

# **System Requirements for SAS<sup>®</sup> 9.4 Foundation for Linux for x64**



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### **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. It has been updated for SAS 9.4M8 (TS1M8).

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 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 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 Foundation is supported on the following operating systems:

Operating System Family	Notes
<p>Oracle Linux 7.9 (64-bit version) and later within 7.x on the x64 chip family</p> <p>Oracle Linux 8.4 (64-bit version) and later within 8.x on the x64 chip family</p> <p>Oracle Linux 9.1 and later within 9.x (64-bit version) on the x64 chip family</p>	<p>Oracle Linux 6.x and 7.1 and later within 7.x are supported for SAS 9.4M0 through SAS 9.4M7.</p> <p>Starting with SAS 9.4M6, support for Oracle Linux 8.4 and later within 8.x is available.</p> <p>Starting with SAS 9.4M7, support for Oracle Linux 9.1 and later within 9.x is available.</p> <p>Starting with <a href="#">SAS 9.4M8</a>, versions of Oracle Linux older than 7.9 are not supported.</p>
<p>Red Hat Enterprise Linux 7.9 and later (64-bit version) within 7.x on the x64 chip family</p> <p>Red Hat Enterprise Linux 8.4 and later within 8.x (64-bit version) on the x64 chip family</p> <p>Red Hat Enterprise Linux 9.1 and later within 9.x (64-bit version) on the x64 chip family</p>	<p>Red Hat Enterprise Linux 6.x and 7.1 and later within 7.x are supported for SAS 9.4M0 through SAS 9.4M7.</p> <p>Starting with SAS 9.4M6, support for Red Hat Enterprise Linux 9.4 and later within 8.x is available.</p> <p>Starting with SAS 9.4M7, support for Red Hat Enterprise Linux 9.1 and later within 9.x is available.</p> <p>Starting with <a href="#">SAS 9.4M8</a>, versions of Red Hat Enterprise Linux older than 7.9 are not supported.</p>
<p>SUSE Linux Enterprise Server 12 SP5 or later</p> <p>SUSE Linux Enterprise Server 15 SP3 or later</p>	<p>SUSE Linux Enterprise Server 11 is supported for SAS 9.4M0 through SAS 9.4M7*.</p> <p>SUSE Linux Enterprise Server 12 is supported for SAS 9.4M5 and later.</p> <p>SUSE Linux Enterprise Server 15 is supported for <a href="#">SAS 9.4M8</a>.</p> <p>Starting with <a href="#">SAS 9.4M8</a>:</p> <ul style="list-style-type: none"> <li>• Versions of SUSE Linux Enterprise Server older than 12 are not supported</li> <li>• SP5 or later is required with SUSE Linux Enterprise Server 12</li> <li>• Support for SUSE Linux Enterprise Server 15 with SP3 is available</li> </ul>

\* Starting with SAS 9.4M7, the SAS Web Server component cannot be deployed on SUSE Linux Enterprise Server 11. Install SAS Web Server on SUSE Linux Enterprise Server 12 or another supported operating system. You can also choose not to install SAS Web Server.

For details about older versions of Linux that were supported in previous maintenance releases of SAS 9.4, see [SAS Supported Operating Systems](#).

## Libraries and Packages

The typical Linux installation comes with all the packages that SAS requires. Problems can occur if default packages were removed from the base operating system (for example, X11 libraries and system utilities). SAS Foundation 9.4 also requires:

- the numactl package
- glibc2.12 or later. For more information, see [glibc](#), below.
- libpng15. For more information, see [libpng15](#), below.
- X11/Xmotif (GUI) packages
- ncurses-compat-libs

**Note:** The ncurses compatibility library (specifically, libncurses.so.5) is not present on Red Hat Enterprise Linux or Oracle Linux 9.x. Red Hat recommends creating a symlink for the missing libncurses.so.5 library to libncurses.so.6.

- (For Red Hat Enterprise Linux or Oracle Linux) The libXp and libXmu packages

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 Linux 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.

### glibc

SAS 9.4 Foundation requires glibc 2.12 or later. Here are the minimum release levels for Red Hat Enterprise Linux or Oracle Linux:

- Red Hat Enterprise Linux 6 requires glibc-2.12-1.166.el6 and later. Refer to RHBA-2015:1465 to obtain the latest package list.
- Red Hat Enterprise Linux 7 requires glibc-2.17-107.el7 and later. Refer to RHSA-2016:2573 to obtain the latest package list.
- Red Hat Enterprise Linux 8 ships with a default release of glibc 2.28. No update is necessary.

**Note:** To see all content related to the issue, users must log in to the Red Hat website.

To determine which version of glibc is installed on the system where SAS will be installed, use the command `ldd --version`

### libpng15

In order to run in [DMS mode](#), SAS 9.4 Foundation requires libpng15. More recent versions of Linux, such as Red Hat Enterprise Linux 8.x or Oracle Linux 8.x and SUSE Linux Enterprise Server 15, include libpng16 and require you to obtain and install the libpng15 RPM package.

For Red Hat Enterprise Linux or Oracle Linux, you can use the following method to install libpng15:

```
sudo yum install libpng15
```

For SUSE Linux, you can use the following method to install libpng15:

```
zypper addrepo https://download.opensuse.org/repositories/home:ecsos/<version>/home:ecsos.repo
zypper refresh
zypper install libpng15-15
```

Replace <version> with the latest version of the SUSE repositories that is currently available.

## **SELinux and Red Hat Federal Information Processing Standard (FIPS)**

With SAS 9.4M7 and later, Security Enhanced Linux (SELinux) set to Enforcing is supported on Red Hat Enterprise Linux 8.x and 9.x.

With SAS 9.4M8 and later, SAS is supported on Linux when the operating system is running with FIPS mode enabled.

## **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 53873: Operating System Tuning Papers” at

<http://support.sas.com/kb/53/873.html>.

## **Java Requirements**

For information about Java Runtime Environment (JRE) requirements, refer to the SAS 9.4 Support for Java Runtime Environments page:

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

## **Security Requirements**

Starting with SAS 9.4M8, SAS Foundation servers use the cryptographic libraries that are available from the operating systems supported by SAS. Each SAS-supported cipher suite might not be available from all operating systems. When this issue is encountered, use a cipher suite that is supported by both SAS and that operating system, or install a third-party SSL provider for use by SAS.

For more information, see [Encryption in SAS 9.4](#).

## **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 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>.

Most SAS product user interfaces include HTML5 to support newer features. These products require recent browser versions.

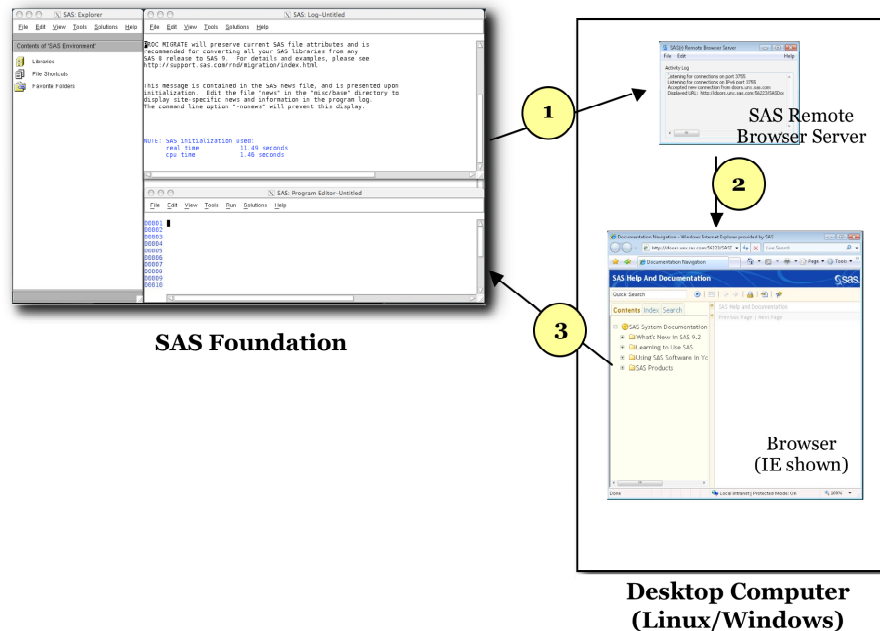
## **Remote Browsing**

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).



With **SAS 9.4M8**, Remote Browsing runs on 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 for 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 (<http://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***

The following machines are supported:

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

### ***System Configuration***

**Important:** *Host name length is restricted to a maximum of 60 characters for all machines in the deployment.*

The following are recommended minimum levels\* for a deployment of SAS 9.4 on Linux for x64:

#### **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](mailto:contactcenter@sas.com).

## 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

### Support for Data Storage in Amazon S3

If you are integrating SAS®9 and SAS Viya, you can access data that is stored in Amazon Simple Storage Service (S3). You can use the `CASLIB` statement to connect the CAS server with an S3 instance. The `FILENAME` statement lets you connect the Compute Server with your S3 data source.

For the S3 procedure, `FILENAME S3`, a CAS S3 data source, and the CAS S3 action set, only AWS is supported. The `FILENAME S3` statement for the Compute Server uses only the AWS S3 REST APIs. EC2 Instance Metadata Service 1 and 2 are supported.

SAS provides S3 support only for Amazon S3. Third-party-compatible providers that implement the public Amazon S3 API might work, but SAS has not validated these providers. As a result, SAS cannot provide direct technical support for other S3-compatible providers.

Before you can use the S3 procedure, an AWS key ID and secret are required. A security token is also required if you are using temporary credentials. For more information, see the [Amazon S3 documentation](#).

For more information about support for Amazon S3, see [S3 Data Source](#) in *SAS Cloud Analytic Services: User's Guide*.

### 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 for Linux (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 for Linux (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 for Linux (64-bit libraries)

### **For SAS 9.4M6 – 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)

### **For SAS 9.4M8**

#### **DBMS Products Required:**

- Teradata Database version 17.10 or later
- Teradata CLIV2 client libraries, TTU 17.10 or later for Linux (64-bit libraries)

## **SAS Data Quality Accelerator for Teradata**

SAS Data Quality 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 for Linux (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 for Linux (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-14.10 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 for Linux (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-15.10-4 or later).

### **For SAS 9.4M6 – 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)

### **For SAS 9.4M8**

#### **DBMS Products Required:**

- Teradata Database version 17.10 or later
- Teradata CLIV2 client libraries, TTU 17.10 or later for Linux (64-bit libraries)
- SAS Embedded Process support functions, latest version available

## **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

**Note:** Starting with SAS 9.4M8, SUSE Linux Enterprise Server 11 is not supported. Use SUSE 12 or SUSE 15 instead.

#### **DBMS Products Required**

- Greenplum Database version 4.2.2 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 (GPPC) 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 and Later**

**DBMS Product Required:** Greenplum Database version 5.7 or later.

For best results, SAS recommends installing 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 and Later**

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 for Linux (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 for Linux (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-15.00-8 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 for Linux (64-bit libraries)
- SAS Embedded Process support functions (sasepfunc-15.10-4 or later)

### **For SAS 9.4M6 – 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)

### **For SAS 9.4M8**

#### **DBMS Products Required:**

- Teradata Database version 17.10 or later
- Teradata CLIV2 client libraries, TTU 17.10 or later for Linux (64-bit libraries)
- SAS Embedded Process support functions, latest version available

## **SAS Scoring Accelerator for Aster**

**Important:** Starting with SAS 9.4M8, SAS Scoring Accelerator for Aster is not available. If you upgrade or migrate SAS Foundation to SAS 9.4M8, SAS recommends that you install and use a different SAS/ACCESS engine and data source instead. Consult the system requirements for the selected SAS/ACCESS engine or contact your SAS representative for assistance.

If you have an existing installation of SAS Scoring Accelerator for Aster in your environment, SAS recommends that you first unconfigure and uninstall before upgrading or migrating to SAS 9.4M8. 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.

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

The recommended DBMS operating system is Red Hat Enterprise Linux 64-bit, version 7.1 or later.

#### **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

### **For SAS 9.4M2 – 9.4M3**

#### **DBMS Products Required**

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

### **For SAS 9.4M4 and Later**

#### **DBMS Products Required:**

- Aster Server version 6.1
- Client utilities for Aster version 6.1 or later

### **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.

A current version of the IBM XLC compiler must be installed on the IBM Db2 server where you will publish scores. Contact an IBM/Db2 representative to obtain the compiler for your Db2 installation.

#### **DBMS Operating Systems:**

- IBM AIX 64-bit 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 or later

### **For SAS 9.4M1 and Later**

#### **DBMS Products Required:**

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

For best results, 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 Enterprise Miner, SAS/ACCESS Interface to Greenplum, and SAS/STAT.

#### **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

**Note:** Starting with SAS 9.4M8, SUSE Linux Enterprise Server 11 is not supported. Use SUSE 12 or SUSE 15 instead.

#### **DBMS Products Required:**

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

### **For SAS 9.4M2 – 9.4M5**

#### **DBMS Products Required:**

- Greenplum Database version 4.3 or later
- Greenplum Partner Connector 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 and Later**

**DBMS Product 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/STAT and SAS/ACCESS Interface to Hadoop. 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 and Later**

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 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 9.4M3 – 9.4M5**

**DBMS Products Required:**

- IBM Netezza version 7.0.3 or later
- Client utilities for IBM Netezza version 7.0.3 or later

**For SAS 9.4M6 and Later**

**DBMS Products Required:**

- IBM Netezza version 7.2.1 or later
- Client utilities for IBM Netezza version 7.2.1 or later

## 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 5.5 or later
- Oracle Enterprise Linux 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.

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

## 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.

### 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 and Later**

- 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 and Later**

- 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](mailto: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 and Later**

**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/STAT, and SAS/ACCESS Interface to Teradata. It also requires SAS Embedded Process support functions.

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 or later for Linux (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 for Linux (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 for Linux (64-bit libraries)
- SAS Embedded Process support functions (*sasepfunc*-15.10-4 or later)

**For SAS 9.4M6 – 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)

**For SAS 9.4M8**

**DBMS Products Required:**

- Teradata Database version 17.10 or later
- Teradata CLIV2 client libraries, TTU 17.10 or later for Linux (64-bit libraries)
- SAS Embedded Process support functions, latest version available

## **SAS/ACCESS Interface to Amazon Redshift**

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](#).

## SAS/ACCESS Interface to Aster

**Important:** Starting with [SAS 9.4M8](#), SAS/ACCESS Interface to Aster is not available. If you upgrade or migrate SAS Foundation to SAS 9.4M8, SAS recommends that you install and use a different SAS/ACCESS engine and data source instead. Consult the system requirements for the selected SAS/ACCESS engine or contact your SAS representative for assistance.

*If you have an existing installation of SAS/ACCESS Interface to Aster in your environment, SAS recommends that you first unconfigure and uninstall before upgrading or migrating to [SAS 9.4M8](#). 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 is required for the installation of SAS/ACCESS Interface to Aster.

SAS/ACCESS Interface to Aster requires 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.

### DBMS Products Required:

- Aster Server version 4.6.3 or later
- Aster ODBC driver version 4.6.3 or later for Linux (64-bit libraries)

### For SAS 9.4M3

#### DBMS Products Required:

- Aster Server version 6.0 or later
- Aster ODBC driver version 5.1 or later for Linux (64-bit libraries)

### For SAS 9.4M4 – 9.4M7

#### DBMS Products Required:

- Aster Server version 6.1 or later
- Aster ODBC driver version 6.1 or later for Linux (64-bit libraries)

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.

SAS/ACCESS Interface to DB2 can be installed on an IBM 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 are installed 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 and Later**

#### **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 Google BigQuery**

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

The required Google BigQuery client library is included with SAS/ACCESS Interface to Google BigQuery.

## **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 64-bit ODBC driver.

For instructions about how to configure SAS/ACCESS Interface to Greenplum, see the [Configuration Guide for SAS 9.4 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 and Later**

**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 and Later**

Hive 1.1 or later is required.

For a list of 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 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

**Important:** Starting with SAS 9.4M8, SAS/ACCESS Interface to HAWQ is not available. If you upgrade or migrate SAS Foundation to SAS 9.4M8, SAS recommends that you install and use SAS/ACCESS Interface to Greenplum instead. Consult the system requirements for SAS/ACCESS Interface to Greenplum or contact your SAS representative for assistance.

*If you have an existing installation of SAS/ACCESS Interface to HAWQ in your environment, SAS recommends that you first unconfigure and uninstall before upgrading or migrating to SAS 9.4M8. 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 is required for the installation of SAS/ACCESS Interface to HAWQ.

SAS/ACCESS Interface to HAWQ includes the required 64-bit 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, 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.

In addition, the ODBC Driver for Impala requires the unixODBC Driver Manager.

### DBMS Products Required:

- Impala Server version 1.2.3 or later
- ODBC Driver for Impala version 2.5.13 or later
- The unixODBC Driver Manager. Use the latest version.

### **For SAS 9.4M4 – 9.4M6**

#### **DBMS Products Required:**

- Impala server version 2.6 or later
- unixODBC Driver for Impala, version 2.5.41 or later
- The latest version of the unixODBC Driver Manager

### **For SAS 9.4M7 and Later**

#### **DBMS Products Required:**

- Impala server version 3.2.0 or later
- ODBC Driver for Impala version 2.6.9 or later

## **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 Products Required:**

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

### **For SAS 9.4M3 and Later**

#### **DBMS Products Required:**

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

## **SAS/ACCESS Interface to JDBC**

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

SAS/ACCESS Interface to JDBC requires 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 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:** Microsoft SQL Server 2008 or later.



### **For SAS 9.4M3 and Later**

**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 for UNIX Environments](#).

## **SAS/ACCESS Interface to MongoDB**

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

SAS/ACCESS Interface to MongoDB requires the MongoDB C Driver (“libmongoc,” the official client library for C applications). You can obtain the latest MongoDB C driver from the following website: <http://mongoc.org/>.

### **DBMS Products Required:**

- MongoDB Server 6.0 or later
- MongoDB C Driver (MongoDB Client) 1.23 or later

SAS recommends using the latest versions as they become available.

SAS/ACCESS Interface to MongoDB supports MongoDB Atlas through the LIBNAME statement for Atlas tiers M10 and later.

You must add the location of the MongoDB C shared libraries to the shared library path environment variable specific to your operating system. For more information, see the *Configuration Guide for SAS 9.4 Foundation for UNIX Environments*, available at the following location: <http://support.sas.com/documentation/installcenter/en/ikfdtnunxcg/66380/PDF/default/config.pdf>.

## **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 and Later**

### **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 post-deployment setup for SAS/ACCESS Interface to MySQL, see the SAS/ACCESS chapter of the [Configuration Guide for SAS 9.4 Foundation for UNIX Environments](#). For more information about using 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/>.

### **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 - 9.4M5**

#### **DBMS Products Required:**

- IBM Netezza version 7.0.3 or later
- Client utilities for IBM Netezza version 7.0.3 or later

### **For SAS 9.4M6 and Later**

#### **DBMS Products Required:**

- IBM Netezza version 7.2.1 or later
- Client utilities for IBM Netezza version 7.2.1 or later

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 7.0.4, you should use the ODBC client driver release 7.0.4 with SAS/ACCESS to Netezza.

## **SAS/ACCESS Interface to ODBC**

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

A compliant ODBC driver manager and ODBC driver (64-bit libraries) are required. ODBC drivers are often available from DBMS vendors and other third-party ODBC driver developers. The ODBC driver that you select might require additional DBMS software to access the data.

You might 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.

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

To use the Bulk Load feature of SAS/ACCESS Interface to Oracle, you must install the Oracle SQL\*Loader data-loading utility. 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 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 and Later

### DBMS Products Required:

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

If your version of the Oracle Database or Client is no longer supported by Oracle, SAS cannot assist you in troubleshooting any issues that you might encounter. Representatives from Oracle are not available to advise SAS on problems with these versions.

**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.*

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 a later 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 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*, available at the following location:  
<http://support.sas.com/documentation/installcenter/en/ikfdtnunxcg/66380/PDF/default/config.pdf>.

## **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 64-bit 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 - 9.4M7**

**DBMS Product Required:** PostgreSQL Database version 9.5.14 or later

### **For SAS 9.4M8**

**DBMS Product Required:** PostgreSQL Database version 12 or later

## **SAS/ACCESS Interface to Salesforce**

Base SAS is required for the installation.

SAS/ACCESS Interface to Salesforce requires a Salesforce user account that has API access enabled. For more information, see the *Configuration Guide for SAS 9.4 Foundation for UNIX Environments*, available at the following location:

<http://support.sas.com/documentation/installcenter/en/ikfdtnunxcg/66380/PDF/default/config.pdf>

**Product Required:** Salesforce API access, version 46.0 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:** *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 (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.*

## **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 and Later**

**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 contact 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 - 9.4M7**

### **DBMS Products Required:**

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

### **For SAS 9.4M8**

### **DBMS Products Required:**

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

\* Prior to [SAS 9.4M8](#), 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 or upgraded to SAS 9.4M8, only the version 16.1 client is supported. See the following SAS note for instructions: [67439](#).

## **SAS/ACCESS Interface to Snowflake**

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

Starting with [SAS 9.4M8](#), SAS/ACCESS Interface to Snowflake includes a required ODBC driver. With previous maintenance releases, you must obtain and configure the required Snowflake ODBC driver and the ODBC driver manager.

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

## SAS/ACCESS Interface to Spark

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

Spark 3.1 or later is required.

Starting with SAS 9.4M7, SAS/ACCESS Interface to Spark has been updated to include support for Databricks clusters. Databricks 10.4 or later (with Spark 3.2.x or later) is supported.

You can also access Spark data sources using optional JDBC drivers that you obtain and configure. SAS 9.4M8 supports the Databricks JDBC Driver for access to Spark data in Databricks data sources. This driver enables you to establish a basic connection to Spark in Databricks by specifying a URL=. The driver is not included with Base SAS or SAS/ACCESS and must be downloaded and installed separately. The open-source Apache Hive driver for JDBC or the JDBC driver provided with your Hadoop installation can be used to access other Spark data sources. For more information about obtaining and configuring a JDBC driver for Spark, see “Configuring SAS/ACCESS Interface to Spark” in [Hadoop Configuration Guide for Base SAS and SAS/ACCESS](#).

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>.

For a list of 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/ACCESS Interface to Teradata

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

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>.

TLS 1.2 is supported when using SAS/ACCESS Interface to Teradata. The Teradata database must use version 16.20.53.30 or later and TTU version 17.10 or later. When you have configured the database for TLS, you can encrypt data that is transferred between Teradata and SAS 9.4M8 or later. For more information, see [Configure TLS for SAS/ACCESS Connection to Teradata](#).

### DBMS Products Required:

- Teradata Database version 13.10 or later
- Teradata CLIV2 client libraries, TTU 13.10 - 16.20 for Linux (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 – 9.4M6**

#### **DBMS Products Required:**

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

### **For SAS 9.4M7**

#### **DBMS Products Required:**

- Teradata Database version 16.10 or later
- Teradata CLIV2 client libraries, TTU 17.10 if using TPT and not using Legacy Utilities
- Teradata Database version 16.xx if using TTU 16.10 or TTU 16.20
- Teradata Database version 17.xx if using TTU 17.10

### **For SAS 9.4M8**

#### **DBMS Products Required:**

- Teradata CLIV2 client libraries, TTU 17.10 or later
- Teradata Database version 17.xx

## **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 the Vertica Client ODBC driver, 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 and Later**

#### **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 your SAS software to work with Vertica software, refer to the *Configuration Guide for SAS 9.4 Foundation for UNIX*

*Environments*, available at the following location:

<http://support.sas.com/documentation/installcenter/en/ikfdtnunxcg/66380/PDF/default/config.pdf>.

## **SAS/ACCESS Interface to Yellowbrick**

Base SAS is required for the installation of SAS/ACCESS Interface to Yellowbrick. It was new with the seventh maintenance release of SAS 9.4 (SAS 9.4M7).



SAS/ACCESS Interface to Yellowbrick includes the required 64-bit PostgreSQL ODBC driver.

**DBMS Product Required:** Yellowbrick Database version 4.0.0-23452 or later

## **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**

- 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

**Important:** Starting with SAS 9.4M8, SAS/Genetics is not available. In order to continue using SAS/Genetics, do not upgrade Base SAS or SAS Foundation to SAS 9.4M8.

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 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.

#### ***MDDDB 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.



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