System Requirements
for SAS® 9.4 Foundation
for Linux for x64
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Overview

This document provides requirements for installing and running SAS 9.4 Foundation for Linux for x64. You must update your system to meet the minimum requirements before running SAS 9.4 Foundation. These are the major requirements listed in the document:

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

Additional Resources

Configuring your IO Subsystem


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 useful for troubleshooting system performance problems, see http://support.sas.com/kb/42/197.html
Software Requirements

Operating System

SAS is supported on the following operating systems:

- Oracle Linux 6.1 and higher
- Red Hat Enterprise Linux 6, Update 1 and higher
- Red Hat Enterprise Linux 7 (supported with restrictions)
  For more information, refer to SAS Installation Note 53997: Red Hat Enterprise Linux 7 is supported for SAS 9.4 with restrictions, http://support.sas.com/kb/53/997.html
- SUSE Linux Enterprise Server 11, Service Pack 1 and higher

The typical Linux installation comes with all the packages that SAS requires. Problems can occur if default packages were removed in the base operating system (for example, X11 libraries and system utilities). In particular, if you run Red Hat Enterprise Linux, the libXp and libXmu packages are required.

SAS Foundation 9.4 requires GLIBC 2.12 and the numactl package. In addition, X11/Xmotif (GUI) packages must be installed on any machine where you want to run SAS Foundation 9.4.

Note: To verify that you have the latest patch requirements, we recommend checking periodically for the most recent updates to this System Requirements document on the Install Center web page (http://support.sas.com/installcenter).

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

Operating System Tuning Guidelines

For information about tuning your Linux for x64 operating system for optimum performance of SAS 9.4, refer to “Installation Note 43820: Tuning guidelines for SAS on Red Hat Enterprise Linux” at http://support.sas.com/kb/43/820.html.

Java Requirements

For information about Java Runtime Environment (JRE) requirements, refer to the SAS 9.4 Support for Java Runtime Environments web page, located at 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 architecture 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), then 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 to be displayed 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 it must have one of the supported browsers installed:

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

The Remote Browser Server must be installed and running to enable 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.

To enable SAS 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 Linux for x64.

Machines Supported

The following machines are supported:

- Intel processors with Intel 64 support
- AMD processors with AMD64 support

Distribution Media

The following distribution methods are supported:

- Electronic Software Delivery
- DVD

System Configuration

The following are recommended minimum levels for a deployment of SAS 9.4 Foundation for Linux for x64 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 that you work 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.
## System Requirements for SAS 9.4 Foundation for Linux for x64

### 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 Linux for x64. Use this information to determine the amount of free disk space you must have available before you can install SAS 9.4 Foundation. 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 Server software</td>
<td>172</td>
</tr>
<tr>
<td>SAS Data Quality Server</td>
<td>40</td>
</tr>
<tr>
<td>SAS High-Performance Forecasting</td>
<td>1</td>
</tr>
<tr>
<td>SAS Installation and Qualification Verification software</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 Aster</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Greenplum</td>
<td>46</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Hadoop</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 PC Files</td>
<td>8</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to PostgreSQL</td>
<td>1</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>2047*</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>
</tbody>
</table>

*SAS/GRAPH also includes new pre-production 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 Linux for x64
- 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 Data Quality Accelerator for Teradata

SAS Data Quality Accelerator for Teradata was new in SAS 9.4M1. It requires Base SAS and 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 Linux (64-bit libraries)

For SAS 9.4M3

SAS Data Quality Accelerator for Teradata requires Base SAS and SAS/ACCESS Interface to Teradata.

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 Embedded Process support functions (sasepfunc-15.00-8 or higher). Contact your Teradata representative to obtain these support functions.
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/

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 Aster

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

DBMS Products Required
- Aster Server versions 4.6.3, 5.0.1, 5.1, or 6.0
- Client utilities for Aster version 4.6.3, 5.0.1, or 5.1

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

- Aster Server version 6.0
- Client utilities for Aster version 5.1

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

SAS Scoring Accelerator for DB2

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

DBMS Products Required

- IBM DB2 version 10.1 with FixPack 1
- Client utilities for IBM DB2 version 9.5

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 Technology Level 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

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

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.
**System Requirements for SAS 9.4 Foundation for Linux for x64**

**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/STAT and SAS/ACCESS Interface to Hadoop. 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 12c. The database encoding must be UTF8.
- Oracle Client 11gr2 (64-bit libraries) or Oracle Client 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 or Higher**

**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/STAT, and 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 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/ACCESS Interface to Aster
Base SAS is required for the installation of SAS/ACCESS Interface to Aster.
SAS/ACCESS Interface to Aster requires version 6.0 or higher of the Aster server, and version 5.1 or higher of the Aster ODBC driver (64-bit version) and the bulk loading clients. To obtain the ODBC driver and bulk loading clients, contact Aster Data Technical Support.
Refer to the Configuration Guide for SAS® 9.4 Foundation for UNIX Environments for information about where to install the ODBC driver and bulk loader client and how to configure your SAS software to work with them.

SAS/ACCESS Interface to DB2
Base SAS is required for the installation of SAS/ACCESS Interface to DB2.
DBMS Products Required
- IBM DB2 version 10.1 with FixPack 1
- Client utilities for IBM DB2 version 10.1 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 may be 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/

**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 Impala**

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

**DBMS Products Required**

- Impala Server version 1.2.3 or higher
- ODBC Driver for Impala, version 2.5.13 or higher

In addition, the ODBC Driver for Impala requires a compatible ODBC Driver Manager, such as the unixODBC Driver Manager.

**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 included with Informix Connect must be installed and configured prior to using 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 MS 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**

- Any MySQL Client version 5.1 or higher
- 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/).

*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 you select may require additional DBMS software to access the data.

You may have to use a text editor to modify 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 the vendor of your ODBC driver.

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, you must have Oracle’s SQL*Loader data-loading utility 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 a higher version.
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 number 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 version 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; you must 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 contact 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 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/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, associated with the Vertica Analytic Database.

For information about where to install the ODBC driver and how to configure your 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.
System Requirements for SAS 9.4 Foundation for Linux for x64

Products Required for Run Mode

- Base SAS
- SAS/GRAPH (to display some graphics objects)

Other products may be required, depending on the application.

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.

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/EIS
- SAS/GRAPH

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 installation 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. 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 traditional graphics in SAS/OR software requires a SAS/GRAPH license.

**SAS/QC**
The use of traditional graphics in SAS/QC software requires a SAS/GRAPH license.
SAS is the world leader in providing software and services that enable customers to transform data from all areas of their business into intelligence. SAS solutions help organizations make better, more informed decisions and maximize customer, supplier, and organizational relationships. For more than 30 years, SAS has been giving customers around the world The Power to Know®. Visit us at www.sas.com.