System Requirements for SAS® 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture
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*System Requirements for SAS® 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture*

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July 2015

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Overview

This document provides requirements for installing and running SAS 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture. You must update your system to meet the minimum requirements before running SAS 9.4 Foundation. The major requirements listed in the document are of the following types:

- Software Requirements
- Hardware Requirements
- Space Requirements
- Specific Product Requirements

Additional Resources

Configuring Your IO Subsystem

We recommend the white paper titled Best Practices for Configuring your IO Subsystem for SAS®9 Applications. You can access it at the following web page:

Support for Alternative Operating Systems

This document lists the operating systems deployed by SAS in testing the software. Additional operating systems may also be supported. For information about variants of operating systems that are alternatives to the list that SAS identifies as officially supported, see
http://support.sas.com/techsup/pcn/altopsys.html

Troubleshooting System Performance Problems

For a list of papers that are useful for troubleshooting system performance problems, see
http://support.sas.com/kb/42/197.html
Software Requirements

Operating System

SAS 9.4 Foundation is supported on the HP-UX 11i version 3 (11.31) operating system, update 9 and higher.

Your operating system should have the PHKL_41967-11.31.fs select cumulative patch or higher applied.

In addition, if you are using HP-UX 11.31, the Atomic APIs product B.11.31.0803.01 is required. This software package is available for download from the HP web site at https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productId=Atomic

Note: The patch level listed was correct at the time this document was published. However, patches that are required for HP-UX for the Itanium Processor Family Architecture are subject to unexpected change. To verify that you have the latest patch requirements, go to the Install Center web page (http://support.sas.com/installcenter) to find the most recent updates to this System Requirements document.

The file systems where SAS is installed must have the setuid mount option enabled because sasauth, sasperm, and elssrv require it at SAS runtime.

Streams

SAS for HP-UX requires that HP Streams be installed and enabled. The Streams product is generally installed by default. This can be quickly verified by performing the following command:

/usr/sbin/swlist -l product | grep Streams

If the Streams product is not found, it must first be installed before continuing. The software is included on the HP-UX installation media that accompanied the system. The Systems Administrator typically performs this installation.

Once installed, Streams must also be enabled in the HP-UX kernel. Streams status can be checked by running the following command:

/usr/sbin/kctune -v streampipes

If “Current Value” is “1”, HP Streams is enabled, and you can skip the remaining steps, which describe how to enable Streams.

If “Current Value” is “0”, first the streampipes kernel variable must be changed and then the system must be rebooted to enable streams. These actions are privileged and are generally performed by the Systems Administrator.

To change the streampipes kernel variable, run the following command:

/usr/sbin/kctune streampipes=1

On success, a message indicates that the “Value at Next Boot” is “1.” You may now reboot the system or wait for a more convenient time.
**Direct I/O**

You can use Direct I/O to attempt to improve system performance. Direct I/O enables SAS to read files from and write files directly to storage devices without going through the UNIX read and write caches. More information is available in the *SAS Companion for UNIX Environments* at [https://support.sas.com/documentation/cdl/en/hostunx/67929/HTML/default/viewer.htm#titlepage.htm](https://support.sas.com/documentation/cdl/en/hostunx/67929/HTML/default/viewer.htm#titlepage.htm)

You must install the “Online features of the VxFS File System” to enable Direct I/O. This component is not usually installed by default. Verify whether this component is installed by running the following command:

```
/usr/sbin/swlist -l product | grep Online
```

If the component is not found, you must install it to enable Direct I/O. The software is included on the HP-UX installation media that accompanied the system. A Systems Administrator typically performs this installation.

**Java Requirements**

For information about Java Runtime Environment (JRE) requirements, refer to the SAS 9.4 Support for Java Runtime Environments web page: [http://support.sas.com/resources/thirdpartysupport/v94/jres.html](http://support.sas.com/resources/thirdpartysupport/v94/jres.html).

**Web Browser**

SAS 9.4 Foundation uses remote browsing to display web-based information. Instead of running a browser on the UNIX workstation, SAS 9.4 Foundation sends the URL to your desktop computer for display in a web browser. This removes the browser overhead from the UNIX server. A lightweight software agent, the Remote Browser Server, is installed on your desktop computer to enable SAS to communicate with your browser.

SAS creates a URL that references the information to be displayed (usually program help or ODS output) and sends the URL to the SAS Remote Browser Server on your desktop computer (step 1). The Remote Browser Server sends a request to the browser to display a page (step 2). The browser then reconnects to SAS to retrieve the information and displays it in the browser (step 3).
To use remote browsing, your desktop computer must be running on one of the following platforms, and have one of the following supported browsers installed:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Supported Browser</th>
</tr>
</thead>
</table>
| Windows 7 and Windows 8 32-bit and 64-bit | Firefox 6 or higher  
|                        | Internet Explorer 9 or 10 |
| Linux 32-bit and 64-bit | Firefox 6 or higher |

The Remote Browser Server must be installed and running for SAS to display web information. The installer for the Remote Browser Server can be found at [http://www.sas.com/apps/demosdownloads/setupintro.jsp](http://www.sas.com/apps/demosdownloads/setupintro.jsp), or directly downloaded from a SAS session.

For SAS to be able to use your web browser, the browser must be configured to allow pop-up windows.
Hardware Requirements

The following recommendations apply to installation of SAS 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture.

Machines Supported

SAS 9.4 TS1M2 can be installed on all HP machines conforming to IA64.

Earlier maintenance releases of SAS 9.4 (TS1M0 and TS1M1) did not support HP 9500-series (Poulson) processors. For more information, refer to SAS Note 52052, SAS 9.4 cannot run on HP 9500-series (Poulson) processors: http://support.sas.com/kb/52/052.html.

Distribution Media

The following distributions methods are supported:

- Electronic Software Delivery
- DVD

System Configuration

The following are recommended minimums* for a deployment of SAS 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture systems:

Desktop Systems

- A minimum of two cores
- 2 GB RAM (available to SAS)
- Swap space: 1.5 times physical RAM or 250 GB, whichever is less

Server Systems

- A minimum of 4 cores
- 16 GB RAM (available to SAS)
- Swap space: 1.5 times physical RAM or 250 GB, whichever is less
- I/O Throughput of 400 MB/sec

*Note: We strongly suggest working with your SAS Account Team to obtain an official hardware recommendation based on your proposed SAS workload.

Displays Supported

SAS 9.4 supports any X display server in conjunction with an ICCCM-compliant window manager.
**Space Requirements**

The following list contains space requirements in MB for all of the products available with this release of SAS 9.4 Foundation for HP-UX for the Itanium Processor Family Architecture. Use this information to help you determine how much free disk space you must have available before you can install SAS 9.4. In addition, SAS 9.4 Foundation requires approximately 30 MB of disk space on the /tmp partition to complete the installation.

<table>
<thead>
<tr>
<th>Software Product</th>
<th>Required Disk Space (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS software</td>
<td>886</td>
</tr>
<tr>
<td>ODS Templates</td>
<td>50</td>
</tr>
<tr>
<td>Report Fonts for Clients</td>
<td>172</td>
</tr>
<tr>
<td>SAS Data Quality Server software</td>
<td>40</td>
</tr>
<tr>
<td>SAS High-Performance Forecasting software</td>
<td>1</td>
</tr>
<tr>
<td>SAS Install Qualification Tool</td>
<td>5</td>
</tr>
<tr>
<td>SAS Integration Technologies</td>
<td>19</td>
</tr>
<tr>
<td>SAS OLAP Server</td>
<td>7</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2</td>
<td>46</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Greenplum</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Hadoop</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to HP Neoview</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Informix</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Microsoft SQL Server</td>
<td>47</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to MySQL</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Netezza</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to ODBC</td>
<td>3</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle</td>
<td>2</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to PostgreSQL</td>
<td>.5</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to PC Files</td>
<td>8</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Sybase</td>
<td>2</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Sybase IQ</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Teradata</td>
<td>3</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Vertica</td>
<td>1</td>
</tr>
<tr>
<td>SAS/AF</td>
<td>4</td>
</tr>
<tr>
<td>SAS/ASSIST</td>
<td>22</td>
</tr>
<tr>
<td>SAS/CONNECT</td>
<td>9</td>
</tr>
<tr>
<td>SAS/EIS</td>
<td>41</td>
</tr>
<tr>
<td>SAS/ETS</td>
<td>178</td>
</tr>
<tr>
<td>SAS/FSP</td>
<td>3</td>
</tr>
<tr>
<td>SAS/Genetics</td>
<td>26</td>
</tr>
<tr>
<td>SAS/GIS</td>
<td>60</td>
</tr>
<tr>
<td>SAS/GRAPH</td>
<td>2,047 *</td>
</tr>
<tr>
<td>SAS/IML</td>
<td>55</td>
</tr>
<tr>
<td>SAS/IntrNet</td>
<td>5</td>
</tr>
<tr>
<td>SAS/OR</td>
<td>120</td>
</tr>
<tr>
<td>SAS/QC</td>
<td>97</td>
</tr>
<tr>
<td>SAS/SECURE 168-bit</td>
<td>6</td>
</tr>
<tr>
<td>SAS/SECURE SSL</td>
<td>6</td>
</tr>
<tr>
<td>SAS/STAT</td>
<td>359</td>
</tr>
<tr>
<td>SAS/TOOLKIT</td>
<td>3</td>
</tr>
<tr>
<td>SAS/Warehouse Administrator</td>
<td>46</td>
</tr>
</tbody>
</table>

*SAS/GRAPH also includes map data sets from GfKGeoMarketing. SAS/GRAPH now requires 1.3 GB of disk space in addition to the total listed above.*
Specific Product Requirements

Base SAS Software

Requirements for SPD Engine on HP-UX for the Itanium Processor Family

- An SMP (symmetric multiprocessing) computer with at least two CPUs; four are preferred
- At least one I/O channel per two CPUs
- Enough disk drives to have at least one mount point per CPU isolated on its own disk; two mount points per CPU are preferred

SAS Analytics Accelerator for Teradata

The SAS Analytics Accelerator for Teradata requires Base SAS, SAS/ACCESS Interface to Teradata, and at least one of the following products:

- SAS/ETS
- SAS/STAT
- SAS Enterprise Miner

DBMS Products Required

- Teradata Database version 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for Linux (64-bit libraries)

For SAS 9.4M3

DBMS Products Required

- Teradata Database version 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Linux (64-bit libraries)

SAS In-Database Code Accelerator for Greenplum

The SAS In-Database Code Accelerator for Greenplum requires Base SAS and SAS/ACCESS Interface to Greenplum. It also requires the SAS Embedded Process to be installed and configured on your database.

DBMS Products Required

- Greenplum Database version 4.2.2
- Greenplum Partner Connector (GPPC) version 1.2

For SAS 9.4M2 or Higher

DBMS Products Required

- Greenplum Database version 4.3
- Greenplum Partner Connector (GPPC) version 1.2

The recommended DBMS operating system is Red Hat Enterprise Linux 64-bit version 5.5 or higher.
SAS In-Database Code Accelerator for Hadoop

The SAS In-Database Code Accelerator for Hadoop requires Base SAS and SAS/ACCESS Interface to Hadoop. It also requires the SAS Embedded Process to be installed and configured on Hadoop.

For supported Hadoop distributions and versions, refer to the following web page: [http://support.sas.com/resources/thirdpartysupport/v94/hadoop/](http://support.sas.com/resources/thirdpartysupport/v94/hadoop/)

SAS In-Database Code Accelerator for Teradata

The SAS In-Database Code Accelerator for Teradata requires Base SAS and SAS/ACCESS Interface to Teradata. It also requires the SAS Embedded Process to be installed and configured on your database.

**DBMS Products Required**
- Teradata Database version 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for Linux (64-bit libraries)

For SAS 9.4M3

**DBMS Products Required**
- Teradata Database version 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Linux (64-bit libraries)

SAS Scoring Accelerator for DB2

The SAS Scoring Accelerator for DB2 requires Base SAS, SAS Enterprise Miner, SAS/ACCESS Interface to DB2, and SAS/STAT.

**DBMS Products Required**
- IBM DB2 version 10.1 with FixPack 1
- Client utilities for IBM DB2 version 10.1 with FixPack 1

A current version of the IBM XLC compiler must be installed on the DB2 server where you will be publishing scores. Contact your IBM/DB2 representative to obtain the appropriate compiler for your DB2 installation.

**DBMS Operating Systems**
- AIX version 6.1 with TL 6 and Service Pack 5 or higher
- AIX version 7.1 with Service Pack 3 or higher
- Red Hat Enterprise Linux 64-bit, version 5.5 or higher

For SAS 9.4M1 or Higher

**DBMS Products Required**
- IBM DB2 version 10.5 with FixPack 1
- Client utilities for IBM DB2 version 10.5 with FixPack 1 or higher

**DBMS Operating Systems**
- AIX 64-bit, version 7.1 with Service Pack 3 or higher
- Red Hat Enterprise Linux 64-bit, version 5.5 or higher
SAS Scoring Accelerator for Greenplum


DBMS Products Required
- Greenplum Database version 4.2.2.0
- Greenplum Partner Connector (GPPC) version 1.2

The recommended DBMS operating system is Red Hat Enterprise Linux 64-bit, version 5.5 or higher.

For SAS 9.4M2 or Higher

DBMS Products Required
- Greenplum Database version 4.3
- Greenplum Partner Connector version 1.2

The recommended DBMS operating system is Red Hat Enterprise Linux 64-bit version 5.5 or higher.

SAS Scoring Accelerator for Hadoop

The SAS Scoring Accelerator for Hadoop requires Base SAS, SAS/ACCESS Interface to Hadoop, and SAS/STAT. It also requires SAS Enterprise Miner or SAS Model Manager.

For supported Hadoop distributions and versions, refer to the following web page: http://support.sas.com/resources/thirdpartysupport/v94/hadoop/

SAS Scoring Accelerator for Netezza

The SAS Scoring Accelerator for Netezza requires Base SAS, SAS Enterprise Miner, SAS/ACCESS Interface to Netezza, and SAS/STAT.

DBMS Products Required
- IBM Netezza version 7.0
- Client utilities for IBM Netezza version 7.0

For SAS 9.4M3

DBMS Products Required
- IBM Netezza version 7.0.3. Includes support for multi-schema.
- Client utilities for IBM Netezza version 7.0.3

SAS Scoring Accelerator for Oracle

The SAS Scoring Accelerator for Oracle requires Base SAS, SAS/STAT, SAS/ACCESS Interface to Oracle, and SAS Enterprise Miner.

DBMS Products Required
- Oracle Server version 11gr2 BP24 or higher. The database encoding must be UTF8.
- Oracle Client release 11gr2 (64-bit libraries).
The following are the minimum recommended Linux operating system versions for the database:

- Red Hat Enterprise Linux version 5.5
- Oracle Enterprise Linux version 5.5

When this document was published, patches for the following Oracle bugs were not available:

- Bug 12658656 - DUPLICATE SYMBOLS in EXTPROC/AGENT
- Bug 12904682 - CORE DUMP IN MUTEX ACQUIRE WHEN DIAG INITIALIZATION FAILS
- Bug 12904657 - ADR INITIALIZATION FAILS IN SOME EXTPROC THREADS

Until patches can be applied for all three of these bugs, you must add the following line to $ORACLE_HOME/network/admin/sqlnet.ora:

```
DIAG_ADR_ENABLED=OFF
```

No restart is required.

**For SAS 9.4M2 or Higher**

**DBMS Products Required**

- Oracle Server version 11gr2 or Oracle Server version 12c. The database encoding must be UTF8.
- Oracle Client version 11gr2 (64-bit libraries) or Oracle Client version 12c (64-bit libraries).

**DBMS Operating Systems**

- Red Hat Enterprise Linux 64-bit, version 5.5 or higher
- Oracle Enterprise Linux version 5.5

**SAS Scoring Accelerator for SAP HANA**

SAS Scoring Accelerator for SAP HANA was new in SAS 9.4M2. It requires Base SAS, SAS Enterprise Miner, SAS/ACCESS Interface to SAP HANA, and SAS/STAT.

**For SAS 9.4M2**

**DBMS Products Required**

- SAP HANA SPS 08 Server
- Client utilities for SPS 08

**DBMS Operating Systems**

- Red Hat Enterprise Linux 64-bit, version 5.5 or higher
- SUSE Linux Enterprise Server 64-bit, version 11

**SAS Scoring Accelerator for SPD Server**

The SAS Scoring Accelerator for SPD Server requires Base SAS, SAS Enterprise Miner, SAS Scalable Performance Data Server version 5.1, and SAS/STAT.

**For SAS 9.4M3**

**DBMS Product Required**: SAS Scalable Performance Data Server version 5.2
**SAS Scoring Accelerator for Teradata**

The SAS Scoring Accelerator for Teradata requires Base SAS, SAS Enterprise Miner, SAS/ACCESS Interface to Teradata, and SAS/STAT.

**DBMS Products Required**
- Teradata Database version 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for Linux (64-bit libraries)

**For SAS 9.4M3**
- Teradata Database version 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Linux (64-bit libraries)

**SAS/ACCESS Interface to DB2**

Base SAS is required for the installation of SAS/ACCESS Interface to DB2.

**DBMS Products Required**
- IBM DB2 version 10.5 with FixPack 1
- Client utilities for IBM DB2 version 10.5 with FixPack 1 or higher

**For SAS 9.4M1 or Higher**

**DBMS Products Required**
- IBM DB2 version 10.5 with FixPack 1
- Client utilities for IBM DB2 version 10.5 with FixPack 1 or higher

SAS/ACCESS Interface to DB2 can be installed on a DB2 server or on a DB2 client node with an installation of the IBM Data Server Client. In addition, DB2 Connect must be installed to connect to DB2 databases that reside on AS/400, VSE, VM, MVS, and z/OS systems.

**SAS/ACCESS Interface to Greenplum**

Base SAS is required for the installation of SAS/ACCESS Interface to Greenplum.

SAS/ACCESS Interface to Greenplum requires the DataDirect Driver Manager and DataDirect Driver for Greenplum. SAS provides both of these ODBC client components with SAS/ACCESS Interface to Greenplum. When you install SAS, you are asked to specify a location for these components. They must be installed and configured before you use SAS/ACCESS Interface to Greenplum.

For instructions about how to configure SAS/ACCESS Interface to Greenplum, see the *Configuration Guide for SAS 9.4 for UNIX Environments*.

**SAS/ACCESS Interface to Hadoop**

Base SAS is required for the installation of SAS/ACCESS Interface to Hadoop.

For supported Hadoop distributions and versions, refer to the following web page: [http://support.sas.com/resources/thirdpartysupport/v94/hadoop/](http://support.sas.com/resources/thirdpartysupport/v94/hadoop/)
SAS/ACCESS Interface to HAWQ

SAS/ACCESS Interface to HAWQ is new in SAS 9.4M3. Base SAS is required for the installation of SAS/ACCESS Interface to HAWQ.

SAS/ACCESS Interface to HAWQ requires the DataDirect Driver Manager and DataDirect Driver for Greenplum. SAS provides both of these ODBC client components with SAS/ACCESS Interface to HAWQ.

For instructions about how to configure SAS/ACCESS Interface to HAWQ, see the Configuration Guide for SAS 9.4 for UNIX Environments.

SAS/ACCESS Interface to Informix

Base SAS is required for the installation of SAS/ACCESS Interface to Informix.

SAS/ACCESS Interface to Informix uses an ODBC connection. The ODBC driver that is included with Informix Connect must be installed and configured before you can use SAS/ACCESS to Informix.

SAS/ACCESS Interface to Informix also requires the use of communication protocols such as TCP/IP to function properly.

**DBMS Product Required:** Informix Client SDK 350.UC9

*For SAS 9.4M3*

**DBMS Product Required:** Informix Client SDK 4.10FC4 (64-bit only)

SAS/ACCESS Interface to Microsoft SQL Server

Base SAS is required for the installation of SAS/ACCESS Interface to Microsoft SQL Server.

**DBMS Product Required:** Microsoft SQL Server 2008 or higher.

SAS/ACCESS Interface to Microsoft SQL Server requires the DataDirect ODBC Driver Manager and ODBC Driver for Microsoft SQL Server, both of which are provided by SAS with this ACCESS product.

These components must be installed and configured before you use SAS/ACCESS Interface to Microsoft SQL Server. When you install SAS, you can designate where these DataDirect ODBC client components are installed.

*For SAS 9.4M3*

**DBMS Product Required:** Microsoft SQL Server 2012 or higher.

For directions about how to configure SAS/ACCESS Interface to Microsoft SQL Server, see the Configuration Guide for SAS 9.4 for UNIX Environments.
**SAS/ACCESS Interface to MySQL**

Base SAS is required for the installation of SAS/ACCESS Interface to MySQL.

**DBMS Products Required**

- MySQL Client version 5.1
- MySQL Server version 5.0 or higher

For more information about SAS/ACCESS Interface to MySQL, see the MySQL chapter in *SAS/ACCESS Software for Relational Databases: Reference*.

**SAS/ACCESS Interface to Netezza**

Base SAS is required for the installation of SAS/ACCESS Interface to Netezza.

SAS/ACCESS Interface to Netezza requires an ODBC driver from IBM. To obtain the appropriate IBM Netezza ODBC driver, contact IBM Technical Support at (877) 426-6006 or visit the IBM Fix Central website, [http://www.ibm.com/support/fixcentral/](http://www.ibm.com/support/fixcentral/)

**DBMS Products Required**

- IBM Netezza version 6.0 or higher
- Client utilities for IBM Netezza version 4.6.2 or higher

**For SAS 9.4M2 or Higher**

**DBMS Products Required**

- IBM Netezza version 7.0 or higher
- Client utilities for IBM Netezza version 7.0 or higher

For best results, match the Netezza ODBC client version with the version of the Netezza server where it will be connected. For example, if you have a Netezza Interface server release 7.0.3, you should use the ODBC client driver release 7.0.3 with SAS/ACCESS to Netezza.

**SAS/ACCESS Interface to ODBC**

Base SAS is required for the installation of SAS/ACCESS Interface to ODBC.

**DBMS Product Required:** A compliant ODBC driver manager and ODBC driver (64-bit libraries)

ODBC drivers are often available from DBMS vendors and other third-party ODBC driver developers. The ODBC driver that you select may require additional DBMS software in order to access the data.

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

The ODBC drivers are ODBC API-compliant dynamic link libraries, referred to in UNIX as shared objects. You must include the full path to the dynamic link libraries in the OS load library environment variable, i.e., `LD_LIBRARY_PATH`, `LIBPATH`, or `SHLIB_PATH` so that the ODBC drivers can be loaded dynamically at run time. For more information, consult your ODBC driver vendor.
SAS/ACCESS Interface to Oracle

Base SAS is required for the installation of SAS/ACCESS Interface to Oracle.

**DBMS Products Required:** SAS/ACCESS Interface to Oracle can be installed on either a full Oracle RDBMS server node or on an Oracle client node.

The minimum required Oracle Client release is Oracle, Release 11g (64-bit libraries).

**Note:** To use the Bulk Load feature of this SAS product, the Oracle SQL*Loader data-loading utility must be installed. This utility can be obtained by running the Oracle installer and selecting the Oracle Utilities product. Refer to your Oracle documentation for information on SQL*Loader.

SAS/ACCESS Interface to PC Files

Base SAS is required for the installation of SAS/ACCESS Interface to PC Files.

**Product Required on Windows:** 32-bit or 64-bit SAS PC Files Server, running the same “bitness” of ACE (Microsoft Access Database Engine 2010 Redistributable) driver on the same Windows machine.

**DBMS Product Required on Windows:** Microsoft Access Database Engine 2010 Redistributable (ACE) or higher.

SAS/ACCESS Interface to PC Files supports access to virtually any data source through ODBC support on Windows, as well as the following software formats:

- dBase files (.dbf)
- Excel files (.xls, .xlsx, .xlsb, .xlsm)
- JMP files (.jmp is in Base)
- Lotus files (.wk1, .wk3, and .wk4)
- Microsoft Access database files (.mdb or .accdb)
- Paradox (.db)
- SPSS files (.sav)
- Stata files (.dta)

SAS PC Files Server (**pcfserver.exe** or **pcfservice.exe**) running on Windows is required to use the PCFILES libname engine to access Microsoft Access database files, Microsoft Excel workbook files, or any ODBC supported data sources.

You can run SAS PC Files Server as a Windows service or as an application listening to the PCFILES libname engine. SAS PC Files Server provides data encryption and authentication features with default port 9621, which can be configured through the SAS PC Files Server application console. Note that the “bitness” (32-bit or 64-bit) of SAS PC Files Server must match that of the Microsoft ACE driver on the same Windows machine.

SAS/ACCESS Interface to PostgreSQL

Base SAS is required for the installation of SAS/ACCESS Interface to PostgreSQL.

SAS/ACCESS Interface to PostgreSQL is capable of connecting to a PostgreSQL Database 9.1.9 or higher with the included PostgreSQL ODBC driver.
**SAS/ACCESS Interface to SAP HANA**

Base SAS is required for the installation of SAS/ACCESS Interface to SAP HANA.

SAS/ACCESS Interface to SAP HANA requires the ODBC driver (64-bit) for SAP HANA from SAP. The ODBC driver is part of the SAP HANA Client.

**DBMS Product Required:** SAP HANA Client 1.00 (ODBC driver)

**SAS/ACCESS Interface to Sybase**

Base SAS is required for the installation of SAS/ACCESS Interface to Sybase.

**DBMS Product Required:** Sybase Open Client SDK (Software Developers Kit) Software, Release 15.7 or higher (64-bit libraries)

**Note:** SAS/ACCESS Interface to Sybase no longer supports access to Microsoft SQL Server data.
SAS/ACCESS Interface to Sybase software uses the CTLIB API calls to access the Sybase DBMS product. These CTLIB API calls are not supported by Microsoft SQL Server; therefore, you must use SAS/ACCESS Interface to Microsoft SQL Server with an appropriate ODBC driver to access Microsoft SQL Server data.

**Note:** Sybase IQ is not supported; use SAS/ACCESS Interface to Sybase IQ instead.

**SAS/ACCESS Interface to Sybase IQ**

Base SAS is required for the installation of SAS/ACCESS Interface to Sybase IQ.

To obtain the Sybase IQ Network Client, release 15.4 and higher, contact your database administrator or Sybase Technical Support at 1-800-8-SYBASE.

**DBMS Products Required**

- Sybase IQ Network Client version 15.4
- ODBC driver (64-bit version) from Sybase

**For SAS 9.4M3**

**DBMS Products Required**

- Sybase IQ Network Client version 16.0
- ODBC driver (64-bit version) from Sybase

**SAS/ACCESS Interface to Teradata**

Base SAS is required for the installation of SAS/ACCESS Interface to Teradata.

**DBMS Products Required**

- Teradata Database version 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for HP-UX Itanium (64-bit libraries)
For SAS 9.4M3

DBMS Products Required
- Teradata Database version 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Linux (64-bit libraries)

SAS/ACCESS Interface to Vertica
Base SAS is required for the installation of SAS/ACCESS Interface to Vertica.
SAS/ACCESS Interface to Vertica requires an ODBC driver, version 6.1 or higher, to be associated with the Vertica Analytic Database.
For information about where to install the ODBC driver and how to configure SAS software to work with Vertica software, refer to the Configuration Guide for SAS 9.4 Foundation for UNIX Environments.

SAS/AF

Products Required for Build Mode
- Base SAS
- SAS/AF
- SAS/GRAPH (to create and display some graphics objects)
Other products may be required, depending on the application.

Products Required for Run Mode
- Base SAS
- SAS/GRAPH (to display some graphics objects)
Other products may be required, depending on the application.

Printers
- A color or gray-scale printer is required for printing graphics-based objects.
- Certain non-graphic objects may require SAS/GRAPH to print, depending on the object.

SAS/EIS

Products Required for Build Mode
- Base SAS
- SAS/AF
- SAS/EIS
- SAS/FSP
- SAS/GRAPH
Other products may be required, depending on the application.
Products Required for Run Mode
- Base SAS
- SAS/GRAPH
- SAS/EIS

Other products may be required, depending on the application.

Memory
- 96 MB required per concurrent user
- 128 MB recommended per concurrent user

Printers
For printing graphics-based objects, a color or gray-scale printer is required.

SAS/Genetics
Base SAS and SAS/GRAPH are required for the installation of SAS/Genetics.

SAS/GIS

Products Required for Build Mode
- Base SAS
- SAS/AF
- SAS/GIS
- SAS/GRAPH

Other products may be required, depending on the application.

Products Required for Run Mode
- Base SAS
- SAS/FSP
- SAS/GIS
- SAS/GRAPH

Other products may be required, depending on the application.

Printers
A color or gray-scale printer is required.

SAS/IntrNet
SAS/IntrNet consists of several components that may be installed independently. SAS/IntrNet Server software is installed on an existing SAS system and is included on SAS 9.4 media.
CGI Tools and Applications

**Application Dispatcher**
Requires Base SAS and SAS/IntrNet Server. The Application Broker component of the Application Dispatcher must be installed on a web server.

**htmSQL**
Requires Base SAS, SAS/SHARE, and a SAS/IntrNet software license (SETINIT). The htmSQL component must be installed on a web server.

**MDDB Report Viewer Application**
Requires Base SAS, SAS/GRAPH, SAS/IntrNet, and SAS/EIS or SAS OLAP Server software. The Application Dispatcher component must be installed and configured.

**Xplore Sample Web Application**
Requires Base SAS and SAS/IntrNet Server. The Application Dispatcher component must be installed and configured.

Java Tools and Applications

**SAS/CONNECT Driver for Java**
Requires Base SAS, SAS/CONNECT, and SAS/IntrNet Server software. SAS/SHARE must also be installed if data services are used. The Java Tools package must be installed on a web server or client system.

**Tunnel Feature**
Must be installed on a web server running on a UNIX or Windows system.

SAS/OR
The use of graphics in SAS/OR software requires a SAS/GRAPH license. Invoking the OPTLP, OPTMILP, OPTQP, and OPTMODEL procedures in distributed computing mode requires a SAS High-Performance Analytics license.

SAS/Warehouse Administrator

**Products Required for Build Mode**
- Base SAS
- SAS/AF (required only for API usage)
Products Required for Run Mode

- Base SAS
- Other products, depending on the application (e.g., SAS/ACCESS software for access to DBMS tables, SAS/CONNECT for access to remote data, or SAS/AF to access warehouse via method calls)

Printers

- For printing graphics-based objects, a color or gray-scale printer is required.
- Certain non-graphic objects may require SAS/GRAPH software to print, depending on the object.
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