



Managing Faults

proactively & reactively



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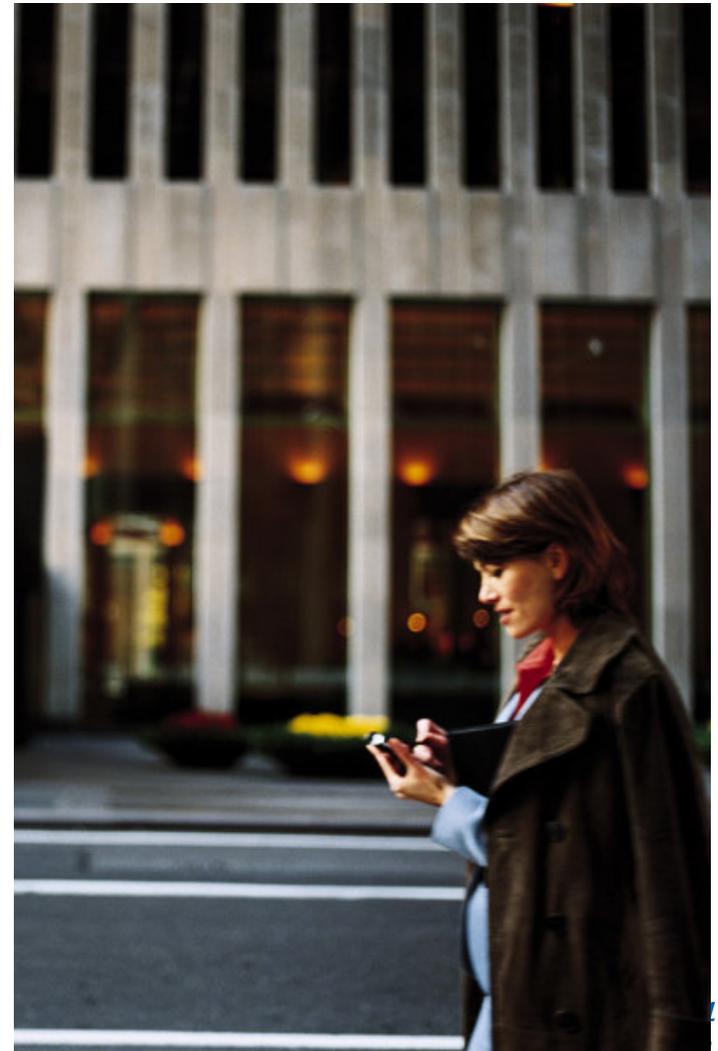


What's driving change?

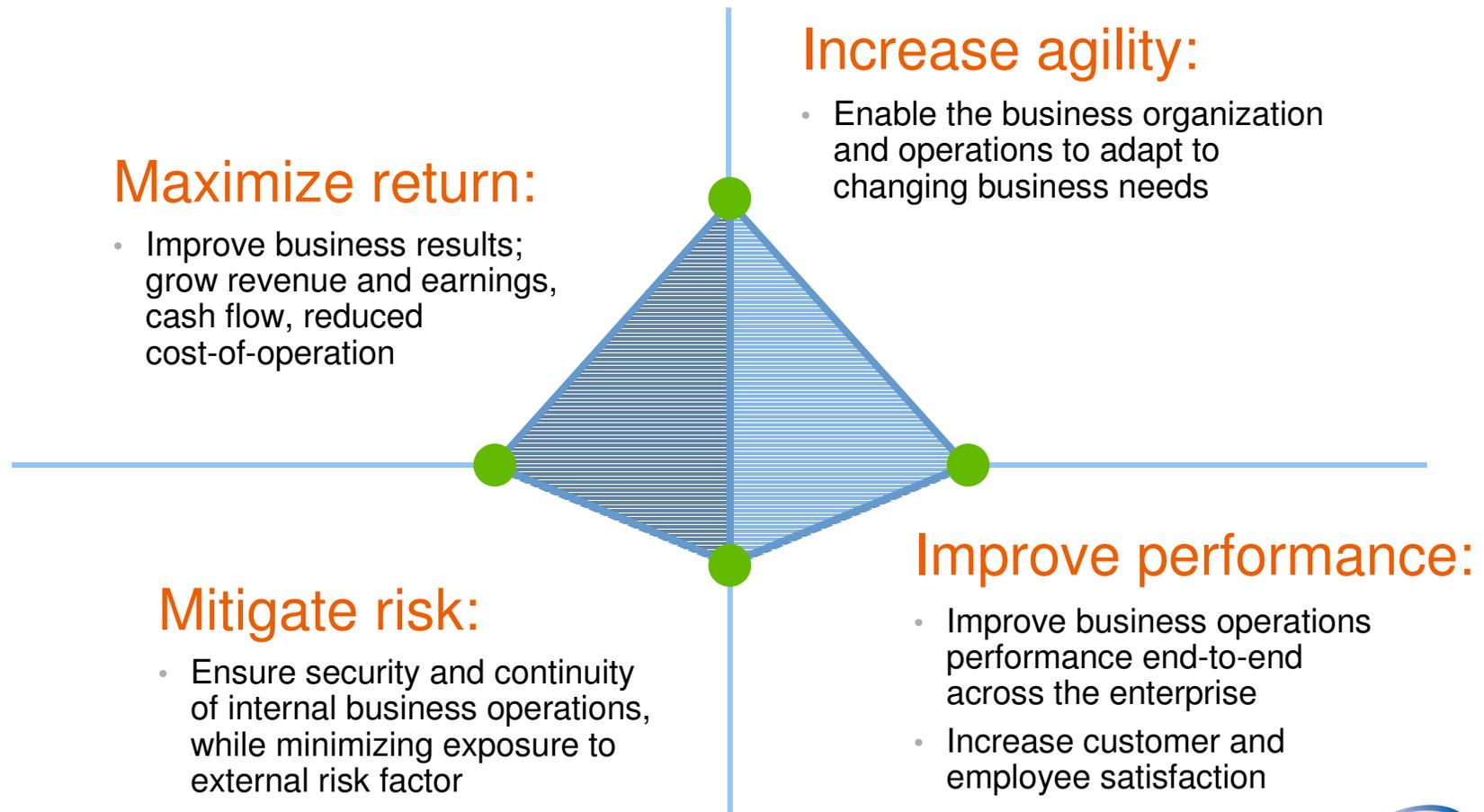
Three big shifts



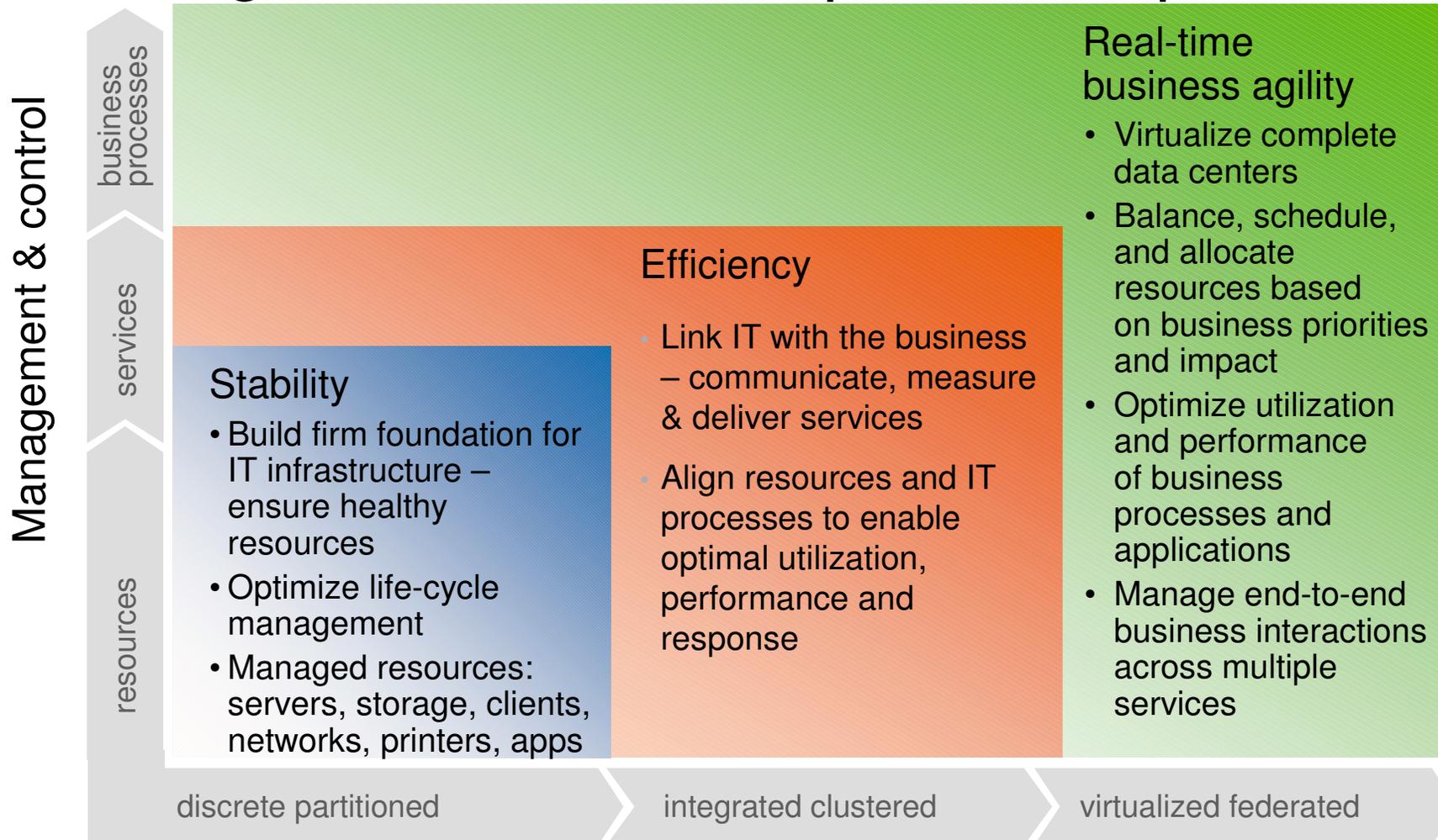
- All processes and content will be transformed from physical and static to digital, mobile, personal and virtual
- The demand for simplicity, manageability and adaptability will change how customers work and organize, buy and use technology
- It's a horizontal, heterogeneous, networked world. Standards are about connection and common language



The IT's balancing act

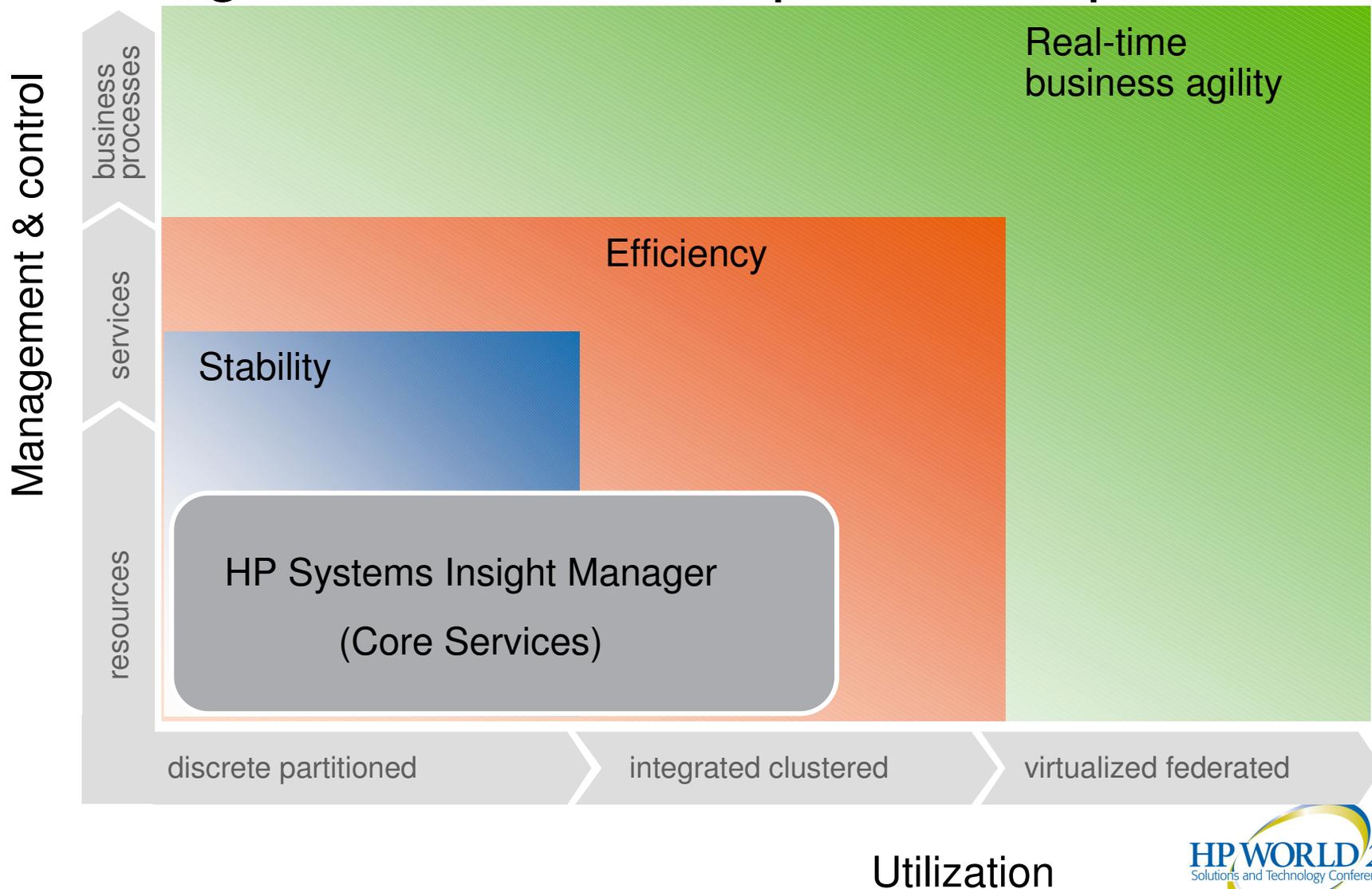


Management for the adaptive enterprise



Utilization

Management for the adaptive enterprise





HP System

Insight Manager



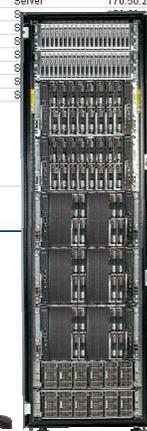
HP Systems Insight Manager

Comprehensive management through core services

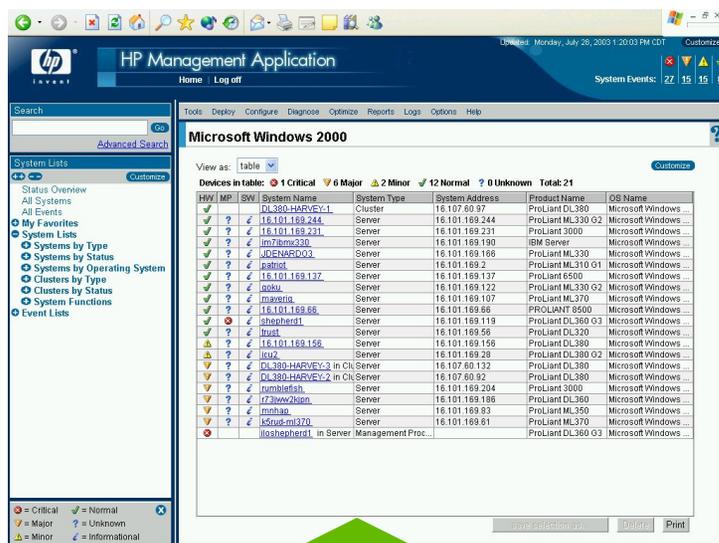


- Multi-OS - installs on HP-UX, Windows, and Linux
- Manages all HP server platforms
- Inventory, **fault**, and configuration management
- Secure - Role-based authorizations; OS based authentication; SSL, SSH support
- Distributed task facility to remotely run commands, scripts and batch files on managed systems
- Plug-in Extensibility – add additional tools & applications using the tool definitions

Se...	HW	MP	SW	System Name	System Type	System Address	Product Name	OS Name
				10a	Server	170.50.1.13	ProLiant DL360 G2	Microsoft Windows ...
				11a	Desktop	170.50.1.94		Microsoft Windows ...
				11b	Server	170.50.2.51	ProLiant ML370 G2	Microsoft Windows ...
				12a	Server	170.50.1.14	ProLiant ML370 G3	Microsoft Windows ...
				16.101.169.22	Server	16.101.169.22	IBM Server	
				16.101.169.143	Desktop	16.101.169.143	Evo D510 CMT	
				16.101.169.148	Desktop	16.101.169.148	Evo D510 CMT	
				16.101.169.148	Server	16.101.169.148	SANworks Manag... hp OpenView stora...	
				16.101.169.181	Server	16.101.169.181	HP NetServer TC ...	Windows 2000
				170.50.2.35	Printer	170.50.2.35	HP Jetdirect	
				16.101.169.17	Printer	16.101.169.17	HP Jetdirect	
				16.101.169.58	Printer	16.101.169.58	HP Jetdirect	
				170.50.1.102	Server	170.50.1.102	Dell Server	
				170.50.1.183	Server	170.50.1.183	9000/800	HP-UX
				16.101.169.0	Printer	16.101.169.0	HP Jetdirect	
				170.50.2.45	Server	170.50.2.45	ProLiant DL360 G2	Microsoft Windows ...
				126	Server	170.50.1.126	ProLiant DL360 G3	Microsoft Windows ...
				230	Server	170.50.1.230	ProLiant 1600	NetWare
				200	Server	170.50.1.200	9000/800	HP-UX
				17	Server	170.50.1.17	9000/800	HP-UX
				238	Server	170.50.1.238	9000/800	HP-UX
				239	Server	170.50.1.239	9000/800	HP-UX
				250	Server	170.50.1.250	9000/800	HP-UX

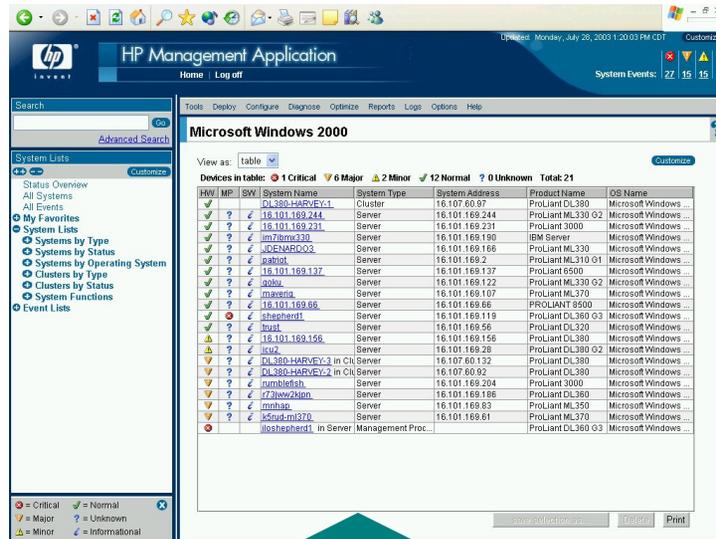


Proactive fault management



- HP Systems Insight Manager automatically or manually discovers and identifies managed systems
- HP Systems Insight Manager detects problems before they result in server downtime.
 - Disks, CPU, memory, fans, IO, server environmentals
 - ServiceGuard High Availability and MSCS Clusters
- HP Systems Insight Manager speeds failure diagnosis and resolution
 - Status drill down leads the way to failed components
 - Enables remote event notification and forwarding

Fault management



- Monitoring
 - Status polling & asynchronous
 - Incoming events
 - SNMP traps
 - DMTF/WBEM indications (events)

• HP Systems Insight Manager detects problems before they result in server downtime.

– ProLiant servers (disks, CPU, memory, fans, IO, server environmentals) via SNMP insight agents

– HP9000 & Integrity servers: EMS HW monitors & ServiceGuard/HA EMS monitors

• HP Systems Insight Manager speeds failure diagnosis and resolution

– Status drill down leads the way to failed components

– Enables remote event notification and forwarding





Management Processor Health

Software Health

Hardware Health

Performance Health

HP Systems Insight Manager - Microsoft Internet Explorer provided by Hewlett-Packard

Home Logout

Tools Deploy Configure Diagnostics Help

All Systems

View as: Table

Systems in table: Critical 0 Major 0 Minor 23 Normal 1 Unknown Total: 24

	HW	MP	SW	PF	System Name	System Type	System Address	Product Name	OS Name
<input type="checkbox"/>	✓	✓	✓	?	hptc in Encl. hptc_8i21kfs3	Management ...	10.10.10.111	ProLiant BL e-Cl...	
<input type="checkbox"/>	?	?	?	?	hptc_8i21kfs33017	Enclosure			
<input type="checkbox"/>	✓	✓	✓	?	linuxblade1 in Encl. hptc_8	Server	10.10.10.11	ProLiant BL10e	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	linuxblade2 in Encl. hptc_8	Server	10.10.10.12	ProLiant BL10e	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	linuxblade3 in Encl. hptc_8	Server	10.10.10.13	ProLiant BL10e	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	linuxblade4 in Encl. hptc_8	Server	10.10.10.14	ProLiant BL10e	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	linuxblade5 in Encl. hptc_8	Server	10.10.10.15	ProLiant BL10e	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	pst-branch	Server	10.10.10.8	ProLiant DL360...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-branch-ilo in Server pst	Management ...	10.10.10.108	Integrated Light...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-dbload	Server	10.10.10.3	ProLiant DL380...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-dbload-ilo in Server pst	Management ...	10.10.10.103	Integrated Light...	Microsoft Wind...
<input type="checkbox"/>	✓	?	✓	?	pst-hpsim	Server	10.10.10.2	ProLiant DL360...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-linuxnfs	Server	10.10.10.7	ProLiant DL360...	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	pst-linuxnfs-ilo in Server ps	Management ...	10.10.10.107	Integrated Light...	Linux - Red Hat
<input type="checkbox"/>	✓	✓	✓	?	pst-main	Server	10.10.10.1	ProLiant DL380...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-main-ilo in Server pst-r	Management ...	10.10.10.101	Integrated Light...	
<input type="checkbox"/>	✓	✓	✓	?	pst-ovow	Server	10.10.10.4	ProLiant DL360...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-ovow-ilo in Server pst-c	Management ...	10.10.10.104	Integrated Light...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-switch	Switch	10.10.10.51	ProCurve Switc...	
<input type="checkbox"/>	✓	✓	✓	?	pst-target1	Server	10.10.10.5	ProLiant DL360...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-target1-ilo in Server pst	Management ...	10.10.10.105	Integrated Light...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-target2	Server	10.10.10.6	ProLiant DL360...	Microsoft Wind...
<input type="checkbox"/>	✓	✓	✓	?	pst-target2-ilo in Server pst	Management ...	10.10.10.106	Integrated Light...	Microsoft Wind...
<input type="checkbox"/>	✓	?	✓	?	pst-windows64	Server	10.10.10.9	server r2600	Microsoft Wind...

Legend: Critical (red X), Major (red triangle), Minor (yellow triangle), Normal (green check), Unknown (blue question mark), Informational (blue lightning bolt)

Save Selection As... Delete Print





Fault – status overview page

The screenshot shows the HP Systems Insight Manager interface in Microsoft Internet Explorer. The page title is "Status Overview" and the subtitle is "An overview of system and uncleared event status". The page is updated on Saturday, March 20, 2004, at 5:02:25 AM PST. The status bar shows "Uncleared Event Status" with counts: 243 Critical, 5 Major, 115 Minor, and 690 Normal.

System Status

	Servers	Clusters	Clients	Networking	Printers	Other	TOTAL
Critical	18	0	46	0	0	178	242
Major	25	0	0	0	0	1	26
Minor	12	0	0	0	0	1	13
Normal	191	7	106	9	56	539	908
Unknown	0	0	0	0	0	4	4
TOTAL	246	7	152	9	56	723	1193

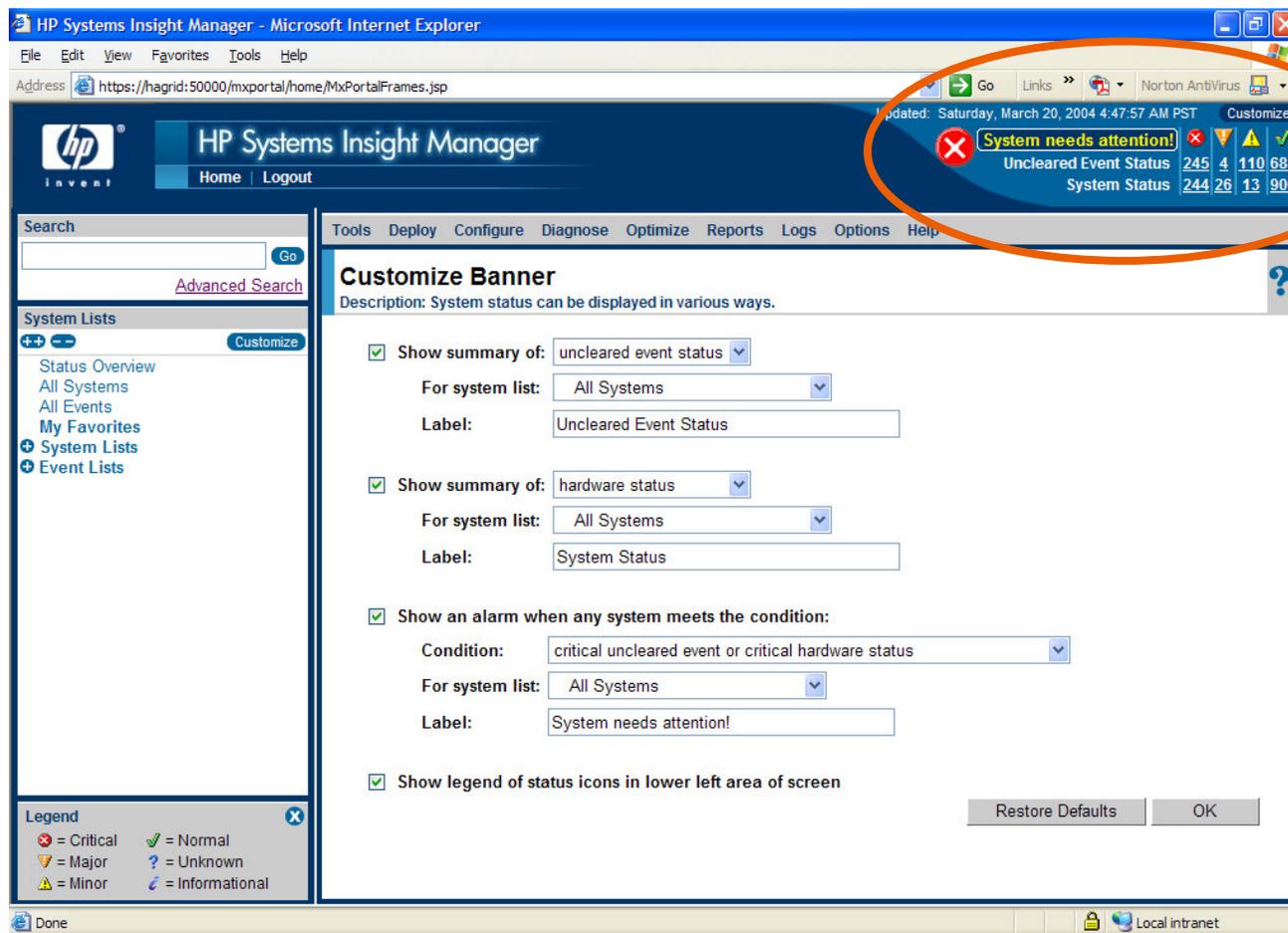
Uncleared Event Status

	Servers	Clusters	Clients	Networking	Printers	Other	TOTAL
Critical	19	0	46	0	0	178	243
Major	3	0	0	0	0	2	5
Minor	27	9	48	0	0	31	115
Normal	106	0	86	2	4	492	690
Informational	249	7	152	9	56	747	1220
TOTAL	404	16	332	11	60	1450	2273

Last Update: Sat, 20-Mar-2004, 5:02 AM PST

Overview of all systems with drill-down to details

Fault – banner customization



The screenshot shows the HP Systems Insight Manager web interface. The top navigation bar includes the HP logo, 'HP Systems Insight Manager', and 'Home | Logout'. A search bar is on the left. The main content area is titled 'Customize Banner' and contains several configuration options:

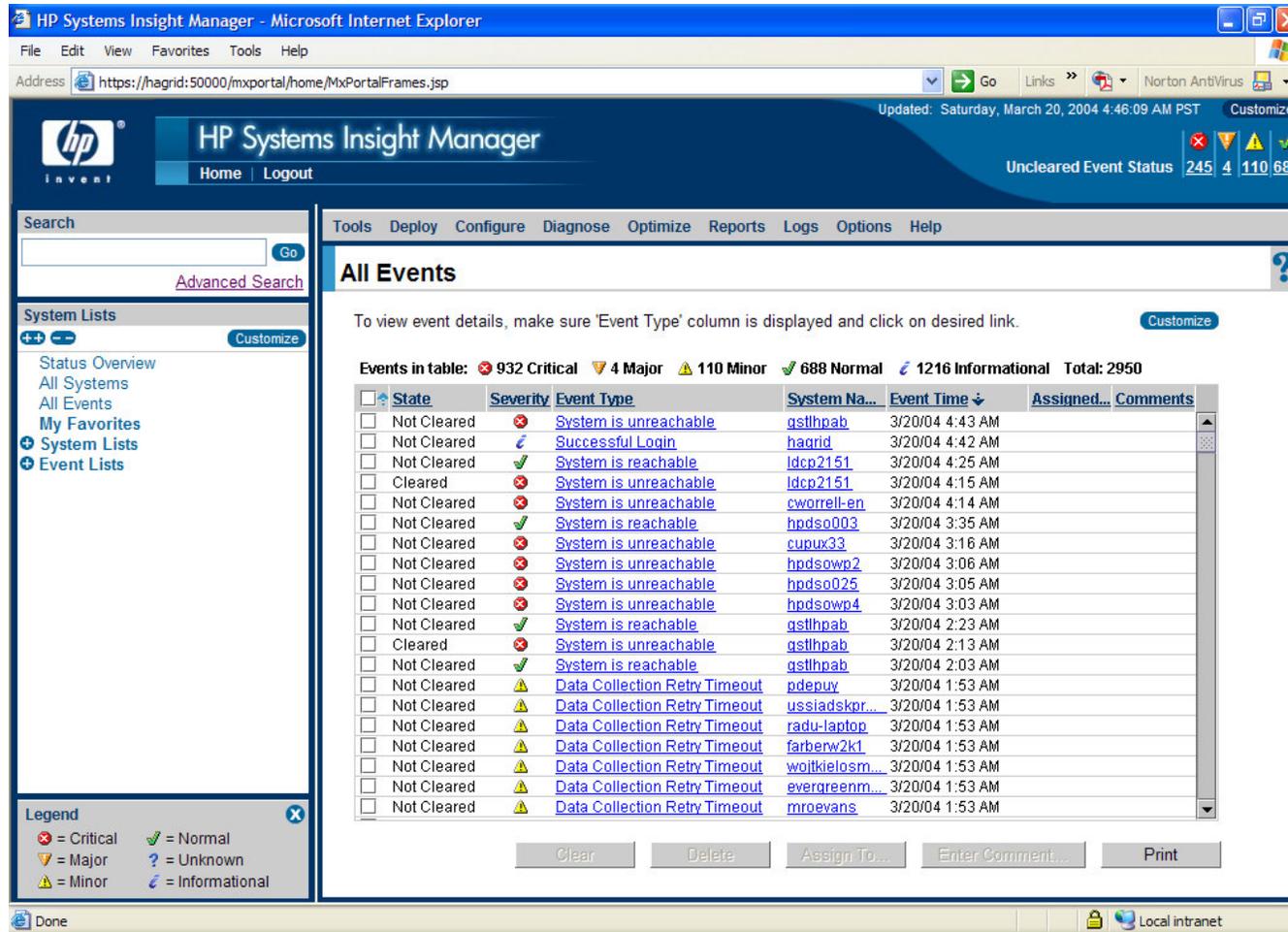
- Show summary of: **uncleared event status**
For system list: All Systems
Label: Uncleared Event Status
- Show summary of: **hardware status**
For system list: All Systems
Label: System Status
- Show an alarm when any system meets the condition:
Condition: critical uncleared event or critical hardware status
For system list: All Systems
Label: System needs attention!
- Show legend of status icons in lower left area of screen

Buttons for 'Restore Defaults' and 'OK' are at the bottom right. A legend in the bottom left corner defines status icons: Critical (red X), Major (yellow triangle), Minor (yellow triangle), Normal (green check), Unknown (blue question mark), and Informational (blue check).

A red circle highlights the 'System needs attention!' banner in the top right corner of the browser window, which also displays 'Uncleared Event Status' counts (245, 4, 110, 688) and 'System Status' counts (244, 26, 13, 906).

The banner shows overall status and can be customized

Fault – event list



HP Systems Insight Manager - Microsoft Internet Explorer

Address: https://hagrid:50000/mxportal/home/MxPortalFrames.jsp

Updated: Saturday, March 20, 2004 4:46:09 AM PST

Uncleared Event Status: 245 4 110 688

Tools Deploy Configure Diagnose Optimize Reports Logs Options Help

All Events

To view event details, make sure 'Event Type' column is displayed and click on desired link.

Events in table: 932 Critical 4 Major 110 Minor 688 Normal 1216 Informational Total: 2950

State	Severity	Event Type	System Na...	Event Time	Assigned...	Comments
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	gstlhpab	3/20/04 4:43 AM		
<input type="checkbox"/> Not Cleared	Informational	Successful Login	hagrid	3/20/04 4:42 AM		
<input type="checkbox"/> Not Cleared	Informational	System is reachable	ldcp2151	3/20/04 4:25 AM		
<input type="checkbox"/> Cleared	Critical	System is unreachable	ldcp2151	3/20/04 4:15 AM		
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	cworrell-en	3/20/04 4:14 AM		
<input type="checkbox"/> Not Cleared	Informational	System is reachable	hpdso003	3/20/04 3:35 AM		
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	cupux33	3/20/04 3:16 AM		
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	hpdsowp2	3/20/04 3:06 AM		
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	hpdso025	3/20/04 3:05 AM		
<input type="checkbox"/> Not Cleared	Critical	System is unreachable	hpdsowp4	3/20/04 3:03 AM		
<input type="checkbox"/> Not Cleared	Critical	System is reachable	gstlhpab	3/20/04 2:23 AM		
<input type="checkbox"/> Cleared	Informational	System is unreachable	gstlhpab	3/20/04 2:13 AM		
<input type="checkbox"/> Not Cleared	Informational	System is reachable	gstlhpab	3/20/04 2:03 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	pdepuv	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	ussladskpr...	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	radu-laptop	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	farberw2k1	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	woitkielasm...	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	evergreenm...	3/20/04 1:53 AM		
<input type="checkbox"/> Not Cleared	Warning	Data Collection Retry Timeout	mroevans	3/20/04 1:53 AM		

Legend: Critical, Major, Minor, Normal, Unknown, Informational

Buttons: Clear, Delete, Assign To, Enter Comment, Print

Events can be managed and further details can be displayed

Fault – HP-UX System Status



HP Systems Insight Manager - Mozilla

https://localhost:50000/mxportal/home/MxPortalFrames.jsp

Updated: Friday, April 30, 2004 11:13:14 AM PDT

Uncleared Event Status: 95 Critical, 28 Major, 19 Minor, 249 Normal

HP-UX test servers

View as: table

Systems in table: 0 Critical, 0 Major, 0 Minor, 32 Normal, 0 Unknown, Total: 32

MP	SW	System Name	System Type	System Address	Product Name	OS Name
?	?	cupux01	Server	15.75.207.100	9000/800/A5...	HP-UX
?	?	cupux02	Server	15.75.207.101	9000/800/A5...	HP-UX
?	?	cupux03	Server	15.75.207.102	9000/800	HP-UX
?	?	cupux04	Server	15.75.207.103	9000/800	HP-UX
?	?	cupux05	Server	15.75.207.104	ia64	HP-UX
?	?	cupux08	Server	15.75.207.107	9000/800/A...	HP-UX
?	?	cupux09	Server	15.75.207.108	9000/800/A...	HP-UX
?	?	cupux11	Server	15.75.207.110	9000/800/A...	HP-UX
?	?	cupux12	Server	15.75.207.111	9000/800/A...	HP-UX
?	?	cupux13	Server	15.75.207.112	9000/800	HP-UX
?	?	cupux15	Server	15.75.207.114	ia64	HP-UX
?	?	cupux16	Server	15.75.207.115	ia64	HP-UX
?	?	cupux18	Server	15.75.207.117	9000/800/A...	HP-UX
?	?	cupux19	Server	15.75.207.118	9000/800/A...	HP-UX
?	?	cupux20	Server	15.75.207.119	9000/800	HP-UX
?	?	cupux21	Server	15.75.207.120	9000/800/A5...	HP-UX
?	?	cupux22	Server	15.75.207.121	9000/800/A5...	HP-UX

HW status is based on connectivity based status poll for HP-UX servers

Fault – HP-UX EMS



The screenshot shows the HP Systems Insight Manager web interface in a Mozilla browser window. The browser address bar shows the URL: https://localhost:50000/mxportal/home/MxPortalFrames.jsp. The page title is "HP Systems Insight Manager". The navigation menu includes "Tools", "Deploy", "Configure", "Diagnose", "Optimize", "Reports", "Logs", "Options", and "Help". The "Diagnose" menu is open, and "Event Monitoring Service..." is highlighted with an orange circle. The main content area displays a table of "HP-UX test servers". The table has columns for "HW", "MP", "SW", "System Name", "System Type", "System Address", "Product Name", and "OS Name". The table shows 22 rows of server data, with the 8th row (cupux08) selected. The status bar at the bottom of the browser shows the date and time: Fri Apr 30 11:14 AM.

HW	MP	SW	System Name	System Type	System Address	Product Name	OS Name
?	?	?	cupux01	Server	15.75.207.100	9000/800/A5...	HP-UX
✓	✓	?	cupux02	Server	15.75.207.101	9000/800/A5...	HP-UX
✓	✓	?	cupux03	Server	15.75.207.102	9000/800	HP-UX
✓	✓	?	cupux04	Server	15.75.207.103	9000/800	HP-UX
✓	✓	?	cupux05	Server	15.75.207.104	ia64	HP-UX
✓	✓	?	cupux08	Server	15.75.207.107	9000/800/A1...	HP-UX
✓	✓	?	cupux09	Server	15.75.207.108	9000/800/A1...	HP-UX
✓	✓	?	cupux11	Server	15.75.207.110	9000/800/A1...	HP-UX
✓	✓	?	cupux12	Server	15.75.207.111	9000/800/A1...	HP-UX
✓	✓	?	cupux13	Server	15.75.207.112	9000/800	HP-UX
✓	✓	?	cupux15	Server	15.75.207.114	ia64	HP-UX
✓	✓	?	cupux16	Server	15.75.207.115	ia64	HP-UX
✓	✓	?	cupux18	Server	15.75.207.117	9000/800/A5...	HP-UX
✓	✓	?	cupux19	Server	15.75.207.118	9000/800/A5...	HP-UX
✓	✓	?	cupux20	Server	15.75.207.119	9000/800	HP-UX
✓	✓	?	cupux21	Server	15.75.207.120	9000/800/A5...	HP-UX
✓	✓	?	cupux22	Server	15.75.207.121	9000/800/A5...	HP-UX

Select HP-UX system from list and then select EMS from tool menu

Fault – HP-UX EMS HA Monitors



The screenshot shows the HP Systems Insight Manager web interface. The browser window title is "HP Systems Insight Manager - Mozilla". The address bar shows "https://localhost:50000/mxportal/home/MxPortalFrames.jsp". The page header includes the HP logo, "HP Systems Insight Manager", and navigation links like "Home" and "Logout". A status bar indicates "Uncleared Event Status" with counts: 95 (Critical), 28 (Major), 19 (Minor), and 249 (Informational). The main content area is titled "Event Monitoring Service" and includes a description: "Description: Configure and view resource monitoring requests on the managed node." Below this, it says "Step 1: Verify Target Systems". A table lists the target system:

System Name	OS	Type	Tool launch OK? ↑	Keep?
cupux08	HP-UX	Server	Yes	[Remove]

Buttons for "Change Targets" and "Next >" are visible. A legend at the bottom left defines event status icons: Critical (red X), Major (yellow triangle), Minor (yellow triangle), Normal (green check), Unknown (blue question mark), and Informational (blue circle).

Verify HP-UX server to run EMS on



Fault – HP-UX EMS HA Monitors



HP Systems Insight Manager - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop <https://localhost:50000/mxportal/home/MxPortalFrames.jsp> Search Print

Home Bookmarks Release Notes Plug-ins Extensions Support Mozilla Community

Updated: Friday, April 30, 2004 11:14:44 AM PDT Customize

Uncleared Event Status 95 28 19 249

HP Systems Insight Manager

Home Logout

Search

Go

Advanced Search

System Lists

System Overview

All Systems

All Events

My Favorites

System Lists

Systems by Type

Systems by Status

Systems by Operating System

Clusters by Type

Clusters by Status

System Functions

Cupertino

HP-UX test servers

Event Lists

Legend

Critical

Major

Minor

Normal

Unknown

Informational

Tools Deploy Configure Diagnose Optimize Reports Logs Options Help

Event Monitoring Service

Target: cupux08.cup.hp.com

Step 2: Specify Parameters

Description:

Configure and view resource monitoring requests on the managed node.

Comment:

There are a number of monitors for filesystem usage that are included in the Event Monitoring Service (EMS) product. With this tool you can configure thresholds for notifications and targets (such as SNMP, email or syslog) where notifications are sent. One instance of this tool will be presented for each selected node.

Behavior:

This tool will run on multiple systems. It will generate an X Window user interface.

Command:

```
/opt/resmon/bin/emsui /opt/resmon/bin/EMScnfig.ui
```

X Window:

NOTE: You must have X Window Server software running on your browser system before executing this tool.

Required Field *

Device for X Window display: (e.g. ovwpc088:0.0)

< Prev Run Now

Since EMS has an X based GUI we need to specify where the GUI should be displayed (IP address where browser is being run)



Fault – HP-UX EMS HA Monitors

The screenshot shows the HP Systems Insight Manager (SIM) interface. A window titled "Event Monitoring Service (cupux08)" is open, displaying a table of monitoring requests. The table has columns for Resource, Value, and Notify. The resource is "/storage/status/disks/default/8_16_5.6.0", the value is "UP (0)", and the notify condition is "When value is...".

The main SIM window shows a summary status: 0 Failed, 0 Killed, 0 Cancelled, 0 Complete, 1 Running, 0 Copying, 0 Pending. Below this is a table of target details:

Target Name	Status	Exit Code	Stdout	Stderr
cupux08.cup.hp.com	Running	0	No	No

Target Details for cupux08.cup.hp.com:
Target name: cupux08.cup.hp.com
Exit code: 0
Status: Running

Legend:
Critical (Red X), Major (Yellow Triangle), Minor (Yellow Triangle), Normal (Green Check), Unknown (Blue Question Mark), Informational (Blue Check).

HP SIM will show new task is running on selected HP-UX server. The tool's X based GUI will pop-up in a separate window.



Fault – HP-UX EMS HA Monitors



The screenshot displays the HP-UX Event Monitoring Service (EMS) interface. A dialog box titled "View Monitoring Request Parameters (cupux08)" is open, showing configuration for a resource: `/storage/status/disks/default/8_16_5.6.0`. The current value is `UP (0)`. The dialog includes fields for "Notify: When value is..." (set to `UP (0)`), "Polling Interval: 300 seconds", and "Notify via: SNMP trap" with "Severity: Normal". There are checkboxes for "Initial", "Repeat", and "Return" under the "Options" section. A "Comment" field contains "none specified". Buttons for "Show Instance Description...", "Modify Monitoring Request", "OK", and "Help" are visible.

The background interface shows a tree view on the left with categories like "Systems by Status", "Systems by Operating System", "Clusters by Type", "Clusters by Status", "System Functions", "Cupertino", "HP-UX test servers", and "Event Lists". A "Legend" at the bottom left defines status icons: Critical (red X), Major (yellow triangle), Minor (yellow triangle), Normal (green check), Unknown (blue question mark), and Informational (blue exclamation mark). The bottom status bar shows "Transferring data from localhost...", "HP Systems Insight Manager - Mozilla", "Event Monitoring Service (cupux08)", and "View Monitoring Request Parameters (cupux08)". The system clock indicates "Fri Apr 30 11:16 AM".

With EMS you can select from a large number of resources to monitor and send an SNMP trap when a threshold is reached.

Fault – HP-UX EMS HA Monitors



The screenshot shows the HP Systems Insight Manager web interface. The main content area displays a table of events. A red circle highlights a specific event in the table:

State	Severity	Event Type	System	Event	Assigned To	Comments
Not cleared	Normal	HP-UX EMS Normal Severity Event	cupux08	4/30/04...		

Other events visible in the table include 'System is unreachable', 'Successful Login', 'System is reachable', 'System is unreachable', 'Discovered System', 'HP-UX EMS Normal Severity Event', 'Logout', and 'Discovered System'.

The SNMP traps from the HP-UX server show up in the Event List.



Fault – HP-UX EMS HA Monitors



The screenshot shows the HP Systems Insight Manager web interface in a Mozilla browser window. The page title is "HP Systems Insight Manager" and the URL is "https://localhost:50000/mxportal/home/MxPortalFrames.jsp". The interface includes a search bar, navigation tabs (Tools, Deploy, Configure, Diagnose, Optimize, Reports, Logs, Options, Help), and a main content area titled "All Events".

The "All Events" section displays "Trap Details" for a specific event. The details are as follows:

Variable Description	Value
Full EMS name of the resource being monitored	/storage/status/disks/default/8_16_5.6.0
A unique identifier for the monitoring request	1438449667
Operator indicates poll, change or threshold condition operator: >, >=, <, <=, ==, !=	==
Integer representing the resource type: 3009= String 3010= Sbit32 (signed 32 bit integer) 3011= Ubit32 (unsigned 32 bit integer) 3012= Sbit64 (future use) 3013= Ubit64 (future use) 3014= Float64 (64 floating point number) 3015= Enumerated Type 3016= Error	3015
Quoted string representing resource value, should be converted using the Resource Type indicated in Variable #4 Not applicable if Resource Type is Error	"UP(0)"
Integer representing the threshold type, this is usually the same as resource type. Integer representing the threshold type: 3009= String 3010= Sbit32 (signed 32 bit integer) 3011= Ubit32 (unsigned 32 bit integer) 3012= Sbit64 (future use) 3013= Ubit64 (future use) 3014= Float64 (64 floating point number) 3015= Enumerated Type 3016= Error Not applicable if operator is poll or change; or if Resource Type is Error Note: enumerated type is not supported as threshold type.	3010
Quoted string representing threshold value, should be converted using the Threshold Type indicated in Variable #6. Not applicable if operator is poll or change; or if Resource Type is Error	"0"
Indicates that additional user data is available from EMS 0= no user data 1=	0

Drilling down into the event shows the resource name being monitored.



Fault – HP-UX EMS Tips (HA & HW monitors)



1. To set up trust relationship between CMS and managed HP-UX server use `mxagentconfig` command on the CMS.
2. To run a X based tool like EMS you need to make sure you can display the X window from the computer you are browsing from. To add a X host to a Red Hat Linux computer use: `xhost +hostname`. On Windows computer you will need to run an Xserver tool like ReflectionX.
3. To **add a trap destination to a managed HP-UX server**, on that server:

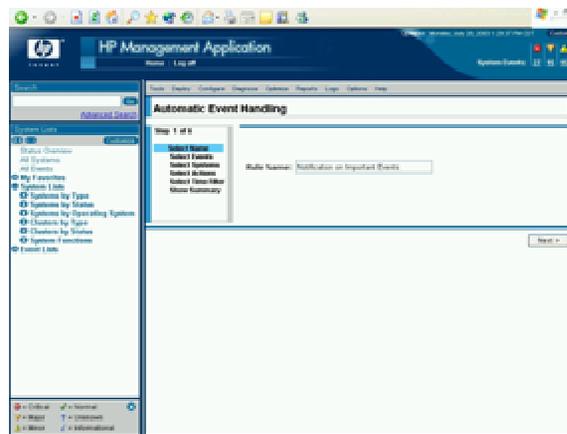
Use: `/sbin/init.d/SnmpMaster stop` to stop SNMP process.

Use: `chmod +w snmpd.conf` to allow file to be written to.

Edit: `/etc/SnmpAgent.d/snmpd.conf` and uncomment “# trap-dest” and add the IP address of the HP SIM CMS

Use: `/sbin/init.d/SnmpMaster start`

Fault - automated event handling



Send important event information to the right place at the right time

Send Page



Send E-mail



Forward Alert



Launch Script





Fault – Action on Events

The screenshot shows the HP Systems Insight Manager web interface in Microsoft Internet Explorer. The browser address bar shows the URL: <https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp>. The page title is "HP Systems Insight Manager". The navigation menu includes: Home, Logout, Tools, Deploy, Configure, Diagnose, Optimize, Reports, Logs, Options, Help. The main content area is titled "Automatic Event Handling - New Task" with a description: "Create a new task for automatic event handling". The wizard is at "Step 1 of 6" and the current step is "Select name". The task name field contains "Email Rich on nieghbor loss". A "Next >" button is visible at the bottom right of the wizard. On the left side, there is a "System Lists" sidebar with options like "System Overview", "All Systems", "All Events", "My Favorites", "System Lists", and "Event Lists". A "Legend" section at the bottom left defines event severity levels: Critical (red X), Major (yellow triangle), Minor (yellow triangle), Normal (green checkmark), Unknown (question mark), and Informational (blue checkmark).

Create a new action on event task



Fault – Action on Events

Select the event or events to take action on



Fault – Action on Events

HP Systems Insight Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp>

Updated: Friday, April 30, 2004 2:25:49 PM PDT Customize

Uncleared Event Status 99 29 19 265

HP Systems Insight Manager
Home Logout

Search Go [Advanced Search](#)

System Lists [Customize](#)

- System Overview
- All Systems
- All Events
- My Favorites
- System Lists
- Event Lists

Legend

- = Critical
- = Major
- = Minor
- = Normal
- = Unknown
- = Informational

Tools Deploy Configure Diagnose Optimize Reports Logs Options Help

Automatic Event Handling - New Task

Description: Create a new task for automatic event handling

Step 3 of 6

Select systems

where is

< Prev Next >

Done Local intranet

Select the systems that the new action task should apply to



Fault – Action on Events

HP Systems Insight Manager - Microsoft Internet Explorer

Address: https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp

Updated: Friday, April 30, 2004 2:26:49 PM PDT

Uncleared Event Status: 99 29 19 265

Automatic Event Handling - New Task

Description: Create a new task for automatic event handling

Step 4 of 6

Select actions

- Send e-mail
 - To: rich.simms@hp.com
 - CC:
 - Subject: Trouble
 - Message format: HTML
- Run custom command
- Assign
- Forward as SNMP trap
- Write to system log
- Clear event

< Prev Next >

Legend

- = Critical
- = Normal
- = Major
- = Unknown
- = Minor
- = Informational

Select an action to take

Fault – Action on Events

The screenshot shows the HP Systems Insight Manager web interface in Microsoft Internet Explorer. The browser address bar shows the URL: <https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp>. The page title is "HP Systems Insight Manager" and the current page is "Automatic Event Handling - New Task". The page is updated on Friday, April 30, 2004, at 2:28:49 PM PDT. The "Uncleared Event Status" is 99 Critical, 29 Major, 19 Minor, and 265 Informational. The main content area is titled "Automatic Event Handling - New Task" with the description "Create a new task for automatic event handling". It is currently on "Step 5 of 6" and the "Select time filter" step is active. The "Select time filter" step includes a checkbox for "Use time filter:" which is currently unchecked. Below the checkbox is a dropdown menu set to "Out of Office" and a "Manage Filters" button. The page also features a search bar, a system lists sidebar, and a legend for event severity levels.

A time filter can be applied

Fault – Action on Events



HP Systems Insight Manager - Microsoft Internet Explorer

Address: https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp

Updated: Friday, April 30, 2004 2:29:19 PM PDT

Uncleared Event Status: 99 29 19 265

Automatic Event Handling - New Task

Description: Create a new task for automatic event handling

Step 6 of 6

Review summary

Review the configuration below and click on 'Finish' to save changes.

Task name: Email Rich on nieghbor loss

Action(s): Send e-mail To: rich.simms@hp.com
CC:
Subject: Trouble
Message format: HTML

E-mail settings: E-mail SMTP host: corp.hp.com
Sender: MyCMS@hp.com [Edit e-mail settings...](#)

Make sure that the e-mail settings are correctly configured.

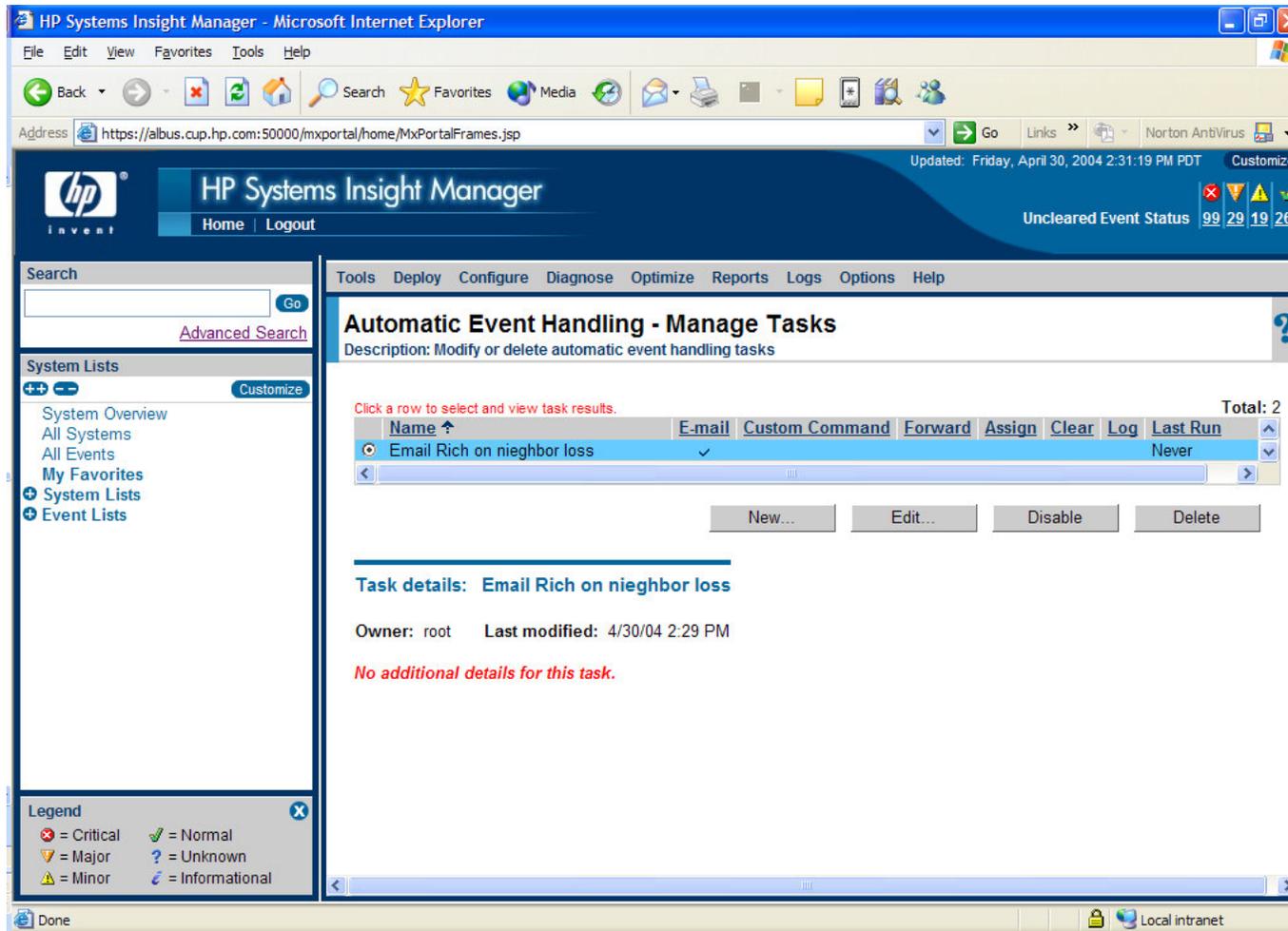
< Prev Finish

Legend

- ⊗ = Critical
- ⚠ = Major
- ⚠ = Minor
- ✓ = Normal
- ? = Unknown
- ℹ = Informational

Review the new action of event task

Fault – Action on Events



HP Systems Insight Manager - Microsoft Internet Explorer

Address: https://albus.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp

Updated: Friday, April 30, 2004 2:31:19 PM PDT

Uncleared Event Status: 99 29 19 265

Tools Deploy Configure Diagnose Optimize Reports Logs Options Help

Automatic Event Handling - Manage Tasks

Description: Modify or delete automatic event handling tasks

Click a row to select and view task results. Total: 2

Name	E-mail	Custom Command	Forward	Assign	Clear	Log	Last Run
Email Rich on neighbor loss	✓						Never

Buttons: New... Edit... Disable Delete

Task details: Email Rich on neighbor loss

Owner: root Last modified: 4/30/04 2:29 PM

No additional details for this task.

Legend

- ✗ = Critical
- ✓ = Normal
- ▽ = Major
- ? = Unknown
- △ = Minor
- ℳ = Informational

The tasks can be monitored and edited as needed

Fault – Action on Events



ovwpc200: EGP Neighbor Loss: Trouble
 MyCMS@hp.com
 To: Simms, Richard J

Event Identification and Details

Event Severity	Critical
Cleared Status	Not cleared
Event Source	ovwpc200
Associated System	ovwpc200
Associated System Status	Critical
Event Time	30-Apr-2004, 15:19:33 PDT
Description	An egpNeighborLoss trap signifies that an EGP neighbor for whom the sending protocol entity was an EGP peer has been marked down and the peer relationship no longer obtains.
Assignee	
Comments	

Trap Details

Variable Description	Value
Mib Information	
The associated MIB File Name for this trap is rfc1215.mib and the MIB identifier RFC1215-MIB	

Example of an email action





HP-UX EMS Hardware Monitors





EMS Hardware Monitors

Introduction

- Hardware Monitoring Overview
- Hardware Monitoring Process
- Benefits of Hardware Monitoring
- Products Supported by Hardware Monitoring
- Available EMS Hardware Monitors

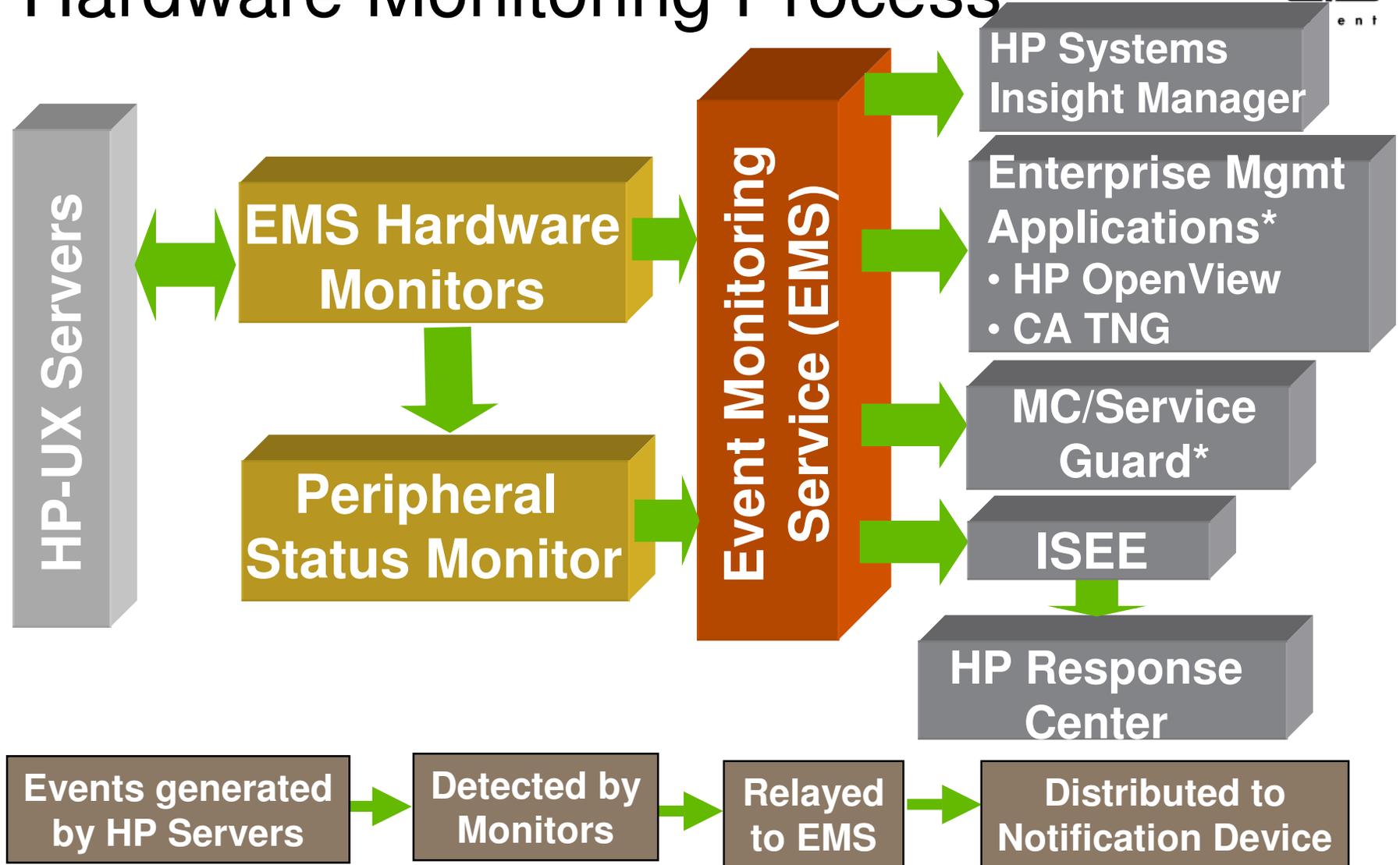


Hardware Monitoring Overview

- Hardware monitoring is part of the proactive fault management solution that gives you automatic fault detection, automatic fault isolation and automatic fault notification
- Included as base part of HP-UX (free) to provide a high level of protection against system hardware failures that could interrupt system operation or cause data loss
- Process of watching hardware resources for the occurrence of any unusual activity and reports the event to you using a variety of notification methods
 - Correctable error notifications are generated, even though the system may recover.
 - Excessive correctable errors generate different events with higher severity.
- Integrates easily with other management applications such as MC/ServiceGuard and HP OpenView, Instant Support Enterprise Ed.
 - Integrates with third party Enterprise System Management software such as CA Unicenter and IBM Tivoli (via SNMP traps or DMTF/WBEM indications)



Hardware Monitoring Process





Benefits of Hardware Monitoring

- Proactively monitors hardware resources
- Automated detection, isolation and notification of HW issues
- Easy to understand: problem description, probable cause, recommended action
- Reduce system downtime/time to repair
- Turnkey: Default monitoring configuration provided
- Allows various notification methods
- Integrate with Manageability applications & HP Support Services (Instant Support Enterprise Edition)



Products Supported by EMS Hardware Monitoring



- Server Platform
 - CPU, memory
 - chassis, interconnect, power, fans, etc.
- Disk Arrays
- Disk Products
- Tape Products
- High Availability Storage Systems
- Fibre Channel SCSI Multiplexers
- Fibre Channel Adapters
- Fibre Channel Arbitrated Loop Hubs
- Fibre Channel Switches
- Interface Cards



Available EMS HW Monitors

- For a list of available monitors:
 - [See the EMS Hardware Monitors Reference Section.](#)
 - Visit the EMS Hardware Monitors data sheets web page at:
http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_summ.htm



Getting Details About a HW Monitor

- Key information about each monitor is contained in the monitor data sheet, which provides:
 - What the monitor does and how it operates
 - When the monitor was released or underwent major changes
 - Firmware, OS versions, etc. required to properly operate
 - Resource path for the monitor
 - Whether it supports automatic PSM state control
 - Monitor name
 - Locations, names, and default values for all configuration files
- Basic information can be obtained from HP-UX man page
 - *man* <MONITOR_NAME>

EMS Hardware Monitors Data Sheets Web Page



EMS Hardware Monitors: Data Sheets - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History

Address http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_summ.htm Go Links

ems hardware monitors

HEWLETT PACKARD

EMS Hardware Monitors: Data Sheets

For a data sheet on an EMS hardware monitor, click on one of the following links:

- [Generic Monitor \(default settings for all monitors\)](#)
- [AutoRAID Disk Array \(ammmon\)](#)
- [Chassis Monitor \(dm_chassis\)](#)
- [CMC Monitor \(cmc_em\)](#)
- [Core Hardware \(dm_core_hw\)](#)
- [CPE Monitor \(cpe_em\)](#)
- [CPU \(formerly LPMC\) \(lpmc_em\)](#)
- [Disk \(disk_em\)](#)
- [Disk Array FC60 \(fc60mon\)](#)
- [Fast Wide SCSI Disk Array \(fw_disk_array\)](#)
- [Fibre Channel Adapters \(dm_FCMS_adapter\)](#)
- [Fibre Channel Adapter \(dm_TL_adapter\)](#)
- [Fibre Channel Adapter \(dm_ql_adapter\)](#)
- [Fibre Channel Arbitrated Loop Hub \(dm_fc_hub\)](#)
- [Fibre Channel SCSI Multiplexer \(dm_fc_scsi_mux\)](#)
- [Fibre Channel Switch \(dm_fc_sw\)](#)
- [High Availability Disk Array \(ha_disk_array\)](#)
- [High Availability Storage System \(See SES Enclosure Monitor\)](#)
- [HP Storage Works Modular SAN array 1000 / 30 Monitor \(msamon\)](#)
- [IPMI Forward Progress Log Monitor \(fpl_em\)](#)
- [iSCSI Subsystem Monitor \(dm_iscsi_adapter\)](#)
- [Itanium Core Hardware Monitor \(ia64_corehw\)](#)
- [Kernel Resource \(dremod\)](#)

Start Jab... Inb... cind... HP ... htt... EM... Op... Micr... Internet 2:34 PM

http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_summ.htm



EMS Hardware Monitor Data Sheet Example



Chassis Code Monitor (dm_chassis)

[Monitor Description](#) | [Configuration Files](#)

Monitor Description

The Chassis code monitor is designed to monitor all system chassis logs. It reads all the chassis logs from the file `/var/stm/logs/os/ccbootlog`. This log is created by the chassis code logging daemon (cclogd). Cclogd reads all logs from the Guardian Service Processor (GSP) and writes them to the ccbootlog file. An EMS event will be generated for each chassis log that has been defined to trigger an event.

The Chassis Code monitor polls the ccbootlog file periodically for new chassis logs. By default, the polling interval is one (1) minute. This can be changed in the dm_chassis.cfg file.

Cclogd is launched by diagmond (if the OnlineDiag product is installed on the system) automatically when the system is started. It then begins reading chassis logs from the GSP and writing them to ccbootlog. All chassis logs with alert level of 0 or greater are logged to ccbootlog.

Release History

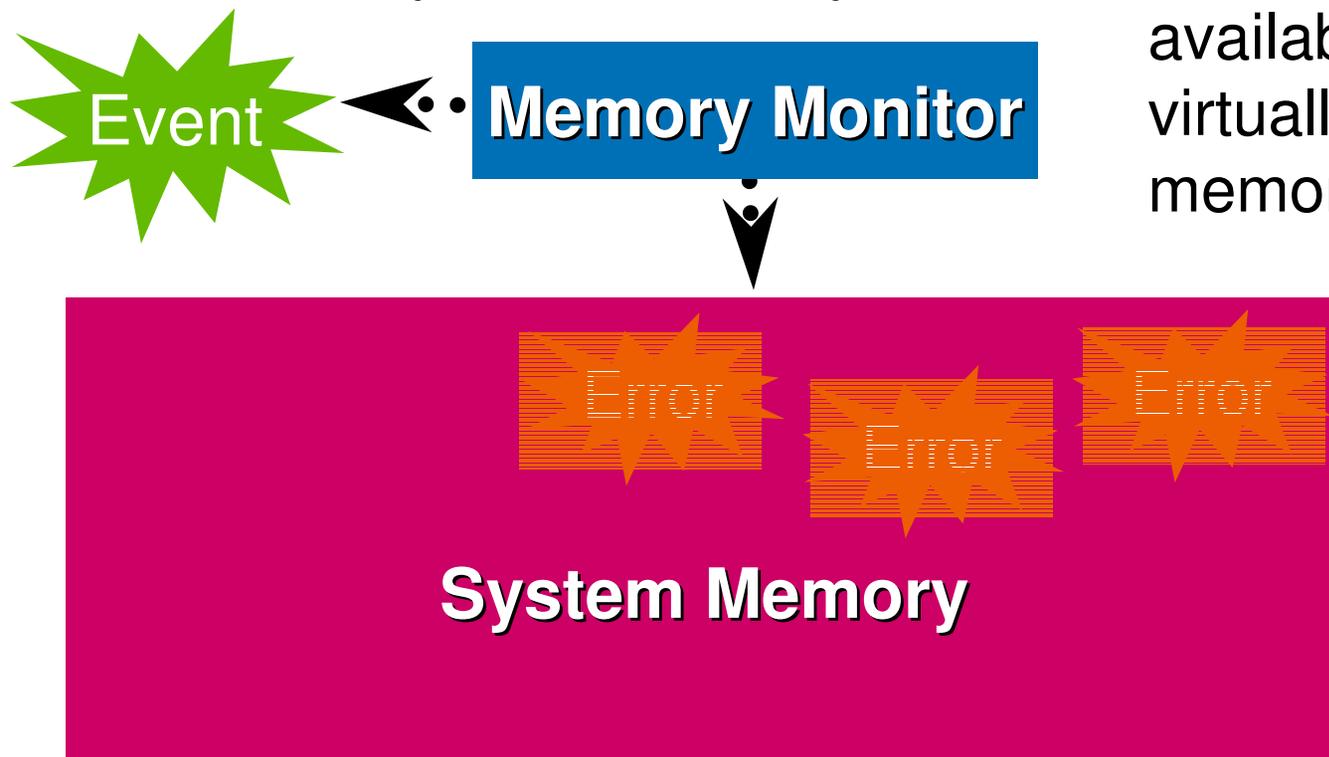
June 2001 Release (Support Plus Media) and HP-UX 11i: Multiple-view ("Predictive-enabled") support.
June 2001 Release: Initial release.

Example: Memory Monitor

Dynamic Memory Resilience

Monitors the rate of correctable errors in the system memory

Improves system availability with virtually no visible memory loss to you!



Example: CPU Monitor

Dynamic Processor Resilience

Monitors the rate of correctable errors in each processor's on-board cache

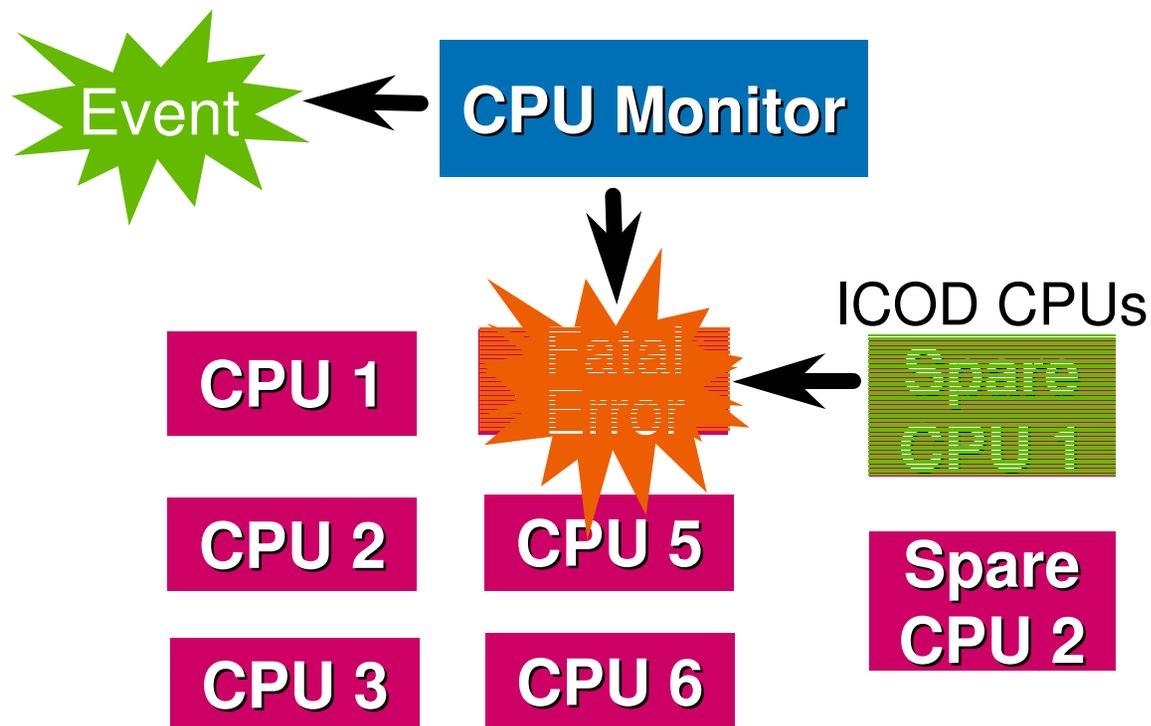
HP proven technology

Provides:

No system crash

No performance loss

No resource loss



completely transparent to the end-users!



EMS Hardware Monitors

Installation

- Installing EMS Hardware Monitors
- Product Structure

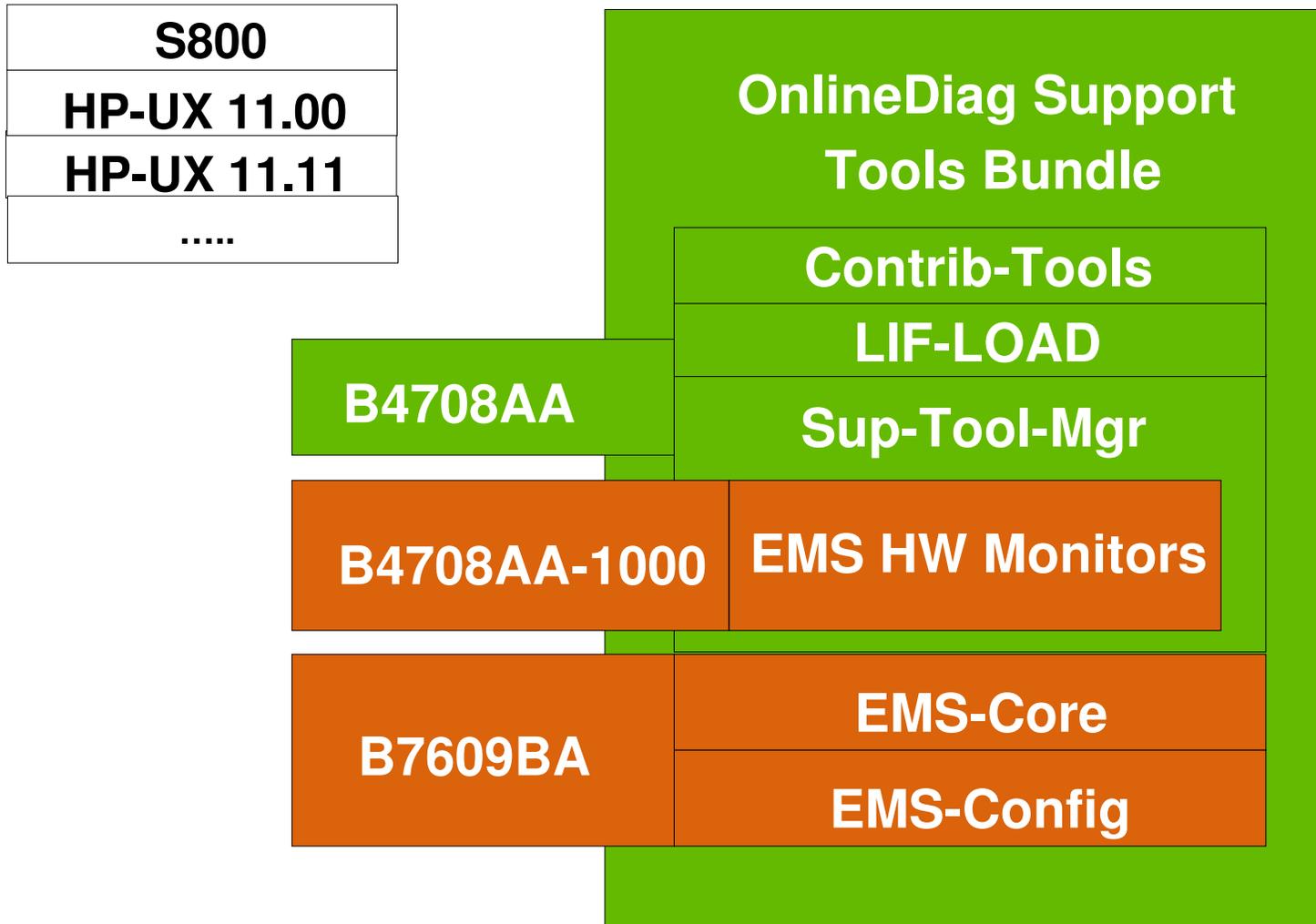


Installing EMS Hardware Monitors

- By default, the Diagnostics and Support Tools are **AUTOMATICALLY** installed when you install the HP-UX operating system
- New versions of the Diagnostics and Support Tools are released
 - Incorporate improvements to the interface, tools, or functionality
 - Support new functionality or new hardware
- A copy of the OnlineDiag Software Depot can be obtained from:
 - HP-UX Operating System software
 - Support Plus CD-ROM
 - HP Software Depot (<http://www.software.hp.com>)



EMS HW Product Structure





EMS Hardware Monitors

Usage and Operation

- Monitoring Request Overview
- Default HW Event Notification & Logging
- Anatomy of Notification Subscription
- Notification Methods
- Event Severity Levels
- Monitoring Request Manager



HW Monitoring Request Overview

- Used to implement your strategy for monitoring hardware resources
- Mechanism by which you manage how hardware event notification takes place
- Used to determine the following:
 - What events should be reported
 - What notification method should be used to report the events
- Monitoring Request Example:
 - Send events generated by all monitors with severity \geq SERIOUS to EMAIL sysad@hp.com



Default HW Event Notification & Logging

Severity Levels	Notification Methods
All (> = INFORMATION)	Text Log File: <i>/var/opt/resmon/log/event.log</i>
Major Warning, Serious, Critical	SYSLOG: <i>/var/adm/syslog/syslog.log</i>
Major Warning, Serious, Critical	EMAIL: <i>Root email address</i>

Anatomy of Notification Subscription



EMS Hardware Monitor

This setting identifies what Hardware you want to monitor. You can select multiple monitors for each request.

Severity Level:
Critical = 5
Serious = 4
Major Warning = 3
Minor Warning = 2
Information = 1

+

Operator
=
>
<
>=
<=
!-

Together, these settings identify what events you want reported. You can select one pair of settings for each request.

Notification Method

This setting identifies the Notification method to use when an event occurs. You can select only one notification method for each request.



Notification Methods

NOTIFICATION METHOD	NOTIFICATION TARGET
Write to syslog	<i>/var/adm/syslog/syslog.log</i>
Write to console	System console
Write to text log	User defined text log (default: <i>/var/opt/resmon/log/event.log</i>)
Send via eMail	User defined eMail address (default: eMail root)
Send via TCP/UDP	User written socket program – host & port specified
Send via SNMP	Any application configured to receive SNMP msgs
Send OPC format	Templates provided for integration with HP OpenView IT/O



Event Severity Levels

Critical	An event that will or has already caused data loss, system down time, or other loss of service. System operation will be impacted and normal use of the HW should not continue until the problem is corrected. Immediate action is required to correct the problem.
Serious	An event that may cause data loss, system down time, or other loss of service if left uncorrected. System operation and normal use of the HW may be impacted. The problem should be repaired as soon as possible.
Major Warning	An event that could escalate to a Serious condition if not corrected. System operation should not be impacted and normal use of the HW can continue. The problem should be repaired at a convenient time.
Minor Warning	An event that will not likely escalate to a more severe condition if left uncorrected. System operation will not be interrupted and normal use of the hardware can continue. The problem can be repaired at a convenient time.
Information	An event that occurs as part of the normal operation of the hardware. No action is required.



EMS HW Monitoring Request Manager

- A tool provided to you for creating and managing hardware monitoring requests
- To run the Monitoring Request Manager, you must be logged on as *root*
- Type */etc/opt/resmon/sbin/monconfig*

HW Monitoring Request Manager: Opening Screen



```
Terminal
Window Edit Options Help
=====
Event Monitoring Service
Monitoring Request Manager
=====

EVENT MONITORING IS CURRENTLY ENABLED.

=====
Monitoring Request Manager Main Menu
=====

Select:
(S)how monitoring requests configured via monconfig
(C)heck detailed monitoring status
(L)ist descriptions of available monitors
(A)dd a monitoring request
(D)elete a monitoring request
(M)odify an existing monitoring request
(E)nable Monitoring
(K)ill (disable) monitoring
(H)elp
(Q)uit
Enter selection: [s]
```

HW Monitoring Request Manager: Functions (1 of 3)



- Enable hardware event monitoring
 - Use the “(E)nable Monitoring” selection to enable hardware event monitoring if it is not already enabled
- List monitor description
 - Use the “(L)ist descriptions of available monitors” selection to list the descriptions of the available monitors and the hardware type each monitor supports
- View current monitoring requests
 - Use the “(S)how monitoring requests configured via monconfig” selection to view a list of all the current monitoring requests (both active and inactive)

HW Monitoring Request Manager: Functions (2 of 3)



- Add monitoring requests
 - Use the “(A)dd a monitoring request” selection to add a new monitoring request
- Modify monitoring requests
 - Use the “(M)odify an existing monitoring request” selection to alter one of the settings used in the monitoring request
- Check detailed monitoring status
 - Use the “(C)heck detailed monitoring status” selection to view a list of all the active monitoring requests

HW Monitoring Request Manager: Functions (3 of 3)



- Delete monitoring requests
 - Use the “(D)delete a monitoring request” selection to delete a monitoring request
 - **USE WITH CAUTION:** Only monitoring requests created exclusively for the hardware resource that has been removed from your system should be deleted
- Disable hardware event monitoring
 - Use the “(K)ill (disable) monitoring” selection to disable hardware event monitoring
 - **USE WITH EXTREME CAUTION:** While hardware event monitoring is disabled, your hardware resources are vulnerable to undetected failures



EMS Hardware Monitors

Detailed Picture of Hardware Monitoring

- Hardware Monitoring Components
- Event Detection Methods
- Peripheral Status Monitor (PSM)
- Monitor Configuration Files
- Event Messages



Hardware Monitoring Components

- Event Monitoring System (EMS):
 - The framework for event notification
- Hardware event monitoring components:
 - The EMS Hardware Monitors
 - The associated configuration files
 - The Monitoring Request Manager (monconfig)
- Support Tools Manager (STM):
 - The low-level handling components that are also used for recording and viewing system errors
 - The map used by the EMS Hardware Monitors to determine which devices they should be watching



Event Detection Methods

- Two event detection methods and a monitor may use one or both of the methods to detect events
- Polling Method
 - Checks the status of its hardware resources at regular intervals for any unusual condition reported by the hardware
 - Polling interval is selected to provide reasonable detection without impacting system performance
- Asynchronous Method
 - Allows a monitor to detect an event when it occurs to allow immediate notification and response to a critical situation

Peripheral Status Monitor

EMS Hardware Monitor

The HW event monitor assigns a severity level to each event and passes it to the PSM.



Peripheral Status Monitor (PSM)

The PSM converts the severity level of the event to a device status (UP or DOWN) and passes the status to EMS.



Event Monitoring Service (EMS)



EMS Notification

If a PSM monitoring request has been created for the resource (via SAM), the specified notification method is used to alert you.



To MC/ServiceGuard

If the resource is configured as an MC/ServiceGuard package dependency, EMS alerts MC/SG to the change in state. If the status of the resource has changed to DOWN, MC/SG will fail-over the package.



Monitor Configuration Files

- Several configuration files are used to control the operation of each EMS Hardware Monitor
 - Located in */var/stm/config/tools/monitor/* directory
- The default configuration settings for each monitor have been carefully selected to provide efficient monitoring for most systems, it is not recommended to alter these settings unless you fully understand the implications of doing so
- For more detailed information on Monitor Configuration Files, see the EMS Hardware Monitors Reference Section.



Retrieving Event Messages

- Email and text file notification methods deliver the entire content of the event message
- Other notification methods (such as console, syslog) alert you to the occurrence of an event
 - You will need to use the *resdata* utility in order to retrieve the entire content of the event message



Interpreting Event Messages

- Information contained in an event message:
 - Notification time
 - Value that triggered event
 - Event data from monitor
 - Description of error
 - Probable cause
 - Recommended action
 - Additional event and system data
 - Hardware resource information

EMS Hardware Monitors Event Descriptions



http://docs.hp.com/hpux/onlinedocs/diag/ems/eme_summ.htm

ems hardware monitors

EMS Hardware Monitors: Event Descriptions

For a complete listing of the events reported by an EMS hardware monitor, click on one of the following links:

- [AutoRAID Disk Array \(armmon\)](#)
- [Chassis Monitor \(dm_chassis\)](#)
- [CMC Monitor \(cmc_em\)](#)
- [Core Hardware \(dm_core_hw\)](#)
- [CPE Monitor \(cpe_em\)](#)
- [CPU Monitor \(formerly LPMC Monitor\) \(lpmc_em\)](#)
- [Disk \(disk_em\)](#)
- [Disk Array FC60 Hardware \(fc60mon\)](#)
- [Fast-Wide SCSI Disk Array \(fw_disk_array\)](#)
- [Fibre Channel Adapters \(dm_FCMS_adapter\)](#)
- [Fibre Channel Adapter \(dm_ql_adapter\)](#)
- [Fibre Channel Adapter \(dm_TL_adapter\)](#)
- [Fibre Channel Arbitrated Loop Hub \(dm_fc_hub\)](#)
- [Fibre Channel SCSI Multiplexer \(dm_fc_scsi_mux\)](#)
- [Fibre Channel Switch \(dm_fc_sw\)](#)
- [High-Availability Disk Array \(ha_disk_array\)](#)
- [High-Availability Storage System \(See SES Enclosure Monitor\)](#)
- [HP Storage Works Modular SAN array 1000 / 30 Monitor \(msamon\)](#)
- [IPMI Forward Progress Log Monitor \(fpl_em\)](#)
- [iSCSI Subsystem Monitor \(dm_iSCSI_adapter\)](#)
- [Itanium Core Hardware Monitor \(ia64_corehw\)](#)
- [Kernel Resource \(krmond\)](#)
- [LPMC Monitor \(Now CPU Monitor\) \(lpmc_em\)](#)

http://docs.hp.com/hpux/onlinedocs/diag/ems/eme_summ.htm



EMIS hardware monitors event Description



http://docs.hp.com/hpux/onlinedocs/diag/ems/cpe_em.htm

CPE Monitor (Events) in HP-UX 11.23 Release

Event 100101

- **Severity:** Major Warning
- **Event Summary:** A Corrected Platform Error was reported by PCI bus.
- **Event Class:** CPE
- **Problem Description:** A platform error was corrected by the firmware/hardware. The error occurred on the Host Bridge Adapter (Elroy). The PCI card connected to this adapter is at slot (x). More information is available in the Event Details section of this event.
- **Recommended Action :** No action is necessary.
- **Automated Recovery:** None.
- **Event Generation Threshold:** Every *threshold* occurrence of CPE on the **same** cell, sba and rope. Default threshold is 3 events in 24-hour period.
- **Fault Notifier Generation Threshold:** Not used.
- **Event Details:** The event details will different for each cause of the CPE.

Event 100102

- **Severity:** Major Warning
- **Event Summary:** A Corrected Platform Error was reported by PCI bus.
- **Event Class:** CPE
- **Problem Description:** A platform error was corrected by the firmware/hardware. The error occurred on the Host Bridge Adapter (Mercury). The PCI card connected to this adapter is at slot (x). More information is available in the Event Details section of this event.

Sample Event Message

Event #4500, memory_ia64 (1 of 3)



>----- Event Monitoring Service Event Notification -----<

Notification Time: Thu Apr 11 18:17:02 2003

hpdst351 sent Event Monitor notification information:

/system/events/memory_ia64/memory is >= 1.
Its current value is CRITICAL(5).

Event data from monitor:

Event Time.....: Thu Apr 11 18:17:01 2003

Severity.....: CRITICAL

Monitor.....: memory_ia64

Event #.....: 4500

System.....: hpdst351.cup.hp.com

Summary:

Memory Event Type : Single bit error (SBE) event. A correctable single bit error has been detected and logged.

Description of Error:

The memory component: Cab 1 Cell 0 DIMM 0A is experiencing an excessive rate of single bit errors on a single component.

Sample Event Message

Event #4500, memory_ia64 (2 of 3)



Probable Cause / Recommended Action:

Although the single bit errors are being corrected, it is strongly advisable to monitor the situation. This condition can indicate a potential problem. Contact your memory vendor support representative to check the memory boards.

Additional Event Data:

*System IP Address...: 15.16.130.249
Event Id.....: 0x3cb6358d00000002
Monitor Version.....: B.01.00
Event Class.....: Memory
Client Configuration File.....:
/var/stm/config/tools/monitor/default_memory_ia64.clcfg
Client Configuration File Version...: A.01.00
Qualification criteria met.
Number of events..: 320
Received within...: 7 day(s)
Associated OS error log entry id(s):
None*

Sample Event Message

Event #4500, memory_ia64 (3 of 3)



Additional System Data:

System Model Number.....: ia64 hp superdome server SD64A
EMS Version.....: A.04.00
STM Version.....: B.40.00
OS Version.....: B.11.23
Latest information on this event:

http://docs.hp.com/hpux/content/hardware/ems/memory_ia64.htm#4500

v-v-v-v-v-v-v-v-v-v D E T A I L S v-v-v-v-v-v-v-v-v-v

Component Data:

DIMM Location.....: Cab 1 Cell 0 DIMM 0A
Serial Number.....: A56E03466111
Part Number.....: A5198-60001

>----- End Event Monitoring Service Event Notification -----<



EMS Hardware Monitors

Tips, Tricks

- Push EMS Hardware Monitors Configuration to Multiple Systems
- Disable an EMS Hardware Monitor for a Single Instance
- Controlling Individual EMS Hardware Monitor Events
- Troubleshooting EMS Hardware Monitors

Push EMS Hardware Monitors Configuration to Multiple Systems



- Create all the necessary monitoring requests on one system via the Monitoring Request Manager
- Perform further edits, if any, in the other configuration files
- For each system where the new configuration is desired, copy all files in */var/stm/config/tools/monitor/* to the new system
- Execute */etc/opt/resmon/sbin/startcfg_client* to enable the new configuration on the new system

Disable an EMS HW Monitor for a Single Instance (1 of 2)



- To temporarily stop the reporting of the error message on a hardware instance only after you have acknowledged the event and until you get the hardware instance working again
- You can now use the */var/stm/data/tools/monitor/disabled_instances* text file to list all the instances that you wanted to disable
 - Fully qualified instances listed, one per line
 - Wildcards can be used in the instance names
- Instances listed in the disabled instance file will show no monitoring requests in monconfig
 - The monitor will not stop polling the device but any events will not be forwarded to the log files

Disable an EMS HW Monitor for a Single Instance (2 of 2)



- Perform the following:
 - Add/delete/modify instances in the disabled_instances file
 - Run the Monitoring Request Manager and execute (E)nable Monitoring
- **USE WITH CAUTION!**

Controlling Individual EMS Hardware Monitor Events



- For multiple-view monitors, you can control the way a monitor reports individual events by modifying the client configuration files (.clcfg) for the monitor
- To control the qualification criteria on when a monitor should generate an event to meet your monitoring and notification strategy
- For each event:
 - Severity
 - Enable flag
 - Suppression time
 - Threshold
- **USE WITH CAUTION!**

Troubleshooting EMS Hardware Monitors (1 of 2)



- To check if EMS Hardware Monitors are functioning:
 - Run the Monitoring Request Manager
 - The initial screen tells you whether hardware monitoring is enabled
 - List all monitoring requests that have been created by executing (S)how monitoring request configured via monconfig
 - List all currently active monitoring requests by executing (C)heck detailed monitoring status
- To verify if EMS Hardware Monitors are working:
 - For multiple-view monitors, use the *send_test_event* program to have the monitor generate a test event
 - `/etc/opt/resmon/sbin/send_test_event -v -a <monitor_name>`

Troubleshooting EMS Hardware Monitors (2 of 2)



- To check if EMS Hardware Monitors are properly functioning:
 - Check the *api.log* file for any error messages logged by the monitor
 - Used to indicate if there were any errors encountered when trying to perform its operation of monitoring the hardware resource
 - Located in the */etc/opt/resmon/log/* directory
 - Any error messages logged will identify the error, indicate the probable cause(s), and recommend action to the error encountered



EMS Troubleshooting Tips

Frequently asked questions can be found at the following website:

http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_faq.htm

This site offers answers to general questions, and solutions to some of the most common problems.

Example:

EMS Hardware Monitors

Frequently Asked Questions – General (1 of 2)



ems hardware monitors

Frequently Asked Questions

General questions:

- [How can I push my EMS Hardware Monitors configuration to multiple systems?](#)
- [Why should I install EMS hardware monitors?](#)
- [How do I know if EMS hardware monitors are functioning?](#)
- [Should I configure the EMS hardware monitors?](#)
- [What happens if I set the monitor polling interval to a number outside the minimum or maximum values?](#)
- [What are the default notification methods?](#)
- [I just added new devices to my systems. Will they be monitored by the EMS hardware monitors?](#)
- [Where can I get more information?](#)
- [What is the difference between EMS hardware monitors and EMS high availability \(HA\) monitors?](#)
- [Is the Event Monitoring Service \(EMS\) Y2K-compliant?](#)
- [What is the relationship between EMS hardware monitors and Predictive Support?](#)

EMS Hardware Monitors FAQs – General (2 of 2)



Frequently Asked Questions - Microsoft Internet Explorer provided by Hewlett-Packard

File Edit View Favorites Tools Help

Address http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_faqs.htm#howpush

How can I push my EMS Hardware Monitors configuration to multiple systems?

Do the configuration on one system via monconfig (creates appropriate `/var/stm/config/tools/monitor/*.sapcfg`)

Do additional manual edits, if any, in the other configuration files
(NOTE: The default values in these files work; it would only be if you had specific configurations you wanted to change and push out that you would need this step)

`/var/stm/config/tools/monitor/*.cfg, default_*.clcfg`

`/var/stm/config/tools/monitor/Global.cfg`

`/var/stm/data/tools/monitor/`

For each system where the new configuration is desired:
Copy all `/var/stm/config/tools/monitor/*.cfg, default_*.clcfg, *.sapcfg` to new system except any file with the name "predictive" in it.
Execute `/etc/opt/resmon/sbin/startcfg_client` to enable the new configuration.

NOTE: If OPC (OpenView) configuration is desired (using "opcmsg"), the initial configuration must be done on a system where OPC is installed.
Otherwise, the option of "opcmsg" will not be a destination in monconfig.

NOTE: If you want to keep a copy of the old configuration, either on the system where you do the configuration or the systems where you are going to do the push, you should make copies of the files before doing any changes.

Why should I install EMS hardware monitors?

The EMS hardware monitors allow you to monitor the operation of a wide variety of hardware products and be alerted immediately if any failure or other unusual event occurs.

Start | Internet | 9:47 AM

EMS Hardware Monitors Frequently Asked Questions – Problems (1 of 2)



Frequently Asked Questions - Microsoft Internet Explorer provided by Hewlett-Packard

Address http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_fa_q.htm

- [How can I disable a EMS HW monitor for a single instance?](#)

Problems

- [Difficulty installing EMS hardware monitors.](#)
- [One monitor is not working or is not working as expected.](#)
- [The hardware monitors log errors after monitoring is disabled.](#)
- ["Status" monitor requests are lost after EMS Hardware monitors are updated.](#)
- [Fibre Channel SCSI MUX Monitor \(dm_fc_scsi_mux\) does not monitor the FC SCSI MUX.](#)
- [FC-AL hub monitor not functioning.](#)
- [FC-AL hub monitor exits with a SIGABRT signal \(6\).](#)
- [Missing configuration file for Fibre-Channel Switch monitor.](#)
- [Compatibility Problem with ServiceGuard and LockManager](#)
- [Problem with FC60 Monitor in Sept 1999 Release](#)
- [Devices not supported in SCSI Tape Monitor](#)
- ["Monitor restart" messages are sometimes generated for devices on the system. Is there something wrong?](#)
- [Unhelpful event message from the SCSI Tape Devices Monitor \(dm_stape\): event # 599 \(Unrecognized TapeAlert event\)](#)

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EMS Hardware Monitors FAQs – Problems (2 of 2)



Frequently Asked Questions - Microsoft Internet Explorer provided by Hewlett-Packard

File Edit View Favorites Tools Help

Address http://docs.hp.com/hpux/online/docs/diag/ems/ems_faq.htm#cantinstall

Difficulty installing EMS hardware monitors.

- Does your system meet the requirements for EMS hardware monitors?
 - The operating system must be HP-UX 10.20 or HP-UX 11.x
 - Diagnostic/IPR Media 9902 or later
- Have you followed the directions in chapter 5 of the Diagnostic/IPR Media User's Guide available at [Diagnostics HOME](#)

One monitor is not working or is not working as expected.

Several of the monitors have special requirements, such as patches or certain versions of firmware. Check the current requirements for the monitor, as described in [EMS Hardware Monitor Supported Products](#), and verify that you have satisfied them.

Requirements for specific monitors are also listed in chapter 2 of the manual "EMS Hardware Monitors User's Guide".

The hardware monitors log errors after monitoring is disabled.

When monitoring is disabled using the monconfig program, each monitor will log an error in the /var/opt/resmon/log/api.log file similar to the following:

```
-----Start Event-----
User event occurred at Tue Sep  1 10:27:58 1998
Process ID: 10723 (/usr/sbin/stm/uut/bin/tools/.../disk_em)  Log Level: Error
Tool is exiting due to receipt of a SIGINT signal.
-----End Event-----
```

This is not an error as the monitors are stopped with a SIGINT signal during the disable process.

"Status" monitor requests are lost after EMS Hardware monitors are updated.

Start | Internet | 9:52 AM



EMS Hardware Monitors Reference Section Index



- Available Hardware Monitors
- Monitor Configuration Files
- Useful URLs

[Support Tools Manager](#)

Available EMS Hardware Monitors



(1 of 4)

EMS HW Monitor	Monitor Name	Responsible for monitoring
Chassis Code Monitor	dm_chassis	System chassis logs
Core Hardware Monitor	dm_core_hw* ia64_corehw^	Hardware in the System Processing Unit (SPU)
CPU Monitor	lpmc_em* cmc_em^	Processors
Memory Monitor	dm_memory* memory_ia64^	System memory
Kernel Resource Monitor	krmond	Variety of HP-UX resources
System Status Monitor	sysstat_em	System and Online Diagnostics up status

* = HP 9000 Servers

^ = HP Integrity Servers



Available EMS Hardware Monitors

(2 of 4)



EMS HW Monitor	Monitor Name	Responsible for monitoring
AutoRAID Disk Array Monitor	armmon	AutoRAID Disk Arrays
High-Availability Disk Array Monitor	ha_disk_array	High-Availability Disk Arrays
Fast/Wide SCSI Disk Array Monitor	fw_disk_array	Fast/Wide SCSI Disk Arrays
Disk Array FC60 Monitor	fc60mon	HP StorageWork E Disk Array FC60
Disk Monitor	disk_em	Fixed disk drives
SCSI Tape Devices Monitor	dm_stape	SCSI tape devices

Available EMS Hardware Monitors

(3 of 4)



EMS HW Monitor	Monitor Name	Responsible for monitoring
High-Availability Storage System Monitor	dm_ses_enclosure	SES Enclosure
Fibre Channel SCSI Multiplexer Monitor	dm_fc_scsi_mux	Fibre Channel SCSI Multiplexers
Fibre Channel Adapters Monitor	dm_FCMS_adapter	Fibre Channel Adapter Cards
A5158A Fibre Channel Adapter Monitor	dm_TL_adapter	A5158A, A6684A, A6685A, A6795A Fibre Channel Adapter Cards
Fibre Channel Arbitrated Loop Hub Monitor	dm_fc_hub	Fibre Channel Arbitrated Loop Hubs

Available EMS Hardware Monitors

(4 of 4)



EMS HW Monitor	Monitor Name	Responsible for monitoring
Fibre Channel Switch Monitor	dm_fc_sw	Fibre Channel Switches
SCSI Card Monitor	scsi123_em	SCSI1, SCSI2, and SCSI3 interface cards
Remote Monitor	RemoteMonitor	Devices via a remote connection to the device's management software
UPS Monitor	ups_mond	Uninterruptible Power System (UPS) devices connected to a system through RS-232 cables

For more information, please visit:

www.docs.hp.com/hpux/diag/index.html

Return





Monitor Configuration Files

(1 of 2)

- Several configuration files are used to control the operation of each EMS Hardware Monitor
 - Located in */var/stm/config/tools/monitor/* directory
- Global monitor configuration file (*Global.cfg*)
 - Contains settings defined to be used for all monitors, unless overridden by a monitor-specific file
- Monitor-specific configuration file (*<monitor_name>.cfg*)
 - Contains monitor-specific settings that will override comparable settings defined in the global configuration file
- Client configuration files (*<monitor_name>.clcfg*)
 - Only for multiple-view monitors
 - Contains the qualification criteria on when to generate event to allow each client to control when to receive events



Monitor Configuration Files

(2 of 2)



- Startup configuration file (*<monitor_name>.sapcfg*)
 - Contains the monitoring requests currently defined for the monitor
- Peripheral Status Monitor configuration file (*<monitor_name>.psmcfg*)
 - Controls the interaction between the Peripheral Status Monitor and the monitor
- Before editing any configuration file, create a backup copy of it
- The default configuration settings for each monitor have been carefully selected to provide efficient monitoring for most systems, it is not recommended to alter these settings unless you fully understand the implications of doing so



Useful URL Links (1 of 2)

- For an overview on the EMS Hardware Monitors, see the “EMS Hardware Monitors: Overview”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/emo_summ.htm
- For complete background information on the EMS Hardware Monitors, see the “EMS Hardware Monitors User’s Guide”:
 - <http://docs.hp.com/hpux/onlinedocs/2512/ems.pdf>
- For key information about each EMS Hardware Monitor, see “EMS Hardware Monitors: Data Sheets”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_summ.htm
- For a list of events reported by each EMS Hardware Monitor, see “EMS Hardware Monitors: Event Descriptions”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/eme_summ.htm



Useful URL Links (2 of 2)

- For a history of changes to the EMS Hardware Monitors, see the “EMS Hardware Monitors: Release Notes”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_rel.htm
- For information on both general and specific Frequently Asked Questions (FAQs) about the EMS Hardware Monitors, see the “EMS Hardware Monitors: FAQs”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_faq.htm
- For information on the requirements and the products supported by the EMS Hardware Monitors, see the “Requirements and Supported Products”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_prod.htm
- For information on supporting the Multiple-View feature in the EMS Hardware Monitors, see “Multiple-View Monitors”:
 - http://docs.hp.com/hpux/onlinedocs/diag/ems/ems_pred.htm



Questions?





HP-UX Online

Diagnostics





Support Tools Manager

Overview

- Support Tools Manager Overview
- Installation & Product Structure
- Tool Licensing
- Types of Support Tools Available
- Support Tools Usage Model
- Support Tools Manager Architecture
- Support Tools User Interface
- Support Tools Examples



Support Tools Manager Overview

- Provides a map of all hardware devices in the system, plus useful information about them
- Support Tools Manager (STM) consists of a extensive set of online diagnostics support tools
- To assist you in verifying and trouble-shooting your system's hardware problems



Support Tools Manager

Installation

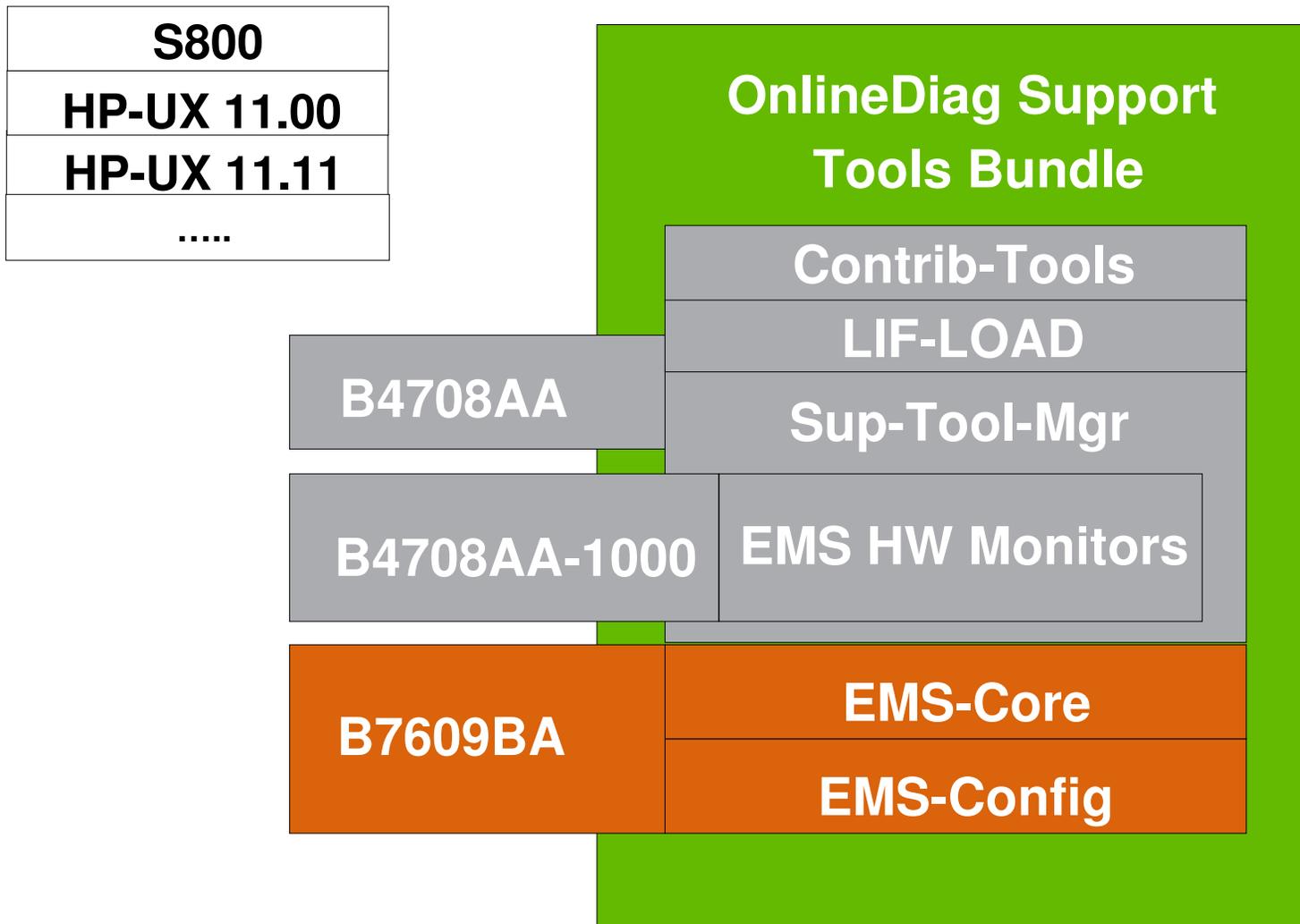
- Installing the Support Tools Manager
- Product Structure

Installing the Support Tools Manager



- By default, the Diagnostics and Support Tools are **AUTOMATICALLY** installed when you install the HP-UX operating system
- New versions of the Diagnostics and Support Tools are released
 - Incorporate improvements to the interface, tools, or functionality
 - Support new functionality or new hardware
- A copy of the OnlineDiag Software Depot can be obtained from:
 - Update Media (CD-ROM)
 - HP Software Depot (<http://www.software.hp.com>)

Product Structure

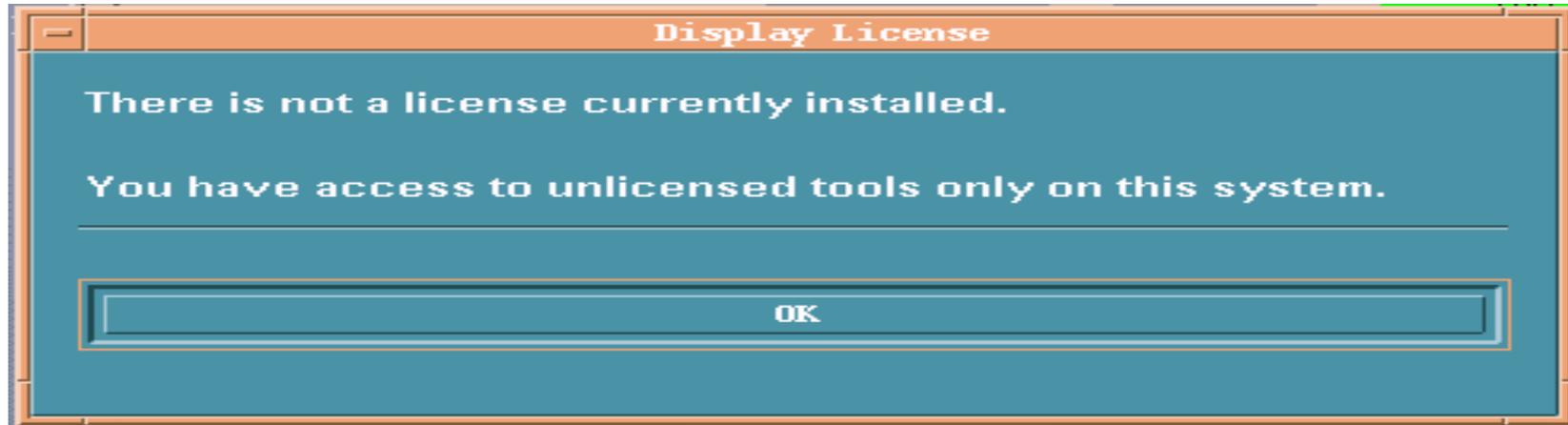




Tool Licensing

- 3 levels of licensing:
 - Free (no special license required)
 - Class License
 - HP Only
- Licenses are obtained by:
 - Purchasing a support contract
 - Temporary licenses provided by HP support

Display License (XSTM)





Tool Licensing

Tool Type	Licensing Required
Information Tools	No
Verifiers	No
Exercisers	No
Diagnostics	Yes
Expert Tools	Yes
Firmware Update Tools	Yes
Logtool Utility	No
Copyutil Utility	Yes
Modmutil Utility	No
MOutil Utility	No

Types of Support Tools Available

(1 of 4)



- Identification Modules
 - Identify devices on the system in order to provide a representation of all of the hardware
 - Only executed when the configuration map is built
- Information Tools
 - Provide quick access to the most useful information about hardware components
 - Typical information includes
 - Product identifier
 - Physical path
 - Firmware revisions
 - On-board log information

Types of Support Tools Available

(2 of 4)



- Utilities

- Logtool

- Access to system log files that contain recoverable errors detected by the system

- Copyutil

- Backup data from a SCSI disk device, and at a later time, to restore the data from the backup medium to the desired disk

- MOutil

- Retrieve information about the MO devices and run various diagnostic tests to verify that all MO devices are functional

- Modmutil

- Display modem information, reset the internal modem, run terminal commands, and test the internal modem

Types of Support Tools Available

(3 of 4)



- Verifiers
 - Provide a quick verification of the hardware to ensure it is properly connected and functional from an end-user perspective
 - Isolate the cause of failures
- Exercisers
 - Stress the hardware in order to facilitate the reproduction of intermittent problems
 - Isolate errors, if possible
- Diagnostics
 - Perform as complete a test as possible on the hardware to detect and isolate faulty hardware on the device
 - Isolate failures to FRU & component level

Types of Support Tools Available

(4 of 4)



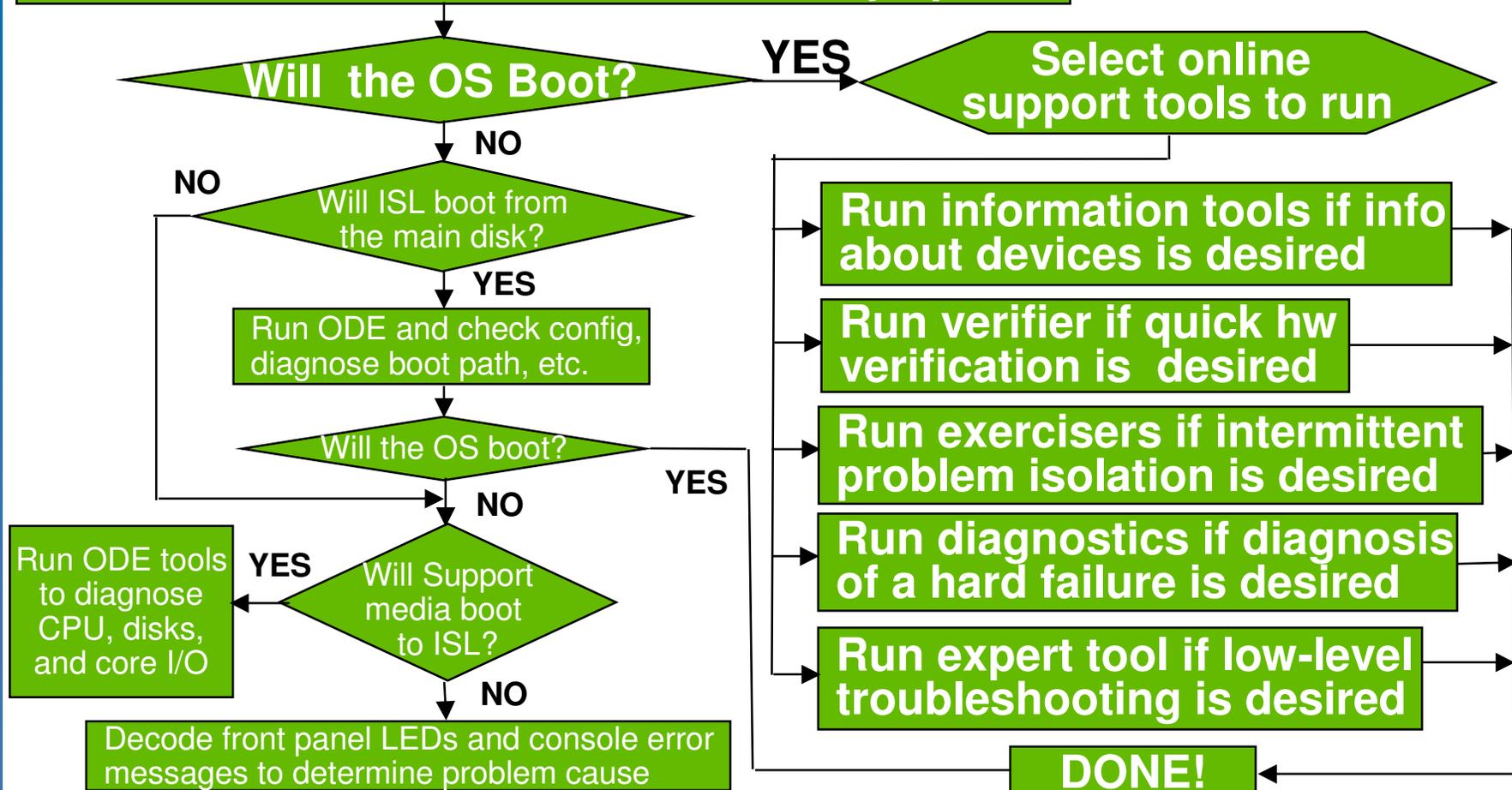
- Firmware Update Tools
 - Initiate the firmware update process for a selected device
 - Provide a common front-end for various device-specific firmware update processes
- Expert Tools
 - Device-specific sophisticated troubleshooting utilities for expert users
 - Functionality depends on the type of device and needs of users
 - Interactive tool

Support Tools Usage Model

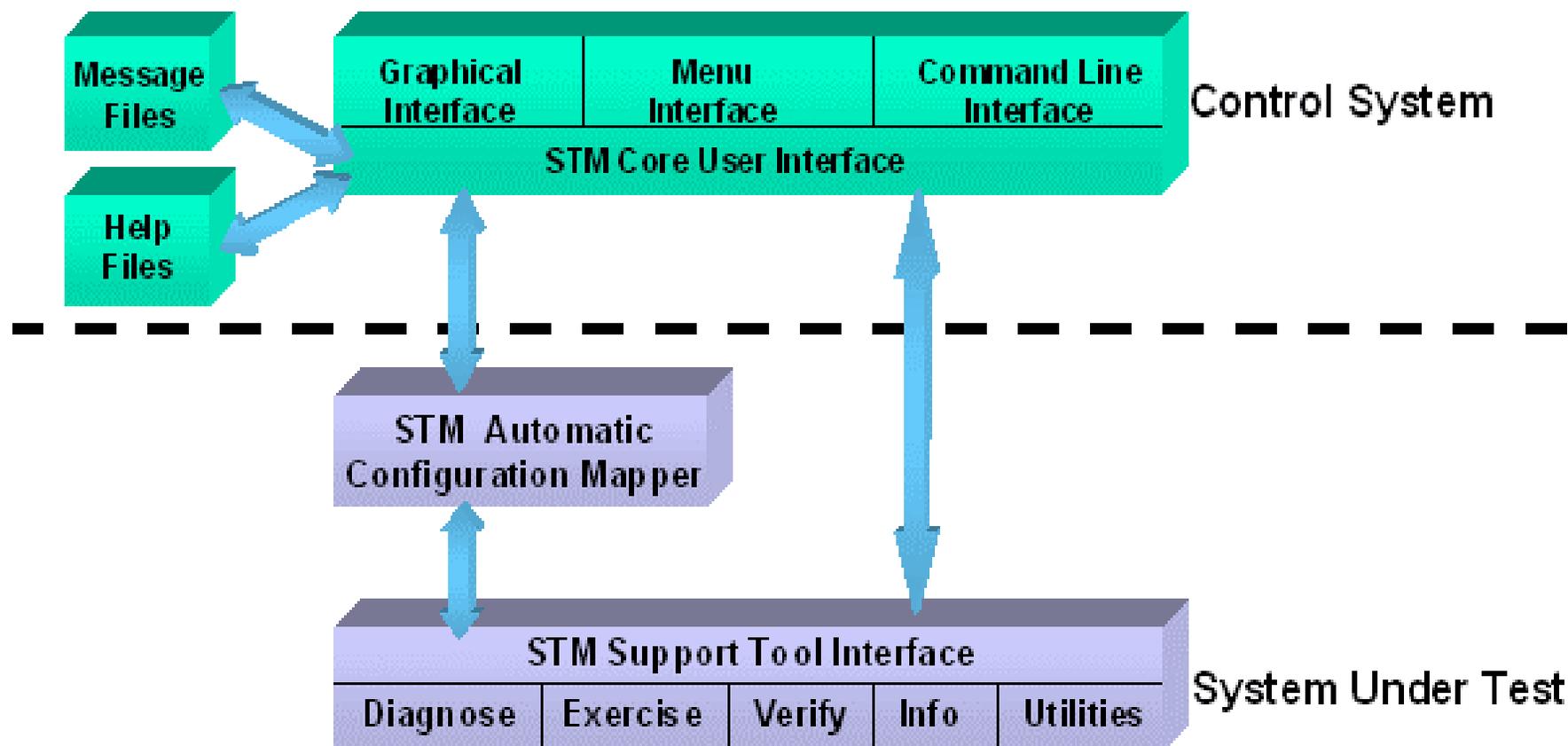


Proactive EMS Hardware Monitors

Record events, error conditions, and symptoms



Support Tools Manager Architecture





Running the Support Tools Manager

- Start the Support Tools Manager with the desired user interface
 - Graphical: */usr/sbin/xstm*
 - Menu: */usr/sbin/mstm*
 - Command Line: */usr/sbin/cstm*

User Interface

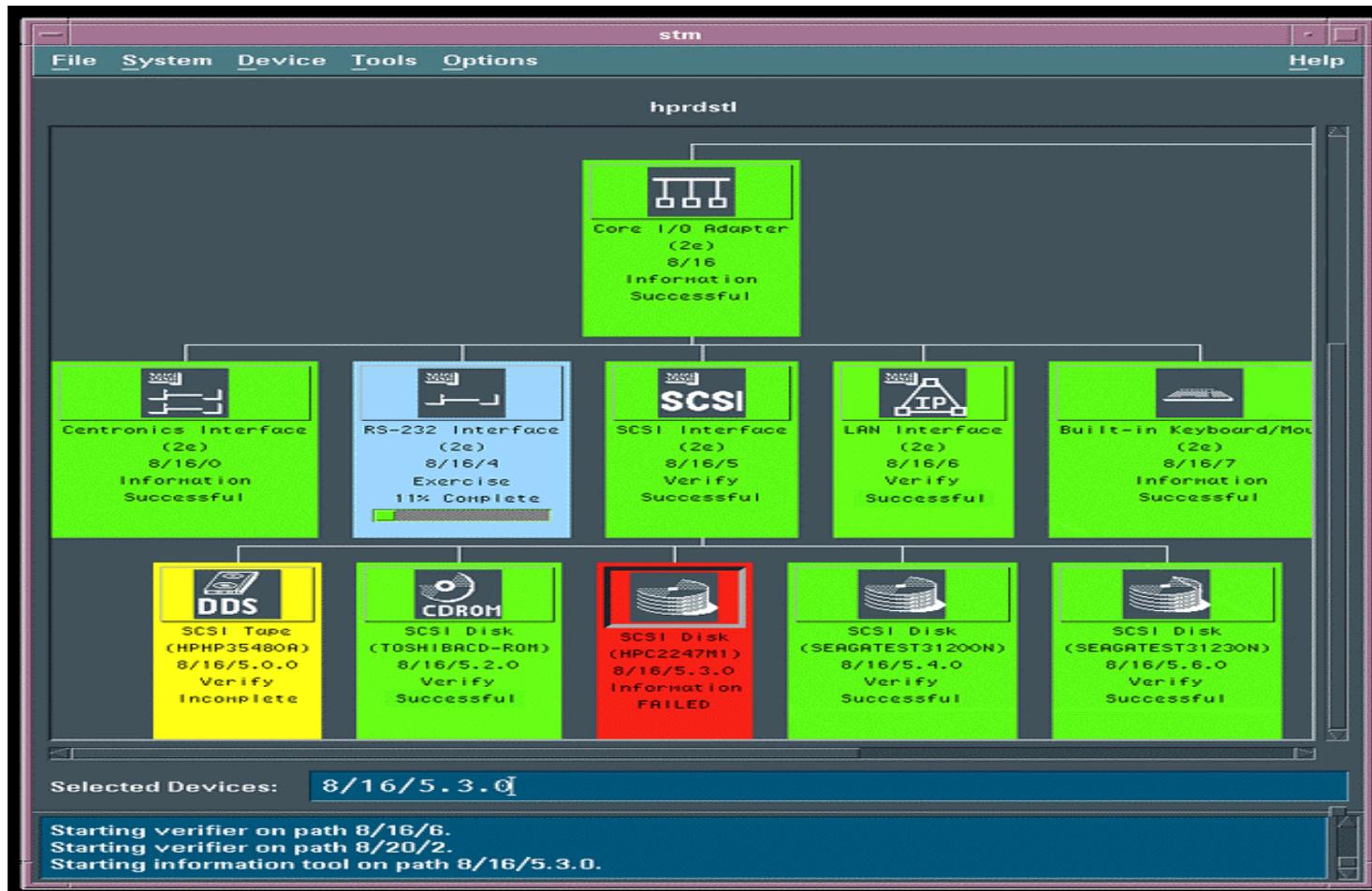
- Support Tools Manager can be accessed through any of three interfaces
- Graphical User Interface (XSTM)
 - X Window graphics terminals or workstations
- Menu User Interface (MSTM)
 - Non-graphics terminals
- Command Line User Interface (CSTM)
 - Non-graphics terminals
 - Useful for running scripts



System Map

- Upon startup, the Support Tools Manager provides you with a system map displaying all of the hardware within the system
- The system map is used to select the specific devices to test and to display a summary of the test results
- The system map also provides information on device type, device path, last active tool, and test status

Graphical User Interface (XSTM): System Map





Menu User Interface (MSTM): System Map

```
dot
/usr/sbin/stm/ui/bin/stm
File System Device Tools Options Help
-----
Current Device Status | up.hp.com
-----
Clear Tool Status | Last Active Tool Last Op
-----
Path | Status
=====
8 | Verify Successful
8.1 | Verify Successful
24 |
24.0.0 |
25 | \
32 | NIO Fast/Wide SCSI Interf Verify Aborted
32.5.0 | SCSI Disk (SEAGATEST31200 Verify Successful
32.6.0 | SCSI Disk (HPC2490WD) Verify Successful
36 | NIO Token Ring LAN Interf Verify Incomplete
40 | NIO LAN Interface (4)
48 | NIO Terminal Multiplexor
49 | NIO Terminal Multiplexor
56 | NIO LAN/Console Interface
62 | CPU (283)
63 | MEMORY (14)

help Alt Select/ Deselect Menubar on/off dot REFRESH EXIT
```

Command Line User Interface (CSTM): System Map



```
dot
```

Dev Num	Path	Product	Last Active Tool	Last Op Status
1	8	NIO HP-IB Interface (4)		
2	8.1	HP-IB Disk (HP1707)	Verify	Aborted
3	24	NIO SCSI Interface (4)	Verify	Aborted
4	24.0.0	SCSI Tape (HPHP35480A)		
5	25	Centronics Interface (4)		
6	32	NIO Fast/Wide SCSI Interf	Verify	Aborted
7	32.5.0	SCSI Disk (SEAGATESTI31200		
8	32.6.0	SCSI Disk (HPC2490WD)	Verify	Aborted
9	36	NIO Token Ring LAN Interf		
10	40	NIO LAN Interface (4)	Verify	Aborted
11	48	NIO Terminal Multiplexor	Verify	Successful
12	49	NIO Terminal Multiplexor	Verify	Successful
13	56	NIO LAN/Console Interface	Verify	Incomplete
14	62	CPU (283)		
15	63	MEMORY (14)		

```
cstm>
```



Support Tools Manager

Using Support Tools

- 3 Step Paradigm
- Getting Results Information



Using Support Tools

- Support tools can be run using a simple three-step paradigm:
 - Select the device(s) to test
 - Select a tool (test) to execute on the device(s)
 - Examine the results



Getting Results Information

(1 of 2)

- Result information from support tools can be obtained easily from the system map device status
 - **Successful** - The most recent operation succeeded
 - **Failed** – The most recent operation failed
 - **Warning** – Operation completed, warnings in log
 - **Incomplete** – The operation could not be completed
 - **Aborted** – The user has stopped the operation
 - **Abort Pending** – Abort waiting
 - **Query Pending** – Query waiting
 - **Hung** – The operation was hung
 - **Killed** – User has killed the operation
 - **Suspended** – Suspended by the user



Getting Results Information

(2 of 2)

- Tool Logs
 - Failure Log
 - Failure information identifying the likely causes for the device hardware failure, probable cause(s) and recommended action(s)
 - Use this log when a tool completes with a failure status
 - Test Activity Log
 - Tool activity information showing detailed tool status, test options, etc.
 - Use this log when a tool completes with anything other than a successful status
 - Information Tool Log
 - Information tool data (created by the information tools only) providing useful information on the selected device
 - Use this log after running an information tool



Example: Memory Information Tool

- Provide general information about the memory hardware subsystem
 - Information on amount of memory installed, configured, or deconfigured on the system
 - Inventory of all DIMM slots on the system
 - Summary of memory errors on the system
 - Summary of memory entries in the Page Deallocation Table
- Can be used for support, manageability, and memory upgrade activity



Memory Information Tool (XSTM)

The screenshot shows the XSTM Memory Information Tool interface. A log window titled "Information Tool Log for IPF_MEMORY on path memory" is open, displaying the following information:

```
-- Information Tool Log for IPF_MEMORY on path memory --
Log creation time: Thu Jul 24 22:39:02 2003
Hardware path: memory

Basic Memory Description
Module Type: MEMORY
Page Size: 4096 Bytes
Total Physical Memory: 9216 MB
Total Configured Memory: 9216 MB
Total Deconfigured Memory: 0 MB

Memory Board Inventory
```

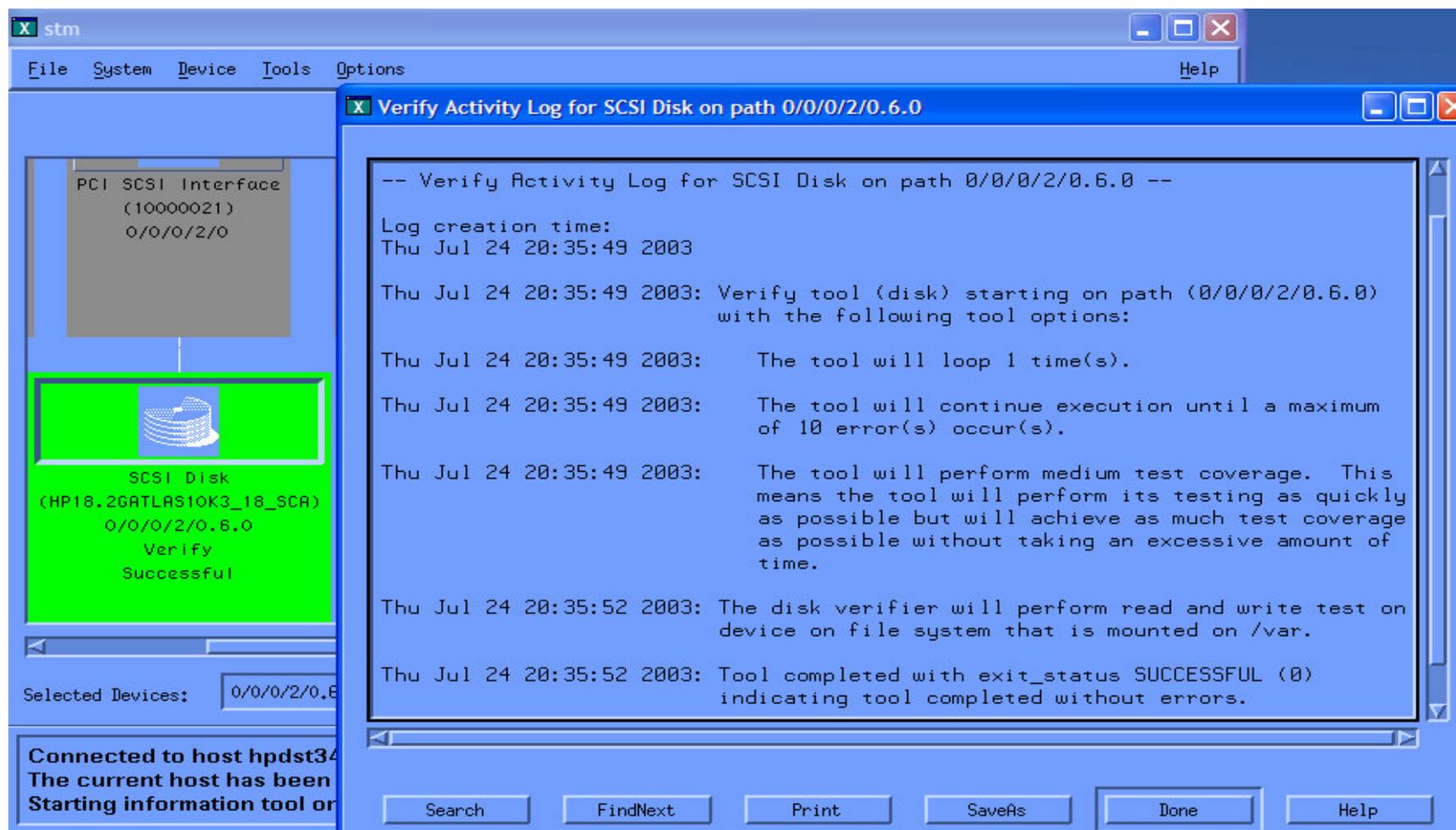
DIMM Location	Size(MB)	State	Serial Num	Part Num
Cab 0 Cell 0 DIMM 0A	512	Config	A56E03476756	A5198-60001
Cab 0 Cell 0 DIMM 0B	512	Config	A56E03884192	A6097-60001
Cab 0 Cell 0 DIMM 1A	512	Config	A56E03884500	A6097-60001
Cab 0 Cell 0 DIMM 1B	512	Config	A56E03884183	A6097-60001
Cab 0 Cell 0 DIMM 2A	2048	Config	A56E04110020	A6100-60001

The interface also includes a sidebar with a "RAM" icon and a "Selected Devices" section. At the bottom, there are buttons for Search, FindNext, Print, SaveAs, Done, and Help.

Example: Disk Verifier

- Provide quick verification on the selected disk device to determine if it is functional
- Write/Read tests will be performed when:
 - Disk is mounted and media is fixed
 - Media is removable and write enabled
- Read-Only tests will be performed when:
 - Media is removable and write protected
 - Full media verification required

Disk Verifier (XSTM)



The screenshot displays the XSTM Disk Verifier application window. The main window has a menu bar with 'File', 'System', 'Device', 'Tools', 'Options', and 'Help'. On the left, a tree view shows a 'PCI SCSI Interface (10000021)' at path '0/0/0/2/0'. Below it, a 'SCSI Disk (HP18.2GATLAS10K3_18_SCA)' at path '0/0/0/2/0.6.0' is highlighted in green, with the status 'Verify Successful'. A status bar at the bottom left indicates 'Connected to host hpdst34' and 'The current host has been Starting information tool on...'. A 'Verify Activity Log' window is open in the foreground, showing the following log entries:

```
-- Verify Activity Log for SCSI Disk on path 0/0/0/2/0.6.0 --  
Log creation time:  
Thu Jul 24 20:35:49 2003  
Thu Jul 24 20:35:49 2003: Verify tool (disk) starting on path (0/0/0/2/0.6.0)  
with the following tool options:  
Thu Jul 24 20:35:49 2003: The tool will loop 1 time(s).  
Thu Jul 24 20:35:49 2003: The tool will continue execution until a maximum  
of 10 error(s) occur(s).  
Thu Jul 24 20:35:49 2003: The tool will perform medium test coverage. This  
means the tool will perform its testing as quickly as possible but will achieve as  
much test coverage as possible without taking an excessive amount of  
time.  
Thu Jul 24 20:35:52 2003: The disk verifier will perform read and write test on  
device on file system that is mounted on /var.  
Thu Jul 24 20:35:52 2003: Tool completed with exit_status SUCCESSFUL (0)  
indicating tool completed without errors.
```

At the bottom of the log window, there are buttons for 'Search', 'FindNext', 'Print', 'SaveAs', 'Done', and 'Help'.

Example: Fibre Channel Interface Diagnostic Tool



- Perform a complete set of test to check the functionality of the selected Fibre Channel Interface card
- An external loop back test is performed to identify any FRU level problems
- Both internal and external loop back tests are performed to identify any component level problems

Fibre Channel Interface Diagnostic Tool (XSTM)



The screenshot displays the XSTM diagnostic tool interface. The main window is titled "stm" and contains a menu bar with "File", "System", "Device", "Tools", "Options", and "Help". A secondary window titled "Diagnose Activity Log for Fibre Channel Interface on path 8/0/1/0" is open, showing a log of diagnostic activities. The log text is as follows:

```
-- Diagnose Activity Log for Fibre Channel Interface on path 8/0/1/0 --  
Log creation time:  
Thu Jul 24 20:39:12 2003  
Thu Jul 24 20:39:12 2003: Diagnose tool (fc_adaptor) starting on path (8/0/1/0)  
with the following tool options:  
Thu Jul 24 20:39:12 2003: The tool will loop 1 time(s).  
Thu Jul 24 20:39:12 2003: The tool will isolate failures to the Field  
Replaceable Unit (FRU).  
Thu Jul 24 20:39:12 2003: The tool will perform medium test coverage. This  
means the tool will perform its testing as quickly as possible but will achieve as  
much test coverage as possible without taking an excessive amount of  
time.  
Thu Jul 24 20:40:00 2003: Tool completed with exit_status SUCCESSFUL (0)  
indicating tool completed without errors.
```

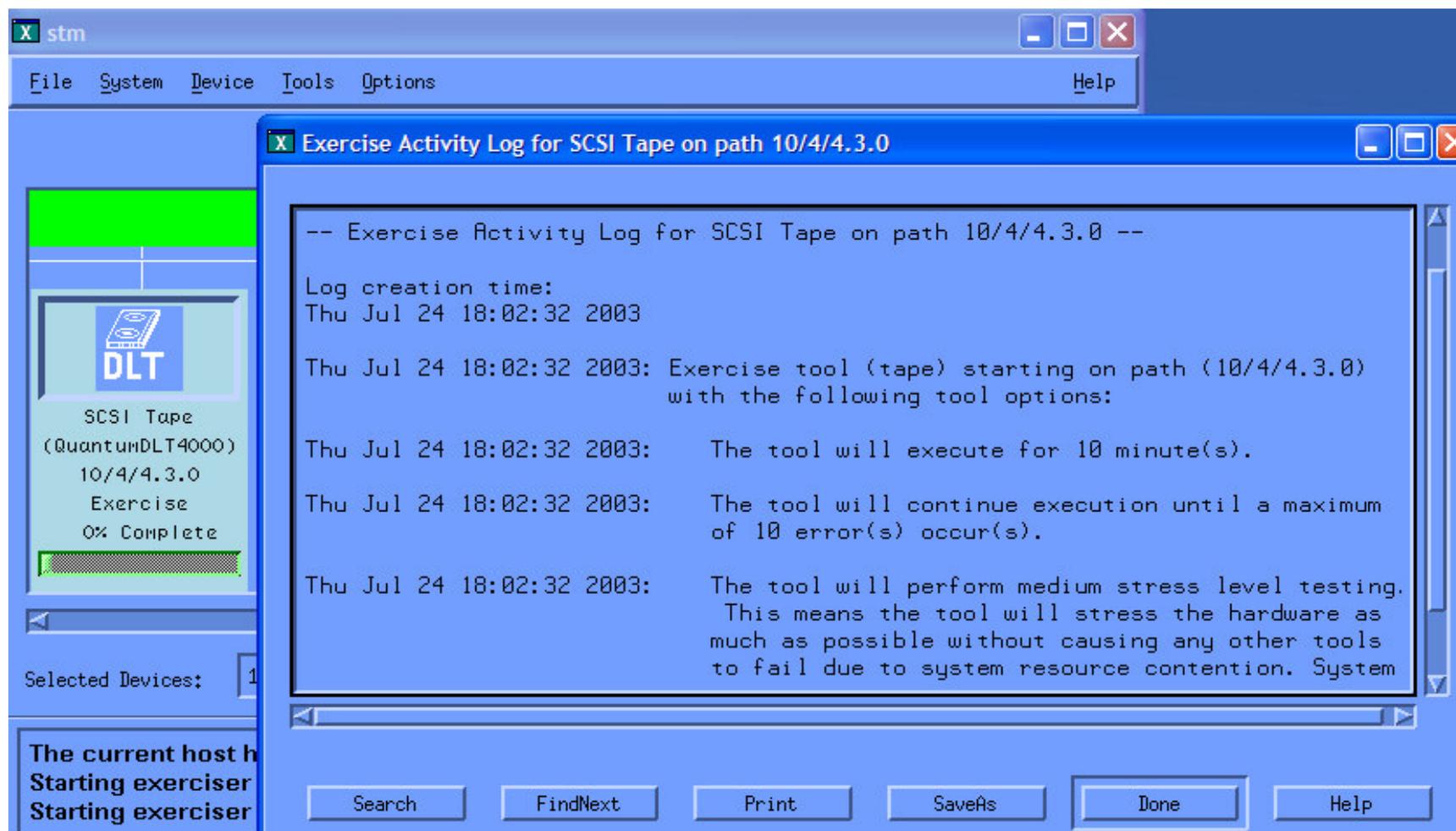
In the background, a device tree shows a highlighted node for "Fibre Channel Interface (HP3740A_Tachyon) 8/0/1/0" with a status of "Diagnose Successful". Below the tree, the "Selected Devices:" field contains "8/0/1/0". At the bottom of the interface, there are buttons for "Search", "FindNext", "Print", "SaveAs", "Done", and "Help".



Example: Tape Exerciser

- Stress the selected tape device in order to assist in finding intermittent problems
- Stress the tape channel by performing continuous read and write operations to the selected device

Tape Exerciser (XSTM)



stm

File System Device Tools Options Help

Exercise Activity Log for SCSI Tape on path 10/4/4.3.0

-- Exercise Activity Log for SCSI Tape on path 10/4/4.3.0 --

Log creation time:
Thu Jul 24 18:02:32 2003

Thu Jul 24 18:02:32 2003: Exercise tool (tape) starting on path (10/4/4.3.0) with the following tool options:

Thu Jul 24 18:02:32 2003: The tool will execute for 10 minute(s).

Thu Jul 24 18:02:32 2003: The tool will continue execution until a maximum of 10 error(s) occur(s).

Thu Jul 24 18:02:32 2003: The tool will perform medium stress level testing. This means the tool will stress the hardware as much as possible without causing any other tools to fail due to system resource contention. System

DLT

SCSI Tape
(Quantum DLT4000)
10/4/4.3.0
Exercise
0% Complete

Selected Devices: 1

The current host h
Starting exerciser
Starting exerciser

Search FindNext Print SaveAs Done Help



Support Tools Manager

Troubleshooting

- STM Online Help
- STM FAQ
- System Map Building
- Unknown Device in System Map
- Hung State
- Cannot Start Tool
- Disabled Commands/Menus
- Useful URL Links



STM Online Help

STM offers extensive online help for each user interface. Online help can be found at the following website:

http://docs.hp.com/hpux/onlinedocs/diag/stm/sth_summ.htm

Example:

STM Online Help



support tools manager

STM Online Help

Each version of STM has extensive online help.

If STM is running, you access online help from the Help pulldown menu (xstm and mstm) or by executing a help command (cstm).

General Help (Platform, User Interface)

The help systems for the platform as a whole have been translated to the Web pages are available from this page:

- [xstm Online Help](#) (graphical interface)
- [mstm Online Help](#) (menu interface)
- [cstm Online Help](#) (command-line interface)

Interactive Tools

Each interactive tool (expert tool, firmware update tool, and utility) has its own online help system. Many (but not all) of these help systems have been translated to the Web and are available from this page:

- [Expert tools](#).
- [Firmware update tools](#).
- [Utilities](#)

STM Online Help - xstm



support tools manager

xstm Online Help

- [On Tasks](#)
 - [Preparation](#)
 - [Running Tools](#)
 - [Getting Information](#)
 - [Troubleshooting STM](#)
- [On Item](#)
 - [Main Window](#)
 - [System Map](#)
- [On Menus and Commands](#)
 - [File](#)
 - [System](#)
 - [Device](#)
 - [Tools](#)
 - [Options](#)
 - [Help](#)

The Support Tools Manager (STM) allows you to run various support tools on one or more PA-RISC/LA64 machines. Support tools include information modules, verifiers, diagnostics, exercisers, firmware update tools, expert tools, and utilities.

When you run xstm, the program displays a system map (device map) showing the devices configured on the Unit Under Test or UUT (for more information, see [User Interface \(UI\) and Unit Under Test \(UUT\)](#)).

Select devices by clicking on one or more icons representing the device(s). Using pulldown and popup [menus](#), choose the desired operations to

STM Online Help – xstm (cont.)



Running Tools

- [Get Information on a Device](#)
- [Run a Go/No Go Test on Selected Hardware \(Verify\)](#)
- [Isolate Hardware Errors to the FRU Level \(Diagnose\)](#)
- [Locate Intermittent Hardware Problems \(Exercise\)](#)
- [Update the Firmware on a Specific Device](#)
- [Run Non-Device-Specific Support Tools \(Utilities\)](#)

Getting Information

- [Interpret the Icons on the System Map](#)
- [View Device Status](#)
- [View the Failure Log](#)
- [View a Tool's Activity Log](#)
- [View STM Logs \(All Available\)](#)

Troubleshooting STM

- [Troubleshooting the Support Tools Manager](#)

[Top](#)

Select a Remote System(s) to Test

By default, the test system (Unit Under Test) is the same as the computer system running the user interface.

To select a remote system for testing, do the following:

1. Move your cursor to the [System Menu](#) pulldown in the Main Menu Bar.

STM Online Help – xstm (cont.)



Get Information on a Device

To get information about a hardware device(s), run an information tool:

1. [Select Device\(s\)](#).
2. If desired, [Select/Set Test Options](#).
3. Go to the [Tools Menu](#) pulldown in the Main Menu Bar.
4. Move the cursor to the [Information](#) cascade menu.
5. Select [Run](#).

The device icon will change color, depending upon the state of the device, and the result of the tool's operation:

- o A green icon means the operation was successful.
- o A red icon indicates a device failure. [View the Failure Log](#).
- o A yellow icon indicates a problem running the tool. [View a Tool's Activity Log](#).

For more detailed information, [View Device Status](#).

6. To see the device information obtained by the information tool, [View the Information Log](#).

[Top](#)

Run a Go/No Go Test on Selected Hardware (Verify)



STM Troubleshooting Tips

Frequently asked questions can be found at the following website:

http://docs.hp.com/hpux/onlinedocs/diag/stm/stm_faq.htm

This site groups questions into different categories:

- General STM
- Installing STM
- Starting STM
- Tools and Scripts.

STM FAQs - General



Frequently Asked Questions (FAQs) - Microsoft Internet Explorer provided by Hewlett-Packard

File Edit View Favorites Tools Help

Address http://docs.hp.com/hpux/online/docs/diag/stm/stm_faq.htm#howdoiuse

Google Search Web Search Site 339 blocked Options My Search More

How do I use STM?

- Select a device** or devices
xstm: click on device icon
mstm: move cursor over device and hit the SPACE key.
- Run a tool**
Tools --> <tool> --> Run
- View logs** after the tool completes
Tools --> <tool> --> <log>

Which tool should I use?

- Information** creates an information log containing firmware revisions and other useful device data. (After the tool is done, it is necessary to display the information log)
Tools --> Information
- Verifier** makes sure that a device is accessible by the operating system
Tools --> Verify
- Exerciser** stresses the device.

Start | Internet | 10:50 AM

STM Frequently Asked Questions



Frequently Asked Questions (FAQs)

Contents: [General STM](#) / [Installing STM](#) / [Starting STM](#) / [Device map/Available tools](#) / [General tool](#) / [Specific tool](#) / [CSTM scripts](#)

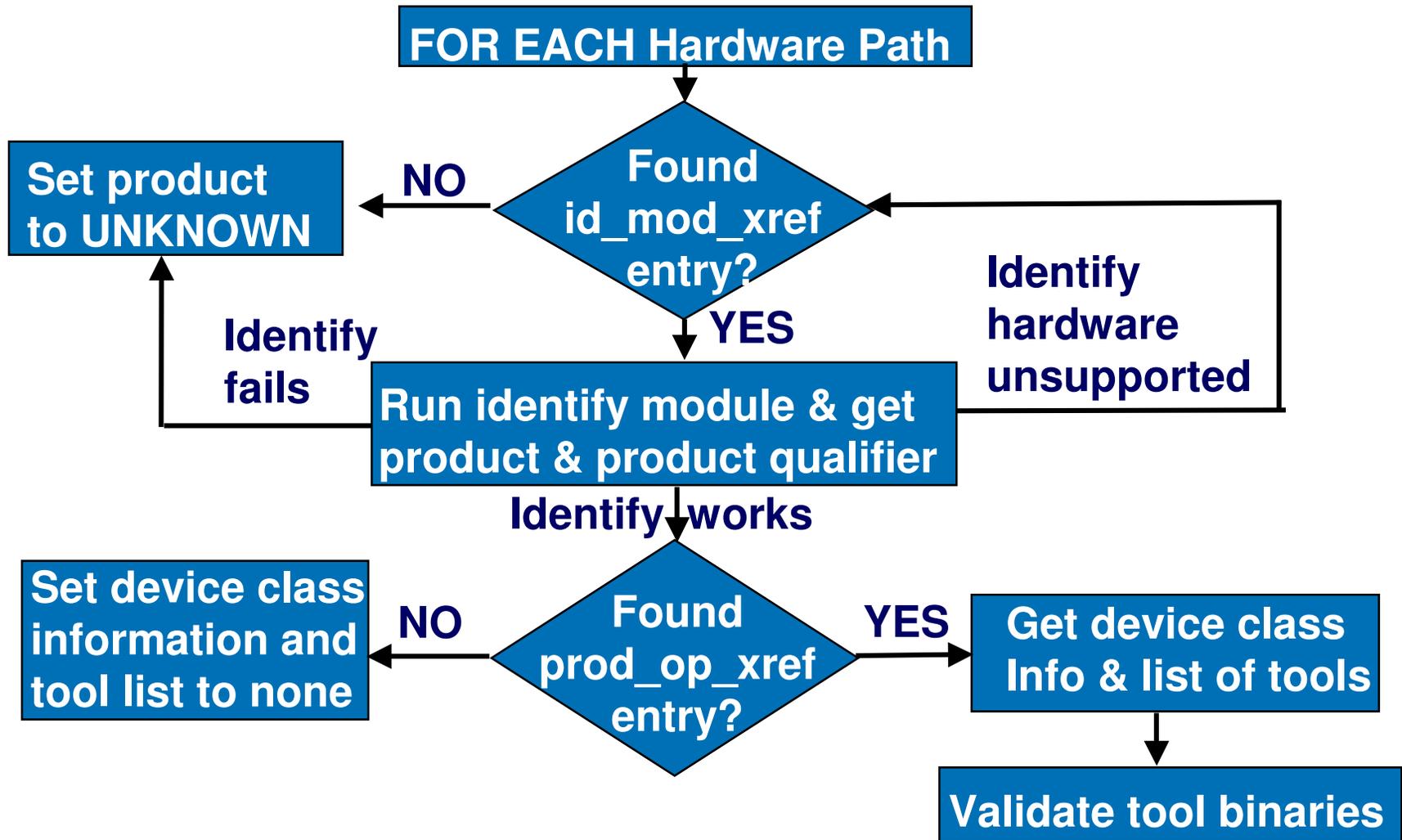
General STM questions:

- [How do I start STM?](#)
- [How do I use STM?](#)
- [Which tool should I use?](#)
- [Which log should I look at?](#)
- [On which releases is SYSDIAG removed from the system?](#)
- [Is STM available on HP-UX 9.x and MPE systems?](#)
- [How do I view my OS and memory logs? \(What replaced sysdiag's logtool?\)](#)
- [User Interface \(UI\) reports an incorrect password, or that diagmond won't start, or psconfig says that diagmond is not running, why?](#)
- [What are the daemons involved in STM?](#)
- [How can I get information about features and problems in the different releases of the diagnostics?](#)
- [The diagnostic daemon diagmond seems to be using a high percentage of the CPU \(IPR 9909\).](#)
- [When I try to get online help in xstm on HP-UX 11.20, nothing happens.](#)
- [On blade servers, the support tools don't tell the chassis and slot number of the server blade under test.](#)

Installing STM and patches:

- [I was unable to load a recent patch; what is the problem? \(PHSS 14401 - PHSS 14406\)](#)
- [When I try to install an STM patch, why does the checkinstall script fail? \(PHSS 17884 - PHSS 17888\)](#)
- [Should I swremove an older STM before installing a new one?](#)

System Map Building





Unknown Device in System Map

- A device in the Support Tools Manager system map is “Unknown” (or its icon is blank)
- Reasons for an “Unknown” device:
 - The device was turned off or removed from the system but a reboot has not yet been performed
 - The driver associated with the device is not recognized by the Support Tools Manager
 - The device file for the device was not created by the system at boot time
- In any case, display the *scan_hw_log* file for the cause of the “Unknown” device and what to do about it
- Check if your version of the Support Tools Manager needs to be updated

Tool in “HUNG” State

- Tool going into and out of “HUNG” state
 - Indicate the tool cannot get enough time to execute properly
 - System is very busy
 - User is attempting to start many tools simultaneously
 - User has multiple tools already running
 - System has limited resources
 - Update the diagmond configuration to wait longer
- Tool stays in “HUNG” state
 - Determine if there is an error by examining the tool activity log file for errors
 - Examine the last time the tool logged compared to the current time

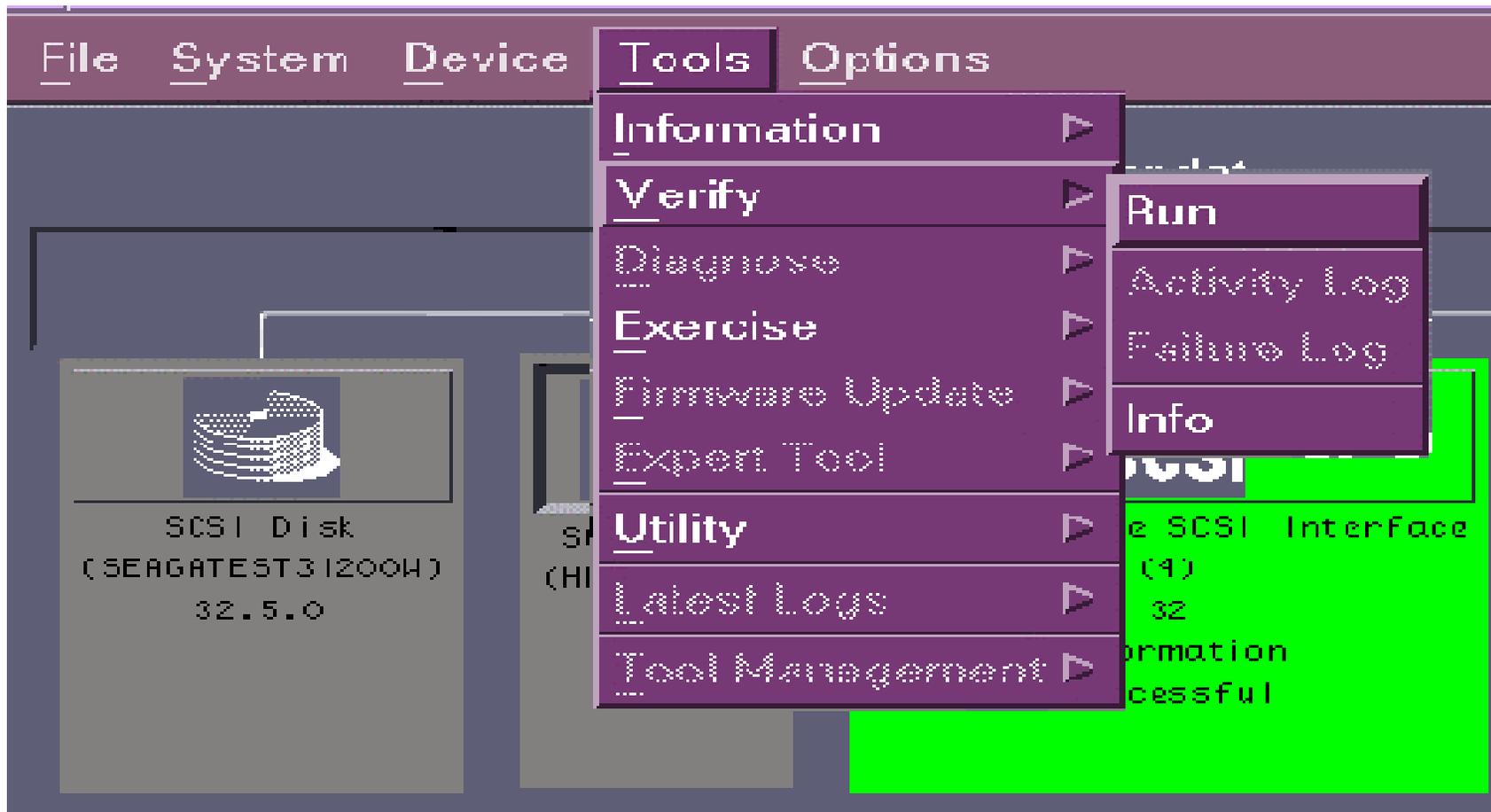
Cannot Start Tools

- Tools fail to start from user interface
 - UI occasionally fails to start tools if STM cannot get enough time to initiate the tool properly
 - View the UI activity log file for a message indicating a timeout when trying to start the tool
- Tools start but exit with an incomplete status
 - Tools occasionally cannot perform initiation tasks if they cannot get enough time to initiate properly
 - View the UI activity log file for a message indicating a timeout when trying to perform initialization
- In both cases, retry at a later time when system is not so busy

Disabled Commands/Menus

- There may be commands/menus in the Support Tools Manager that are disabled
- Disabled commands/menus:
 - In XSTM, will appear dimmed compared to other elements in the pull-down menu
 - In MSTM, will appear “grayed-out” on the menu keys
 - In CSTM, will display an error message when the command is typed at the prompt
- **Reasons for disabled commands/menus:**
 - Command requires a device to be selected
 - Command requires a license to be installed
 - Command runs on a tool that is not available

XSTM: Disabled Commands/Menus





Useful URL Links

(1 of 2)

- For an overview on the Support Tools Manager, see the “STM Overview”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/sto_summ.htm
- For a tutorial on the Support Tools Manager, see the “STM Tutorial”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/stt_summ.htm
- For online help on the Support Tools Manager, see the “STM Online Help”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/sth_summ.htm
- For a quick reference guide on the Support Tools Manager, see the “STM Quick Reference Guide”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/stm_qik.htm



Useful URL Links

(2 of 2)

- For a history of changes to the Support Tools Manager, see the “STM Release Notes”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/stm_rel.htm
- For information on both general and specific Frequently Asked Questions (FAQs) about the Support Tools Manager, see the “STM FAQs”:
 - http://docs.hp.com/hpux/onlinedocs/diag/stm/stm_faq.htm
- For information on the installation of the Support Tools Manager, see the “Diagnostics: Installation”:
 - <http://docs.hp.com/hpux/diag/index.html#Diagnostics:%20Installation>
- For information on individual tools (Logtool), see the “Online Diagnostics: Individual Tools”:
 - <http://docs.hp.com/hpux/diag/index.html#Online%20Diagnostics:%20Individual%20Tools>



Support Tools Manager

Commands

- System Commands
- Device Commands
- Tools Commands
- File Commands
- Options Commands
- Help Commands
- UI Files
- System Files



System Commands

(1 of 3)

- Connect to systems
 - Connect UI to the selected system
- Select current system
 - Makes selected system current with its system map displayed
- Disconnect system
 - Disconnect UI from selected system
- Save map
 - Save a text version of the map for the current system to a file
- Print map
 - Print a text version of the map for the current system





System Commands

(2 of 3)

- Remap system
 - Rescan the hardware on the current system and rebuild the system map
- Map log
 - Format and display *scan_hw_log* for current system
- Display license
 - Display the license level active for the current system
- Install license
 - Install a normal license on the current system
- Install HP-Only license
 - Install an HP-Only license for the session in which the UI is active

System Commands

(3 of 3)



- Deinstall license
- De-install all licenses on the current system
- System activity log
 - Format and display the system *activity_log* for the current system
- Map (CSTM only)
 - Display the map for the current system



Device Commands

(1 of 2)

- Current device status
 - Format and display information about the current state of the selected device
- Clear tool status
 - Reset tool history for the currently selected devices to indicate no tools have been executed
- Select all/unselect all
 - Select or unselect all devices on the current system
- Select class/unselect class
 - Select/unselect device on current system based on device type and device qualifier selected

Device Commands

(2 of 2)



- Filter set/clear
 - Limit the number of items which are displayed in the system map at a given time



Tools Commands

(1 of 2)

- Run
 - Run the tool on the selected devices
 - * Information
 - * Verify
 - * Exercise
 - * Utility
 - * Diagnose
 - * Expert Tool
 - * Firmware Update
- Information log (Information Tools only)
 - Format and display the information retrieved by the information tool
- Activity log
 - Format and display the *activity_log* created by the tool



Tools Commands

(2 of 2)

- Failure log
 - Format and display the *failure_log* created by the tool
- Info
 - Format and display basic information about the tool
- Abort/suspend/resume/kill tool
 - Abort/suspend/resume/kill the tool executing on the currently selected device
- Abort/kill utility
 - User interface will ask the user which active utility to abort
- Display “Query Pending”
 - Display the query from the currently selected tool



File Commands

(1 of 3)

- Save/restore UI configuration on
 - Map options
 - General options
 - Tool options
- Start/stop recording command file
 - Create command files by recording actions
- Run command file
 - Read in and execute a sequence of commands from file
- Start/stop recording output
 - Save UI output to a file

File Commands

(2 of 3)

- UI activity log
 - Format and display *ui_activity_log*
- Reread UUT configuration
 - Have *diagmond* reread *diagmond.cfg* file
- Update tool information
 - Reread *prod_op_xref* entry for selected devices
- Local startup/shutdown
 - Startup and shutdown local *diagmond*
- Local map log
 - Format and display *scan_hw_log* on local system
 - Does not require UI to be connected or *diagmond* to be up



File Commands

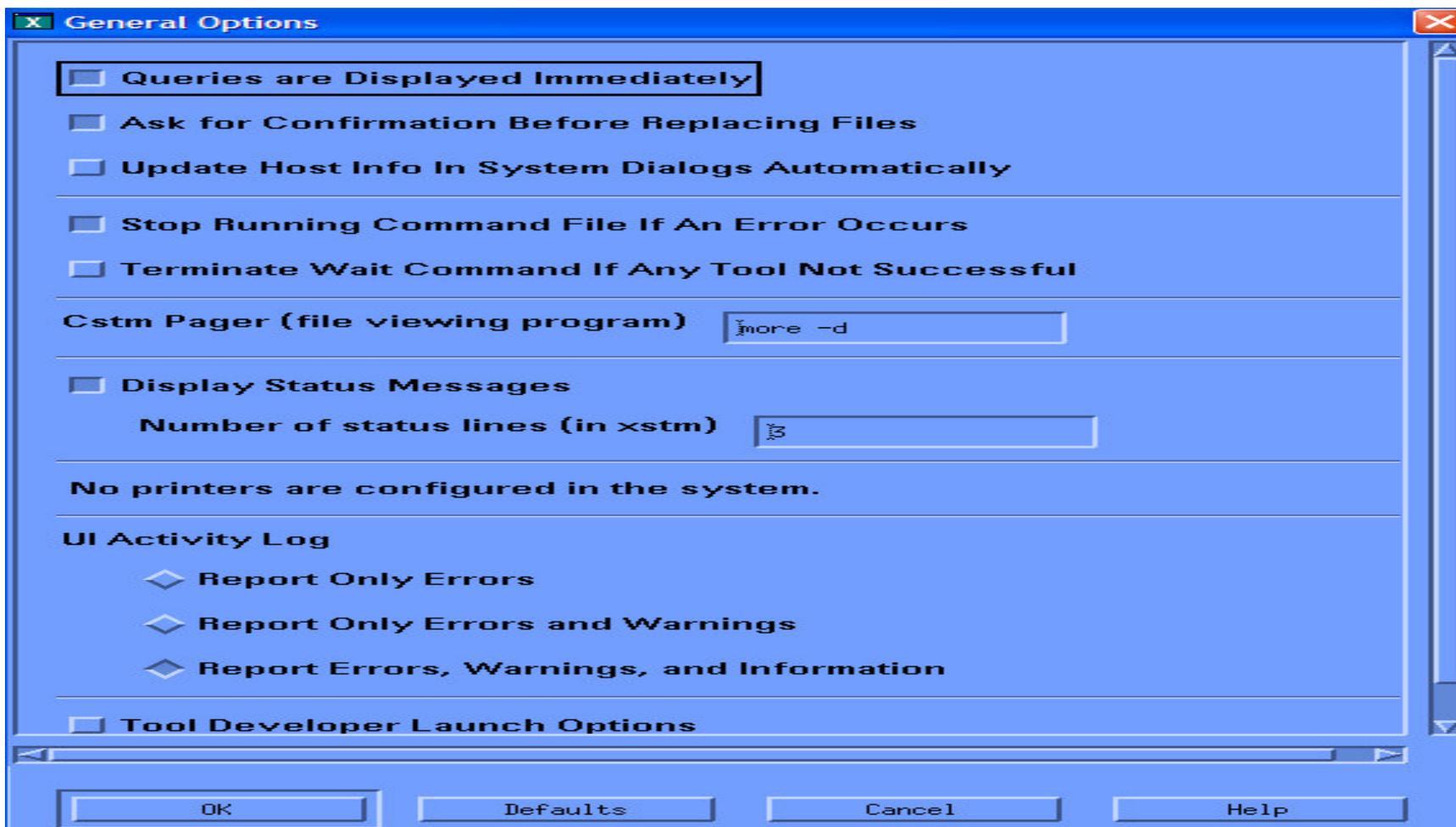
(3 of 3)

- Local system activity log
 - Format and display system *activity_log* on local system
 - Does not require UI to be connected or *diagmond* to be up
- Local syslog
 - Display log created by *syslogd*
- Escape to OS (MSTM and CSTM only)
 - Suspend user interface and bring up Shell prompt
- Exit

Options Commands

- General options
 - Options for controlling UI operation
- Map options
 - Options for controlling fields displayed in system map
- Tool options
 - Set of options for each tool type

General Options



General Options

Queries are Displayed Immediately

Ask for Confirmation Before Replacing Files

Update Host Info In System Dialogs Automatically

Stop Running Command File If An Error Occurs

Terminate Wait Command If Any Tool Not Successful

Cstm Pager (file viewing program)

Display Status Messages

Number of status lines (in xstm)

No printers are configured in the system.

UI Activity Log

Report Only Errors

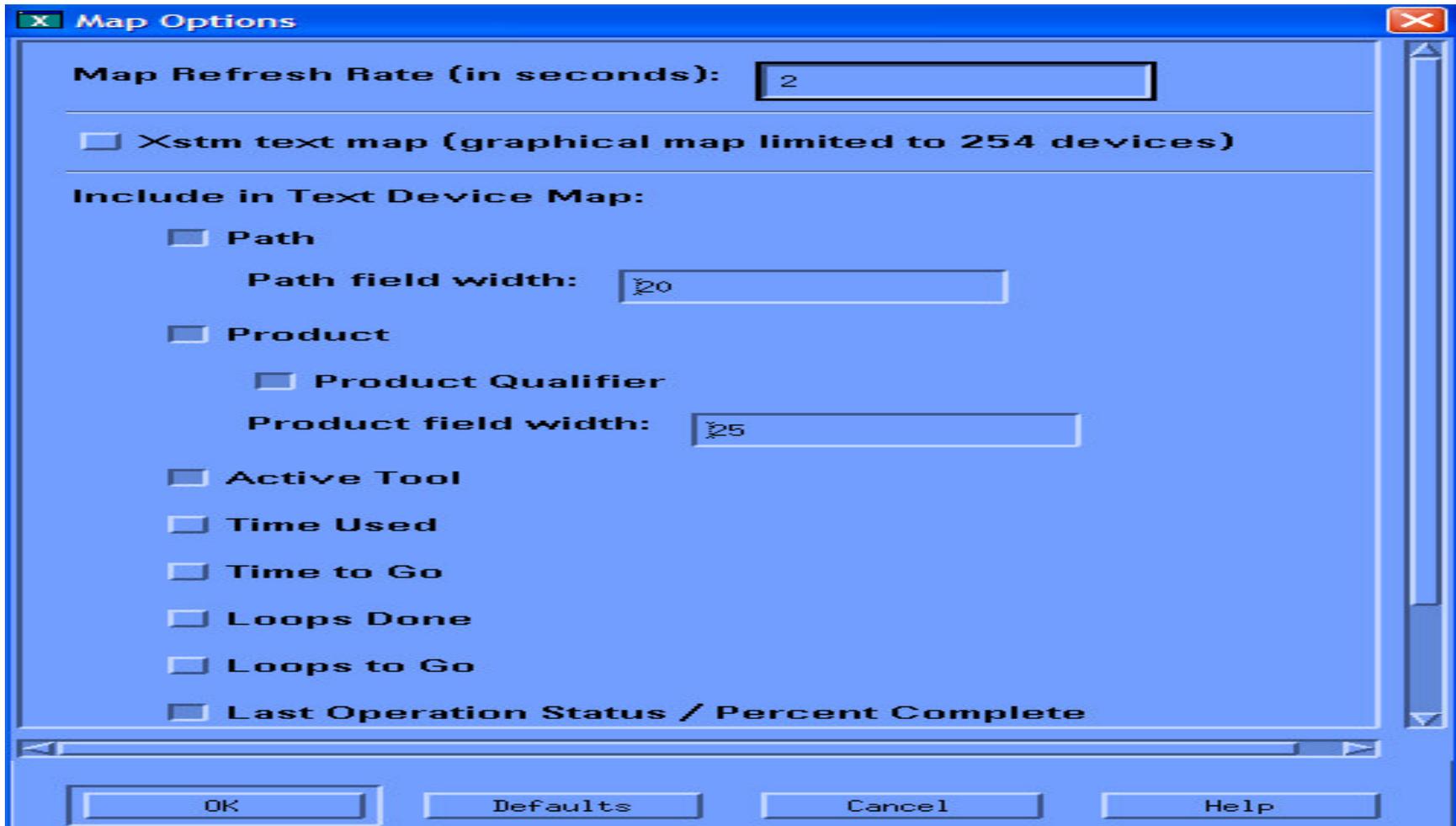
Report Only Errors and Warnings

Report Errors, Warnings, and Information

Tool Developer Launch Options

OK Defaults Cancel Help

Map Options (XSTM)

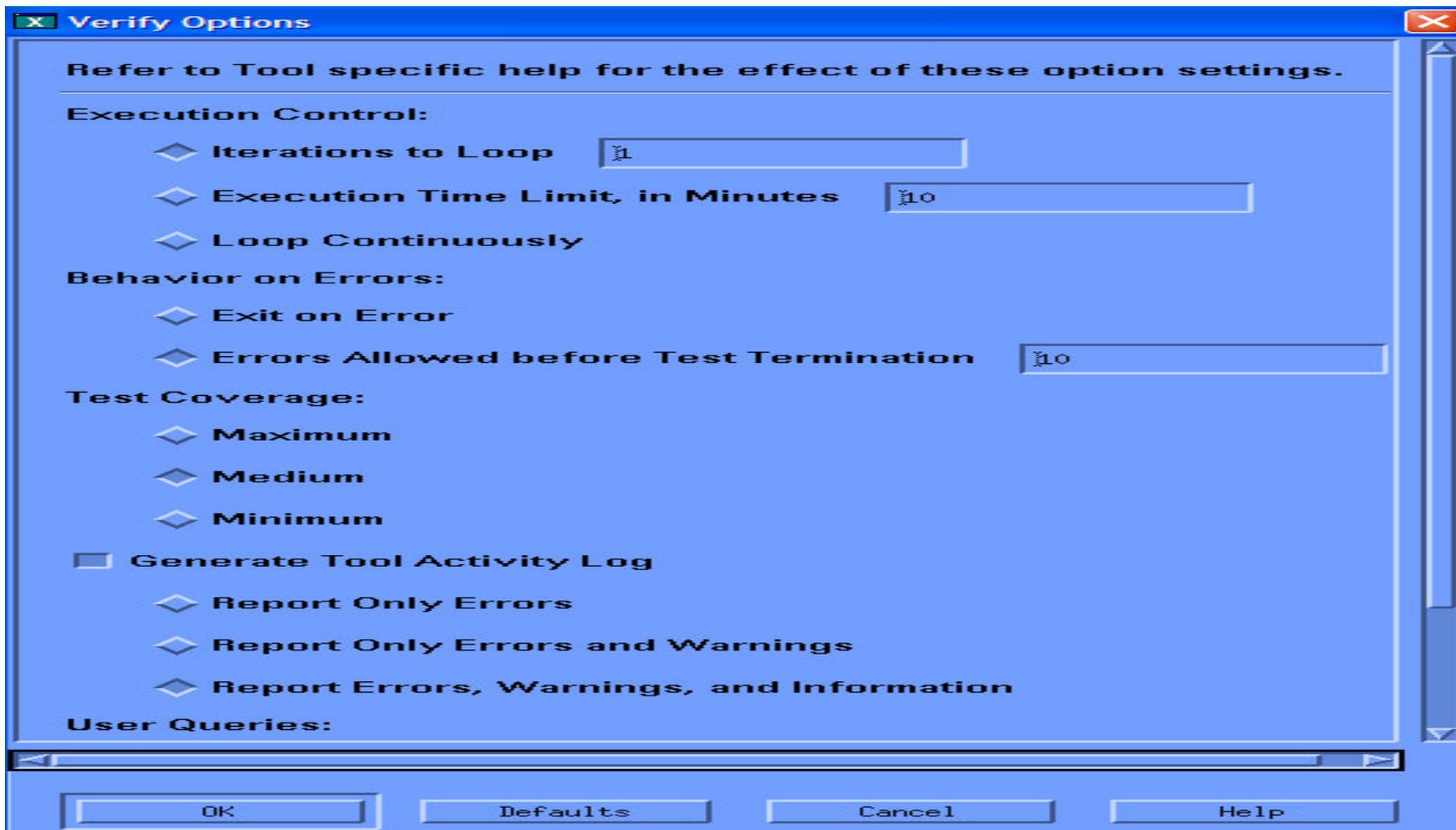


The screenshot shows a Windows-style dialog box titled "Map Options". It has a blue title bar with a close button (X) in the top right corner. The main area is light blue and contains the following controls:

- Map Refresh Rate (in seconds):** A text box containing the value "2".
- Xstm text map (graphical map limited to 254 devices)**
- Include in Text Device Map:**
 - Path**
Path field width:
 - Product**
 - Product Qualifier**
 - Product field width:
 - Active Tool**
 - Time Used**
 - Time to Go**
 - Loops Done**
 - Loops to Go**
 - Last Operation Status / Percent Complete**

At the bottom of the dialog, there are four buttons: "OK", "Defaults", "Cancel", and "Help".

Verify Options (XSTM)



Verify Options

Refer to Tool specific help for the effect of these option settings.

Execution Control:

- Iterations to Loop
- Execution Time Limit, in Minutes
- Loop Continuously

Behavior on Errors:

- Exit on Error
- Errors Allowed before Test Termination

Test Coverage:

- Maximum
- Medium
- Minimum

Generate Tool Activity Log

- Report Only Errors
- Report Only Errors and Warnings
- Report Errors, Warnings, and Information

User Queries:

OK Defaults Cancel Help



Help Commands

- On item
 - Select the particular item on which to display help
- On tasks
 - Display help on common tasks
- On application
 - Display general help on STM
- On help
 - Display help on how to use the help system
- On version
 - Display STM version information
- On menus/commands
 - Display help on specific menus/commands

UI Files

- XSTM X resource file (*/usr/lib/X11/app-defaults/XStm*)
 - Contain X resource definitions
 - Size of windows
 - Foreground colors
 - Background colors
 - Highlights
 - Colors for different tool states
- .stmrc startup script (*/usr/sbin/stm/ui/config/.stmrc*)
 - Contain UI startup commands
 - User can copy the default script into their \$HOME directory to create customize startup script
- config.stm configuration file (*\$HOME/config.stm*)
 - Contain UI configuration when user selects to save it

System Files

- `id_mod_xref (/var/stm/data/id_mod_xref)`
 - Determine identify modules to execute to identify hardware on the system
 - Identify modules to determine product information
- `prod_op_xref (/var/stm/data/prod_op_xref)`
 - Determine device-class information
 - Determine list of available tools for product information (determined by identify modules)
- `diagmond.cfg (/var/stm/config/sys/diagmond.cfg)`
 - Contain configuration information for the *diagmond* daemon



Questions?





HP-UX Offline

Diagnostics



Offline Diagnostics Environment

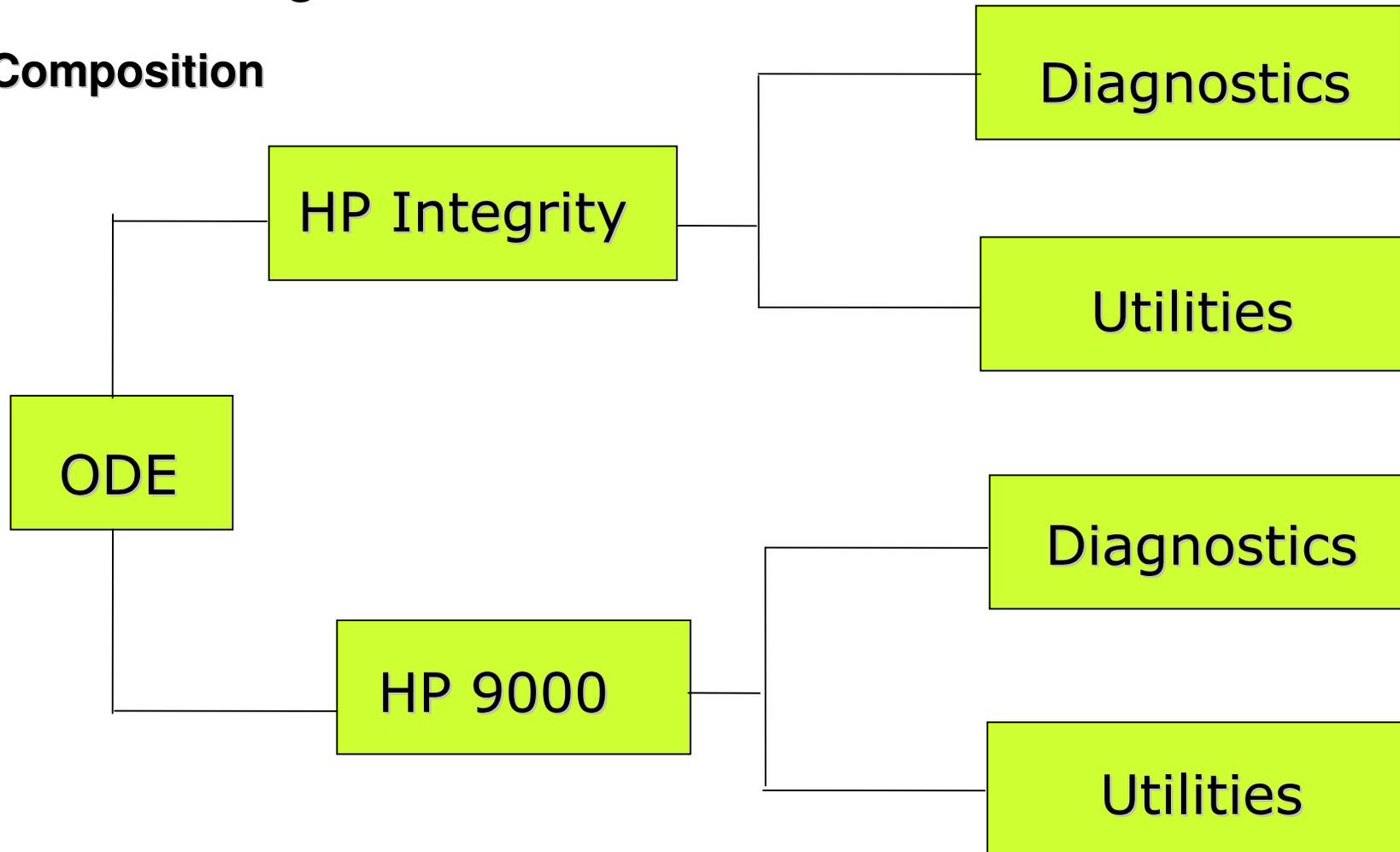
- What is ODE
- Why & when to use ODE
- How to use ODE
- What tools are available
- Use MAPPER first
- Common ODE commands
- Sample tool output
 - MAPPER
 - CPUDIAG
 - DFDUTIL
- Troubleshooting
 - FAQ

What is ODE?

Offline Diagnostics Environment



Composition





What is ODE?

ODE

- ODE stands for Offline Diagnostics Environment
- ODE is Operating System neutral (pre-OS boot)
- It is dependent on the CPU/HW architecture:
 - PA (HP9000)
 - IPF (HP Integrity)
- Unlike online exercisers
- Point to point (directed functional) test for system components
- Includes utilities for HW manageability

What is ODE?

Diagnostics

- The ODE Diagnostics Suite consist a set of diagnostics that test major components of a system & isolates the fault down to a Field Replaceable Unit (FRU).
- The following is a list of the major components in the ODE Diagnostics Suite:
 - Processor
 - Memory
 - Core Electronic chipset
 - Core IO
 - IO cards



What is ODE?

Utilities

- ODE Suite also contains a set of utilities that allows the user to view the system components and update firmware when system is offline.
- The major utilities consist of the following:
 - MAPPER: Display inventory/configuration of a system
 - DFDUTIL: updates SCSI disk drive firmware
 - FCFUPDATE: updates IO card firmware on supported cards
 - COPYUTIL: offline backup/restore tool for boot devices; use image copy instead of file system copy



Why use ODE suite?

Why

- ODE is the only diagnostics choice when system is down
- ODE contains comprehensive test coverage for faulty FRU (Field Replacement Unit) identification
 - Some Hardware test can't/shouldn't be done in a production OS environment
- All HP9000 (PA) & Integrity (IPF) server shipped must pass ODE tests
- Boots quickly



When to use ODE suite?

When

- System crash
- OS is not bootable
- HW problems that are hard to isolate
 - Requires testing/verifying very specific HW functions



Which ODE tools to use?

Which

- When time is limited, run the selected diagnostics tailored to the component suspected of failure
 - ex. If you notice that your LAN card is not working, run IOTEST to confirm that the card is indeed bad.
- Running all diagnostics on all components on a large configuration, could take a long time



Getting ODE?

How

- Pre-installed on HP-UX servers
 - PA-RISC LIF or IPF Service Partition
- Offline CD (included with system purchase)
- The same diagnostics can be used from the smallest workstation to the largest server.
- Getting update for offline tools
 - IPF: <http://www.hp.com/support/itaniumservers>
 - PA: http://www.software.hp.com/ER_products_list.html

Launch for HP 9000 Systems (PA-RISC)



Overview

- System disk
 - Boot ODE from the system disk (LIF directory)
- Support Plus Media CD
 - Boot the system from the Support Plus Media
- Boot from LAN
 - Ability to designate on system as the boot server, and have all systems that desire to run diagnostics boot from the boot server



Launch for HP Integrity Systems (IPF)

Overview

- System disk
 - Boot ODE from the system disk (HP Service Partition)
- Boot from IPF Offline Diagnostics and Utilities CD
- Boot from LAN
 - Ability to designate on system as the boot server, and have all systems that desire to run diagnostics boot from the boot server

Available tools on ODE

(Availability)



```
ODE> ls
```

```
Modules on this boot media are:
```

filename	type	size	created	description
CIODIAG2.EFI	TM	643072	07/09/2003	Core IO diagnostic
CPUDIAG.EFI	TM	741376	07/09/2003	Processor diagnostic
IODIAG.EFI	TM	144384	07/09/2003	Runs selftests on I/O modules
MAPPER.EFI	TM	1654272	07/09/2003	System mapping utility
MEMDIAG.EFI	TM	263168	07/09/2003	Memory diagnostic
PERFVER.EFI	TM	817664	07/09/2003	Runs ROM-based selftests on peripherals
PLUTODIAG.EFI	TM	514560	07/09/2003	SBA/LBA diagnostic
COPYUTIL.EFI	TM	1041920	07/09/2003	Disk-to-tape copy utility
DFDUTIL.EFI	TM	850432	07/09/2003	Disk firmware download utility
FCFUPDATE.EFI	TM	608256	07/09/2003	FW Update Utility for Fibre Channel

```
ODE> mapper
```



Use MAPPER first

MAPPER

- It's a good practice to always run MAPPER before you run any diagnostics. Running MAPPER first identifies which components exist on the system.
- Check the MAPPER output to determine obvious inconsistencies.

Common ODE Commands



ODE

COMMAND	FUNCTION
CLEARLOG	Clears the contents of a message log
Control-Y/C	Abort a Test command or stop execution of a Test Module
DEBUG	Enable debug print off
DISPLOG	Display a message log
DUMP	Read and display memory locations
ERRNUM	Set/Display the state of the ERRNUM flag
ERRONLY	Enable printing of errors only
ERRPAUSE	Set/Display the state of the ERRPAUSE flag
ERRPRINT	Set/Display the state of the ERRPRINT flag





Common ODE Commands (Cont.)

ODE

EXIT	Return to higher level prompt
HELP	Display information on Test Commands and Test Modules
LOGSIZE	Set the size of a message log
LOOP	Set the loop counter
LS	List ODE modules and data files
RESET	Reinitialize a TM and reset ODE environment variables
RESUME	Continue execution of a TM that was paused
RUN	Start execution of a TM
SAVE	Save error log to a file. OUTPUT.TXT
UNLOAD	Remove a TM from memory





MAPPER Output

MAPPER

```
MAPPER> run
STARTING EXECUTION OF MAPPER
Date : 03/06/2002  Time : 15:25:44
```

System Identification:

```
OEMId           =HP
Mfr Model ID = Everest
ACPI version =2
```

Processor Identification:

Socket	Status	Vendor	Family	Processor Type	Speed	L3 cache
-----	-----	-----	-----	-----	-----	-----
cpu 0	Active	INTEL	Itanium Processor	Central	1.500GHz	6144KB
cpu 1	Active	INTEL	Itanium Processor	Central	1.500GHz	6144KB
cpu 2	Active	INTEL	Itanium Processor	Central	1.500GHz	6144KB
cpu 3	Active	INTEL	Itanium Processor	Central	1.500GHz	6144KB

MAPPER Output (Cont.)

MAPPER



Memory Device Identification:

Type	Location	Size (MByte)
HP RAM	Ext 0-DIMM 0A	256
HP RAM	Ext 0-DIMM 0B	256
HP RAM	Ext 0-DIMM 1A	256
HP RAM	Ext 0-DIMM 1B	256

Total Memory found: 1024 MB

Cache Identification:

Cache Level	Instruction (KBytes)	Data (KBytes)
0	16	16
1	N/A	256
2	N/A	6144

Configuring I/O...

Please wait.

Looking for SCSI devices via LSI SPT device driver.....

Looking for IDE devices via IDE device driver.....

Looking for USB devices via USB device drivers.....



MAPPER Output (Cont.) MAPPER



SubSys		VENDOR	DEVICE	Vendor	SUBSYS	REV
PATH	COMPONENT NAME	ID	ID	ID	ID	ID
0	System Bus Adapter	103CH	1229H			0022H
0/0	Local Bus Adapter	103CH	122EH			0032H
0/0/1/0	USB Controller	1033H	0035H	1033H	0035H	0041H
0/0/1/0.1.0	USB SILITEK USB Keyboard and Mouse (Keyboard)					01.20
0/0/1/0.1.1	USB SILITEK USB Keyboard and Mouse (Generic HID device)					01.20
0/0/1/1	USB Controller	1033H	0035H	1033H	0035H	0041H
0/0/1/1.1.0	USB Logitech N43 (Mouse)					04.01
0/0/1/2	USB Controller	1033H	00e0H	1033H	00e0H	0002H
0/0/2/0	IDE Controller	1095H	0649H	1095H	0649H	0002H
0/0/2/0.0.0	IDE ATAPI CDROM DW-224E					C.0B
0/0/3/0	Ethernet Controller	8086H	1229H	103cH	1274H	000DH

MAPPER Output (Cont.) MAPPER



```
0/1      Local Bus Adapter          103CH  122EH          0032H
0/1/1/0
      SCSI Bus Controller          1000H  0030H  1000H  1000H  0007H
0/1/1/0.0.0      SCSI HP 36.4G ST336607LC      HPC3
0/1/1/0.1.0      SCSI HP 36.4G ST336607LC      HPC3
0/1/1/1
Ethernet Controller          14e4H  1645H  103cH  12a4H  0015H
0/2      Local Bus Adapter          103CH  122EH          0032H
0/6/1/0
      SCSI Bus Controller          1000H  0021H  103cH  1330H  0001H
0/7      Local Bus Adapter          103CH  122EH          0032H
0/7/1/0
      Communications Controller      103cH  1290H  103cH  1291H  0001H
0/7/1/1
      Serial Controller              103cH  1048H  103cH  1282H  0003H
0/7/2/0
      VGA or 8514 Controller        1002H  5159H  103cH  12abH  0000H
IO map Done...

MAPPER execution complete
Date : 07/24/2003  Time : 01:13:20
Exiting...

RUN COMPLETED.
ODE>
```


Section/Loop Command

CPUDIAG



```
CPUDIAG> sec 1/2
CPUDIAG> loop 2
CPUDIAG> run
STARTING EXECUTION OF CPUDIAG

SECTION 001
general register Test Section

Started Date : 7/24/2003   Time : 16:31:24
Sent AP(3) Start Message
Sent AP(2) Start Message
Sent AP(1) Start Message
Finished Date : 7 /24/2003   Time : 16:31:24

SECTION 002
Bank register Test Section

Started Date : 7/24/2003   Time : 16:31:24
Sent AP(3) Start Message
Sent AP(2) Start Message
Sent AP(1) Start Message
Finished Date : 7 /24/2003   Time : 16:31:24
END OF LOOP 1
```

Section/Loop Command (Cont.)

```
STARTING EXECUTION OF CPUDIAG
SECTION 001
general register Test Section

Started Date : 7/24/2003   Time : 16:32:34
Sent AP(3) Start Message
Sent AP(2) Start Message
Sent AP(1) Start Message

Finished Date : 7 /24/2003   Time : 16:32:34

SECTION 002
Bank register Test Section

Started Date : 7/24/2003   Time : 16:32:34
Sent AP(3) Start Message
Sent AP(2) Start Message
Sent AP(1) Start Message

Finished Date : 7 /24/2003   Time : 16:32:34

END OF LOOP 2
RUN COMPLETED.
CPUDIAG>
```



Proc Command

CPUDIAG

```
CPUDIAG> proc 0/1  
CPUDIAG> loop 1  
CPUDIAG> run
```

STARTING EXECUTION OF CPUDIAG

SECTION 001

general register Test Section

Started Date : 7/24/2003 Time : 16:35:35

Sent AP(1) Start Message

Finished Date : 7 /24/2003 Time : 16:35:35

SECTION 002

Bank register Test Section

Started Date : 7/24/2003 Time : 16:35:35

Sent AP(1) Start Message

Finished Date : 7 /24/2003 Time : 16:35:35

RUN COMPLETED.

CPUDIAG>

Master Command

CPUDIAG



```
CPUDIAG> master 1
CPU:ID 1 is now Master.
CPUDIAG> sec 20

CPUDIAG> run
STARTING EXECUTION OF CPUDIAG

SECTION 020
MP Purge Test Section

Started Date : 7/24/2003   Time : 17:48:20
Sent AP(1) Start Message

Master CPU: 1
Slave CPU: 0
Finished Date : 7 /24/2003   Time : 17:48:20

RUN COMPLETED.
CPUDIAG>
```



Error Messages

Error

```
CPUDIAG> proc 0/3
CPUDIAG> run
STARTING EXECUTION OF CPUDIAG

SECTION 001
general register Test Section

Started Date : 7/24/2003   Time : 18:4 :11

Sent AP(3) Start Message
Sent AP(2) Start Message
Sent AP(1) Start Message
2 0 0x000281 0x1880000000000340 Processor Bus Check
2 0 0x00028E 0x000000003FFFCDB0 Processor Mod Err Info Target ID

ERROR 1000 IN SECTION 001

CMC was detected!
CPUDIAG PAUSED>
```



DFDUTIL (thru system disk)

DFDUTIL

- Need to copy ODE suite to the LIF (HP9000) or HP Service Partition (Integrity)
- Download the latest disk firmware from HP support
- Store the firmware in the LIF (HP 9000) or HP Service partition (Integrity) directory
- Launch ODE from system disk by issuing ODE at the shell prompt.
 - Ex. `fs0:\EFI\HP\DIAG\ODE>ode` (Integrity)

Detected Disks

DFDUTIL



```
Press <Return> to continue; Type h for help
Looking for SCSI devices via LSI SPT device driver.....
The Shared Library <SLMOD.EFI> is loaded.
... <23> modules found
```

Warning: CONFIGDATA is not loaded.

```
*****
*                               HP Supported Disks Found                               *
*****
```

Indx	Path	Product ID	Bus	Size	Rev
0	0/1/1/0.0.0	SCSI HP 18.2G ATLAS10K3_18_SCA	SCSI	18. GB	HP05
1	0/1/1/0.1.0	SCSI FUJITSU MAJ3364MC	SCSI	36. GB	HP07
2	0/1/1/1.2.0	SCSI HP 18.2G ATLAS10K3_18_SCA	SCSI	18. GB	HP05

Legend:

Indx = Index number used for referencing the device
Rev = Firmware Revision of the device

Note: Due to different calculation methods used, the size of the device shown is only a rough approximation.
Create a firmware file list? (q for quit) [default for y]

Detected Firmware

DFDUTIL



```
Create a firmware file list? (q for quit) [default for y]
```

```
Please wait while I search for all the firmware files.
```

```
Note: This may take a while if you are booting from tape.
```

```
numFile = 4
```

```
..
```

```
*****
```

```
*                Firmware Files Found (not disks)                *
```

```
*****
```

File name	Intended Product ID	Rev.	Size
MAJ3364MC.HP08.frm	rm	HP08	233472

```
Legend:
```

```
File name          = name of the firmware file
```

```
Intended Product ID = firmware file's intended product name
```

```
Rev.               = firmware Revision of the firmware file
```

```
Size              = exact byte size of the firmware image
```

```
eXiting DFD_entry()
```

```
DFDUTIL>
```

Update Firmware

```

DFDUTIL> download MAJ3364MC.HP08.frm 1
About to work on (1) range of disks w/MAJ3364MC.HP08.FRM firmware file.

*****
* Downloading firmware to a disk MAY destroy the data on the *
* disk. Make sure you have made the necessary backups.      *
*****

*****
* About to download firmware MAJ3364MC.HP08.FRM onto disk(s): 1.
*****

Do you wish to continue with the download (y/[n]/q)? y

*****
*                               WARNING!                               *
* DO NOT INTERRUPT THIS PROCESS OR THE DISK MAY BE DAMAGED! *
*****

```

Update Finished

DFDUTIL



```
*****
* Please wait while disk 1 at 0/1/1/0.1.0           is updated
* from revision HP07 to HP08.
*****
Please wait a few minutes for file verification of the downloaded firmware ....
Please wait while the disk ROMs are updating.

30 seconds left      .....
20 seconds left      .....
10 seconds left      .....
Done!

*****
*                Firmware downloaded SUCCESSFULLY!                *
*                -----                                           *
* Power off & on disk drive(s) to activate the new firmware. *
*****

DFDUTIL>
```





ODE Troubleshooting Tips

Frequently asked questions can be found at the following website:

http://docs.hp.com/hpux/onlinedocs/diag/ode/ode_faq.htm

This site lists the most frequently asked questions pertaining to the Offline Diagnostics Environment.

Example:

ODE Frequently Asked Questions



ODE: Offline Diagnostic Environment

ODE: Frequently Asked Questions

- [How do I run the offline diagnostics?](#)
- [Help! I want to run the offline diagnostics but I can't find the CD-ROM needed to run them \(Support Plus Media\).](#)
- [Which package of the offline diagnostics should I run - the one on the Support Plus Media or the one on the system disk?](#)
- [Offline diagnostics may not recognize some disks \(HP-HSC cards\)](#)
- [Problem with offline diagnostics \(June 99 release\) on N-Class Computers](#)
- [Several offline diagnostics do not run on my N4000 server.](#)
- [I can't run offline diagnostics on a V-Class system using the HP-UX 11i Support Plus CD-ROM.](#)
- [IOTEST2 offline diagnostic can cause HPMC's \(HP-UX 11i only\)](#)
- [Problem with offline diagnostics on Superdome \(Mar 2001 release\)](#)
- [How do I run offline diagnostics on computer systems running HP-UX 11.20?](#)
- [How do I run offline diagnostics on computer systems running HP-UX 11.22 and later Itanium Processor Family \(IPF\) systems?](#)
- [I can't run customer-licensed offline tools on high-end systems using the June 2001 SupportPlus media.](#)

How do I run the offline diagnostics?

To start the full set of offline diagnostics:

1. Locate the Support Plus Media (CD-ROM) that came with your system. If you have a more current version of the Support Plus Media, use that instead.
2. Insert the Support Plus Media into a CD-ROM drive connected to the computer.
3. Reboot the computer and allow it to come up to the PDC (Bootadmin, BCH, etc.) prompt. **Note:** the PDC prompts may differ from system to



ODE Frequently Asked Questions



ODE: Frequently Asked Questions - Microsoft Internet Explorer provided by Hewlett-Packard

File Edit View Favorites Tools Help

Address http://docs.hp.com/hpux/online/docs/diag/ode/ode_faq.htm#nocd

Google Search Web Search Site 339 blocked Options My Search More

Help! I want to run the offline diagnostics but I can't find the CD-ROM needed to run them (Support Plus Media).

If you have installed the diagnostics bundle ("OnlineDiag"), you can run some of the offline diagnostics from the LIF volume of the system disk.

This package of the offline diagnostics provides a subset of the most commonly used offline diagnostics:
For 32-bit systems (e.g., K-Class): MAPPER, IOTEST, PERFVER.
For 64-bit systems (e.g., N-Class): MAPPER2, IOTEST2, PERFVER2.

To start the offline diagnostics from the LIF volume of the system disk.

1. Reboot the computer and allow it to come up to the PDC (Bootadmin, BCH, etc.) prompt. **Note:** the PDC prompts may differ from system to system.
2. At the PDC (Bootadmin, BCH, etc.) prompt, boot from the primary boot path and then choose to interact with IPL (ISL).

```
Main Menu: Enter command or menu > boot primary
Interact with IPL (Y, N, or Cancel)??> y
```
3. At the ISL prompt, type ODE:

```
ISL> ODE
```
4. At the ODE> prompt, type the offline diagnostic program you want to run. For example:

```
ODE> mapper
```

Which package of the offline diagnostics should I run - the one on the Support Plus Media or the one on the system disk?

In general, we suggest that you run the offline diagnostics from the Support Plus Media:

Start | Drafts - Microso... | Adobe Acrobat ... | Microsoft Power... | ODE: Frequent... | Internet | 11:03 AM





Questions?





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