libraries. The prelinked shared library images, sas{os}730 and sas{os}800, where {os} represents the operating system (i.e. h8x for HP-UX, r6x for AIX RS6000, slx for Solaris 2, alx for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS

System under the UNIX Environments” for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasorav7 at SAS 6.12 and sasora at SAS 7.00.

- 4. The user can use the SAS/ACCESS Interface to Oracle with either the default local Oracle UNIX BEQUEATH driver (prior Oracle Release 7.3.x the BEQUEATH driver was referenced as the PIPE driver) or if SQL*Net is installed (optional), TCP/IP may be used to connect to a local database.*

NOTE: If you are unable to connect to Oracle using SAS/ACCESS, connect to the exact same Oracle database outside of SAS using the Oracle tool, SQLPLUS. SAS/ACCESS uses a similar technique that SQLPLUS does. If you are able to connect using SQLPLUS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- sasorav7 or sasora images have READ and EXECUTE permissions*
- Shared Library Locations for Oracle are designated below:*

*For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:
\$LD_LIBRARY_PATH must contain \$ORACLE_HOME/lib:/usr/ucblib*

*For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$ORACLE_HOME/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$ORACLE_HOME/lib*

*For Digital Unix (AOSF) platforms using SAS 7.00:
\$LD_LIBRARY_PATH contains \$ORACLE_HOME/lib*

- \$TWO_TASK may need to be set on some platforms (ask your DBA for the value of this setting)*
- \$SASORA=V7 at SAS 6.12 for Oracle V7 or Oracle V8.*
- \$SASORA is NOT needed at SAS 7.00.*

scenario 2: *Example where SAS and Oracle are installed on same operating system platform but on two different machines:*

SAS node = RS6000 AIX 4.2.1 [SAME O.S.]

Oracle node = RS6000 AIX 4.2.1 [DIFFERENT NODES]

1. a. *User installs Oracle RDBMS version certified for the RS6000 AIX release.*
- b. *User must also purchase and install the Oracle SQL*Net Software that is used for network communications at their site.*
- c. *User follows Oracle SQL*Net instructions for configuring SAS RS6000 node as an Oracle SQL*Net client node.*

*To install Oracle products on a client node, the user selects the Oracle Installer action 'Install/Upgrade/Patch Software Only. The user follows instructions provided by Oracle and selects the SQL*Net software purchased/licensed. All client libraries required for SAS/ACCESS Interface to Oracle product at a user's site will be installed.*

2. *User installs SAS certified for the RS6000 AIX release on a different RS6000 node from where Oracle is installed. The operating system version on the Oracle RS6000 node must be binary compatible with the operating system version on the SAS RS6000 node.*
3. *User installs SAS/ACCESS Interface to Oracle and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Oracle and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is available at SAS 6.12 and 7.00.*

The prelinked image, sasorav7exe, is shipped with SAS 6.12 was linked with Oracle V7 libraries. The prelinked shared library images, sas{os}730 and sas{os}800, where {os} represents the operating system (i.e. h8x for HP-UX, r6x for AIX RS6000, slx for Solaris 2, alx for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System

under the UNIX Environments” for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasorav7 at SAS 6.12 and sasora at SAS 7.00.

*Note: The user will need to install Oracle SQL*Net products on the SAS node or have an NFS mount to access the Oracle libraries.*

- 4. The user can use the SAS/ACCESS Interface to Oracle on the SAS RS6000 node to access their Oracle RDBMS on the Oracle RS6000 node with the Oracle SQL*Net software they have installed. The most common Oracle SQL*Net protocol for UNIX systems is TCP/IP and is configured by your DBA in the Oracle file, TNSNAMES.ORA.*

*The user may also access any other Oracle server on any node in their network with the Oracle SQL*Net software they have installed and their DBA has configured them within the Oracle file, TNSNAMES.ORA.*

NOTE: *If you are unable to connect to Oracle using SAS/ACCESS, connect to the exact same Oracle database outside of SAS using the Oracle tool, SQLPLUS. SAS/ACCESS uses a similar technique that SQLPLUS does. If you are able to connect using SQLPLUS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- sasorav7 or sasora images have READ and EXECUTE permissions*
- Shared Library Locations for Oracle are designated below:*

*For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:
\$LD_LIBRARY_PATH must contain \$ORACLE_HOME/lib:/usr/ucblib*

*For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$ORACLE_HOME/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$ORACLE_HOME/lib*

*For Digital Unix (AOSF) platforms using SAS 7.00:
\$LD_LIBRARY_PATH contains \$ORACLE_HOME/lib*

- \$TWO_TASK may need to be set on some platforms (ask your DBA for the value of this setting)
- \$SASORA=V7 at SAS 6.12 for Oracle V7 or Oracle V8.
- \$SASORA is NOT needed at SAS 7.00.

scenario 3: Example where SAS and Oracle are installed on different operating system platforms:

SAS node = RS6000 AIX 4.2.1 [DIFFERENT O.S.]
 Oracle node = HP/UX 10.20 [DIFFERENT NODES]

1. a. User installs Oracle RDBMS version certified for the HP/UX release. (Any version of Oracle on any platform is fine since this version of Oracle will not be linked with SAS).
- b. User must also purchase and install the Oracle SQL*Net Software that is used for network communications at their site.
2. a. User purchases and installs the Oracle SQL*Net Software that are used for network communications at their site which are certified for RS6000 AIX. The operating system version on the Oracle RS6000 node must be binary compatible with the operating system version on the SAS RS6000 node. The user may install an Oracle RS6000 database server either on the SAS node or another RS6000 node.
- b. User follows Oracle SQL*Net instructions for configuring SAS RS6000 node as an Oracle SQL*Net client node.

To install Oracle products on a client node, the user selects the Oracle Installer action 'Install/Upgrade/Patch Software Only.' The user follows instructions provided by Oracle and selects the SQL*Net software purchased/licensed. All client libraries required for SAS/ACCESS Interface to Oracle product at a user's site will be installed.

3. User installs SAS certified for the RS6000 AIX release on the same or different RS6000 node from where the Oracle RS6000 client is installed.

4. *User installs SAS/ACCESS Interface to Oracle and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Oracle and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is available at SAS 6.12 and 7.00.*

The prelinked image, sasorav7exe, is shipped with SAS 6.12 was linked with Oracle V7 libraries. The prelinked shared library images, sas{os}730 and sas{os}800, where {os} represents the operating system (i.e. h8x for HP-UX, r6x for AIX RS6000, slx for Solaris 2, alx for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasorav7 at SAS 6.12 and sasora at SAS 7.00.

*Note: The user will need to install Oracle SQL*Net products on the SAS node or have an NFS MOUNT to access the Oracle libraries.*

5. *The user can use the SAS/ACCESS Interface to Oracle on the SAS RS6000 node to access their Oracle RDBMS on the Oracle HP/UX node with the Oracle SQL*Net software they have installed. The most common Oracle SQL*Net protocol for UNIX systems is TCP/IP and is configured by your DBA in the Oracle file, TNSNAMES.ORA.*

*The user may also access any other Oracle server on any node in their network with the Oracle SQL*Net software they have installed, if the DBA has configured them within the Oracle file, TNSNAMES.ORA.*

NOTE: *If you are unable to connect to Oracle using SAS/ACCESS, connect to the exact same Oracle database outside of SAS using the Oracle tool, SQLPLUS. SAS/ACCESS uses a similar technique that SQLPLUS does. If you are able to connect using SQLPLUS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- *sasorav7 or sasora images have READ and EXECUTE permissions*
- *Shared Library Locations for Oracle are designated below:*

For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:

\$LD_LIBRARY_PATH must contain \$ORACLE_HOME/lib:/usr/ucblib

For AIX/RS6000, platforms using SAS 7.00:

\$LIBPATH must contain \$ORACLE_HOME/lib

For HP/UX platforms using SAS 7.00:

\$SHLIB_PATH must contain \$ORACLE_HOME/lib

For Digital Unix (AOSF) platforms using SAS 7.00:

\$LD_LIBRARY_PATH contains \$ORACLE_HOME/lib

- *\$TWO_TASK may need to be set on some platforms (ask your DBA for the value of this setting)*
- *\$\$SASORA=V7 at SAS 6.12 for Oracle V7 or Oracle V8.*
- *\$\$SASORA is NOT needed at SAS 7.00.*

INFORMIX

To access Informix using SAS/ACCESS Interface to Informix at a user's site, the customer needs the following software for the platform where SAS is installed:

1. the SAS System (required)
2. the SAS/ACCESS Interface to Informix (required)
3. INFORMIX ESQL/C development tools (required)
4. INFORMIX-Net (client node or with SE server) or INFORMIX-Star (online server) (optional)

Refer to the System Requirements specific for your operating system for a list of certified RDBMS versions with your SAS software and the hardware requirements .

scenario 1: Example where SAS and Informix are installed on same operating system platform on the same machine:

SAS node = SunOS 5.6 [SAME O.S.]
Informix node = SunOS 5.6 [SAS NODE = INFORMIX NODE]

1. User installs an Informix Server configuration certified for the SunOS release on the Informix node, installing software in the following order:
 - a. Informix software tools (required)
ESQL/C development libraries are required; other tools are optional
 - b. Informix database servers (required)

Informix ONLINE server or Informix SE server
 - c. No Informix networking software is required.
2. User installs SAS certified for the SunOS release on the same node where Informix is installed.
3. User installs SAS/ACCESS Interface to Informix and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Informix and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.

The prelinked shared library images, sasnf720 and sasnf820, where 720 and 820 represents the level of Informix ESQL/C library used to create the shared images, are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasnfx, at SAS 6.12 and SAS 7.00.

- 4. The user can use the SAS/ACCESS Interface to Informix on the SAS SUN/OS node to access their local Informix RDBMS.*

NOTE: If you are unable to connect to Informix using SAS/ACCESS, connect to the exact same Informix database outside of SAS using the Informix tool, DBACCESS. SAS/ACCESS uses a similar technique that DBACCESS does. If you are able to connect using DBACCESS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- sasnfx image have READ and EXECUTE permissions*

- Shared Library Locations for Informix are designated below:*

*For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:
\$LD_LIBRARY_PATH must contain \$INFORMIXDIR/lib and
\$INFORMIXDIR/lib/esql*

*For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$INFORMIXDIR/lib and INFORMIXDIR/lib/esql*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$INFORMIXDIR/lib and
\$INFORMIXDIR/lib/esql*

- \$INFORMIXDIR must be set to the location of the Informix Home/root directory (you may need to ask your DBA for the value for this setting)*

scenario 2: *Example where SAS and Informix are installed on same operating system platform but on two different machines:*

*SAS node = SunOS 5.6 [SAME O.S.]
Informix node = SunOS 5.6 [DIFFERENT NODES]*

1. User installs an Informix Server configuration certified for the SunOS release on the Informix SunOS node, installing software in the following order:

a. Informix software tools (required)

ESQL/C development libraries are required if NFS-mount used for client installation, otherwise ESQL/C development libraries are optional on the server node; other tools are optional.

b. Informix database servers (required)

Informix ONLINE server or Informix SE server

c. Informix networking software (required)

*Informix STAR is required for ONLINE server
Informix NET is required for SE server*

2. User installs an Informix client configuration certified for the SunOS release on the SAS node either installing from media or setting up an NFS-mounted client:

A. Client software installed from media: user installs Informix client software certified for the SunOS release on the SAS node in the following order:

a. Informix software tools (required)

ESQL/C development libraries are required; other tools are optional

b. Informix networking software (required)

Informix NET is required for all Informix client configurations

c. User follows Informix instructions for other tasks necessary to configure an Informix client node.

B. Client software available through NFS mount:

ONLINE users install both Informix Star and Informix Net on the Informix SunOS server node. All users set up an NFS mount between the client SAS node and server Informix node, following instructions from Informix.

- 3. User installs SAS certified for the SunOS release on a node other than where Informix is installed. The operating system on the Informix SunOS node must be binary compatible with the operating system on the SAS SunOS node.*
- 4. User installs SAS/ACCESS Interface to Informix and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Informix and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.*

The prelinked shared library images, sasnf720 and sasnf820, where 720 and 820 represents the level of Informix ESQL/C library release used to create the shared image, are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasnfx, at SAS 6.12 and SAS 7.00.

- 4. The user can use the SAS/ACCESS Interface to Informix on the SAS SunOS node to access their Informix RDBMS on the remote Informix SunOS node. The user may also access any other Informix server on any node in their network accessible to the Informix networking software they have installed.*

NOTE: *If you are unable to connect to Informix using SAS/ACCESS, connect to the exact same Informix database outside of SAS using the Informix tool, DBACCESS. SAS/ACCESS uses a similar technique that DBACCESS does. If you are able to connect using DBACCESS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- sasnfx image have READ and EXECUTE permissions

- Shared Library Locations for Informix are designated below:

For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:

\$LD_LIBRARY_PATH must contain \$INFORMIXDIR/lib and \$INFORMIXDIR/lib/esql

For AIX/RS6000, platforms using SAS 7.00:

\$LIBPATH must contain \$INFORMIXDIR/lib and INFORMIXDIR/lib/esql

For HP/UX platforms using SAS 7.00:

\$SHLIB_PATH must contain \$INFORMIXDIR/lib and \$INFORMIXDIR/lib/esql

- \$INFORMIXDIR must be set to the location of the Informix Home/root directory (you may need to ask your DBA for the value for this setting)

scenario 3: Example where SAS and Informix are installed on different operating system platforms:

SAS node = SunOS 5.6 [DIFFERENT O.S.]

Informix node = RS6000 AIX 4.2.1 [DIFFERENT NODES]

1. User installs an Informix Server configuration certified for the RS6000 AIX release on the Informix node. (Any version of Informix on any node is fine since this version of Informix will not be linked with the SAS system.) Install Informix server software in the following order:

a. Informix software tools (optional)

Informix tools on the Informix RS6000 server node are optional

b. Informix database servers (required)

Informix ONLINE server or Informix SE server

c. Informix networking software (required)

Informix STAR is required for ONLINE server

Informix NET is required for SE server

2. *User installs an Informix client configuration certified the SunOS release on the SAS node installing from media.*

NOTE: The user cannot set up an NFS-mounted client when the operating systems for the client and server are different.

Client software installed from media: user installs Informix client software certified for the SunOS release on the SAS node in the following order:

- a. *Informix software tools (required)*

ESQL/C development libraries are required; other tools are optional.

- b. *Informix networking software (required)*

Informix NET is required for all Informix client configurations

- c. *User follows Informix instructions for other tasks necessary to configure an Informix client node.*

3. *User installs SAS certified for the SunOS release on the SAS node.*

4. *User installs SAS/ACCESS Interface to Informix and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Informix and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.*

The prelinked shared library images, sasnf720 and sasnf820, where 720 and 820 represents the level of Informix ESQL/C library release used to create the shared image, are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasnfx, at SAS 6.12 and SAS 7.00.

5. The user can use the SAS/ACCESS Interface to Informix on the SAS SunOS node to access their Informix RDBMS on the remote Informix SunOS node. The user may also access any other Informix server on any node in their network accessible to the Informix networking software they have installed.

NOTE: If you are unable to connect to Informix using SAS/ACCESS, connect to the exact same Informix database outside of SAS using the Informix tool, DBACCESS. SAS/ACCESS uses a similar technique that DBACCESS does. If you are able to connect using DBACCESS from the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- sasnfx image have READ and EXECUTE permissions

- Shared Library Locations for Informix are designated below:

For SUNOS/Solaris platforms using SAS 6.12 and/or SAS 7.00:
\$LD_LIBRARY_PATH must contain \$INFORMIXDIR/lib and \$INFORMIXDIR/lib/esql

For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$INFORMIXDIR/lib and INFORMIXDIR/lib/esql

For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$INFORMIXDIR/lib and \$INFORMIXDIR/lib/esql

- \$INFORMIXDIR must be set to the location of the Informix Home/root directory (you may need to ask your DBA for the value for this setting)

INGRES

To access Ingres using SAS/ACCESS Interface to Ingres at a user's site, the customer needs the following software for the platform where SAS is installed:

1. the SAS System (required)
2. the SAS/ACCESS Interface to Ingres (required)
3. INGRES ESQ/C software tools (required)
4. INGRES/Net (optional)

Refer to the System Requirements specific for your operating system for a list of certified RDBMS versions with your SAS software and hardware requirements .

scenario 1: Example where SAS and Ingres are installed on same operating system platform on the same machine:

SAS node = HP/UX 10.20 [SAME O.S.]
Ingres node = HP/UX 10.20 [SAS NODE = INGRES NODE]

1. User installs Ingres RDBMS version certified for the HP/UX release. ESQ/C is required and is included in the software distribution. No Ingres networking software is needed. (Note: User installs Ingres using *iibuild* with no options).
2. User installs SAS certified for the HP/UX release on same node where Ingres is installed.
3. User installs SAS/ACCESS Interface to Ingres and executes the SAS/ACCESS installation script (*sasmanager* with V6 and *sassetup* with V7). Executing this script creates an executable image by either 1) linking with SAS, Ingres and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.

The prelinked shared library image, *sasing*, is shipped with SAS V7 and executes using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasing, at SAS 6.12 and SAS 7.00.

4. *The user can use the SAS/ACCESS Interface to Ingres on the SAS HP/UX node to access their local Ingres RDBMS.*

NOTE: If you are unable to connect to Ingres using SAS/ACCESS, connect to the exact same Ingres database outside of SAS using the Ingres SQL tool. SAS/ACCESS uses the similar technique that the Ingres SQL tool does. If you are able to connect using the Ingres SQL TOOL on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- sasing image have READ and EXECUTE permissions*

- Shared Library Locations for Ingres are designated below:*

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00:

\$LD_LIBRARY_PATH must contain \$II_SYSTEM/lib

For AIX/RS6000, platforms using SAS 7.00:

\$LIBPATH must contain \$II_SYSTEM/lib

For HP/UX platforms using SAS 7.00:

\$SHLIB_PATH must contain \$II_SYSTEM/lib

- \$II_SYSTEM must be set to the location of the Ingres home/root directory (you may need to ask your DBA for the value for this setting)*

scenario 2: Example where SAS and Ingres are installed on same operating system platform but on two different machines:

SAS node = HP/UX 10.20 [SAME O.S.]

Ingres node = HP/UX 10.20 [DIFFERENT NODES]

1. a. *User installs Ingres RDBMS version certified for the HP/UX release on the Ingres server node. ESQL/C is required and is included in the software distribution. (Note: User installs Ingres using iibuild with no options).*

with V7). Executing this script creates an executable image by either 1) linking with SAS, Ingres and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.

The prelinked shared library image, *sasing*, is shipped with SAS V7 and executes using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" or details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, *sasing*, at SAS 6.12 and SAS 7.00.

5. The user can use the SAS/ACCESS Interface to Ingres on the SAS HP/UX node to access their Ingres RDBMS on the remote Ingres HP/UX node. The user may also access any other Ingres server on any node in their network accessible to the Ingres/Net networking software they have installed.

NOTE: If you are unable to connect to Ingres using SAS/ACCESS, connect to the exact same Ingres database outside of SAS using the Ingres SQL tool. SAS/ACCESS uses the similar technique that the Ingres SQL TOOL does. If you are able to connect using the Ingres SQL TOOL on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- *sasing* image have READ and EXECUTE permissions

- Shared Library Locations for Ingres are designated below:

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00:

`$LD_LIBRARY_PATH` must contain `$II_SYSTEM/lib`

For AIX/RS6000, platforms using SAS 7.00:

`$LIBPATH` must contain `$II_SYSTEM/lib`

For HP/UX platforms using SAS 7.00:

`$SHLIB_PATH` must contain `$II_SYSTEM/lib`

- *\$II_SYSTEM* must be set to the location of the Ingres home/root directory (you may need to ask your DBA for the value for this setting)

scenario 3: Example where SAS and Ingres are installed on different operating system platforms:

SAS node = HP/UX 10.20 [DIFFERENT O.S.]
Ingres node = SunOS 5.6 [DIFFERENT NODES]

- 1. a. User installs Ingres RDBMS version certified for the SunOS release on the Ingres server node. Ingres tools are optional. Any version of Ingres on any node is fine since this version of Ingres will not be linked with the SAS system. (Note: User installs Ingres using iibuild with no options).*
- b. User must also purchase and install Ingres/Net certified for the SunOS release on the Ingres server node for the protocols that are used for network communications at their site. (Installed as part of main iibuild installation process.)*
- 2. User installs an Ingres client configuration certified for the HP/UX release on the SAS node.*

NOTE: The user cannot set up an NFS-mounted client when the operating systems for the client and server are different.

Client software installed from media: user installs the following Ingres software products certified for the HP/UX release on the SAS node .

a. Ingres software tools (required)

ESQL/C is required and is included in the software distribution; other tools are optional

b. Ingres/NET networking software (required)

Ingres/NET and the Ingres Name Server is required for all Ingres client configurations (Installed as part of main iibuild installation process.)

c. User follows Ingres instructions for other tasks necessary to configure an Ingres client node. (Note: User installs Ingres using `iibuild -t` for a Tools Only client installation.)

- 3. User installs SAS certified for the HP/UX release on the client (SAS) node.*
- 4. User installs SAS/ACCESS Interface to Ingres and executes the SAS/ACCESS installation script (`sasmanager` with V6 and `sassetup` with V7). Executing this script creates an executable image by either 1) linking with SAS, Ingres and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.*

The prelinked shared library image, `sasing`, is shipped with SAS V7 and executes using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for the load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, `sasing` at SAS 6.12 and SAS 7.00.

- 5. The user can use the SAS/ACCESS Interface to Ingres on the SAS HP/UX node to access their Ingres RDBMS on the Ingres SunOS node and any other Ingres server node in their network accessible to the Ingres/Net networking software they have installed.*

NOTE: *If you are unable to connect to Ingres using SAS/ACCESS, connect to the exact same Ingres database outside of SAS using the Ingres SQL tool. SAS/ACCESS uses the similar technique that the Ingres SQL TOOL does. If you are able to connect using the Ingres SQL TOOL on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- `sasing` image have READ and EXECUTE permissions*
- Shared Library Locations for Ingres are designated below:*

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00:

\$LD_LIBRARY_PATH must contain \$II_SYSTEM/lib

*For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$II_SYSTEM/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$II_SYSTEM/lib*

- \$II_SYSTEM must be set to the location of the Ingres home/root directory (you may need to ask your DBA for the value for this setting)*

SYBASE

To access Sybase using SAS/ACCESS Interface to Sybase at a user's site, the customer needs the following software for the platform where SAS is installed:

1. the SAS System (required)
2. the SAS/ACCESS Interface to Sybase (required)
3. Sybase Open Client software tools (required)
4. Sybase Interfaces file and network configuration (required)

Refer to the System Requirements specific for your operating system for a list of certified RDBMS versions with your SAS software and hardware requirements.

scenario 1: Example where SAS and Sybase are installed on same operating system platform on the same machine:

SAS node = HP/UX 10.20 [SAME O.S.]
Sybase node = HP/UX 10.20 [SAS NODE = SYBASE NODE]

1. a. User installs Sybase SQL Server (RDBMS) version certified for the HP/UX release.

b. User installs Sybase Open Client Library certified for the HP/UX release.

c. Sybase Interfaces File (list of known Sybase Servers available to the client application through the user's network). The Sybase Interfaces File is required to be set up (along with networking socket entries, etc.) even when the Sybase server and Sybase Open Client application reside on the same node in the network.
2. User installs SAS certified for the HP/UX release on same node where Sybase is installed.
3. User installs SAS/ACCESS Interface to Sybase and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Sybase Open-Client and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00

The prelinked image, sassyb10, is shipped with SAS 6.12 for Solaris 2 platforms only and must only be use with Sybase Open-Client 10.0

or later. The prelinked shared library images, sy{os}104 and sy{os}111, where {os} represents the operating system (i.e. h8x for HP-UX, r6x for AIX RS6000, slx for Solaris 2, alx for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sassyb, at SAS 6.12 and SAS 7.00.

4. The user can use the SAS/ACCESS Interface to Sybase on the SAS HP/UX node to access their local Sybase RDBMS.

NOTE: If you are unable to connect to Sybase using SAS/ACCESS, connect to the exact same Sybase database outside of SAS using the Sybase ISQL tool. SAS/ACCESS uses a similar technique that the Sybase ISQL tool does. If you are able to connect using the Sybase ISQL tool on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- sassyb image has READ and EXECUTE permissions

- Shared Library Locations for Sybase are designated below:

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00:

`$LD_LIBRARY_PATH` must contain `$SYBASE/lib`

For AIX/RS6000, platforms using SAS 7.00:

`$LIBPATH` must contain `$SYBASE/lib`

For HP/UX platforms using SAS 7.00:

`$SHLIB_PATH` must contain `$SYBASE/lib`

- `$SYBASE` must be set to the location of the Sybase home/root directory (you may need to ask your DBA for the value for this setting)

scenario 2: *Example where SAS and Sybase are installed on same operating system platform but on two different machines:*

SAS node = HP/UX 10.20 [SAME O.S.]
Sybase node = HP/UX 10.20 [DIFFERENT NODES]

1. *On the HP/UX Server (Sybase) node,*
 - a. *User installs Sybase SQL Server (RDBMS) version certified for the HP/UX release. (required)*
 - b. *User installs Sybase Open Client Library certified for the HP/UX release. (optional)*
 - c. *Sybase Interfaces File (list of known Sybase Servers available to the client application through the user's network). The Sybase Interfaces File is required to be set up (along with networking socket entries, etc.) to facilitate client/server communications. (required)*
 2. *On the HP/UX Client (SAS) node,*
 - a. *User installs Sybase Open Client Library certified for the HP/UX release. (required)*
 - b. *Sybase Interfaces File (list of known Sybase Servers available to the client application through the user's network). The Sybase Interfaces File is required to be set up (along with networking socket entries, etc.) to facilitate client/server communications. (required)*
- Alternatively, if both Sybase SQL Server and Sybase Open Client Library and the Interfaces file are all installed on the Sybase HP/UX server node, the user can create an NFS mount between the HP/UX server node and HP/UX client node and setup the networking socket entries, etc. on the client needed by the Sybase Interfaces File. The operating system on both the client and server nodes must be binary compatible for an NFS mount configuration to work.*
3. *User installs SAS certified for the HP/UX release on a node other than where Sybase is installed.*

4. User installs SAS/ACCESS Interface to Sybase and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Sybase Open-Client and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.

The prelinked image, *sassyb10*, is shipped with SAS 6.12 for Solaris 2 platforms only and must only be use with Sybase Open-Client 10.0 or later. The prelinked shared library images, *sy{os}104* and *sy{os}111*, where {os} represents the operating system (i.e. *h8x* for HP-UX, *r6x* for AIX RS6000, *slx* for Solaris 2, *alx* for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, *sassyb*, at SAS 6.12 and SAS 7.00.

5. The user can use the SAS/ACCESS Interface to Sybase on the SAS HP/UX node to access their Sybase SQL Server (RDBMS) on the remote Sybase HP/UX node. The user may also access any other Sybase SQL server on any node in their network accessible to the Sybase Interfaces File installed on the client (SAS) HP/UX node.

NOTE: If you are unable to connect to Sybase using SAS/ACCESS, connect to the exact same Sybase database outside of SAS using the Sybase ISQL tool. SAS/ACCESS uses a similar technique that the Sybase ISQL TOOL does. If you are able to connect using the Sybase ISQL tool on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- *sassyb* image has READ and EXECUTE permissions
- Shared Library Locations for Sybase are designated below:

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00: `$LD_LIBRARY_PATH` must contain `$SYBASE/lib`

*For AIX/RS6000, platforms using SAS 7.00:
\$LIBPATH must contain \$SYBASE/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$SYBASE/lib*

- *\$SYBASE must be set to the location of the Sybase home/root directory (you may need to ask your DBA for the value for this setting)*

scenario 3: Example where SAS and Sybase are installed on different operating system platforms:

*SAS node = HP/UX 10.20 [DIFFERENT O.S.]
Sybase node = RS6000 4.2.1 [DIFFERENT NODES]*

1. *On the RS6000 AIX Server (Sybase) node,*
 - a. *User installs Sybase SQL Server (RDBMS) version certified for the RS6000 AIX release. (required)*
 - b. *User installs Sybase Open Client Library certified for the RS6000 AIX release. (optional)*
 - c. *Sybase Interfaces File (list of known Sybase Servers available to the client application through the user's network). The Sybase Interfaces File is required to be set up (along with networking socket entries, etc.) to facilitate client/server communications. (required)*
2. *On the HP/UX Client (SAS) node,*
 - a. *User installs Sybase Open Client Library certified for the HP/UX release. (required)*
 - b. *Sybase Interfaces File (list of known Sybase Servers available to the client application through the user's network). The Sybase Interfaces File is required to be set up (along with networking socket entries, etc.) to facilitate client/server communications. (required)*

NOTE: The user cannot set up an NFS-mounted client when the operating systems for the client and server are different.

3. User installs SAS certified for the HP/UX release on the client (SAS) node.
4. User installs SAS/ACCESS Interface to Sybase and executes the SAS/ACCESS installation script (sasmanager with V6 and sasssetup with V7). Executing this script creates an executable image by either 1) linking with SAS, Sybase Open-Client and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS which is only available at SAS 7.00.

The prelinked image, *sassyb10*, is shipped with SAS 6.12 for Solaris 2 platforms only and must only be use with Sybase Open-Client 10.0 or later. The prelinked shared library images, *sy{os}104* and *sy{os}111*, where {os} represents the operating system (i.e. *h8x* for HP-UX, *r6x* for AIX RS6000, *slx* for Solaris 2, *alx* for Digital Unix), are shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, *sassyb* at SAS 6.12 and SAS 7.00.

5. The user can use the SAS/ACCESS Interface to Sybase on the SAS HP/UX node to access their Sybase SQL Server (RDBMS) on the remote Sybase RS6000 node. The user may also access any other Sybase SQL server on any node in their network accessible to the Sybase Interfaces File installed on the client (SAS) HP/UX node.

NOTE: If you are unable to connect to Sybase using SAS/ACCESS, connect to the exact same Sybase database outside of SAS using the Sybase ISQL tool. SAS/ACCESS uses a similar technique that the Sybase ISQL TOOL does. If you are able to connect using the Sybase ISQL tool on the same SAS node, same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- *sassyb* image has READ and EXECUTE permissions

- Shared Library Locations for Sybase are designated below:

For SUNOS/Solaris and Digital Unix (AOSF) platforms using SAS 6.12 and/or SAS 7.00:

\$LD_LIBRARY_PATH must contain \$SYBASE/lib

For AIX/RS6000, platforms using SAS 7.00:

\$LIBPATH must contain \$SYBASE/lib

For HP/UX platforms using SAS 7.00:

\$SHLIB_PATH must contain \$SYBASE/lib

- *\$SYBASE must be set to the location of the Sybase home/root directory (you may need to ask your DBA for the value for this setting)*

DB2

To access DB2 using SAS/ACCESS Interface to DB2 at a user's site, the customer needs the following software for the platform where SAS is installed:

1. the SAS System (required)
2. the SAS/ACCESS Interface to Oracle (required)
3. the DB2 RDBMS (version1/version2/version 5 (required)
4. DB2/6000 Client Enabler Software (version1/version2/version5(required)
5. DB2 Software Developer's Kit (optional)
6. DDCS/6000 product (access DRDA host databases) -or- the DB2 Connect product which replaces the DDCS/6000 product at later releases of DB2 (optional).

Refer to the System Requirements specific for your operating system for a list of certified RDBMS versions with your SAS software and hardware requirements

scenario 1: Example where SAS and DB2 are installed on same operating system platform on the same machine:

SAS node = RS6000 AIX 4.2.1 [SAME O.S.]

DB2 node = RS6000 AIX 4.2.1 [SAS NODE = DB2 NODE]

1. User installs DB2 RDBMS version certified for the RS6000 AIX release. No network communications software need to be purchased and installed.
2. User installs SAS certified for the RS6000 AIX release on same node where DB2 is installed.
3. User installs SAS/ACCESS Interface to DB2 and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, DB2 and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS that is available at both SAS 6.12 and SAS 7.00.

The prelinked image, sasptdb2, is shipped with SAS 6.12 for AIX/RS6000 platforms only. The prelinked shared library images, sasdbu, is shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems

Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasptdb2 at SAS 6.12 and sasdbu at SAS 7.00.

4. *The user can use the SAS/ACCESS Interface to DB2 on the SAS AIX/RS6000 node to access the local DB2 database.*

NOTE: *If you are unable to connect to DB2 using SAS/ACCESS, connect to the exact same DB2 database outside of SAS using the DB2 Command Line Processor. SAS/ACCESS uses a similar technique that the DB2 Command Line Processor does. If you are able to connect using the DB2 Command Line Processor on the same SAS node, with same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- *sasptdb2 (SAS 6.12) or sasdbu (SAS 7.00) images have READ and EXECUTE permissions*

- *Shared Library Locations for DB2 are designated below:*

For SUNOS/Solaris platforms using SAS 7.00:

\$LD_LIBRARY_PATH must contain \$INSTHOME/lib

For AIX/RS6000, platforms using SAS 6.12 and/or SAS 7.00:

\$LIBPATH must contain \$INSTHOME/lib

For HP/UX platforms using SAS 7.00:

\$SHLIB_PATH must contain \$INSTHOME/lib

- *\$INSTHOME must be set to the location of the DB2 home/root directory (you may need to ask your DBA for the value for this setting)*

- *SAS 6.12 was BINDed with DB2 using the following DB2 command from within the DB2 Command Line Processor:*

> BIND !SASROOT/sas612/saspgm/dbi/obj/sasdb2.bnd

NOTE: *SAS 7.00 does not require binding of the SAS application Since SAS 7.00 uses the CLI Interface.*

- SAS 6.12 users have been granted execute privileges on the DB2.SASDB2 package. For example, to give all users permission to use SAS/ACCESS to DB2, issue the following DB2 command from the DB2 Command Line Processor:
 - > GRANT execute on package DB2.SASDB2 to public

scenario 2: Example where SAS and DB2 are installed on same operating system platform but on two different machines:

SAS node = RS6000 AIX 4.2.1 { SAME O.S.]
DB2 node = RS6000 AIX 4.2.1 [DIFFERENT NODES]

1. a. User installs DB2 RDBMS version certified for the RS6000 AIX release.
 - b. User must also purchase and install the DB2 Client Enabler Software which is used for Client/Server communications at their site.
 - c. User follows DB2 Client Enabler Software instructions for configuring SAS RS6000 node as a DB2 client node. To install DB2 products on a client node, the user executes "db2setup" and follows the instructions from the db2setup menu. User selects the DB2 Client Enabler option for Client/Server Communications. The user may also select the Software Developers Kit (SDK) optional option to select from this menu as well. All client libraries needed to access DB2 using SAS/ACCESS at a user's site will be installed.
2. User installs the latest SAS release certified for the RS6000 AIX release on a different RS6000 node from where DB2 is installed. The operating system version on the DB2 RS6000 node must be binary compatible with the operating system version on the SAS RS6000 node.
3. User installs SAS/ACCESS Interface to DB2 and executes the SAS/ACCESS installation script (sasmanager with V6 and sasssetup with V7). Executing this script creates an executable image by either 1) linking with SAS, DB2 and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS that is available at both SAS 6.12 and SAS 7.00.

The prelinked image, sasptdb2, is shipped with SAS 6.12 for AIX/RS6000 platforms only. The prelinked shared library images,

sasdbu, is shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasptdb2 at SAS 6.12 and sasdbu at SAS 7.00.

- 4. The user can use the SAS/ACCESS Interface to DB2 on the SAS AIX/RS6000 node to access their DB2 RDBMS on the remote DB2 RS6000 node. The user may also access any other DB2 RDBMS on any node in their network assuming the DB2 Client Enabler Software or the DB2 Connect Software (A.K.A. DDCS/6000 product) is installed and is configured to connect to these nodes correctly using the DB2 instructions on the client (SAS) AIX/RS6000 node.*

NOTE: *If you are unable to connect to DB2 using SAS/ACCESS, connect to the exact same DB2 database outside of SAS using the DB2 Command Line Processor. SAS/ACCESS uses a similar technique that the DB2 Command Line Processor does. If you are able to connect using the DB2 Command Line Processor on the same SAS node, with same userid and password, and same environment then it should work using SAS/ACCESS.*

Be sure of the following:

- sasptdb2 (SAS 6.12) or sasdbu (SAS 7.00) images have READ and EXECUTE permissions*
- Shared Library Locations for DB2 are designated below:*

*For SUNOS/Solaris platforms using SAS 7.00:
\$LD_LIBRARY_PATH must contain \$INSTHOME/lib*

*For AIX/RS6000, platforms using SAS 6.12 and/or SAS 7.00:
\$LIBPATH must contain \$INSTHOME/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$INSTHOME/lib*

- \$INSTHOME must be set to the location of the DB2 home/root directory (you may need to ask your DBA for the value for this setting)*

- SAS 6.12 was BINDed with DB2 using the following DB2 command from within the DB2 Command Line Processor:
 - > BIND !SASROOT/sas612/saspgm/dbi/obj/sasdb2.bnd

NOTE: SAS 7.00 does not require binding of the SAS application
Since SAS 7.00 uses the CLI Interface.

- SAS 6.12 users have been granted execute privileges on the DB2.SASDB2 package. For example, to give all users permission to use SAS/ACCESS to DB2, issue the following DB2 command from the DB2 Command Line Processor:
 - > GRANT execute on package DB2.SASDB2 to public

scenario 3: Example where SAS and DB2 are installed on different operating system platforms:

SAS node = SUNOS 5.6 [DIFFERENT O.S.]
DB2 node = MVS MAINFRAME [DIFFERENT NODES]

1. a. User installs DB2 RDBMS version certified for the MVS MAINFRAME release.

b. User follows DB2 Client Enabler Software Instructions for configuring SAS SUNOS node as a DB2 client node.
2. a. User purchases and installs the DB2 Connect or the DDCS product to access DRDA host databases certified for the OS release , in this case MVS MAINFRAME DB2 node, at their site.

b. User follows the DB2 Connect or DDCS product instructions for configuring SAS SUNOS node as a DB2 client node.
3. User installs the SAS release certified for the SUNOS release on their SAS node.
4. User installs SAS/ACCESS Interface to DB2 and executes the SAS/ACCESS installation script (sasmanager with V6 and sassetup with V7). Executing this script creates an executable image by either 1) linking with SAS, DB2 and system libraries which is only done at SAS V6 or 2) using the prelinked image shipped with SAS/ACCESS that is available at both SAS 6.12 and SAS 7.00.

The prelinked image, sasptdb2, is shipped with SAS 6.12 for AIX/RS6000 platforms only. The prelinked shared library images, sasdbu, is shipped with SAS V7 and execute using the matching RDBMS release shared libraries which must be set to the appropriate environment variable for load libraries for your specific operating system. Refer to the "Installation Instructions and Systems Administrator's Guide for Version 7 (TS P1) of the SAS System under the UNIX Environments" for details on setting these environments and validating your SAS/ACCESS Installation.

The resulting image whether created or copied will be named, sasptdb2 at SAS 6.12 and sasdbu at SAS 7.00.

5. *The user can use the SAS/ACCESS Interface to DB2 on the SAS SUNOS node to access their DB2 RDBMS on the remote MVS MAINFRAME node. The user may also access any other DB2 RDBMS on any node in their network assuming the DB2 Client Enabler Software or the DB2 Connect Software (A.K.A. DDCS/6000 product) is installed and is configured to connect to these nodes correctly using the DB2 instructions on the client (SAS) SUNOS node.*

NOTE: If you are unable to connect to DB2 using SAS/ACCESS, connect to the exact same DB2 database outside of SAS using the DB2 Command Line Processor. SAS/ACCESS uses a similar technique that the DB2 Command Line Processor does. If you are able to connect using the DB2 Command Line Processor on the same SAS node, with same userid and password, and same environment then it should work using SAS/ACCESS.

Be sure of the following:

- *sasptdb2 (SAS 6.12) or sasdbu (SAS 7.00) images have READ and EXECUTE permissions*
- *Shared Library Locations for DB2 are designated below:*

*For SUNOS/Solaris platforms using SAS 7.00:
\$LD_LIBRARY_PATH must contain \$INSTHOME/lib*

*For AIX/RS6000, platforms using SAS 6.12 and/or SAS 7.00:
\$LIBPATH must contain \$INSTHOME/lib*

*For HP/UX platforms using SAS 7.00:
\$SHLIB_PATH must contain \$INSTHOME/lib*

- *\$INSTHOME* must be set to the location of the DB2 home/root directory (you may need to ask your DBA for the value for this setting)
- SAS 6.12 was *BINDed* with DB2 using the following DB2 command from within the DB2 Command Line Processor:
 - > *BIND !SASROOT/sas612/saspgm/dbi/obj/sasdb2.bnd*

*NOTE: SAS 7.00 does not require binding of the SAS application
 Since SAS 7.00 uses the CLI Interface.*

- SAS 6.12 users have been granted execute privileges on the DB2.SASDB2 package. For example, to give all users permission to use SAS/ACCESS to DB2, issue the following DB2 command from the DB2 Command Line Processor:
 - > *GRANT execute on package DB2.SASDB2 to public*

Conclusion

This paper discussed the minimum requirements for accessing different RDBMS using SAS/ACCESS on UNIX platforms. This discussion includes details and scenarios referencing different operating systems and RDBMS's

For additional information on the RDBMS referenced in this report, please refer to your RDBMS manuals or ask your Database Administrator for assistance.

For detailed information on the SAS/ACCESS operating system software and hardware requirements and SAS/ACCESS product and usage, reference the following manuals:

Installation Instructions and System Administrator's Guide for Version 7 (TS P1) of the SAS System under UNIX Environments

Installation Instructions for the SAS System under UNIX Environments, Release 6.12

System Requirements, The SAS System Version 7 (for Solaris 2, HP-UX, AIX/6000, COMPAQ's Digital Unix)

System Requirements, The SAS System Release 6.12 (for SUNOS/Solaris 2, HP-UX, AIX/6000, COMPAQ's Digital Unix)

SAS/ACCESS Software for Relational Databases Reference, Version 6 (# 55144)

SAS/ACCESS Interface to ORACLE Usage and Reference, Version 6 (# 56082)

SAS/ACCESS Interface to SYBASE and SQL Server Usage and Reference, Version 6 (# 56081)

SAS/ACCESS Interface to INGRES Usage and Reference, Version 6 (# 56072)

SAS/ACCESS Software Changes and Enhancements, SQL Procedure Pass-Through Facility, Version 6 (# 55237)

SAS/ACCESS Interface to INFORMIX Technical Report, SQL Procedure Pass-Through Facility, Release 6.09 (# 55119)

SAS Software Changes and Enhancements, Release 6.11 (# 55300)

SAS Technical Report, Append Capability for PROC DBLOAD (TS-347)

Getting Started with SAS/ACCESS Software, Version 6 (# 55103)

TS 518A SAS/ACCESS Guidelines for Connecting to DB2 Databases in the Unix Environment

TS 518B SAS/ACCESS Guidelines for Connecting to Informix Databases in the Unix Environment

TS 518C SAS/ACCESS Guidelines for Connecting to Ingres Databases in the Unix Environment

TS 518D SAS/ACCESS Guidelines for Connecting to Oracle Databases in the Unix Environment

TS 518E SAS/ACCESS Guidelines for Connecting to Sybase Databases in the Unix Environment

TS 566A Processing DB2 Dates with SAS/ACCESS in the Unix Environment

TS 566D Processing Oracle Dates with SAS/ACCESS in the Unix Environment

TS 566E Processing Sybase Dates with SAS/ACCESS in the Unix Environment