



How to Use Partition Manager and the Service Processor to increase the agility of your Adaptive Enterprise



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Agenda

- System Management via the Service Processor
 - Event Management
 - Service Processor/Console/Platform management
 - Superdome Support Management Station (SMS)
- System Management via Partition Manager
 - Overview of Partition Manager
 - Architecture of Partition Manager
 - Partition Manager security
 - Walk through example usage scenario
- Questions & Answers

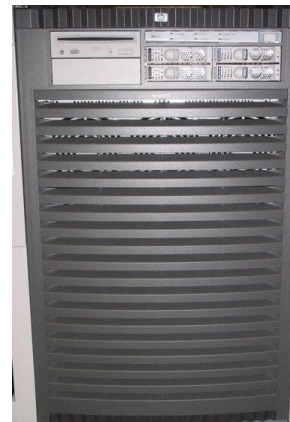
HP Cellular Systems Family

Superdome
(PA-RISC & Itanium®)



16 cells, 64 cpu's
512 DIMM slots
192 PCI slots

PA-RISC: rp8420
Itanium®: rx8620



4 cells, 16 cpu's
64 DIMM slots
32 PCI slots,
17U high, 19" rack

PA-RISC: rp7420
Itanium®: rx7620



2 cells, 8 cpu's
32 DIMM slots
16 PCI slots,
10U high, 19" rack

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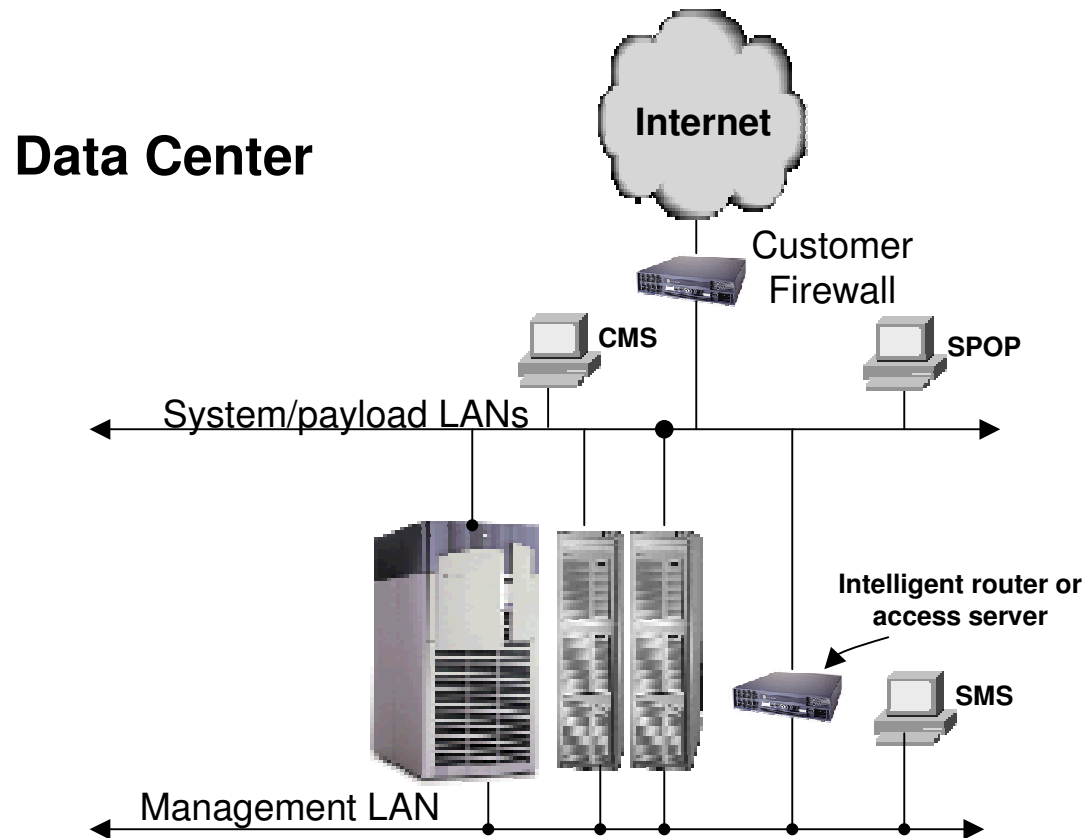


Platform Management

Definitions

- MP = GSP = Service Processor
- Complex: The entire box(es) including all partitions

Management Components

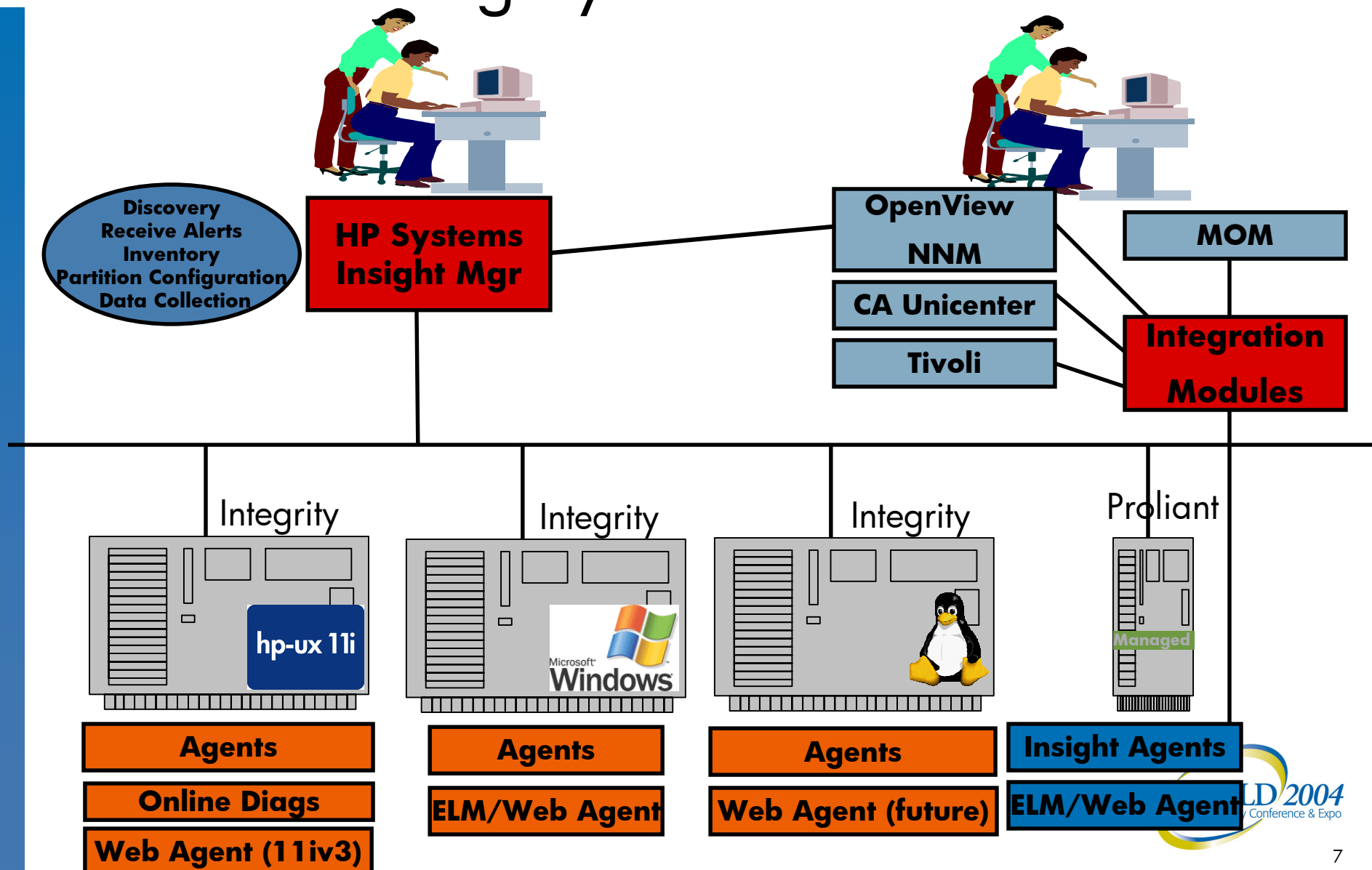


CMS: Central Management Station (Service Control Manager, Insight Manager)

SPOP: ISEE Support Point of Presence

SMS: Support Management Station

HP Systems Insight Manager with Multi-OS Integrity + ProLiant





HP SIM Discovering a System

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

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History

Address <https://garbage.openview.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp> Go Links >>

Search Messenger Bookmarks My Yahoo! Yahoo! Finance Mail News Shopping >>

Updated: Monday, August 25, 2003 5:20:29 PM PDT Customize

HP Management Application

Home Log off

System Events: 2 4 0 3

Search Go Advanced Search

System Lists Customize

- Status Overview
- All Systems
- All Events
- My Favorites
- System Lists
 - Systems by Type
 - All Systems
 - All Servers
 - All Racks
 - All Enclosures
 - All Clients
 - All Printers
 - All Management Processors
 - All Networking Devices
 - Systems by Status
 - Systems by Operating System
 - Clusters by Type
 - Clusters by Status

View as: table Customize

Systems in table: 0 Critical 1 Major 0 Minor 9 Normal 0 Unknown Total: 10

HW	MP	SW	System Name	System Type	System Address	Product Name	OS Name
✓	?	?	owwpc550	Server	15.27.245.186	HP NetServer	
✓	?	?	cranberries	Server	15.27.245.172	HP NetServer lh Series	Windows NT
✓	?	?	stinger	Server	15.27.245.173	HP Server	
✓	?	?	owwpc028	Server	15.27.245.111	Linux Server	LINUX
✓	?	?	owwpc012	Server	15.27.245.49	Linux Server	LINUX
✓	?	?	owwpc063	Server	15.27.245.36	Linux Server	LINUX
✓	?	?	puffer	Server	15.27.245.175	NetServer LC 3	Windows 2000
✓	?	?	bumblebee	Server	15.27.245.174	NetServer LC 3	Windows 2000
✓	?	?	owwpc202	Server	15.27.245.185	ProLiant DL360 G2	Microsoft Windows 2000 Advan...
✓	?	?	pavarotti-1	Server	15.244.36.154	superdome server SD64A	Integrity Servers-Windows Serv...

Save Selection As... Delete Print

Done Local intranet

Legend:
✗ = Critical ✓ = Normal
▽ = Major ? = Unknown
△ = Minor ⓘ = Informational



HP SIM – Server Device Page

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

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites History

Address <https://garbage.openview.cup.hp.com:50000/mxportal/home/MxPortalFrames.jsp> Go Links

Search Messenger Bookmarks My Yahoo! Yahoo! Finance Mail News Shopping

Updated: Monday, August 25, 2003 5:23:01 PM PDT Customize

HP Management Application

Home Log off

System Events: 2 4 0 3

Search [] Go Advanced Search

System Lists Customize

- Status Overview
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 - Systems by Type
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 - All Servers
 - All Racks
 - All Enclosures
 - All Clients
 - All Printers
 - All Management Processors
 - All Networking Devices
 - Systems by Status
 - Systems by Operating System
 - Clusters by Type
 - Clusters by Status

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

Device Page pavarotti-1

Tools Deploy Configure Diagnose Optimize Reports Logs Options Help

Identity Links Events Data Collection Report

General System Information

Address	15.244.36.154 15.244.36.156 15.244.36.155 15.244.36.152
System Name	pavarotti-1
DNS Name	pavarotti-1.cup.hp.com
Management Protocols	SNMP:1.0
Contact	HP-Support
Location	
System Type	Server
Product Model	superdome server SD64A
Hardware Description	ia64 Family 31 Model 1 Stepping 5 Intel Itanium processor family -
Software Description	Windows Version 5.2 (Build 3790 Multiprocessor Free)
Server Role	

Status Information

- Hardware Status
 - from Management agent
 - response to SNMP
 - from ping
- Software Status

Windows Web Based Management Agent



http://pavarotti-1:2301/WEBAGENT/FINDEX.TPL - Microsoft Internet Explorer provided by Hewlett-Packard

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print W * * * * *

Address http://pavarotti-1:2301/WEBAGENT/FINDEX.TPL Go Links >>

Y! Search Messenger Bookmarks My Yahoo! Yahoo! Finance Mail News Shopping >>

HP Insight Management Agents
Integrity Agents v2.00
[Agent Help](#) [Summary](#) [Device Home](#) [Options](#)

Condition Legend
Unknown OK
Degraded Failed

CONFIGURATION
[Software Version Info](#)
[System Info](#)
[Complex Info](#)
[Partition Configuration](#)
[Cell Boards](#)
[IO Boards](#)
[System Resources](#)
[Security](#)
[System Report](#)

MASS STORAGE
[File System Space](#)

System Name : PAVAROTTI-1
[Manually Refreshed](#) @ Monday, August 25, 2003 5:26:16 PM

Summary

PAVAROTTI-1: superdome server SD64A
Contact Information: HP-Support
Location: N/A
IP Address: 15.244.36.152
Current Webagent User: anonymous [login](#)

Failed or Degraded Items

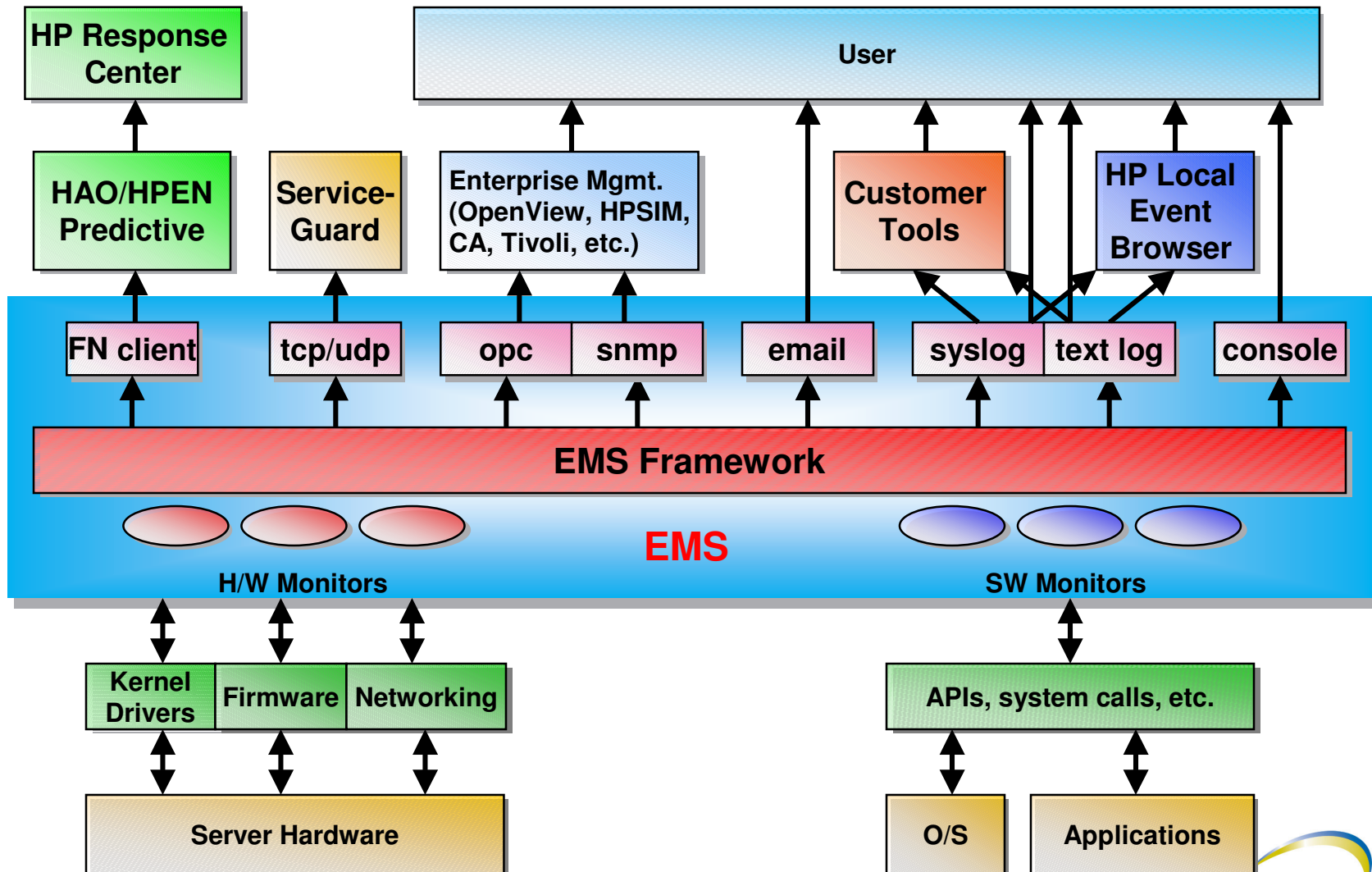
Item Name:	Category:
Smart Array 6400 Controller in Cabinet 0, IO Bay 0, IO Chassis 1, Slot 7 - Connected To - Cabinet 0, Cell 2	Mass Storage
PCI 1000Base-T/SX Gigabit Ethernet Adapter at Cabinet 0, IO Bay 0, IO Chassis 1, Slot 11 - Connected To - Cabinet 0, Cell 2	NIC

Local intranet

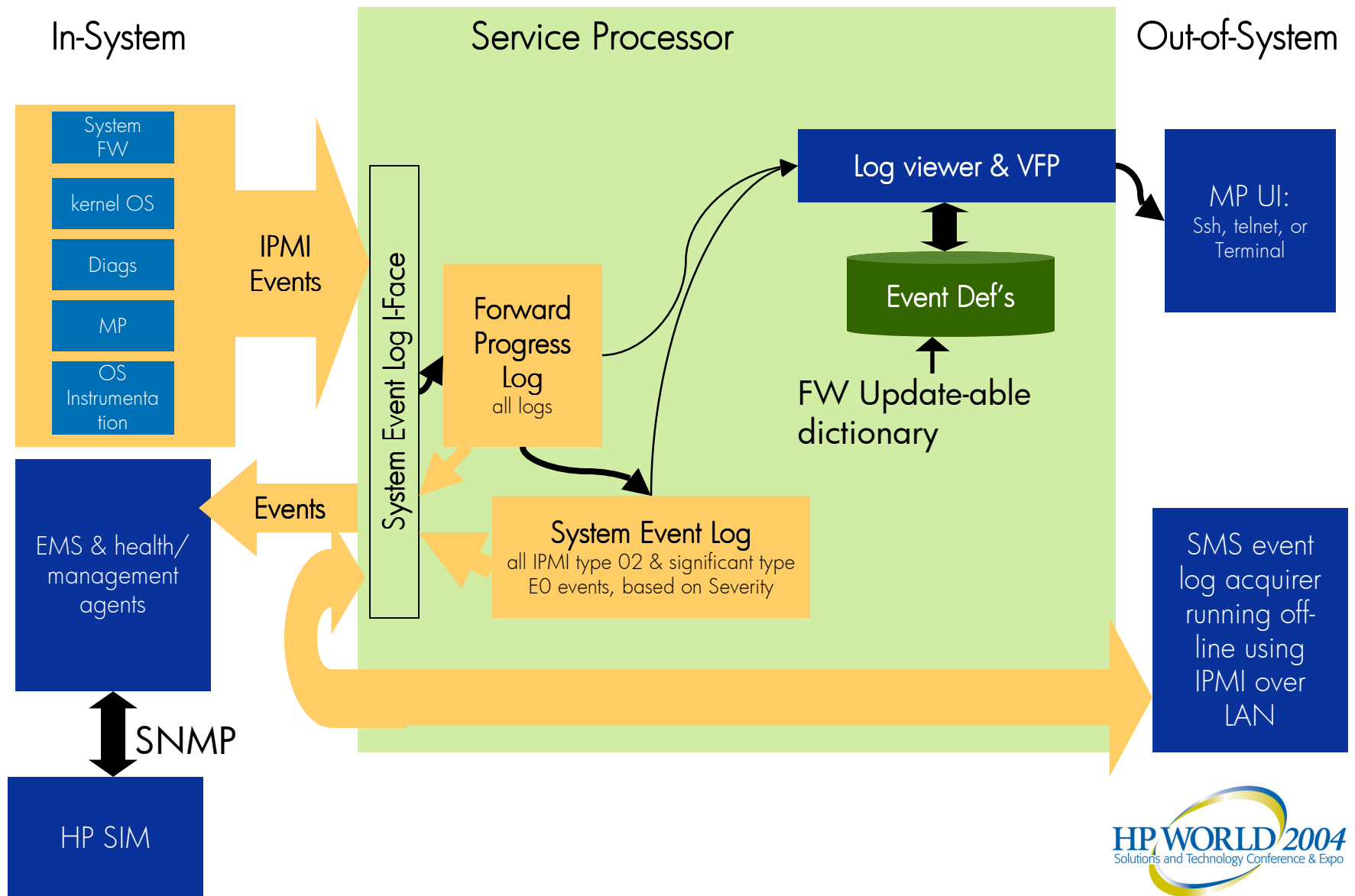
HPUX Event Management Software Stack



/etc/opt/resmon/lbin/monconfig to configure events



Platform Event Flow



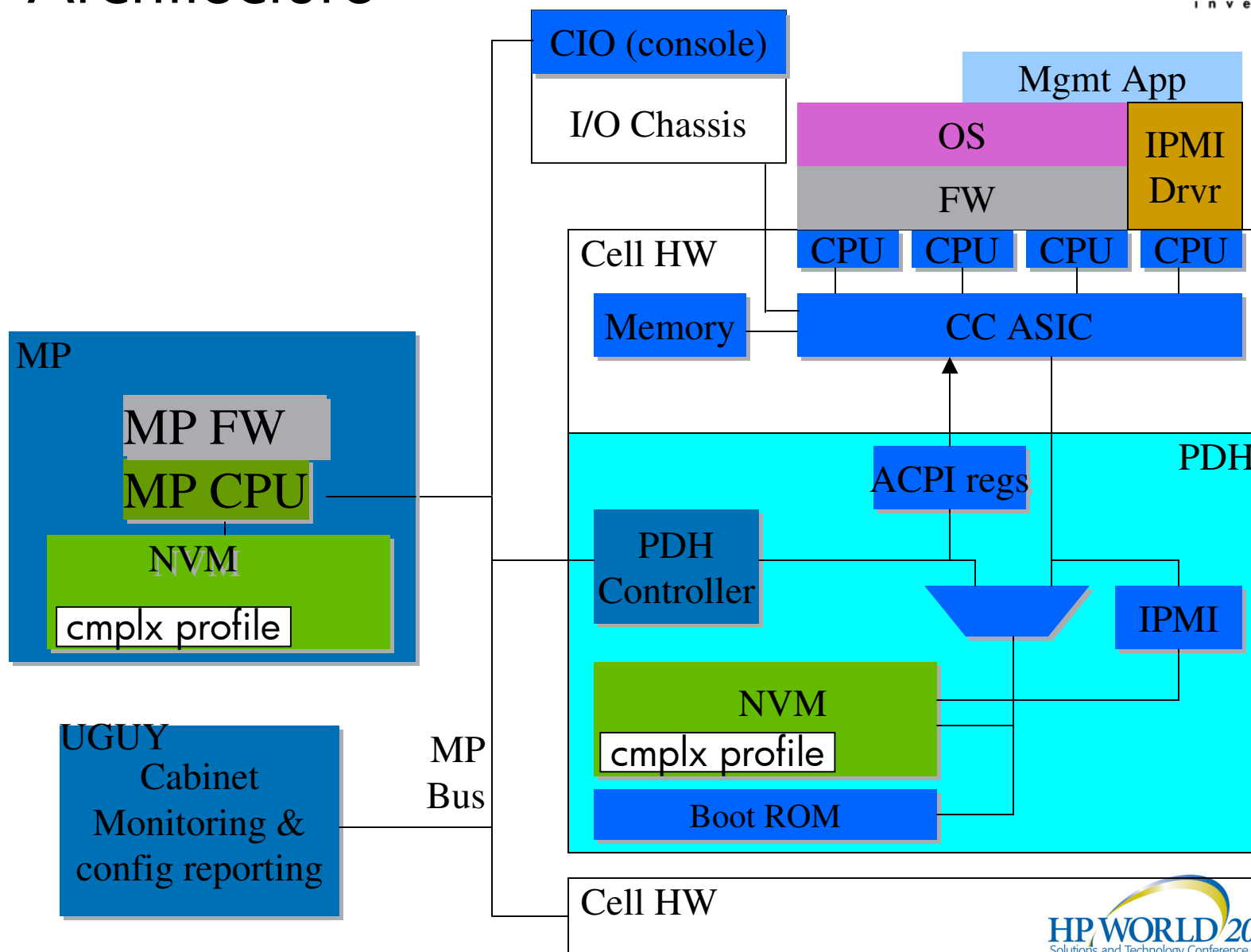
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MP enhancements for Pinnacles Platforms

- ✓ Support for network-based mgmt apps (parmgr, SMS)
- ✓ Support multi-OS, PA + IPF, multi-core CPUs
- ✓ More descriptive event decoding
- ✓ Enhanced security
 - ✓ PARPERM cmd: Disable partition reconfig from partition
 - ✓ ssh (late 2004)
 - ✓ SA cmd: disable unneeded services
 - ✓ SO cmd: IPMI password
- ✓ PCI OL* command

HW Architecture

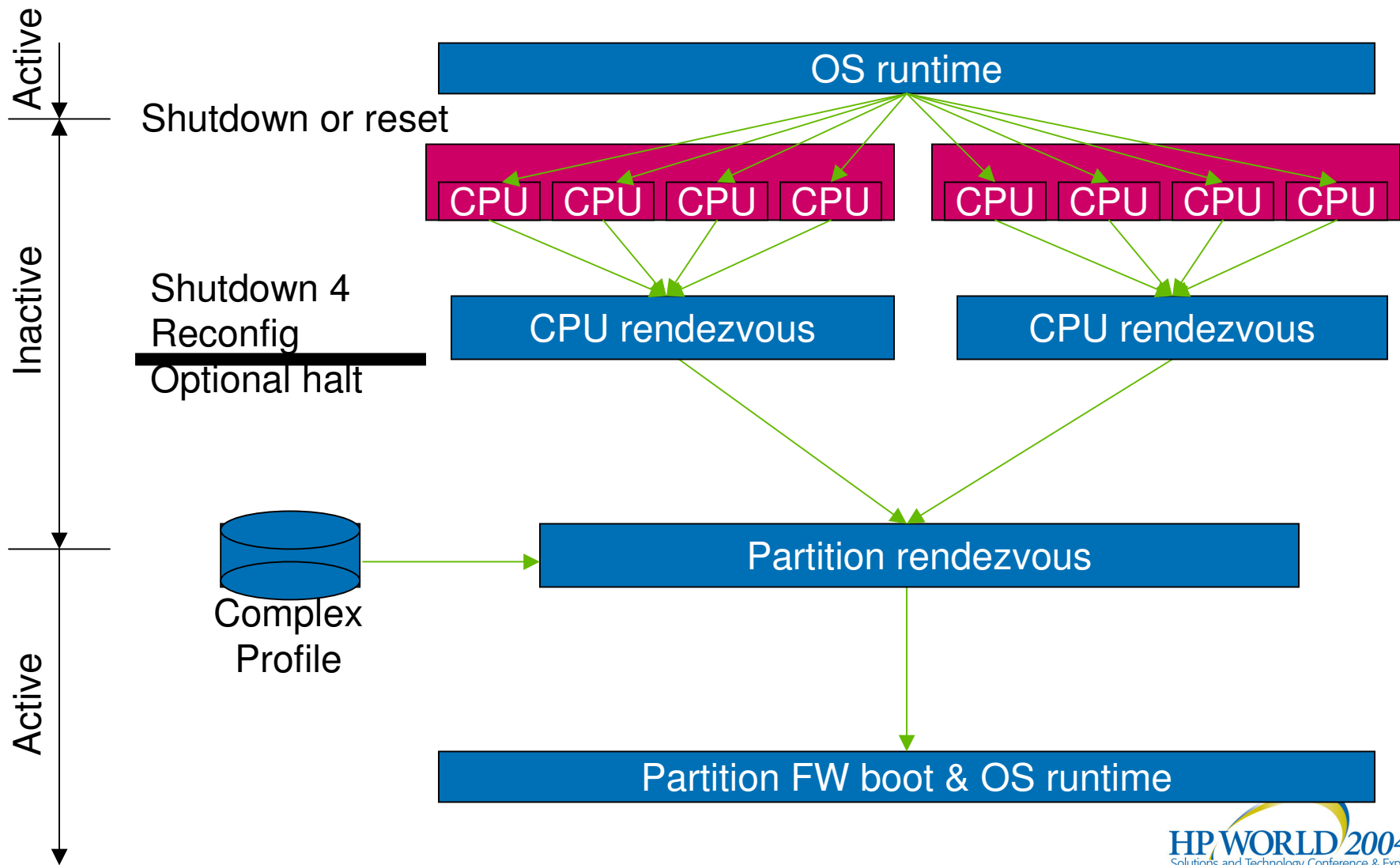


Complex Profile & Active/Inactive Cells



- Complex Profile: a data structure stored redundantly in non-volatile memory, which contains the assignment of cells to partitions, partition names, etc.
- Active/Inactive Cell:
 - A cell is inactive in a partition from the time it starts booting until it reads the complex profile and rendezvous with the other cells in its partition.
 - A cell is active in a partition from the time it reads the complex profile, through boot and OS-run, until it's partition is reset or shutdown.
- Inactive cells can be immediately reconfigured
- Partitions can be shut down for reconfiguration

SW flow - reboot with reconfiguration



Shutdown & Restart commands

Shutdown

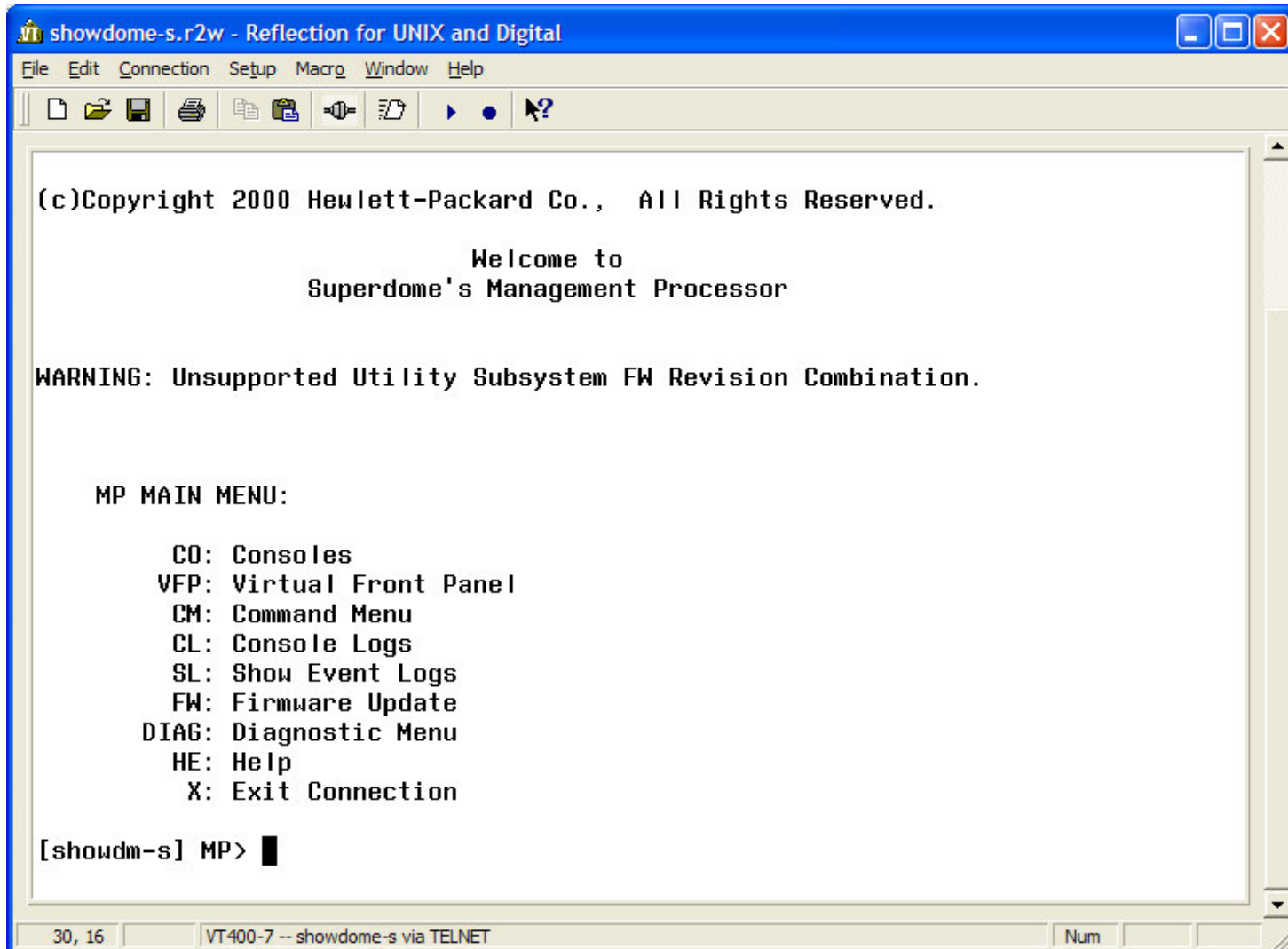
- HPUX: shutdown –RH or shutdown –R
- Windows: start→shutdown, shutdown or restart
- Linux: pwrdown or shutdown -r
- EFI FW: reconfigreset
- MP: RR or RS

Restart from halted at reconfig

- MP: BO
- Partition mgmt tools: boot

MP operation

Always remember – HE from the main menu gets HELP!



```
showdome-s.r2w - Reflection for UNIX and Digital
File Edit Connection Setup Macro Window Help

(c)Copyright 2000 Hewlett-Packard Co., All Rights Reserved.

Welcome to
Superdome's Management Processor

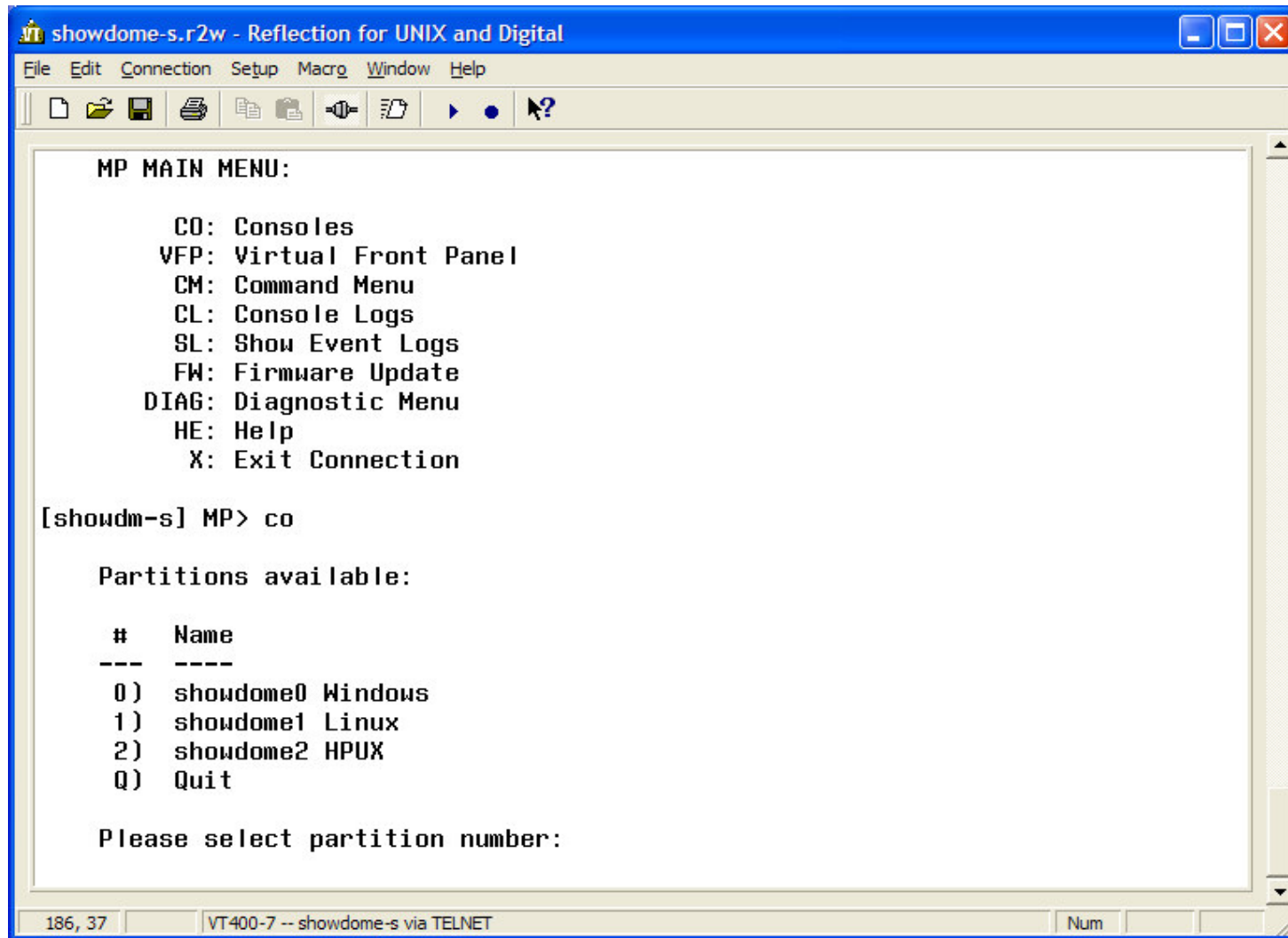
WARNING: Unsupported Utility Subsystem FW Revision Combination.

MP MAIN MENU:

CO: Consoles
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show Event Logs
FW: Firmware Update
DIAG: Diagnostic Menu
HE: Help
X: Exit Connection

[showdm-s] MP> 
```

MP operation – Console menu



```
showdome-s.r2w - Reflection for UNIX and Digital
File Edit Connection Setup Macro Window Help
MP MAIN MENU:
  CO: Consoles
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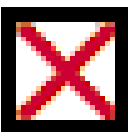





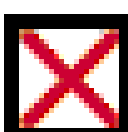





[showdm-s] MP> co

Partitions available:

#   Name
---  ---
0)  showdome0 Windows
1)  showdome1 Linux
2)  showdome2 HPUX
Q)  Quit

Please select partition number:
```

Telnet Clients for Console Access

<u>Console</u>	Reflection 1 for HP or hpterm (X)	Hyperterm or telnet from cmd.exe window	Other ANSI or VT100
HPUX	Best 		
Windows		Best 	
Linux			
IPF FW			
MP			

MP operation - VFP

```

showdome-s.r2w - Reflection for UNIX and Digital
File Edit Connection Setup Macro Window Help
[Icons]
# Partition state      Activity
- -----
0 At System Firmware console  SAL_INFO_REC_CLEAR          55 Logs

# Cell state          Activity
- -----
0 Cell has joined partition  337 Logs
E 2 Cell has joined partition 247 Logs

E indicates error since last boot
MP:VFP (Use '?' to display help or ^B to Quit) >
281, 50 VT400-7 -- showdome-s via TELNET Num
  
```


Command menu concepts



- **Shared environment**
 - all users in the command menu share the environment,
 - i.e. all users see commands typed by other users
- **Command ownership**
 - once a user types a command name, e.g. RS, they have exclusive ownership of that command until the command completes or an inactivity timer expires.
- **Command timeout**
 - if a user types a command but doesn't complete the action before the timeout expires, the command will be aborted

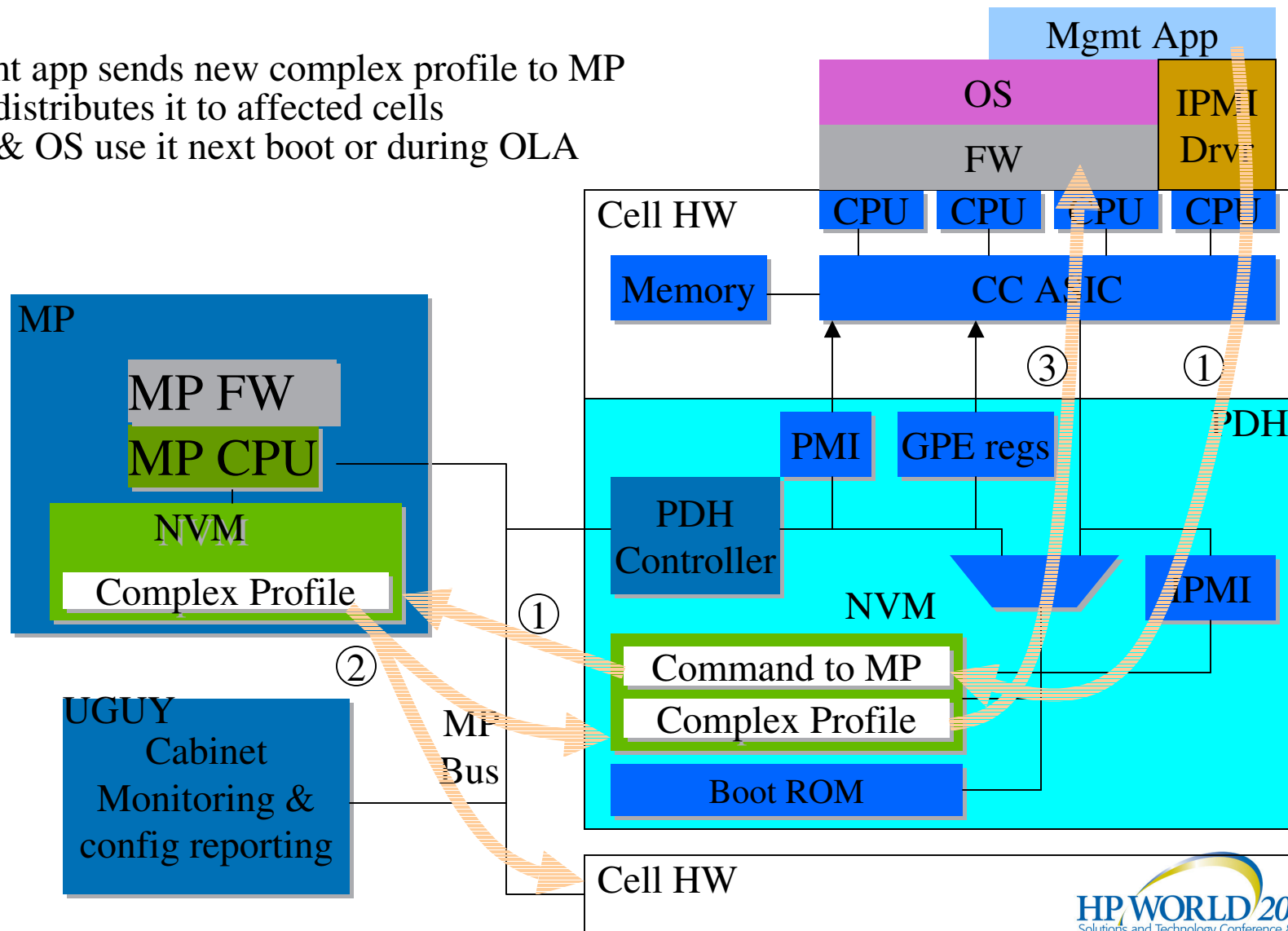
Command menu concepts



- **3 User Capability Levels, set by SO command**
 - 1. Single_Partition user**
 - Can only connect to assigned partition**
 - Can only execute commands that affect their assigned partition**
 - 2. Operator**
 - Has single partition user capabilities on all partitions**
 - Can't reconfigure the MP**
 - 3. Administrator**
 - Has operator level capabilities**
 - Can reconfigure the MP**

Configuration Management System

- ① Mgmt app sends new complex profile to MP
- ② MP distributes it to affected cells
- ③ FW & OS use it next boot or during OLA



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Superdome SMS Value proposition



- The purpose of the Support Management Station is to provide Customer Engineers with an industry-leading set of support tools, and thereby enable faster troubleshooting and more precise problem root-cause analysis. It also enables remote support by factory experts who consult with and back up the HP Customer Engineer.
- The SMS complements the proactive role of HP's High Availability Observatory (which is offered to Mission Critical customers), and ISEE Support Point of Presence by focusing on reactive diagnosis, for both mission-critical and non-mission-critical Superdome customers.

SMS Accessibility Clients & Servers



Server access clients

- MP console access device
- Web browser
- Reflection1 & ReflectionX
- Terminal Services Client

SMS Access servers

- ftp server (e.g. IIS, or other) for fw update support
- Modem access support (e.g. PC-Anywhere)

SMS Tools



Diagnostic tools

- Scan diagnostic tools
- Console logger and viewer
- Event logger and viewer

Superdome FW Image Repository

Partition Management tools

- nPar commands (late 03)
- Parmgr (late 04)

SMS Bundle Recipe Breakdown

Rp2470

(HPUX 11.00, 11.11)

PA-8700+

- SMS Tools (ChassMon, Fptest, softdecoder, MCA, Smser)
- Scan (JUST, CMD, CMD Setup)
- Firmware (PDC, MFW)
- FWUU

PA-8800, SD Integrity

- SMS Tools (Encrytpasswd, Event Viewer/Library, Log Acquirer, SALInfo2)
- Scan (JUST, JET, JET Setup, SOTF scripts)
- Firmware (legacy FW, IA SFW, PA SFW, MFW, FWUU)

Rx2600

(HPUX 11.23)

PA-8700+

- SMS Tools (ChassMon, MCA, Smser)
- Scan (JUST, CMD, CMD Setup)
- Firmware (PDC, MFW)
- FWUU

PA-8800, SD Integrity

- SMS Tools (Encrytpasswd, Event Viewer/Library, Log Acquirer, SALInfo2)
- Scan (JUST, JET, JET Setup, SOTF scripts)
- Firmware (legacy FW, IA SFW, PA SFW, MFW, FWUU)

ML350-G3

(Win2K SP4)

PA-8800, SD Integrity

- SMS Tools (Encrytpasswd, Event Viewer/Library, Log Acquirer, Console Logger, SALInfo2, Partition/Memory Advisors)
- Scan (JUST, JET, JET Setup, SOTF scripts)
- Firmware (IA SFW, PA SFW, MFW, PC FWUU)
- ParCLI (Commands, WMI Provider, WMI Mapper, Commands Wizard)
- 3rd Party Software (Remote Desktop, Reflection X, Reflection HP, PC-Anywhere, Cygwin, Nero DVD Burning SW, Java JRE)

SMS Roadmap



Mid-2004: rx2600 SMS.

- Smaller form factor, HPUX, parmgr GUI

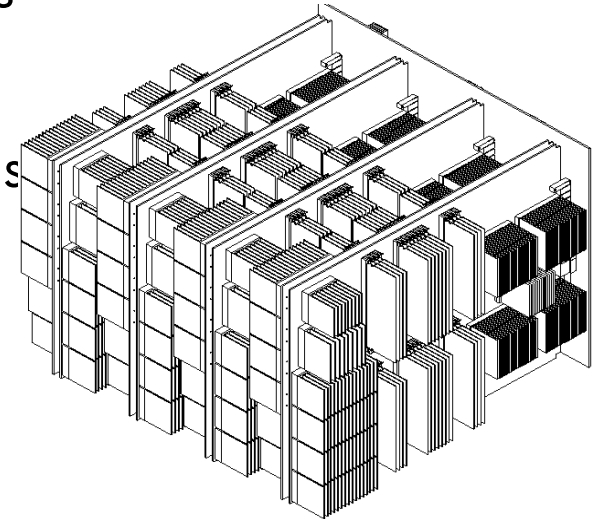


Agenda

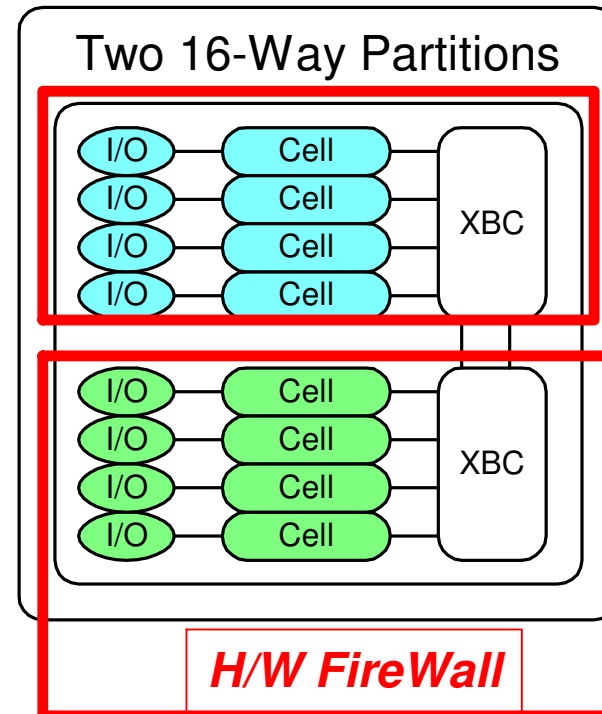
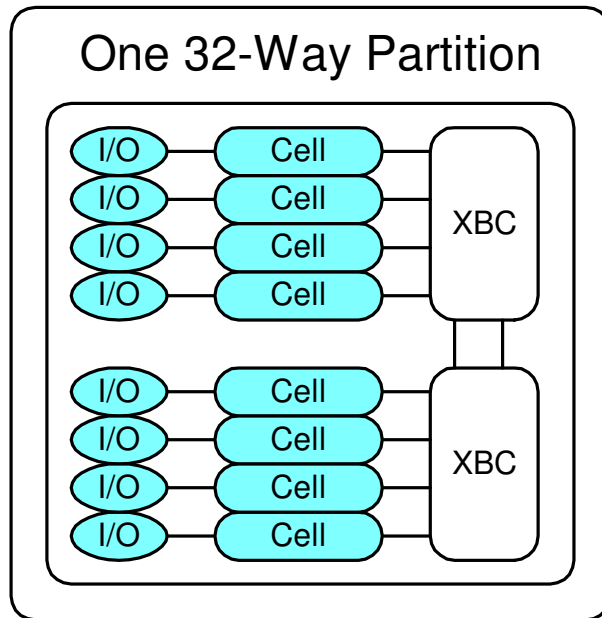
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nPartitions: What are they?

- Partitions are physical entities defined around cell board boundaries
- A partition's I/O consists of the I/O chassis attached to cells in the partition.
- A partition must contain at least one I/O chassis with a core I/O card along with sufficient I/O resources to boot the partition.
- An instance of an operating system uses the cells and I/O chassis assigned to the partition.
- Dynamic addition of new Partitions
- Adding/removing cell boards to existing Partitions does not impact any other Partition
- Follow-on release will increase the dynamism.
- HP also offers Virtual Partitions that can reside within nPartitions.



nPartitions on an eight cell SD32000



Partition Manager Overview

- Partition Manager (parmgr)
 - Shipping with **HP-UX 11i v2**
 - Partition commands shipping on Windows SMS
 - Partition Manager and commands will be released on Windows 1H05
- Supports the initial and ongoing configuration of HP Integrity Superdome systems
- Displays **graphical** hardware views
 - Configuration and status available at a glance, ranging from power supplies to individual dimms
- **Easy, fast, reliable**
- 100% Web based configuration tool
- Design based on **customer** feedback
- Supports “out-of-band” configuration

HP Integrity Superdome Configuration Tool



- **Customers wanted...**

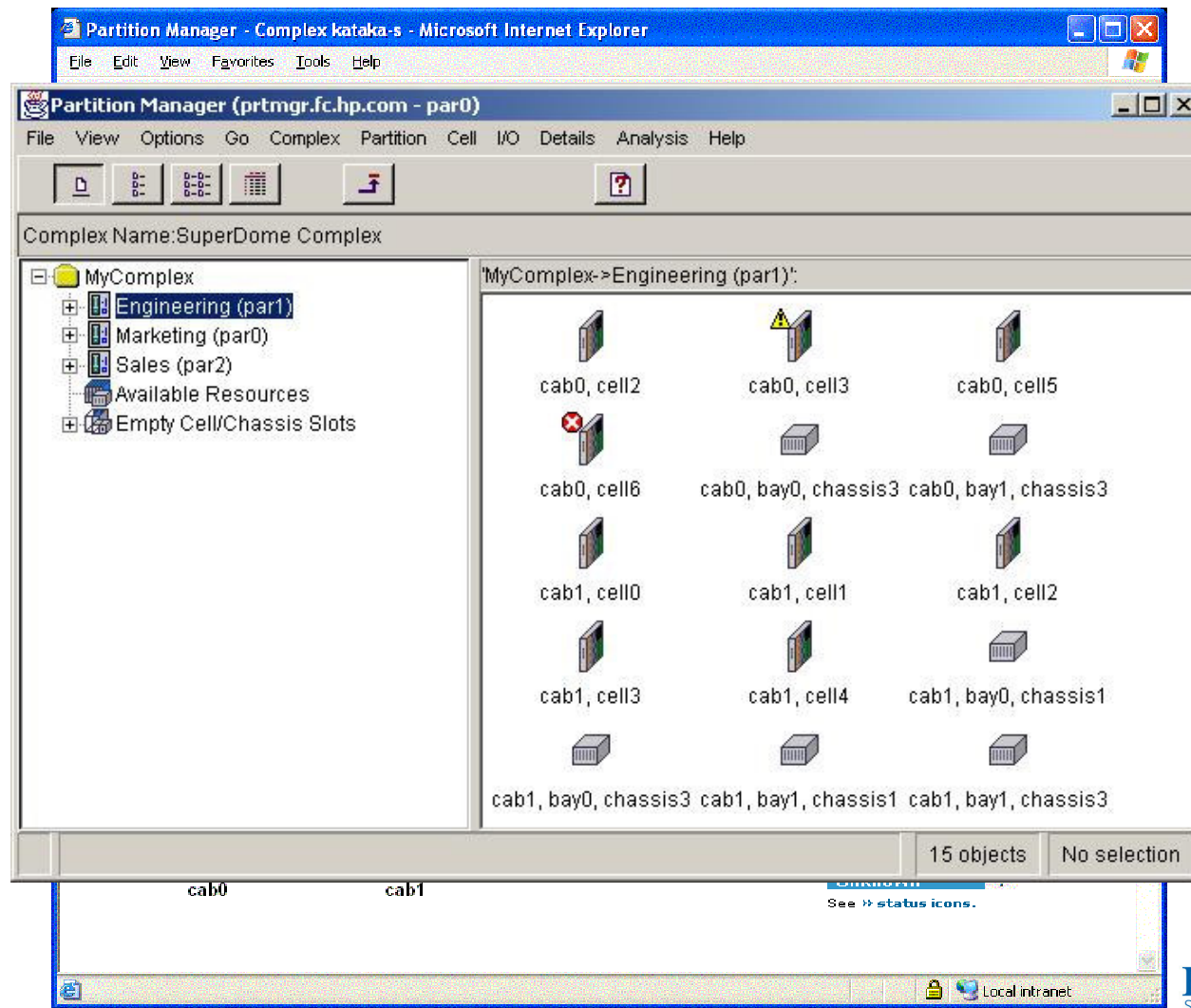
- all relevant complex information available in **one convenient location** - you don't have to hunt around for what you want to know
- complete GUI & commands overlap for **ALL** tasks - you can navigate through the GUI or launch directly from the command line
- Graphical views displaying hardware and logical configurations



“Most people are picture-based; we want the big picture.”

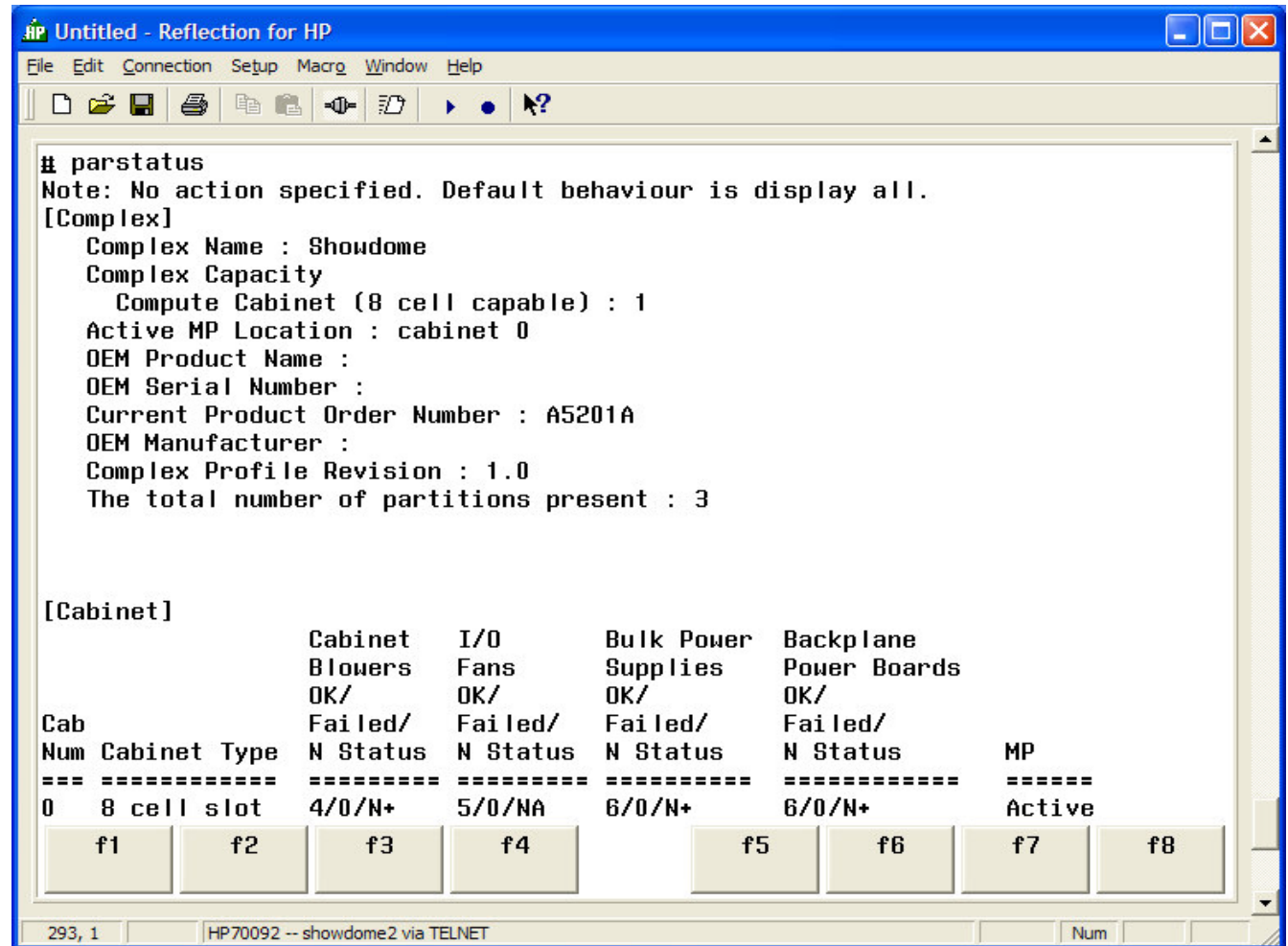


Partition Manager "Big Picture View"



nPartition commands

- cplxmodify(1M)
- fruled(1)
- frupower(1M)
- parcreate(1M)
- parmgr(1M)
- parmodify(1M)
- parremove(1M)
- parstatus(1M)
- partition(1)
- parunlock(1M)



Untitled - Reflection for HP

File Edit Connection Setup Macro Window Help

```
# parstatus
Note: No action specified. Default behaviour is display all.
[Complex]
  Complex Name : Showdome
  Complex Capacity
    Compute Cabinet (8 cell capable) : 1
  Active MP Location : cabinet 0
  OEM Product Name :
  OEM Serial Number :
  Current Product Order Number : A5201A
  OEM Manufacturer :
  Complex Profile Revision : 1.0
  The total number of partitions present : 3

[Cabinet]
```

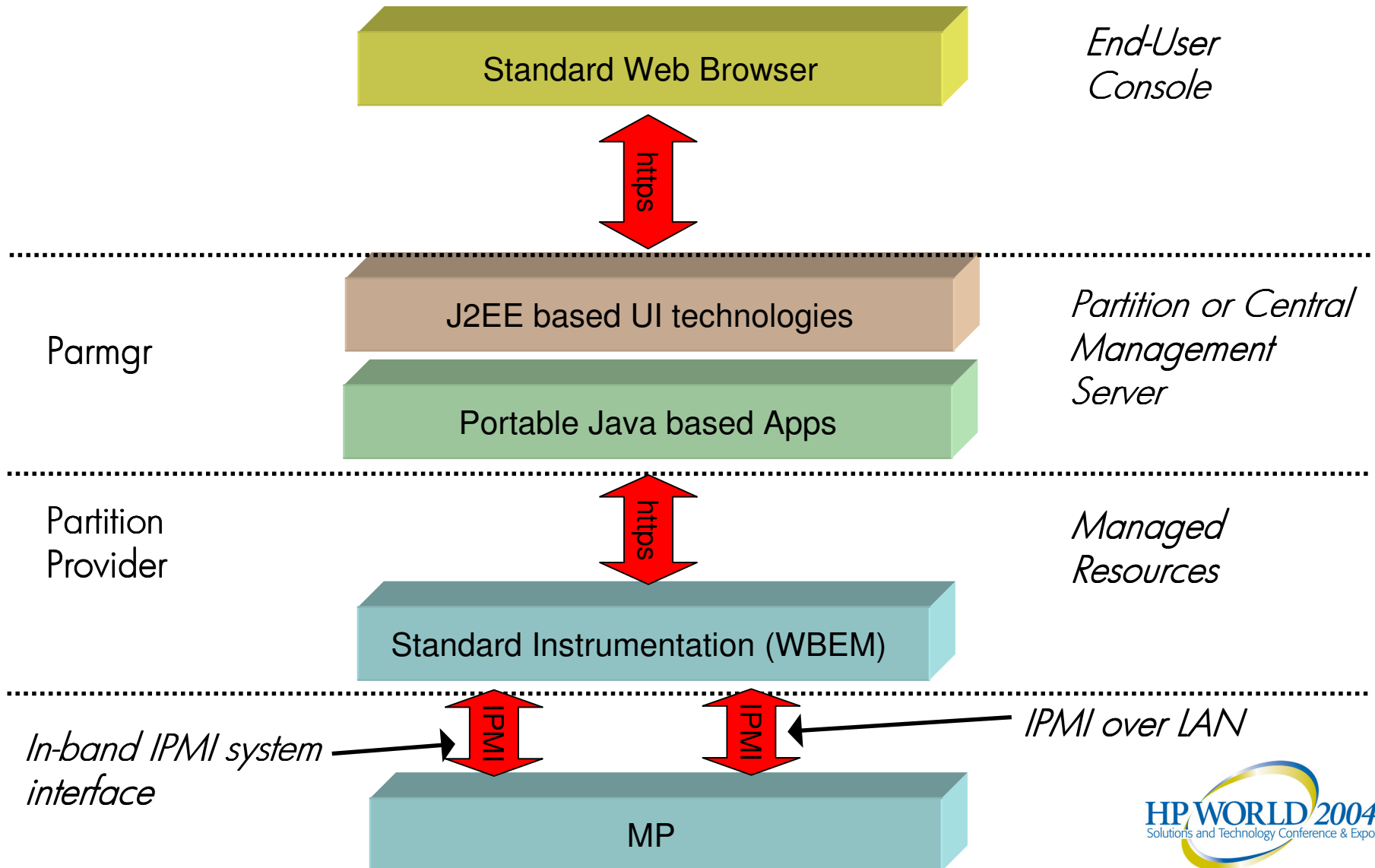
Cab	Num	Cabinet Type	Cabinet Blowers OK/ Failed/ N Status	I/O Fans OK/ Failed/ N Status	Bulk Power Supplies OK/ Failed/ N Status	Backplane Power Boards OK/ Failed/ N Status	MP
0	8	cell slot	4/0/N+	5/0/NA	6/0/N+	6/0/N+	Active

293, 1 HP70092 -- showdome2 via TELNET Num

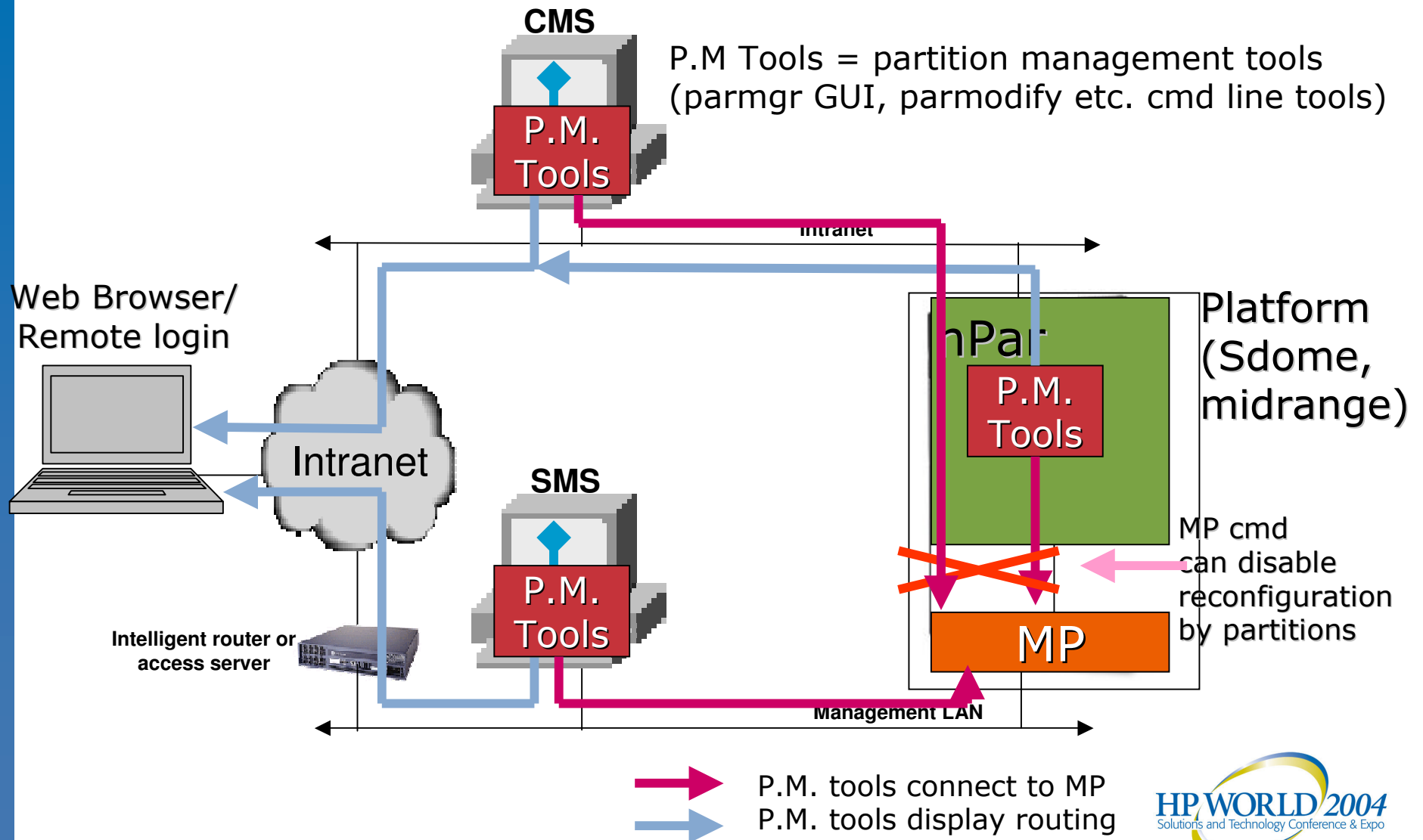
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Partition Manager Architecture Overview



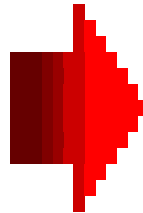
Partition Management Connection Options



Parmgr Local Management



- System with supported web browser

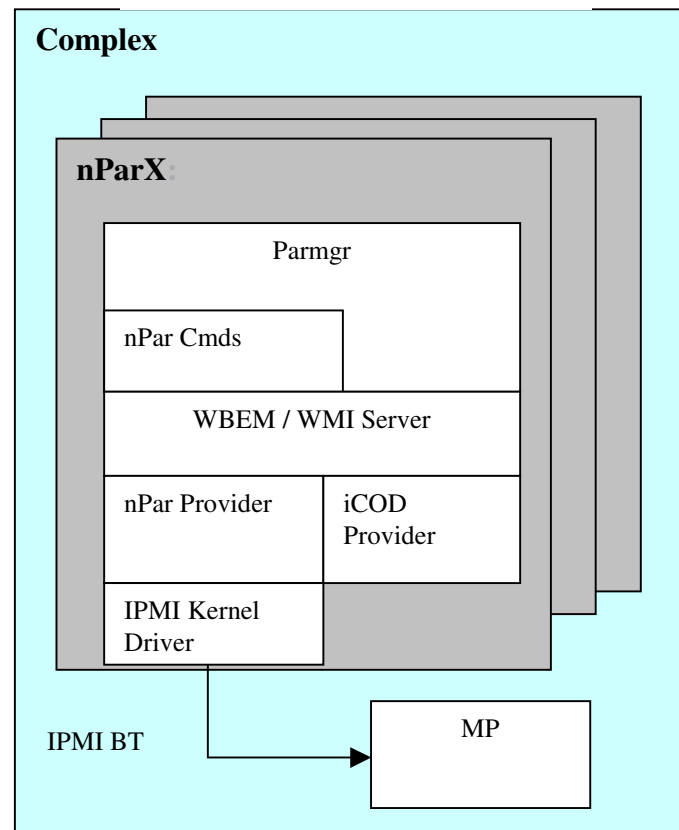


- Partition Manager and Partition CLI
- WBEM / WMI Providers
- Communication with service processor via kernel IPMI/BT interface

Partition Manager Architecture – IPMI/BT

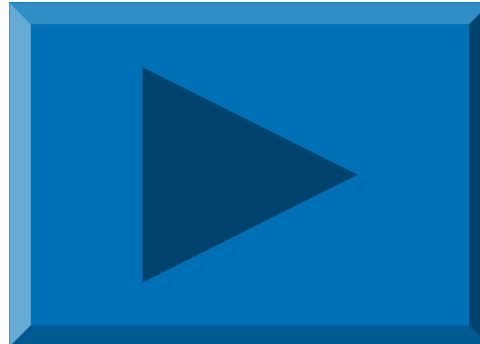


Local Management

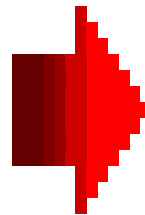




Partition Manager Local Login



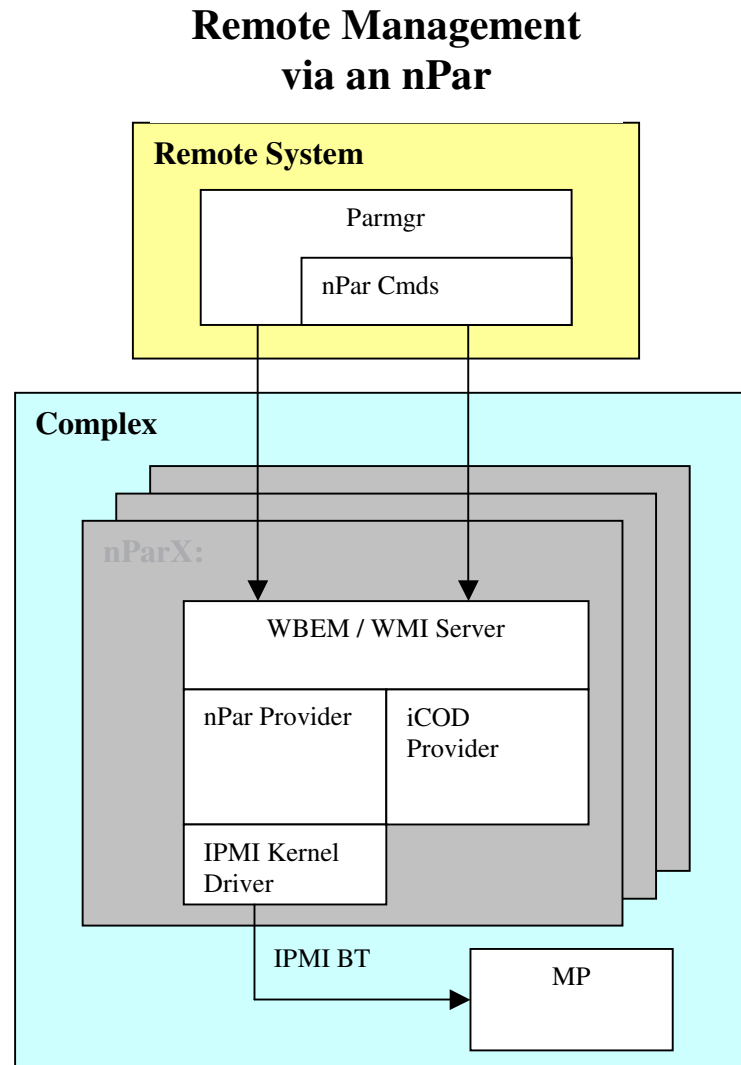
Parmgr Remote Partition Management



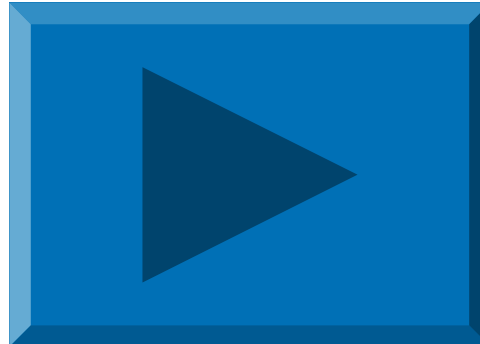
- System with supported web browser
- Partition Manager Application
- Partition CLI

- WBEM / WMI Providers
- Communication with service processor via kernel IPMI/BT interface

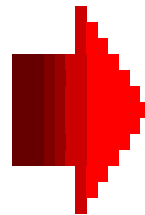
Partition Manager Architecture – IPMI/BT



Partition Manager Remote Partition Login



Parmgr Remote Management



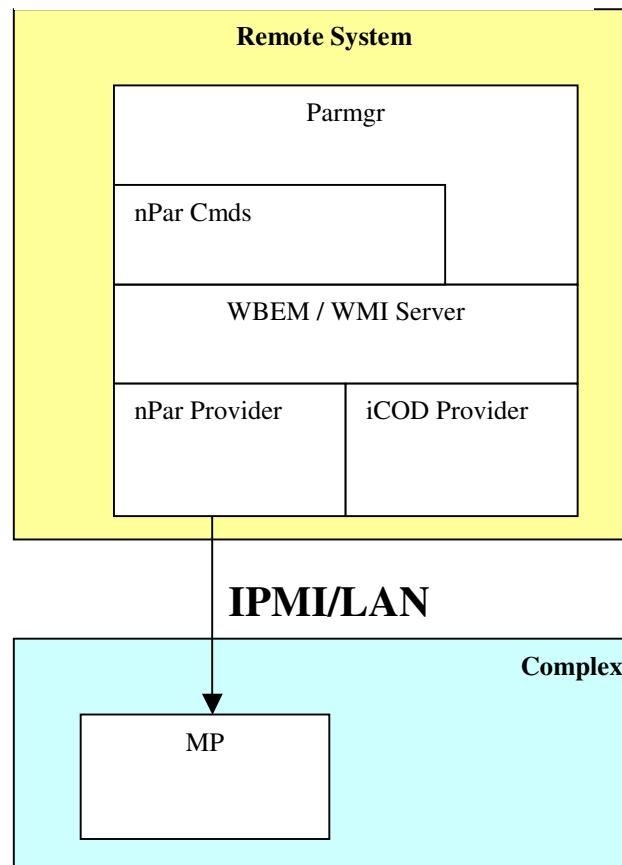
- Windows System (e.g. SMS), or HP-UX System
- Partition Manager Application
- Partition CLI
- WBEM / WMI Providers

- Direct communication with service processor via IPMI/LAN interface

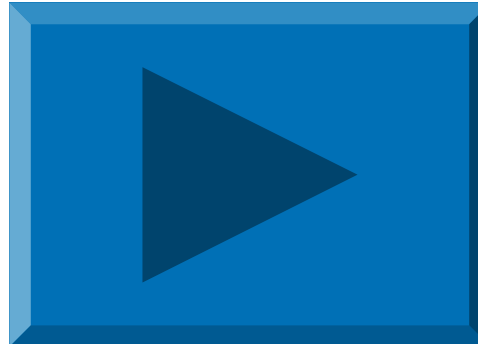
Partition Manager Architecture – IPMI/LAN



Remote Management via IPMI over LAN



Partition Manager Service Processor Login



Partition Manager Architecture and Connection Options Summary



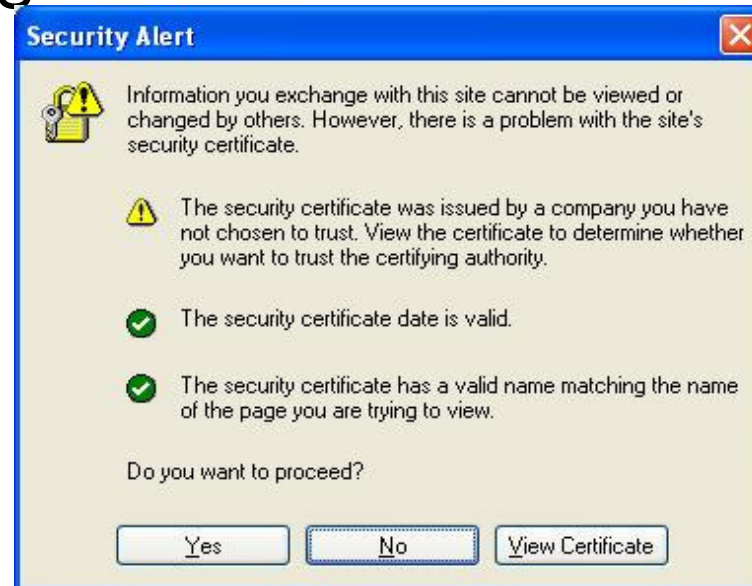
- nPartition management providing three main connection options:
- Local Management
 - Similar to partition management on legacy systems
 - Access to all other OS tools on managed nPartition
 - Management of other nPartitions can be restricted
- Remote Partition Management
 - Management of other nPartitions can be restricted
 - Requires only WBEM providers running on managed system
- Remote Management
 - Partition configuration in the absence of an OS on the managed system
 - Access to MP's network connection maybe not be available depending on your configuration
 - Allows full complex management when nPartition Configuration Privilege is enabled

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 - Partition Manager security
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Partition Manager Security

- Self-signed certificates are generated on each system where parmgr is running which enables secure management



- Certificate Authority signed (CA-signed) certificates can be installed to increase security.

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Parmgr Example Scenario: Sequence of Events

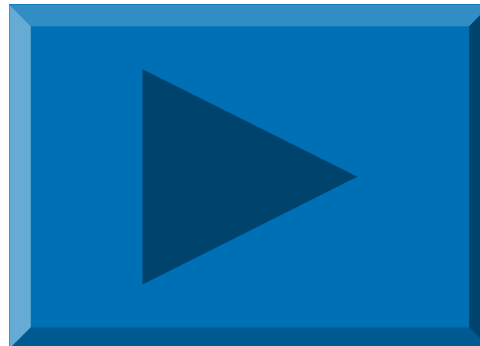


1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. “Production” partition is expanded to include two of the new cells.
4. “Testing” partition is created with the two remaining new cells.
5. Boot the “Testing” partition, and perform a reboot for reconfiguration on the “Production” partition.

Parmgr Example Scenario: Step 1

1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. "Production" partition is expanded to include two of the new cells.
4. "Testing" partition is created with the two remaining new cells.
5. Boot the "Testing" partition, and perform a reboot for reconfiguration on the "Production" partition.

Big Picture Views

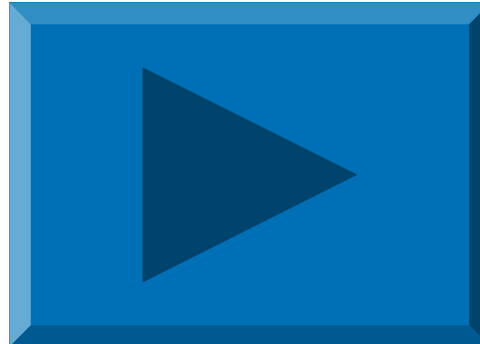


Parmgr Example Scenario: Step 2

1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. "Production" partition is expanded to include two of the new cells.
4. "Testing" partition is created with the two remaining new cells.
5. Boot the "Testing" partition, and perform a reboot for reconfiguration on the "Production" partition.



Refresh After Installing Hardware



Parmgr Example Scenario: Step 3

1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. “Production” partition is expanded to include two of the new cells.
4. “Testing” partition is created with the two remaining new cells.
5. Boot the “Testing” partition, and perform a reboot for reconfiguration on the “Production” partition.



Modify “Production” Partition



Parmgr Example Scenario: Step 4

1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. "Production" partition is expanded to include two of the new cells.
4. "Testing" partition is created with the two remaining new cells.
5. Boot the "Testing" partition, and perform a reboot for reconfiguration on the "Production" partition.

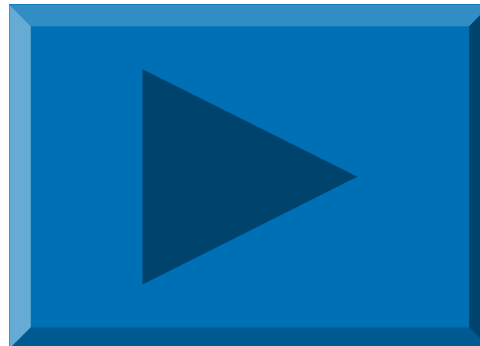
Create “Testing” Partition



Parmgr Example Scenario: Step 5

1. System Administrator views current configuration for planning purposes.
2. The new hardware is physically installed.
3. "Production" partition is expanded to include two of the new cells.
4. "Testing" partition is created with the two remaining new cells.
5. Boot the "Testing" partition, and perform a reboot for reconfiguration on the "Production" partition.

Boot Partitions



More Information

- HP Technical Documentation Server
 - <http://docs.hp.com>
 - search for “HP System Partitions Guide”
- IT Resource Center (ITRC)
 - <http://itrc.hp.com>
- HP Superdome Servers
 - <http://www.hp.com/go/superdome>
- HP Software Depot
 - <http://software.hp.com>
 - search for “ParMgr”
- HP Integrity Tech Support
 - <http://www.hp.com/support/itaniumservers/>

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