

System Requirements for SAS[®] 9.3 Foundation for Solaris[®] for x64



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Overview

This document provides requirements for installing and running SAS 9.3 Foundation for Solaris. You must update your system to meet the minimum requirements before running SAS 9.3 Foundation.

The major requirements listed in the document are:

- Software Requirements
- Hardware Requirements
- Space Requirements
- Specific Product Requirements
- Graphics Hardware and Software Compatibility

Software Requirements

Operating System

SAS is supported on Solaris 10 1/06 and higher. To determine which Solaris release you are running, look at the `/etc/release` file using the `% cat /etc/release` command. Your result should look something like this:

```
Solaris 10 1/06 s10x_u1wos_19a X86
Copyright 2005 Sun Microsystems, Inc. All Rights Reserved.
Use is subject to license terms.
Assembled 07 December 2005
```

Ensure that the first line includes a value of “Solaris 10 1/06” or higher.

If you use Solaris 10 06/06, SAS for Solaris x64 will receive errors upon initialization in display manager mode unless patch 119281-06 has been installed. In addition, if you are using LDAP for authentication, you will also need 120037-09 or higher. The patches are available from the Sun vendor site.

SAS recommends that you apply the latest Sun Recommended Solaris Patch Cluster for x64 Solaris 10 to your Solaris 10 installation.

Note: *The patch levels listed were correct at the time this document was printed. However, patches required for Solaris are subject to unexpected change as development continues. 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.*

SAS requires the file systems where SAS is installed to 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.

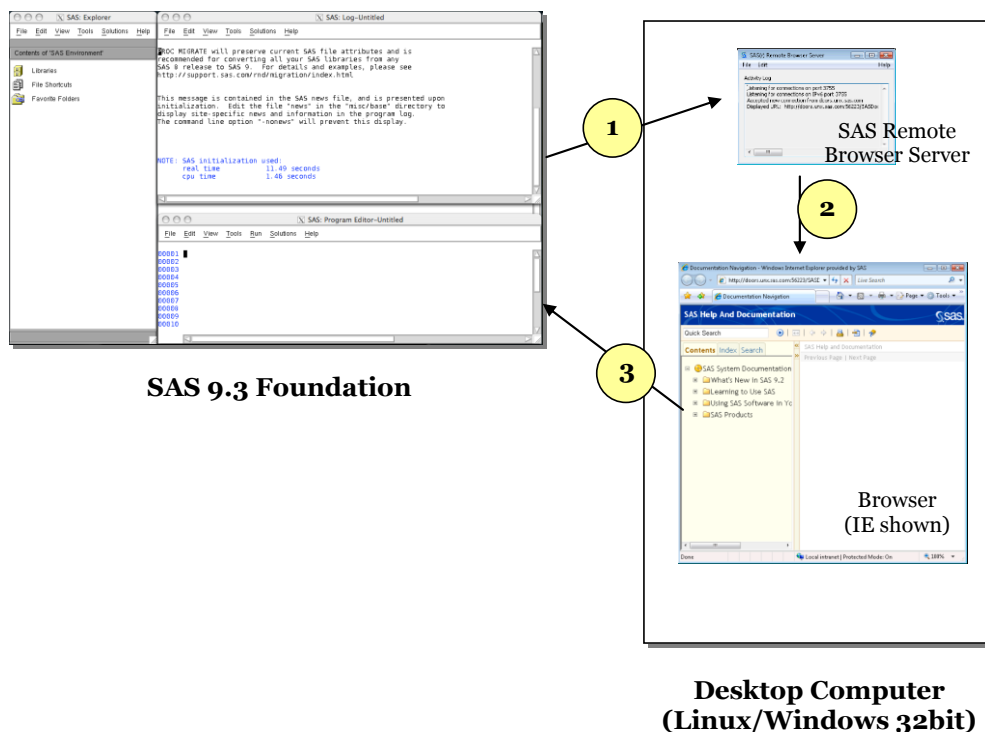
Java Requirements

For information about Java Runtime Environment (JRE) requirements, refer to the SAS 9.3 Support for Java Runtime Environments web page, located at <http://support.sas.com/resources/thirdpartysupport/v93/jres.html>.

Web Browser

SAS 9.3 Foundation uses remote browsing to display Web-based information. Instead of running a browser on the UNIX workstation, SAS 9.3 Foundation sends the URL to your desktop computer for display in a Web browser. This removes the browser overhead from the UNIX server. A small software agent named the Remote Browser Server is installed on your desktop computer to enable SAS to communicate with your browser. The process is illustrated below.

SAS creates a URL that references the information to be displayed (usually program help or ODS output), then sends the URL to the SAS Remote Browser Server on your desktop computer (step 1). The Remote Browser Server then sends a request to the browser to display a page (step 2). The browser then reconnects to SAS to retrieve the information to be displayed and displays it in the browser (step 3).



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

Platform	Supported Browser
Windows XP/Vista/7 32-bit and 64-bit	Firefox 3.6
	Internet Explorer 7 or Internet Explorer 8
Linux 32-bit and 64-bit	Firefox 3.6

The Remote Browser Server must be installed and running for SAS to display web information. The installer for the Remote Browser Server can be found at <http://www.sas.com/apps/demosdownloads/setupintro.jsp>, or directly downloaded from a SAS session.

For SAS to be able to use your web browser, the browser must be configured to allow pop-up windows.

Hardware Requirements

Machines Supported

- All models that support Solaris 10 for x64
- Intel processors with Intel 64 support or AMD processors with AMD64 support

Distribution Media

- Electronic Software Delivery
- DVD

Memory Requirements

For general SAS activities (for example, query and reporting, simple statistics, data manipulation), we recommend 96 MB per user.

More memory is needed for memory-intensive tasks such as OLAP, data mining, heavy statistical analysis, multivariate analysis, formats, and any GUI-based applications. See the “Specific Products Requirements” section for more information about memory requirements for specific products.

Supported Displays

- Any X11-based display server. Monitors must support a minimum of 256 colors (PseudoColor).

Space Requirements

The following list contains space requirements in MB for all of the products available with this release of SAS 9.3 Foundation for Solaris. Use this information to help you determine how much free disk space you must have available before you can install SAS 9.3 Foundation. In addition, SAS 9.3 Foundation requires approximately 30 MB of disk space on the `/tmp` partition to complete the installation.

Software Product	Required Disk Space (MB)
Base SAS software	696
Base SAS Versioned JAR Repository	189
ODS Templates software	188
Report Fonts for Server software	370
SAS Data Quality Server software	47
SAS High-Performance Forecasting software	29
SAS Installation and Qualification Verification software	1
SAS Integration Technologies software	10
SAS Integration Technologies Versioned JAR Repository	96
SAS OLAP Server software	4
SAS/ACCESS Interface to DB2 software	1
SAS/ACCESS Interface to Greenplum software	32
SAS/ACCESS Interface to Microsoft SQL Server	29
SAS/ACCESS Interface to MySQL software	1
SAS/ACCESS Interface to ODBC software	2
SAS/ACCESS Interface to Oracle software	1
SAS/ACCESS Interface to PC Files software	4
SAS/ACCESS Interface to R/3 software	5
SAS/ACCESS Interface to Sybase software	1
SAS/ACCESS Interface to Sybase IQ software	1
SAS/ACCESS Interface to Teradata software	1
SAS/AF software	12
SAS/ASSIST software	22
SAS/CONNECT software	7
SAS/EIS software	31
SAS/ETS software	118
SAS/FSP software	2
SAS/Genetics software	12
SAS/GIS software	52
SAS/GRAPH software	420*
SAS/IML software	18
SAS/INSIGHT software	14
SAS/IntrNet software	3
SAS/LAB software	15
SAS/OR software	62
SAS/QC software	61
SAS/SECURE 168-bit software	1
SAS/SECURE SSL software	3
SAS/SHARE software	1
SAS/STAT software	230
SAS/TOOLKIT software	4

*Beginning with the first maintenance release of SAS 9.3 in December 2011, SAS/GRAPH also includes new map data sets from GfKGeoMarketing. SAS/GRAPH now requires 1.3 GB of disk space in addition to the total listed above.

Specific Product Requirements

Base SAS Software

Requirements for SPD Engine on 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 better

SAS Analytics Accelerator for Teradata Software

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

In-Database DBMS Products Required

All SAS Analytics Accelerator 2.1 for Teradata in-database functions require Teradata 13.00.00.15 or higher. SAS Analytics Accelerator for Teradata requires Teradata Tools and Utilities (TTU) 13 with patch 1.9 or later.

SAS High-Performance Forecasting 12.1 Software

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

SAS Scoring Accelerator for DB2 Software

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

In-Database DBMS Products Required (Function-based Architecture)

- IBM DB2 9.5 FixPack 3: AIX 5.3 or IBM DB2 9.5 FixPack 3: Linux for x64: Red Hat Enterprise Linux 4
- Client utilities for IBM DB2 9.5

A current version of the IBM XLC compiler must be installed on the DB2 server where you will be publishing scores. Contact your IBM DB2 representative to secure the appropriate compiler for your DB2 installation.

In-Database DBMS Products Required (SAS Embedded Process-based Architecture)

- IBM DB2 9.7 FixPack 5 or higher
- Client utilities for IBM DB2 9.7 or higher

The following are the operating system version requirements for the database.

AIX:

- AIX 5.3 + TL09
- AIX 6.1 + TL02 or higher
- AIX 7.1 GA + SP3

Linux:

- SUSE Linux Enterprise Server 10 + SP2
- SUSE Linux Enterprise Server 11

SAS Scoring Accelerator for Greenplum Software

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

The following are the minimum Greenplum database requirements:

- GPDB 4.2.2.0
- GPPC 1.1.0.0

The following are the minimum Linux operating system version requirements for the database:

- Red Hat Enterprise Linux 64-bit 5.5, 5.6, 5.7, 6.1, and 6.2
- SUSE Linux Enterprise Server 64-bit 10 SP4, and 11 SP1

SAS Scoring Accelerator for Oracle Software

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

In-Database DBMS Products Required (SAS Embedded Process-based Architecture)

- The minimum required Oracle Server version is 11gr2.
- The minimum required Oracle Client release is Oracle, Release 10g (64-bit libraries).

The following are the minimum Linux operating system version requirements for the database:

- Red Hat Enterprise Linux 5.5
- Oracle Enterprise Linux 5.5

In addition, the server must have patches for the following Oracle bugs installed:

- Bug 11678127 - OCIDESCRIBEANY RETURNS ORA:24323 FOR AN OBJECT TYPE USE CASE
- Bug 12536287 - ODCITABLECLOSE NOT INVOKED FOR PARALLEL ENABLED TABLE FUNCTIONS –
- Bug 13533487 - ODCITABLECLOSE NOT INVOKED WHEN CTRL-C IS INVOKED BY QC IN TABLE FUNCTIONS
- Bug 12974145 - UNSET LENGTH OFFSET FIELD IN PEFMARG CAUSES CRASH IN SPEFM_FIXUP_LIST
- Bug 11772740 - CALLING OCIRESET() TO ABORT A PIECEWISE CYCLE SEVERS THE ORACLE CON

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. No restart is required.

```
DIAG_ADR_ENABLED=OFF
```

SAS Scoring Accelerator for Teradata Software

SAS Scoring Accelerator for Teradata requires Base SAS, SAS/STAT, SAS/ACCESS Interface to Teradata, and SAS Enterprise Miner. To publish the model to the database, it also requires a SAS code interface or SAS Model Manager.

In-Database DBMS Products Required (Function-based Architecture)

- Teradata 12.0 or higher
- Client utilities for Teradata (12 or higher)

In-Database DBMS Products Required (SAS Embedded Process-based Architecture)

- Teradata 13.10.02.01 or higher
- Client utilities for Teradata (13 or higher)

SAS/ACCESS Interface to DB2 Software

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

Products Included:

- SAS/ACCESS Interface to DB2 software
- SAS Accelerator Publishing Agent software

DBMS Product Required: IBM DB2 Universal Database, Version 8.1 FixPack 18 or higher (64-bit libraries)

SAS/ACCESS Interface to DB2 can be installed on a DB2 server or on a DB2 client node with an installation of the DB2 Run-Time Client, DB2 Application Development Client, or DB2 Administration Client. In addition, DB2 Connect must be installed to connect to DB2 databases that reside on AS/400, VSE, VM, MVS, and z/OS systems.

SAS/ACCESS Interface to Greenplum Software

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

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. Contact SAS Technical Support for information about how to obtain these components.

SAS/ACCESS Interface to Hadoop Software

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

Hadoop Components Required

- Hadoop 0.20.204 or later, for Cloudera CDH3u2 and later
- Hive 0.7.1 or later, including patch HIVE-2315
- Hive JDBC Driver 0.7.1 or later, including patches HIVE-1815 and HIVE-2315

Hadoop Components Recommended: JDBC driver patch HIVE-2137

Hive Patch Notes

1. If you run Cloudera Hadoop, Cloudera CDH3u2 and later already contain required patches HIVE-1815 and HIVE-2315. Recommended patch HIVE-2137 is not included in CDH3u2.
2. HIVE-2315 is both a server and client-side patch. It must be installed on your Hadoop server and on your SAS machine or machines.
3. HIVE-1815 and HIVE-2137 are client-side patches and should be installed only on your SAS machine or machines.

SAS/ACCESS Interface to Microsoft SQL Server Software

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

DBMS Product Required

Microsoft SQL Server Version 7.0 or later

SAS/ACCESS Interface to MySQL Software

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

DBMS Products Required

- Any version of MySQL Client 5.1 or 5.5
- MySQL Server 5.0 or later

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

SAS/ACCESS Interface to ODBC Software

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

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 edit the `odbc.ini` file in your home directory with a text editor 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 Software

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

DBMS Products Required

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

The minimum required Oracle Client release is Oracle, Release 10g (64-bit libraries).

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

SAS/ACCESS Interface to PC Files Software

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

Product Required on Windows: SAS PC Files Server, running in either 32-bit or 64-bit to match the ACE driver on that machine.

DBMS Product Required on Windows: Microsoft Office 2007 or higher System Driver: Data Connectivity Components (ACE)

SAS/ACCESS Interface to PC Files software supports access to delimited files (csv, tab), dBase files (.dbf), JMP files (.jmp), SPSS files (.sav), Stata files (.dta), Excel files (.xls), Microsoft Access database files (.mdb or .accdb) and virtually any data source through ODBC support on Windows.

However, to access Microsoft Access database files (.mdb or .accdb), Microsoft Excel workbook files (.xls, .xlsb, .xlsm or .xlsx) or any ODBC supported data sources, SAS/ACCESS Interface to PC Files software requires the PC Files Server (pcfserver.exe or pcfservice.exe) running on Windows.

SAS/ACCESS Interface to Sybase Software

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

DBMS Products Required: Sybase Open Client SDK (Software Developers Kit) Software, Release 12.5.2 or later (64-bit libraries)

Note: *SAS/ACCESS Interface to Sybase software no longer supports access to Microsoft SQL Server data. SAS/ACCESS Interface to Sybase software uses the CTLIB API calls to access the Sybase DBMS product. These CTLIB API calls are not supported by Microsoft SQL Server; therefore, you will have to use SAS/ACCESS Interface to Microsoft SQL Server software with an appropriate ODBC driver to obtain access to Microsoft SQL Server data.*

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

SAS/ACCESS Interface to Sybase IQ Software

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

SAS/ACCESS Interface to Sybase IQ requires an ODBC driver (64-bit version) from Sybase. The Sybase IQ ODBC driver is included in the Sybase IQ Network Client. To obtain the Sybase IQ Network Client, release 15.1 ESD#3 and above, please contact your database administrator or Sybase technical support at 1-800-8-SYBASE.

SAS/ACCESS Interface to Teradata Software

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

DBMS Products Required

The following Teradata Client software is required:

- Teradata Database 12 or higher (Teradata Database 13.10 or higher if Temporal features are needed)
- Teradata CLIv2 client libraries, TTU 12 or later for Solaris (64-bit libraries) (TTU13.10 or higher if Temporal features are needed)

The following are recommended:

- Teradata FastExport utility, TTU 12 or later for Solaris
- Teradata MultiLoad utility, TTU 12 or later for Solaris

SAS/AF Software

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.
- Certain non-graphic objects may require SAS/GRAPH software to print, depending on the object.

SAS/EIS Software

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

- 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 12.1 Software

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

SAS/GIS Software

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. The list of possible printers can be found in the “Graphics Hardware and Software Compatibility” section.

SAS/IntrNet Software

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 9.3 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.

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 client system.

Tunnel Feature

Must be installed on a web server running on a UNIX or Windows system.

SAS/LAB Software

The following products are required for the installation of SAS/LAB software:

- Base SAS
- SAS/FSP (for interactive data entry)
- SAS/GRAPH

SAS/OR 12.1 Software

The use of graphics in SAS/OR software requires a SAS/GRAPH license. Invoking the OPTLP, OPTMILP, OPTQP, and OPTMODEL procedures in distributed computing mode requires a SAS High-Performance Analytics license.

Graphics Hardware and Software Compatibility

Printers

SAS/Graph software supports PostScript, HP-GL, HP-GL/2, PCL, and other printer languages on printers from manufacturers such as Brother, Canon, Hewlett-Packard, IBM, Konica Minolta, Lanier, Lexmark, Okidata, QMS, Ricoh, Sharp, Xante, and Xerox.

Displays

Display of graphs requires an Xwindows-capable display, terminal, or emulation software.

Images and Interfaces to Other Software

Included with SAS/GRAPH software are drivers that can produce Computer Graphics Metafiles (CGM) in binary, character, and clear-text formatted output for use by devices or software that support CGM, such as Word for Windows, WordPerfect for Windows, Harvard Graphics, and Lotus Freelance.

SAS/GRAPH software can generate encapsulated PostScript vector files, which can be exported to word processing packages such as Microsoft Word and WordPerfect. SAS/GRAPH software can also generate Windows metafiles that can be exported to numerous packages including Microsoft Office, Lotus Smart Suite, and Perfect Office. Contact SAS Technical Support for details.

SAS/GRAPH software's HPGL or HPGL2 driver can be used to produce files that can be transferred to most vector-based drawing programs such as CorelDraw and Micrografx Designer.

SAS/GRAPH software also has drivers for PDF and SVG along with image file formats of BMP, DIB, EMF, EPSI, PBM, PPM, GIF, JPEG, EMF, WMF, PNG, TIFF, and PaintBrush image formats. In addition, SAS/GRAPH software can import graphics in the following formats:

- BMP - Microsoft Windows Bitmap
- DIB - Device Independent Bitmap
- EMF - Microsoft NT Enhanced Metafile
- EPSI - Encapsulated PostScript Interchange
- GIF - Graphics Interchange Format
- JPG – JPEG Files
- PBM - Portable Bitmap
- PCD - PHOTO CD
- PCX - PC PaintBrush
- PNG - Portable Network Graphics
- TGA - TARGA Format
- TIF - Tagged Image File Format
- WMF - Microsoft Windows Metafile Format
- XBM - X Window Bitmaps
- XWD - X Window Dump

Viewing SVG output requires a browser capable of displaying SVG content, such as Mozilla 1.8+ based browsers (for example, Firefox 1.5+), a plug-in such as Adobe's SVG plug-in, or an application such as Batik's SVG viewer.

Viewing PDF output requires Adobe Acrobat Reader.

Viewing HTML Pages Created with the ActiveX and Java Device Drivers

The ActiveX and Java device drivers allow you to create HTML pages from within SAS 9.3 Foundation.

Refer to the "Web Browser" section in this document for an overview of Remote Browsing. This is used to view HTML pages.

To view the Java applets, the Java plug-in must be installed on your desktop computer where the Remote Browser Server is running. On Windows systems, the user can install the plug-in when prompted if it is not already installed.



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