

# System Requirements

## The SAS<sup>®</sup> System Release 8.2 (TS2M0) OpenVMS<sup>™</sup> Alpha

This document provides requirements for installing and running the SAS System under OpenVMS Alpha. 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 Alpha, Version 7.1 or above
  - If you are running Version 7.2 of OpenVMS Alpha, then the following software patch is required for installation of the SAS System: VMS72\_UPDATE-V0100 (or one of the later patches that includes this patch)
- 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
- File Systems:
  - ODS-2 (Files 11) is fully supported by the SAS System
  - ODS-5 is supported on an experimental basis by the SAS System for the storage of SAS files or if the SAS System is installed on a disk volume configured with the ODS-5 file system

**Note:** Please contact SAS Technical Support for more information regarding SAS compatibility with ODS-5 or with any problems. We also welcome feedback on the use of the ODS-5 file system. For more information on ODS-5, please reference the Compaq publication: *OpenVMS Guide to Extended File Specifications, AA-REZRA-TE*.

<b>SYSGEN Parameters</b>		
	<b>Minimum</b>	<b>Recommended</b>
CHANNELCNT	256	512
PROCSECTCNT	300	450
<b>AUTHORIZE Quotas</b>		
	<b>Minimum</b>	<b>Recommended</b>
BYTLM	65,536	150,000
FILLM	256	512
WSDEF		2,048
WSQUO		8,192
WSEXTENT		65,536
JTQUOTA	4,096	4,096
PGFLQUOTA	100,000	200,000+

## **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 Alpha 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

### **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 Alpha. 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	4,342	42,087
Base SAS Software	176,176	475,715
Samples	10,062	15,026
Japanese Support for Samples	104	408
DBCS Asian Language Support Software	40,092	97,753
Japanese Support	20,904	84,098
Software Updates	26,052	63,926
SAS/ACCESS Interface to Baan Software	416	1,349
SAS/ACCESS Interface to CA-OpenIngres Software	598	1,436
Samples	78	253
DBCS Asian Language Support Software	208	515
Japanese Support	26	22
SAS/ACCESS Interface to ORACLE Software	4,992	11,095
Samples	78	253
DBCS Asian Language Support Software	442	1,059
Japanese Support	26	13
SAS/ACCESS Interface to Oracle Rdb Software	9,984	22,548
Samples	78	253
DBCS Asian Language Support Software	338	857
Japanese Support	26	24
SAS/ACCESS Interface to R/3 Software	7,020	20,293
Samples	26	11
SAS/ACCESS Interface to SYBASE Software	1,508	3,564
Samples	78	253
DBCS Asian Language Support Software	390	953
Japanese Support	26	27
SAS/AF Software	9,022	19,083
DBCS Asian Language Support Software	520	1,406
Japanese Support	26	35
SAS/ASSIST Software	11,388	33,660
Japanese Support	6,994	25,864
SAS/CONNECT Software	3,952	8,734
Samples	156	325
DBCS Asian Language Support Software	624	1,713
SAS/EIS Software	15,158	40,794
Samples	13,260	20,719
DBCS Asian Language Support Software	208	553
Japanese Support	7,436	25,782
SAS/ETS Software	23,036	58,429
Samples	364	785
SAS/FSP Software	1,196	3,718
DBCS Asian Language Support Software	442	1,251
SAS/GIS Software	19,812	64,195
Samples	156	428
SAS/GIS Census Tract Maps	9,724	50,720
SAS/GRAPH Software	35,620	81,976
Samples	1,664	3,932

<b>Software Product</b>	<b>Save Set Size</b>	<b>File Size</b>
DBCS Asian Language Support Software	3,198	8,255
Japanese Support	14,560	21,452
Countries in Africa and Middle East Maps	2,314	7,256
Countries in Asia and Pacific Maps	6,526	19,433
Japanese Support	312	1,531
Countries in Europe Maps	9,334	22,835
North America and Canada Maps	2,496	9,955
Countries in Latin America and Caribbean Maps	4,420	11,960
Canada Maps	1,014	3,746
Continents Maps	28,392	51,112
World Map	22,854	51,271
Very Large US County Map, Unprojected	4,368	24,753
Large US County Map, Unprojected and Reduced	572	2,977
Large US Mainland County Map, Projected and Reduced	780	2,977
Large US State Outline Map, Unprojected	650	2,817
SAS/IML Software	9,438	18,652
Samples	390	942
SAS/INSIGHT Software	19,604	29,435
Samples	182	612
DBCS Asian Language Support Software	4,654	9,459
Japanese Support	104	380
SAS Integration Technologies Software	7,046	21,905
DBCS Asian Language Support Software	234	573
SAS/IntrNet Software	1,092	4,067
Samples	442	2,188
DBCS Asian Language Support Software	416	1,264
Japanese Support	52	358
SAS/LAB Software	6,760	18,295
DBCS Asian Language Support Software	1,170	2,430
SAS/MDDDB Server Software	22,646	26,447
Japanese Support	26	2
SAS OnlineTutor Software	102,986	115,268
SAS/OR Software	21,970	78,129
Samples	806	3,251
SAS/QC Software	24,076	60,847
Samples	2,080	7,291
DBCS Asian Language Support Software	572	1,153
SAS/SECURE 168-bit Software	1,352	1,962
SAS/SHARE Software	59,436	71,660
Samples	78	229
DBCS Asian Language Support Software	78	150
SAS/SPECTRAVIEW Software	1,560	4,912
Samples	6,604	22,532
SAS/STAT Software	41,470	94,616
Samples	1,352	3,827
DBCS Asian Language Support Software	884	1,837
SAS/TOOLKIT Software	2,860	10,525
SAS Support Tools	130	176
<b>Total</b>	<b>909,168</b>	<b>2,145,597</b>

## 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
<b>Total for all entries</b>	<b>879,135</b>

## SAS/IntrNet Software Components

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

# 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:

- Ingres II

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 7.3.3.6
- Oracle, Release 8.0.5.x

## **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 7.0-5

To use the new SAS/ACCESS Interface to Oracle Rdb Libname engine, the following additional DBMS products are required:

- ORACLE client, Release 7.3.3.6
- Oracle SQL/Services, Version 7.0

## **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/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 CT-Library is required:

- SYBASE Open Client, Release 10.0.4 with appropriate patches for Year 2000 compliance

*Note:* Sybase ASIQ, Release 12.x is not supported.

## **SAS Activity-Based Management Software**

### **Products Required for Activity-Based Management ETL Server:**

- Base SAS software
- SAS/ACCESS engine of choice
- SAS Activity-Based Management ETL Server, which contains necessary elements of the following:
  - SAS/CONNECT software
  - SAS Integration Technologies software

### **Disk Space Required for Activity-Based Management ETL Server:**

The disk space required for the Activity-Based Management ETL Server 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 Activity-Based Management ETL Server should be decreased by the disk space of any of the above products that have been previously installed.

### **Products Required for Activity-Based Management ETL Administrator:**

- Base SAS software
- SAS Activity-Based Management ETL Administrator, which contains necessary elements of the following:
  - SAS/CONNECT software
  - SAS/Warehouse Administrator software

### **Disk Space Required for Activity-Based Management ETL Administrator:**

The disk space required for the Activity-Based Management ETL Administrator 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 Activity-Based Management ETL Administrator should be decreased by the disk space of any of the above products that have been previously installed.

## **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 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 value for the `SYSGEN` parameter, `PROCSECTCNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running SAS/ASSIST software include:

SYSGEN Parameter	
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	263,000

**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 value for the `SYSGEN` parameter, `PROCSECTCNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running SAS/EIS software include:

<b>SYSGEN Parameter</b>	
PROCSECTCNT	450
<b>AUTHORIZE Quota</b>	
PGFLQUOTA	263,000

## 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 Information Delivery Portal (Release 1.1)

### Products Required for SAS Information Delivery Portal Server:

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

### Disk Space Required for SAS Information Delivery Portal Server:

The disk space required for the SAS Information Delivery Portal Server Components 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 Information Delivery Portal Server Components should be decreased by the disk space of any of the above products that have been previously installed.

## 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 value for the `SYSGEN` parameter, `PROCSECTCNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running SAS/INSIGHT software include:

SYSGEN Parameter	
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	263,000

## 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.

#### 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.

### 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 value for the SYSGEN parameter, PROCSECTCNT, and the value for the AUTHORIZE quota, PGFLQUOTA.

The recommended values for running SAS/LAB software include:

SYSGEN Parameter	
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	263,000

## 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/TOOLKIT Software

The only language with a Production status for SAS/TOOLKIT software is C. Other languages have a Beta status.

## 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 value for the `SYSGEN` parameter, `PROCSECTCNT`, and the value for the `AUTHORIZE` quota, `PGFLQUOTA`.

The recommended values for running The Graphics Editor include:

SYSGEN Parameter	
PROCSECTCNT	450
AUTHORIZE Quota	
PGFLQUOTA	263,000

# 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.

## 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:

<b>Java-enabled Web Browser</b>	<b>Operating System</b>
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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