



Required Hardware & Software Configurations

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2.1 The mscinfo Utility

Important: The mscinfo utility exists as a separate executable on UNIX platforms. On the Windows NT platform mscinfo is built into the `setup.exe` program. The information below applies only to the separate UNIX executable.

MSC/PATRAN provides a utility for obtaining important system information. This utility provides information on most of the system requirements used in this chapter.

To run the mscinfo utility from an MSC/PATRAN installation:

```
% <installation_dir>/patran8x/bin/mscinfo
```

Note that you must be root to obtain complete graphics and virtual memory information under Hewlett Packard HP-UX or Digital UNIX. Running as a normal user provides all other data.

Table 2-1 mscinfo Utility Option Flags

mscinfo option	Use
mscinfo -x	Displays information pertaining to the Xserver. Must be run at the graphics head of the client.
mscinfo -v	Verbose mode - applicable only under IBM AIX.
mscinfo -commands	Displays a list of the commands used to determine system information

2.2 Memory and Performance

MSC/PATRAN hardware requirements vary according to model size and actions performed. Solvers or other software that run concurrently with MSC/PATRAN increase RAM, swap (also referred to as virtual memory), and disk space requirements.

2.2.1 RAM versus Swap

Total memory is the sum of swap space and RAM. A given process requires a minimum amount of total memory. If the minimum memory required to execute is higher than the total memory available, MSC/PATRAN typically generates memory or “memalloc” errors (on some operating systems it may issue only a segmentation violation).

Since RAM memory is much faster than swap memory, increasing the amount of RAM typically results in improved performance. A good rule of thumb is to provide 25% to 30% of total memory as RAM. Consult your operating system documentation for additional information.

See [UNIX Shell Resource Limits](#) (p. 80) for additional information on accessing memory.

2.2.2 Memory and Disk Space Requirements

Table 2-2 shows disk space, swap and RAM guidelines for small, medium, and large analysis models. MSC/PATRAN may actually run with fewer resources than shown, but we recommend these minimums for practical use of MSC/PATRAN.

Table 2-2 UNIX Disk Space and Memory Requirements

	Minimum	Standard	Large Models
Random Access Memory (RAM) per user	96 MB (Digital UNIX) 64MB (all others)	128 MB	256 MB
Paging Disk Space (Swap)	400 MB (Digital UNIX) 192 MB (all others)	384 MB	768 MB
Scratch Disk Space (/tmp)	50 MB	Solver Dependent	Solver Dependent
Scratch Disk Space (/var/tmp)	10MB	10MB	10MB

Table 2-3 Windows NT Disk Space and Memory Requirements

	Minimum	Standard	Large Models
Random Access Memory (RAM)	64 MB	128 MB	256 MB
Paging Disk Space (Swap)	200 MB	300 MB	500 MB

The mscsetup utility on UNIX (See **Installing MSC/PATRAN with mscsetup** (p. 29)), and the setup.exe Wizard on Windows NT indicate required disk space for each product set.

Important: The installation process requires some small additional space for file decompression. At most, decompression requires about 50MB beyond product disk requirements, but 10MB of additional space is more typical. The mscsetup utility attempts to use /tmp for decompression if insufficient space is available in the installation directory.

2.3 Digital UNIX Requirements

MSC/PATRAN supports the following Digital UNIX hardware and software:

Table 2-4 Digital UNIX Requirements

Hardware Platforms	DEC 3000 (500, 600), AlphaStation (500, 600), Personal Workstation (433au, 500au, 600au)
Operating Systems	Digital UNIX release 4.0B, 4.0D
Compiler Versions	Digital FORTRAN 77 5.0, Digital C 5.2 (C and FORTRAN required for MSC/PATRAN THERMAL and dbaccess programing only)
Window Managers	CDE
3D Graphics Software	Digital Open3D 4.30 for Digital UNIX (see below)
Graphics Device	ZLXp-L2, PowerStorm 4D40T, Power Storm 4D50T, Power Storm 4D60T

Database Compatibility

The binary format of MSC/PATRAN databases on Digital UNIX differs from other platforms. If you wish to transfer databases between Digital UNIX workstations and other platforms (i.e. SUN SOLARIS or HP-UX), you must perform a conversion. See [Moving Databases Between Platforms](#) (p. 83) for additional information.

Required Program Application Kits

MSC/PATRAN requires the OPEN3D Program Authorization Key(PAK) which includes libraries for OpenGL. You must have OPEN3D 4.30 or later (03DDWSBASE430).

Note for ZLXp-L2 Video Card

For some models, hidden lines may appear incorrect in OpenGL mode. This is a limitation of the OpenGL driver for the ZLXp-L2 video card. This does not occur in software mode, or in OpenGL mode with the Power Storm video cards.

2.4 Hewlett-Packard HP-UX Requirements

MSC/PATRAN supports the following HP-UX hardware and software:

Table 2-5 Hewlett-Packard HP-UX Requirements

Hardware Platforms	HP Series 700 (710, 712, 715, 725,730, 735), J200, J210, J280, J2240, B132L, B160L, B180, C100, C110, C160, C180, C200, C240, K260, K460
Operating Systems	HP-UX 10.20, 10.20 ACE
Compiler Versions	FORTRAN 77 B.10.20.03, C B.10.20.03 (MSC/PATRAN THERMAL and dbaccess programing only)
Window Managers	CDE 1.16 or later
3D Graphics Software	Starbase 3D or OpenGL ^a
Graphics Device	CRX-24Z, CRX-48Z, HCRX-8Z, HCRX-24Z, Visualize-8, Visualize-24, Visualize-48 ^b , Visualize-48XP ^b , Visualize-FX2, Visualize-FX4, Visualize-FX6

a. Visualize-FX graphics devices support Starbase 3D or OpenGL. All other graphics devices support Starbase 3D only.

b. Requires patch PHSS_12471 (see below)

HP-UX Kernel Settings

The HP-UX System Administration Manager (SAM) is used to adjust kernel parameters. The MacNeal-Schwendler Corporation recommends the following changes to the default kernel settings:

Table 2-6 HP-UX Kernel Parameters

Parameter	Description	Default	Recommended
maxdsiz	Maximum Data Segment Size	64Mb	90% of swap
maxtsiz	Maximum Text Segment Size	64Mb	64 Mb (no change)
maxssiz	Maximum Stack Segment Size	8Mb	67108864 (64 Mb)

MSC/PATRAN requires a large block(> 64Mb) of virtual memory. The default maxdsiz is too low. BOTH the swap size and the maxdsiz parameter must be increased to make additional virtual memory available to MSC/PATRAN.

MSC/PATRAN should not exceed the 64Mb maxtsiz parameter. Most customers will not need to change this parameter.

HP-UX Patches

The following tables list patches that are required or recommended for MSC/PATRAN by The MacNeal-Schwendler Corporation or HP. The first table lists patches which are absolutely required. MSC/PATRAN will not run without these patches. The second table lists patches that will provide a performance boost to MSC/PATRAN, or will fix bugs likely to be encountered by MSC/PATRAN users.

Table 2-7 Required Patches

Patch	Platform	Purpose
PHSS_12308^a	700/800	10.20 OpenGL OGL Common Binary Graphics API
PHSS_14948	700/800	10.20 Starbase:PEX5.1:Hardcopy Cumulative Runtime
PHSS_15837^b	700/800	10.20 OpenGL 1.07 Runtime (FX Graphics devices only)
PHSS_15043	700/800	10.20 aC++ Runtime 1.15

a. Required unless PHSS_15837 is installed i.e. you must install one or the other, but cannot install both.

b. This patch is required only for users running OpenGL on Visualize-FX graphics devices. All other graphics devices must install PHSS_12308. Requires HP-UX 10.20ACE.

Table 2-8 Recommended Patches

Patch	Platform	Purpose
PHSS_14943	700/800	10.20 XServer Cumulative
PHSS_15008	700/800	10.20 X11/Motif Runtime
PHSS_14595	700/800	10.20 CDE Runtime Cumulative
PHSS_14947	700/800	10.20 3D Graphics Common Runtime Cumulative
PHSS_15931	700/800	10.20 dld.sl Cumulative
PHKL_15958	700	10.20 LVM/UFS Update
PHKL_15959	800	10.20 LVM/UFS Update
PHNE_15041	700	10.20 NFS Kernel Performance Patch
PHNE_15042	800	10.20 NFS Kernel Performance Patch
PHNE_15541	700/800	10.20 NFS/NIS Megapatch

Note that some patches may require the installation of additional patches. These dependencies are documented by Hewlett Packard. Also note that patch numbers are subject to change as new versions supersede existing patches frequently. Consult Hewlett-Packard to for additional information.

HP-UX Performance Tuning

For those customers who would like increased performance on the HP, they can try the following:

Table 2-9 Performance Tuning

Parameter	Setting	Default
fs_async	1	0
default_disk_ir	1	1 on HP700 class; 0 on HP800 Class
maxusers	100	32

Setting **fs_async** and **default_disk_ir** to 1 enables asynchronous disk writes and disk write caching. This allows MSC/PATRAN faster I/O, since the application will not wait to verify that the write was completed.

There is a small risk associated with these settings. With **fs_async** and **default_disk_ir** set to 1, disk writes may not have been completed should the system crash at just the wrong time. This will not corrupt the MSC/PATRAN database.

The reward (better database performance) outweighs the risk (lost data). These parameters are primarily for large network cluster applications like on-line transaction processing where data integrity is the primary concern at all times.

Maxusers sets the maximum number of users, but more importantly, it lets SAM tune other parameters that can increase the performance of MSC/PATRAN.

Setting all three of these parameters to the above settings can have a significant effect on the performance of MSC/PATRAN, especially I/O speed.

2.5 IBM AIX Requirements

MSC/PATRAN supports the following IBM AIX hardware and software:

Table 2-10 IBM AIX Requirements

Hardware Platforms	RISC Power/System 6000 - 2xx, 3xx, 5xx, 3AT, 3BT, 3CT, 37T, 397, 42T, 42W, 43P
Operating System	AIX 4.1.5, 4.2.1, 4.3.1
Motif Version	1.2.3
Compiler Versions^a	FORTRAN 77 4.1.0.5, C 3.1.4.7 (MSC/PATRAN THERMAL and dbaccess programing only)
Window Manager	Common Desktop Environment (CDE 1.0 or later)
3D Graphics Library Version	graPHIGS or OpenGL 1.1 (4.1.5.5) or higher
Graphics Accelerators	Gt4e, Gt4x 24-bit, Gt4i 24-bit, Gt4xi 24-bit, GXT255P, GXT500D, GXT550P, GXT800P, GXT800M, GXT1000, GXT1000P. The Z-buffer option is required for all graphic accelerators.

a.MSC/PATRAN requires the libxlf90.a runtime libraries. See below.

AIX Patches and Libraries

The following table lists required patches and subsets for IBM AIX. Note that patch numbers are subject to change. Contact IBM for the latest version of these patches.

Table 2-11 Required Patches

Patch	APAR	OS Level	Required LPP
U453239	N/A	All	slhs.dev.obj 1.1.7.0 ^a
U453240	N/A	All	slhs.rte.obj 1.1.7.0 ^a
N/A	N/A	All	FORTRAN 90 Runtime libxlf90.a ^b
N/A	IX68058	4.1.5 only	Open GL 1.1 (4.1.5.5) and MP merge
U453396	IX73456	4.2.1 only	bos.net.nfs.client.4.2.1.10
U456052	N/A	4.3.1 only	bos.net.nfs.cleint.4.3.1.2.bff

a.Both these filesets are included in the same download.

b.Included in the IBM AIX installation as part of subset xlf rte.

Starting the X.11 Window Manager Properly

The MSC/PATRAN 3D graphics driver is sensitive to the way you start the X.11 server process. Use one of the following commands to start the X.11 window manager for MSC/PATRAN:

<code>% xinit</code>	X.11 window
<code>% xinit -- -bs</code>	X.11 window with backingstore

GraPHIGS vs. Open GL

The following graphics boards support GraPHIGS only:

Gt4e, Gt4x, Gt4i, Gt4xi

All others support both GraPHIGS and OpenGL, with OpenGL being preferred.

Performance Tip for the Gt4/Gt4x/Gt4e Accelerators

For maximum performance when using MSC/PATRAN with the Gt4/Gt4x/Gt4e accelerators during the rotation of a solid shaded model, turn OFF the model edges in MSC/PATRAN. Enter the Display/Shading... menu and deselect “Show Edges.”

When using multiple viewports on these devices, and tiling or resizing the viewport, the render style cannot be shaded. If it is, this may lock up MSC/PATRAN on these devices. IBM is working on a patch for this. This only affects the GraPHIGS 3D driver. OpenGL or software mode is okay.

Performance Tip for All IBM Graphics Accelerators

The MSC/PATRAN 3D driver is sensitive to how you define the DISPLAY environment variable. To get the maximum graphics performance when running MSC/PATRAN locally on the workstation, define the DISPLAY variable as follows (csh).

```
%setenv DISPLAY :0.0
```

3D Support for Insight

The MSC/PATRAN postprocessing module, Insight, supports its 3D operations in both hardware 3D mode and software 3D mode for all graphics boards except the 8-bit graphics board (Gt4e). The Gt4e is supported in software 3D mode only.

Supplied OpenGL and graPHIGS Stubs Libraries

MSC/PATRAN requires portions of the OpenGL and/or graPHIGS drivers to properly initialize with hardware graphics. These libraries are supplied with AIX 4.3.1. Partial (stubs) libraries are provided with MSC/PATRAN for support of versions prior to 4.3.1.

The stubs files are found in the `<installation>/patran8x/lib` directory.

- libgP.a (for graPHIGS)
- libgl.a (for GL32)
- libGL.a (OpenGL)
- libGLU.a (OpenGL Utilities)

MSC/PATRAN will use these files if the complete libraries are not found in `/usr/lib`. For some “native” graphics devices, however, the complete IBM supplied libraries are required for MSC/PATRAN to run under hardware graphics. The following table lists these devices:

Table 2-12 IBM Graphics Drivers

Device	Required LPP (lspp -L)
GT4x Series	OpenGL.GL32.dev.pci.xxx GL Device Dependent Software OpenGL.GL32.rte.base GL Base Runtime Environment
GXT550- GXT1000	OpenGL.OpenGL_X.dev.pci.xxx OpenGL Device Dependent Software OpenGL.OpenGL_X.rte.base OpenGL Base Runtime Environment

Special Instructions for Customers Using the Nastran Input File Reader for IBM AIX 4.3.1

Due to system library incompatibilities between the minimum supported AIX version and AIX 4.3.1, a different Nastran Input File Reader server is needed for AIX 4.3.1 customers.

The Nastran Input File Reader server is not installed directly by the MSC install program, but requires a minimum of effort for our AIX 4.3.1 customers. The following are the required steps needed for successful execution of the Nastran Input File Reader:

Locate the MSC/PATRAN Version 8 CD for the IBM platform.

Mount the CD using the following command:

```
# mount -rv cdrfs /dev/cd0 /CDROM
```

Change the current directory location to the directory on the CD of the Nastran Input File Reader for AIX 4.3.1

```
#cd /CDROM/NastServer_4.3.1
```

Copy the Nastran Input File Reader executable into the MSC/PATRAN installation directory

```
#cp MscNastranDbServer <patran_installation_dir>/bin/exe/.
```

Copy the system libraries into the MSC/PATRAN installation directory

```
#cp lib* <patran_installation_dir>/lib/.
```

These simple steps will allow IBM AIX 4.3.1 customers access to the appropriate Nastran Input File Reader server.

2.6 Silicon Graphics IRIX Requirements

MSC/PATRAN supports the following Silicon Graphics IRIX hardware and software:

Table 2-13 Silicon Graphics IRIX Requirements

Hardware Platforms	Indigo (R4000), Crimson, Indigo 2, Indy, Onyx, Challenge, O2, Octane, Onyx2, Origin
Operating System	IRIX 6.2, 6.3, 6.4 For on-line help to function correctly, the System V Release 4 Networking Package (eoel.sw.svr4net) is required. This is an optional package shipped with the IRIX operating system.
Motif Version	1.2.4
Compiler Versions	FORTRAN 77 V4.02, C V3.19 (MSC/PATRAN THERMAL and dbaccess programing only). C++ libraries are required to use dbaccess.a.
Window Manager	Motif Window Manager (mwm) or 4DWM
3D Graphics Library Version	OpenGL (level determined by OS)
Graphics Accelerators	XZ, Extreme, XS24 w/Z buffer, Solid IMPACT, High IMPACT, Indy 8/24-bit, CRM, SI, MXI

IRIX Patches and Libraries

The following table lists recommended patches SGI IRIX. Note that patch numbers are subject to change. Contact SGI for the latest version of these patches.

Table 2-14 Required Patches

Patch	OS Level	Problem Corrected
2654	IRIX 6.2	File locking problems on NFS mounted disks
2655	IRIX 6.3	File locking problems on NFS mounted disks
2656	IRIX 6.4	File locking problems on NFS mounted disks

Accessing On-line Help with SGI Server and Non-SGI Client

The following problem may occur when accessing an SGI server from a non-SGI client and attempting to run MSC/PATRAN On-line Help or other FrameViewer tools:

```
Can't open display: <machine_name>:0.0
```

The work-around is to use the system IP address instead of the system hostname in the DISPLAY environment variable. Where you would normally type:

```
setenv DISPLAY <hostname>:0.0
```

use:

```
setenv DISPLAY 192.0.1.37:0.0
```

Also note that Frameviewer requires the installation of the IRIX System V Release 4 Networking Package. For more information see **This section covers warnings and cosmetic problems such as colors or fonts. It also includes several frequently asked questions about MSC/PATRAN and related products.** (p. 99)

Swap Space Configuration for IRIX Systems

MSC/PATRAN requires a minimum logical swap space of **1 gigabyte** for SGI workstations running under IRIX 6.x.

Under IRIX, you can configure this amount either by using real swap space or by configuring a virtual swap area on your system.

The MacNeal-Schwendler Corporation *strongly recommends that you configure a virtual swap area instead of using real swap space!* The reason is that a virtual swap area will increase your total logical swap space without using disk space.

To configure your IRIX system with approximately 1 gigabyte of virtual swap area, enter the following:

```
# vi /etc/config/vswap.options
(Enter "vswaplen=2000000" as the last line in the file, then exit
the file.)
# chkconfig vswap on
# /etc/reboot
```

Background Information

Under IRIX, the memory resources are not shared by the child and parent processes. Instead, the system must reserve an amount of swap space for the child process that is equal to the current address size of the parent process when the child process is initiated.

Though most MSC/PATRAN subprocesses only use a fraction of its reserved swap space, this space must exist or else MSC/PATRAN will fail. Under the IRIX swap system, a large MSC/PATRAN model can easily consume several hundred megabytes of swap space. This is why a minimum of 1Gb of logical swap space is required.

Because many MSC/PATRAN sites may not be able to allocate this amount using real swap space, a virtual swap area is recommended instead. Configuring a virtual swap area will not consume additional disk space, which real swap space will.

For more information, see the “LOGICAL SWAP SPACE” discussion that appears in the `swap(1m) man` page on your IRIX system.

2.7 Sun Solaris Requirements

MSC/PATRAN supports the following Sun Solaris hardware and software:

Table 2-15 Sun Solaris Requirements

Hardware Platforms	SPARCstation 5, 10, 20 Ultra 1, 2, 10, 30, 60
Operating System	Solaris 2.5.1, 2.6
Motif Version	1.2.3, 1.2.6
Compiler Versions	FORTRAN 77 4.2, C 4.2, C++ 4.2 (MSC/PATRAN THERMAL and dbaccess programing only)
Window Manager	Motif Window Manager (mwm) 1.2.3, OpenLook 3.x, or CDE
3D Graphics Library Version	XGL Release 3.2.1 RTE or higher, OpenGL 1.1 or higher
Graphics Boards	ZX, TurboGX, TurboGX+, Creator, Creator 3D ^a , Elite 3D ^a

a.All Sun graphics devices support the XGL driver. The Creator 3D and Elite 3D boards also support the OpenGL graphics driver. Other Sun graphics devices will run with the OpenGL driver on, but do so in a compatibility mode. Therefore, OpenGL is recommended only for the Creator 3D and Elite 3D graphics devices.

Solaris Patches

The following table lists required patches for Sun Solaris. Note that patch numbers are subject to change. Contact SUN for the latest version of these patches.

Table 2-16 Required Patches

Patch	OS Level	Description
103461-03	2.5.1 only	Motif 1.2.3 Runtime (corrects scrollbar problem)
105789-01	2.5.1 only	VIS/XIL Graphics Patch (corrects 3D lockup)
105790-04	2.5.1 only	Creator 2.5.1 FFB Graphics Patch ^a
105360-11	2.6 only	Creator 2.6 FFB Graphics Patch ^a

a.Required for Creator and Creator 3D workstations only

Note: MSC/PATRAN may freeze on viewport resize with XGL Graphics drivers on all SUN graphics devices. SUN has a fix for FFB Graphics boards (105790-04 and 105360-11 above), and is working on fix for other devices.

Note: There are also reports of MSC/PATRAN hanging during graphics rotation on ZX graphics devices. MacNeal-Schwendler is working to identify and correct this problem.

2.8 Microsoft Windows NT Requirements

MSC/PATRAN supports the following Microsoft Windows NT hardware and software:

Table 2-17 Windows NT Requirements

Hardware Platforms	Intel Pentium, Pentium Pro, Pentium II (see below)
Operating System	Microsoft Windows NT 4.0 with Service Pack 3 or higher
Xwindow Emulator	Hummingbird Exceed 6.0.2 and Exceed 3D 6.0.2 ^a
Other	2 or 3 Button Mouse (3 Button Recommended) NTFS file System (for Unigraphics Part file access) Ethernet Card and Microsoft TCP/IP Service (see below)
Graphics Devices	1024x768 or better Windows NT Graphics Card (see below) 17 inch or better monitor

a.Both of these products are required for MSC/PATRAN on Windows NT (see below)

Tested Systems

MSC has tested MSC/PATRAN on the following computer systems:

- Compaq Professional Workstation 5000/5100/6000/8000
- Dell Workstation 400M, 410, 610
- IBM IntelliStation Z-Pro, M-Pro
- HP Vectra XW, Kayak XW
- NEC 6200 Laptop
- Digital Intel Based PC
- Siemens/Nixdorf Celsius

MSC/PATRAN and MSC/NASTRAN on Windows NT should run on any Intel based PC that is compatible with Windows NT. For the systems noted above, the size of the RAM ranged from 64 MB to 256 MB depending on the specific PC.

Important: MSC/PATRAN on Windows NT does not support Windows NT running on DEC Alpha-based workstations.

Graphics Boards and OpenGL Acceleration

Any graphics board that has a driver for Windows NT 4.0, should run with MSC/PATRAN. We recommend using a native OpenGL graphics card in order to achieve 3D acceleration.

MSC has tested the following Standard and OpenGL graphics adapters to verify compatibility with MSC/PATRAN on Windows NT.

- Accel Graphics Eclipse
- Diamond Stealth 64, FireGL 1000, FireGL 4000, 3D 2000
- Intergraph Intense3D, Intense3D II, Intense3D Pro, Realizm, 3410
- Dynamic Pictures Oxygen 202, 402
- ELSA GLoriaL, GLoriaL/MX, GLoriaXL
- Chips and technologies

Note that OpenGL (Hardware) mode requires more colors, and typically causes color flashing on 256 color displays. Use 32K color or higher mode to avoid color flashing. For additional information see **MSC/PATRAN 3D Graphics Drivers** (p. 25).

The MSC/PATRAN 3D driver is sensitive to how you define the DISPLAY environment variable. To get the maximum graphics performance when running MSC/PATRAN locally on the workstation, define the DISPLAY variable either in the control panel or on the command line as follows.

```
%set DISPLAY=:0
```

Hummingbird Exceed

MSC/PATRAN on Windows NT requires Hummingbird Exceed to emulate Xwindows on an NT workstation. This software is not included on the MSC/PATRAN CD-ROM and must be purchased separately. MSC/PATRAN v8 requires Hummingbird Exceed and Exceed 3D versions 6.0.2 or later.

Important: MSC/PATRAN on Windows NT no longer includes Hummingbird Exceed. Contact Hummingbird to purchase Exceed and Exceed 3D:

Hummingbird Communications LTD.
1 Sparks Avenue, North York
Ontario, M2H 2W1 Canada
Telephone: 1(416) 496-2200
Fax: 1(416) 496-2207
email: sales@hummingbird.com
WWW: <http://www.hummingbird.com>

In Europe:
37 rue de Vermont
1202 Geneva, Switzerland
Telephone: +41 (22) 733 18 58
Fax: +41 (22) 733 64 03

TCP/IP Requirements

You must have the Microsoft TCP/IP networking facility installed on Windows NT.

MSC/PATRAN also requires an ethernet card, even if the workstation is not connected to a network. MSC/PATRAN uses the ethernet card to create a system ID for FLEXlm licensing. For additional information see **TCP/IP Setup** (p. 55).

2.9 MSC/PATRAN 3D Graphics Drivers

MSC/PATRAN provides 3D graphics functionality on all supported workstations. MSC/PATRAN has 2 modes of 3D graphics operations. Software rendering and hardware rendering. Software rendering is the default, although hardware rendering, if available, can be much faster.

MSC/PATRAN automatically detects the presence of a hardware graphics device. If a supported hardware device is present, MSC/PATRAN hardware rendering can be enabled under Preference | Graphics. Alternatively, MSC/PATRAN default can be changed using settings.pcl:

```
pref_env_set_string("graphics_hardware", "YES")
```

“YES” indicates Hardware 3D mode and “NO” indicates Software 3D mode.

MSC recommends that you run the 3D driver in Hardware 3D mode if the workstation has a supported graphics option.

Note that graphics acceleration is not applicable to remote displays except for homogenous OpenGL machines. MSC/PATRAN automatically switches to Software 3D mode if running from a remote Xserver that does not support OpenGL.

The MSC/PATRAN 3D driver requires that the DISPLAY environment variable be set to “<hostname>:0.0”, “:0.0”, “unix:0.0”, or “localhost:0.0”. Any other form uses the software 3D mode.

Important: Some graphics boards that support Hardware 3D mode require an additional Z-buffered device and/or layered software product provided by the hardware vendor. See the specific hardware platform section in this chapter to find out if your graphics board requires a Z-buffered device or a layered software product.

OpenGL Hardware Graphics

MSC/PATRAN supports the OpenGL graphics library. On the SGI, DIGITAL, and Windows NT platforms, hardware graphics is enabled only through OpenGL. The HP, IBM, and Sun platforms support OpenGL only for certain adapters. MSC recommends using the MSC/PATRAN OpenGL graphics driver for those hardware devices that support it. To engage the OpenGL drivers, set the following line in settings.pcl to “YES”:

```
pref_env_set_string("graphics_hardware", "YES")  
pref_env_set_string("graphics_hardware_OpenGL", "YES")
```

2D Graphics Accelerators

Some systems offer optional 2D graphics accelerators to improve X11 performance. Since MSC/PATRAN is a graphically intensive product, we recommend that you use a 3D graphics accelerator for optimum performance. MSC/PATRAN is only tested with the graphics boards shown in the system specific tables.

Potential Color Flashing Problem

If MSC/PATRAN is running with other X applications, the colors may flash if the mouse is moved outside of an MSC/PATRAN window.

Though harmless, the flashing occurs if MSC/PATRAN tries to allocate colors in the system's default color map, when another X application has already allocated the color map. MSC/PATRAN instead creates its own custom color map.

As long as the mouse is in an MSC/PATRAN window, MSC/PATRAN uses a custom color map and the colors will be correct.

On the HP, the color flashing problem may also occur when you define the environment variable `SB_X_SHARED_CMAP` before you start the X Server. (MSC/PATRAN does not require this variable.)

Additionally, the following parameter in the `settings.pcl` file allows adjustment of the number of colors MSC/PATRAN tries to use. Lowering this value may also solve color flashing problems.

```
pref_env_set_integer( "graphics_colors", 120 )
```

Do not lower the number of colors below 64.

Display Resolution

MSC requires a minimum display resolution of 1024x768. A display resolution of 1152x864 or higher is recommended. For devices running at 1024x768, the "SmallScreenLayout" preference must be set in the `settings.pcl` file. See [settings.pcl](#) (p. 76) for additional information.