

# System Requirements

## SAS<sup>®</sup> 9.1.2 Foundation Linux for Intel Architecture

This document provides requirements for installing and running SAS 9.1.2 Foundation for Linux for Intel Architecture. You must update your system to meet the minimum requirements before running SAS 9.1.2 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 has been developed and tested on:

- Red Hat Linux 8.0 - Note that Red Hat no longer supports Red Hat Linux 8.0
- Red Hat Enterprise Linux 2.1
- SuSE Linux Enterprise Server 8 + Service Pack 1

SAS is also supported on RHEL 3 with the following caveat:

- compat-libstdc++-7.3-2.96.122 RPM must be installed. This RPM can be found on the standard RHEL 3 disc 3 but is not installed by default.

**Important:** Many other distributions of Linux will not work due to thread library incompatibilities. If you are interested in running SAS on a version or distribution of Linux other than those listed here, contact SAS Technical Support.

**Note:** The patch levels listed were correct at the time this document was printed. However, patches required for Linux for Intel Architecture 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>) and select Linux for Intel Architecture to find the most recent updates to this System Requirements document.

## **Web Browser**

SAS 9.1.2 Foundation requires:

- Netscape 6.2.3

The correct version of Netscape can be downloaded from the Install Center (<http://support.sas.com/documentation/installcenter/linux/91/ts1m2/index.html>), under "Third-party software reference links" in the **Resources** section on the right.

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

## Hardware Requirements

### **Machines Supported**

- Pentium II and above

### **Distribution Media**

- CD-ROM

### **Memory Requirements**

- 64 MB recommended
- 8 MB additional recommended for each concurrent user

### **Terminals Supported**

- Any X Windows-based terminal or server that supports a minimum of 256 colors

## Space Requirements

The following list contains space requirements in MB for all of the products available with this release of SAS 9.1.2 Foundation for Linux for Intel Architecture. Use this information to help you determine how much free disk space you must have available before you can install SAS 9.1.2 Foundation. In addition, SAS 9.1.2 Foundation requires approximately 30 MB of disk space on the /tmp partition to complete the installation.

Software Product	Required Disk Space	Additional Space for Samples/Optional Files
Base SAS Software	436.6	8.3
SAS/ACCESS Interface to DB2 Software	0.7	0.2
SAS/ACCESS Interface to ODBC Software	0.7	0.2
SAS/ACCESS Interface to ORACLE Software	0.6	0.2
SAS/ACCESS Interface to PC Files Software	1.9	0.0
SAS/ACCESS Interface to R/3 Software	72.5	0.1
SAS/ACCESS Interface to SAP BW Software	2.7	0.0
SAS/ACCESS Interface to SYBASE Software	0.7	0.2
SAS/AF Software	6.6	0.0
SAS/ASSIST Software	21.4	0.0
SAS/CONNECT Software	2.9	0.2
SAS Data Quality Server Software	133.0	0.1
SAS/EIS Software	17.4	10.5
Enterprise Miner Server Software	63.4	37.0
SAS/ETS Software	44.9	1.1
SAS/FSP Software	0.9	0.0
SAS/GENETICS Software	1.4	0.2
SAS/GIS Software	62.8	0.3
SAS/GRAPH Software	70.8	2.4
SAS High-Performance Forecasting Software	5.6	0.1
SAS/IML Software	7.8	0.7
SAS/INSIGHT Software	17.8	0.4
SAS Integration Technologies Software	4.7	0.4
SAS/IntrNet Software	2.6	1.1
SAS Inventory Replenishment Planning Software	0.3	0.1
SAS/LAB Software	7.0	0.0
SAS Marketing Automation Processes Software	0.2	0.0
SAS OLAP Server Software	2.5	0.0
SAS/OR Software	35.2	2.1
SAS/QC Software	30.3	3.5
Risk Dimensions Software	9.0	500.0
SAS/SECURE Software	1.6	0.0
SAS/SHARE Software	0.9	0.2
SAS/SPECTRAVIEW Software	2.8	14.4
SAS/STAT Software	54.1	3.2
SAS/TOOLKIT Software	5.0	0.0
SAS/Warehouse Administrator Software	44.9	0.0

## SAS/GIS Census Tract Maps

State	Required Disk Space in MB
Alabama	12.7
Alaska	10.3
Arizona	3.9
Arkansas	11.6
California	17.5
Colorado	8.1
Connecticut	2.5
Delaware	0.8
District of Columbia	0.2
Florida	14.8
Georgia	15.7
Hawaii	1.6
Idaho	8.5
Illinois	13.7
Indiana	8.2
Iowa	8.4
Kansas	9.0
Kentucky	12.9
Louisiana	16.8
Maine	8.1
Maryland	4.3
Massachusetts	4.5
Michigan	12.7
Minnesota	17.3
Mississippi	9.6
Missouri	13.3

State	Required Disk Space in MB
Montana	12.9
Nebraska	7.4
Nevada	3.3
New Hampshire	2.7
New Jersey	3.9
New Mexico	4.7
New York	14.2
North Carolina	15.4
North Dakota	9.6
Ohio	11.4
Oklahoma	9.6
Oregon	9.7
Pennsylvania	13.5
Rhode Island	0.9
South Carolina	9.5
South Dakota	8.6
Tennessee	14.1
Texas	28.2
Utah	5.2
Vermont	2.1
Virginia	12.4
Washington	9.8
West Virginia	6.9
Wisconsin	13.3
Wyoming	7.1
<b>Total for all entries</b>	<b>483.4</b>

## SAS/GRAPH Map Data Sets

Data Set	Required Disk Space
Countries in Africa and Middle East Maps	6.7
Countries in Asia and Pacific Maps	22.0
Countries in Europe Maps	14.7
North America and Canada Maps	5.6
Countries in Latin America and Caribbean Maps	7.0
Canada Maps	2.0
Continents Maps	25.8
World Map	25.7
Very Large US County Map, Unprojected	12.5
Large US County Map, Unprojected and Reduced	1.6
Large US Mainland County Map, Projected and Reduced	1.5
Large US State Outline Map, Unprojected	1.6
<b>Total for all entries</b>	<b>126.7</b>

## **DBCS Support**

The following list contains space requirements in MB for SAS 9.1.2 components that offer DBCS support.

<b>Software Product</b>	<b>Required Disk Space</b>
Base SAS Software	21.8
SAS/ACCESS Interface to DB2 Software	0.6
SAS/ACCESS Interface to ODBC Software	0.6
SAS/ACCESS Interface to ORACLE Software	0.2
SAS/ACCESS Interface to PC Files Software	0.9
SAS/ACCESS Interface to R/3 Software	0.1
SAS/ACCESS Interface to SYBASE Software	0.4
SAS/AF Software	0.3
SAS/CONNECT Software	0.9
SAS/EIS Software	0.2
Enterprise Miner Server Software	0.2
SAS/FSP Software	0.4
SAS/GRAPH Software	58.8
SAS/INSIGHT Software	3.0
SAS/LAB Software	0.9
SAS/QC Software	0.5
SAS/SHARE Software	0.1
SAS/STAT Software	0.7

## **Japanese Language**

<b>Japanese Support</b>	<b>Primary Encoding Required Disk Space</b>	<b>Additional Space for Samples/ Optional Files</b>	<b>Secondary Encoding Required Disk Space</b>	<b>Additional Space for Samples/ Optional Files</b>
Base SAS Software	12.8	0.3	12.8	0.3
Enterprise Miner Server Software	3.4	0.0	3.4	0.0
SAS/GRAPH Software	0.3	0.0	0.3	0.0
SAS/IntrNet Software	0.3	0.0	0.3	0.0
SAS OLAP Server Software	0.2	0.0	0.2	0.0
Countries in Asia and Pacific Maps	22.0	0.0	22.0	0.0

## **Korean Language**

<b>Korean Support</b>	<b>Required Disk Space</b>
Base SAS Software	8.2
Enterprise Miner Server Software	0.2
SAS/GRAPH Software	0.3
SAS OLAP Server Software	0.2
SAS/QC Software	0.2

## Chinese Simplified Language

<b>Chinese Simplified Support</b>	<b>Required Disk Space</b>
Base SAS Software	8.6
Enterprise Miner Server Software	0.2
SAS/GRAPH Software	0.2
SAS/IntrNet Software	0.3
SAS OLAP Server Software	0.2

## Chinese Traditional Language

<b>Chinese Traditional Support</b>	<b>Required Disk Space</b>
Base SAS Software	2.9
SAS/GRAPH Software	16.6
SAS OLAP Server Software	0.2

# Specific Product Requirements

## SAS/ACCESS Interface to DB2 Software

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to DB2 software

### **DBMS Products Required:**

- DB2 Universal Database, Version 7 or higher (32-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 OS/390 systems if the version of the DB2 Client is version 7.x or earlier. If the DB2 Client is version 8.1 or later, the DB2 Connect software is no longer required for connections to these mainframe and midrange databases.

**Note:** Ensure your DB2 release is certified by IBM to run on the operating system (and revision level) you have installed. At production time, IBM was only certifying their Linux DBMS products on Red Hat Advanced Server 2.1.

## SAS/ACCESS Interface to ODBC Software

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to ODBC software

### **DBMS Products Required:**

- A compliant ODBC driver manager and ODBC driver (32-bit libraries)

ODBC drivers are often available from DBMS vendors and other third party ODBC driver developers. The ODBC driver you choose 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 `LD_LIBRARY_PATH` so that the ODBC drivers can be loaded dynamically at run time.

For more information, please consult your ODBC driver vendor.

## SAS/ACCESS Interface to ORACLE Software

### **Products Required:**

- Base SAS software
- 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 8 release is:

- Oracle, Release 8.1.7.2.x (32-bit libraries)

The minimum required Oracle 9 release is:

- Oracle, Release 9i (32-bit libraries)

**Note:** Ensure your Oracle release is certified by Oracle to run on the operating system (and revision level) you have installed. At production time, Oracle was only certifying their Linux DBMS products on Red Hat Advanced Server 2.1.

## SAS/ACCESS Interface to PC Files Software

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to PC Files software

### **Products Required on Windows:**

- SAS PC Files Server

### **DBMS Products Required on Windows:**

- Microsoft Jet 4.0 Components
- Microsoft Data Access Components (MDAC), Version 2.7 or higher

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

However, to access Microsoft Access database file(.mdb), Microsoft Excel workbook file(.xls) or any ODBC supported data sources, SAS/ACCESS Interface to PC Files software requires the PC Files Server (pcfserver.exe) running on Windows. The PC Files Server (pcfserver.exe) component is shipped on the Client Side Components CDs.

## **SAS/ACCESS Interface to R/3 Software**

**Note:** The graphical user interface of the SAS/ACCESS Interface to R/3 is not supported on Linux.

**Note:** The RFC Server is only supported on the following platforms: Windows, HP-UX, Linux Red Hat 8.0 (**not** on Suse Linux), Solaris, AIX, Tru64 UNIX, and z/OS. When running SAS/ACCESS Interface to R/3 on Suse Linux, you must run the RFC server on one of the supported platforms.

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to R/3 software

Additional functionality is obtained if the following products are installed:

- SAS/Warehouse Administrator software
- SAS/CONNECT software
- SAS/SHARE software

SAS/ACCESS Interface to R/3 software requires the use of communication protocols such as TCP/IP to function properly.

### **SAP R/3 Products Required:**

- SAP R/3, Release 4.5B or higher

**Note:** For the RFC server, the thread safe shared library for RFC must be installed. This shared library is provided by SAP AG. Download the shared library for your platform per instructions in SAP Note 413708.

## **SAS/ACCESS Interface to SAP BW Software**

**Note:** The graphical user interface of the SAS/ACCESS Interface to SAP BW is not supported on Linux.

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to R/3 software
- SAS/ACCESS Interface to SAP BW software

Additional functionality is obtained if the following products are installed:

- SAS/EIS software, or
- SAS OLAP Server software

### **SAP BW Products Required:**

- SAP BW, Release 2.0B or higher

## SAS/ACCESS Interface to SYBASE Software

### **Products Required:**

- Base SAS software
- SAS/ACCESS Interface to SYBASE software

### **DBMS Products Required:**

The following release of SYBASE Open Client software is required:

- SYBASE Open Client Software, Release 12.5

The following is recommended:

- Adaptive Server Enterprise, Release 11.x or higher

**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 ODBC software with an appropriate ODBC driver to obtain access to Microsoft SQL Server data.

**Note:** Sybase ASIQ, Release 12.x is not supported; SAS/ACCESS Interface to ODBC software must be used instead.

## 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:**

- 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 Anti-Money Laundering 1.2 Software

### **Products Required for SAS Anti-Money Laundering Administrator 1.2:**

- Base SAS software
- SAS/AF software
- SAS/CONNECT software
- SAS/Warehouse Administrator software

### **Disk Space Required for SAS Anti-Money Laundering Administrator 1.2:**

The disk space required for SAS Anti-Money Laundering Administrator 1.2 is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have SAS 9.1.2 Foundation already installed, then the amount of disk space required to install SAS Anti-Money Laundering Administrator 1.2 should be decreased by the disk space of any of the above products that have been previously installed.

### **Products Required for SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2:**

- Base SAS software
- SAS/ACCESS Engine of choice
- SAS Anti-Money Laundering Data Management and Alert Engine Server software, which contains:
  - SAS/AF software
  - SAS/CONNECT software
  - SAS Data Quality - Cleanse software
  - SAS Enterprise Miner software
  - SAS/ETS Software
  - SAS/GRAPH software
  - SAS/IML software
  - SAS integration Technologies software
  - SAS OLAP Server software
  - SAS/OR software
  - SAS/QC software
  - SAS/SHARE software
  - SAS/STAT software

### **Disk Space Required for SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2:**

The disk space required for SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2 is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have SAS 9.1.2 Foundation already installed, then the amount of disk space required to install SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2 should be decreased by the disk space of any of the above products that have been previously installed.

## **Products Required for SAS Anti-Money Laundering Investigation Application Server 1.2:**

- Base SAS software
- SAS/ACCESS Engine of choice (must be the same engine as used for the SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2)
- SAS Anti-Money Laundering Investigation Application Server software, which contains:
  - SAS/CONNECT software

## **Disk Space Required for SAS Anti-Money Laundering Investigation Application Server 1.2:**

The disk space required for SAS Anti-Money Laundering Investigation Application Server 1.2 is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have SAS 9.1.2 Foundation already installed, then the amount of disk space required to install SAS Anti-Money Laundering Data Management and Alert Engine Server 1.2 should be decreased by the disk space of any of the above products that have been previously installed.

## **Base SAS Software**

### **External Tape Devices Supported:**

The TAPE device type is supported for the following tape devices:

- 4mm cartridge tapes
- 8mm cartridge tapes

## **SAS/CONNECT Software**

### **TCP/IP Access Method:**

- Any TCP/IP package that comes with the operating system

## **SAS Data Quality Server Software**

### **Memory:**

The memory requirements for SAS Data Quality Server software are dependent upon the complexity of the data and the number of locales loaded from the Quality Knowledge Base at one time.

- 128 MB recommended per locale

## **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:**

- 64 MB required
- 96 MB recommended

### **Printers:**

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

### **Enterprise Miner Solution 4.3**

#### **Products Required for Enterprise Miner Server:**

- Base SAS software
- SAS/STAT software
- Enterprise Miner Server Solution, which contains:
  - Enterprise Miner Server software and necessary elements of the following:
  - SAS/CONNECT software
  - SAS/ETS software
  - SAS/GRAPH software
  - SAS Integration Technologies

#### **Memory Required for Enterprise Miner Server:**

- 512 MB required

#### **Disk Space Required for Enterprise Miner Server:**

The disk space required for the Enterprise Miner Server Solution is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have SAS 9.1.2 Foundation already installed, then the amount of disk space required to install the Enterprise Miner Server Solution should be decreased by the disk space of any of the above products that have been previously installed.

## SAS/Genetics Software

### **Products Required:**

- Base SAS software
- SAS/Genetics software, which contains necessary elements of the following:
  - SAS/GRAPH software

### **Disk Space Required:**

The disk space required for SAS/Genetics software is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have Release 8.2 of SAS 9.1.2 already installed, then the amount of disk space required to install SAS/Genetics software should be decreased by the disk space of any of the above products that have been previously installed.

## SAS/GIS Software

### **Products Required for Build Mode:**

- Base SAS software
- SAS/AF software (recommended)
- 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 (recommended)
- 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 9.1.2 media. Other SAS/IntrNet software components may be installed from the *SAS Client-Side Components* CD.

### **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**

### **Products Required:**

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

## SAS OLAP Server Software

### **Products Required:**

- Base SAS software
- SAS OLAP Server contains necessary elements of the following:
  - SAS/AF software
  - SAS/GRAPH software
  - SAS Integration Technologies software

### **Memory:**

The memory requirements for SAS OLAP Server software are dependent upon the complexity of the data.

- 512 MB required

Large applications will see performance improvements with more available memory.

## Portal Server Components 9.1.2

### **Products Required:**

- Base SAS software
- Portal Server Components, which contains necessary elements of the following:
  - SAS Integration Technologies software

### **Disk Space Required for SAS Portal Server Components 9.1.2:**

The disk space required for Portal Server Components 9.1.2 is the combined total space requirements for the SAS software products listed above. See the **Space Requirements** table for more information.

**Note:** If you have SAS 9.1.2 Foundation already installed, then the amount of disk space required to install Portal Server Components 9.1.2 should be decreased by the disk space of any of the above products that have been previously installed.

## Risk Dimensions (Release 9.1.2)

### **Memory:**

- 512 MB per processor required
- 1 GB or more per processor recommended

### **Other Requirements for Risk Dimensions:**

- Web server to view RiskWeb reports

## **SAS/SHARE Software**

### **Products Required:**

- Base SAS software

### **TCP/IP Access Method:**

- Any TCP/IP package that comes with the operating system

## **SAS/Warehouse Administrator Software**

### **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 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.

# Graphics Hardware and Software Compatibility

## Printers

SAS/GRAPH software provides device drivers for all Hewlett-Packard printers (and compatibles), and printers that support PostScript, HP-GL, HP PCL, and other printer languages. Here is a partial list of printers that SAS/GRAPH software supports:

CalComp ColorMaster, ColorMaster Plus, PlotMaster  
Canon Bubble Jet, Laser Shot  
Digital printers that support either SIXEL, HP PCL, Tektronix, or PostScript emulation modes  
Epson FX and LQ series printers (and all printers running in Epson emulation mode)  
Hewlett-Packard LaserJet, DeskJet, PaintJet, and DesignJet printers (and compatibles)  
IBM Graphics, Proprinter, and ColorJet printers  
PostScript printers (including color and gray-scale PostScript printers)  
QMS Colorgrafix with CGM interpreter  
QMS 800, 1200, 1500, 2200, and 2400 using QUIC or Tektronix emulation modes  
Talaris 800, 802, 1200, 1500, and 2400 using QUIC or Tektronix emulation modes  
Talaris printers using the EXCL language  
Tektronix Phaser printers (all models)  
Tektronix 4693 printers with Tektronix 4510 rasterizer  
Xerox 2700 and 4045 printers with a GRAPHX cartridge  
Xerox 3700 (with imaging board and at least 1M of memory)  
Xerox 4030 (contact Technical Support), 4213, 4235, and 4700  
Xerox 4700 printer  
Xerox 5775 color copier with an EFI Fiery attachment

SAS/GRAPH device drivers may also be available for additional printers not listed above and that do not support PostScript, HP-GL, or HP PCL. For additional information on these drivers, contact SAS Institute Technical Support.

## Terminals and Displays

SAS/GRAPH software supports graphics display on graphics terminals from DEC, Tektronix, HP, and on X Windows terminals. SAS/GRAPH software also supports graphics emulators that emulate any of the above terminals. Note the use of the SAS/GRAPH graphics editor requires an X Windows display or X Windows emulation software.

## Plotters

SAS/GRAPH software provides device drivers for all HP plotters supporting HP-GL or HP-GL/2, and plotters from other manufacturers that support the HP-GL or HP-GL/2 language. SAS/GRAPH software also supports Houston Instruments plotters using the DMPL language and ZETA plotters that support the GML language.

## **Film Recorders**

SAS/GRAPH software provides device drivers that support the following film recorders:

Genigraphics Masterpiece Camera System with SCODL interface  
Lasergraphics MPS 2000 film recorder with a Lasergraphics UI-100 or RASCOL rasterizer  
Matrix QCR and PCR cameras with Matrix QVP, MVP, or Lasergraphics rasterizers  
Polaroid Palette CI-3000 and CI-5000  
Presentation Technologies Montage film recorder

Support may be available for other film recorders not listed here. For details, contact SAS Institute Technical Support.

## **Interfaces to Other Graphics Software**

Included with SAS/GRAPH software is a series of drivers that can produce Computer Graphics Metafiles (CGM) in binary, character, and clear-text formats. These drivers can be used to transfer SAS/GRAPH output to other products that support CGM input, such as Word for Windows, WordPerfect for Windows, Harvard Graphics, and Lotus Freelance, or to devices that can process CGM input.

SAS/GRAPH software can also generate encapsulated PostScript vector files, which can be exported to word processing packages such as Microsoft Word, WordPerfect, and several others.

Many other graphics and word processing applications can process files in Hewlett-Packard (HP-GL) format. The HPGL driver can be used to produce files that can be transferred to most applications that can process HP-GL files. In addition, there are drivers for PDF, PBM, PPM, GIF, JPEG, EMF, WMF, PNG, TIFF, EPSI, and PaintBrush image formats. To view a complete list of all SAS/GRAPH device drivers, submit the following SAS program:

```
proc gdevice c=sashelp.devices nofs;  
  list _all_;  
run; quit;
```

SAS/GRAPH software can also export graphics in the following formats:

BMP - Microsoft Windows Bitmap  
EPS - Encapsulated PostScript  
GIF - Graphics Interchange Format  
PNG - Portable Network Graphics  
PPM - Portable Pixmap  
PS - PostScript Bitmap  
TIF - Tagged Image File Format  
XPM - X11 Pixmap  
JPG - JPEG Files  
XBM - X11 Bitmap

In addition, SAS/GRAPH software can import graphics in the following formats:

BMP - Microsoft Windows Bitmap  
EPS - Encapsulated PostScript  
GIF - Graphics Interchange Format  
PBM - Portable Bitmap  
PCD - Kodak Photo-CD  
PCX - PC PaintBrush  
PGM - Portable Graymap  
PNG - Portable Network Graphics  
PNM - Portable Anymap  
PPM - Portable Pixmap  
TGA - Targa format  
TIF - Tagged Image File Format  
XBM - X11 Bitmap  
XPM - X11 Pixmap  
XWD - X Window Dump  
JPG - JPEG Files

### **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 9.1.2.

Refer to the "Web Browser" section in this document for a list of browsers with which you can view HTML pages on this operating environment.

To view the Java applets, the Java plug-in must be installed on each client machine. On Windows systems, the user can install the plug-in when prompted if it is not already installed. On other systems, the plug-in can be installed from one of the Third Party Software Components CDs. Follow the instructions included with the Java and web browser installation for your system to enable the Java plug-in.

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