

System Requirements

The SAS[®] System Release 6.12 (TS070) HP-UX[®]

This document provides requirements for installing and running the SAS System for HP-UX. You must update your system to meet the minimum requirements before running the SAS System. The major requirements listed in the document are:

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

For additional information and to view the latest system requirements for your system, access the SAS Institute Web site at:

http://www.sas.com/software/enclosures/system_req.html

or contact SAS Institute Technical Support (refer to Contacting SAS Institute Technical Support in the installation instructions included in your package).

For information about Year 2000 compliance, see <http://www.sas.com/techsup/download/technote/y2kcomp.html>.

Software Requirements

Operating System

- HP-UX, Releases 9.04 through 11.0

Special Notes: For HP-UX, Releases 10.20 or later, be sure to refer to your *Alert Notes* for more information on these specific operating system levels.

For HP-UX, Release 11.0, be sure to refer to the SAS/ACCESS product sections in your *Alert Notes* for setup information.

Hardware Requirements

Machines Supported

- HP machines conforming to PA-RISC 1.1

The following models are PA-RISC 1.0; therefore, they are not supported – 840, 850, 855, 860, 865, 870, 890, 815, 825, 835, 845, 635, 645, 808, 822, 832, 842 and 852.
See the *Alert Notes* for more details.

A math coprocessor is required. Be sure to install a math coprocessor that is compatible with your specific model.

Distribution Media

For installing the SAS System:

- CD-ROM
- 4mm
- 8mm

For creating files using the SAS System (tape types):

- 4mm
- 8mm

Memory Requirements

- 16 MB minimum
- 24 MB recommended
- 8 MB additional recommended for each concurrent user

Hard Disk Requirements

A default installation will require approximately 190 MB of additional temporary storage while doing the installation. Refer to the **Space Requirements** section for details on product space requirements.

The SAS System installation requires that 2 MB of hard disk space be available on the partition where the SAS System is installed. This disk space is needed when running the install's SAS Manager application.

Devices Supported

- A mouse is required for X Windows

Space Requirements

The media you received is customized for your site and contains all of the SAS software products for which you are licensed.

The following list contains space requirements in MB for all of the products available with this release of the SAS System for HP-UX. Use this information to help you determine how much free disk space you must have available before you can install the SAS System.

Software Product	Required Disk Space	Additional Space for Samples and Optional Files
Base SAS Software	135.9	15.9
SAS/ACCESS Interface to INFORMIX Software	0.4	0.1
SAS/ACCESS Interface to INGRES Software	1.2	0.2
SAS/ACCESS Interface to ODBC Software	0.2	0.0
SAS/ACCESS Interface to ORACLE Software	3.2	0.2
SAS/ACCESS Interface to PC File Formats Software	0.3	0.0
SAS/ACCESS Interface to SYBASE and SQL Server Software	1.3	0.2
SAS/ACCESS Interface to UNIX Databases Software	0.1	0.0
SAS/AF Software	1.6	0.0
SAS/ASSIST Software	11.7	0.0
SAS/CALC Software	5.1	0.0
SAS/CONNECT Software	6.0	0.2
SAS/EIS Software	22.2	10.6
SAS/ENGLISH Software	6.0	0.3
SAS/ETS Software	16.3	0.3
SAS/FSP Software	1.6	0.0
SAS/GIS Software	40.0	0.4
SAS/GRAPH Software	22.7	5.1
SAS/GRAPH Map Data Sets	11.8	0.0
SAS/IML Software	6.6	0.6
SAS/INSIGHT Software	5.0	0.4
IT Service Vision Server Software	160.0	0.0
SAS/LAB Software	6.1	0.0
SAS/MDDDB Server Software	0.3	0.0
SAS/OR Software	24.1	2.4
SAS/PH-Clinical Software	22.2	10.6
SAS/QC Software	15.3	3.7
SAS/SHARE Software	0.6	0.0
SAS/SPECTRAVIEW Software	1.8	11.4
SAS/STAT Software	24.0	1.9
SAS/TOOLKIT Software	6.6	0.0
SAS/TUTOR Software: Fundamentals of the SAS System (CBT101)	4.3	0.0
SAS/TUTOR Software: Reading Raw Data and Formatting Values with the DATA Step (CBT102)	2.3	0.0
SAS/TUTOR Software: Creating, Modifying and Processing Variables with the DATA Step (CBT103)	2.2	0.0
SAS/TUTOR Software: Developing Custom Data Entry Applications (CBT104)	2.4	0.0
SAS/TUTOR Software: Creating and Enhancing SAS/GRAPH Output (CBT105)	3.8	0.0
SAS/TUTOR Software: Creating Tables with PROC TABULATE (CBT106)	2.2	0.0
SAS/Warehouse Administrator Software	12.5	7.3
SAS Notes and TS070 Maintenance Files	110.5	0.0
Total	700.4	71.8

Specific Product Requirements

SAS/ACCESS Interface to INFORMIX Software

Products Required:

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

DBMS Products Required:

- For INFORMIX, Version 5 releases, the INFORMIX ESQL/C development tools are required on the local SAS node. An INFORMIX SE or INFORMIX ONLINE server is required either on the local SAS node or a remote node.
- INFORMIX-Net is required on the SAS client node to run SAS/ACCESS Interface to INFORMIX software in a distributed environment. INFORMIX-Net is required on an INFORMIX SE server node to run SAS/ACCESS Interface to INFORMIX software in a distributed environment. INFORMIX-Star is required on an INFORMIX ONLINE server node to run SAS/ACCESS Interface to INFORMIX software in a distributed environment.
- For INFORMIX, Version 6 and 7 releases, the INFORMIX ESQL/C development tools are required on the local SAS node. An INFORMIX SE or INFORMIX ONLINE server is required either on the local SAS node or a remote node.

Note: The INFORMIX-Net and INFORMIX-Star products are incorporated into INFORMIX ESQL/C, SE, and ONLINE products with INFORMIX, Version 6 and Version 7 releases.

SAS/ACCESS Interface to INGRES Software

Products Required:

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

DBMS Products Required:

- Any certified INGRES Release 6.4/03 or later, including CA-OpenIngres 1.1/.04 or CA-OpenIngres 1.2/00.

INGRES ESQL/C development tools are required on the local SAS node. The INGRES installation can be a Server, NFS Client, or Tools Client installation. To use SAS/ACCESS Interface to INGRES software in a distributed environment, INGRES/Net is required.

SAS/ACCESS Interface to ODBC Software

Products Required:

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

DBMS Products Required:

- An ODBC driver for the data source from which you want to access data.

ODBC drivers are often available from the DBMS vendor 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 the 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 SHLIB_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 that has ORACLE SQL*Net support.

One of the following ORACLE releases is required:

- ORACLE, Release 6 versions
- ORACLE7, Release 7.0.12 or subsequent releases

SAS/ACCESS Interface to SYBASE and SQL Server Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to SYBASE and SQL Server software

DBMS Products Required:

One of the following releases of SYBASE Open Client DB-Library is required:

- SYBASE System, Release 4.6, 4.6.1, 4.6.2 or a Sybase System 10 Open Client release
- Any version of SYBASE SQL Server is supported

SAS/AF Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software
- SAS/GRAPH software (to create and display graphics objects)
- SAS/FSP software (to create and display SAS/FSP objects)
- Other products may be required depending on the application

Terminals:

- Any X Windows-based terminal or server

Products Required for Run Mode:

- Base SAS software
- SAS/GRAPH software (to create and display graphics objects)
- SAS/FSP software (to create and display SAS/FSP objects)
- Other products may be required depending on the application

Terminals:

- Any X Windows-based terminal or server

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.
- The quality of printed output may be less than desirable on true pen plotter type devices.

Video Player Object in SAS/AF Software

Hardware:

- Minimum of 256 colors
- Audio is not supported on HP-UX systems with audio capability (i.e., HP715, HP735)
- External speakers are recommended

SAS/ASSIST Software

To use the enhancements in SAS/ASSIST software, an X Windows-based terminal or server is required.

Please refer to *SAS/ASSIST Software: Changes and Enhancements* for information on the new features.

Base SAS Software

Video Player in Base SAS Software

A Video Player utility has been added to Base SAS software with Release 6.12. This will allow users to play video clips on their workstations. The Video Player Object (Class) is actually part of SAS/AF software. The Video Player utility based on the Video Player Object is included with Base SAS software.

Memory:

- 8 MB RAM required
- 16 MB RAM recommended

Hardware:

- Minimum of 256 colors
- Audio is not supported on HP-UX systems with audio capability (i.e., HP715, HP735)
- External speakers are recommended

SAS/CALC Software

Products Required:

- Base SAS software
- SAS/CALC software

Terminals:

- Any X Windows-based terminal or server

SAS/CONNECT Software

APPC Access Method

With the APPC access method, a HP-UX user is provided access to an SNA network. The following software is required:

- HP-UX, Version 9.x
- HP-UX SNAplusAPI and SNAplusLink, Release 3 or subsequent releases tested with Release 3/Dart 16 components. Recommended patches at Release 3/Dart 16 are PHNE_4773, PHNE_5314, and PHNE_5374

TELNET and TCP/IP Access Methods

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

SAS/EIS Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software
- SAS/FSP software
- SAS/GRAPH software
- SAS/EIS software
- Other products may be required depending on the application

Terminals:

- Any X Windows-based terminal or server

Products Required for Run Mode:

- Base SAS software
- SAS/GRAPH software
- SAS/EIS software
- Other products may be required depending on the application

Terminals:

- Any X Windows-based terminal or server

Printers:

- For printing graphics-based objects, a color or gray scale printer is required.
- The quality of printed output may be less than desirable on true pen plotter type devices.

SAS/ENGLISH Software

Products Required:

- Base SAS software
- SAS/ASSIST software
- SAS/ENGLISH software

Terminals Required:

- Any X Windows-based terminal or server

SAS/GIS Software

Products Required:

- Base SAS software
- SAS/GRAPH software
- SAS/FSP software
- SAS/GIS software
- Other products may be required depending on the application

Printers:

- A color gray scale printer is required. The list of possible printers can be found in the **Graphics Hardware and Software Compatibility** section.
- The quality of printed output may be less than desirable on true pen plotter type devices.

Display:

- 16 color X Windows-based terminal or server required
- 256 colors recommended

Video Extensions in SAS/GRAPH Software

Video processing capabilities have been incorporated into SAS/GRAPH software. There are two components, a Non Linear Editor and a Text Compositor. Using these components, SAS System users can build their own video clips with superimposed textual annotation and audio. These video clips can then be included into any SAS application by using the video frame object technology to create a multimedia presentation. The editor supports AVI files (with uncompressed or Intel Indeo 3.1 and 3.2 video compression), WAV (audio) files, and TIFF files. The text compositor component of the software allows users to add textual annotation to video clips. The text compositor is designed to allow creation and animation of text blocks for credit rolls, subtitles, etc. Users can compose blocks of text and assign attributes such as fonts, sizes, and spacing. Users can assign surface attributes, such as color and transparency (visibility).

Memory:

- 8m RAM required
- 16m RAM recommended

Hardware:

- Minimum of 256 colors
- Audio is not supported on HP-UX systems with audio capability (i.e., HP715, HP735)

SAS/LAB Software

Products Required:

- Base SAS software
- SAS/GRAPH software
- SAS/LAB software
- SAS/FSP software is recommended but not required

Terminals:

- Any X Windows-based terminal or server

SAS/MDDB Server Software

The memory requirements for SAS/MDDB Server software are dependent upon the complexity of the hierarchies generated. While the minimum requirement of 8 MB will allow the creation of simple hierarchies, more complex hierarchies will require additional RAM.

SAS/SHARE Software

APPC Access Method

With the APPC access method, a HP-UX user is provided access to an SNA network. The following software is required:

- HP-UX, Version 9.x
- HP-UX SNAplusAPI and SNAplusLink, Release 3 or subsequent releases tested with Release 3/Dart 16 components. Recommended patches at Release 3/Dart 16 are PHNE_4773, PHNE_5314 and PHNE_5374.

TCP/IP Access Method

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

SAS/TUTOR Software

Terminals:

- Any X Windows-based terminal or server

SAS/Warehouse Administrator Software

Products Required for Build Mode:

- Base SAS software
- SAS/AF software (required only for API usage)
- SAS/FSP software

Products Required for Run Mode:

- Base SAS software
- SAS/FSP 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.
- The quality of printed output may be less than desirable on true pen plotter type devices.

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 1 MB 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.

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

Writing Your Own Device Driver

SAS Institute's Metagraphics driver facility can be used to develop driver support for virtually any device you choose. The Metagraphics driver facility is device-intelligent and supports most hardware features. A user-written program is required to translate the metafile into the appropriate graphics language recognized by the hardware. SAS/GRAPH software will, optionally, perform device I/O. For details, contact SAS Institute Technical Support.

The Macintosh Meta Application

The Macintosh Meta Application is a free program that can be installed on your Macintosh. A metafile produced by the SAS/GRAPH Metagraphics driver can be transferred to the Macintosh from your host system and viewed on the screen. Images can then be stored in PICT or clipboard format to be used by other applications or printed on an attached Apple LaserWriter (or compatible) printer. Images can be saved into the Macintosh clipboard and used by MacDraw and other Macintosh packages. For details, contact SAS Institute Technical Support.

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