

System Requirements

The SAS[®] System Release 8.2 (TS2M0) OpenVMS[™] VAX[™]

This document provides requirements for installing and running the SAS System under OpenVMS VAX. 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 following Web site:

<http://www.sas.com/newversion>

or contact SAS Institute Technical Support (refer to "Contacting SAS Institute Technical Support" in the Installation Instructions included in your package).

Software Requirements

Operating System and User Requirements

- OpenVMS VAX, Version 6.2 or higher, excluding Version 7.0
- Motif 1.2.4, X11R5 (required for use of the interactive SAS windowing environment)
- TCP/IP Software:
 - Digital TCP/IP Services, Version 4.2 or greater
 - MultiNet Software, Version 4.0 Rev B or greater

SYSGEN Parameters		
	Minimum	Recommended
CHANNELCNT	256	300
PROCSECTCNT	300	450
VIRTUALPAGECNT (valid only for OpenVMS VAX)	102,400	153,600
AUTHORIZE Quotas		
	Minimum	Recommended
BYTLM	65,536	150,000
FILLM	300	512
WSDEF		1,024
WSQUO		4,096
WSEXTENT		32,768
JTQUOTA	1,024	3,072
PGFLQUOTA	100,000	150,000

Web Browser

- Netscape Navigator, Version 3.03 (required to access online help and online documentation)

Note: Netscape Navigator, Version 3.03 can be obtained from
<http://www.openvms.digital.com/openvms/products/ips/index.html>

Hardware Requirements

Machines Supported

- All OpenVMS VAX systems supported by Compaq Computer Corporation that run under the OpenVMS systems listed above in **Software Requirements**

Memory Requirements

- 96 MB of physical memory for a non-cluster system
- 128 MB of physical memory for a cluster system
- 78 MB of virtual address space (valid only for OpenVMS VAX)

Distribution Media

- CD-ROM

Terminals Supported

- Workstations running Motif or any X Windows-based terminal or a server with graphics support that has a minimum of 256 colors

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 **blocks (512 bytes)** for all of the products available with this release of the SAS System under OpenVMS VAX. 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	Save Set Size	File Size
Required Installation Files	4,264	41,935
Base SAS Software	123,578	324,463
Samples	10,062	14,994
DBCS Asian Language Support Software	19,240	41,270
SAS/ACCESS Interface to Baan Software	416	1,333
SAS/ACCESS Interface to CA-OpenIngres Software	364	768
Samples	78	253
DBCS Asian Language Support Software	78	154
SAS/ACCESS Interface to ORACLE Software	390	845
Samples	78	253
DBCS Asian Language Support Software	208	395
SAS/ACCESS Interface to Oracle Rdb Software	468	1,026
Samples	52	175
DBCS Asian Language Support Software	52	96
SAS/ACCESS Interface to R/3 Software	7,046	20,261
Samples	26	11
SAS/AF Software	8,658	17,688
DBCS Asian Language Support Software	208	387
SAS/ASSIST Software	11,388	33,453
SAS/CONNECT Software	2,886	5,429
Samples	156	325
DBCS Asian Language Support Software	286	580
SAS/EIS Software	15,210	40,367
Samples	13,260	20,719
DBCS Asian Language Support Software	104	168
SAS/ETS Software	14,794	38,521
Samples	364	785
SAS/FSP Software	520	1,006
DBCS Asian Language Support Software	182	367
SAS/GIS Software	18,070	57,466
Samples	156	428
SAS/GIS Census Tract Maps	10,712	50,720
SAS/GRAPH Software	27,664	57,822
Samples	1,742	3,932
DBCS Asian Language Support Software	1,508	3,467
Countries in Africa and Middle East Maps	2,756	7,256
Countries in Asia and Pacific Maps	7,514	19,433
Countries in Europe Maps	10,764	22,835
North America and Canada Maps	2,704	9,955
Countries in Latin America and Caribbean Maps	5,122	11,960
Canada Maps	1,066	3,746
Continents Maps	30,160	51,112
World Map	25,532	51,271
Very Large US County Map, Unprojected	4,940	24,753
Large US County Map, Unprojected and Reduced	936	2,977

Software Product	Save Set Size	File Size
Large US Mainland County Map, Projected and Reduced	624	2,977
Large US State Outline Map, Unprojected	702	2,817
SAS/IML Software	5,694	10,092
Samples	390	942
SAS/INSIGHT Software	16,874	23,907
Samples	182	612
DBCS Asian Language Support Software	1,950	3,957
SAS/IntrNet Software	910	3,201
Samples	442	2,172
DBCS Asian Language Support Software	208	407
SAS/LAB Software	4,862	13,737
DBCS Asian Language Support Software	520	978
SAS/MDDDB Server Software	22,074	24,365
SAS OnlineTutor Software	102,986	115,268
SAS/OR Software	15,938	63,739
Samples	780	3,251
SAS/QC Software	17,940	45,028
Samples	2,080	7,275
DBCS Asian Language Support Software	234	408
SAS/SECURE 168-bit Software	1,170	1,420
SAS/SHARE Software	59,358	71,431
Samples	78	229
DBCS Asian Language Support Software	52	56
SAS/SPECTRAVIEW Software	910	4,214
Samples	6,838	22,532
SAS/STAT Software	28,262	63,257
Samples	1,352	3,827
DBCS Asian Language Support Software	390	713
SAS Support Tools	104	139
Total	679,666	1,480,111

SAS/GIS Census Tract Maps

State	Required Disk Space
Alabama	23,409
Alaska	19,709
Arizona	7,341
Arkansas	20,989
California	33,300
Colorado	14,453
Connecticut	4,554
Delaware	1,461
District of Columbia	125
Florida	27,715
Georgia	27,207
Hawaii	3,015
Idaho	15,812
Illinois	24,676
Indiana	14,002
Iowa	14,189
Kansas	15,443
Kentucky	22,440
Louisiana	31,760
Maine	15,604
Maryland	7,772
Massachusetts	8,446
Michigan	23,095
Minnesota	32,209
Mississippi	16,944
Missouri	23,331

State	Required Disk Space
Montana	24,233
Nebraska	12,511
Nevada	6,023
New Hampshire	5,016
New Jersey	7,163
New Mexico	8,489
New York	26,524
North Carolina	28,196
North Dakota	17,655
Ohio	20,288
Oklahoma	17,031
Oregon	18,380
Pennsylvania	25,121
Rhode Island	1,485
South Carolina	17,700
South Dakota	15,444
Tennessee	25,489
Texas	50,120
Utah	9,581
Vermont	3,664
Virginia	21,370
Washington	18,459
West Virginia	12,239
Wisconsin	24,516
Wyoming	13,437
Total for all entries	879,135

SAS/IntrNet Software Components

Software Component	Required Disk Space
Java Tools	2,600
MetaSpace Explorer	21,400
Connection Wizard	6,800
Total	30,800

Specific Product Requirements

SAS/ACCESS Interface to Baan Software

Products Required:

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

Additional functionality is obtained if the following product is installed:

- SAS/Warehouse Administrator software

DBMS Products Required:

One of the following Baan releases is required:

- Baan IV
- BaanERP

SAS/ACCESS Interface to Baan software requires the Exchange Module from Baan Utilities.

SAS/ACCESS Interface to CA-OpenIngres Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to CA-OpenIngres software

DBMS Products Required:

- OpenIngres, 1.2/01

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

SAS/ACCESS Interface to ORACLE Software

Products Required:

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

DBMS Products Required:

- Oracle, Release 7.3.2.3.1

Operating System Required:

- OpenVMS VAX, Version 7.1 or higher

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SAS/ACCESS Interface to Oracle Rdb Software

Products Required:

- Base SAS software
- SAS/ACCESS Interface to Oracle Rdb software

DBMS Products Required:

- Oracle Rdb, Version 7

SAS/ACCESS Interface to R/3 Software

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 3.0A or higher
- SAP R/3 Remote Function Call Software Development Kit (RFCSDK)

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 to print depending on the object.

Video Player Object in SAS/AF Software

Hardware:

- Audio is not supported

SAS/ASSIST Software

System Considerations:

The SAS/ASSIST product may require *SYSGEN* parameters and *AUTHORIZE* quotas larger than the suggested minimums listed in the installation instructions. Please refer to the **Installation Instructions and System Manager's Guide for Release 8.2 (TS2M0) of the SAS System under OpenVMS Alpha and VAX** for recommended values. Particular attention should be paid to the values for the *SYSGEN* parameters, *PROCSECTCNT* and *VIRTUALPAGECNT*, and the value for the *AUTHORIZE* quota, *PGFLQUOTA*.

The recommended values for running SAS/ASSIST software include:

SYSGEN Parameters	
<i>VIRTUALPAGECNT</i>	153,600
<i>PROCSECTCNT</i>	450
AUTHORIZE Quota	
<i>PGFLQUOTA</i>	150,000

Note: These values should allow most situations to run. However, specific data configurations may require larger values.

Base SAS Software

Video Player in Base SAS Software

A Video Player utility is included with Base SAS software. This allows users to play video clips on their workstations. The Video Player Object (Class) is actually part of SAS/AF software.

Hardware:

- Audio is not supported

SAS/CONNECT Software

DECnet Access Method:

SAS/CONNECT software provides a DECnet access method for use with OpenVMS.

Each local and remote process that is running on an OpenVMS system must have *TMPMBX* and *NETMBX* privileges.

TCP/IP Access Method:

The following products are supported:

- Digital TCP/IP Services, Version 4.2 or greater
- MultiNet Software, Version 4.0 Rev B or greater

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

System Considerations:

The SAS/EIS product may require `SYSGEN` parameters and `AUTHORIZE` quotas larger than the suggested minimums listed in the installation instructions. Please refer to the **Installation Instructions and System Manager's Guide for Release 8.2 (TS2M0) of the SAS System under OpenVMS Alpha and VAX** for recommended values. Particular attention should be paid to the values for the `SYSGEN` parameters, `PROCSECTCNT` and `VIRTUALPAGECNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running SAS/EIS software include:

SYSGEN Parameters	
VIRTUALPAGECNT	153,600
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	150,000

Note: These values should allow most situations to run. However, specific data configurations may require larger values.

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/INSIGHT Software

System Considerations:

The SAS/INSIGHT product may require `SYSGEN` parameters and `AUTHORIZE` quotas larger than the suggested minimums listed in the installation instructions. Please refer to the **Installation Instructions and System Manager's Guide for Release 8.2 (TS2M0) of the SAS System under OpenVMS Alpha and VAX** for recommended values. Particular attention should be paid to the values for the `SYSGEN` parameters, `PROCSECTCNT` and `VIRTUALPAGECNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running SAS/INSIGHT software include:

SYSGEN Parameters	
VIRTUALPAGECNT	153,600
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	150,000

Note: These values should allow most situations to run. However, specific data configurations may require larger values.

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 Client-Side Components CD. See the **Space Requirements** section for the disk space requirements for these components.

CGI Tools and Applications

Note: SAS/IntrNet's CGI Tools do not support operation on an OpenVMS Web server. CGI components (Application Broker and htmSQL) must be installed on a Windows, UNIX, or OS/390 Web server.

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.

MDDDB 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.

MetaSpace Explorer Applet

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

SAS/LAB Software

Products Required:

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

System Considerations:

The SAS/LAB product may require SYSGEN parameters and AUTHORIZE quotas larger than the suggested minimums listed in the installation instructions. Please refer to the **Installation Instructions and System Manager's Guide for Release 8.2 (TS2M0) of the SAS System under OpenVMS Alpha and VAX** for recommended values. Particular attention should be paid to the values for the SYSGEN parameters, PROCSECTCNT and VIRTUALPAGECNT, and the value for the AUTHORIZE quota, PGFLQUOTA.

The recommended values for running SAS/LAB software include:

SYSGEN Parameters	
VIRTUALPAGECNT	153,600
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	150,000

Note: These values should allow most situations to run. However, specific data configurations may require larger values.

SAS OLAP Server Package

Products Required:

- Base SAS software
- SAS OLAP Server Package, which contains necessary elements of the following:
 - SAS/MDDDB Server software
 - SAS/AF software
 - SAS/GRAPH software

Disk Space Required:

The disk space required for the SAS OLAP Server Package 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 the SAS System already installed, then the amount of disk space required to install the SAS OLAP Server Package should be decreased by the disk space of any of the above products that have been previously installed.

SAS/SHARE Software

DECnet Access Method:

SAS/SHARE software provides a DECnet access method for use with OpenVMS.

Each local and remote process that is running on an OpenVMS system has the TMPMBX and NETMBX privileges.

TCP/IP Access Method:

The following products are supported:

- Digital TCP/IP Services, Version 4.2 or greater
- MultiNet Software, Version 4.0 Rev B or greater

SAS/GRAPH Software

The Graphics Editor

System Considerations:

The Graphics Editor may require `SYSGEN` parameters and `AUTHORIZE` quotas larger than the suggested minimums listed in the installation instructions. Please refer to the **Installation Instructions and System Manager's Guide for Release 8.2 (TS2M0) of the SAS System under OpenVMS Alpha and VAX** for recommended values. Particular attention should be paid to the values for the `SYSGEN` parameters, `PROCSECTCNT` and `VIRTUALPAGECNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running The Graphics Editor include:

SYSGEN Parameters	
<code>VIRTUALPAGECNT</code>	153,600
<code>PROCSECTCNT</code>	450
AUTHORIZE Quota	
<code>PGFLQUOTA</code>	150,000

Note: These values should allow most situations to run. However, specific data configurations may require larger values.

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 which 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. Contact SAS Institute Technical Support for additional information on these drivers.

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. Contact SAS Institute Technical Support for details.

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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
- 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 the SAS System.

The HTML pages created with the ActiveX device driver can only be viewed on Windows operating systems with Internet Explorer, Version 5.

The HTML pages created with the Java device driver can only be viewed *with* the following Java-enabled Web browsers *on* the following operating systems:

Java-enabled Web Browser	Operating System
Netscape Navigator, Version 4.08 or higher	AIX, HP-UX, Solaris, ABI for Intel Architecture, IRIX, Compaq Tru64 UNIX
Netscape Communicator, Version 4.04 for Warp 4	OS/2
Internet Explorer, Version 5 (with Java VM 5.0.0.3167 or higher) or Netscape Navigator, Version 4.07	Windows, Windows NT, Windows NT Server

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