

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



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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. The requirements in this document were updated for SAS 9.4M7 (TS1M7).

Important: Starting with SAS 9.4M8 (TS1M8), SAS Foundation is not available on HP-UX for the Itanium Processor Family Architecture. In order to move forward to SAS 9.4M8, you can promote your content to SAS 9.4M8 installed on one of the available operating environments, or you can migrate to SAS 9.4M8 installed on a machine that is running an available operating system in the same family. For the UNIX operating system family, options such as Red Hat Enterprise Linux are available. Consult the corresponding SAS Foundation System Requirements for the operating system that you select.

For more information, see the [SAS® 9.4 Migration Guide](#).

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 I/O Subsystem

SAS recommends the white paper titled *Best Practices for Configuring your I/O Subsystem for SAS 9 Applications*. You can access it here:

<http://support.sas.com/resources/papers/proceedings16/SAS6761-2016.pdf>.

Support for Alternative Operating Systems

This document lists the operating systems deployed by SAS in testing the software. Additional operating systems might 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 with maintenance levels M0 – M7 is supported on the HP-UX 11i version 3 (11.31) operating system, update 9 and later.

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

Important: For SAS 9.4M6 and SAS 9.4M7, patch PHSS_44707 is required to support Java 8.

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 from the HP website:

<https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=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.

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.

In UNIX environments, the SAS BASE (V9) engine requires a POSIX-compliant file system. Consult the vendor for confirmation that the file system you are considering has been certified POSIX-compliant.

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 can reboot the system now 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>

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: <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-java.html>.

Web Browsers

Both SAS 9.4 Foundation software and client applications support recent versions of popular web browsers to display SAS user interfaces. To run SAS clients, use a browser and platform combination that is listed on the following SAS Support page:

<https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html>.

A few SAS product user interfaces deploy HTML5 to support newer features. For example, SAS Visual Analytics provides an optional “modern” appearance mode. The individual [system requirements documents](#) for these products include a link to additional information about supported web browsers.

SAS 9.4 Foundation offers a Remote Browsing feature to display information. Instead of using a local browser, SAS 9.4 Foundation sends the information as a URL to your desktop computer for display in a web browser. This feature removes the browser overhead from the server and allows for the display of output that requires browser plug-ins that do not run on a 64-bit computer. A software agent, the Remote Browser Server, is installed on your desktop computer to enable SAS to communicate with your browser.

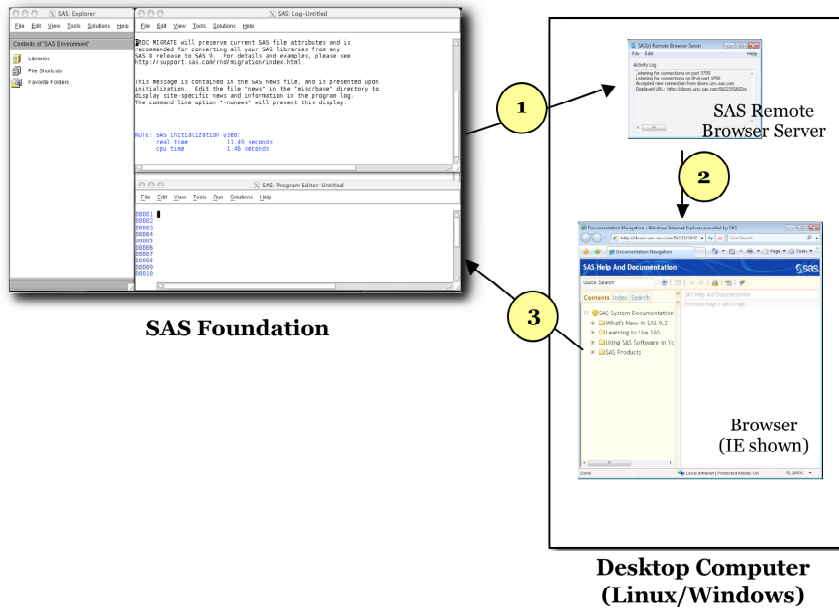
To enable remote browsing, your desktop computer must be running on Windows 10 or later or Linux for x64.

Remote Browsing

SAS 9.4 Foundation uses Remote Browsing to display web-based information. Instead of running a browser on the workstation server, SAS 9.4 Foundation sends the URL to your desktop computer for display in a web browser. This feature removes the browser overhead from the server and allows for the display of output that requires browser plug-ins that do not run on a 64-bit computer. A 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 display it (Step 3).



Remote Browsing runs on Windows 10, Windows 10, and 64-bit Linux. To use the remote browsing feature, your desktop computer must have a recent version of one of the following browsers installed:

- Google Chrome
- Microsoft Edge
- Microsoft Edge on Chromium
- Mozilla Firefox

The SAS Remote Browser Server, SAS Foundation, and client applications support 32-bit or 64-bit browser software. However, 64-bit browsers are recommended.

A supported operating system and browser and the Remote Browser Server must be installed and running on your desktop machine to enable Remote Browsing. The installer for the Remote Browser Server can be found on the SAS 9.4 Software Downloads site (<https://support.sas.com/downloads/>). The browser must also be configured to allow pop-up windows. In addition, make sure that the default browser on the local machine is set to the browser that you want to use, and then select **Default Browser** for the **Display with browser** setting in the Remote Browser Preferences dialog box.

Hardware Requirements

Machines Supported

Starting with the second maintenance release (SAS 9.4M2), SAS 9.4 Foundation can be installed on all HP machines conforming to IA64.

Earlier maintenance releases of SAS 9.4 (9.4M0 and 9.4M1) 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 distribution 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 at least 100 MB/second/core

* **Note:** SAS strongly recommends obtaining a hardware recommendation that is based on your estimated workload and number of users.

Displays Supported

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

Space Requirements

SAS 9.4 Foundation requires approximately 30 MB of disk space on the `/tmp` partition to complete the installation.

SAS strongly recommends consulting with a SAS Sizing Expert to obtain an official hardware recommendation that is based on your estimated SAS workload and number of users. Disk space requirements are provided for individual components in separate documents. However, the space requirements that you can obtain from the individual System Requirements documents that are provided for SAS Solutions and other add-on products are not a substitution for expert advice. To request sizing expertise, send an email to contactcenter@sas.com.

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

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required

- Teradata Database version 13.10 or later
- Teradata CLIV2 client libraries, TTU 13.10 - 16.20 (64-bit libraries)

For SAS 9.4M3

DBMS Products Required

- Teradata Database version 14.10 or later
- Teradata CLIV2 client libraries, TTU 14.10 - 16.20 (64-bit libraries)

For SAS 9.4M4 – 9.4M5

DBMS Products Required

- Teradata Database version 15.10 or later
- Teradata CLIV2 client libraries, TTU 15.10 - 16.20 (64-bit libraries)

For SAS 9.4M6 – SAS 9.4M7

DBMS Products Required

- Teradata Database version 16.10 or later
- Teradata CLIV2 client libraries, TTU 16.10 - 16.20 (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 Operating Systems

- Red Hat Enterprise Linux 64-bit, version 6.7 or later
- SUSE Linux Enterprise Server 64-bit, version 11 or later with the latest Service Pack

DBMS Products Required

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

For SAS 9.4M2 – 9.4M5

DBMS Products Required

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

In Greenplum 5.x, the Partner Connector library (GPPC) is integrated natively into the database. If you are using a Greenplum 5.0 or later database, it is not necessary to install the package. For best performance SAS recommends using Greenplum 5.7 or later.

For SAS 9.4M6 – SAS 9.4M7

DBMS Product Required: Greenplum Database version 5.7 or later

For best results, SAS recommends having the latest Service Packs on the client and server.

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 SAS 9.4M4 – 9.4M6

Hive 0.14 or later is required.

For SAS 9.4M7

Hive 1.1 or later is required.

For supported Hadoop distributions and versions, refer to the following web page:

<https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-hadoop.html>.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For more information about the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

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.

Contact a Teradata representative to obtain the required support functions for the SAS Embedded Process. It is important to install the latest version from Teradata at Your Service. Teradata Customer Service coordinates installation of the SAS Embedded Process packages and application of the SAS Embedded Process support functions (sasepfunc) on the DBMS machine.

Note: *The version number for sasepfunc indicates the latest version of Teradata database that is supported. It is backward-compatible with Teradata Database 15.xx and earlier versions of Teradata Database 16.xx.*

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required:

- Teradata Database version 13.10 or later
- Teradata CLIV2 client libraries, TTU 13.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-14.10 or later)

For SAS 9.4M3 - 9.4M5

DBMS Products Required:

- Teradata Database version 15.10 or later
- Teradata CLIV2 client libraries, TTU 15.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-15.10-4 or later)

For SAS 9.4M6 – SAS 9.4M7

DBMS Products Required:

- Teradata Database version 16.10 or later
- Teradata CLIV2 client libraries, TTU 16.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-16.20-2)

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 Operating System Requirements:

- IBM AIX version 6.1 with TL 6 and Service Pack 5 or later
- IBM AIX version 7.1 with Service Pack 3 or later
- Red Hat Enterprise Linux 64-bit, version 6.7 or later

DBMS Products Required:

- IBM DB2 version 10.1 with FixPack 1 or later
- Client utilities for IBM DB2 version 10.1 with FixPack 1 or later

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

For SAS 9.4M1 – SAS 9.4M7

DBMS Products Required:

- IBM DB2 version 10.5 or later
- Client utilities for IBM DB2 version 10.5 or later

SAS recommends installing the latest FixPack on the client and server.

SAS Scoring Accelerator for Greenplum

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

DBMS Operating Systems:

- Red Hat Enterprise Linux 64-bit, version 6.7 or later (recommended)
- SUSE Linux Enterprise Server 64-bit, version 11 or later with the latest Service Pack

DBMS Products Required:

- Greenplum Database version 4.2.2.0 or later
- Greenplum Partner Connector (GPPC) version 1.2 or later

For SAS 9.4M2 – 9.4M5

DBMS Products Required:

- Greenplum Database version 4.3 or later
- Greenplum Partner Connector (GPCC) version 1.2 or later

In Greenplum 5.x, the Partner Connector library (GPPC) is integrated natively into the database. If you are using a Greenplum 5.0 or later database, it is not necessary to install the package. For best performance SAS recommends using Greenplum 5.7 or later.

For SAS 9.4M6 – SAS 9.4M7

DBMS Products Required: Greenplum Database version 5.7 or later

For best results, SAS recommends installing the latest Service Packs on the client and server.

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 SAS 9.4M4 – 9.4M6

Hive 0.14 or later is required.

For SAS 9.4M7

Hive 1.1 or later is required.

For supported Hadoop distributions and versions, refer to the following web page:
<https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-hadoop.html>.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For more information about the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

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

For SAS 9.4M2 – SAS 9.4M7

DBMS Products Required:

- IBM Netezza version 7.0.4
- Client utilities for IBM Netezza version 7.0.4

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.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Operating Systems:

- Red Hat Enterprise Linux 64-bit, version 6.7 or later
- Oracle Enterprise Linux 64-bit, version 5.5 or later

DBMS Products Required:

- Oracle Server version 11gR2 or later. The database encoding must be UTF8.
- Oracle Client release 11gR2 or later (64-bit libraries)

Notes: *Some additional configuration might be required to use the 12c, 18c, or later client. See the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#) for more information.*

You can also use the Oracle Instant Client with SAS/ACCESS Interface to Oracle. However, if you find any issues, you should switch to the full Oracle client, which is the only Oracle client that SAS uses in official tests. SAS Technical Support will only investigate issues that can be reproduced with the full Oracle client.

SAS Scoring Accelerator for SAP HANA

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

DBMS Operating Systems:

For SAS 9.4M2 – 9.4M3

- Red Hat Enterprise Linux 64-bit, version 6.6 or later
- SUSE Linux Enterprise Server 64-bit, version 11 or later with the latest service pack

For SAS 9.4M4 – 9.4M5

- Red Hat Enterprise Linux 64-bit, version 6.10 or later
- SUSE Linux Enterprise Server 64-bit, version 12 or later with the latest service pack

For SAS 9.4M6 – SAS 9.4M7

- Red Hat Enterprise Linux 64-bit, version 7.2 or later
- SUSE Linux Enterprise Server 64-bit, version 12 or later with the latest service pack

***Note:** Refer to SAP Note 2235581 “SAP HANA: Supported Operating Systems” for more information regarding operating system versions that are supported for a specific SAP HANA release and revision level. This note is available at <https://launchpad.support.sap.com/#/notes/2235581>.*

DBMS Products Required:

For SAS 9.4M2 – 9.4M3

- SAP HANA 1.0 SPS 08 Server or later
- Client utilities for SAP HANA 1.0 SPS 08 or later

For SAS 9.4M4 – 9.4M5

- SAP HANA 1.0 SPS 12 Server or later
- Client utilities for SAP HANA 1.0 SPS 12 or later

For SAS 9.4M6 – SAS 9.4M7

- SAP HANA 2.0 SPS 02 or SAP HANA 2.0 SPS 03 Server
- Client utilities for SAP HANA 2.0 SPS 02 or later

***Note:** In order to run SAS Scoring Accelerator for SAP HANA for SAS 9.4M6 on an SAP HANA 2.0 SPS04 server or later, you must access and apply the software updates for SAS Embedded Process. To access and apply these software updates, request a SAS 9.4M6 instance of SAS Embedded Process from your SAS account representative. If you need assistance in determining your SAS account representative, send an email to contactcenter@sas.com.*

For best results, match the SAP HANA client version with the version of the SAP HANA server where it will be connected. SAS also recommends installing the latest Service Packs on the client and server.

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

For SAS 9.4M4

DBMS Product Required: SAS Scalable Performance Data Server version 5.3

For SAS 9.4M5 – SAS 9.4M7

DBMS Product Required: SAS Scalable Performance Data Server version 5.4

SAS Scoring Accelerator for Teradata

The SAS Scoring Accelerator for Teradata requires Base SAS, SAS/ACCESS Interface to Teradata, SAS Embedded Process support functions, and SAS/STAT.

You must also license either SAS Enterprise Miner or SAS Model Manager, (or both), depending on the type of models that are exported. SAS Model Manager is required for STAT Linear models. SAS Enterprise Miner is required for Enterprise Miner models.

Contact a Teradata representative to obtain the required support functions for the SAS Embedded Process. It is important to install the latest version from Teradata at Your Service. Teradata Customer Service coordinates installation of the SAS Embedded Process packages and application of the SAS Embedded Process support functions (sasepfunc) on the DBMS machine.

Note: The version number for sasepfunc indicates the latest version of Teradata database that is supported. It is backward-compatible with Teradata Database 15.xx and earlier versions of Teradata Database 16.xx.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required:

- Teradata Database version 13.10 or later
- Teradata CLIV2 client libraries, TTU 13.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-13.10-4 or later)

For SAS 9.4M3

DBMS Products Required:

- Teradata Database version 14.10 or later
- Teradata CLIV2 client libraries, TTU 14.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-14.10-4 or later)

For SAS 9.4M4 and 9.4M5

DBMS Products Required:

- Teradata Database version 15.10 or later
- Teradata CLIV2 client libraries, TTU 15.10 - 16.20 (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-15.10-4 or later).

For SAS 9.4M6 – SAS 9.4M7

DBMS Products Required:

- Teradata Database version 16.10 or later
- Teradata CLIV2 client libraries, TTU 16.10 - 16.20 for Linux (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-16.20-2 or later)

SAS/ACCESS Interface to Amazon Redshift

SAS/ACCESS Interface to Amazon Redshift was new with the April 2016 release of SAS/ACCESS. Base SAS is required for the installation of SAS/ACCESS Interface to Amazon Redshift.

SAS/ACCESS Interface to Amazon Redshift includes a required ODBC driver.

For instructions about how to configure SAS/ACCESS Interface to Amazon Redshift, see the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#).

SAS/ACCESS Interface to DB2

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

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 licensed to connect to DB2 databases that reside on AS/400, VSE, VM, MVS, and z/OS systems.

DBMS Products Required:

- IBM DB2 version 10.1 or later
- Client utilities for IBM DB2 version 10.1 or later

For SAS 9.4M1 – 9.4M6

DBMS Products Required:

- IBM DB2 version 10.5 or later
- Client utilities for IBM DB2 version 10.5 or later

For SAS 9.4M7

DBMS Products Required:

- IBM DB2 version 11 or later
- Client utilities for IBM DB2 11 or later

For best results, SAS recommends installing the latest FixPack on the client and server.

SAS/ACCESS Interface to Greenplum

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

SAS/ACCESS Interface to Greenplum includes the required ODBC driver.

For instructions about how to configure SAS/ACCESS Interface to Greenplum, see the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#).

DBMS Product Required: Greenplum Database version 4.3 or later.

SAS does not recommend using Greenplum Database versions 5.0 - 5.6.

For SAS 9.4M6

DBMS Product Required: Greenplum Database version 5.7 or later

For SAS 9.4M7

DBMS Product Required: Greenplum Database version 6.0 or later

For best results, SAS recommends installing the latest Service Packs on the client and server.

SAS/ACCESS Interface to Hadoop

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

For SAS 9.4M4 – 9.4M6

Hive 0.14 or later is required.

For SAS 9.4M7

Hive 1.1 or later is required.

For supported Hadoop distributions and versions, refer to the following web page:

<https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-hadoop.html>.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For more information about the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

SAS/ACCESS Interface to HAWQ

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

SAS/ACCESS Interface to HAWQ includes the required ODBC driver.

For SAS 9.4M3

DBMS Product Required: HAWQ Database version 1.2.1 or later

For SAS 9.4M4

DBMS Product Required: HAWQ Database version 2.0 or later

For SAS 9.4M5 - 9.4M7

DBMS Product Required: HAWQ Database version 2.2 or later

For instructions about how to configure SAS/ACCESS Interface to HAWQ with SAS 9.4M7 or earlier, see the [Configuration Guide for SAS 9.4 Foundation 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 Products Required:

- IBM Informix Client SDK 350.UC9
- IBM Informix Server version 11.5 or later

For SAS 9.4M3 – SAS 9.4M7

DBMS Products Required:

- IBM Informix Client SDK 4.10FC4 (64-bit only)
- IBM Informix Server version 11.5 or later

SAS/ACCESS Interface to JDBC

SAS/ACCESS Interface to JDBC was new with the November 2018 release of SAS/ACCESS. Base SAS is required for the installation of SAS/ACCESS Interface to JDBC.

SAS/ACCESS Interface to JDBC require a Java Database Connectivity (JDBC) driver. JDBC drivers are often available from DBMS vendors and from other third-party JDBC driver developers. SAS recommends using JDBC drivers that comply with the JDBC 4.1 specification or later.

SAS/ACCESS Interface to Microsoft SQL Server

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

SAS/ACCESS Interface to Microsoft SQL Server includes a required ODBC driver.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Product Required: Microsoft SQL Server 2008 or later.

For SAS 9.4M3 – SAS 9.4M7

DBMS Product Required: Microsoft SQL Server 2012 or later.

For directions about how to configure SAS/ACCESS Interface to Microsoft SQL Server, see the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#).

SAS/ACCESS Interface to MySQL

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

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required:

- MySQL Client version 5.1, 5.6, or 5.7
- MySQL Server version 5.1 or later

For SAS 9.4M4 – 9.4M6

DBMS Products Required:

- MySQL Client version 5.6 or 5.7
- MySQL Server version 5.6 or later

For SAS 9.4M7

DBMS Products Required:

- MySQL Client version 5.7 or 8.0
- MySQL Server version 5.7 or later (including MySQL 8)

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 web site, <http://www.ibm.com/support/fixcentral/>

DBMS Products Required:

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

For SAS 9.4M2 – SAS 9.4M7

DBMS Products Required:

- IBM Netezza version 7.0.4
- Client utilities for IBM Netezza version 7.0.4

SAS/ACCESS Interface to ODBC

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

DBMS Products 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 might 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.

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

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required:

- Oracle Database 11gR2 or later
- Oracle Client 11gR2 (64-bit libraries) or later

For SAS 9.4M7

DBMS Products Required:

- Oracle Database 12.1 or later
- Oracle Client 12.1 or later

Notes: *Some additional configuration might be required in order to use the 12c, 18c, or later client. See the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#) for more information.*

You can also use the Oracle Instant Client with SAS/ACCESS Interface to Oracle. However, if you find any issues, you should switch to the full Oracle client, which is the only Oracle client that SAS uses in official tests. SAS Technical Support will only investigate issues that can be reproduced with the full Oracle client.

The database encoding must be UTF8.

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.

For best results, SAS recommends installing the latest patches on the client and server.

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 later.

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, .xslm)
- 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 the PI System

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

SAS/ACCESS Interface to the PI System uses the PI System Web API, which is HTTPS-based and RESTful. No PI System client software is required to be installed on the machine where SAS is running. However, the PI System Web API (PI Web API 2015-R2 or later) must be installed and activated on the host machine where the user connects.

For information about how to configure the PI System on the server, refer to the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#).

SAS/ACCESS Interface to PostgreSQL

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

SAS/ACCESS Interface to PostgreSQL includes the required ODBC driver.

SAS has extended SAS/ACCESS and SAS In-Database Technologies support to selected cloud and database variants of supported data sources. For a list of the supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Product Required: PostgreSQL Database version 9.1.9 or later.

For SAS 9.4M4 and 9.4M5

DBMS Product Required: PostgreSQL Database version 9.1.23 or later.

For SAS 9.4M6 and SAS 9.4M7

DBMS Product Required: PostgreSQL Database version 9.5.14 or later.

SAS/ACCESS Interface to SAP ASE

Base SAS is required for the installation of SAS/ACCESS Interface to SAP ASE (formerly SAS/ACCESS Interface to Sybase).

Note: *Connecting to SAP IQ is not supported by SAS/ACCESS Interface to SAP ASE; use SAS/ACCESS Interface to SAP IQ instead.*

DBMS Product Required: SAP ASE (Sybase) Open Client SDK, Release 15.7 or later (64-bit libraries).

Note: *SAS/ACCESS Interface to SAP ASE no longer supports access to Microsoft SQL Server data. SAS/ACCESS Interface to SAP ASE software uses the CTLIB API calls to access the SAP ASE (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 to access Microsoft SQL Server data.*

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 Products Required:

- SAP HANA 1.0 SPS 08 Server or later
- SAP HANA ODBC Client for SAP HANA 1.0 SPS 08 or later

For SAS 9.4M4 – 9.4M6

DBMS Products Required:

- SAP HANA 1.0 SPS 12 Server or later
- SAP HANA ODBC Client for SAP HANA 1.0 SPS 12 or later

For SAS 9.4M7

DBMS Products Required:

- SAP HANA 2.0 SPS 4 Server or later
- SAP HANA ODBC Client for SAP HANA 2.2.83 or later

For best results, SAS recommends installing the latest Service Packs on the client and server. SAS also recommends matching the SAP HANA client version with the version of the SAP HANA server where it will be connected.

SAS/ACCESS Interface to SAP IQ

Base SAS is required for the installation of SAS/ACCESS Interface to SAP IQ (formerly SAS/ACCESS Interface to Sybase IQ).

To obtain the required SAP IQ Network Client, contact your database administrator or SAP Technical Support.

DBMS Products Required:

- SAP IQ Network Client version 15.4 or later
- SAP IQ Database version 15.4 or later

For SAS 9.4M3 – 9.4M5

DBMS Products Required:

- SAP IQ Network Client version 16.0
- SAP IQ Database version 16.0

For SAS 9.4M6 and 9.4M7

DBMS Products Required:

- SAP IQ Network Client version 16.0 or 16.1*
- SAP IQ Database version 16.0 or 16.1

* A hot fix for SAS/ACCESS Interface to SAP IQ is required in order to use version 16.1 of the client. Once you have applied the hot fix, only the version 16.1 client is supported. See the following SAS note for instructions: [67439](#).

SAS/ACCESS Interface to Teradata

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

SAS has extended SAS/ACCESS support to selected cloud and database variants of supported data sources. For a list of supported variants, see <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-database.html>.

DBMS Products Required:

- Teradata Database version 13.10 or later
- Teradata CLIV2 client libraries, TTU 13.10 - 16.20 (64-bit libraries)

For SAS 9.4M3

DBMS Products Required:

- Teradata Database version 14.10 or later
- Teradata CLIV2 client libraries, TTU 14.10 - 16.20 (64-bit libraries)

For SAS 9.4M4 and SAS 9.4M7

DBMS Products Required:

- Teradata Database version 15.10 or later
- Teradata CLIV2 client libraries, TTU 15.10 - 16.20 (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 the Vertica ODBC Client Driver. To obtain it, contact your database administrator or Micro Focus Technical Support.

DBMS Products Required:

- Vertica Analytic Database version 6.1 or later
- Vertica ODBC client version 6.1 or later

For SAS 9.4M3 – 9.4M5

DBMS Products Required:

- Vertica Analytic Database version 7.1 or later
- Vertica ODBC client version 7.1 or later

For SAS 9.4M6 – SAS 9.4M7

DBMS Products Required:

- Vertica Analytic Database version 9.1 or later
- Vertica ODBC client version 9.1 or later

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 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

Important: Starting with [SAS 9.4M8](#), SAS/Genetics is not available.

A best practice is to unconfigure retired SAS products before you upgrade and to uninstall them after you upgrade. For more information, see [“Unconfiguring and Uninstalling Retired Products”](#) in the SAS Guide to Software Updates and Product Changes.

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.

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 (for example, 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-graphical objects may require SAS/GRAPH software to print, depending on the object.



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