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Introduction

04/11/2007- Addendum #1

The IBM pSeries High Performance Switch (HPS) POWER5 Service Pack provides updates and code levels for these components:

- Hardware Management Console (HMC).
- Global Firmware (GFW).
- Power Subsystem Microcode (BPC code).
- HPS Network Manager (HPSNM).
- HPS/Switch Network Interface (SNI) Devices LP.
- Cluster Systems Management (CSM) LP.
- Reliable Scalable Cluster Technology (RSCT) software.
- AIX 5L Version 5.2 and 5.3.
- Various supporting AIX LPs.

HPS POWER5 Service Pack 13 Addendum #1 provides support for release SF240_299 / BP240_211.

Note:

System firmware level SF240_298 has been removed from the web due to a problem when running virtual I/O services (VIOS). This problem has been corrected by SF240_299 released April 5, 2007.

If you are currently running with SF240_298 and using VIOS on the system, Product Engineering recommends that you install SF240_299 as soon as possible. The VIOS fix is the only change in SF240_299 from SF240_298. This service pack can be installed concurrently.

Caution:

There is a known problem when upgrading the HMC from version 5 and early version 6 to version 6.1 or later. In this scenario the Hardware Server Resource Manager on the HMC fails to start after the upgrade. This results in the HMC not displaying the hardware configuration. To avoid this problem when upgrading to HMC version 6.1.2 (in this p5 HPS SP13 service pack), you must also install HMC interim fix PTF MH00946 as indicated in the [Component Updates](#) and [Installation Notes](#) sections of this ReadMe. MH00946 will be picked up in a future HMC V6.x update package.

with 01SF230_126_120 (or a later 01SF230 firmware level) that are upgraded to 01SF235_160_160 firmware will not boot if the I/O chassis on 9118-575 has been replaced. The failure requires that the VPD card for the 9118-575 be replaced to fix the problem.

If you are coming from SP2 there is no new microcode. This means that if you are following the new code load procedure; then you will not have to re-IPL the CEC nor Power Off the CEC; you will only have to reboot the LPARs to activate the alt_disk.

This document also contains general guidelines for upgrading the components listed in [Component Update/Download Information](#).

These guidelines are intended to be a supplement to the other IBM documents referred to in this document.

You must have all referenced documents available before you begin the upgrade process. A list of referenced documents can be found in [Supporting Documentation](#).

The Code Levels listed in [Component Update/Download Information](#) reflect the levels available at the time of this HPS POWER5 Release. Some components support only a single version, notably the Microcode for GFW and the Power Subsystem. Subsequent released versions are expected to be backward compatible.

The procedure outlined in [Recommended Installation Sequence](#) is the standard sequence of installation. Non-standard sequences or undocumented code levels may cause unforeseen problems. In this event please contact your Customer Service Representative.

HPS POWER5 SP3 introduced a modified install plan intended to reduce the maintenance window down time. Refer to the [Alternate procedure to reduce downtime](#).

HPS POWER5 SP5 introduced support for system firmware level 240.

HPS POWER5 SP11 allows use of the HPS TOD "Time of Day" function (refer to "Restrictions" section).

Service Pack Levels

230 Service pack code levels:

HMC: Version: 4; Release: 5.0 - Build level 20050629 + MH00454
IBMhsc.HPSNM_log-1.4.1.3-1 RPM

CEC: Global Firmware (GFW) - Version SF230_158
FRAME:Power Code (BPC code) - Version BP230_155

235 Service Pack code levels:

HMC: Version 5.1 + MH00593
IBMhsc.HPSNM_log-1.4.1.1-1 RPM
IBMhsc.NM_Common-1.0.0.0-12

CEC: Global Firmware (GFW) - Version SF235_214
FRAME: Power Code (BPC code) - Version BP235_212

240 Service pack code levels:

HMC: Version: 6 Release: 1.0 + MH00915 (HMC V6R1.2)
HMC V6R1.2 + MH00946 (efix for the CSM component)
IBMhsc.HPSNM_log-1.4.1.12-1 RPM
IBMhsc.NM_Common-1.1.0.3-1 RPM
IBMhsc.IBMNM_GUI-1.1.0.3-1 RPM

CEC: Global Firmware (GFW) - Version SF 240_299
FRAME: Power Code (BPC code) - Version BP240_211

AIX Service Packs and Supported Cluster and High Performance Computing (HPC) LPs:

- AIX 5L Version 5.2 TL 09 SP4
- AIX 5L Version 5.3 TL 05 SP4
- HPSNM - csm.hpsnm 1.4.1.17 (CSM Management Server only)
- AIX 5L Version 5.2 / HPS Devices LP 1.1.3.x as listed in [Detailed LP level check](#).
- AIX 5L Version 5.3 / HPS Devices LP 1.2.0.x as listed in [Detailed LP level check](#).
- Other supported AIX LP's: as listed in [Detailed LP level check](#).

New functions and features

HPS POWER5 SP5 introduced support for system firmware level 240. See New Functions and Features below.

The following items are new functions and features in release 240 for the High End systems that support

the IBM HPS:

- Support for 2.2 GHz processors on the model 570.
- Support for 1.9 GHz processor cards on the model 9406-570.
- Support for 4, 8, and 16 GB memory cards with 0% initial activation, and 1 GB activation increments, on model 590 and model 595 systems.
- Support for two CUoD DDR2 memory features on the model 570: a 4/8 GB feature, and an 8/16 GB memory feature.
- Support for mixing CoD-capable DDR2 memory with DDR2 memory that is not CoD-capable in a system.
- Support for F/C 0649, a new high-performance SCSI with RAID 6 disk controller.
- Support for the collection (and viewing on the HMC) of logical partitions' utilization of processor and memory resources.
- Support for enhanced model 575.
- Support for concurrent maintenance of the following entities on model 590 and 595 systems:
 - Node addition or upgrade.
 - RIO bus adapter addition or upgrade.
 - RIO bus adapter repair.
 - Clock card repair.
 - Various enhancements to the server firmware to reduce IPL times.
 - Support for huge pages (16 GB) in the Advanced System Management Interface (ASMI) menus.
 - Enhancements to the "Restore to factory default" option, CoD options, time-of-day, and firmware update policy menu on the ASMI menus.
 - Enhancements to the memory deconfiguration menu interface in the ASMI menus.
 - The option to set the number of virtual LAN (VLAN) switches was added to the ASMI menus.
 - A feature was added to the system firmware so that booting a system or partition from a hard disk will be retried, instead of immediately failing, to handle the situation in which disks are not yet available to boot before the firmware wants to boot from them. This typically happens when the boot disk is in an external disk enclosure.
 - Add support for USB devices in system firmware.
 - The maximum number of I/O towers on a loop is increased to six on an iSeries model 595.

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Supporting Documentation

Use the following information to reference the supporting documentation for this Readme:

- [High Performance Switch Planning, Installation, and Service for IBM server p5 servers](#)
- [Hardware Management Console](#)
- [eServer pSeries and AIX Information Center](#)
- [Switch Network Interface for eServer pSeries High Performance Switch Guide and Reference](#)
- [AIX 5.2 documentation](#)
- [AIX 5L Version 5.2 Installation Guide and Reference](#)
- [AIX 5L Version 5.2 Performance Management Guide](#)
- [Reliable Scalable Cluster Technology \(RSCT\) Library](#)
- [General Parallel File System \(GPFS\) Library](#)
- [Cluster System Management \(CSM\) Library](#)
- [IBM Parallel Environment \(PE\) Library](#)
- [LoadLeveler for AIX5L and Linux V3.3](#)
- [Guide to Multiple Page Size Support on AIX 5L Version 5.3](#)
- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)
- [CSM for AIX5L V1.x Planning and Installation Guide](#)
- [CSM for AIX5L V1.x Administration Guide](#)

The following table contains information about component updates and locations for downloads.

Service pack update and download information

Component	Service pack updates	Download sites
HMC	230 HMC V4R5.0. Select HMC Version 4.5 HMC_Update_V4R5.0_1.zip HMC_Update_V4R5.0_2.zip This release requires efix MH00454. You can download the HMC Recovery CD V4R5.0 package as a set of .iso images by using Download Director or you can download the corrective service file directly from the Internet. See Notice regarding 7310-C04 and 7310-C05/ internal modem compatibility issue.	HMC Support Select "HMC 4.5" Downloads for Updates are on the "Corrective service" tab. Click the "View" link for an HMC Update package to see the Readme.
	235 HMC V5R1 Select "HMC_Recovery_CD_V5R1.0" This release requires that the HMC is installed with HMC V5R1.0.	HMC Support Select "HMC 5.1" Downloads and media ordering for Recovery DVDs are on the "Recovery media" tab. Click the "View" link for the ISO images to see the HMC Readme.
	PTF MH00593 is an HMC Required Maintenance Package (HMC Version 5, Release 1.2.). This Maintenance Fix <i>must</i> be installed on HMC Version 5 Release 1.0. Updating to HMC 5.1 requires an Upgrade via the Recovery media process. There is no "update" corrective service to upgrade your current HMC Version to HMC 5.1. The HMC Recovery DVD V5 R1.0 is a bootable image and contains the HMC Base Code. You can order the package DVDs from the HMC "Recovery Media" tab. You can also download the DVD images in ISO format, and then use the images to burn your own DVD.	Downloads for updates and fixes are on the "Corrective service" tab. Click the "View" link

Click the "Installation instructions" tab for procedures for burning DVDs and for using the HMC Recovery DVD V5 R1.0.

for an HMC package to see the Readme.

See Notice regarding 7310-C04 and 7310-C05/ internal modem compatibility issue.

240

HMC V6R1.0 + MH00915

This release requires that the HMC is installed with HMC V6R1.2.

See Notice regarding 7310-C04 and 7310-C05/ internal modem compatibility issue.

[HMC corrective service](#)

Notes:

1. There is a known problem when upgrading the HMC from version 5 and early version 6 to version 6.1 or later. In this scenario, the Hardware Server Resource Manager on the HMC fails to start after the upgrade. This failure results in the HMC not displaying the hardware configuration.

Select "HMC 6.1"

Under "HMC corrective service support, select "HMC V6.1.2".

For the HMC ReadMe: scroll down to Download individual files.

To avoid this problem when upgrading to HMC version 6.1.2), you must also install HMC interim fix PTF MH00946. Obtain this fix from the [HMC corrective service support](#) page. MH00946 will be picked up in a future HMC V6.x update package.

Select "View" in the "ReadMe" column

2. MH00915 is required to get to V6R1.2.
3. You must use Recovery media or the Network to perform an Upgrade to update to HMC Version 6 Release 1.0.

Contact your IBM Sales Representative or Business Partner, and order Hardware Feature Code (MES) 0960 for the initial upgrade CDs.

230: Fix pack BP230_155

Fix pack SF230_158

235: Fix pack BP235_212**

Fix pack SF235_214

240: Fix pack BP240_211

Fix pack SF240_299

**Power Subsystem
Microcode**

AND

System Firmware

****Note:**

Power Subsystem update BP235_212 should only be installed on POWER5 systems using the IBM pSeries High Performance Switch. Download this update by clicking on the following links:

- o [02bp235_212_156.rpm](#)
- o [02bp235_212_156.xml](#)
- o [02bp235_212_156.html](#)

[Microcode Updates](#)

Power Subsystem Microcode is available up to 1 week earlier and GFW is available 3-4 days earlier than the web download site.

Please contact your IBM Service Support Rep (SSR) for the Power Subsystem Microcode or GFW package if not available on website.

AIX levels for this Service Pack:

AIX52

5200-09-04

bos.mp64: 5.2.0.99

[pSeries support fixes](#)

AIX53

5300-05-04

bos.mp64: 5.3.0.54

[AIX V 5.2](#)

[AIX V 5.3](#)

AIX

Also Apply Critical fixes as appropriate.

[AIX 5L Critical fixes](#)

Note:

Critical fixes for AIX 5L service are no longer being updated.

Because critical and pervasive fixes are now delivered as part of Service Packs, Critical Fix Packs will no longer be created. To better understand this direction, read [AIX 5L Service Strategy and Best Practices](#).

To download Service Packs for AIX visit [Quick links for AIX fixes](#).

Notes:

1. CSM 1.4 requires RPM update openCIMOM 0.8 (5.2)
2. If you are APPLYING software for csm.server 1.4.1.1, please install the following images from the AIX Installation Media Volume 2:
tcl
tk
expect
conserver-8.1

openCIMOM
(CSM requisite)

[openCIMOM](#)

openssl-0.9.7d-2

SSL_
(CSM requisite)

AIX-rpm-5.2.0.40-1

[sourceforge.net -
openssh-aix](#)

SSH_
(CSM requisite)

openssh-3.8.1p1_52.tar.gz

[sourceforge.net -
openssh-aix](#)

On the CSM MS:

This release requires AIX HPSNM LP csm.hpsnm 1.4.1.17

apply HPSNM AIX PTF U811265, [APAR IY92631](#)

[pSeries support fixes](#)

Note:

AIX filesets csm.hpsnm and csm.server may be included in AIX Maintenance or Technical Level Update Packages, should *only* be installed on the CSM MS and *not* on production LPARS.

[Fix Central](#)

HPSNM

On the HMC:

230 Level:
HMC v 4.5
HPSNM Service Pack 3 MB01192 MH00401

235 Level
HMC v 5.1
HPSNM Service Pack 4 MB01237 MH00461

240 Level:
HMC v 6.1.2
HPSNM Service Pack 9 MB02087 MH00947

[Hardware](#)
[Management Console](#)

Support for UNIX
servers and Midrange
servers

Select an HMC
release, and then select
the "HPSNM/IBMNM
fixes" tab

IBM HPS POWER5 Readme - Service Pack 13

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Installation Sequence

Complete the information in the following subsections to install this service pack:

1. Install HMC
2. Install Power Subsystem Microcode
3. Install GFW
4. Create LPAR definition and assign adapters.
5. Install Cluster System Manager (CSM) Software
6. Define the nodes/LPARs in the cluster.
7. Assign IP Addresses for SNIs
8. Install AIX on all LPARs in the cluster
9. Apply HPS/SNI Updates
10. Dynamic Host Configuration Protocol (DHCP)
11. Power Off CECs
12. Configure the High Performance Switch Network Manager (HPSNM)

In order to coordinate the tasks necessary for the installation and configuration of the HPS Cluster, we recommend that Service Support Representatives and System Administrators review the following documents applicable to your CSM release:

- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)
- [CSM for AIX5L V1.x Planning and Installation Guide](#)
- [CSM for AIX5L V1.x Administration Guide](#)

Especially Chapter 6 *Installation* of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#) provides detailed information on the hardware, firmware, and software sequence of installation.

Alternate procedure to reduce downtime

Perform the following upgrade procedure to reduce the maintenance window for the service packs upgrades.

1. On the CSM MS - install / upgrade:
 - Install the new AIX PTFs.
 - Install the new RSCT PTFs.
 - Install the new CSM PTFs.
 - Install the new FNM PTFs.
 - Reboot the CSM MS.
2. On the HMC - install / upgrade:
 - Upgrade ELA master and wait until ELA master is up and running.
 - Upgrade the rest of the HMCs.
3. Power Code upgrade:
 - If the new Power Code supports concurrent upgrade; then select concurrent upgrade during

the update process.

- If the new Power Code does not support concurrent upgrade; then select concurrent install only with deferred disruptive activate.

4. GFW upgrade:

- Disable SNM.
- If the new GFW supports concurrent upgrade; then select concurrent upgrade during the update process.
- If the new GFW don't supports concurrent upgrade; then select concurrent install only with deferred disruptive activate.
- Enable SNM.

5. On the LPARs - install / upgrade AIX and LPPs:

- Use alternative disk install for AIX and LPPs.
- Change the bootlist to the alternative disk.

6. Stop the workload:

- If you don't have to activate Power Code or GFW; then reboot the LPARs to activate alt disk install.
- If you don't have to activate Power Code or GFW but have new microcode; then shutdown the LPARs
 - Re-IPL CECs.
 - Activate the LPARs.
- If you do have to activate Power Code or GFW:
 - Shutdown the LPARs.
 - Power off the CECs.
 - Activate the Power Code or the GFW Code.
 - Power on The CEC(s) the LPARs.

7. Restart the workload.

Note:

This SP updates both the GFW and the BPC code concurrently.

Install HMC

Install Hardware Management Console (HMC) software on all HMCs in the cluster. There are no required efixes to apply.

Documentation Reference:

- [Hardware Management Console](#)
- [Hardware Management Console V4R5.0 Readme](#)
- [Hardware Management Console V5R1.0 Readme](#)
- [Hardware Management Console for pSeries Maintenance Guide](#)
- [Hardware Management Console for pSeries Installation and Operations Guide](#)
- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers \(SA38-0646-00\)](#)

HMC Software Download Information

In the HMC corrective service support section on the [HMC Power5servers page](#), scroll to "Supported HMC products" and select from the following:

- SF230: Version 4.5 machine code updates
- SF235: Version 5.1 machine code updates
- SF240: Version 6.1 machine code updates

Follow the information and HMC installation instructions.

Note:

Check if your HMC is listed in the BIOS updates sub-section. If you are updating the HMC on a listed model, you must first update the BIOS of that HMC model. The BIOS and installation instructions are also available on the [HMC support page](#).

Installation Notes

If the HMC was used in standalone mode before CRHS setup, reboot the HMC after running the addpeer command to add the HMC into the peer domain. This ensures that the HMC GUI displays hardware in cluster mode.

Upgrading an HMC in the ClusterPeerDomain should not require that the addpeer command be run again for that HMC. The ClusterPeerDomain should be preserved after an upgrade.

Caution:

There is a known problem when upgrading the HMC from Version 5 and early Version 6 to Version 6.1 or later. In this scenario the hardware server resource manager on the HMC fails to start after the upgrade. This results in the HMC not displaying the hardware configuration.

To avoid this problem when upgrading to HMC version 6.1.2 (in this p5 HPS SP13 Service Pack release), you must also install HMC interim fix PTF MH00946. Obtain this fix from the HMC 6.1.2 [HMC support page](#). MH00946 will be picked up in a future HMC V6.x update package.

To preserve the Cluster Ready Hardware Server configuration on an HMC, be sure to save "Save upgrade data" prior to upgrading the HMC. This data should automatically be restored after the HMC is upgraded and doesn't require a reboot of the HMC.

Install the HMC code using the most recent copy of the [HPS Install and Planning Guide](#).

Review the HMC information on the web page where you downloaded the images.

For new HMC install follow the instructions in Chapter 3, "Installing and Configuring the HMC":

[Hardware Management Console for pSeries Installation and Operations Guide](#).

Level Check

Level Check by running the lshmc -V command on the HMC command line or selecting the "Help --> About Hardware Management Console" option on the HMC GUI.

Level Check from HMC command line where lshmc -V shows:

SF230:

```
version= Version: 4
Release: 5.0
HMC Build level 20051010.1
MH00454: Maintenance Package for V4R5.0 (10-10-2005)
```

SF235:
version= Version: 5
Release: 1.1
HMC Build level 20060104.1

SF240:
version= Version: 6
Release: 1.2
HMC Build level 20070123.1
MH00946: Fix Cluster Ready Hardware Server issues after upgrade (02-07-2006)

Level Check from HMC GUI

Menu "Help" "About Hardware Management Console" shows:

230 level:
Version: 4
Release: 5.0
HMC Build level 20051010.1
MH00454: Required Maintenance Fix for V4R5.0 (10-10-2005)

235 level:
Version= Version: 5
Release: 1.0
HMC Build level 20060104.1
MH00523: Remote HMC Management fix (01-12-2006)
MH00607: Fix Dump collection issues (02-25-2006)

240 level:
Version= Version: 6
Release: 1.2
HMC Build level 20070123.1
MH00946: Fix Cluster Ready Hardware Server issues after upgrade (02-07-2006)

Service Network

The HMC requires a 'Service Network' to communicate with the Cluster components:

- HMC
- Managed Frames
- Managed Systems (CEC FSP's)
- CSM Management Server (MS)

This service network is an Ethernet hub to which the cluster components are connected via an Ethernet cable. There is a requirement to connect only one port of the frames A-side BPA Ethernet hub to the primary service network (a.k.a. external Ethernet hub).

Connect an Ethernet cable from the A-side BPA network hub at the top of the frame (labeled J00 RJ45 ports A, B, C or D). All 24-inch frames, including frames for the p575, p590, p595 servers and switch-only frame, are provided with their internal networks pre-cabled to the internal network hub on both sides of the frame. No additional internal Ethernet cable connections are required.

The other ports on the hub are connected to frame components such as the SP and BPA. HMCs typically have two integrated

Ethernet ports labeled 1 and 2, eth0 and eth1, respectively. eth0 must be connected to the private service network. Any other Ethernet port can be used for a public network if desired.

Check if BIOS hyperthreading is disabled on the HMC. Many of the rack mounted HMCs (8187-KUH, 7315-C03) have a BIOS option to enable hyperthreads. The HMC's embedded kernel will not run well when this option is enabled. Hyperthreading must be disabled before upgrading to HMC R4V5 or higher.

WEBSM

After a successful HMC installation or upgrade, the Install Shield version of the Web-based System Manager Remote Client a.k.a WebSM PC Client may need to be re-installed on your remote server or PC. Uninstall any existing WebSM PC Client. Failure to uninstall will result in undefined behavior of the WebSM PC Client.

To install the PC Client software on your remote server or PC, complete the following steps:

1. Go to http://<hmc-hostname>/remote_client.html.
2. Select the image to install: Linux Or Windows
3. Select "Open" to immediately install on the machine on which the browser is running.

Note:

The installation may take up to 10 minutes to complete.

For complete instructions on installing and using the Remote Client please refer to Chapter 9, "Installing and Using the Remote Client" in

[Hardware Management Console for pSeries Installation and Operations Guide](#).

HMC Properties

Additional information on the HMC properties is also available in Chapter 6, "Installation" of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)

Important: The login available at virtual console 0 (via the CTRL-ALT-F1 key sequence) is no longer available. Set the date and time

Check that the date and time is set on the Hardware Management Console. Refer to "Step 3: Set the date and time on the console" of the "Firmware Installation" section in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers \(SA38-0646-00\)](#) for more details.

Enable the CRHS port

Enable the Cluster Ready Hardware Server 8899:tcp port on the service network on the HMCs in the cluster.

To enable the Cluster Ready Hardware Server port, complete the following steps:

1. Open the HMC GUI.
2. Select *Customize Network Configuration*.
3. Select *Ethernet interface*.
4. Click on *Details*.
5. Click on *Firewall*.
6. Highlight *Cluster Ready Hardware Server 8899:tcp* from upper window.
7. Click the *Allow incoming* button.
8. Verify that *Cluster Ready Hardware Server* appears in the lower part of the window.

9. Reboot HMC after the configuration.

Set frame numbers

Set frame numbers on each frame in the cluster. Refer to "Step 4: Setting frame numbers" of the "Firmware Installation" section in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#) for more details.

Install Power Subsystem Microcode

Install Power Subsystem Microcode on all server and switch frames in the cluster.

Refer to "Step 5: Installing power subsystem microcode and managed system (GFW) firmware" of the "Firmware Installation" section in Chapter 6 ("Installation") of the pSeries High Performance Switch (HPS) Planning, Installation and Service Guide for IBM eServer p5 server (SA38-0646-00) for installation details.

Important Preliminary Notes:

- A complete install/update consists of two files, (i) a firmware code fixpack in RPM format and (ii) a cover letter in XML format.
- The managed frames must be in the Standby/Standby state on the "Frame Management" panel prior to the power subsystem microcode install/upgrade.

Documentation Reference:

- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)

Power subsystem microcode Download Information:

- <http://www14.software.ibm.com/webapp/set2/firmware/gjsn>

Level Check

To view the expected installed and activated power subsystem licensed internal code (LIC) level after a successful install/upgrade:

- On the HMC GUI, select the "Licensed Internal Code Updates" tab.
- From the "Change Internal Code" task panel, select "View system information" and click OK.
- Select "None" on the "Specify LIC Repository" panel and click OK.
- EC Number LIC Type Machine Type/Model/Serial Number Installed Level Activated Level Accepted Level: where <nnn> is the Accepted LIC level last successfully installed and activated power subsystem LIC level

Refer to the [Component Update/Download Information](#) section for the Power Subsystem Microcode.

Note:

The HMC command line can also be used to update power subsystem microcode using the `lslic` and `updlic` commands. Refer to the HMC man pages for detailed information on using using these commands.

Install GFW

Install managed system firmware on all managed systems/CECs in the cluster. Refer to "Installing power subsystem microcode and managed system (GFW) firmware" in the "Firmware Installation" section in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#) for installation details.

Important Preliminary Notes:

- A complete install/update consists of two files, (i) a firmware code fixpack in RPM format and (ii) a cover letter in XML format.
- The managed systems must be in either Operating, Standby, or Power Off state on the "Server Management" GUI panel prior to the managed system firmware install/upgrade.
- Verify that the managed frames are in the Standby/Standby state on the "Frame Management" GUI panel prior to the power subsystem microcode install/upgrade.

Documentation Reference:

- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)

Managed system firmware (GFW) Download Information:

- <http://www14.software.ibm.com/webapp/set2/firmware/gjsn>

Level Check

To view the expected installed and activated power subsystem licensed internal code (LIC) level after a successful install/upgrade:

- On the HMC GUI, select the *Licensed Internal Code Updates* tab.
- On the *Change Internal Code* task panel, select *View system information* and click *OK*.
- Select "None" on the "Specify LIC Repository" panel and click *OK*.
- EC Number LIC Type Machine Type/Model/Serial Number Installed Level Activated Level Accepted Level: [See: GFW Levels](#)

where <nnn> is the Accepted LIC level last successfully installed and activated power subsystem LIC level

Note:

The HMC command line can also be used to update power subsystem microcode using the `lslic` and `updlc` commands. Refer to the HMC man pages for detailed information on using using these commands.

Create LPAR definition and assign adapters

For details refer to "HMC code load" in the "Software Installation" section in Chapter 6, "Installation", [pSeries HPS Planning, Installation and Service Guide](#).

Install Cluster System Manager Software

CSM software is part of the base AIX installation. The recommended AIX service levels :[See Component Updates](#)

a. Preliminary Notes:

- o CSM requires openCIMOM 0.8(5.2) RPM update which is available on the AIX Toolbox page: <http://www.ibm.com/servers/aix/products/aixos/linux/download.html>
- o The following opensource images also available on the AIX Toolbox page, <http://www.ibm.com/servers/aix/products/aixos/linux/download.html>
- o pre-requisites for applying csm.server which will be carried out in Step 6b below:
 - tcl
 - tk
 - expect
 - conserver-8.1

Documentation Reference:

- o For information on AIX installation, refer to [AIX 5L Version 5.2 Installation Guide and Reference \(SC23-4389-03\)](#)
- o For information on CSM installation, refer to CSM for AIX5L Planning and Installation Guide
- o For information on CSM configuration, refer to CSM for AIX5L Administration Guide
- o [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)

For AIX5L Maintenance Package Download Information go to:

<http://www.ibm.com/servers/eserver/support/unixservers/aixfixes.html>

Notes:

- i. Check that the csm.gui.websm and csm.hpsnm filesets were installed as part of the AIX installation media and the option to "Automatically increase filesystems" was selected during the installation. These filesets are required for the operation of the High Performance Switch Network Manager (HPSNM) software on the CSM management server.
- ii. Check that the size of the /var directory on the CSM Management Server is approximately 1 Gigabyte to accommodate the HPSNM log files.
- iii. Additional information on installing the CSM software is also available in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers \(SA38-0646-00\)](#).

b. Apply RSCT and CSM Updates to CSM MS

Apply the RSCT and CSM PTF update images for AIX on the CSM Management Server.

RSCT PTF Download Information - refer to Component Update/Download Information for RSCT

CSM PTF Download Information - refer to Component Update/Download Information for CSM

Level Check:

- o lsllpp -L csm.client csm.core csm.diagnostics csm.dsh csm.gui.dcem csm.gui.websm csm.server csm.hams
- o lsllpp -L rsct.core.sensorrm rsct.core.utils rsct.exp.cimrm rsct.basic.rte rsct.core.lprm rsct.core.rmc rsct.core.sec rsct.basic.hacmp rsct.core.auditrm

Define the nodes/LPARs in the cluster

To define the nodes/LPARs in the cluster, review the following:

- Refer to Chapter 6, "Software Installation", Set up the CSM cluster' in the [HPS Planning Guide](#)
- For detailed information about setting up the CSM cluster, refer to Chapter 8 of: [Cluster System Management \(CSM\) Library](#)
- CSM for AIX 5L Planning and Installation Guide

Assign IP Addresses for SNIs

"Step 5: Assign IP Addresses for SNIs" of the "Software Installation" section in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers \(SA38-0646-00\)](#) cannot be implemented at this stage of the installation sequence due to a known problem with NIM whereby the defaults used by NIM for the number and size of technical large pages are not big enough to support the automatic configuration of more than one SNI as secondary adapters by NIM.

This step to assign IP Addresses to the SNIs will now be carried out after AIX is installed on the LPARs, the HPS/SNI updates are applied and large page support enabled on the nodes (see step 10c below).

Install AIX on all LPARs in the cluster

Refer to [pSeries HPS Planning, Installation and Service Guide](#), Chapter 6, "Installation", Software Installation", "Install AIX on the nodes".

For the recommended service levels of AIX5L version 5.2 and AIX5L version 5.3 refer to the [Component Update/Download Information for AIX](#)

Note:

For the PE LP - DPCL is no longer a part of the IBM PE for AIX licensed program. Instead, DPCL is now available as an open source offering that supports PE. For more information and to download the DPCL open source project go to <http://oss.software.ibm.com/developerworks/opensource/dpcl>

This page should link to <http://sourceforge.net/projects/dpcl> where you can download the required code.

Because /var is a system data repository, system administrators should check periodically to maintain /var such that there is at least 30 Mb free [use 'df -k']. If /var is more than 75% full, use the command `du /var | sort -n` to find directories containing the most data.

Documentation Reference:

- For information on AIX installation, refer to [AIX 5L Version 5.2 Installation Guide and Reference \(SC23-4389-03\)](#)
- [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#)
- Chapter 12, "Installing the AIX operating system on the nodes", in [CSM for AIX5L Planning and Installation Guide](#) which also contains details on installing the AIX operating system on the LPARs.

AIX5L Maintenance Package Download Information

To download the package, complete the following steps:

1. Go to <http://www.ibm.com/servers/eserver/support/unixservers/aixfixes.html>
2. Select Maintenance Packages and choose AIX52 or AIX53
3. Specify your "Current level"
4. Specify "Desired level" and click "GO."
5. Follow instructions on this page.
6. Check AIX5L Critical Fixes.

Level check AIX by running the following command on the LPARs:

- `oslevel -r`
- `lslpp -L bos.mp`

Refer to [Component Update/Download Information for AIX](#).

Note:

If filesets "csm.hpsnm" and "csm.server" are packaged with AIX5L, they should NOT be installed on the LPARs in the cluster.

Apply HPS/SNI Updates to all LPARs

Note that a filter installing AIX on the LPARs, only the HPS and SNI base level images are on LPARs in the cluster.

Download and apply the HPS/SNI PTF update referenced in the ["Detailed LP Check" for AIX5L 5.2 or AIX5L 5.3](#).

Level Check:

- `lslpp -Lc | egrep "HPS|sni" | cut -d : -f 2,3 | sed 's:/ /'`
- `dsh "lslpp -Lc | egrep "HPS|sni" | cut -d : -f 2,3 | sed 's:/ /' "|dshbak|more"`

[Expected Levels are provided in Table 2](#) " HPS/SNI Detailed LP Level Check"

Notes:

- i. Notes on using TLP (Large Page) Settings in High Performance Computing (HPC) environment:
 - It is strongly recommended that users familiarize themselves with TLP basics and configuration options available.
 - The High Performance Switch adapter requires TLP usage and these TLP requirements are documented.
 - A formula to calculate the required TLP is outlined below.
 - You should also consult the section on the Large Page feature on AIX in [AIX 5L Version 5.2 Performance Management Guide](#)
OR
[AIX 5L Version 5.3 Performance Management Guide](#)
 - Users need to be aware of the usage of the LoadLevelerR pre-emption features with TLP (Large Pages) - specifically the fact that jobs that are using TLP that are pre-empted will essentially "lock up" the real memory the TLP's use, which is pinned by AIX. Unwise use of TLPs with LoadLeveler pre-emption can result in exhausting real memory available for jobs. If one wants LoadLeveler to schedule jobs based on the availability of large page, (especially if the job is going to run in mandatory Large Page mode) he/she may consider

making use of the LoadLeveler consumable resource feature. The consumable resource function, which has already been around for several years, is documented in the LoadLeveler manual.

ii. Notes on tuning Virtual Memory(VMM) Settings in an HPC environment:

Customers should be advised that the AIX VMM parameters (set by the vmo command) minfree and maxfree will most likely have to be adjusted (increased) in an HPC environment based on your cluster size, the amount of system memory, and number of processors per CEC. These settings when tuned properly will ensure enough memory remains available for core cluster infrastructure applications (RSCT, GPFS, LoadL). The recommended initial value for these tunables are minfree = 10000 and maxfree = 12000. Users are strongly urged to consult the following AIX documentation on virtual memory and vmstat tools and tune their system accordingly:

- http://publib16.boulder.ibm.com/doc_link/en_US/a_doc_lib/aixbman/prftungd/memperf.htm
- http://publib16.boulder.ibm.com/doc_link/en_US/a_doc_lib/aixbman/prftungd/memperf1.htm#i50853 The [AIX 5L Version 5.2 Performance Management Guide](#) should also be consulted.

Tuning these settings have been shown to help users avoid conditions where core cluster applications shut down and restart due to extensive blockage caused by "out of memory" issues. Keep in mind that all cluster applications should be designed and cluster tuned accordingly as to avoid oversubscribing to the real memory available.

After successful update of HPS/SNI filesets to the latest level, 64 bit kernel and technical large page support option must be enabled.

Set up your LPARs with 64-bit kernel

- i. Check which kernel is currently in use: bootinfo -K a response of "32" is a 32bit Kernel
- ii. In -fs /usr/lib/boot/unix_64 /unix
- iii. In -fs /usr/lib/boot/unix_64 /usr/lib/boot/unix
- iv. Determine which rootvg hdisk contains the boot logical volume (usually hd5). This hdisk will be your "ipldevice".
 - `lspv |grep rootvg`
 - `hdisk0 009b982332a1f9b8 rootvg active`
 - `hdisk1 009b982332a2321a rootvg active`
 - `lspv -l hdisk0 |grep hd5`
 - `hd5 1 1 01..00..00..00 N/A (hdisk0 is your ipldevice)`
- v. Issue: `bosboot -ad /dev/<ipldevice>` (eg. `bosboot -ad /dev/hdisk0`)
- vi. Reboot: `shutdown -Fr`
- vii. Verify 64 bit kernel is running after reboot: `bootinfo -K 64`

Set up Large Page Option

For configuration details see Large Page Support in [AIX 5L 5.2 Performance Management Guide](#) or

[AIX 5L 5.3 Performance Management Guide](#)

The number of TLP depends on customer configuration and relates to the number of windows required for each adapter(sni) plus any Large Pages used by other applications. Set up Large Page Option using the vmo command for each LPAR:

`vmo -r -o v_pinshm=1 -o lgpg_size=16777216 -o lgpg_regions=YYY`

where YYY is the amount of Technical Large Pages to export.

Note: you can use `/usr/sni/aix5?/debugtools/sni_calc_lgpg_cnt` to calculate the minimum number of TLP's.

Example:

On an LPAR with 2 sni's :

```
/usr/sni/aix5?/debugtools/sni_calc_lgpg_cnt
number_of_sni = 2
num_windows = 16
total_num_windows = 23
spool_size = 0x2000000
rpool_size = 0x2000000
Total required LPs == 0x39 [57]
```

You can also use `sni_calc_lgpg_cnt` to calculate TLP for a number of different vars.

Example:

```
/usr/sni/aix5?/debugtools/sni_calc_lgpg_cnt -a 8
number_of_sni = 8
num_windows = 16
total_num_windows = 23
spool_size = 0x2000000
rpool_size = 0x2000000
Total required LPs == 0xd5 [213]
```

Example:

To setup a node with 8 sni adapters:

```
16MB Large Page: lgpg_size = 16777216
256 Large Pages: lgpg_regions = 256
dsh <nodelist> "echo y|vmo -r -o v_pinshm=1 -o
lgpg_size=16777216 -o lgpg_regions=256"
```

(Use `, echo y|vmo` because otherwise `vmo` will prompt for verification to run `bosboot`) Would generate this response:

```
Setting v_pinshm to 1 in nextboot file
Setting lgpg_size to 16777216 in nextboot file
Setting lgpg_regions to 256 in nextboot file
Warning: some changes will take effect only after a bosboot and a reboot
Run bosboot now?
bosboot: Boot image is 19624 512 byte blocks.
Warning: changes will take effect only at next reboot
```

Note:

The `vmtune` sample program is being phased out and is not supported in future releases. It is replaced with the `vmo` command (for all the pure VMM parameters) and the `ioo` command (for all the I/O related parameters) which can be used to set most of the parameters that were previously set by `vmtune`. The `-v` flag has been added to `vmstat` to replace the `-A` flag which display counter values instead of tuning parameters. For AIX 5.2, a compatibility script calling `vmo` and `ioo` is provided to help the transition.

To Check that Large Page Option is set:

```
vmo -a|grep lg
```

```

lgpg_size = 16777216
lgpg_regions = YYY <where YYY is the amount of Technical Large Pages to export
soft_min_lgpgs_vmpool = 0

```

Reboot LPARs. The LPARs should be rebooted as soon as possible to properly integrate the changes and to avoid disruption of current functionality.

Using memory by Remote Direct Memory Access (RDMA) and TLP

The following items outline information on using memory by RDMA and TLP:

- o Real memory is divided into two categories - Small Pages and Large pages.
- o It is the user's responsibility to achieve an optimal balance between the the two categories based on the expected and/or experienced needs of both SNI adapters memory requirements expressed in TLP and applications use of Small Pages as expressed in RDMA.
- o TLP can allocate up to 75% of real memory.
- o RDMA can pin and map up to 75% of small page application memory.
- o Total Real Memory is a function of $N(\text{bytes of real mem}) = T(\text{bytes of real mem allocated to TLP}) + S(\text{bytes of real mem allocated to Small Pages})$
- o Small Page memory is a function of $S(\text{bytes of real mem allocated to Small Pages}) = N(\text{bytes of real mem}) - T(\text{bytes of real mem allocated to TLP})$
- o Large Page memory is a function of $T(\text{bytes of real mem allocated to TLP}) = N(\text{bytes of real mem}) - S(\text{bytes of real mem allocated to Small Pages})$
- o The amount of small page memory can be calculated as follows:
 - `lsattr -E -l sys0 -a realmem` returns the number of kbytes real memory, call this number A.
 - `vmo -o lgpg_regions` returns the number of large pages, call this number B.
 - Then $A * 1024 - B * 16 * 1024 * 1024$ is the amount of small page memory in bytes.

For example:

```

#!/bin/ksh
real_mem=`lsattr -E -l sys0 -a realmem|awk '{print $2}'`
lgpg_regions=`vmo -o lgpg_regions|awk '{print $3}'`
A=$(( real_mem * 1024 ))
B=$(( lgpg_regions * 16*1024*1024 ))
print "Real Mem=$A, TLP=$B; Small pages=$((A - B))"

```

Real Mem=32212254720, TLP=4294967296; Small pages=27917287424

- o The `rdma_xlat_limit` will limit the amount of memory that a user application can pin and map for use with RDMA.
- o This pinning and mapping only survives as long as the job is executing. After it exits the memory is unpinning and freed.

Assign IP addresses to all adapter Switch Network Interfaces (SNIs)

Refer to [pSeries \(HPS\) Planning, Installation and Service Guide](#) , Chapter 6, "Installation", "Assign IP addresses for SNIs" in the "Software Installation" section in of the for more details.

Note: The IP addresses and netmask are assigned to the SNIs using the `chdev` command.

Examples of the *chdev* command:

- o `chdev -l sn0 -a netaddr=192.168.0.3 -a netmask=255.255.255.0 -a state=up`
- o `chdev -l sn1 -a netaddr=192.168.1.3 -a netmask=255.255.255.0 -a state=up`
- o `chdev -l ml0 -a netaddr=10.10.10.3 -a netmask=255.255.255.0 -a state=up`

Dynamic Host Configuration Protocol (DHCP)

- Disable Dynamic Host Configuration Protocol (DHCP) on the HMC and reboot the HMC.
- Configure DHCP on CSM Management Server so that the lease time never expires. Details available in Chapter 7 ("Using Cluster-Ready Hardware Server (CRHS)") of the [CSM for AIX5L Administration Guide](#)
- Configure Cluster Ready Hardware Server (CRHS) software on the CSM Management Server. Detailed instructions to configure CRHS on the CSM Management Server is available in Chapter 7 ("Using Cluster-Ready Hardware Server (CRHS)") of the [CSM for AIX5L Administration Guide](#).

Preliminary Notes:

The Secure Sockets Layer (SSL) RPM is a prerequisite for Secure Shell (SSH) which is required for the CRHS support.

Download Information:

- Download the SSL RPM from <http://www.ibm.com/link/oss.software.ibm.com/redirect.shtml/projects/opensshi>. The current version of SSL at the time of CSM 1.4.1 publication is `openssl-0.9.7d-2.aix5.1.ppc.rpm`.
- Download `openssh-3.8.1-p1_52.tar.gz` from <http://www.ibm.com/link/oss.software.ibm.com/redirect.shtml/projects/opensshi> and open the SSH tarball. The SSH tarball should include the following files:
 - o `openssh.base.client 3.8.0.5200 COMMITTED Open Secure Shell Commands`
 - o `openssh.base.server 3.8.0.5200 COMMITTED Open Secure Shell Server`
 - o `openssh.license 3.8.0.5200 COMMITTED Open Secure Shell License`
 - o `openssh.man.en_US 3.8.0.5200 COMMITTED Open Secure Shell`
 - o `openssh.msg.en_US 3.8.0.5200 COMMITTED Open Secure Shell Messages`
 - o `openssh.base.client 3.8.0.5200 COMMITTED Open Secure Shell Commands`
 - o `openssh.base.server 3.8.0.5200 COMMITTED Open Secure Shell Server`

Use the following documentation references:

- An overview of the CRHS setup is available in Chapter 4 ("System management components"), sub-section titled "Cluster-Ready Hardware Server concepts" of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#).
- Detailed instructions to configure CRHS on the CSM Management Server is available in Chapter 7 ("Using Cluster-Ready Hardware Server (CRHS)") of the [CSM for AIX5L Administration Guide](#).
- [CSM for AIX5L Planning and Installation Guide](#)
- [CSM download info \(select 'view'\)](#)

Level check

Verify the levels of RSCT and CSM on the CSM Management server:

- `lspp -L csm.client csm.core csm.diagnostics csm.dsh csm.gui.dcem csm.gui.websm csm.server csm.hams`

- o [AIX52 / AIX53 CSM Level check](#)
- lspp -L rsct.core.sensorrm rsct.core.utils rsct.exp.cimrm rsct.basic.rte rsct.core.lprm rsct.core.rmc rsct.core.sec rsct.basic.hacmp rsct.core.auditrm
 - o [AIX52 RSCT level check](#)
 - o [AIX53 RSCT level check](#)

Notes:

- a. Please see the following CSM webpage for packages and known issues
<http://www14.software.ibm.com/webapp/set2/sas/f/csm/download/home.html>
- b. The CSM Management Server should have the right levels of RSCT and CSM PTFs after successfully completing Steps 6a & 6b above in order to configure CRHS.
- c. From the [CSM FAQs](#):
 - i. How should the service network be configured on the HMC as part of the Cluster Ready Hardware Server setup after the DHCP server migration to the CSM Management Server?
 - o The service network interface on the HMC must be configured as "static" to prevent the DNS nameserver in the /etc/resolv.conf file from getting modified during an HMC update. Use the following steps on the HMC to enable a static service network on the HMC:
 - i. On the HMC GUI, in the "HMC Management" panel, select the "HMC Configuration" option.
 - ii. Select the "Customize Network Settings" option.
 - iii. Under the "LAN Adapters" tab, select the service network interface for your HMC, example, "Ethernet eth0" and click on "Details"
 - iv. Under the "LAN Adapter" tab, in the "Local Area Network Information sub-section, select the "open" option.
 - v. In the "DHCP Client/IP Address" sub-section, select the "Specify an IP address" option and enter the TCP/IP interface address and network mask of the service network.
 - vi. Click *OK*.
 - vii. The HMC will have to be rebooted in order for the changes to be in effect.

Power off CECs

Ensure all CECs in the cluster are in the powered off state before proceeding.

Configure the High Performance Switch Network Manager (HPSNM)

Configure the High Performance Switch Network Manager (HPSNM) software, bring the network online and report installation complete.

- i. Install the HPSNM_Serv_Pack.zip on the HMC and apply the csm.hpsnm PTF fileset to the CSM MS.
- ii. Bring the network online and report installation complete using the instructions in the "Bringing the network online and reporting Installation Complete" section, in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#).

Download Information:

For the HMC:

Install the HPSNM Service Pack package from the HPSNM/IBMNm fixes tab of the appropriate HMC Level as indicated by the System Firmware shown in the "[Component Update/Download Information Section](#)" for HPSNM:

- [230](#)

- [235](#)
- [240](#)

For the CSM MS:

Download and Install csm.hpsnm AIX PTF as indicated by the "[Component Update/Download Information Section](#)" in the HPSNM section.

CSM Packages for AIX and Linux are available at:

<https://www14.software.ibm.com/webapp/set2/sas/f/csm/download/home.html>

Installation Instructions:

Installation on the HMC:

- The HPSNM_Serv_Pack_<n>.zip is installed on all HMCs in the cluster, and each HMC should be rebooted.
- Install the zip file on all HMCs from the HMC GUI using the following options:
 - Licensed Internal Code Maintenance -> HMC Code Update -> Install Corrective Service
- Select the appropriate install method:
 - Apply corrective service from removable media if HPSNM_Serv_Pack_2.zip was downloaded to a removable media
- OR
 - download the corrective service file from a remote system, and then apply the downloaded service file if the zip file was downloaded to a remote system.
- Reboot all HMCs with the HPSNM Service Pack installed.

Installation on the CSM Management Server (CSM MS):

- The csm.hpsnm base fileset is installed on the CSM Management Server as part of the CSM MS installation with AIX5L Maintenance package (Use the "Automatically increase filesystems" option when doing this installation).
- Apply the csm.hpsnm PTF fileset on the CSM MS.

NOTE: In order to accommodate the HPSNM log files, /var on the CSM Management Server should be increased to 1 Gigabyte.

More Configuration:

- ELA Master Selection. This is needed for tracelogd.
- /opt/csm/hpsnm/bin/chswelamast -q # Used to query the ELA Master and Backup HMCs
- /opt/csm/hpsnm/bin/chswelamast -m <hostname or IP address> [-b <hostname or IP address>] # Used to set the ELA Master and Backup HMCs.

Switch Topology Selection:

- /opt/csm/hpsnm/bin/chswlogtop -n1 <n1's_topology> -n2 <n2's_topology> # This should be done for each network.
- /opt/csm/hpsnm/bin/chswlogtop -h Shows syntax, including supported topologies.
- /opt/csm/hpsnm/bin/chswlogtop -n <network_number> none To clear a network topology.

Activation and Verification:

- o Verify that all switch frames are powered.
- o Verify that all CECs are powered off.
- o Complete the procedure to bring the network online and report installation complete, otherwise known as, Service code 20 in the US. Refer to the section titled, "Bringing the network online and reporting Installation Complete" in Chapter 6 ("Installation") of the [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers \(SA38-0646-00\)](#) for complete details.
- o Examine switch link status by running the following command: `/opt/csm/hpsnm/bin/lsswtopol {-n network}`
- o Examine endpoint link status by running the following command: `/opt/csm/hpsnm/bin/lsswendpt`

Looking for Events:

On the ELA Master HMC GUI, select the following options to view the reported events/errors: Service Applications --> Service Focal Point --> Manage Serviceable Events

Collecting Data:

In case you need to report a problem, run `/opt/csm/hpsnm/bin/fnm.snap` to generate a snap. Look for core dumps in `/var/opt/csm/hpsnm/log/`

Documentation Reference:

- o [pSeries High Performance Switch \(HPS\) Planning, Installation and Service Guide for IBM eServer p5 servers](#) .

Level Check:

On the CSM MS, do either one of the following:

- o Use `lspp -L csm.hpsnm` to verify csm.hpsnm successfully installed. See CSM in the HPSNM component
- b. Create a service login ID on the CSM Management Server.

For instructions on creating a service login ID, refer to "Step 21: Create hardware service representative login ID" in Chapter 5 ("Installing the management server on AIX") of the [CSM for AIX5L V1.4.1 Planning and Installation Guide](#).

Note:

The service login ID, with the appropriate permissions, is necessary for the IBM Service Representative to access service-related HPSNM functions on the CSM Management Server without requiring root authority.

[Introduction](#)

[Supporting documentation](#)

[Component updates](#)

[Installation sequence](#)

[AIX LP](#)

[Known problems and workarounds](#)

[Fix list](#)

[Readme archive](#)

AIX Licensed Program (LP)

The LP fileset fix levels listed in the [Detailed LP Level Check](#) table below indicate the latest available levels at the time this HPS Service Pack was released. They are available from [pSeries support fixes](#).

Order by individual APAR OR Order ALL Fixes for this HPS POWER5 Service Pack: [APAR IY95157](#).

As a convenience, the table contains an "order the latest" APAR number for each of the LPs.

Clicking on the LP Component link will open a new page on the 'pSeries support fixes' website. There you will be presented with an opportunity to get the latest available fixes for that component.

Alternatively, clicking on the 'Order All the Latest' link will open a new page on the 'pSeries support fixes' website. There you will be presented with an opportunity to get all the latest available fixes for this Service Pack.

The selected APAR package will contain fix levels that are the same or higher than the levels listed below.

To check the LP service levels, on each logical partition issue:

```
lslpp -Lc | egrep "vsd|LAPI|HPS|sni|ppe|LoadL|mmfs|rsct|csm|essl|pessl" | cut -d : -f 2,3 | sed 's:/ /'
```

LP	AIX 5.3	AIX 5.2
VSD	4.1.0	4.1.0
LAPI	2.4.3	2.3.3
HPS/SNI (CSS)	1.2.0	1.1.3
PE	4.3.0	4.2.2
LoadLeveler	3.4.0	3.3.2
GPFS	3.1.0	2.3.0
CSM	1.6.0	1.5.1
RSCT	2.4.6	2.3.10
ESSL	4.2.0	4.2.0
Parallel ESSL	3.3.0	3.2.0

Detailed LP Level Check

Depending on the LP's that are installed, your output should match the LP fileset levels listed in the Detailed LP Level Check table. Use the following Detailed LP Level Check table to order the latest APARs that are available from [pSeries support fixes](#).

LP	Release	Component ID	APAR	Level check
VSD	4.1.0	5765G2602	IY95137	rsct.vsd.cmds 4.1.0.18 rsct.vsd.rvsd 4.1.0.15 rsct.vsd.vsdd 4.1.0.20 rsct.vsd.vsdrm 4.1.0.7
LAPI AIX52 only	2.3.3	5765G2601	IY95583	rsct.lapi.nam 2.3.3.2 rsct.lapi.rte 2.3.3.7 rsct.lapi.samp 2.3.3.0
LAPI AIX53 only	2.4.3	5765G2601	IY95138	rsct.lapi.nam 2.4.3.0 rsct.lapi.rte 2.4.3.3 rsct.lapi.samp 2.4.3.0
HPS/SNI AIX52 only	1.1.3	5765G2400	IY95139	devices.chrp.IBM.HPS.hpsfu 1.1.3.0 devices.chrp.IBM.HPS.rte 1.1.3.10 devices.common.IBM.sni.ml 1.1.3.2 devices.common.IBM.sni.ntbl 1.1.3.0 devices.common.IBM.sni.rte 1.1.3.9 devices.msg.en_US.chrp.IBM.HPS.hpsfu 1.1.3.0 devices.msg.en_US.chrp.IBM.HPS.rte 1.1.3.1 devices.msg.en_US.common.IBM.sni.ml 1.1.3.1 devices.msg.en_US.common.IBM.sni.ntbl 1.1.3.1 devices.msg.en_US.common.IBM.sni.rte 1.1.3.0
HPS/SNI AIX53 only	1.2.0	5765G2400	IY95140	devices.chrp.IBM.HPS.rte 1.2.0.6 devices.common.IBM.sni.ml 1.2.0.2 devices.common.IBM.sni.ntbl 1.2.0.0 devices.common.IBM.sni.rte 1.2.0.7 devices.msg.en_US.chrp.IBM.HPS.rte 1.2.0.2 devices.msg.en_US.common.IBM.sni.ml 1.2.0.0 devices.msg.en_US.common.IBM.sni.ntbl 1.2.0.1
PE	4.2.2	5765F8300	IY95141	ppe.man 4.2.2.2 ppe.perf 4.2.2.3 ppe.poe 4.2.2.8 ppe.pvt 4.2.2.0
PE	4.3.0	5765F8300	IY95142	ppe.perf 4.3.0.1 ppe.poe 4.3.0.3
LoadLeveler AIX53 only	3.3.2	5765E6900	IY95143	LoadL.full 3.3.2.8 LoadL.msg.En_US 3.3.2.5 LoadL.msg.en_US 3.3.2.5 LoadL.so 3.3.2.8
LoadLeveler	3.4.0	5765E6900	IY95145	LoadL.full 3.4.0.2 LoadL.msg.en_US 3.4.0.1 LoadL.so 3.4.0.2 LoadL.webui 3.4.0.2
GPFS	2.3.0	5765F64AP	IY95146	gpfs.base 2.3.0.20 gpfs.docs.data 2.3.0.8 gpfs.msg.en_US 2.3.0.13

[GPFS](#) 3.1.0 5765G66P IY95147 gpfs.base 3.1.0.10
gpfs.docs.data 3.1.0.3
gpfs.msg.en_US 3.1.0.9

[CSM](#) 1.5.1 5765E88AP IY95148 csm.server 1.5.1.3
csm.bluegene 1.5.1.1
csm.client 1.5.1.2
csm.core 1.5.1.3
csm.deploy 1.5.1.3
csm.diagnostics 1.5.1.0
csm.dsh 1.5.1.5
csm.essl 1.5.1.0
csm.gpfs 1.5.1.0
csm.gui.dcem 1.5.1.0
csm.gui.websm 1.5.1.0
csm.hams 1.5.1.1
csm.hpsnm 1.4.1.16
csm.ll 1.5.1.0
csm.pe 1.5.1.0
csm.pessl 1.5.1.0
csm.server 1.5.1.5

RPMS:

expect 5.32-1
openCIMOM 0.8-1
openssl 0.9.7d-2
AIX-rpm 5.2.0.40-1
tcl 8.3.3-1
tk 8.3.3-1

[CSM](#) 1.6.0 5765F6700 IY95150 csm.core 1.6.0.2
csm.deploy 1.6.0.2
csm.dsh 1.6.0.2
csm.hams 1.6.0.2
csm.hc_utils 1.6.0.1
csm.ivm.server 1.6.0.3
csm.server 1.6.0.2

RPMS:

expect 5.32-1
openCIMOM 0.8-1
openssl 0.9.7d-2
AIX-rpm 5.2.0.40-1
tcl 8.3.3-1
tk 8.3.3-1
conserver 8.1.7-2

[RSCT](#) 2.3.10 5765F07AP IY95152 devices.chrp.base.ServiceRM 1.2.0.95
AIX52 only
rsct.basic.hacmp 2.3.10.0
rsct.basic.rte 2.3.10.2
rsct.basic.sp 2.3.10.0
rsct.compat.basic.hacmp 2.3.10.0
rsct.compat.basic.rte 2.3.10.0
rsct.compat.basic.sp 2.3.10.0
rsct.compat.clients.hacmp 2.3.10.0
rsct.compat.clients.rte 2.3.10.0
rsct.compat.clients.sp 2.3.10.0
rsct.core.auditrm 2.3.10.0
rsct.core.errm 2.3.10.0
rsct.core.fsrn 2.3.10.0
rsct.core.gui 2.3.10.0
rsct.core.hostrm 2.3.10.1
rsct.core.lprm 2.3.10.0
rsct.core.rmc 2.3.10.2
rsct.core.sec 2.3.10.0
rsct.core.sensorrm 2.3.10.0
rsct.core.sr 2.3.10.0
rsct.core.utils 2.3.10.2
rsct.opt.saf.amf 2.3.10.1
rsct.opt.storagerm 2.3.10.2

[RSCT](#) 2.4.6 5765F07AP IY95153 devices.chrp.base.ServiceRM 1.3.0.50
AIX53 only
rsct.basic.hacmp 2.4.6.0
rsct.basic.rte 2.4.6.2
rsct.basic.sp 2.4.6.0
rsct.compat.basic.hacmp 2.4.6.0
rsct.compat.basic.rte 2.4.6.0
rsct.compat.basic.sp 2.4.6.0
rsct.compat.clients.hacmp 2.4.6.0
rsct.compat.clients.rte 2.4.6.0
rsct.compat.clients.sp 2.4.6.0
rsct.core.auditrm 2.4.6.0
rsct.core.errm 2.4.6.0
rsct.core.fsrn 2.4.6.0
rsct.core.gui 2.4.6.0
rsct.core.hostrm 2.4.6.1
rsct.core.lprm 2.4.6.0
rsct.core.rmc 2.4.6.2
rsct.core.sec 2.4.6.2
rsct.core.sensorrm 2.4.6.1
rsct.core.sr 2.4.6.0
rsct.core.utils 2.4.6.2
rsct.opt.saf.amf 2.4.6.1
rsct.opt.storagerm 2.4.6.2

Parallel	320	5765F8400	PK21664	pessl.rte.common 3.2.0.1
ESSL				pessl.rte.hv 3.2.0.1
				pessl.rte.rs1 3.2.0.1
				pessl.rte.smp 3.2.0.1
				pessl.man.en_US 3.2.0.1
				pessl.rte.mp 3.2.0.0
				pessl.rte.rs2 3.2.0.0
				pessl.rte.up 3.2.0.0
				pessl.loc.license 3.2.0.0
Parallel	330	5765F8400		pessl.rte.common 3.3.0.0
ESSL				pessl.rte.hv 3.3.0.0
AIX53 only				pessl.rte.rs1 3.3.0.0
				pessl.rte.smp 3.3.0.0
				pessl.man.en_US 3.3.0.0
				pessl.rte.mp 3.3.0.0
				pessl.rte.rs2 3.3.0.0
				pessl.rte.up 3.3.0.0
				pessl.loc.license 3.3.0.0
ESSL	420	5765F8200	PK02186	essl.rte.common 4.2.0.4
				essl.rte.rs1 4.2.0.4
				essl.rte.rs2 4.2.0.0
				essl.rte.smp 4.2.0.4
				essl.rte.mp 4.2.0.0
				essl.rte.up 4.2.0.0
				essl.man.en_US 4.2.0.0
				essl.loc.license 4.2.0.0

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Restrictions/Known Problems/Workarounds

This pSeries HPS POWER5 release does not support concurrent firmware installation in an operational HPS POWER5 cluster pending further testing of this function.

The use of High Availability Management Server is restricted with this release pending further testing.

Customers who upgrade to this pSeries HPS POWER5 Service Pack and try to enable the redundant FSP feature with invalid Klingon configurations may result in ambiguous to troublesome errors.

Upon application of csm.hpsnm APAR IY88538 (available as of csm.hpsnm 1.4.1.16, included in p5 HPS SP11), customers can safely reenable the High Performance Switch (HPS) Time Of Day (TOD) support. In a previous service bulletin/flash, HPSNM Development recommended that customers disable this support by adding the following to "/etc/environment " on the Management Station:
"HPSNM_TOD_SUPPORT=off".

Customers that wish to reenable HPS TOD support should apply IY88538, remove the environment variable from "/etc/environment" and restart HPSNM. For customers that have not disabled the HPS TOD support, no action is required following the application of IY88538 , but be aware there will be a momentary interruption of the TOD on the first restart (only) of HPSNM. This could impact the POE co-scheduler, as well as applications that use the MPI _WTIME subroutine that reads the TOD.

Retain Tip Abstracts

[LAPI hang](#)

[HPS/SNI Protocol stack requires all sni in all servers to be on the same network](#)

[When updating Licensed Internal Code, if the "High Performance Switches"](#)

[No support in Service Focal Point for collecting VPD for High Performance Switches](#)

[B1818600 error is posted from Perc](#)

[Service Focal Point \(SFP\) flags a switch board or riser with a bad BIST and/or bad Signature.](#)

[The HPS Network Manager End-Point View and lsswendpt command show cage 16 as cage 0.](#)

[VPD databases lost on the HMC](#)

[When verifying switch chip ports, you should look for Down:No Signal.](#)

Retain Tip Abstract:

When a LAPI hang is reported that does not involve a timeout and the new LAPI_Xfer types LAPI_HW_PUT or LAPI_HW_GET are used then it is possible that this problem has been reproduced. This problem is restricted to jobs running in user space mode using the HPS switch adapter.

Problem Description:

When a LAPI program uses the new LAPI interfaces for hardware get or put using the LAPI call LAPI_Xfer with the LAPI_HW_PUT or LAPI_HW_GET type and request target notification, it is possible that the program will hang. It is unlikely that this problem will be hit on a system with all links known to be reliable since it depends on the last packet of an RDMA operation being only partially completed. This problem is restricted to jobs running in user space mode using the HPS switch adapter.

Customer Impact:

Customers starting development of new programs using this new LAPI interface may have the program suspend operation because RDMA message completion notification never arrives.

Workaround:

Download the following files

1SF235_181_160.rpm

01SF235_181_160.xml

Retain Tip Abstract:

HPS/SNI Protocol stack requires all sni of same number in all servers to be on the same network in dual-network HPS clusters.

Search Keys:

Miswire, Miscable, SNI, ping problem, intermittent packet, intermittent ping, packet loss

Problem Description:

If the corresponding SNIs in the servers are not on the same network, packets over the switch will intermittently fail. For example, if sni0 in server A is on network 1 and sni0 in server B is on network 2, you will have packets intermittently fail. There is no indication of this in the HPSNM GUI. Furthermore, if an SNI fails in such a way that it is not recognized by AIX, and it would not be the highest numbered sni in the configuration, all SNIs that would have followed it in the tree are now one less than they would have been previously. This causes the appearance of a miswire.

Customer Impact:

Performance degradation and potential application failure.

Workaround:

While performing the "Bringing the Network online" procedure in the HPS Planning, Install and Service Guide, the following steps should be performed just before running the host verification tools: If intermittent packet failure is observed after installation, use the following steps to:

A) Check for incorrectly cabled SNIs:

1. Go to the CSM MS and check the `"/var/opt/csm/hpsnm/log/topology.map"` file for: "There are X inconsistently cabled adapters". They are listed in HPSNM logical locations and indicate frame, cage and chip locations.
2. Record the locations of the inconsistently cabled adapters.
3. Open the HPSNM Endpoint View on the CSM MS GUI.
4. Look up the SNIs frame, cage and chip in the HPSNM and cross-reference to the physical location on the GUI panel.
5. Select this SNI link.
6. Click "Selected-Properties" on the menu
7. Note the network for this SNI.
8. Check the cabling instructions and recable as instructed:

- i) If the cable instructions indicate that this SNI is cabled correctly, the cable planning should be redone such that this SNI is placed on the same network as the corresponding SNIs in the other servers.
- ii) Keep in mind that it may be possible that the entire switch has been wired into the incorrect network. In such a case, all SNIs connected to this switch will be considered to be cabled inconsistently.

9. After making changes, you should check GUI status and SFP for errors that may have been caused by recabling.

B) Check for unconfigured SNIs:

1. If the "Bringing the Network Online" procedures indicated any SNIs that were not configured and visible by AIX, perform the following on those SNIs:
2. For each server that had unconfigured SNIs:

- i) `mv /usr/sni/aix52/cfgsni /usr/sni/aix52/cfgsni.orig`
- ii) Reboot server
- iii) For each snix on the server: `rmdev -d -l snix`

- iv) mv /usr/sni/aix52/cfgsni.orig /usr/sni/aix52/cfgsni
- v) cfgmgr -s

C) To double-check for unconfigured SNIs causing others to be on the incorrect netid.
(assumption: all discrepancies found in the topology.map were fixed)

1. Run the following command string on the CSM MS. This assumes that all LPARs are accessible via "dsh -av"
(Be mindful of the placement of quotation marks).

```
for x = 0 1 2 3 4 5 6 7; do echo sni$x;  
dsh -av "/usr/sni/aix52/debugtools/sni_qry -l sni$x | grep netid"  
2>/dev/null | uniq -f 3;  
done
```

2. There is a problem if more than one adapter is listed under each "sniX" heading. If this is the case, specific queries for the SNIs that may potentially be bad should be carried out.

3. With a knowledge of the correct network for sniX, run the following command on the CSM MS:

(be mindful of quotation marks and backslashes)

```
dsh -av '/usr/sni/aix52/debugtools/sni_qry sniX | grep "netid: [wrong  
network]'"
```

where you give the wrong network as the [wrong network] part of the grep.

For example, if sni0 should be network 1:

```
dsh -av "/usr/sni/aix52/debugtools/sni_qry sni0 | grep "netid: 2""
```

4. Now that you have the list of LPARs with problem adapters, you can recover on each LPAR:

- i) mv /usr/sni/aix52/cfgsni /usr/sni/aix52/cfgsni.orig
- ii) Reboot server.
- iii) For each snix on the server: rmdev -d -l sniX
- iv) mv /usr/sni/aix52/cfgsni.orig /usr/sni/aix52/cfgsni
- v) cfgmgr -s

Retain Tip Abstract:

When updating Licensed Internal Code, if the "High Performance Switches" target is selected with one or more managed system targets, a java.lang.ArrayStoreException occurs immediately.

Problem Description:

Licensed Internal Code update fails with a java.lang.ArrayStoreException when the "High Performance Switches" target is selected with one or more managed system target. A serviceable event with refcode E302F9D2 will be recorded in Service Focal Point. Licensed Internal Code is not updated on any of the specified targets.

Customer Impact:

Licensed Internal Code cannot be updated simultaneously on managed system and "High Performance Switches" targets.

Workaround:

Update Licensed Internal Code for the "High Performances Switches" target separately from any other targets. Updating multiple managed system targets simultaneously continues to work correctly.

Retain Tip Abstract:

No support in Service Focal Point for collecting VPD for High Performance Switches

Problem Description: The Collect VPD Information function under the Service Focal Point component of the Hardware Management Console does not support the collection of vital product data for High Performance Switch clusters.

Customer Impact:

The customer will have to manually execute a command on the HMC to collect VPD for High Performance Switch cluster.

Workaround:

Execute the following command on the HMC:

```
/opt/hsc/bin/vpdfs -x cluster
```

The command will produce an xml file in the working directory named *7045-SW4-bycluster.xml*. This file contains the VPD for the switch cluster.

Retain Tip Abstract:

B1818600 error is posted from Perc.

Problem Description:

A B1818600 error is posted from Perc with a user section showing:

Process name: netsSlp

Customer Impact:

There is no impact to the customer or the equipment.

Workaround:

No workaround is required since this is a recoverable situation.

Retain Tip Abstract:

Service Focal Point (SFP) flags a switch board or riser with a bad BIST and/or bad Signature.

Search Keys: *Bad BIST, Bad Signature.*

Problem Description:

A bad BIST error for a switch board or a riser is logged by fnmd when the self test computes a value that does not match what fnmd is expecting. This may or may not lead to subsequent errors.

Customer Impact:

Most likely no impact. Wait for other error types before taking corrective action. Return FNM_Init.log or an fnmd snap to IBM for analysis.

Retain Tip Abstract:

The HPS Network Manager End-Point View and lsswendpt command show cage 16 as cage 0.

Problem Description:

If a frame has adapters in cage 16, the HPS Network Manager End-Point View and lsswendpt command will show these adapters in cage 0.

Customer Impact:

Customer is presented incorrect information, but there is no loss of function.

Workaround:

None

Retain Tip Abstract:

VPD databases lost on the HMC

Search Keys:

Trace, Tracelogd, VPD, ELA

Problem Description:

This is a problem which FVT and MPV have both hit. What happens is the following:

1. Tracelogd on the CSM and on the HMC are both running.
2. Tracelogd on the CSM starts sending the VPD files and manages to get one or two across.
3. Tracelogd on the HMC dies and starts to come back up. (it takes 5 seconds before tracelogd fully comes up and re-connects with hardware server and can start receiving messages again)
4. Tracelogd on the CSM realizes that there's a problem sending the files and goes into an error loop.

Unfortunately, this error loop will time out before the 5 seconds are up and the rest of the VPD files will not get across. This could possibly leave either a database completely off the HMC or leave only half of one there.

Customer Impact:

A database could either only be copied halfway onto the HMC or left off completely. This means that ELA could possibly not have the MTMS information needed to let a IBM SSR know where a problem is located.

Workaround:

The workaround is to take a look at the databases on the HMC. If one of the three databases (sma_vpd.db, chassis_vpd.db and bpa_vpd.db) is missing, copy it over from the CSM (you can use scp or ftp for example). CSM directory: /var/opt/csm/hpsnm/data HMC directory: /opt/hsc/data

Retain Tip Abstract:

When verifying switch chip ports, you should look for Down:No Signal.

Search Keys: No Signal, Down:No Signal

Problem Description:

Down:No signal indicates that a clock or a light-present signal is not seen on a port. This can mean that a switch link has no cable, or that the link is faulty. There is a missing check for this in the HPS Service Doc procedure,

Bringing the Network Online, Step 3: Verify the network, Task 1: verify SNI and switch chip ports, 1) verify switch ports, step 2.b

Customer Impact:

If the link is faulty, it will be un-useable and may degrade performance.

Workaround:

When executing the HPS Service Doc procedure: Bringing the Network Online

Step 3: Verify the network

Task 1: verify SNI and switch chip ports

1) verify switch ports, step 2.b

you should also filter on "No Signal". If you find one of these, go to the "Network Status Codes on HPSNM" table in Appendix A, and follow the instructions for "Down:No Signal".

Retain Tip Abstract:

DiagnosticSRC D103B0FF in error logs

Search Keys:

D103B0FF Predictive Error

Problem Description:

An informational error was incorrectly categorized as a predictive failure

Customer Impact:

Unnecessary call for service action

Workaround:

Ignore the error. It is not a true software problem. The indication is that a program attempted to get information about the state of the hardware when the hardware was powered off

Retain Tip Abstract:

Cluster Ready Hardware Server data may not be restored after an upgrade install of the HMC resulting in loss of CEC and switch configuration on the HMC and from the CSM management server.

Search Keys:

Cluster Ready Hardware Server (CRHS), HPS, HMC

Systems Affected:

CECs, HMCs HPS switch configured to use Cluster Ready Hardware Server

Problem Description:

It has been observed in several instances of upgrading the HMC from 01SF230_xxx_120 to a later SP level or to 01SF235_xxx_160 that the RSCT data which contains the Cluster Ready Hardware Server configuration is not restored. This happened when the HMC system clock was adjusted as specified in the update process.

Customer Impact:

HMC and CEC Configuration may be lost. Customers will not see CEC configuration in the GUI although the CEC/LPARS should still be functioning prior to the install.

Workaround:

1. If root access is enabled to the HMC then the data can still be restored by the following:

- log in as root
- check if the directory `"/var/ct.backup"` exists with a timestamp of when the save data was performed.
- If it exists then - run the command

```
"/usr/sbin/rsct/bin/ctrestore"
```

- wait a few minutes for the ClusterPeerDomain to be restored and activated.
- verify that the Cluster Ready Hardware Server data has been restored: run the command

```
"lsrsrc IBM.hw_manager"
```

The output should show the HMCs in the cluster and the CSM_MS object.

- If the directory does not exist then:
- mount `/mnt/upgrade`
- verify the `/mnt/upgrade/RSCTSaveUpgrade.tar` file exists.
- If the tar file exists then run:

```
tar -xvf /mnt/upgrade/RSCTSaveUpgrade.tar
```

- check if the directory `"/var/ct.backup"` exists.
- If it exists then run the command

```
"/usr/sbin/rsct/bin/ctrestore"
```

- wait a few minutes for the ClusterPeerDomain to be restored and activated.
- verify that the Cluster Ready Hardware Server data has been restored:

```
run the command "lsrsrc IBM.hw_manager"
```

The output should show the HMCs in the cluster and the CSM_MS object.

2. If the above was not successful or if the customer does not have root access to the HMC then the Cluster Ready Hardware Server data must be recreated as it originally was using the `addpeer` command from the CSM management server. Plan to Resolve:
Plan to fix in a subsequent Service Pack.

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HPS Service Pack Abstract Fix List - By Component

<input type="checkbox"/> HMC	<input type="checkbox"/> VSD	<input type="checkbox"/> Parallel Environment	<input type="checkbox"/> CSM
<input type="checkbox"/> HPSSNM	<input type="checkbox"/> LoadLeveler	<input type="checkbox"/> RSCT	
<input type="checkbox"/> GFW	<input type="checkbox"/> HPS/SNI (Devices)	<input type="checkbox"/> GPFS	

GFW

Refer to the Global Firmware web site for specific details: <http://www14.software.ibm.com/webapp/set2/firmware/gjsn>

HMC

Refer to the HMC web site for specific details:

<http://www14.software.ibm.com/webapp/set2/sas/f/hmc/home.html>

HPSSNM

1.1.0 (HMC component)

```
FNM MANUAL SNAP FAILS WHEN ELA SNAPS EXCEED 30% DEFAULT OF /VAR
SFP Primary Analyzing Console System field is not set properly
ERROR RETURN FROM SWJTAGWRITE() STOPS THAT SWITCHES INIT FLOW
```

1.4.1 (AIX Cluster Management Server Component)

```
Bad location codes passed to ELA
Reparents FNM GUI if CSM not installed
FIX FNM RETRY LOGIC
cut AIX errlog entry for TOD thread exit
FNM UTILITY: HPS_CHECKROUTE.PL IS BROKEN FOR 256WAY TOPO
ERROR RETURN FROM SWJTAGWRITE() STOPS THAT SWITCHES INIT FLOW
rebuild TOD candidate list on Comm timeout/error
```

VSD

4.1.0.x

RVSD hangs during low paging space
Enhance debug/data integrity code
removevds -fa failed to cleanup vgs on VSD primary server
defvds prints out extraneous info
System Crash in CpyRd()
vds.snap needs additional info

LAPI

2.4.3.x

LINUX: update fix level in PE_PKG_DATA and LAPI_PKG_DATA files
LAPI LOCK PROBLEM DURING PREEMPTION
CHANGE LAPI_ERR_INTERNAL5(876) LAPI_ERR_REG_TIMER(414)
Up FIX level in LAPI_PKG_DATA to 3

HPS/SNI Devices

1.2.0.x

Make the verification_test more fault tolerant.
Remove idle forked server processes
PTF builds missing new VERIFICATION_TEST readme
CHGSNI CAUSED SEVERAL NODES TO CRASH..OTHERS NONRESPONSIVE

1.1.3.x

Update automated test case output
Make the verification_test more fault tolerant.
Remove idle forked server processes
PTF builds missing new VERIFICATION_TEST readme
CHGSNI CAUSED SEVERAL NODES TO CRASH..OTHERS NONRESPONSIVE

Parallel Environment

4.2.2

PCT HANGS AT THE END OF THE EXECUTION
Retrofit fix for large page warning/kill capability
PREMATURE PULSE TIMEOUTS WITH REDIRECTED STDIN AND CHECKPOINT
BUG IN LAPI_DGSM_GOSUB COMMAND OF DGSP GENERATED BY MPI_GATHER
Miscellaneous NTBL Sample flag cleanup
File /tmp/s.pedb.<poepid>.<uid> has permission 777
build failed due to 139190 Undefined symbol
MPCI LOCK LEAK PROBLEM
Retrofit fix for PMD cannot access group info
PMD does not recognize LoadL 3.4 for affinity
Occasional race condition error in value returned by MPI_Iprobe

4.3.0.x

Change default for SMT keyword
PREMATURE PULSE TIMEOUTS WITH REDIRECTED STDIN AND CHECKPOINT
File /tmp/s.pedb.> poepid=<.<uid< has permission 777
LINUX: update fix level in PE_PKG_DATA and LAPI_PKG_DATA files
MPCI LOCK LEAK PROBLEM
PMD does not recognize LoadL 3.4 for affinity
Occasional race condition error in value returned by MPI_Iprobe
Linux: bump up PE package FIX level

Loadleveler

3.3.2.x

LLQ -F AND LLQ -R SHOULD RETURN FAVORED_JOB STATUS AS AN OPTIO
Ability to query LL version in MultiCluster env
llclass -X broken between cs3c2 and mercury
job remains in ep too long
ON BLUE GENE THE LLCANCEL CAN TAKE A LONG TIME
THE LLMODIFY -W DOES NOT WORK PROPERLY WITH THE BACKFILL SCHED
Incorrect casting of variables in LoadL_schedd
LoadLeveler for Linux: Wrong secondary groups used at run time
NEGOTIATOR DEADLOCK SCHEDULING SP2 SWITCH
INC MSG FROM LLQ -S WHEN NOT ENOUGH INITIATORS AND NEED ADAPTER
Creating Reservation causes Negotiator to crash
LL MAIL NOT DELIVERED DUE TO INVALID MAIL ADDRESS.
PROBLEM RUNNING A 3.3.1.3 AND 3.3.2.4 MIXED CLUSTER.
llq and llgres display incorrect header and separator
LoadL PTF needs to show correct level for ptf set 6

If i ifconfig and adapter down after preempting a job that was
A LOADL RECYCLE ON THE CENTRAL MANAGER WHEN A RESERVATION IS
MEMORY LEAK IN SCH_API_EXT.C SAMPLE PROGRAM WHEN EXECUTED
LOADL JOBS AT SAME TIME CAN RESULT IN NON-UNIQUE TEMP NAME
USER PROLOG ERROR MSG WHEN FAILURE TO SETUP USER ENVIRONMENT
LOADLEVELER DOES NOT TRY RECONNECTING TO RSCT- RMC_START_SESSI
LOAD LEVELER LOGFILE BEING CREATED WITH OTHER WRITE PERMISSION
USING LLMOVEJOB THE REMOTE FILTER IS NOT CALLED BUT LOCAL IS.
Bad Function Call Parameter reported by ZeroFault
ADAPTER COEXISTENCE BUG SUBMITTING A JOB FROM LL 3.3.1 TO 3.3.
Submit job on AIX will failed due to reservation error.
Level Bump Defect for sprelmer/ptf7

3.4.0.x

Change default for SMT keyword
ELIMINATE CURRENT LIMITATIONS RUNNING NIS/CHECKPOINT HANDLER
CM coredumped in _int_malloc (malloc.c) while testing IB
mpichgm various problems with mpirun options
4net Using instances=8, LL only displays 2 of 4 planes
LOADL JOBS AT SAME TIME CAN RESULT IN NON-UNIQUE TEMP NAME
Jobs stuck in ST state on the C559 system
USER PROLOG ERROR MSG WHEN FAILURE TO SETUP USER ENVIRONMENT
LOAD LEVELER API MUST BE LINKED WITH XLC
StartD status for Draining shows Unknown
Job stuck in VP state
If bad nodes/tasks and save, does not tell you not-saved
Deferred state should be moved to Running-like
Refresh action on machines updates timestamp for jobs as well
Console below submit dialog should default to last entry view
Change default for SMT keyword
su permission issue / env var not preserved on file save
Help text fixes/design in portlets
CK checkpointing status not showing on Job Status window
tool tip missing from check boxes
LOADL NEGOTIATOR RECEIVES SIG 4 WHEN STARTING JOB WITH BLOCKIN
StartD/SchedD_runs_here values returned for UI display
File system full says 0EB
MPI jobs (started with poe) got strange msg in stderr & stdout
misc webui fixes, multi job/machine selection capability needed
LOADL 3.3.2.5 DATA ACCESS API CAN CORE DUMP WITH 64 BIT APPS
MEMORY LEAK/LOADL 3.3.2.5 DATA ACCESS API LINKING 32 BIT APPS.

Startd ignores VACATE order if does not have step object
llstatus -v fails if config files have error
IT Hierarchical job start error unknown with hwlmmn
job selection missing from webui graphic view
create WLM class for suspended ConsumableMemory steps
/usr/lib/libc.a(shr.0) AIX only
fix webui graphic job selection
Message catalog cleanup
BG: LL removes pre-defined block if reuse is off & preemption
LL CAN ALLOCATE A BG PARTITION TO A JOB NOT DE-ALLOCATED YET.
fix job running hilite
Job stuck in RP state when remove cmd follows complete cmd
Job stay in ST state if start & kill cmds reach node same time
job stuck in VP state during high stress run
LoadL PTF needs to show correct level for ptf set 2
update builder fields, version
webui graphic machine missing popups
VEN PTF2 build fails on Packaging. Packaging part files for
Avoid routing unwanted adapter_usage attributes while Job start
LOADLEVELER CONSTRAINS CONSUMABLE RESOURCES WHICH ARE NOT BEING
JCF KEYWORD VALUES CONTAINING LL VARIABLES CANNOT BE OVERRIDDEN
Memory leaks caused by callers of itoa
MEMORY LEAK IN LL GET DATA API WHEN AFFINITY IS CONFIGURED.
A job in R state but actually stuck in Vacate Pending for 2 hrs
MEMORY ERROR ALLOCATING MEMORY TO HOLD AFS TOKENS
TOKENS CMD DOES NOT RETURN THE CORRECT UID
LoadL PTF needs to show correct level

GPFS

2.3.0.x

Refer to the following change logs:

1. https://www14.software.ibm.com/webapp/set2/sas/f/gpfs/download/changelog.gpfs_2319.html.
2. https://www14.software.ibm.com/webapp/set2/sas/f/gpfs/download/changelog.gpfs_2320.html.

3.1.0.x

Refer to the following change logs:

1. https://www14.software.ibm.com/webapp/set2/sas/f/gpfs/download/changelog.gpfs_3108.html.

CSM

1.5.1.x

updatehwdev failed when running on a pLinux MS to a HMC
RPOWER TO OPEN_FIRMWARE PROMPT FAILS IN FULL PARTITION MODE
DSH -S OPTION TRUNCATES OUTPUT CHARACTERS
UPDATENODE -C DOESN'T CONFIGURE ETHERCHANNEL ADAPTERS
DPING ON NODES BROKEN
SOL remote console fails for e326m
Update VRMF and READMEs for CSM 1.5.1.5

1.6.0.x

updatenode failed after chnode to MinManaged,rmnode,definnode
getserviceableevents should delete DSH_PATH
gtetadaptes gives misleading error message
IVM nodes remain in OpenFirmware after installnode is run
RMC DOESN'T NOTIFY HDWR_SVR OF THE CONNECTION AFTER FSP REPLACE
INSTALLNODE RUNS CFM ON ALL THE NODES AFTER FIRST BOOT.
CRHS: HMC 'Manager_Name' attribute is empty
mpt deps need to be replaced in initrd (not appended)
Fixed:qlogic but not emulex drivers removed from initrd
downlevel mptsas dds postinstall w/ QLogic HBA present
out of space in /usr with default CSM ks.cfg
JS21 w/ array fails to boot post-install
timeout problem with lshwstat
lshwinfo -X doesn't display multiple hardware control point
hwmaint: rfwflash not working on SLES10 due to incorrect lib
Remove FSP console method from IVM library
rfwcfg: 1350 ASU refresh
Netc library cannot load OpenSSL library, or does not locate th
Porting:CSM support SL 4.4 on i386/x86_64
getadapters -w -f stanzafile doesn't write to database
makedisklessnode should not run update scripts
SLES9 SP3 hostraid not workable
Update Fishkill VRMF for PTF2 to 1.6.0.2
Log input parsm to sms_local
syntax error after df when mnted file system not available
kernel file missed from vnfs dir caused setupinstall failed
bmc2 console sessions hang if no input for 60 seconds

SLES9 SP3 loads s2io before e1000 on install
Driver load order wrong with RHEL4 U4 ppc64 and 10g
rconsole sessions closing
Update CSM 1.6.0.2 READMEs
updatehwdev failed to setup remote shell on hmc
updatehwdev failed when running on a pLinux MS to a HMC
Update README files for PTF2
csmupdatenode man page missing words
RPOWER TO OPEN_FIRMWARE PROMPT FAILS IN FULL PARTITION MODE
DSH -S OPTION TRUNCATES OUTPUT CHARACTERS
CFMUPDATENODE -F MANPAGE IS INCORRECT IN CSM 1.6
CFMUPDATENODE CANT DISTRIBUTE FILES TO CLIENTS WITH CSM 1.6
UPDATENODE -C DOESN'T CONFIGURE ETHERCHANNEL ADAPTERS
DPING ON NODES BROKEN
SOL remote console fails for e326m
probemgr -p ibm.csm.ms error on AIX 5.3.0.6
Update VRMF and READMEs for CSM 1.6.0.3
lsnode with IP addr failed after setupinstall

RSCT

2.3.10.x

PeerNode:OpState: no event after node come back online
ConfigRM behavior when mkcrpdomain fail due to /var full
do not add the invalid address to THL
GlobalRM: need graceful handle when GS down, no core please
correct some memory leak leftover
cthagsglsm core dump after apply DVO ptf on COP
GFVTRM randomly core at exit
Resources AgFileSystem are not monitored as required for SA
GlobalRM core if rmcd die while query IBM.PeerNode
hags core at SVProtocal.C due to access address 0x0
GFVTRM abort at CRunnable
LX: trace files are unnecessarily reset when node number cha
AIX multiple disks per VG
Notify RMC daemon when /var/ct/cfg/clusters file changes.
lsrsrc/chrsrc help msg no longer shows -c -a as a valid combo
ctcasd still need LD_ASSUME_KERNEL=2.4.19 for RHEL3
CRunnable::threadMain() not catching all exceptions
Remove hooks to detect cluster file changes from the RMC daemon
IBM.HOSTRM:MKCONDITION CANT USE BOTH RUSER &

add iwaccess to Boson/Quark not to break regression
Trace exit handler doesn't work with dlclose
unable to online FS & VG's State is STUCKED
allow rmcd to be down when notifying it of .../clusters change.
One redundant pthread_mutex_unlock call.
Unable to online exported vg
reset of AgFS leaves VG rsrc in Stuck Online state
for StorageRM Diagnostic Tool checking in
Agg rsrc created in 1 node domain when rsrc becomes a ghost
Kill GS cause glsm hang up for 65~70 sec.
can online a resource when odm doesn't match disk info
GS_ERROR_ER AFTER APPLYING RSCT 2.4.6 OR 2.3.10
FS Name is different if Label is changed
Unable to create IBM.AgFileSystem resource
Timing issue during automated move of file system
pclose missing
AutoMonitor doesn't work for LVM agfs
Deadlock on "chrsrc IBM.AgFileSystem AutoMonitor=1"
Linux AgFS AutoMonitor rsrc onlines with anymanual mount point
startrpdomain with man.mounted fs causes RM

2.4.6.x

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ConfigRM behavior when mkrpdomain fail due to /var full
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