

System Requirements for SAS[®] 9.4 Foundation for Solaris for x64



Copyright Notice

The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2023. *System Requirements for SAS® 9.4 Foundation for Solaris for x64*, Cary, NC: SAS Institute Inc.

System Requirements for SAS® 9.4 Foundation for Solaris for x64

Copyright © 2013 - 2023, SAS Institute Inc., Cary, NC, USA

All rights reserved. Produced in the United States of America.

For a hard-copy book: No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of the publisher, SAS Institute Inc.

For a web download or e-book: Your use of this publication shall be governed by the terms established by the vendor at the time you acquire this publication.

The scanning, uploading, and distribution of this book via the Internet or any other means without the permission of the publisher is illegal and punishable by law. Please purchase only authorized electronic editions and do not participate in or encourage electronic piracy of copyrighted materials. Your support of others' rights is appreciated.

U.S. Government Restricted Rights Notice: Use, duplication, or disclosure of this software and related documentation by the U.S. government is subject to the Agreement with SAS Institute and the restrictions set forth in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987).

SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

May 2023

SAS® Publishing provides a complete selection of books and electronic products to help customers use SAS software to its fullest potential. For more information about our e-books, e-learning products, CDs, and hard-copy books, visit the SAS Publishing web site at support.sas.com/bookstore or call 1-800-727-3228.

SAS® and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are registered trademarks or trademarks of their respective companies.

Table of Contents

Overview.....	1
Additional Resources.....	1
Configuring Your I/O Subsystem	1
Support for Alternative Operating Systems.....	1
Troubleshooting System Performance Problems	1
Software Requirements.....	2
Operating System.....	2
Java Requirements	2
Security Requirements	3
Web Browsers	3
Remote Browsing	3
Hardware Requirements.....	5
Machines Supported	5
Distribution Media	5
System Configuration	5
Desktop Systems	5
Server Systems	5
Displays Supported	5
Space Requirements.....	5
Specific Product Requirements.....	6
Base SAS Software	6
Requirements for SPD Engine on Solaris	6
SAS Micro Analytic Service	6
SAS Analytics Accelerator for Teradata	6
SAS In-Database Code Accelerator for Greenplum	7
SAS In-Database Code Accelerator for Hadoop.....	8
SAS In-Database Code Accelerator for Teradata.....	8
SAS Scoring Accelerator for DB2	9
SAS Scoring Accelerator for Greenplum.....	10
SAS Scoring Accelerator for Hadoop	10
SAS Scoring Accelerator for Oracle.....	11
SAS Scoring Accelerator for SAP HANA.....	11
SAS Scoring Accelerator for SPD Server	12
SAS Scoring Accelerator for Teradata.....	12
SAS/ACCESS Interface to Amazon Redshift.....	13
SAS/ACCESS Interface to DB2.....	14
SAS/ACCESS Interface to Greenplum	14
SAS/ACCESS Interface to Hadoop	14
SAS/ACCESS Interface to HAWQ	15
SAS/ACCESS Interface to JDBC	15
SAS/ACCESS Interface to Microsoft SQL Server	15
SAS/ACCESS Interface to MySQL.....	16

SAS/ACCESS Interface to ODBC	16
SAS/ACCESS Interface to Oracle	17
SAS/ACCESS Interface to PC Files	17
SAS/ACCESS Interface to the PI System	18
SAS/ACCESS Interface to PostgreSQL	18
SAS/ACCESS Interface to SAP ASE	18
SAS/ACCESS Interface to SAP HANA	19
SAS/ACCESS Interface to SAP IQ	19
SAS/ACCESS Interface to Teradata	20
SAS/AF	21
Products Required for Build Mode	21
Products Required for Run Mode	21
Printers.....	21
SAS/EIS	21
Products Required for Build Mode	21
Products Required for Run Mode	21
Memory	21
Printers.....	22
SAS/Genetics	22
SAS/GIS	22
Products Required for Build Mode	22
Products Required for Run Mode	22
Printers.....	22
SAS/IntrNet	22
CGI Tools and Applications	22
Java Tools and Applications	23
SAS/OR	23

Overview

This document provides requirements for installing and running SAS 9.4 Foundation for Oracle Solaris. The requirements in this document have been updated for [SAS 9.4M8](#) (TS1M8).

You must update your system to meet the minimum requirements before running SAS 9.4 Foundation. The major requirements listed in the document are as follows:

- 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 that are useful for troubleshooting system performance problems, see

<http://support.sas.com/kb/42/197.html>.

Software Requirements

Operating System

Beginning with **SAS 9.4M8**, SAS is supported on Oracle Solaris 11.4 or later on x64. Previous releases supported Solaris 10 Update 9 and Solaris 11 and later on x64.

To determine which Solaris release you are running, look at the `/etc/release` file using the `% cat /etc/release` command.

If you are installing or running SAS 9.4 on Solaris 11, SAS requires that you install the Solaris `compatibility/ucb` and `system/xopen/xcu4` packages. You can download these packages from this location: <http://pkg.oracle.com/solaris/release/en/index.shtml>

Solaris 11.4 also imposes CPU minimum requirements that differ from those that applied to Solaris 10. The [Oracle Solaris 11.4 Release Notes](#) states, “Oracle Solaris 11.4 supports systems based on the Oracle SPARC T4 or later processors; the Fujitsu SPARC64 X, X+, or XII processors; or x64 CPUs supporting either the Intel EM64T or AMD AMD64 instruction sets.”

The following Solaris packages must be installed in order to enable the SAS Deployment Wizard to run properly:

- `dejavu`
- `freetype`

You can install these packages by running the following commands:

```
pkg install system/library/freetype-2
pkg install font/truetype/dejavu
```

The Sun Performance Libraries, which include BLAS and LAPACK routines, require installation of the `SUNWlibmsr`, `SUNWcslr`, and `SUNWpiclu` packages on your system.

Note: *The patch levels listed were correct at the time this document was published. However, patches that are required for Solaris are subject to unexpected change. To ensure you have the latest patch requirements, go to the Install Center web page (<http://support.sas.com/installcenter>) to find the most recent updates to this System Requirements document.*

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

Java Requirements

For information about Java Runtime Environment (JRE) requirements, refer to the SAS 9.4 Support for Java Runtime Environments web page, located at <https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-java.html>.

Security Requirements

Beginning 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. If 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 and platform combination that is listed on the following SAS Support page:

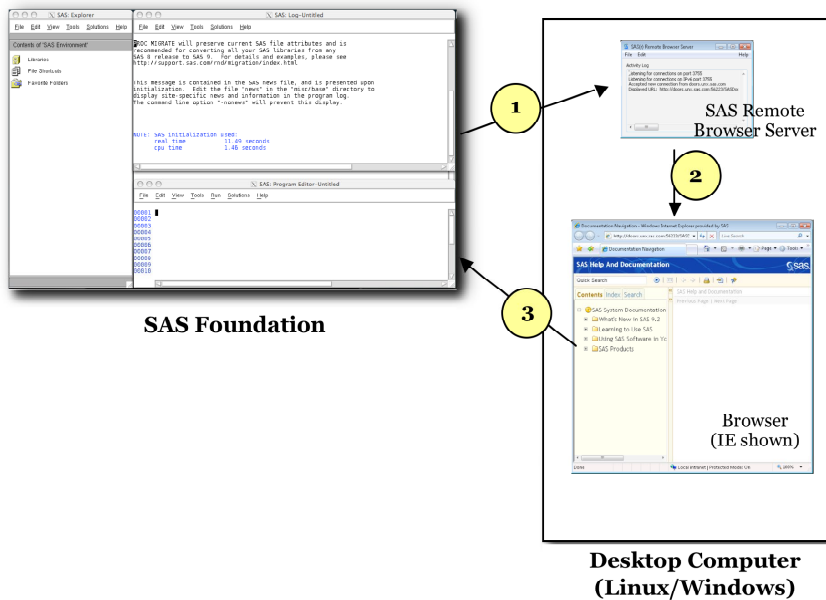
<https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html>.

Most SAS product user interfaces deploy HTML5 to support newer features. For example, SAS Visual Analytics uses HTML5. 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, Windows 11, and 64-bit Linux. To support 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 (<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

The following machines are supported:

- All models that support Solaris 11 for x64
- Intel processors with Intel 64 support
- AMD processors with AMD64 support

Distribution Media

The following distribution methods are supported:

- Electronic Software Delivery
- DVD

System Configuration

The following are recommended minimums* for a deployment of SAS 9.4 Foundation for Solaris for x64 systems:

Desktop Systems

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

Server Systems

- A minimum of 4 cores
- 16 GB RAM (available to SAS)
- Swap space: 1.5 times physical RAM or 250 GB, whichever is less
- I/O Throughput of at least 100 MB/second/core

** Note: SAS 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 recommends consulting with a SAS Sizing Expert for 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 Solaris

- 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 Micro Analytic Service

If you use SAS Micro Analytic Service as an execution engine, be aware that starting with [SAS 9.4M8](#), SAS Micro Analytic Service does not support Solaris.

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 Solaris for x64 (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 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 - 9.4M7

DBMS Products Required:

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

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 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 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 highest 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 Solaris for x64 (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)
- SAS Embedded Process support functions (sasepfunc-14.10-4 or later)

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)
- 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 (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 (64-bit libraries)
- SAS Embedded Process support functions, latest version available

SAS Scoring Accelerator for DB2

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

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

DBMS Operating Systems:

- AIX 64-bit, version 7.1 with Service Pack 3 or later
- Red Hat Enterprise Linux 64-bit, version 7.9 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

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

DBMS Product 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 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

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 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 Scoring Accelerator for Oracle

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

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 version 6.7 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 (64-bit libraries) or later

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 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.*

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/ACCESS Interface to Teradata, and SAS/STAT. 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 - 16.20 for Solaris for x64 (64-bit libraries)

For SAS 9.4M3

DBMS Products Required:

- Teradata Database version 14.10 or later
- Teradata CLIV2 client libraries, version 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 - 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-16.10-4` 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 (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 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 and Later

DBMS Products Required:

- IBM Db2 10.5 or later
- Client utilities for IBM Db2 10.5 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 64-bit 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 and Later

DBMS Product Required: Greenplum Database version 6.0 or later

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 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 a list of 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 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

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.

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

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 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 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 SAS/ACCESS Interface to MySQL software, see the MySQL chapter in *SAS/ACCESS Software for Relational Databases: Reference*.

SAS/ACCESS Interface to ODBC

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

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

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

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

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

SAS/ACCESS Interface to Oracle

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

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

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

SAS 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

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 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 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 and Later

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 DBMS product. These CTLIB API calls are not supported by Microsoft SQL Server; therefore, you will have to use SAS/ACCESS Interface to Microsoft SQL Server with an appropriate ODBC driver to gain access to 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 SAP Technical Support.

DBMS Products Required:

- SAP IQ Network Client version 15.4
- 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 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 Solaris for x64 (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/AF

Products Required for Build Mode

- Base SAS
- SAS/AF
- SAS/GRAPH software (to create and display some graphics objects)

Other products might be required, depending on the application.

Products Required for Run Mode

- Base SAS
- SAS/GRAPH software (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 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 media.

CGI Tools and Applications

Application Dispatcher

Requires Base SAS and SAS/IntrNet Server software. 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 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.



THE
POWER
TO KNOW.

support.sas.com

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