System Requirements for SAS® 9.4 Foundation for Microsoft Windows
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May 2016

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# Table of Contents

**Using the System Requirements** ................................................................. iv
**Additional Resources** .................................................................................. iv
  - Configuring your IO Subsystem ................................................................ iv
  - Troubleshooting System Performance Problems ...................................... iv
  - SAS Technical Support .............................................................................. iv

**Software Requirements** ................................................................................ 1
  **Preparing for Installation** .......................................................................... 1
    - File System Requirements ....................................................................... 1
    - Administrator Privileges ......................................................................... 1
    - Anti-virus and/or Firewall Software ....................................................... 1
    - Windows Software Updates ..................................................................... 1
  **Windows Environments** ............................................................................. 1
    - Server Operating Systems ....................................................................... 1
      - Microsoft Windows Server 2008 Family ............................................... 1
      - Microsoft Windows Server 2012 Family .............................................. 2
    - SAS Support for Windows 7 and Higher .............................................. 2
  **Supported Operating Environments for Windows** .................................... 3
  **Web Browsers** ............................................................................................. 3
    - Remote Browsing ..................................................................................... 3
  **Java Requirements** ..................................................................................... 3

**Suggested Basic Hardware Configuration** .................................................. 5
  **Machines Supported** .................................................................................. 5
  **Distribution Media** ................................................................................... 5
  **System Configuration** ............................................................................... 5
    - Desktop Systems ....................................................................................... 5
    - Server Systems ......................................................................................... 5
  **Monitors Supported** .................................................................................. 6

**Additional Features** .................................................................................... 6
  **The User Installation Experience in SAS 9.4** ......................................... 6
    - Internet Access .......................................................................................... 6
    - HTMLHelp Viewer .................................................................................... 6
    - SAS Universal Viewer ............................................................................... 6
    - Dynamic Data Exchange ......................................................................... 6
    - Email ......................................................................................................... 7
    - Lotus Notes ............................................................................................... 7
    - SAS Service Configuration Utility .......................................................... 7
    - SAS Deployment Wizard and Subset Orders .......................................... 7

**Space Requirements** ................................................................................... 8
  **Disk Space Consumed by Installed Products** .......................................... 8
  **DBCS Support** ........................................................................................... 9
  **National Language Support (NLS)** .......................................................... 9
    - Asian Language Support .......................................................................... 10
Specific Product Requirements

Base SAS Software ................................................................. 11
SAS Analytics Accelerator for Teradata .................................. 11
SAS High-Performance Forecasting ....................................... 11
SAS In-Database Code Accelerator for Greenplum .................. 11
SAS In-Database Code Accelerator for Hadoop ....................... 12
SAS In-Database Code Accelerator for Teradata ................. 12
SAS Scoring Accelerator for Aster ....................................... 12
SAS Scoring Accelerator for DB2 ......................................... 13
SAS Scoring Accelerator for Greenplum .............................. 13
SAS Scoring Accelerator for Hadoop .................................... 13
SAS Scoring Accelerator for Netezza .................................. 13
SAS Scoring Accelerator for Oracle ..................................... 14
SAS Scoring Accelerator for SPD Server ............................... 14
SAS Scoring Accelerator for Teradata .................................. 15
SAS/ACCESS Interface to Amazon Redshift ......................... 15
SAS/ACCESS Interface to Aster .......................................... 15
SAS/ACCESS Interface to DB2 .............................................. 15
SAS/ACCESS Interface to Greenplum .................................. 16
SAS/ACCESS Interface to Hadoop ....................................... 16
SAS/ACCESS Interface to HAWQ ......................................... 16
SAS/ACCESS Interface to Microsoft SQL Server .................... 16
SAS/ACCESS Interface to MySQL ....................................... 16
SAS/ACCESS Interface to Netezza ...................................... 17
SAS/ACCESS Interface to ODBC ........................................ 17
SAS/ACCESS Interface to OLE DB ...................................... 17
SAS/ACCESS Interface to Oracle ....................................... 18
SAS/ACCESS Interface to PC Files ..................................... 18
SAS/ACCESS Interface to PostgreSQL ................................. 19
SAS/ACCESS Interface to SAP HANA .................................. 19
SAS/ACCESS Interface to Sybase ....................................... 19
SAS/ACCESS Interface to Sybase IQ .................................. 19
SAS/ACCESS Interface to Teradata .................................... 20
SAS/AF ............................................................................. 20
SAS/CONNECT ................................................................. 20
SAS/EIS ........................................................................... 21
SAS/Genetics ................................................................. 21
SAS/GIS ........................................................................... 21
SAS/GRAPH ................................................................. 22
SAS/IntrNet ......................................................................... 22

CGI Tools and Applications ................................................ 22
Application Dispatcher ....................................................... 22
htmSQL ............................................................................. 22
MDDB Report Viewer Application ..................................... 22
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xplore Sample Web Application</td>
<td>22</td>
</tr>
<tr>
<td>Design-Time Controls</td>
<td>22</td>
</tr>
<tr>
<td>Java Tools and Applications</td>
<td>23</td>
</tr>
<tr>
<td>SAS/CONNECT Driver for Java</td>
<td>23</td>
</tr>
<tr>
<td>Tunnel Feature</td>
<td>23</td>
</tr>
<tr>
<td>SAS/OR</td>
<td>23</td>
</tr>
<tr>
<td>SAS/TOOLKIT</td>
<td>23</td>
</tr>
<tr>
<td>SAS/Warehouse Administrator</td>
<td>23</td>
</tr>
</tbody>
</table>
Using the System Requirements

The System Requirements for SAS 9.4 Foundation for Microsoft Windows (32-bit) provides requirements for installing and running SAS 9.4 Foundation on Microsoft Windows. This document was introduced with the first maintenance release of SAS 9.4, 9.4M1.

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
- Additional Features
- Space Requirements
- Specific Product Requirements

For additional information and to view the latest system requirements for your system, visit the SAS Install Center web site: http://support.sas.com/documentation/installcenter.

Additional Resources

Configuring your IO Subsystem

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

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

SAS Technical Support

For information about SAS Technical Support, visit http://support.sas.com/techsup/.
Software Requirements

Preparing for Installation

File System Requirements
For releases prior to SAS 9.4 M3, the 8.3 filename convention must remain enabled. The use of file systems supporting long filenames is recommended.

Administrator Privileges
An installer must have administrator privileges to install various updates. This requirement ensures that SAS 9.4 Foundation can be completely and safely installed.

Anti-virus and/or Firewall Software
Before you start, we recommend closing your anti-virus and firewall software. Some anti-virus and/or firewall configurations can prevent an application from installing successfully. If you are unable to close the anti-virus or firewall software, make sure that your configuration allows you to install software and to update the Registry. If your SAS installation fails and you have mandatory anti-virus or firewall software running, check with your system administrator.

Windows Software Updates
A Microsoft bug associated with the method that an individual machine is using to retrieve periodic operating-system updates may cause an error during the installation. If you are running Microsoft Windows 8 Pro, Windows Server 2012, or Windows 8 Enterprise, we recommend performing the steps that are described in SAS Installation Note 48410 (http://support.sas.com/kb/48/410.html). These steps ensure that the SAS Deployment Wizard can successfully enable the required version of Microsoft .NET Framework on your system during the installation.

Windows Environments

Note: Software distributed with the SAS release designation SAS 9.4 TS1M0 does not support Windows in 32-bit environments, but Windows 32-bit support is provided in SAS release 9.4 TS1M1 and higher.

Server Operating Systems

Microsoft Windows Server 2008 Family
SAS 9.4 Foundation is supported on the following 32-bit and 64-bit editions of the Windows Server 2008 family with SAS 9.4 TS1M1 and higher:

- Microsoft Windows Server 2008 SP2 Enterprise Edition
- Microsoft Windows Server 2008 SP2 Standard Edition
- Microsoft Windows Server 2008 SP2 Datacenter Edition
SAS 9.4 Foundation is supported on the following editions of the Windows Server 2008 R2 family with SAS 9.4 TS1M1 and higher:

- Microsoft Windows Server 2008 R2 SP1 Enterprise Edition
- Microsoft Windows Server 2008 R2 SP1 Standard Edition
- Microsoft Windows Server 2008 R2 SP1 Datacenter Edition

**Microsoft Windows Server 2012 Family**

SAS 9.4 Foundation is supported on the following editions of the Windows Server 2012 family with SAS 9.4 TS1M1 and higher:

- Microsoft Windows Server 2012 Foundation Edition
- Microsoft Windows Server 2012 Essentials Edition
- Microsoft Windows Server 2012 Standard Edition
- Microsoft Windows Server 2012 Datacenter Edition

SAS 9.4 Foundation is supported on the following editions of the Windows Server 2012 R2 family with SAS 9.4 TS1M1 and higher:

- Microsoft Windows Server 2012 R2 Foundation Edition
- Microsoft Windows Server 2012 R2 Essentials Edition
- Microsoft Windows Server 2012 R2 Standard Edition
- Microsoft Windows Server 2012 R2 Datacenter Edition

**SAS Support for Windows 7 and Higher**

**Windows 7 SP1 Professional, Ultimate, and Enterprise:** Supported in SAS 9.4 Foundation products.

**Windows 8 Pro and Enterprise, Windows 8.1 Pro and Enterprise:** Supported in SAS 9.4 Foundation products.

**Windows 10 Home, Pro, Enterprise, and Education:** Supported for all SAS 9.4 Foundation products.

**Windows 7 Home Premium, Windows 8, Windows 8.1, and Windows 10:** Supported for the Education Analytical Suite (EAS). The following list indicates the Education Analytical Suite products that are supported on Windows 7 and higher:

**Note:** These products are not supported individually on Windows 7 Home Premium, Windows 8, and Windows 8.1.

- Base SAS
- SAS/ACCESS Interface to Greenplum
- SAS/ACCESS Interface to Informix
- SAS/ACCESS Interface MySQL
- SAS/ACCESS Interface to MS SQL Server
- SAS/ACCESS Interface to ODBC
- SAS/ACCESS Interface to PC Files
- SAS/ACCESS Interface to Sybase
- SAS/AF
- SAS/ASSIST
- SAS/CONNECT

- SAS/EIS
- SAS/ETS
- SAS/FSP
- SAS/GRAPH
- SAS/IML
- SAS/OR
- SAS/QC
- SAS/SECURE
- SAS/SHARE
- SAS/SHARE
Supported Operating Environments for Windows

For more information about the Microsoft Windows operating systems that are supported in SAS 9.4, refer to SAS Knowledge Base System Requirements documentation: http://support.sas.com/resources/sysreq/hosts/pc/.

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: http://support.sas.com/resources/thirdpartysupport/v94/browsers.html.

For the Google Chrome and Mozilla Firefox browsers, only the minimum supported versions are listed, but SAS also supports subsequent minor versions of these browsers.

On client machines where you do not plan to deploy the Remote Browsing feature (described below), install a recent version of your preferred web browser, such as Microsoft Internet Explorer 11, Google Chrome 42, or Mozilla Firefox 31, to support the most modern SAS user interfaces.

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

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).
To use the remote browsing feature, your desktop computer must be running one of the following platforms, and have one of the following supported browsers installed:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Supported Browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7 (32-bit &amp; 64-bit)</td>
<td>Firefox 6 or higher (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Internet Explorer 9 (32-bit) or</td>
</tr>
<tr>
<td></td>
<td>Internet Explorer 10 (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Chrome 15 or higher (32-bit)</td>
</tr>
<tr>
<td>Windows 8 (32-bit &amp; 64-bit)</td>
<td>Firefox 6 or higher (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Internet Explorer 10 and 11 (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Chrome 15 or higher (32-bit)</td>
</tr>
<tr>
<td>Windows 10 (32-bit &amp; 64-bit)</td>
<td>Firefox 6 or higher (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Internet Explorer 11 (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Chrome 15 or higher (32-bit)</td>
</tr>
<tr>
<td>Linux 64-bit</td>
<td>Firefox 6 or higher (32-bit)</td>
</tr>
<tr>
<td></td>
<td>Chrome 15 or higher (32-bit)</td>
</tr>
</tbody>
</table>

As the table shows, the SAS Remote Browser Server supports only the 32-bit version of each browser. However, SAS Foundation and client applications support 32-bit or 64-bit browser software. The Microsoft Edge browser has some limitations and is not yet supported.
In addition to the required operating system and browser, the Remote Browser Server must be installed and running on your desktop machine for SAS to display web information. 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.

**Java Requirements**

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

**Suggested Basic Hardware Configuration**

The following recommendations are for new customers who install SAS 9.4 Foundation for Microsoft Windows. (The hardware requirements for current SAS 9 customers remain unchanged.)

**Machines Supported**

SAS 9.4 supports x64 processor family systems, also known as Intel64 or AMD64 systems.

**Distribution Media**

The following distributions methods are supported:

- Electronic Software Delivery
- DVD

**System Configuration**

The following are recommended minimums* for a deployment of SAS 9.4 for on Windows systems:

**Desktop Systems**

Examples are Windows 7 and Windows 8.

- a minimum of 2 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)
- I/O Throughput of 400MB/sec
- Swap space: 1.5 times physical RAM or 250 GB, whichever is less

*Note: We strongly suggest that you work with your SAS Account Team to obtain an official hardware recommendation based on your proposed SAS workload.
Monitors Supported

SVGA (resolution of 800x600 or higher)

Additional Features

The User Installation Experience in SAS 9.4

If you are upgrading to SAS 9.4 Foundation, note that some of these features were not available in earlier releases of SAS software.

Internet Access

With Internet access, you can view and download documents from the SAS Install Center, and review material on the SAS Support web site.

HTMLHelp Viewer

To conform to the native Windows environment, SAS Help and Documentation is provided in the compiled HTML format supported by the Microsoft HTML Help Viewer, which presents help information in the same layout used in Windows applications. This format is very compact and provides extensive searching capabilities. The highest level of functionality is available when Internet Explorer, Version 6, Service Pack 2 (or higher) is installed. Internet Explorer is provided with Windows Server.

SAS Universal Viewer

SAS Universal Viewer is an application for the Windows operating environment that enables you to view SAS data sets and other types of files without invoking SAS and without installing SAS on your computer. SAS Universal Viewer is a replacement for the SAS System Viewer, and it is available with Base SAS and as a free download from SAS. You can view, sort, and filter data sets, but you are not able to edit them.

With SAS Universal Viewer, you can view the following types of files:

- SAS data sets, including those that were created on platforms other than Windows
- SAS v5 transport files
- SAS programs, logs, and listings
- General text files
- HTML and other file types that open in Internet Explorer

Dynamic Data Exchange

Dynamic Data Exchange (DDE) allows for the exchange of data between SAS 9.4 Foundation and any other application supporting DDE. SAS 9.4 Foundation will act as a client only.
Email
Send Mail is provided as a menu item in the File menu. The Send Mail feature enables you to initiate email messages from SAS 9.4 Foundation. It is also possible to send email using a data step file access method or SCL via SAS/AF software. The following mail APIs are supported: MAPI and VIM. This feature requires installation of third-party products such as Microsoft Outlook or Microsoft Outlook Express. SMTP email server access via MAPI requires an Internet connection.

Lotus Notes
The Lotus Notes access method, NOTESDB, allows populating new documents directly to Lotus Notes from SAS 9.4 Foundation. The NotesSQL ODBC driver enables you to access Lotus Notes documents from within SAS 9.4. An installed license for Lotus Notes Desktop is required. SAS 9.4 Foundation supports the 32-bit version of Lotus Notes 4.0 or higher.

SAS Service Configuration Utility
The SAS Service Configuration Utility allows administrators to customize the operation of SAS 9.4 Foundation running as a service on a particular computer. It requires only 0.5 MB of space on the computer using the SAS Service Configuration Utility.

For additional information, refer to the SAS Service Configuration Utility chapter in Configuration Guide for SAS 9.4 Foundation on Microsoft Windows.

SAS Deployment Wizard and Subset Orders
The SAS Deployment Wizard allows users to subset orders within a depot when it is being moved or copied. The previous process of creating a Client Software Depot or a Personal Software Depot that was available in the SAS Administrator Wizard in earlier releases of SAS has been replaced. If you are accustomed to using either one of these features, refer to the SAS Deployment Wizard and SAS Deployment Manager 9.4: User’s Guide for information about selecting the specific products that you want to copy into a separate depot. This type of newly created depot can serve the same function as those depots did in previous releases. The User’s Guide can be found here: http://support.sas.com/documentation/installcenter/en/ikdeploywizug/66034/PDF/default/user.pdf
Space Requirements

The installation media that you received from SAS contain all SAS software products. The SAS Installation Data file enables easy identification of the products you have licensed. The following list contains space requirements in MB for all of the products available with SAS 9.4 Foundation for Windows. Use this information to help determine how much free disk space you must have available before you can install SAS 9.4 software. Disk space requirements will vary depending upon the blocking factor and compression algorithms that are in use on the installation disk drive. Product disk space values were determined with the HTML Help System in use.

Disk Space Consumed by Installed Products

<table>
<thead>
<tr>
<th>Software Product</th>
<th>Disk Space (in MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS</td>
<td>1124</td>
</tr>
<tr>
<td>ODS Templates</td>
<td>44</td>
</tr>
<tr>
<td>Report Fonts for Clients</td>
<td>172</td>
</tr>
<tr>
<td>SAS Data Quality Server</td>
<td>39</td>
</tr>
<tr>
<td>SAS High-Performance Forecasting 12.3</td>
<td>6</td>
</tr>
<tr>
<td>SAS Installation Qualification Tool</td>
<td>5</td>
</tr>
<tr>
<td>SAS Integration Technologies</td>
<td>20</td>
</tr>
<tr>
<td>SAS OLAP Server</td>
<td>9</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Aster</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Greenplum</td>
<td>8</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Hadoop</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Microsoft SQL Server</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to MySQL</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Netezza</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to ODBC</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to OLE DB</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle</td>
<td>2</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to PC Files</td>
<td>13</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to PostgreSQL</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Sybase</td>
<td>2</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Sybase IQ</td>
<td>1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Teradata</td>
<td>2</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Vertica</td>
<td>1</td>
</tr>
<tr>
<td>SAS/AF</td>
<td>6</td>
</tr>
<tr>
<td>SAS/ASSIST</td>
<td>52</td>
</tr>
<tr>
<td>SAS/CONNECT</td>
<td>7</td>
</tr>
</tbody>
</table>
**System Requirements for SAS 9.4 Foundation for Microsoft Windows**

<table>
<thead>
<tr>
<th>Software Product</th>
<th>Disk Space (in MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS/EIS</td>
<td>82</td>
</tr>
<tr>
<td>SAS/ETS</td>
<td>127</td>
</tr>
<tr>
<td>SAS/FSP</td>
<td>3</td>
</tr>
<tr>
<td>SAS/Genetics 12.3</td>
<td>16</td>
</tr>
<tr>
<td>SAS/GIS</td>
<td>62</td>
</tr>
<tr>
<td>SAS/GRAPH*</td>
<td>2047</td>
</tr>
<tr>
<td>SAS/IML 12.3</td>
<td>38</td>
</tr>
<tr>
<td>SAS/IntrNet</td>
<td>5</td>
</tr>
<tr>
<td>SAS/OR 12.3</td>
<td>86</td>
</tr>
<tr>
<td>SAS/QC 12.3</td>
<td>83</td>
</tr>
<tr>
<td>SAS/STAT 12.3</td>
<td>210</td>
</tr>
<tr>
<td>SAS/TOOLKIT</td>
<td>4</td>
</tr>
<tr>
<td>SAS/Warehouse Administrator</td>
<td>57</td>
</tr>
</tbody>
</table>

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

**DBCS Support**

The following list contains space requirements in MB for SAS 9.4 components that offer DBCS support.

<table>
<thead>
<tr>
<th>Software Product- DBCS Support</th>
<th>Disk Space (in MB)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core of SAS 9.4 DBCS Support Files</td>
<td>34.0</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2 DBCS Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle DBCS Support Files</td>
<td>0.3</td>
</tr>
<tr>
<td>SAS/AF DBCS Support Files</td>
<td>0.5</td>
</tr>
<tr>
<td>SAS/CONNECT DBCS Support Files</td>
<td>1.1</td>
</tr>
<tr>
<td>SAS/EIS DBCS Support Files</td>
<td>0.4</td>
</tr>
<tr>
<td>SAS/Lab</td>
<td>1.9</td>
</tr>
<tr>
<td>SAS/SHARE DBCS Support Files</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39.20</strong></td>
</tr>
</tbody>
</table>

* The actual disk space size has been rounded to the nearest tenth. Therefore, the values will differ slightly from the ones shown by the installer.

**National Language Support (NLS)**

The following list contains space requirements in MB for SAS 9.4 components that support Asian languages.

<table>
<thead>
<tr>
<th>Languages Supported</th>
<th>Disk Space (in MB)*</th>
<th>See Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese – Traditional</td>
<td>3.0</td>
<td>below</td>
</tr>
<tr>
<td>Chinese – Simplified</td>
<td>174.0</td>
<td>below</td>
</tr>
<tr>
<td>Japanese</td>
<td>262.0</td>
<td>Page 10</td>
</tr>
<tr>
<td>Korean</td>
<td>174.0</td>
<td>Page 10</td>
</tr>
</tbody>
</table>
Asian Language Support

The following list contains space requirements in MB for SAS System components that support various Asian Languages.

### Traditional Chinese Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk Space (in MB)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS Traditional Chinese Support Files</td>
<td>3.0</td>
</tr>
</tbody>
</table>

### Simplified Chinese Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk Space (in MB)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS Simplified Chinese Support Files</td>
<td>47.8</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2 Simplified Chinese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle Simplified Chinese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/AF Simplified Chinese Support Files</td>
<td>2.0</td>
</tr>
<tr>
<td>SAS/CONNECT Simplified Chinese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/EIS Simplified Chinese Support Files</td>
<td>1.9</td>
</tr>
<tr>
<td>SAS/GIS Simplified Chinese Support Files</td>
<td>1.8</td>
</tr>
<tr>
<td>SAS/IntrNet Simplified Chinese Support Files</td>
<td>1.8</td>
</tr>
<tr>
<td>SAS/SHARE Simplified Chinese Support Files</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58.8</strong></td>
</tr>
</tbody>
</table>

### Japanese Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk Space (in MB)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS Japanese Support Files</td>
<td>78.1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2 Japanese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle Japanese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/AF Japanese Support Files</td>
<td>2.0</td>
</tr>
<tr>
<td>SAS/CONNECT Japanese Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/EIS Japanese Support Files</td>
<td>10.1</td>
</tr>
<tr>
<td>SAS/GIS Japanese Support Files</td>
<td>1.8</td>
</tr>
<tr>
<td>SAS/IntrNet Japanese Support Files</td>
<td>1.8</td>
</tr>
<tr>
<td>SAS/SHARE Japanese Support Files</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>97.3</strong></td>
</tr>
</tbody>
</table>

### Korean Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk Space (in MB)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base SAS Korean Support Files</td>
<td>47.8</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to DB2 Korean Support Files</td>
<td>0.1</td>
</tr>
<tr>
<td>SAS/ACCESS Interface to Oracle Korean Support Files</td>
<td>0.1</td>
</tr>
<tr>
<td>SAS/AF Korean Support Files</td>
<td>2.0</td>
</tr>
<tr>
<td>SAS/CONNECT Korean Support Files</td>
<td>0.9</td>
</tr>
<tr>
<td>SAS/EIS Korean Support Files</td>
<td>1.9</td>
</tr>
<tr>
<td>SAS/GIS Korean Support Files</td>
<td>1.8</td>
</tr>
<tr>
<td>SAS/IntrNet Korean Support Files</td>
<td>1.6</td>
</tr>
<tr>
<td>SAS/SHARE Korean Support Files</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>
Specific Product Requirements

Base SAS Software

Requirements for SPD Engine on Microsoft Windows:
SPDE will run with the minimum system specified in the Hardware Requirements section on page 5. However, the following list provides the minimum recommended system guidelines to make use of SPDE functionality:

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

SAS Analytics Accelerator for Teradata

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

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

DBMS Products Required

- Teradata Database 13.10 or higher
- Teradata CLIv2 client libraries, Teradata Tools and Utilities (TTU) 13.10 or higher for Windows (32-bit libraries)

For SAS 9.4M3

DBMS Products Required

- Teradata Database 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Windows (32-bit libraries)

SAS High-Performance Forecasting

Base SAS is required for the installation of SAS High-Performance Forecasting software.

SAS In-Database Code Accelerator for Greenplum

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

DBMS Products Required

- Greenplum Database 4.2.2
- Greenplum Partner Connector (GPPC) 1.2
For SAS 9.4M2 or Higher
DBMS Products Required
- Greenplum Database 4.3
- Greenplum Partner Connector (GPPC) 1.2

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

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

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

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

DBMS Products Required
- Teradata 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for Windows (32-bit libraries)

For SAS 9.4M3
DBMS Products Required
- Teradata Database 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Windows (32-bit libraries)

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

DBMS Products Required
- Aster Server version 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 or Higher
DBMS Products Required
- Aster Server version 6.0
- Client utilities for Aster version 5.1

The required DBMS operating system is Red Hat Enterprise Linux 64-bit version 5.5 or higher.
SAS Scoring Accelerator for DB2

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

For SAS 9.4M1 or Higher

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

DBMS Operating System Requirements
- AIX 64-bit version 7.1 with Service Pack 3 or higher
- Red Hat Enterprise Linux 64-bit, version 5.5 or higher

SAS Scoring Accelerator for Greenplum

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

DBMS Products Required
- Greenplum Database version 4.2.2.0
- Greenplum Partner Connector (GPPC) version 1

For Linux operating systems, the minimum version requirements for the database are Red Hat Enterprise Linux 64-bit, versions 5.5, 5.6, 5.7, 6.1, and 6.2.

For SAS 9.4M2 or Higher

DBMS Products Required
- Greenplum Database version 4.3
- Greenplum Partner Connector (GPPC) version 1.2

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

SAS Scoring Accelerator for Hadoop

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

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

SAS Scoring Accelerator for Netezza

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

DBMS Products Required
- IBM Netezza version 7.0
- Client utilities for IBM Netezza version 7.0
For SAS 9.4M3
DBMS Products Required
- IBM Netezza version 7.0.3. Includes support for multi-schema.
- Client utilities for IBM Netezza version 7.0.3

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

DBMS Products Required
- Oracle Server version 11gr2 BP24 or higher. The database encoding must be UTF8.
- Oracle Client 11gr2 (32-bit libraries) or higher

DBMS Operating System Requirements
- Red Hat Enterprise Linux version 5.5 or higher
- Oracle Enterprise Linux version 5.5

When this document was published, patches for the following Oracle bugs were not available:
- Bug 12658656 - DUPLICATE SYMBOLS in EXTPROC/AGENT
- Bug 12904682 - CORE DUMP IN MUTEX ACQUIRE WHEN DIAG INITIALIZATION FAILS
- Bug 12904657 - ADR INITIALIZATION FAILS IN SOME EXTPROC THREADS

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

```
DIAG_ADR_ENABLED=OFF
```

No restart is required.

For SAS 9.4M2 or Higher
DBMS Products Required
- Oracle Server version 11gr2 or Oracle Server 12c. The database encoding must be UTF8.
- Oracle Client 11gr2 (32-bit libraries) or Oracle Client 12c (32-bit libraries)

DBMS Operating System Requirements
- Red Hat Enterprise Linux 64-bit, version 5.5 or higher
- Oracle Enterprise Linux version 5.5

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

For SAS 9.4M3
DBMS Product Required: SAS Scalable Performance Data Server version 5.2
**SAS Scoring Accelerator for Teradata**

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

**DBMS Products Required**
- Teradata Database version 13.10 or higher
- Teradata CL1v2 client libraries, TTU 13.10 or higher for Windows (32-bit libraries)

**For SAS 9.4M3**

**DBMS Products Required**
- Teradata 13 Database version 14.10.02.01 or higher
- Client utilities for Teradata (13CL1v2 client libraries, TTU 14.10 or higher for Windows (32-bit libraries)

**SAS/ACCESS Interface to Amazon Redshift**

SAS/ACCESS Interface to Amazon Redshift is new with the April 2016 release of SAS/ACCESS. Base SAS is required for the installation of SAS/ACCESS Interface to Amazon Redshift. SAS/ACCESS Interface to Amazon Redshift includes a required ODBC driver. For instructions about how to configure SAS/ACCESS Interface to Amazon Redshift, see the *Configuration Guide for SAS 9.4 Foundation for Microsoft Windows*.

**SAS/ACCESS Interface to Aster**

Base SAS is required for the installation of SAS/ACCESS Interface to Aster. SAS/ACCESS Interface to Aster requires version 6.0 or higher of the Aster Server, and version 5.1 or higher of the Aster ODBC driver and the bulk loading client. To obtain the ODBC driver and bulk loader client, contact Aster Data Technical Support. Refer to the *Configuration Guide for SAS® 9.4 Foundation for Microsoft Windows* for information about where to install the ODBC driver and bulk loader client and how to configure your SAS software in order to work with them.

**SAS/ACCESS Interface to DB2**

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

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

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

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

SAS/ACCESS Interface to Greenplum requires the DataDirect Driver Manager and Driver for Greenplum. You must install these components before using SAS/ACCESS Interface to Greenplum. For instructions, see “Configuring SAS/ACCESS Interface to Greenplum” in *Configuration Guide for SAS 9.4 Foundation for Microsoft Windows*.

**SAS/ACCESS Interface to Hadoop**

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

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

**SAS/ACCESS Interface to HAWQ**

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

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

For instructions about how to configure SAS/ACCESS Interface to HAWQ, see the *Configuration Guide for SAS 9.4 Foundation for Microsoft Windows*.

**SAS/ACCESS Interface to Microsoft SQL Server**


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

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

**DBMS Product Required:** Microsoft SQL Server 2012

For information about how to configure SAS/ACCESS Interface to Microsoft SQL Server, see the *Configuration Guide for SAS 9.4 Foundation for Microsoft Windows*.

**SAS/ACCESS Interface to MySQL**

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

**DBMS Products Required**

- Any MySQL Client version 5.1 or 5.5
- MySQL Server version 5.0 or higher
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 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 IBM Netezza ODBC driver, release 4.6.2 or higher, contact IBM Technical Support at (877) 426-6006, or visit the IBM Fix Central website, [http://www.ibm.com/support/fixcentral/](http://www.ibm.com/support/fixcentral/)

**For SAS 9.4M2 or Higher**

**DBMS Products Required**

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

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

**SAS/ACCESS Interface to ODBC**

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

**DBMS Product Required:** An ODBC driver for the data source

Before you can use SAS/ACCESS Interface to ODBC software, an ODBC driver for the data source from which you want to access data is required. 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 for network access. All required network software supplied by your database system vendor must be 32-bit-compliant.

The 32-bit version of the ODBC Driver is required for the data source. All database clients for Windows 32 must be 32-bit.

See the *Configuration Guide for SAS 9.4 Foundation on Microsoft Windows* for installation information.

**SAS/ACCESS Interface to OLE DB**

Base SAS software is required for the installation of SAS/ACCESS Interface to OLE DB.

**DBMS Product Required:** An OLE DB data source provider

Before you can use SAS/ACCESS Interface to OLE DB software, an OLE DB provider for the desired data source is required. OLE DB providers are often available from DBMS vendors and other third-party software vendors. The OLE DB provider you select may require additional DBMS software for network access.

All required network software that is supplied by your database system vendor must be 32-bit-compliant. The 32-bit version of the OLE DB provider is required for the data source.
**SAS/ACCESS Interface to Oracle**

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

**DBMS Products Required**

The user may install an Oracle client on the same machine as SAS/ACCESS Interface to Oracle, or an Oracle server may be used in place of the Oracle client.

The minimum required Oracle client libraries release is Oracle, Release 11g.

Note that SAS 9.4 for Microsoft Windows for x64 requires the 64-bit version of the Oracle client libraries.

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

**SAS/ACCESS Interface to PC Files**

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

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

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

SAS/ACCESS Interface to PC Files software 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 SAS)
- Lotus files (.wk1, .wk3 and .wk4)
- Microsoft Access database files (.mdb or .accdb)
- Paradox (.db)
- SPSS files (.sav)
- Stata files (.dta)

SAS 9.4 will automatically install the Access Database Engine 2010 Redistributable (ACE driver) when you install SAS/ACCESS Interface to PC Files software if no previous ACE driver is installed; otherwise the existing ACE installation is left as is.

*Note:* 32-bit and 64-bit Microsoft ACE engine cannot co-exist on 64-bit Windows. SAS recommends installing a Microsoft ACE driver to match the SAS “bitness” on 64-bit Windows.

Use of an ACCESS or EXCEL libname engine requires the installation of a 64-bit Microsoft ACE driver. If the message “ERROR: Connect: Class not registered” appears while you are using the libname ACCESS or EXCEL libname engine, you have the incompatible 32-bit Microsoft Access database engine (ACE) installed.
If you have to use the 32-bit ACE driver with 64-bit SAS installed, a 32-bit PC Files Server must be used to bridge the “bitness gap” with PCFILES libname engine. You can run SAS PC Files Server as a Windows service or as an application listening to the PCFILES libname engine. SAS PC Files Server provides data encryption and Authentication features with default port number 9621, which can be configured through the SAS PC Files Server application console. Note that the bitness” (32-bit or 64-bit) of SAS PC Files Server must match that of the Microsoft ACE driver on the same Windows machine.

**SAS/ACCESS Interface to PostgreSQL**

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

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

**SAS/ACCESS Interface to SAP HANA**

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

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

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

**SAS/ACCESS Interface to Sybase**

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

**DBMS Product Required:** Sybase Open Client SDK (Software Developers Kit) Software, Release 15.7 or higher (32-bit libraries)

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

SAS/ACCESS Interface to Sybase IQ no longer supports access to Microsoft SQL Server data. SAS/ACCESS Interface to Sybase uses the CTLIB API calls to access the Sybase DBMS product. These CTLIB API calls are not supported by Microsoft SQL Server. To obtain access to Microsoft SQL Server data, use SAS/ACCESS Interface to Microsoft SQL Server with an appropriate ODBC driver.

**SAS/ACCESS Interface to Sybase IQ**

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

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

**For SAS 9.4M3**

**DBMS Products Required**

- Sybase IQ Network Client version 16.0
- ODBC driver (64-bit version) from Sybase
SAS/ACCESS Interface to Teradata

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

DBMS Products Required

- Teradata Database version 13.10 or higher
- Teradata CLIv2 client libraries, TTU 13.10 or higher for Windows (32-bit libraries)

For SAS 9.4M3
DBMS Products Required

- Teradata Database version 14.10 or higher
- Teradata CLIv2 client libraries, TTU 14.10 or higher for Windows (32-bit libraries)

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

SAS/AF

Products Required for Build Mode

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

Other products may be required, depending on the application.

Products Required for Run Mode

- Base SAS software
- 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.
- Depending on the object, certain non-graphic objects may require SAS/GRAPH software to print.

SAS/CONNECT

Base SAS is required for the installation of SAS/CONNECT.

SAS/CONNECT software uses the TCP/IP access method and supports Microsoft’s TCP/IP System Driver, which is provided with Microsoft Windows.
SAS/EIS

Products Required for Build Mode
- Base SAS software
- SAS/AF software
- SAS/EIS software
- SAS/FSP software
- SAS/GRAPH software

Other products may be required, depending on the application.

Products Required for Run Mode
- Base SAS software
- SAS/GRAPH software
- SAS/EIS software

Other products may be required, depending on the application.

Memory: 128 MB required

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

SAS/Genetics

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

SAS/GIS

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

Other products may be required, depending on the application.

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

Other products may be required, depending on the application.

Printers: A color or gray-scale printer is required.
SAS/GRAPH

The 32-bit or 64-bit version of Microsoft Internet Explorer 11 is required to run the SAS/GRAPH ActiveX Graph Control from a web browser.

The 32-bit or 64-bit versions of Internet Explorer version 11, Mozilla Firefox version 6.0 or higher, or Google Chrome version 15 or higher are required to run the SAS/GRAPH Java Applets from a web browser.

The Java plug-in must be installed in order for the SAS/GRAPH Java applets to be displayed in the SAS internal browser, Internet Explorer, Firefox, or Chrome. If the Java plug-in is not installed already, the SAS internal browser and Internet Explorer will prompt you for the installation but the other web browsers will not. The Java runtime can be installed from the Java website before you run SAS Java applets.

If you are prompted to install the Java plug-in, you must refresh your browser after the plug-in is installed or the SAS/GRAPH Java applet will not display.

SAS/IntrNet

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

htmSQL

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

MDDB Report Viewer Application

Requires Base SAS software; SAS/GRAPH software; SAS/IntrNet software; and SAS/EIS software or SAS OLAP Server software. The Application Dispatcher component must be installed and configured.

Xplore Sample Web Application

Requires Base SAS software and SAS/IntrNet Server software. The Application Dispatcher component must be installed and configured.

Design-Time Controls

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

SAS/CONNECT Driver for Java
Requires Base SAS software, SAS/CONNECT software, and SAS/IntrNet Server software. SAS/SHARE software must also be installed if data services are used. The Java Tools package must be installed on a web server or a 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. A SAS High-Performance Analytics license is required to invoke the OPTLP, OPTMILP, OPTQP, and OPTMODEL procedures in distributed computing mode.

SAS/TOOLKIT
Products Included
- Base SAS software
- A compiler
The only language with a Production status for SAS/TOOLKIT software is C. Other languages have a Beta status.

SAS/Warehouse Administrator
Products Required for Build Mode
- Base SAS software
- SAS/AF software (required only for API usage)
Products Required for Run Mode
- Base SAS software
- Other products, depending on the application (e.g., SAS/ACCESS software for access to DBMS tables, SAS/CONNECT software for access to remote data, or SAS/AF software to access warehouse via method calls)
Printers
- For printing graphics-based objects, a color or gray-scale printer is required.
- Certain non-graphic objects may require SAS/GRAPH software to print, depending on the object.
SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions delivered within an integrated framework, SAS helps customers at more than 50,000 sites improve performance and deliver value by making better decisions faster. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW®.