

System Requirements

The SAS[®] System Release 6.12 (TS051) Digital[™] UNIX[®]

This document provides requirements for installing and running the SAS System for Digital UNIX. 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/service/admin/admindoc.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

- Digital UNIX, Version 3.2G, 4.0A, 4.0B, and 4.0D

Note: You must have the OSFSVID2 XXX (where XXX refers to the operating system release you are installing) subset installed in order to run the SAS System. This subset provides UNIX SVID2 compatibility. See the `setld` command for further information on how to install this subset or to see if this subset is already installed.

Special Note: If your operating system level is not referenced above, it currently may not be supported. Please access the SAS Institute Web site at http://www.sas.com/service/techsup/sysreq_index.html for the latest revision of the System Requirements for your platform or contact Technical Support.

It is necessary to reconfigure the Digital UNIX kernel in order to run the SAS System.

The following line must be in the kernel configuration file for your system's machine (the default value is 200 as shipped by Digital Equipment Corporation):

```
mapentries      400
```

Note: Setting `mapentries` to 400 will allow approximately five average SAS sessions.

For each additional concurrent SAS session, it is recommended that you increase this value by 25. Then, reconfigure and install the new kernel. Note that this can be done after installation of the SAS System.

Hardware Requirements

Machines Supported

- All models that support Digital UNIX, Version 3.2G, 4.0A, 4.0B, and 4.0D

Media Supported

For installing the SAS System:

- CD-ROM

For creating tape files within the SAS System:

- 4mm
- 8mm

Terminals Supported

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

Memory Requirements

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

Mouse Requirements

- 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 version of the SAS System for Digital UNIX. Use this information to help you determine how much free disk space you must have available before you can install the SAS System. The SAS System installation requires that 10 MB of hard disk space be available on the `/usr/tmp` partition. This disk space is needed by the `sassetup` tool during the building of the Help system indices.

Software Product	Required Disk Space	Additional Space for Samples and Optional Files
Base SAS Software	147.4	15.8
SAS/ACCESS Interface to INFORMIX Software	0.4	0.1
SAS/ACCESS Interface to INGRES Software	0.8	0.1
SAS/ACCESS Interface to ORACLE Software	4.8	0.1
SAS/ACCESS Interface to PC File Formats Software	0.4	0.0
SAS/ACCESS Interface to SYBASE Software	0.8	0.1
SAS/ACCESS Interface to UNIX Databases Software	0.2	0.0
SAS/AF Software	1.9	0.0
SAS/ASSIST Software	12.4	0.0
SAS/CALC Software	6.6	0.0
SAS/CONNECT Software	3.8	0.1
SAS/EIS Software	23.9	10.5
SAS/ENGLISH Software	6.9	0.4
SAS/ETS Software	18.7	0.3
SAS/FSP Software	1.4	0.0
SAS/GIS Software	41.7	0.4
SAS/GRAPH Software	27.1	5.0
SAS/GRAPH Map Data Sets	11.7	0.0
SAS/IML Software	8.2	0.6
SAS/INSIGHT Software	5.6	0.4
SAS/LAB Software	7.0	0.0
SAS/MDDB Server Software	0.4	0.0
SAS/OR Software	40.4	2.3
SAS/QC Software	18.1	3.6
SAS/SHARE Software	0.7	0.0
SAS/SPECTRAVIEW Software	2.2	11.4
SAS/STAT Software	28.4	1.8
SAS/TOOLKIT Software	6.8	0.0
SAS/TUTOR Software: Fundamentals of the SAS System (CBT101)	4.5	0.0
SAS/TUTOR Software: Reading Raw Data and Formatting Values with the DATA Step (CBT102)	2.4	0.0
SAS/TUTOR Software: Creating, Modifying and Processing Variables with the DATA Step (CBT103)	2.3	0.0
SAS/TUTOR Software: Developing Custom Data Entry Applications (CBT104)	2.5	0.0
SAS/TUTOR Software: Creating and Enhancing SAS/GRAPH Output (CBT105)	4.0	0.0
SAS/TUTOR Software: Creating Tables with PROC TABULATE (CBT106)	2.4	0.0
SAS/Warehouse Administrator Software	12.5	7.3
SAS Notes	40.0	0.0
Total	499.3	60.3

Specific Product Requirements

Special Note: If your database release level is not referenced in a SAS/ACCESS software section below, it currently may not be supported. To get more information, please access the SAS Institute Web site at http://www.sas.com/service/techsup/sysreq_index.html for the latest revision of the System Requirements for your platform or contact Technical Support.

SAS/ACCESS Interface to INFORMIX Software

Note: PROC SQL Pass-Through support only.

Products Required:

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

DBMS Products Required:

One of the following releases of INFORMIX is required:

- INFORMIX, Version 7.10 or 7.20 with INFORMIX ESQL/C development tools on the local SAS node

An INFORMIX SE or INFORMIX ONLINE server is required either on the local SAS node or on a remote node.

INFORMIX-Net is required on the SAS client node and on an INFORMIX SE server node to run SAS/ACCESS software in a distributed environment with an INFORMIX SE server.

When using an INFORMIX ONLINE server node in a distributed environment with SAS/ACCESS Interface to INFORMIX software, INFORMIX-Star is required on an INFORMIX ONLINE server node.

SAS/ACCESS Interface to INGRES Software

Note: PROC DBLOAD and PROC SQL Pass-Through support only.

Products Required:

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

DBMS Products Required:

One of the following releases of INGRES is required:

- INGRES, Release 6.4/05 with INGRES ESQL/C development tools 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 on the SAS node.

SAS/ACCESS Interface to ORACLE Software

Note: PROC DBLOAD and PROC SQL Pass-Through support only.

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 7.2.2.3
- ORACLE, Release 7.3.2.1

SAS/ACCESS Interface to SYBASE and SQL Server Software

Note: PROC DBLOAD and PROC SQL Pass-Through support only.

Products Required:

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

DBMS Products Required:

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

- SYBASE Open Client DB-Library, Release 10
- Any version of SYBASE Server is supported

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.

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
- 128 MB recommended

Printers:

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

SAS/ENGLISH Software

Products Required:

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

SAS/GIS Software

Products Required for Build Mode:

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

SAS/LAB Software

Products Required:

- Base SAS software
- SAS/FSP software (recommended)
- SAS/GRAPH software
- SAS/LAB software

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 the SAS System media. Other SAS/IntrNet software components may be installed from the SAS/IntrNet software media. See the *Space Requirements* section for the disk space requirements for these components.

CGI Tools and Applications

Application Dispatcher

Requires Base SAS Software and SAS/IntrNet Server software. The Application Broker component 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 running on a UNIX or Windows system.

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/SHARE Driver for JDBC

Requires Base SAS software, SAS/SHARE software, and a SAS/IntrNet software license (SETINIT). The Java Tools package must be installed on a Web server or client system.

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.

MetaSpace Explorer Applet

Requires Base SAS software, SAS/CONNECT software and SAS/IntrNet Server software.

Client Components

SAS SQL Library for C

Requires Base SAS software, SAS/SHARE software, and a SAS/IntrNet software license (SETINIT). SAS SQL Library for C must be installed on a UNIX or Windows system with a TCP/IP network connection to the SAS/IntrNet Server.

ODBC Driver

Requires Base SAS software, SAS/SHARE software, and a SAS/IntrNet software license (SETINIT). The ODBC Driver may be installed on any Windows system with TCP/IP network connection to the SAS/IntrNet 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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