BREAK

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Agenda

- **HMC - ASMI – firmware**
- **Managing HMC firmware and System firmware managment**
- **HMC Security administration**
- **Backup and recovery considerations**
- **Sample LPAR configuration**
- **Overview of service utilities available through HMC**

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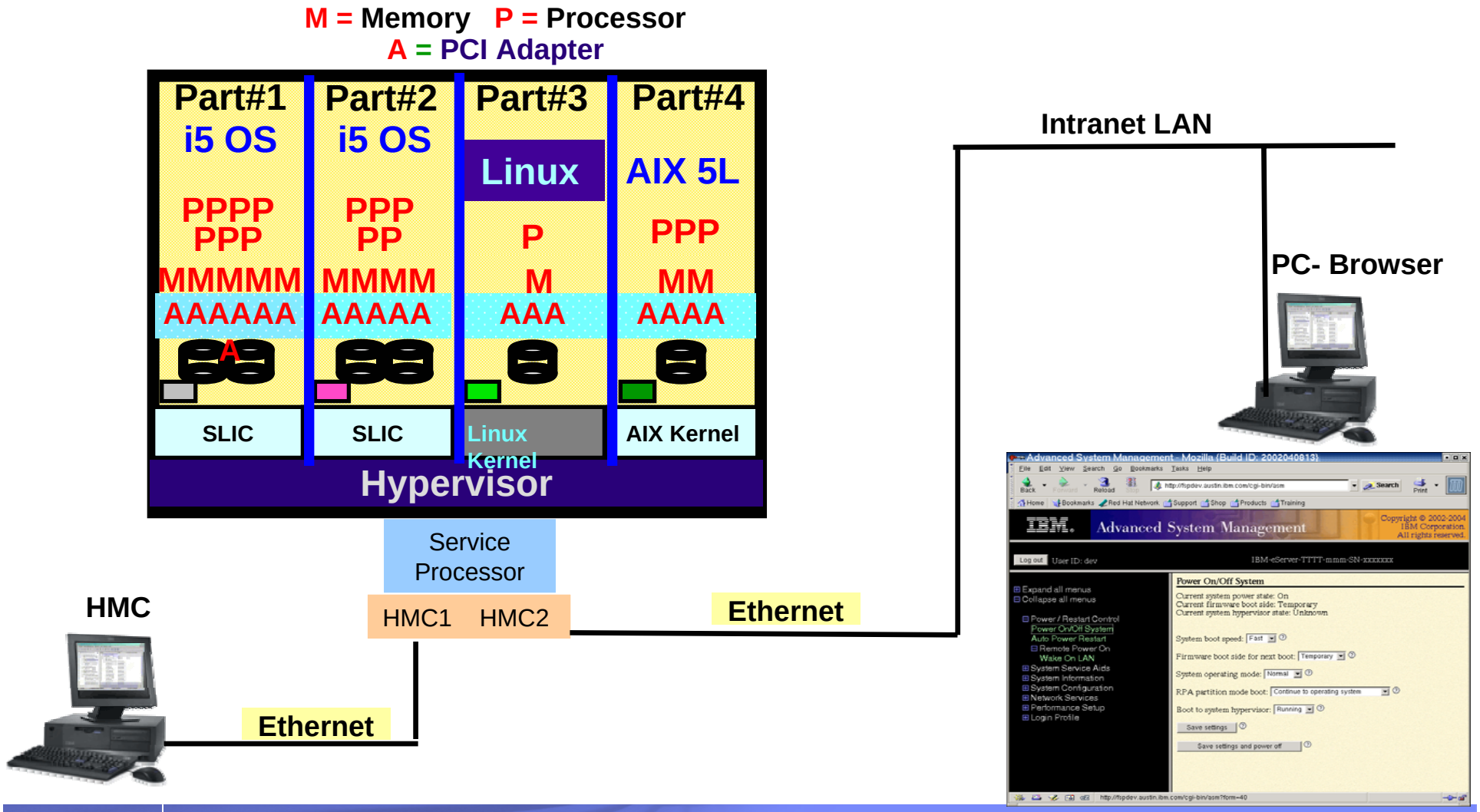
Advanced System Manager Interface (ASMI)

Direct access to the Service Processor (SP), part of every POWER5 server. SP has two ethernet ports. Use any browser or the HMC on i520, i550 and i570. **HMC only on i595**



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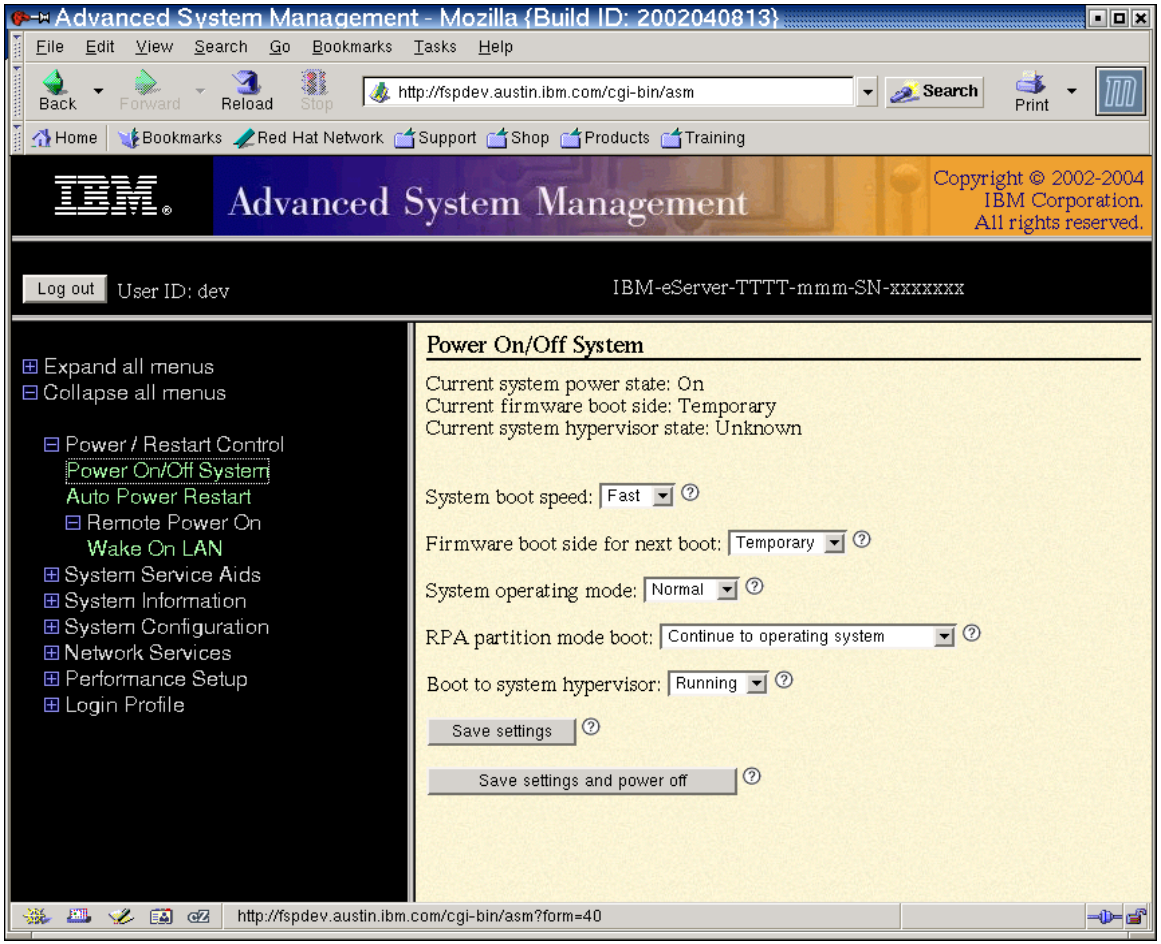
Advanced System Management User Interface

- ASMI is designed primarily for service maintenance personnel
- Service Processor Menus
  - Accessed by web browser or HMC
  - Secure (HTTPS) access
  - Password authentication
  - Basic server operations
    - No partition functions
- Default userid/password is admin/admin
- Many of the ASM menu functions are also available on the HMC
  - A few less common ones only in ASMI
  - Browser interface to ASMI can be launched on the HMC.
  - ASMI can be launched from WebSM client (HMC provides ASMI proxy service)
    - Enable with HMC V4R5 (May 27,2005)

Secure browser interface using SSL. URL is the IP address or DNS server name assigned to the SP ethernet interface. (i.e. HTTPS://ATSi5HMC1.IBM.COM)



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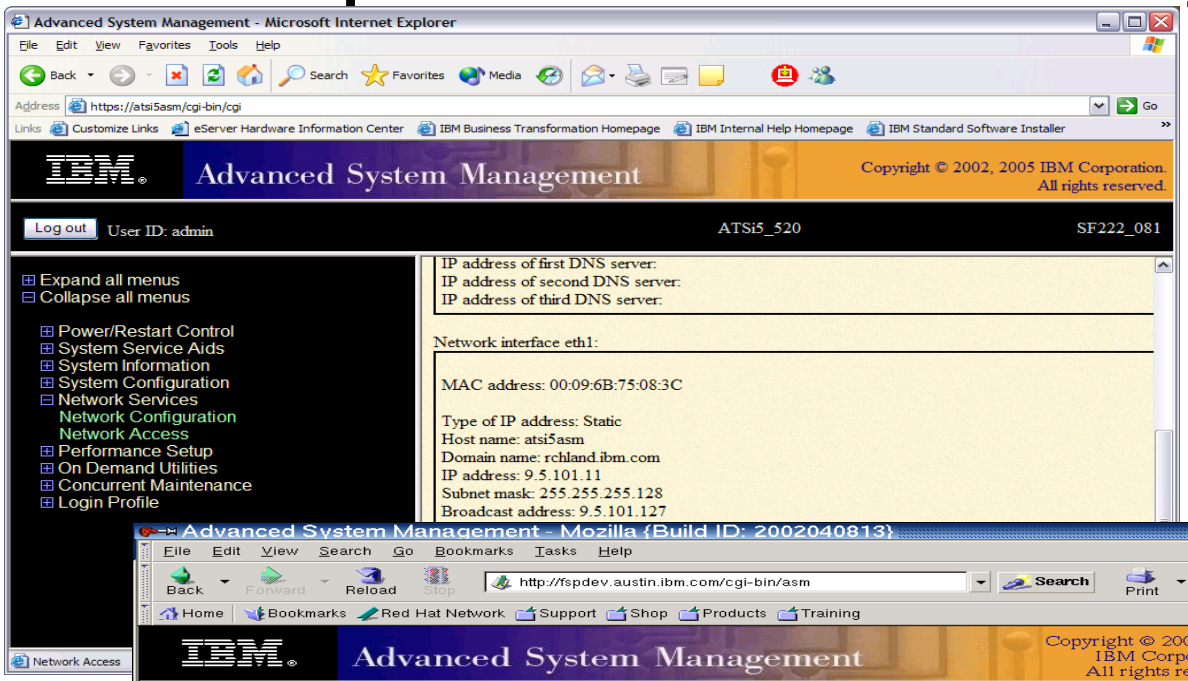
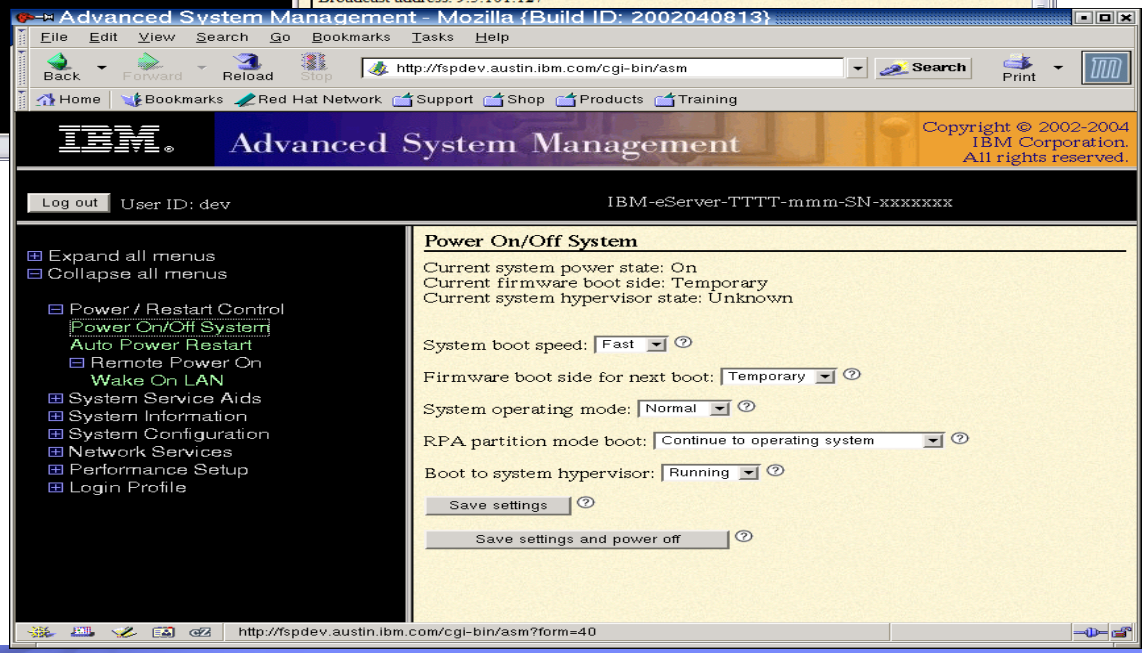
Set TCPIP attributes on SP or power server on/off remotely

- ASMI menu based
  - Set IP address, or by default – DHCP Client enabled, both ports also have defined default IP addresses
    - **192.168.2.147**
    - **192.168.3.147**





- Power on/off the server remotely – without an HMC

Note: POWER5 does not have an option for Remote Control Panel

If an HMC is not required, you may find that iSeries Navigator provides all the management function needed and you still have the option to use ASMI in place of Remote Control Panel for functions; such as remote power on/off

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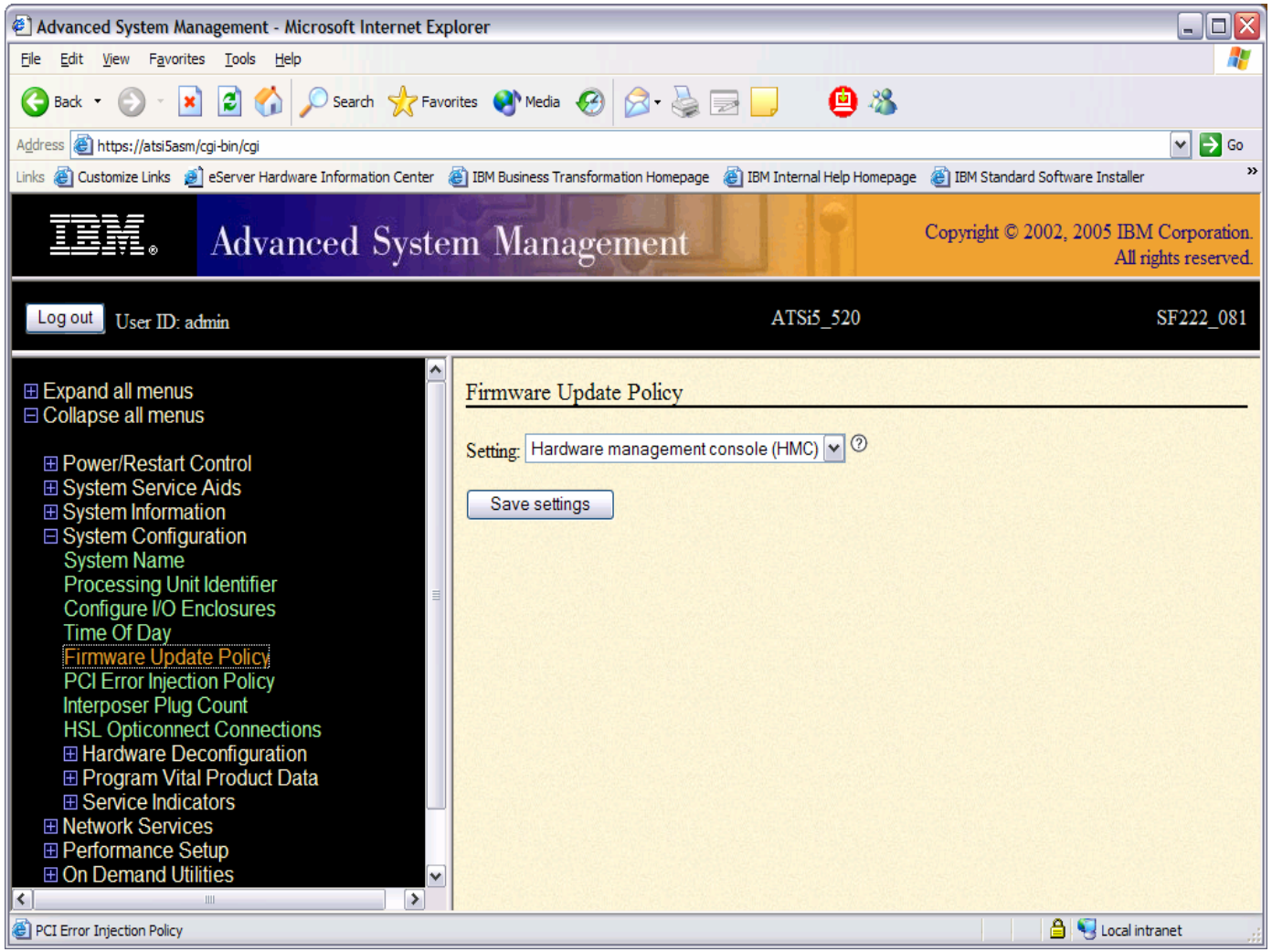
ASMI – Setting the firmware update policy

- By default, once an HMC is connected to a managed server, the firmware update policy is set as HMC managed.
- This can be changed to 'Operating System' managed.
  - Requires one i5/OS partition configured with "service partition enabled".
  - Service Partition is selected from the HMC, under 'Server Properties



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Managing HMC firmware and System firmware updates

- Concurrent firmware updates

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Server Firmware Introduction and maintenance options

- Server Firmware

  "The code that resides in system flash memory, and includes a number of subcomponents, including power control code and the logical partition firmware that is loaded into AIX or Linux logical partitions."

  – Consists of:
    - Service Processor (**SP**)
    - Converged Power PC Hypervisor (**PHYP** – partition mgmt)
    - Partition Firmware (**PFW** - used by AIX/Linux partitions)
    - SPCN/Power code
  – Server firmware is identical on eServer i5 and eServer p5 hardware
  – OS/400 messages refer to server firmware using the term "Hypervisor"

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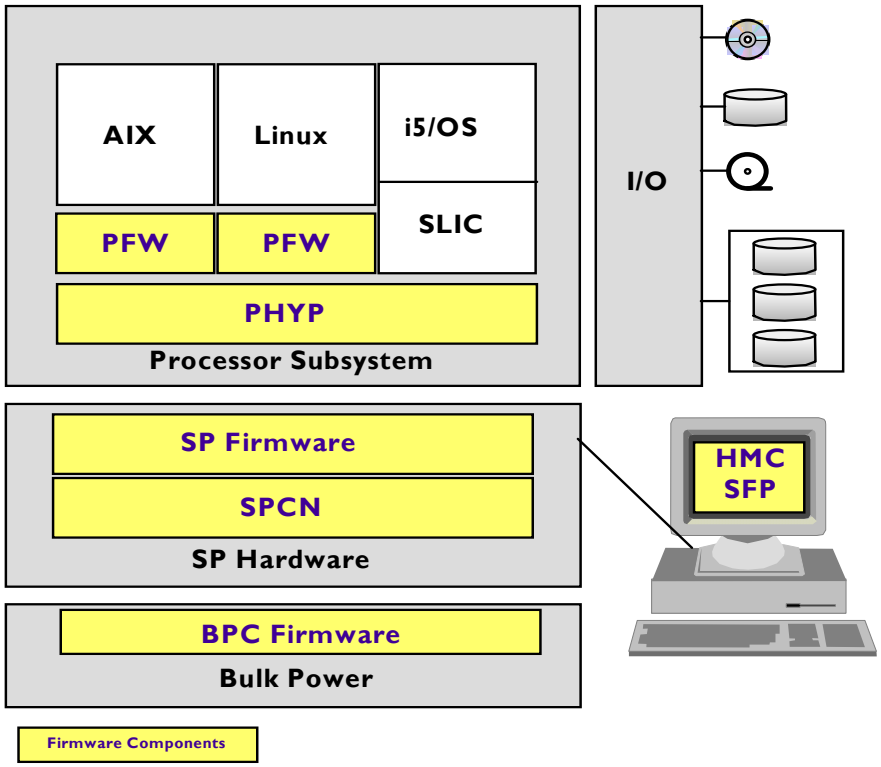
The POWER5 hardware architecture

POWER5 Firmware Components



- **Service Processor - SP**
  - Closed OS Linux based, future i/p convergence
  - Provides diagnostics, initialization, configuration, run-time error detection & correction
- **Power Hypervisor - PHYP**
  - Based on iSeries hypervisor, enhanced for converged i/p design
  - Provides VLAN, virtual I/O, sub-processor partitioning, ...
- **Partition Firmware - PFW (OF/RTAS)**
  - Supports pSeries RPA interface
  - Rewritten to work with PHYP
- **Hardware Management Console - HMC / Serviceability**
  - Provides converged platform configuration, mgmt, and service
- **System Power Control Network - SPCN**
  - Interfaces with bulk power for power monitoring and control (part of FSP code base)
- **Bulk Power Controller (BPC) Firmware**
  - Controls each bulk power assemply (BPA) in CEC and towers. Currently unique to the i595, p590 and IH p575 systems

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Fix Management Options for Server Firmware

- **Two ways to manage changes to server firmware on eServer i5:**
  - Install a fix pack using the HMC (“out-of-band”)
  - Install PTFs using OS/400 service partition or ‘non-partitioned’ server
- **To display or change which option is active:**
  - HMC License Internal Code Update button
  - Advanced Systems Management Interface (ASMI)
  - For non-HMC managed systems
    - DSPPTF 5722999 will show installed LIC Frimware PTFS (MHxxxxx)
    - Display FLASH LEVEL in SST
- **The default for managing the level of server firmware will be to use HMC if one is attached**
- **How to choose HMC vs. OS/400?**
  - OS/400 provides an integrated fix install
    - Installing PTFs via OS/400 will always require a server IPL.
  - HMC provides ability to update multiple servers from single point
  - (Concurrent Firmware maintenance) via HMC only
    - Available with HMC Version 4 Release 5 and May 27,2005 Firmware level INSTALLED on the server, some fix-packs may be able to be installed concurrently (without a server IPL) via HMC

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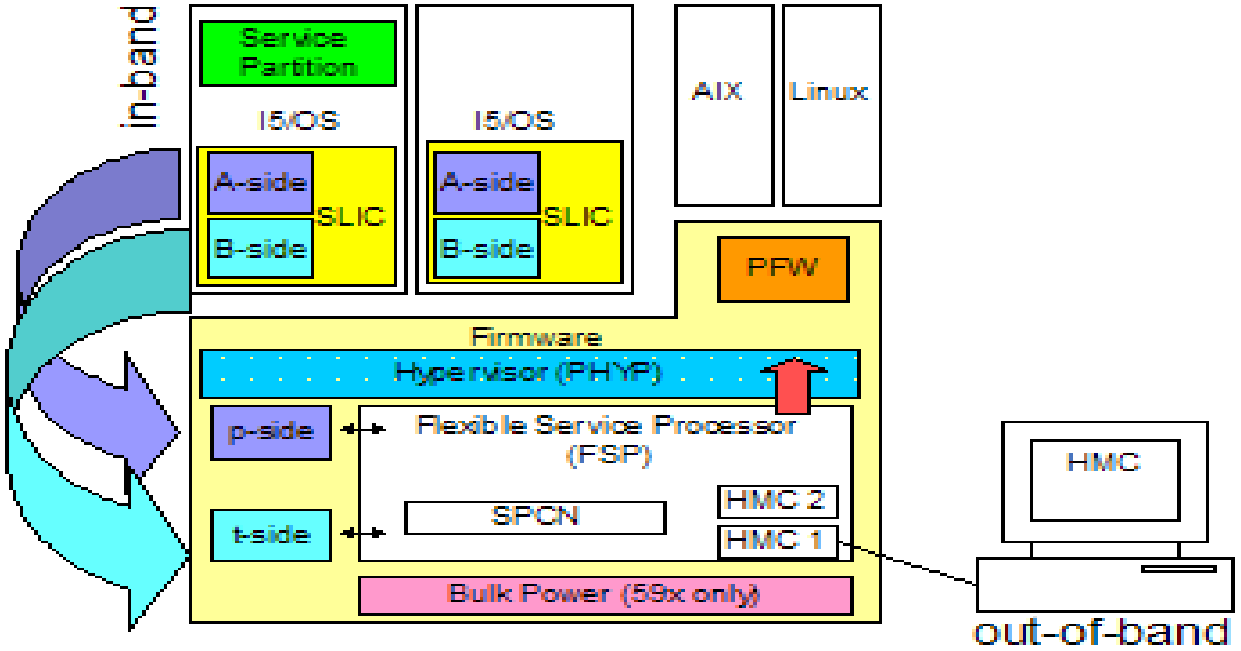
Methods of Firmware update

- **In-band**
- **Out-band**



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Firmware Version/Release history

Ver/Rel	Level	Fixpack ids	GA/date
01SF230	GA5	120 thru 145	9/05
01SF225	GA4	89 thru 96	2/05
01SF222	GA3	71 thru 81	11/04
01SF220	GA2	43 thru 96	8/04
01SF210	GA1	25 thru 29	6/04

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Firmware fix management via OS/400 (“in-band”)

A copy of the server firmware is contained within the 5722999 product. This firmware is what will be activated on the server.

- The server firmware level in 5722999 can be changed by:
  - Applying or removing a PTF that affects the server firmware
  - Re-installing a different level of 5722999
  - Similar to applying micro-code (MFxxxxx type) PTFs

- **Fixes packaged as 5722999 MHxxxxx PTFs**
  - Each set of MHxxxxx PTFs (coreq’d together) has a corresponding fix pack.
  - The PTFs and fix pack have the exact same code – just packaged differently

- **Server firmware fixes applied via PTFs on “service partition”.**
  - Single partitioned systems act as the service partition
  - Applying firmware PTFs on non-service partitions are not relevant
    - Similar to PLIC PTFs installed on non-primary partition

- Requires a “server IPL” to be activated**.**

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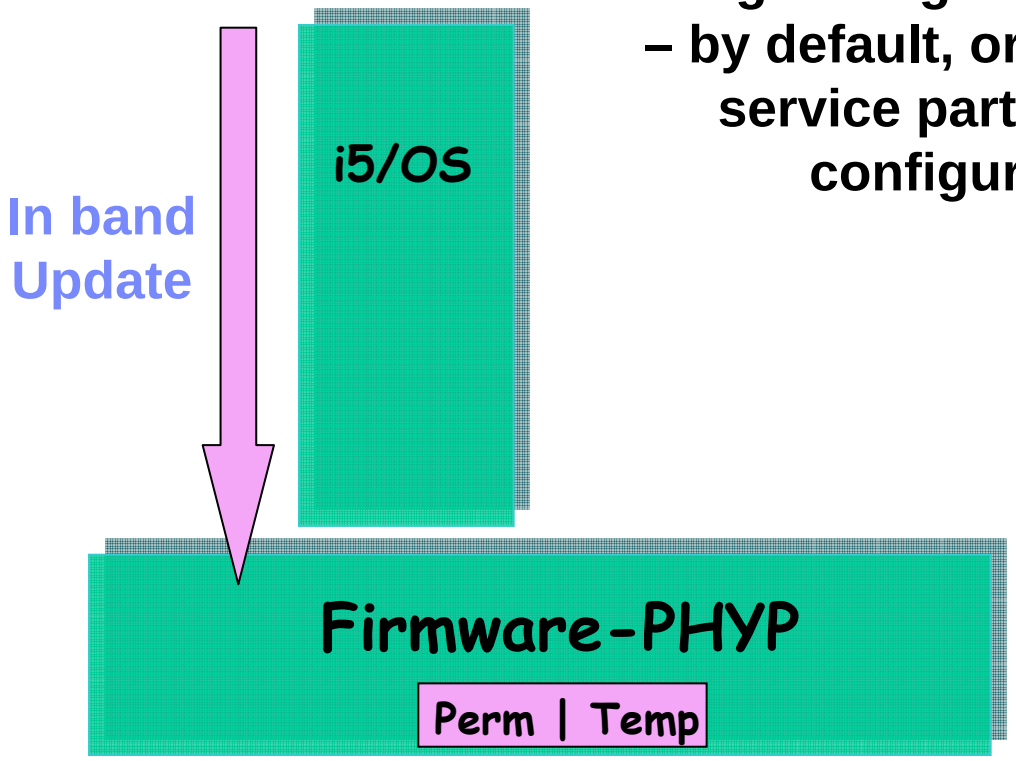
In-band firmware maintenance

Firmware Updates – MHnnnnn PTFs w/o HMC



Single image machines – by default, or by i5/OS service partition if configured

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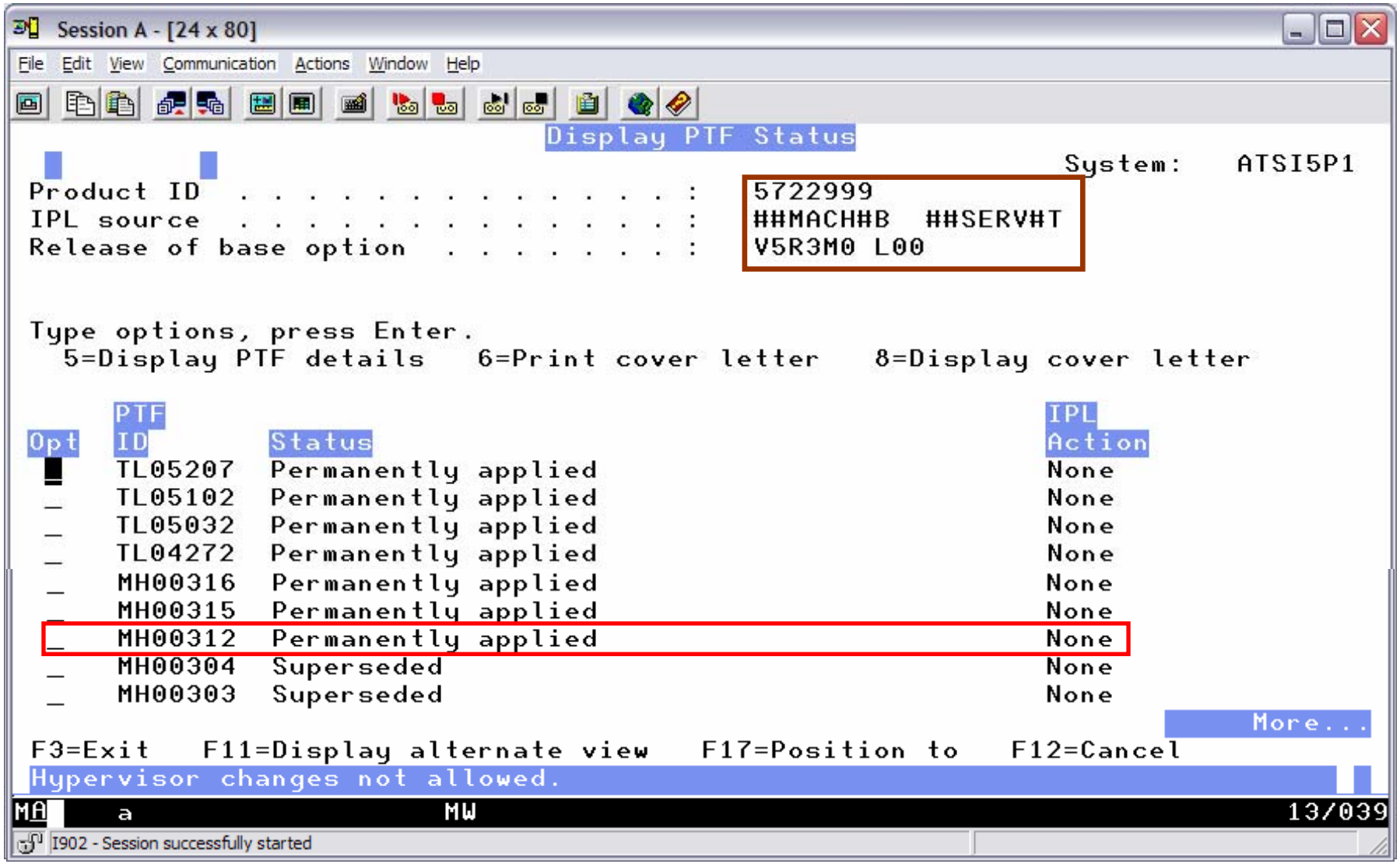
DSPPTF on a Service Partition note - IPL SOURCE ##SERV#T



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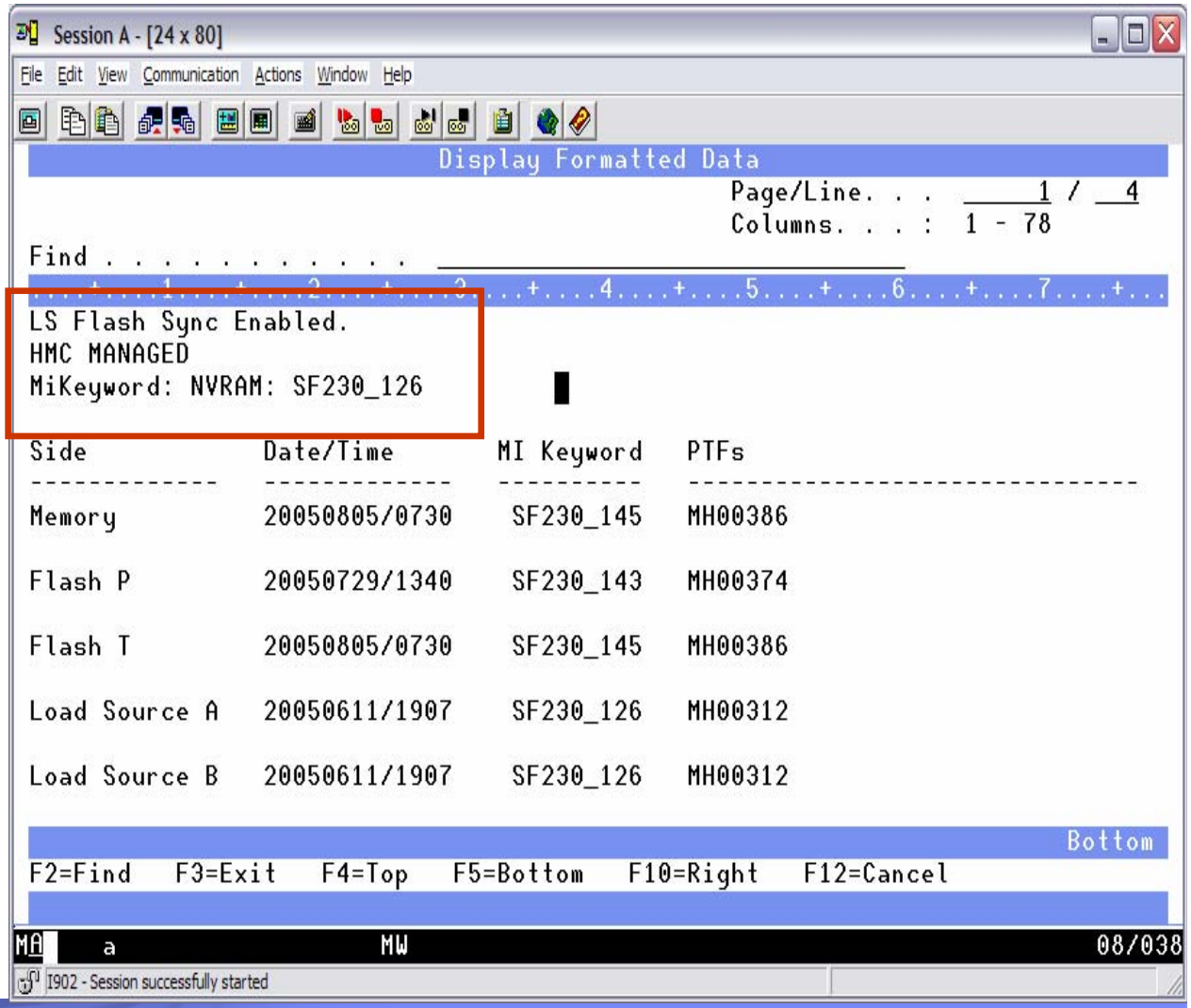
Using SST to Check Flash Level of Firmware

- **Advanced analysis function to allow you to determine what level of server firmware is really running on the system.**

1) **strsst**
2) **sign on**
3) **option 1 (start a service tool)**
4) **option 4 (Display/Alter/Dump)**
5) **option 1 (Display/Alter Storage)**
6) **option 2 (LIC data)**
7) **option 14 (Advanced analysis)**
8) **Select FLASHLEVELS**
9) **hit enter (don't need to specify options)**
10) **flash levels are displayed**



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FLASHLEVELS (cont.)

- **The information shown identifies the “marker” PTFid and corresponding fix pack name for:**
  - **Memory:** the level of firmware that is currently active on the system
  - **Flash P:** the level of firmware that is on the permanent side of the firmware. This is the level that will be activated on the next server IPL using the permanent side.
  - **Flash T:** the level of firmware that is on the temporary side of the firmware. This is the level that will be activated on the next server IPL using the temporary side.
  - **Load Source A:** This is the level of firmware that is currently applied to the A IPL source of the partition.
  - **Load Source B:** This is the level of firmware that is currently applied to the B IPL source of the partition. If this is the service partition, this is the level that will be “pushed” to the T side on the next power down of the service partition.
- **The “MI Keyword” field corresponds to the fix pack name**

- **Note: The Date/Time field is the date and time the PTF was built, not when it was applied**

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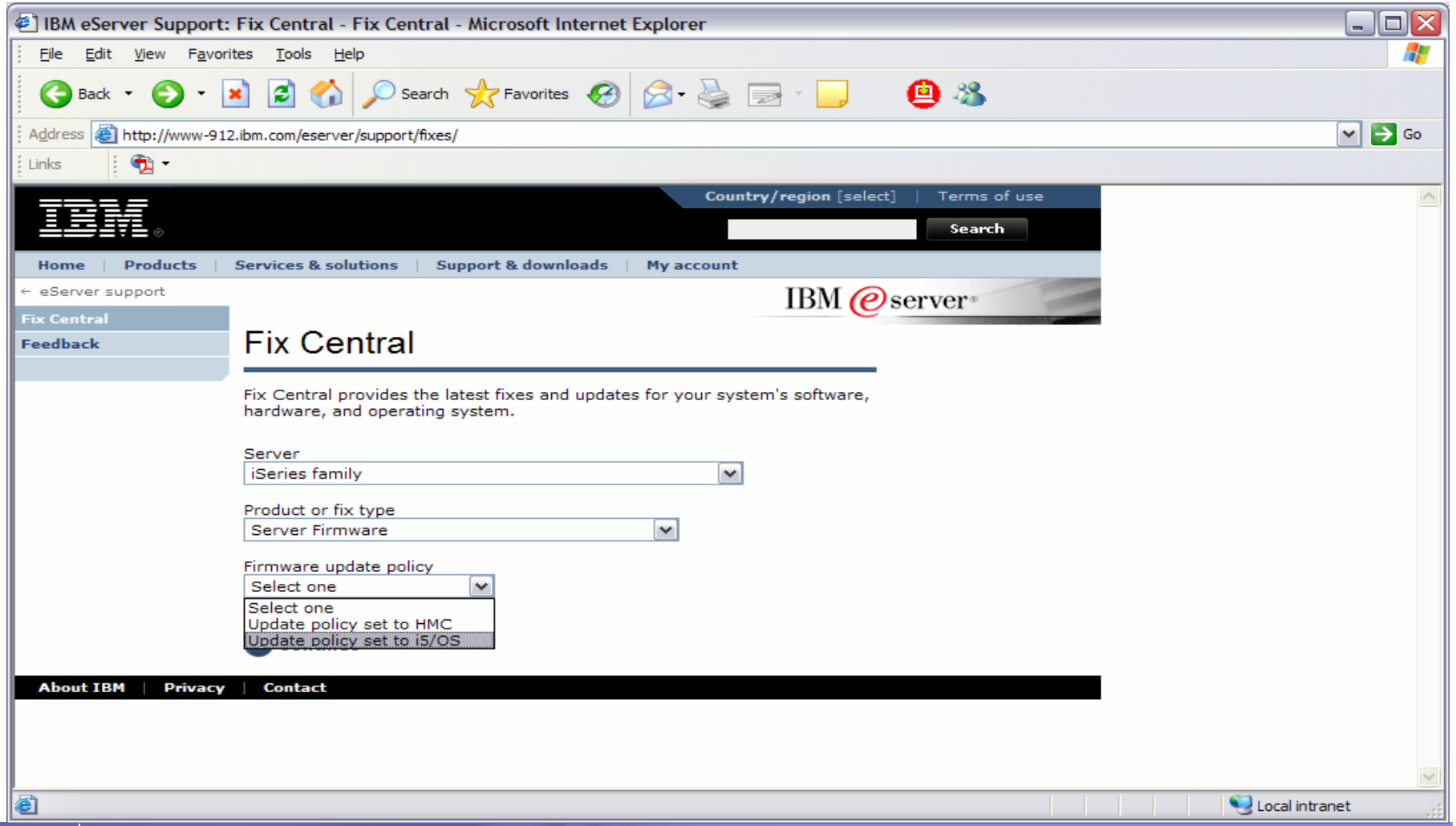
In-Band firmware PTFs (MHxxxx) are ordered and implemented same as micro-code PTFs (MFxxxx)



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Fix Mgmt via HMC - “out-of-band”

- **Server firmware fixes applied via Fix packs**
  - Downloaded from web or on media
  - Packaged in an RPM format
- **“Out-of-band” is the default if server is HMC capable (partitionable or COD)**
  - eServer i5 systems can change to OS/400 fix management (“in-band”)
- **DSPPTF LICPGM(5722999) from service partition**
  - Cannot use PTF status to show you the level of firmware that is active on the server.
  - Will see message CPD35FA - Hypervisor changes not allowed
    - Shown when the level of the server firmware that resides in SLIC is different than what is currently running on the server AND the server firmware is being managed by HMC.

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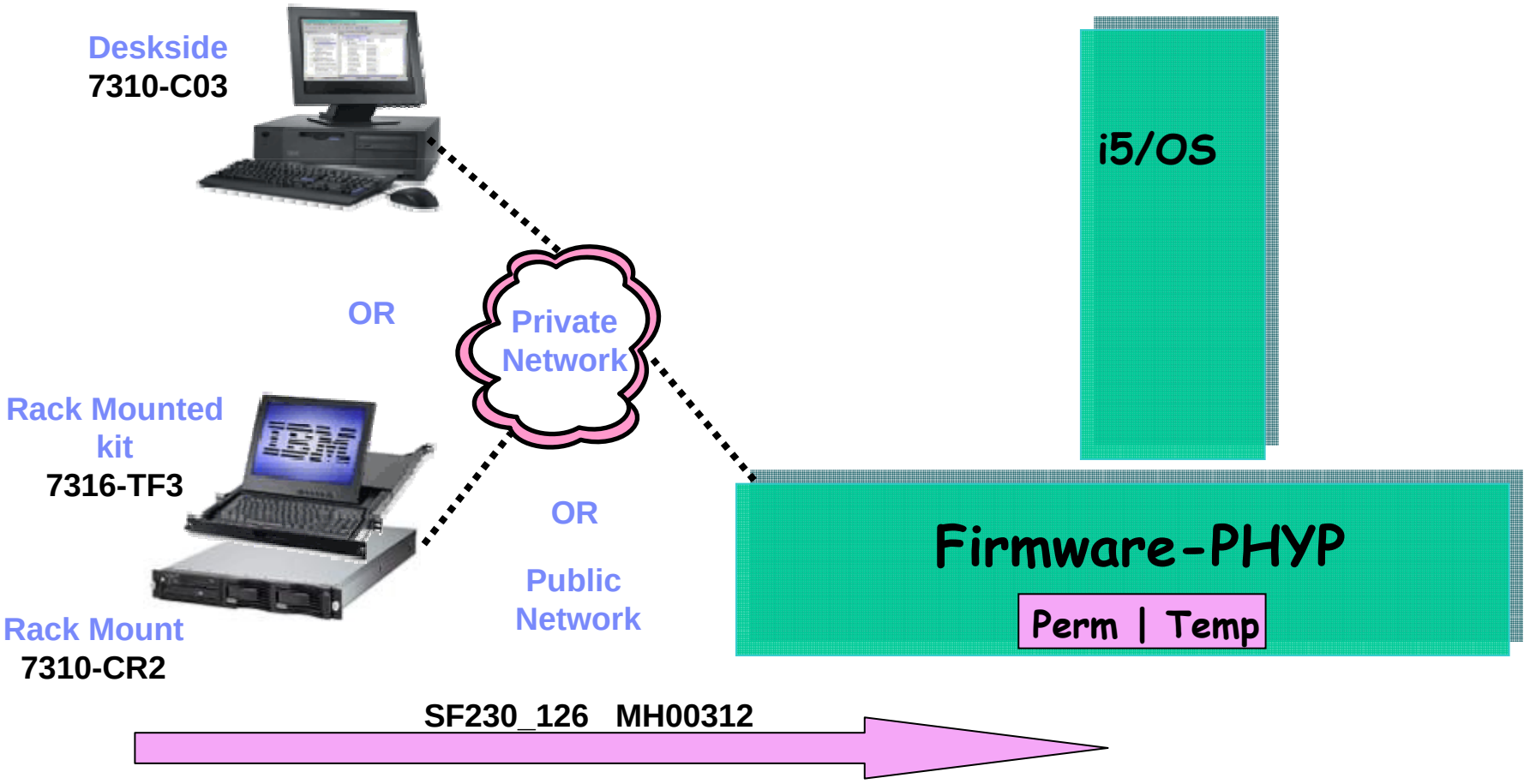
Firmware Updates and Upgrades – 01SFxxx via HMC



Out of band Update ** default with HMC**

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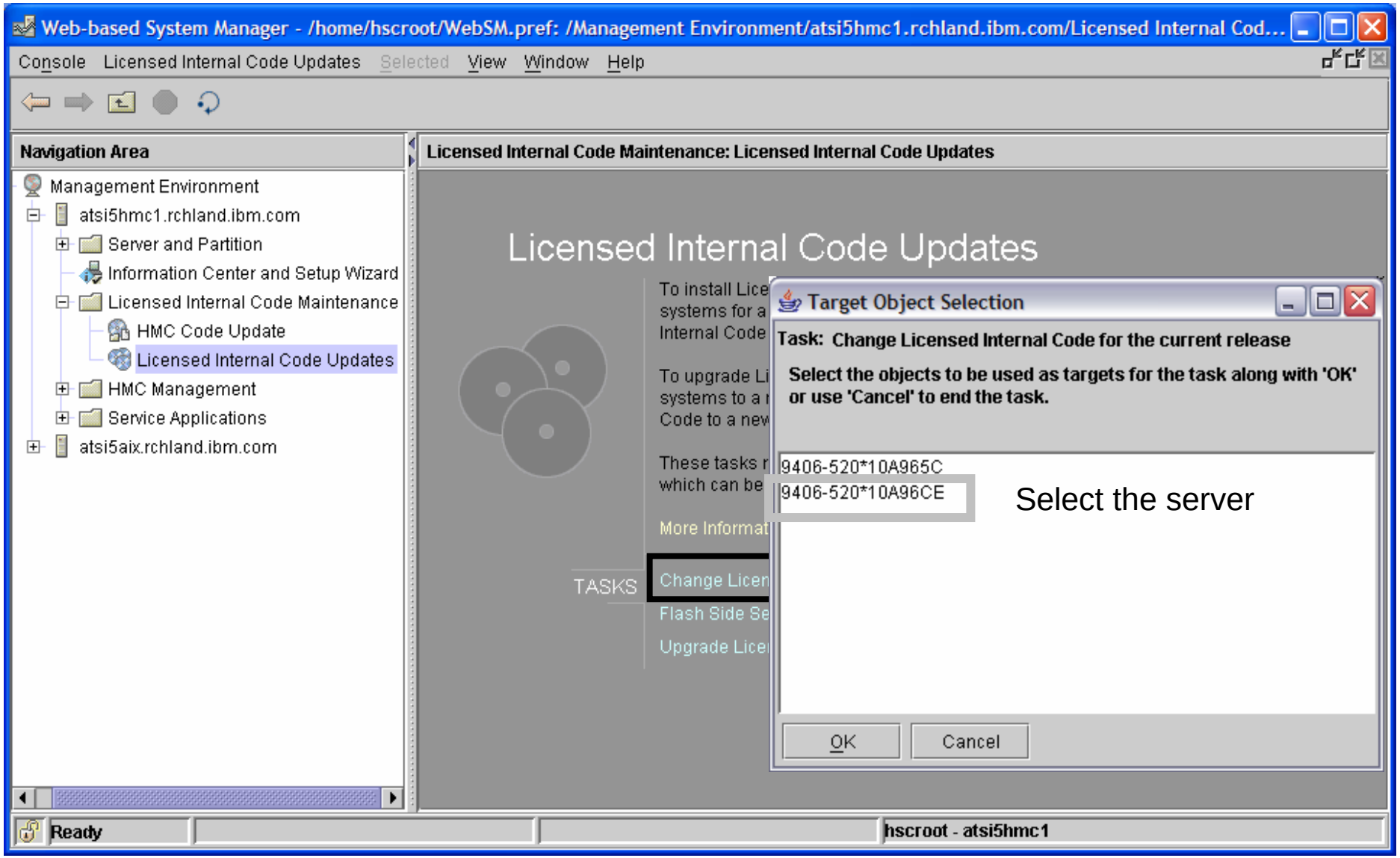
View or update firmware level or ‘upgrade’ firmware level



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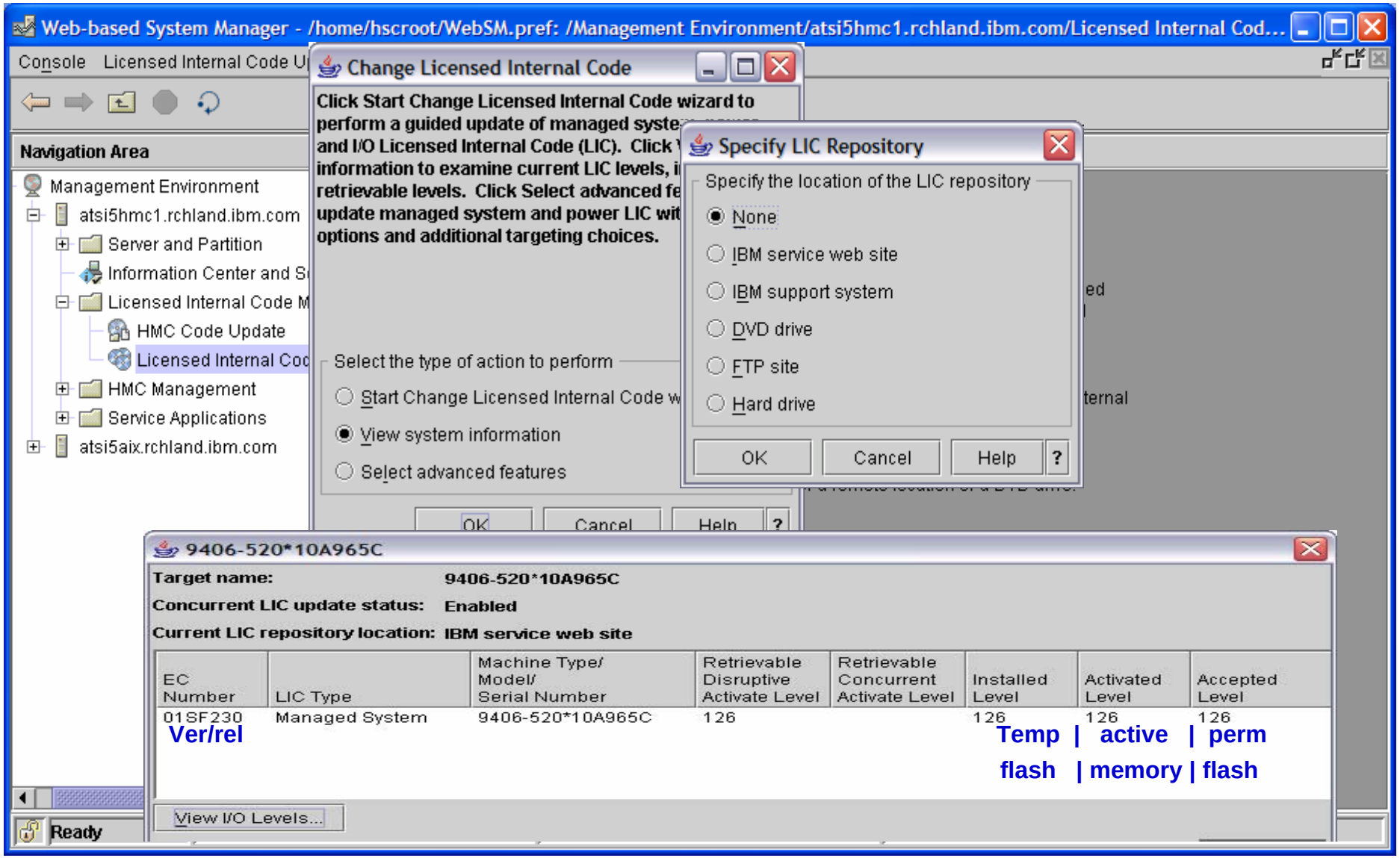
View – Currently installed firmware level



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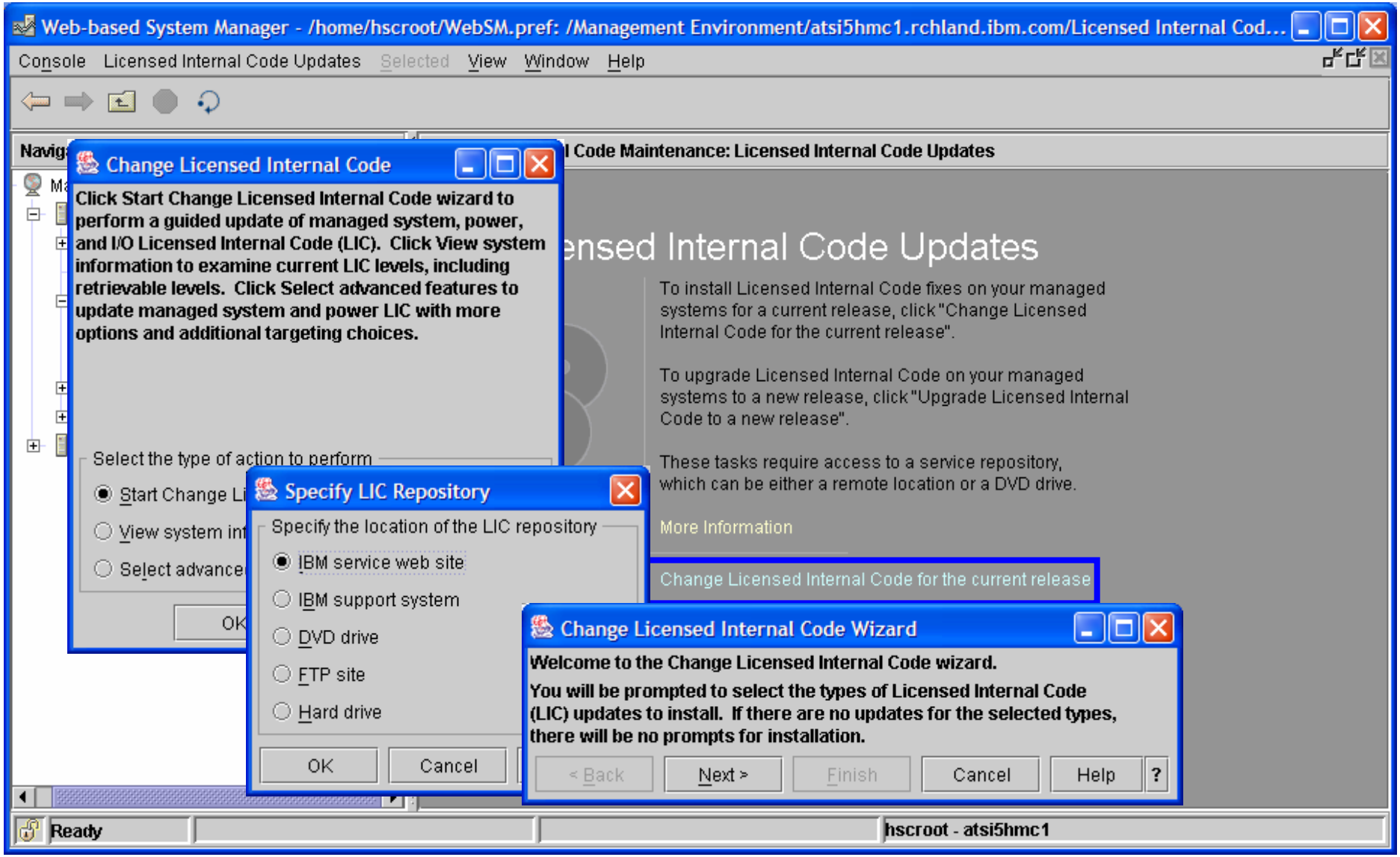
Start the upgrade or fix maintenance



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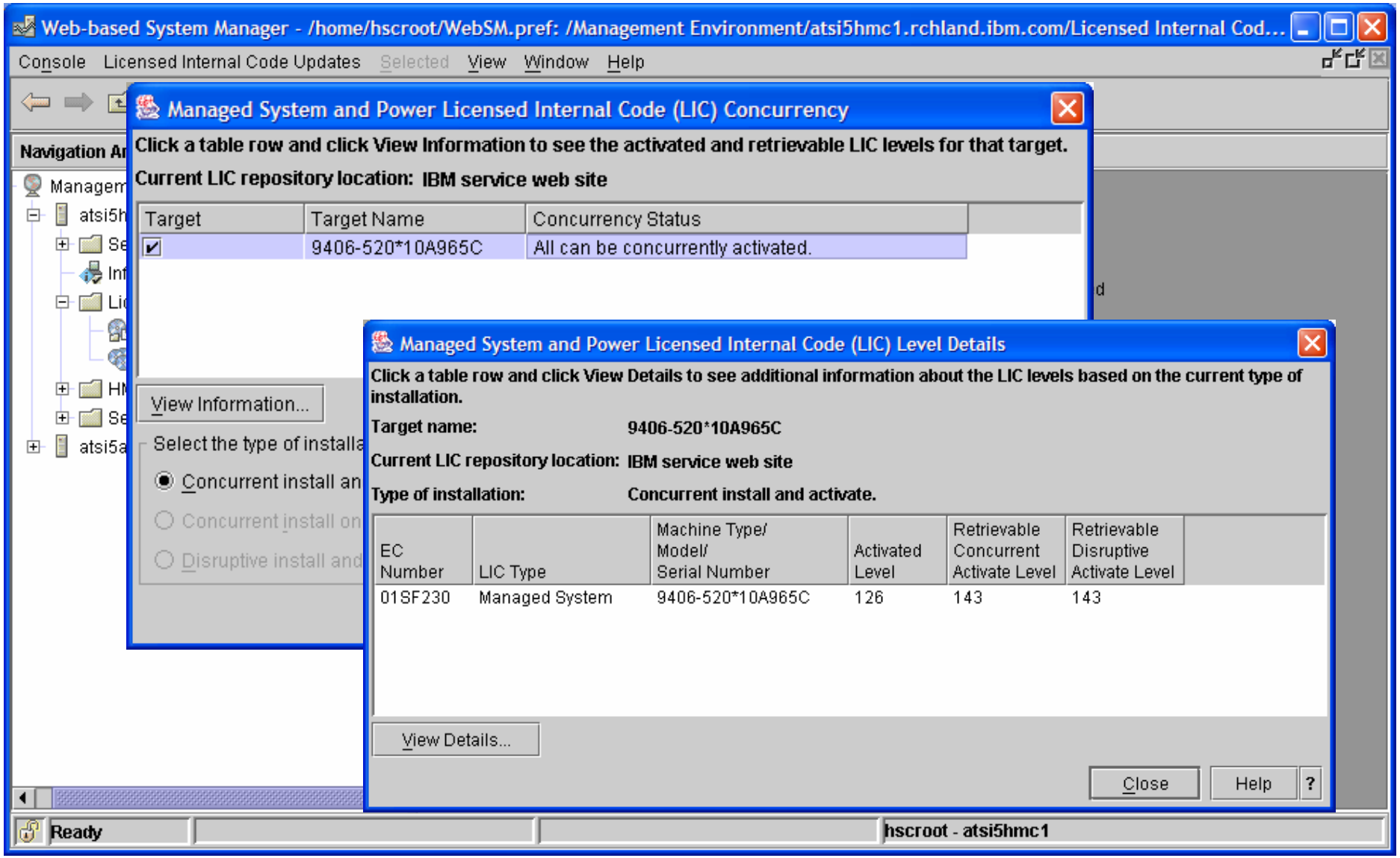
Start the upgrade or fix maintenance



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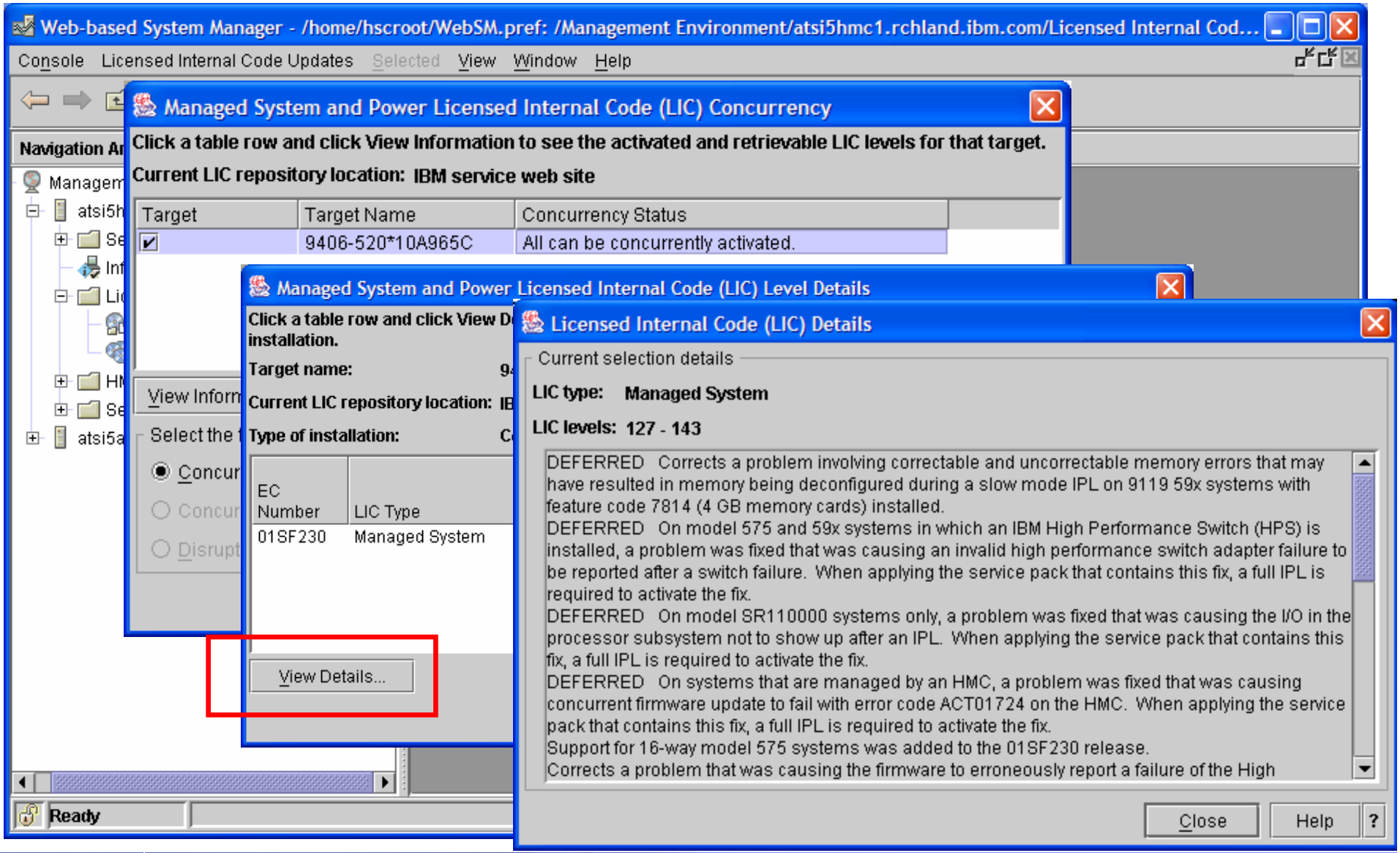
Start the upgrade or fix maintenance



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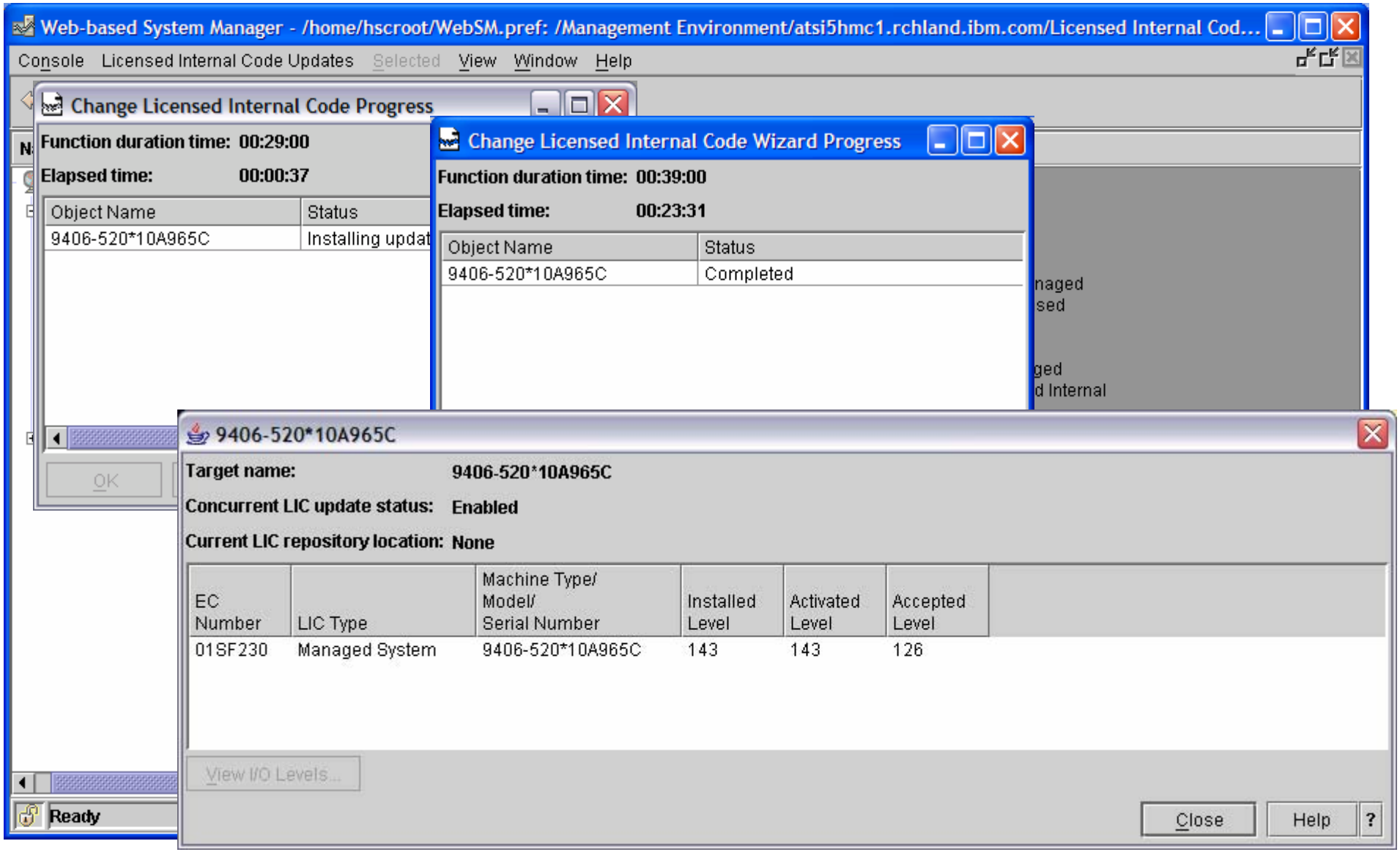
View firmware level following concurrent update



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What is Concurrent Firmware Maintenance?

- **Concurrent Firmware Maintenance (CFM) is the ability to deploy firmware updates on a running system without powering off any partitions (does NOT require a deep IPL of the server)**
  - **New option in GA5** (May 27, 2005) for HMC managed servers only. (not available for "in-band firmware maintenance)
- **Concurrent activation requires a Hardware Management Console (HMC)**
  - Inband (PTF) update support unchanged from previous releases
- **Scope is Server Firmware**
  - Power subsystem firmware is updated in a separate fixpack, and is concurrent with respect to server operations
  - The HMC itself is updated with a separate fixpack, and is concurrent with respect to servers managed
  - Seen as one activity from user interface; under the covers there are two steps:
    - Apply the firmware (update what is in flash)
    - Activate the firmware (cause the new firmware to be running on the system)
- **Only fixpacks within a release can be concurrent**
  - This support starts at GA5, 01SF230_120 level forward
  - A release is a major new code stream; *e.g.* 01SF220 or 01SF222 for system firmware or 02BP222 for power subsystem firmware
  - **Transition to new release is always disruptive activation**
- **Each release will be supported in service for approximately one year**
  - Supports value of CFM by making disruptive release transitions less frequent
  - Previously releases were retired as soon as a new release shipped

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Types of Fixpacks

- **Updating firmware involves two steps:**
  - Apply the firmware (update what is in flash)
  - Activate the firmware (cause the new firmware to be running on the system)

- **Not all fixpacks can be activated concurrently**
  - **Concurrent** – Apply and activate with partitions running
  - **Deferred** – Concurrent apply but contains fixes which affect IPL path – which are not activated until next IPL
    - The portions of the fixpack which can be activated concurrently are activated as described above
  - **Disruptive** – Platform is IPL required to activate
    - None of the fixpack contents are activated until next IPL

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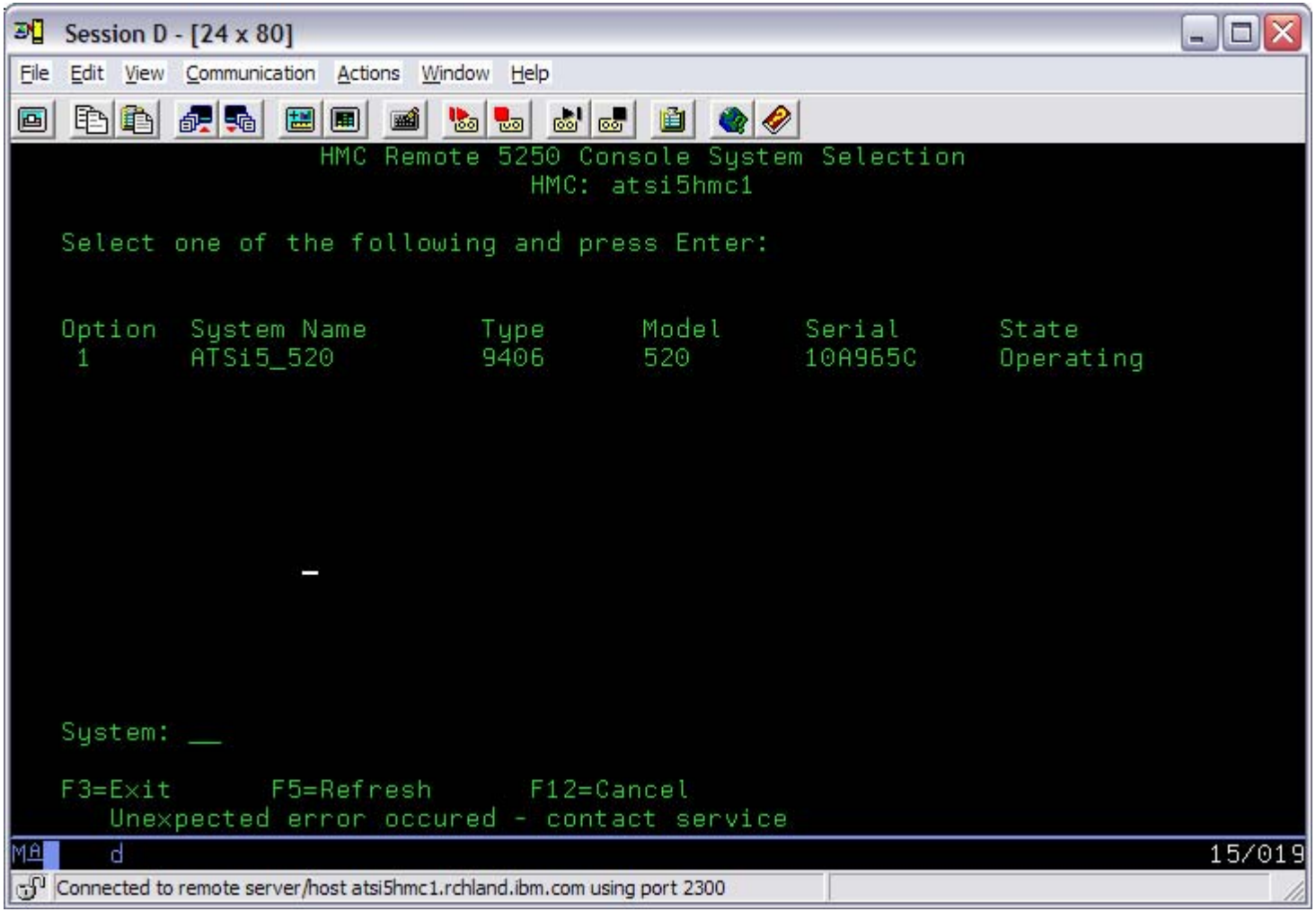
Concurrent updates – effects on HMC i5/OS console session

HMC console session fails – beware interactive jobs on console

Must reconect from the HMC. This means any ‘remote console sessions will be disrupted as well and they can not reconnect until the HMC reconnects.

Also, recommend using the ‘Allow Console Take-over feature of OS/400

See KB **Doc Number:** **367515335**



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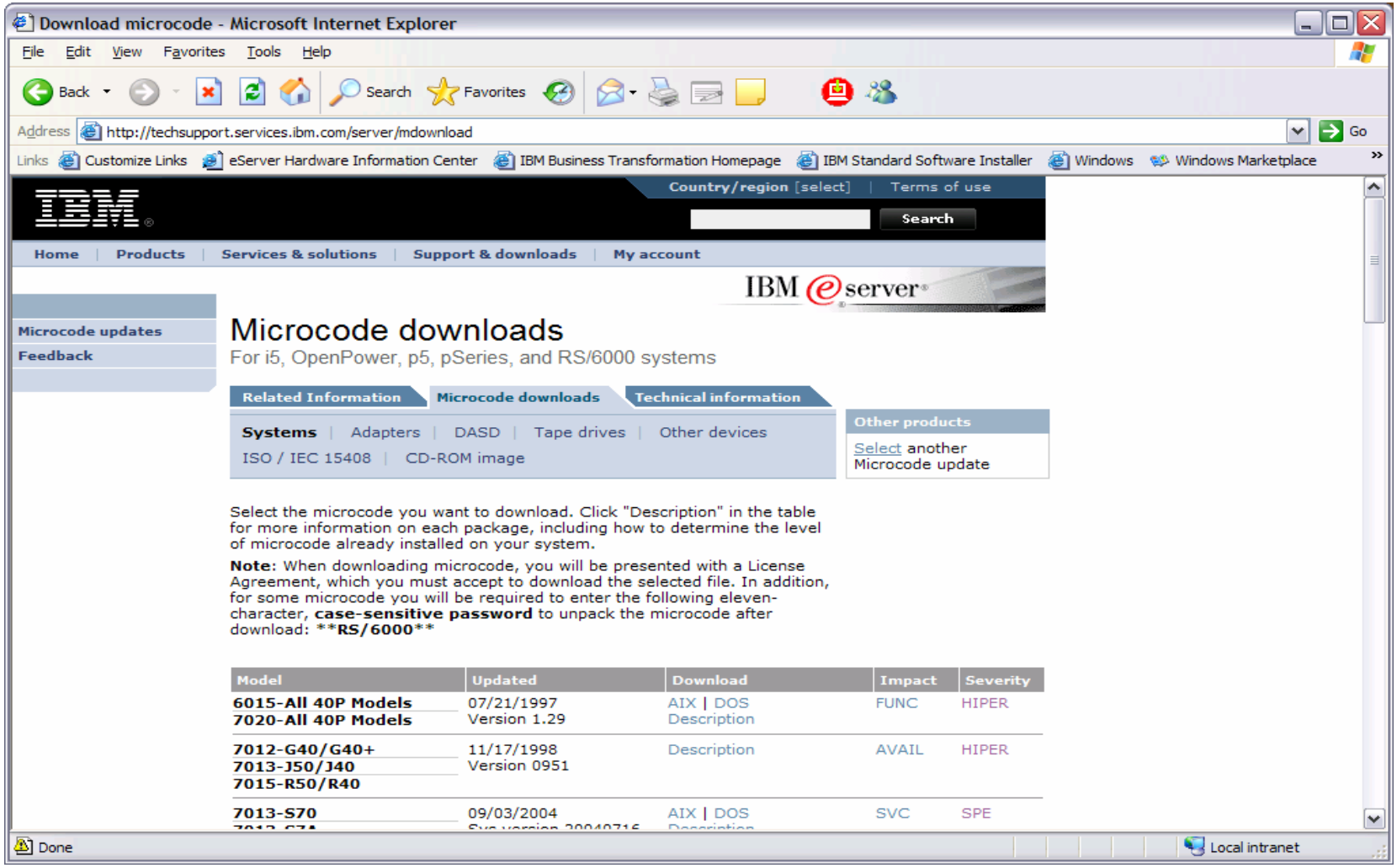
Firmware – Microcode download

http://techsupport.services.ibm.com/server/mdownload



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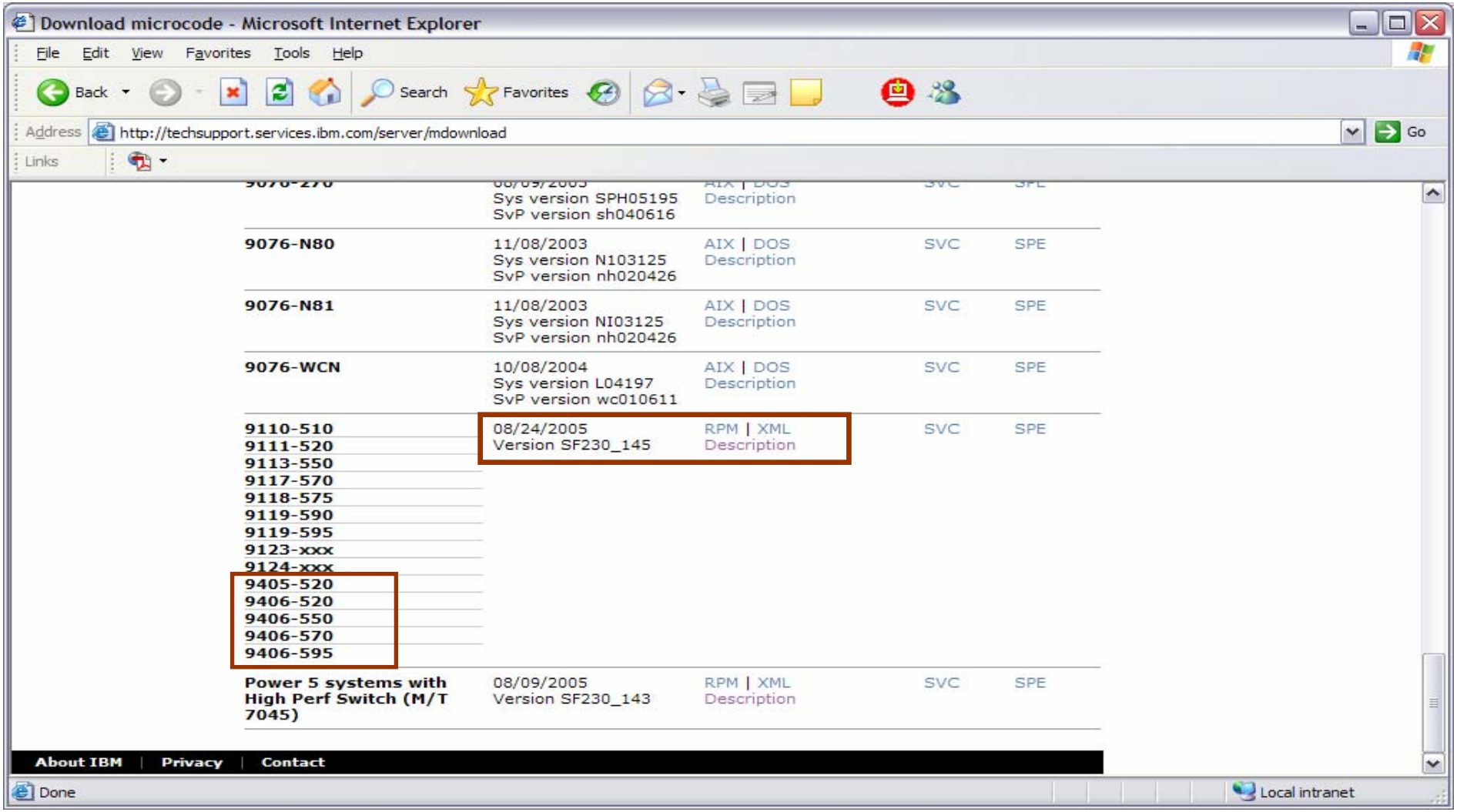
Firmware – Microcode download- continued

Firmware can be downloaded and applied immediately, stored on the HMC hard-drive burned to a CD or DVD for later deployment



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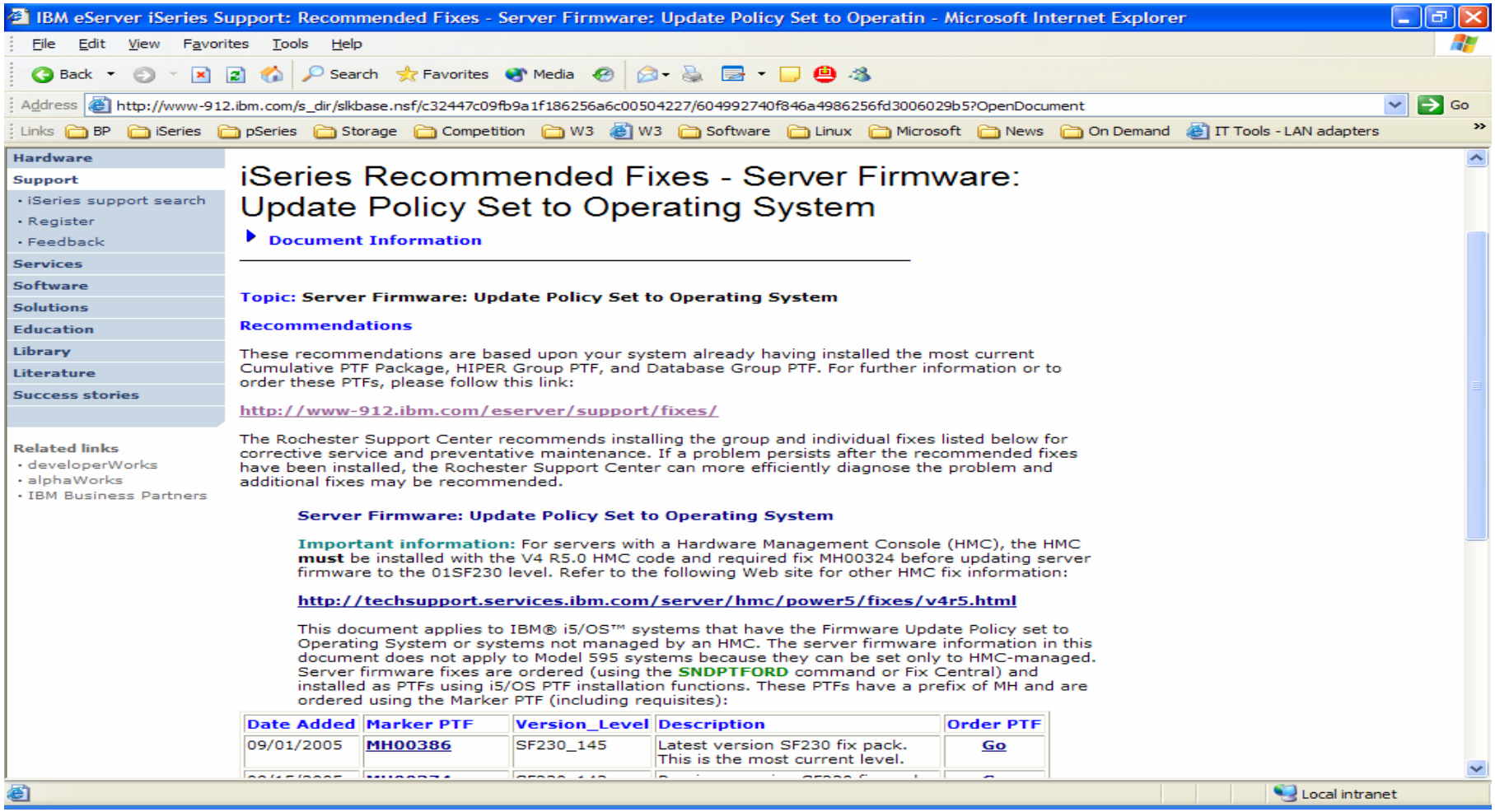
iSeries Recommended Fixes - Server Firmware: Update Policy Set to Operating System

http://www-912.ibm.com/s_dir/slkbase.nsf/c32447c09fb9a1f186256a6c00504227/604992740f846a4986256fd3006029b5?OpenDocument



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iSeries Recommended Fixes - Server Firmware: Update Policy Set to HMC

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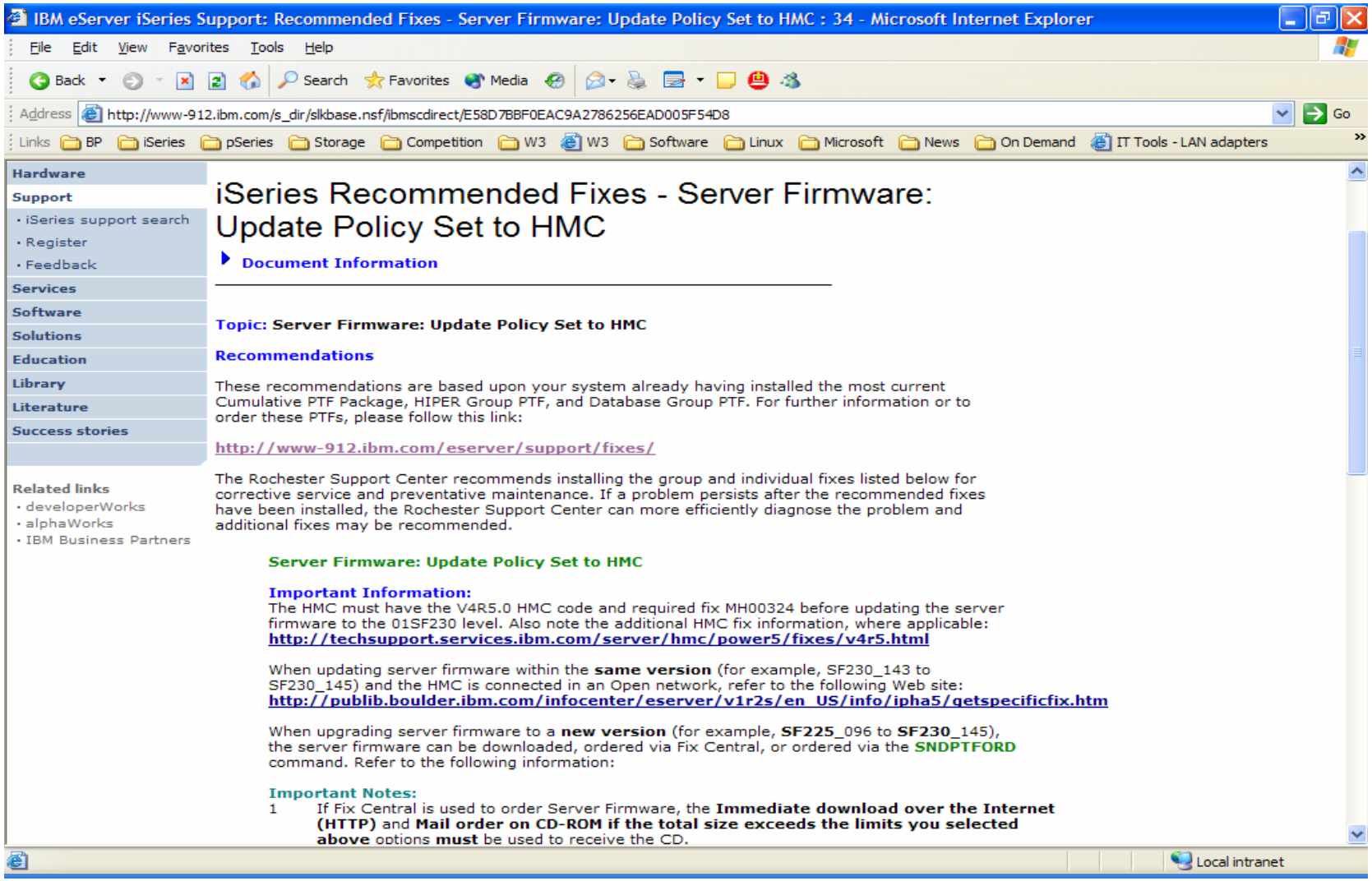

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HMC Firmware maintenance and options for back up and recovery

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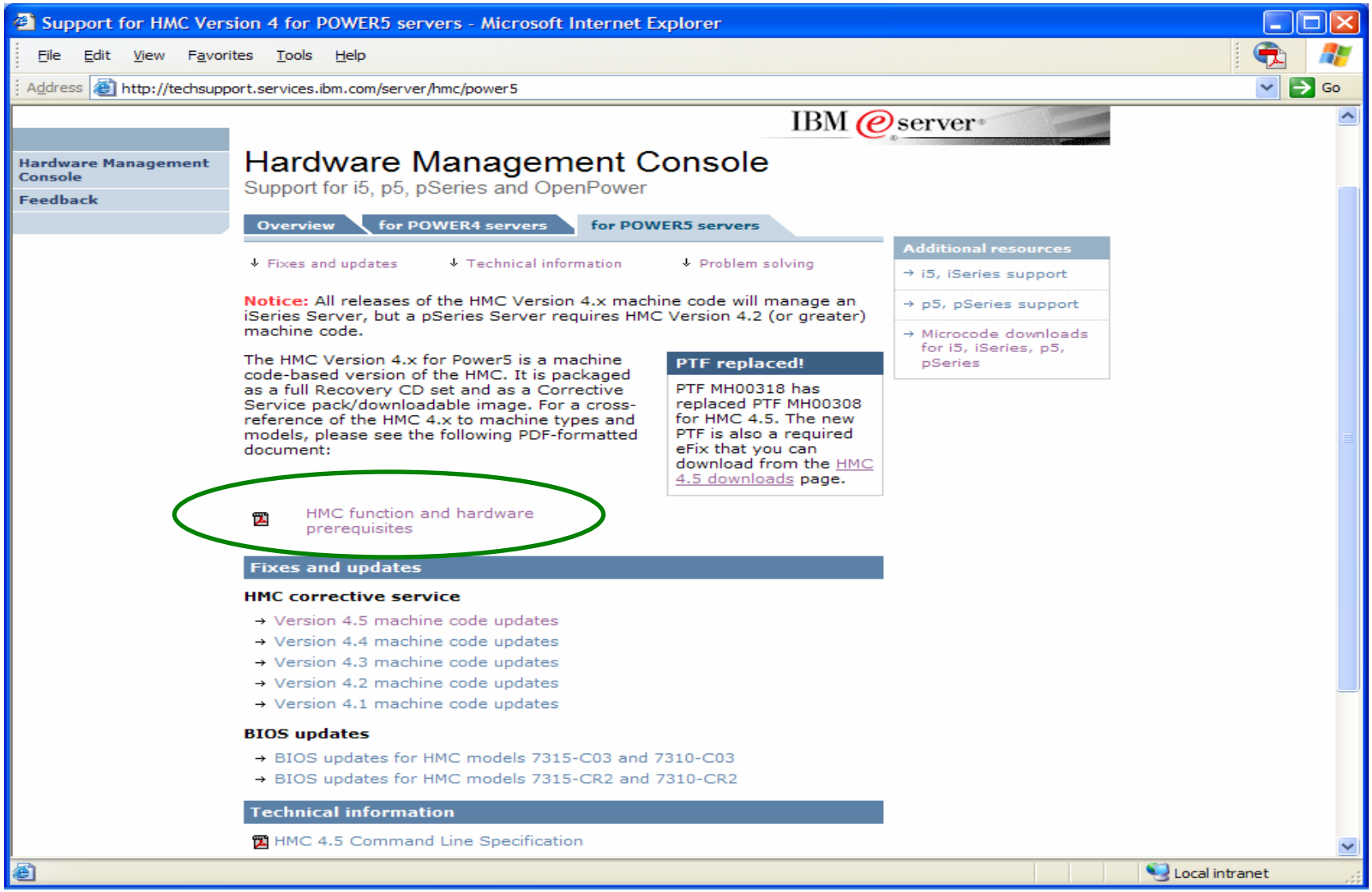
http://techsupport.services.ibm.com/server/hmc/power5



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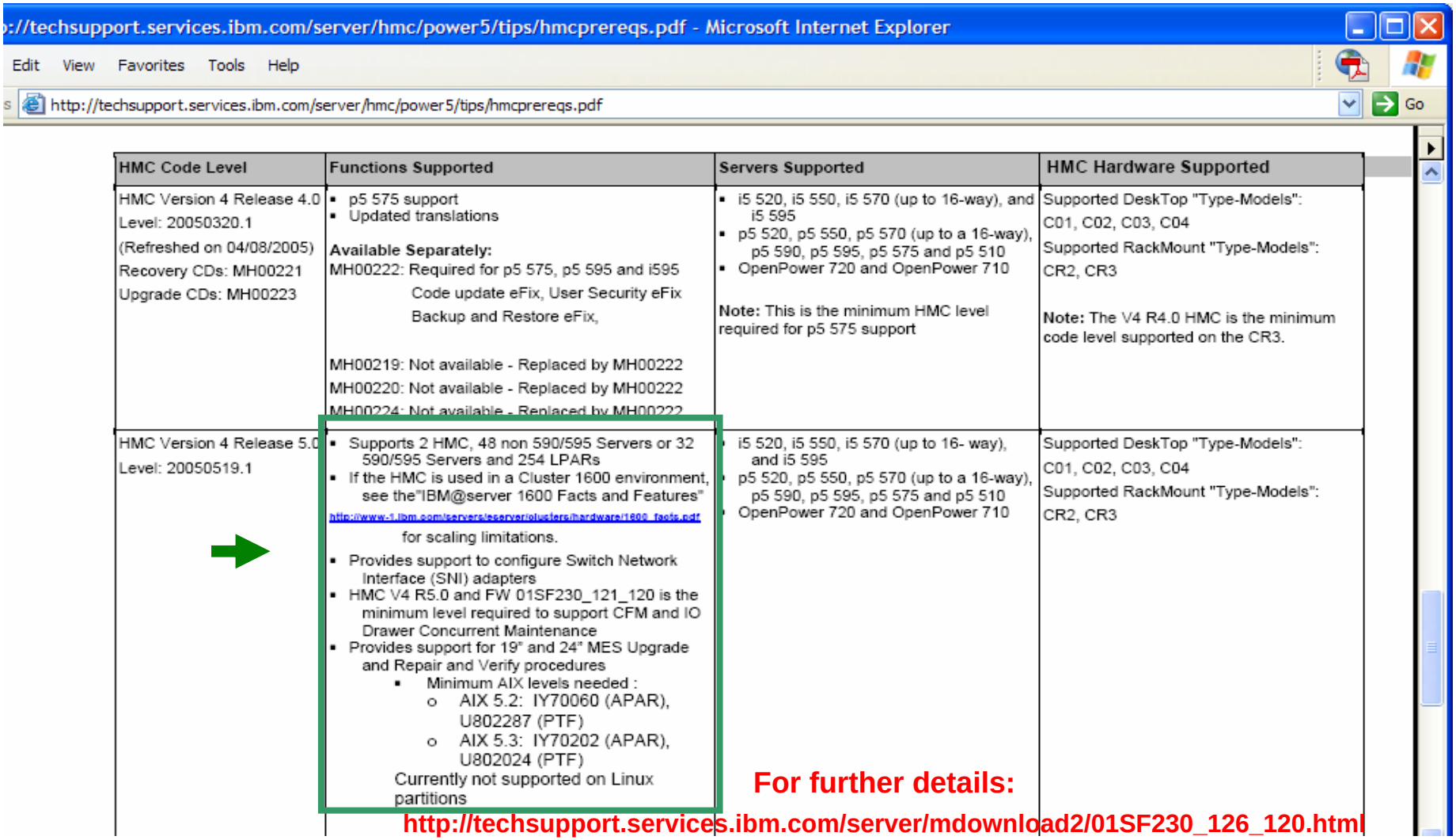
HMC GA 5 (V4R5) enhancements Firmware

http://techsupport.services.ibm.com/server/hmc/power5/tips/hmcprereqs.pdf



://techsupport.services.ibm.com/server/hmc/power5/tips/hmcprereqs.pdf - Microsoft Internet Explorer

Edit View Favorites Tools Help

http://techsupport.services.ibm.com/server/hmc/power5/tips/hmcprereqs.pdf

HMC Code Level	Functions Supported	Servers Supported	HMC Hardware Supported
HMC Version 4 Release 4.0 Level: 20050320.1 (Refreshed on 04/08/2005) Recovery CDs: MH00221 Upgrade CDs: MH00223	▪ p5 575 support ▪ Updated translations **Available Separately:** MH00222: Required for p5 575, p5 595 and i595 Code update eFix, User Security eFix Backup and Restore eFix, MH00219: Not available - Replaced by MH00222 MH00220: Not available - Replaced by MH00222 MH00224: Not available - Replaced by MH00222	▪ i5 520, i5 550, i5 570 (up to 16-way), and i5 595 ▪ p5 520, p5 550, p5 570 (up to a 16-way), p5 590, p5 595, p5 575 and p5 510 ▪ OpenPower 720 and OpenPower 710 **Note:** This is the minimum HMC level required to support p5 575	Supported DeskTop "Type-Models": C01, C02, C03, C04 Supported RackMount "Type-Models": CR2, CR3 **Note:** The V4 R4.0 HMC is the minimum code level supported on the CR3.
HMC Version 4 Release 5.0 Level: 20050519.1	▪ Supports 2 HMC, 48 non 590/595 Servers or 32 590/595 Servers and 254 LPARs ▪ If the HMC is used in a Cluster 1600 environment, see the"IBM@server 1600 Facts and Features" http://www-1.ibm.com/servers/eserver/clusters/hardware/1600_facts.pdf for scaling limitations. ▪ Provides support to configure Switch Network Interface (SNI) adapters ▪ HMC V4 R5.0 and FW 01SF230_121_120 is the minimum level required to support CFM and IO Drawer Concurrent Maintenance ▪ Provides support for 19" and 24" MES Upgrade and Repair and Verify procedures ▪ Minimum AIX levels needed : o AIX 5.2: IY70060 (APAR), U802287 (PTF) o AIX 5.3: IY70202 (APAR), U802024 (PTF) Currently not supported on Linux partitions	▪ i5 520, i5 550, i5 570 (up to 16- way), and i5 595 ▪ p5 520, p5 550, p5 570 (up to a 16-way), p5 590, p5 595, p5 575 and p5 510 ▪ OpenPower 720 and OpenPower 710	Supported DeskTop "Type-Models": C01, C02, C03, C04 Supported RackMount "Type-Models": CR2, CR3

For further details:

http://techsupport.services.ibm.com/server/mdownload2/01SF230_126_120.html

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HMC Maintenance main website

http://techsupport.services.ibm.com/server/hmc/power5

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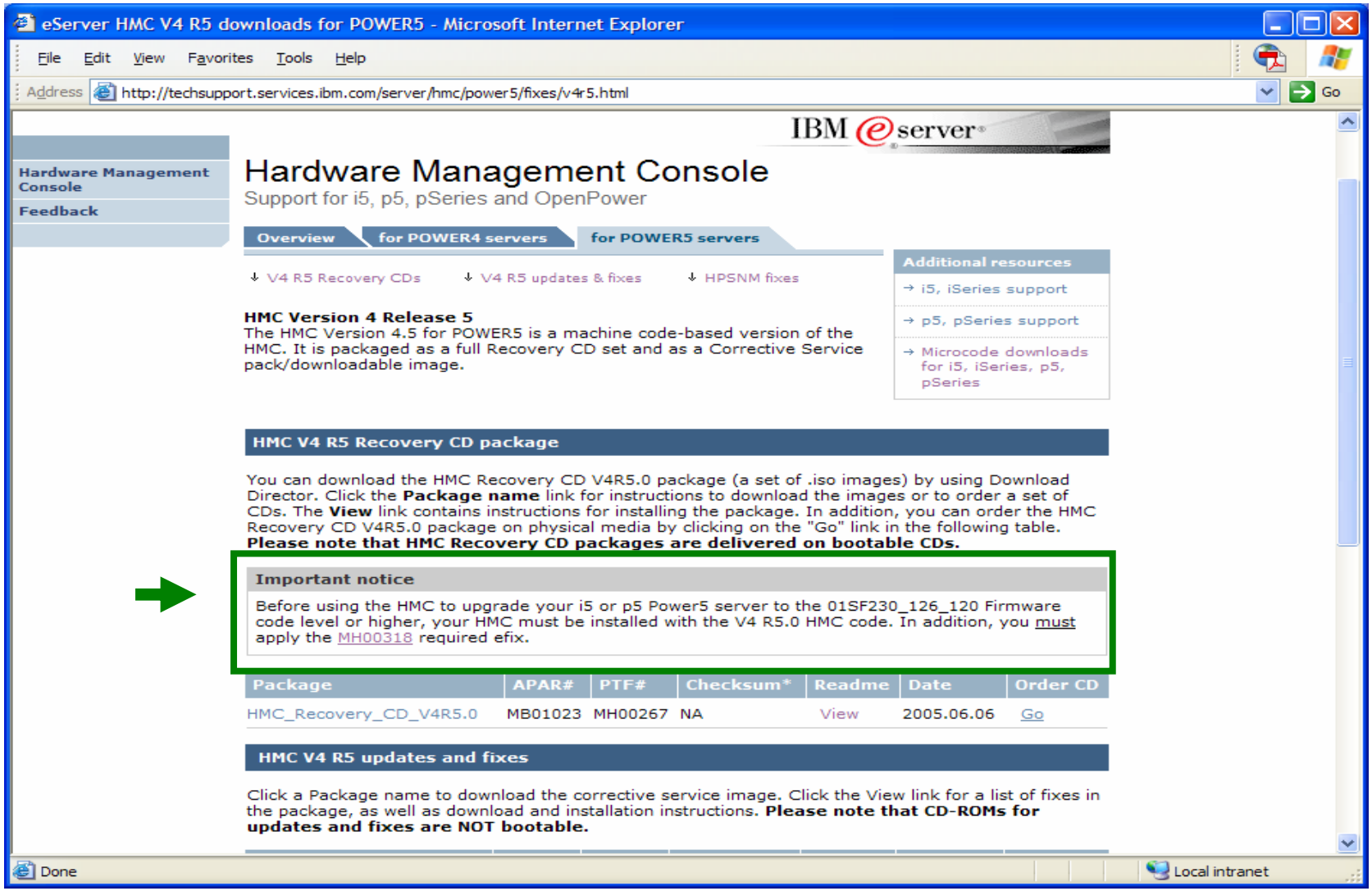
Generally – update HMC before updating server firmware



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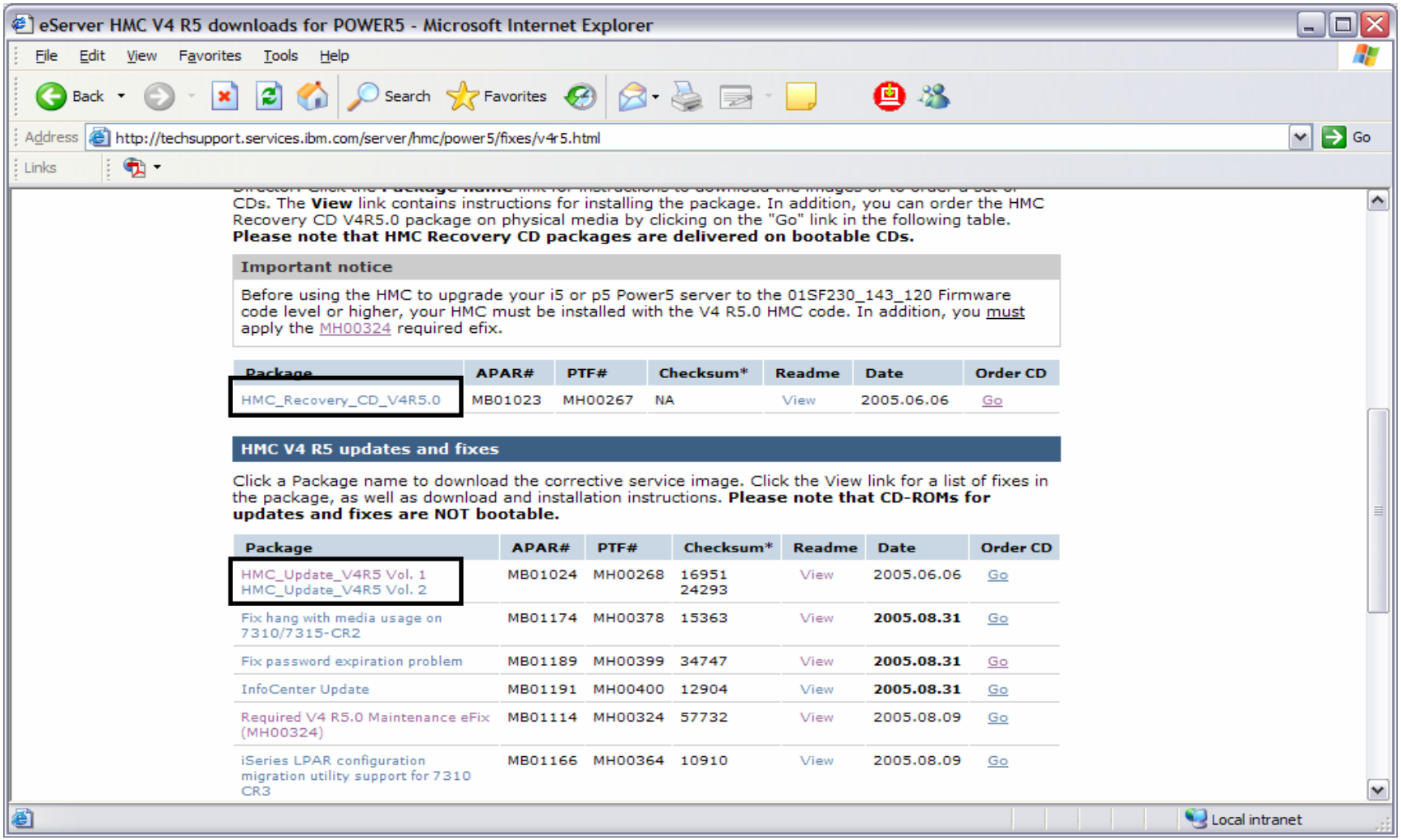
Upgrading HMC firmware - Recovery CD's vs Update .zip files

Recovery CD's will reset the 'base' install level resulting in shorter back up time



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Suggestion for upgrades

- **There is a benefit to installing the refreshed Recovery CD's** vs. the refreshed upgrade zip files. A common complaint is the length of time it takes to **'Save Critical Consol Data'.** The reason this can take so long is it will make a copy of every object that has ever changed since the base install level of the system. This can be reduced by bringing the **recovery point** (the base level) up using the recovery CD's.
- For example, say initially the system ships with V4 R1.0 preloaded. If using the Upgrade Zip file images to move to V4 R2.0, then to V4 R3.0, the recovery point is still V4R1 Recovery CD's plus the Critical Console Data.
- If upgrading from the Recovery CD's to V4 R4.0 MH00221 (in this example), the procedure would be:
  - 1) Save Upgrade Data
  - 2) Boot from the **Recovery CD's** MH00221
  - 3) Restore the saved Upgrade Data (will occur automatically as part of the upgrade)
  - 4) Apply any V4 R4.0 Required Maintenance efix (MH00219 in this example)
  - 5) Save Critical Console Data

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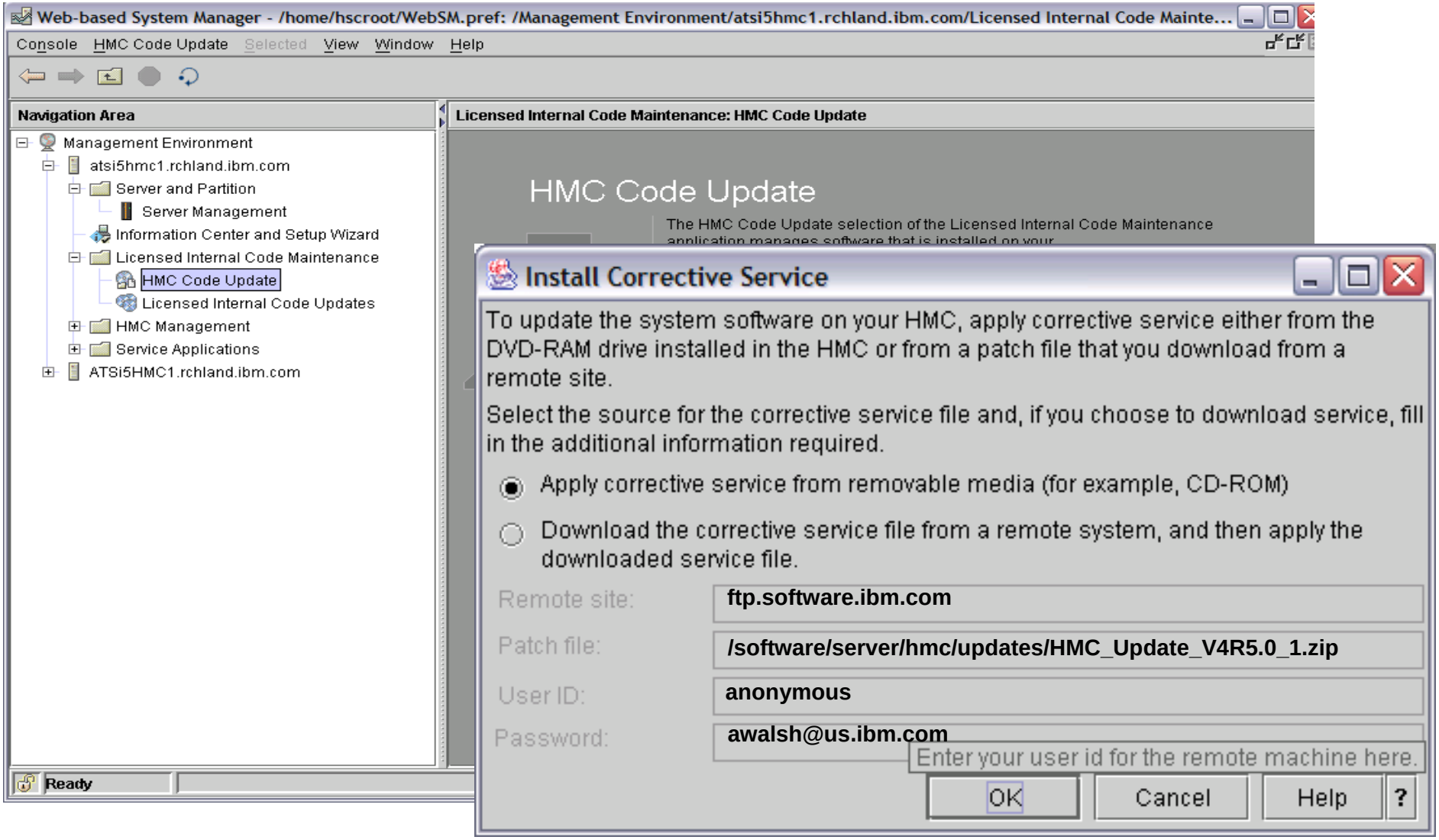
HMC upgrades or eFix downloads



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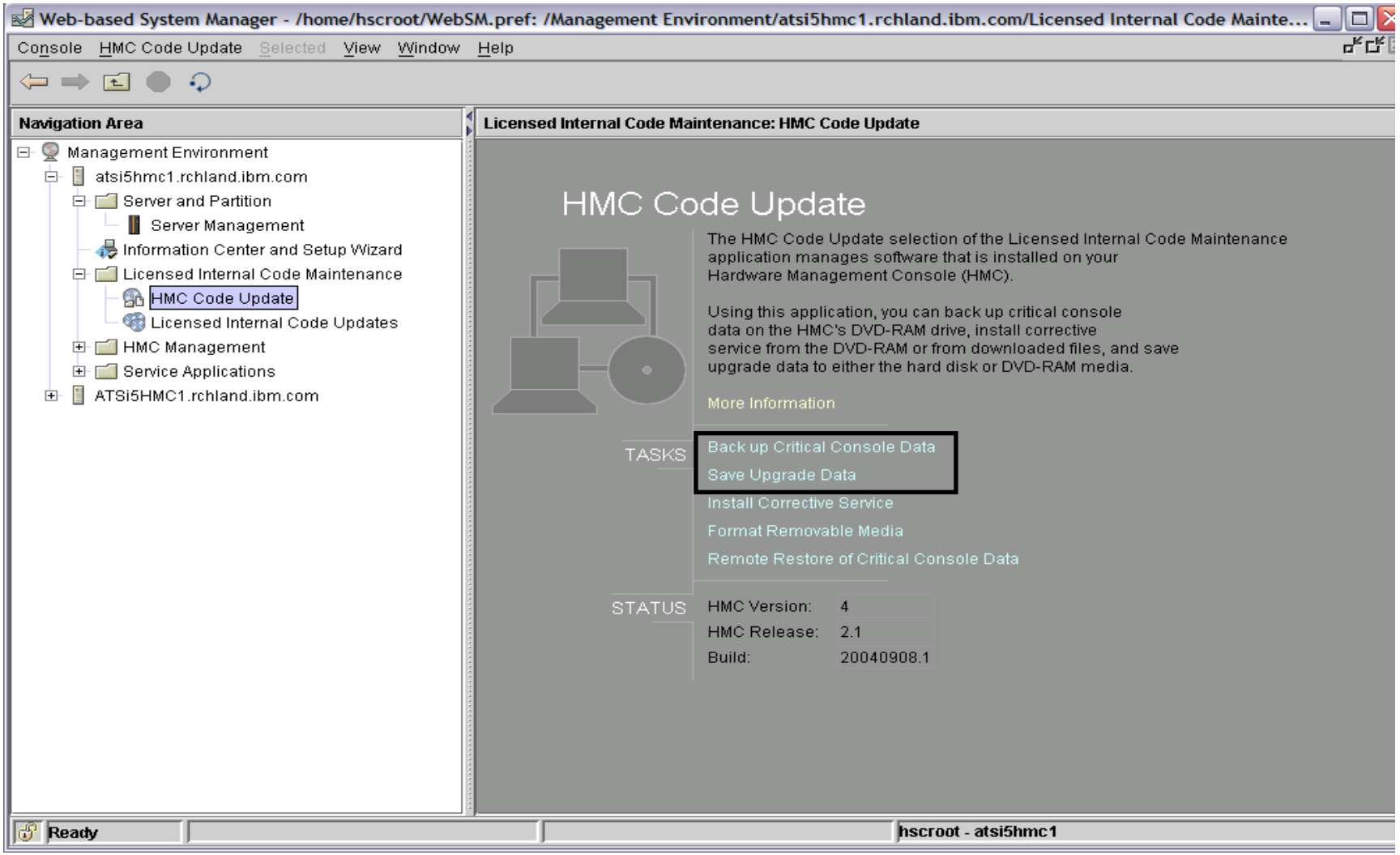
HMC Backup options



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Critical Console Data backup

- **CCD is not a complete save of HMC**
  - User Pref, User info, HMC Platform config, HMC Log
  - You need ORIGINAL HMC Recovery cds
  - Back to
    - to DVD-RAM
    - to FTP site
    - to NFS
- **FTP and NFS can cause restore task to be more difficult**
  - Need to setup networking to get to CCD files
- **Save Upgrade data different from CCD**
  - save before HMC Upgrade
  - System Pref, Profile info, Service info

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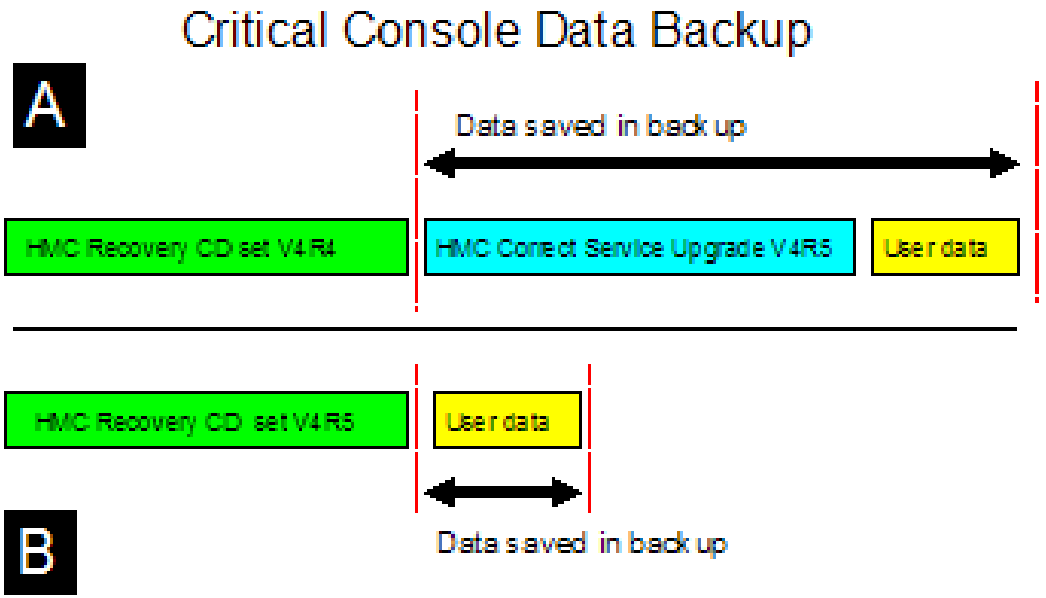
Why CCD backup can take a while…

- **Two methods of HMC software Upgrades**
  - Update via corrective service - A
  - Update with new release Recovery CD set –B
- **Size matters – could be +1GB**
- **Performance is being improved**



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HMC Security

- Granular User Access Controls
  - Define Task and Resource Roles that define accessible lists of user tasks and resources (systems, partitions, etc)
  - Assign roles to users to define their access rights
  - For example, access could be limited to a single partition

- Network Security Firewall Controls
  - Define which HMC network services should be accessible on which physical network interfaces
  - For example, limit remote WebSM or SSH access to a single interface, or none
  - Enable SSL encryption for WebSM remote access
- Restricted Shell
  - Provides access to supported HMC command line functions
  - Accessible remotely through SSH
  - Also accessible as a command prompt window on the HMC itself

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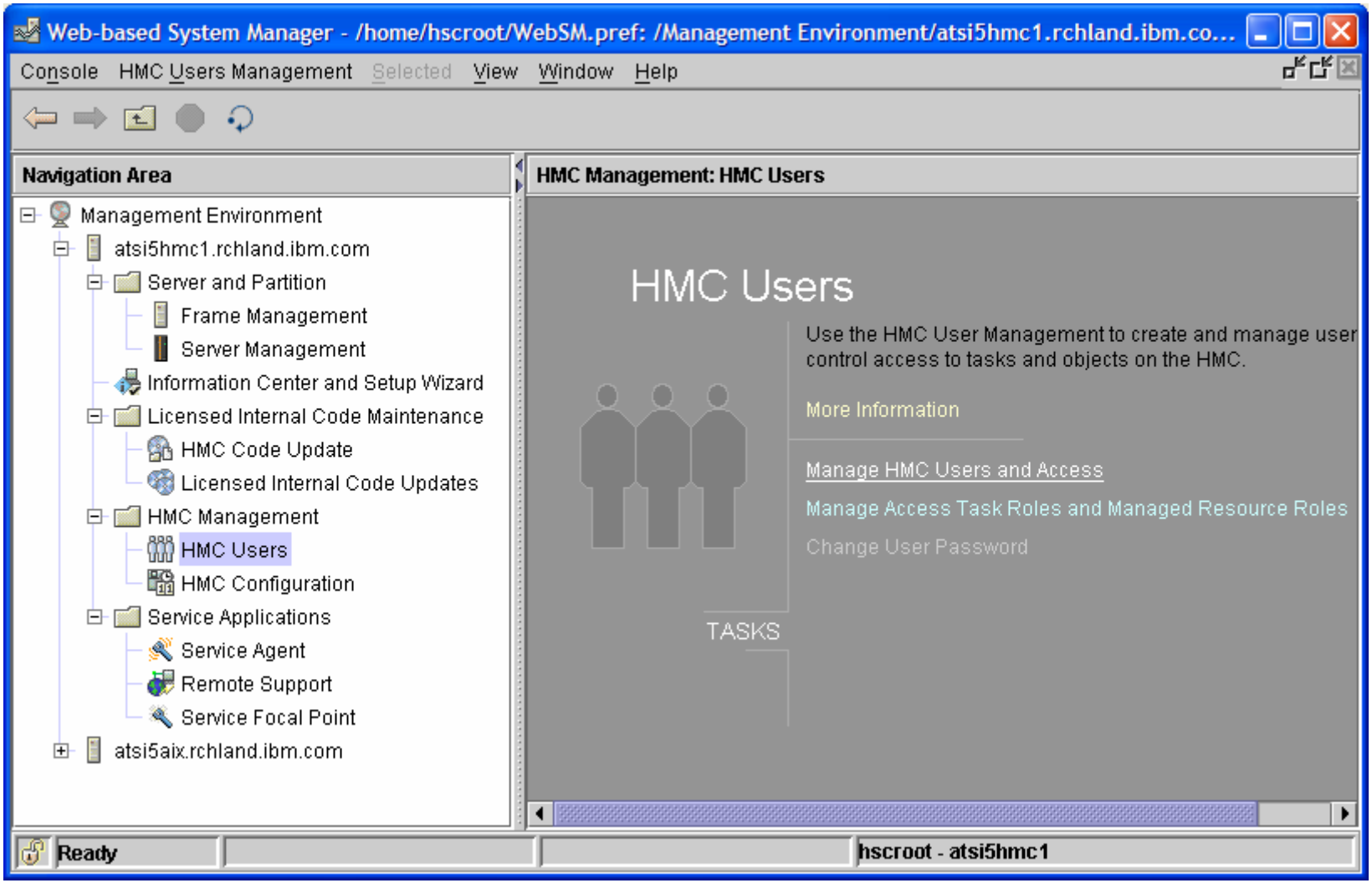
Defining Customized User Roles



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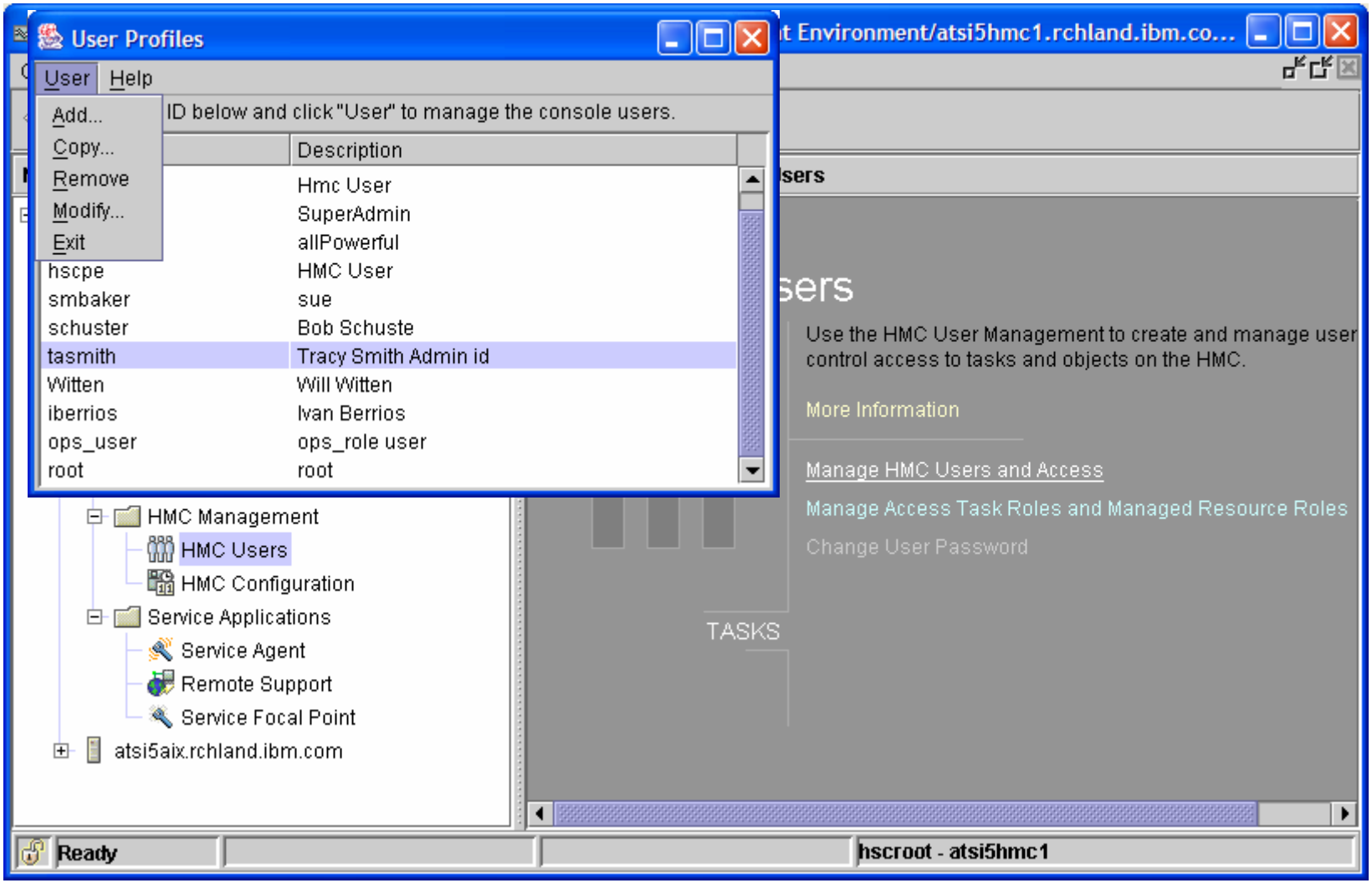
Defining Customized User Roles



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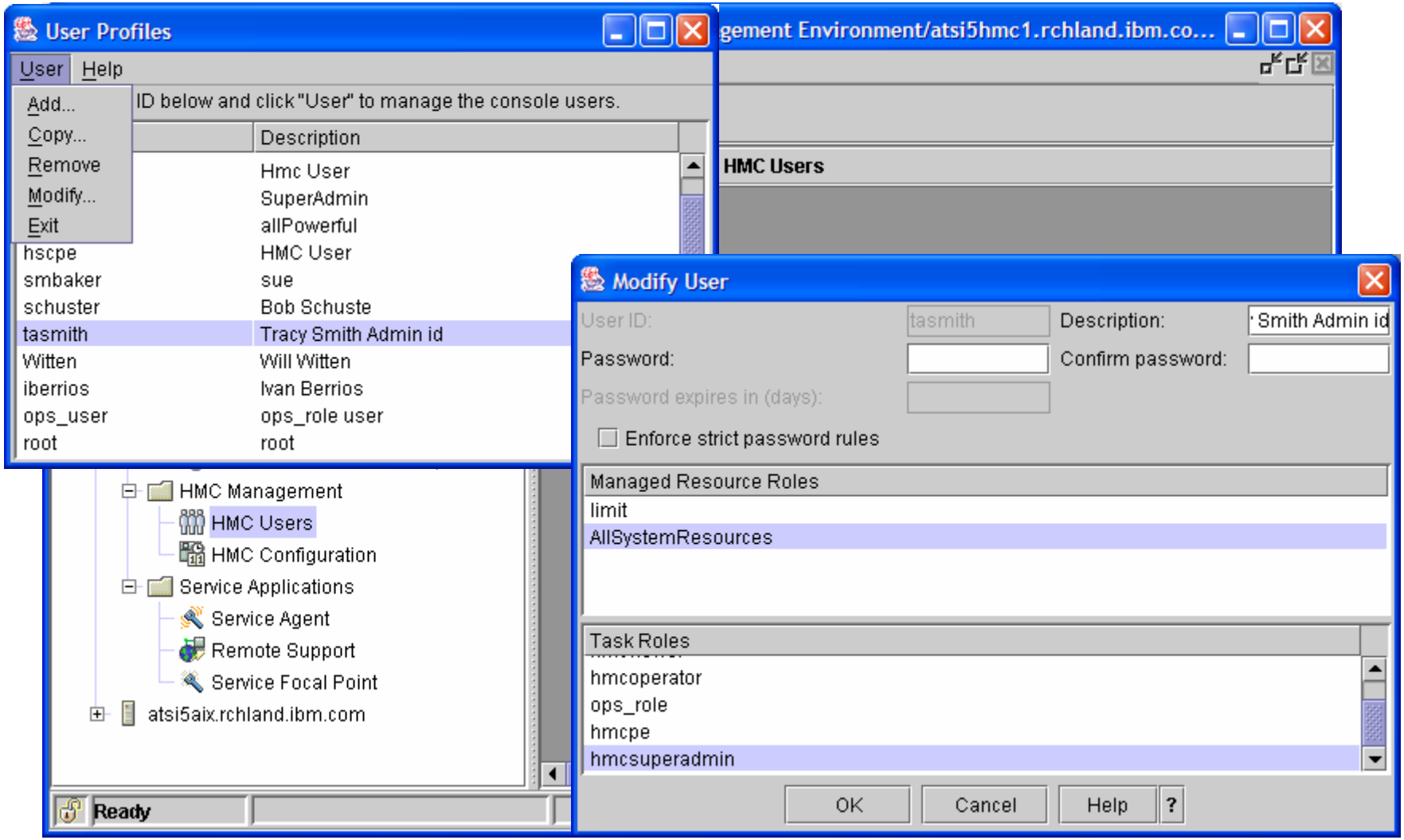
Defining Customized User Roles



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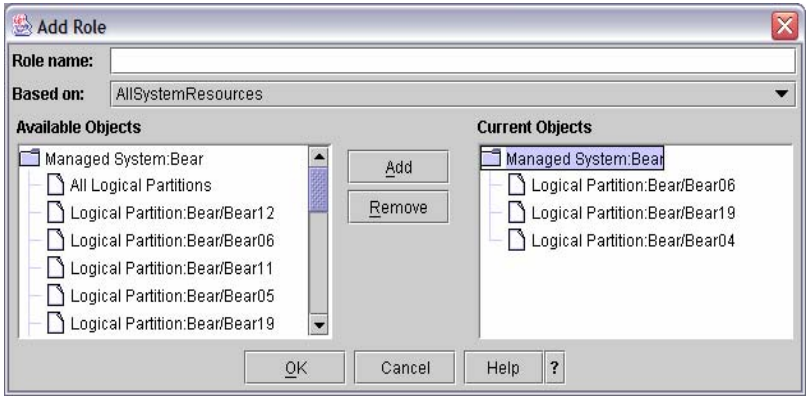
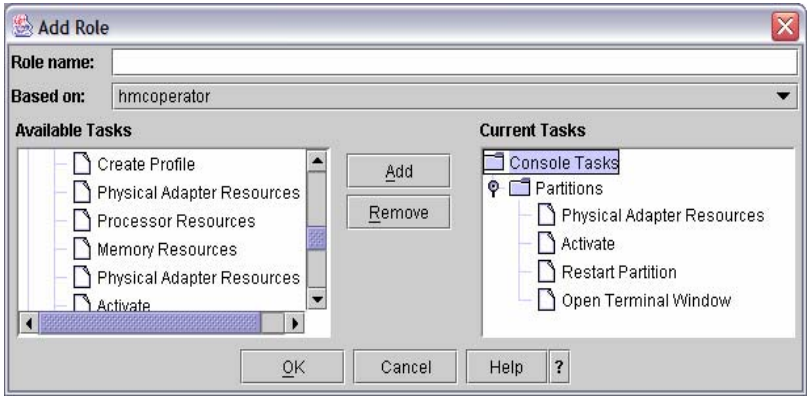
Defining Customized User Roles

By Specific Objects
(Systems, LPARs)



By Specific Tasks
(GUI and Commands)



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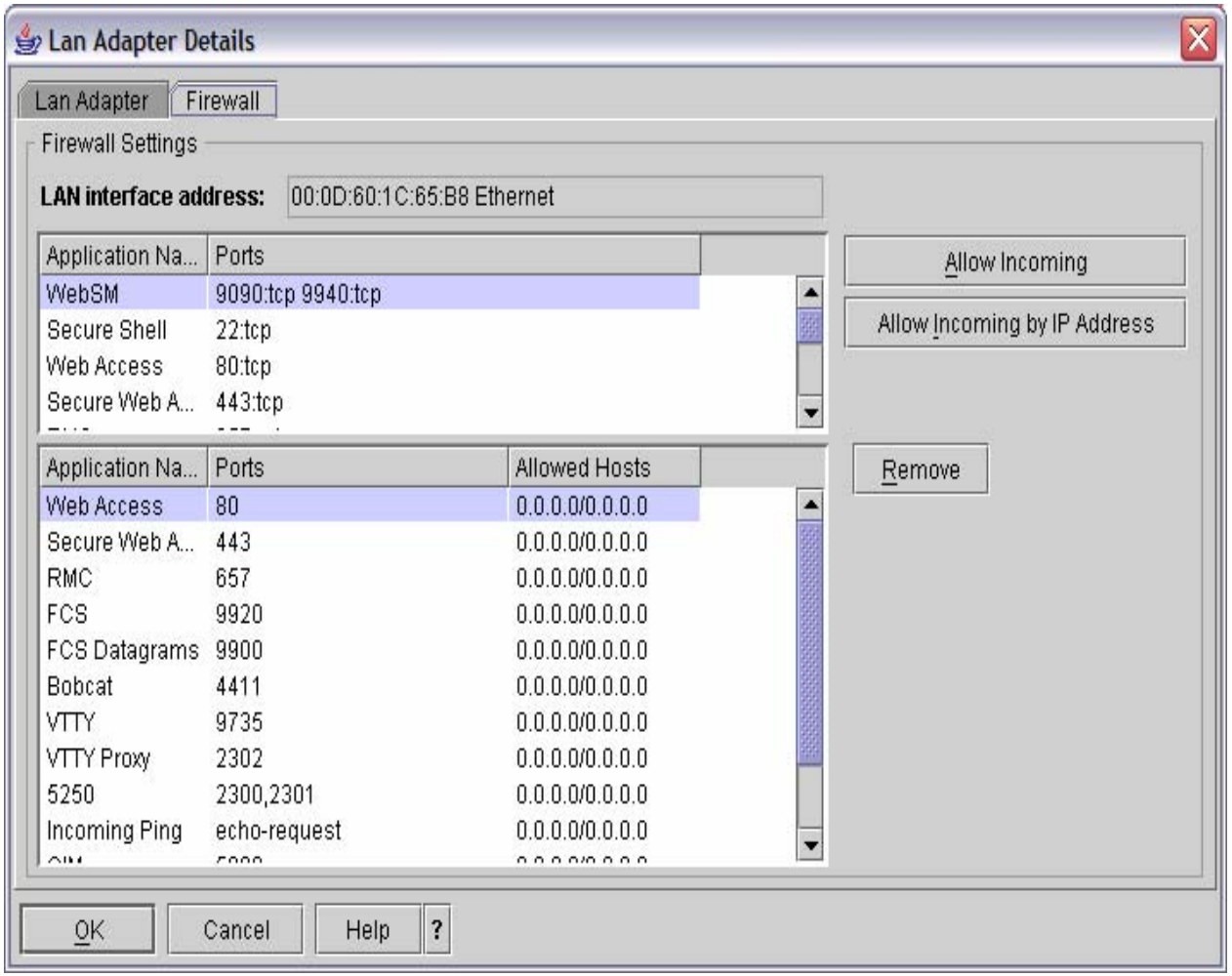
Configure the firewall to specify ‘allowed’ access to HMC

When using a private network for the managed servers, the second port would typically participate in a corporate network or an open network and this can provide outbound access to the internet to report service events or to order fixes. It can also be used for inbound access from remote workstations for functions such as WebSM, SSH, remote 5250 console.



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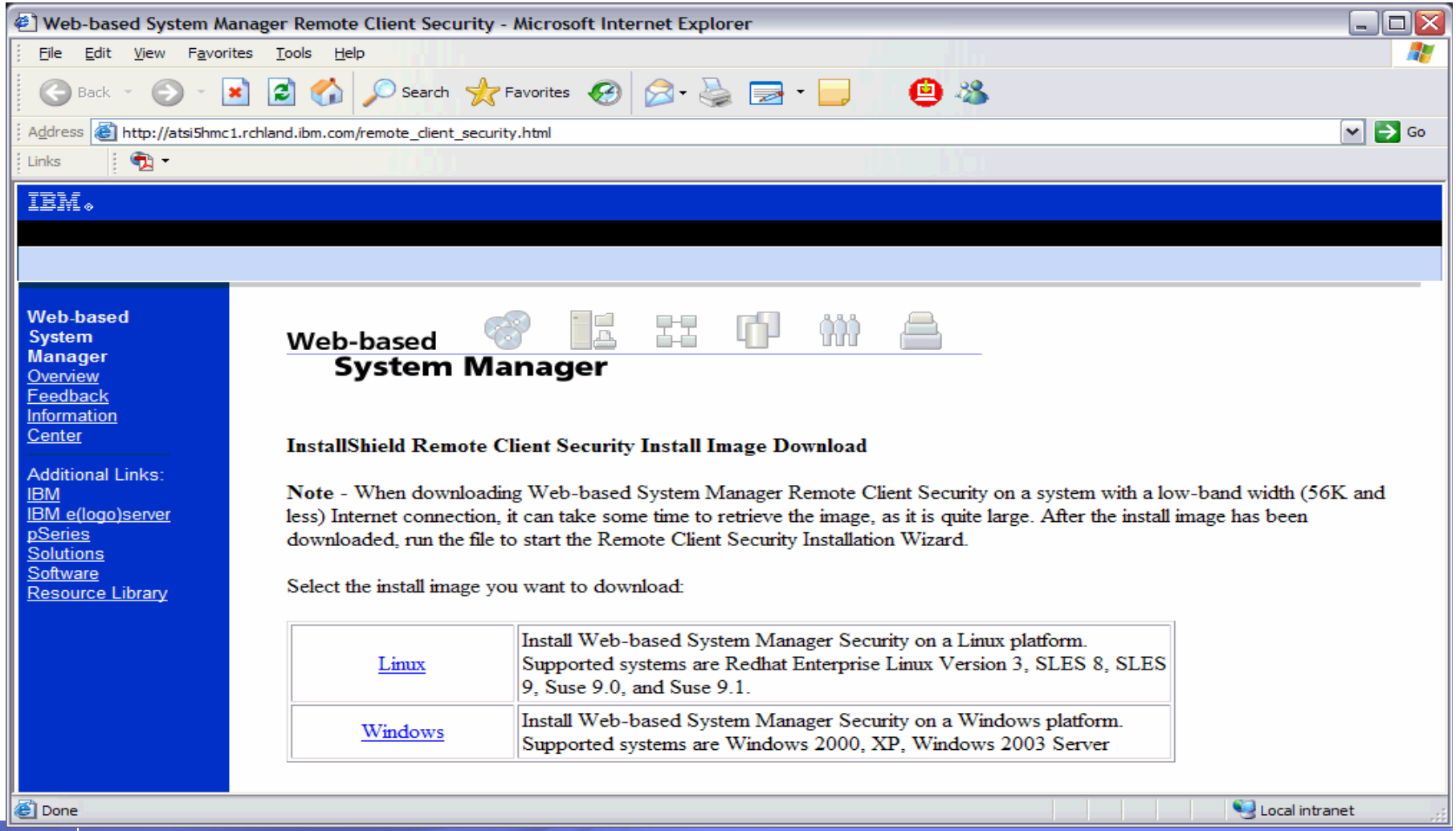
Secure your WebSM remote client access using SSL

start by installing the 'Remote Client Security' package



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Installing and securing the remote client

Detailed information for setting up the HMC as the Certificate Authority, creating and installing the server private key ring files and distributing the public key.

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/info/iphai/remotehmc.htm#remotehmc

Web-based System Manager Remote Client for Java Web Start

1. Configuring one HMC as a certificate authority
2. Generating private key ring files for the servers
3. Installing private key ring files on the servers
4. Distributing the certificate authority's public key with Web-based System Manager Remote Client for Java Web Start
5. Viewing configuration properties
6. Configuring HMC object manager security
7. Installing the Web-based System Manager Remote Client for Java Web Start
8. Uninstalling the Web-based System Manager Remote Client for Java Web Start

Web-based System Manager Remote Client

1. Configuring one HMC as a certificate authority
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3. Installing private key ring files on the servers
4. Installing the Web-based System Manager Remote Client
5. Distributing the certificate authority's public key with Web-based System Manager Remote Client
6. Viewing configuration properties
7. Configuring HMC object manager security
8. Uninstalling the Web-based System Manager Remote Client

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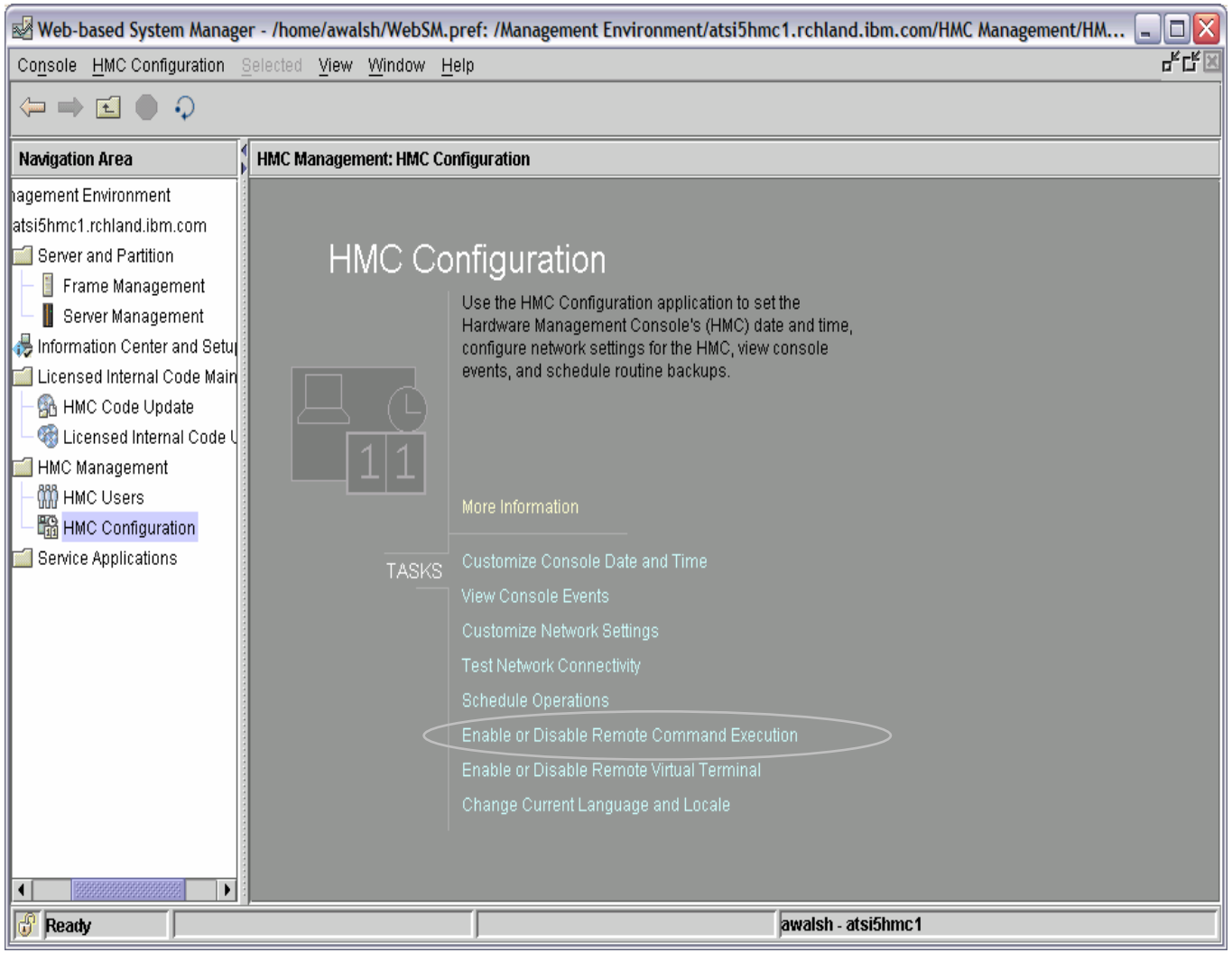
Enable or disable ‘Remote Command’ access

- Accessed through encryption-protected Secure Shell (SSH)
- Key files can be set up and exchanged to avoid password prompts
- Very useful for automation and scripting without human intervention



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HMC Command Line Functions

- Almost all HMC functions can be done through command line
  - Locally or remotely accessible
- Commands follow a POSIX-like syntax
  - Generally of the form: ls*, mk*, ch*, rm*, …
- Formatting options are provided for script optimization
  - Filtered selection of specific output attribute values
  - Choice of attribute value delimiters
  - Optional header with attribute names
- “Man page” documentation is available for each command
  - Type “man <command name>” to see the full command description
  - Or, type “<command name> --help”
- Most commands require target parameters
  - Power on a system: chsysstate –r sys –m MySystem -o on
- For some commands, the target is implied
  - Reboot the HMC: hmcshutdown –r

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Remote command example using PuTTY: display hardware resource information

- **Displaying a Rack Configuration from the HMC Command Line**
- To access the command line from the HMC,
  - Right-click on the desktop of the real (local) HMC, **outside** of the management window.
    (note: This does not work from WebSM session)
- To access command line remotely
  - 1) Use the SSH protocol to get a remote command-line session on the HMC.
    - To download a no-cost SSH client, obtain PuTTY.exe from here: **http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html**. This is the Windows version; if you are running Linux, download the Linux version. It is a single executable file.
  - 2) Double-click on PuTTY to start it, then enter the hostname or IP address of your HMC, and click "Open."
  - 3) Need a valid HMC user ID and password to sign on
    - Use this command to determine system name(s) of all servers managed by this HMC:

      lssyscfg -r sys -F name
    - To display hardware resources, one common example is:
      - This command shows all system buses, slots, and to what partition (if any) each belongs. In the following example, the managed system name is “ATSi5_520,"

        lshwres -r io --rsubtype slot -m ATSi5_520 –F

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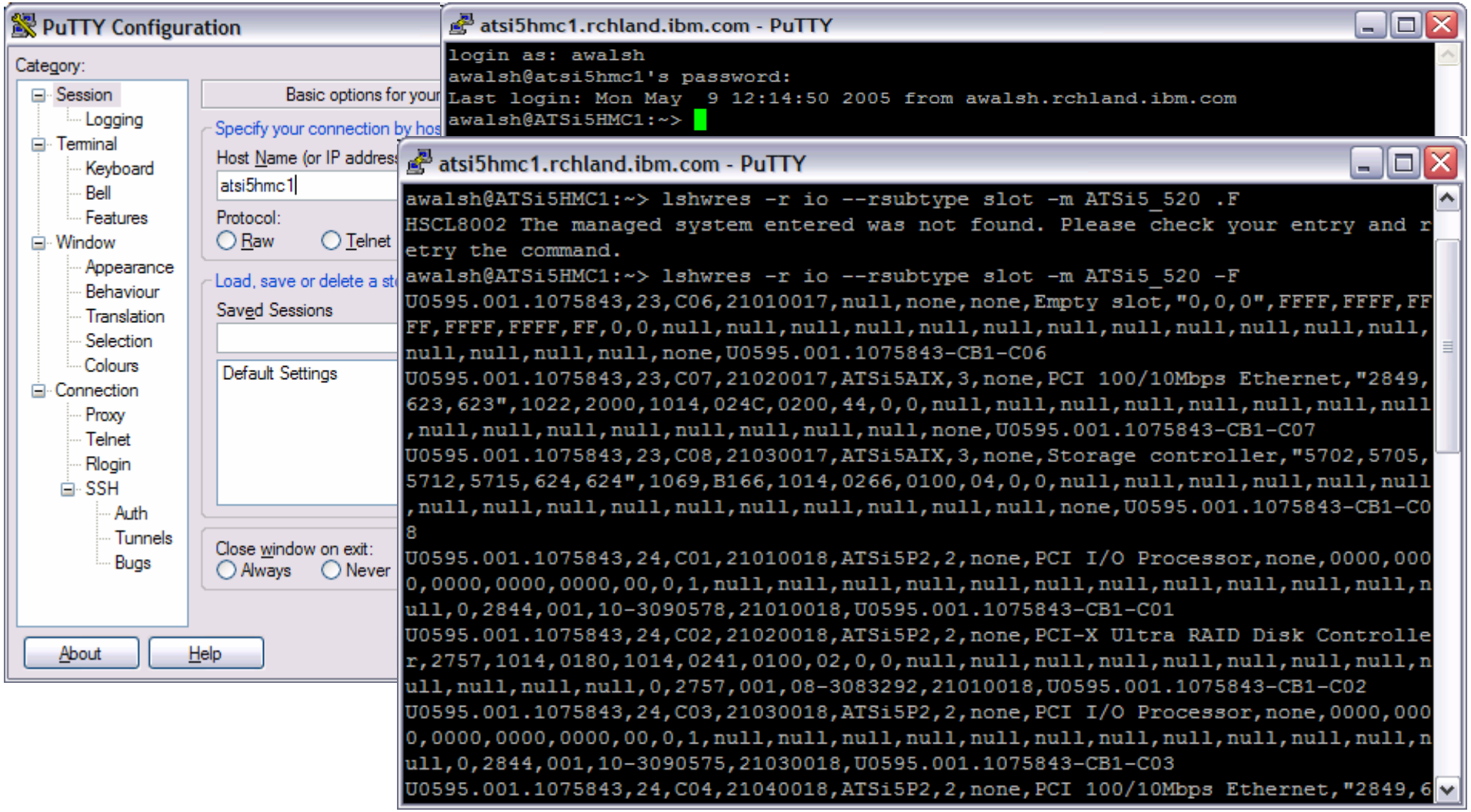
Using PuTTY for remote command line, command help example



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Command level help is available using ‘man’ then the cmd

Download the PDF documentation for command formats

http://techsupport.services.ibm.com/server/hmc/power5/tips/hmc_man_GA5.pdf

atsi5hmc1.rchland.ibm.com - PuTTY

```
awalsh@ATSi5HMC1:~> man mkhmcusr
Reformatting mkhmcusr(1), please wait...
MKHMCUSR(1)                 User Manuals                 MKHMCUSR(1)



NAME
       mkhmcusr - create a Hardware Management Console user

SYNOPSIS
       mkhmcusr -u user-name -a task-role [-d description]
        [--passwd password] [-M number-of-days] [--help]

DESCRIPTION
       mkhmcusr creates a Hardware Management Console (HMC) user.

OPTIONS
       -u     The  user  name of the HMC user to create.  The user name cannot be longer than
              32 characters, and it must begin with a letter.

       -a     The access control task role for this user.  Valid  values  are  hmcsuperadmin,
              hmcoperator, hmcviewer, hmcpe, hmcservicerep, or a user-defined task role.

       -d     The  description for this user.  description can be any string.  If this option
              is not specified, then the description for this user will be set to "HMC User".

       --passwd
              The password for this user.  If this option is omitted, you will be prompted to
              enter the password.  The password must be at least 7 characters in length.

       -M     The number of days until the password for this user expires.  If this option is
              not specified, then this user's password will never expire.

       --help Display the help text for this command and exit.

EXAMPLES
       Create the user sysadmin:
```


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Sample LPAR configuration

- Capped vs. uncapped
- CPU processing units, license considerations

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HMC Profile-based Partition Management

- Partition Profiles
  - Users can create multiple, named profiles for each partition
    - Provides the ability to predefine multiple partition configurations
    - Useful, for example, for predefining “on demand” server images for different workloads
  - Users activate a partition by selecting a profile
  - For POWER5 systems, profiles define:
    - Partition type (AIX/Linux or OS/400)
    - Processor allocation type (dedicated or shared)
    - Resource requirements (processors, memory, physical I/O, virtual I/O)
    - Resource max/min boundaries
    - Boot mode
    - Workload Management partition groups
    - Partition policies (service authority, monitoring, etc.)
- System Profiles
  - User can create multiple, named system profiles
  - System profiles list one or more LPAR profiles to activate
  - Validation tools are available to make sure the profiles don’t conflict

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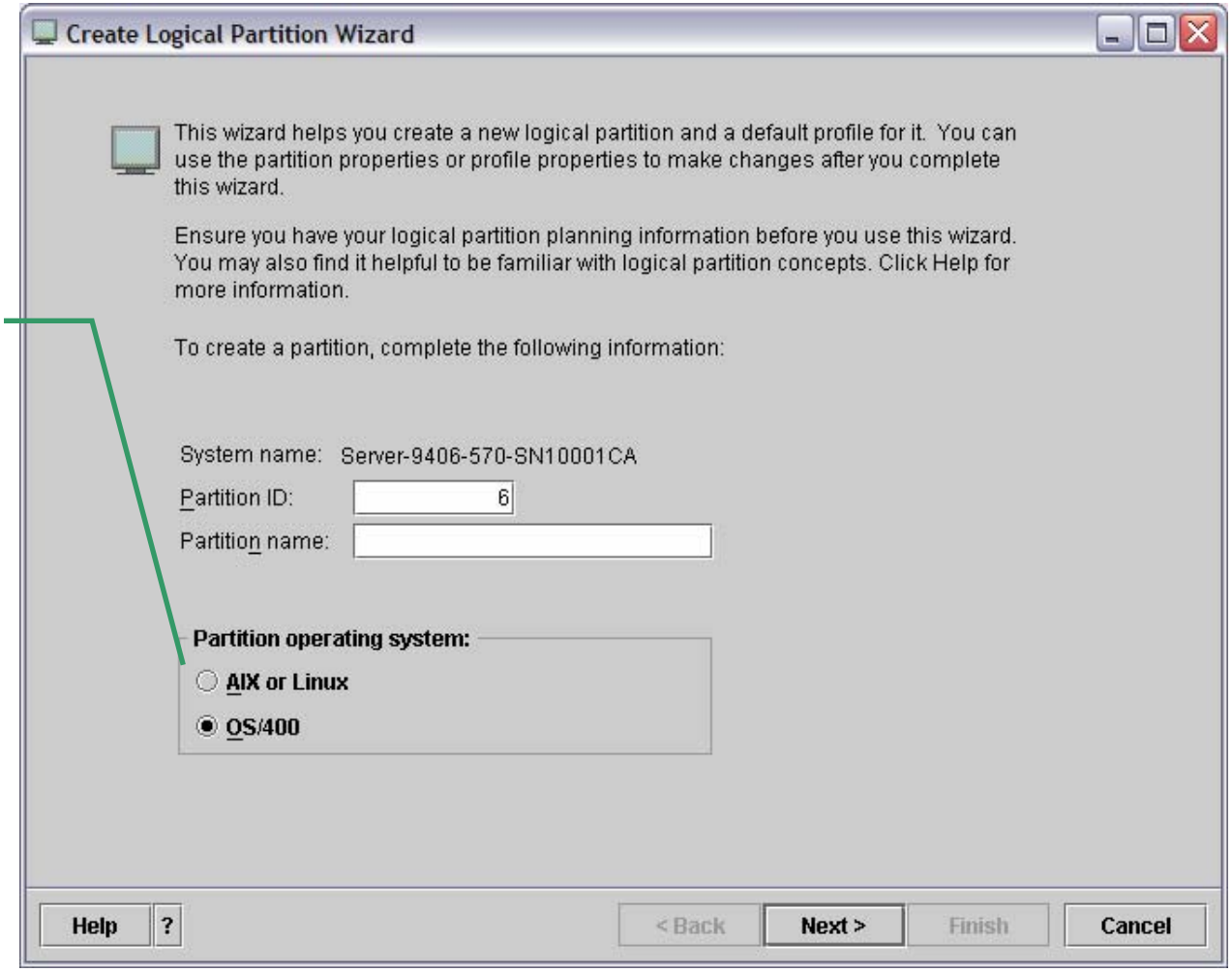
LPAR Creation Wizard – Default Type

Partition type default is now based on system type (iSeries or pSeries)



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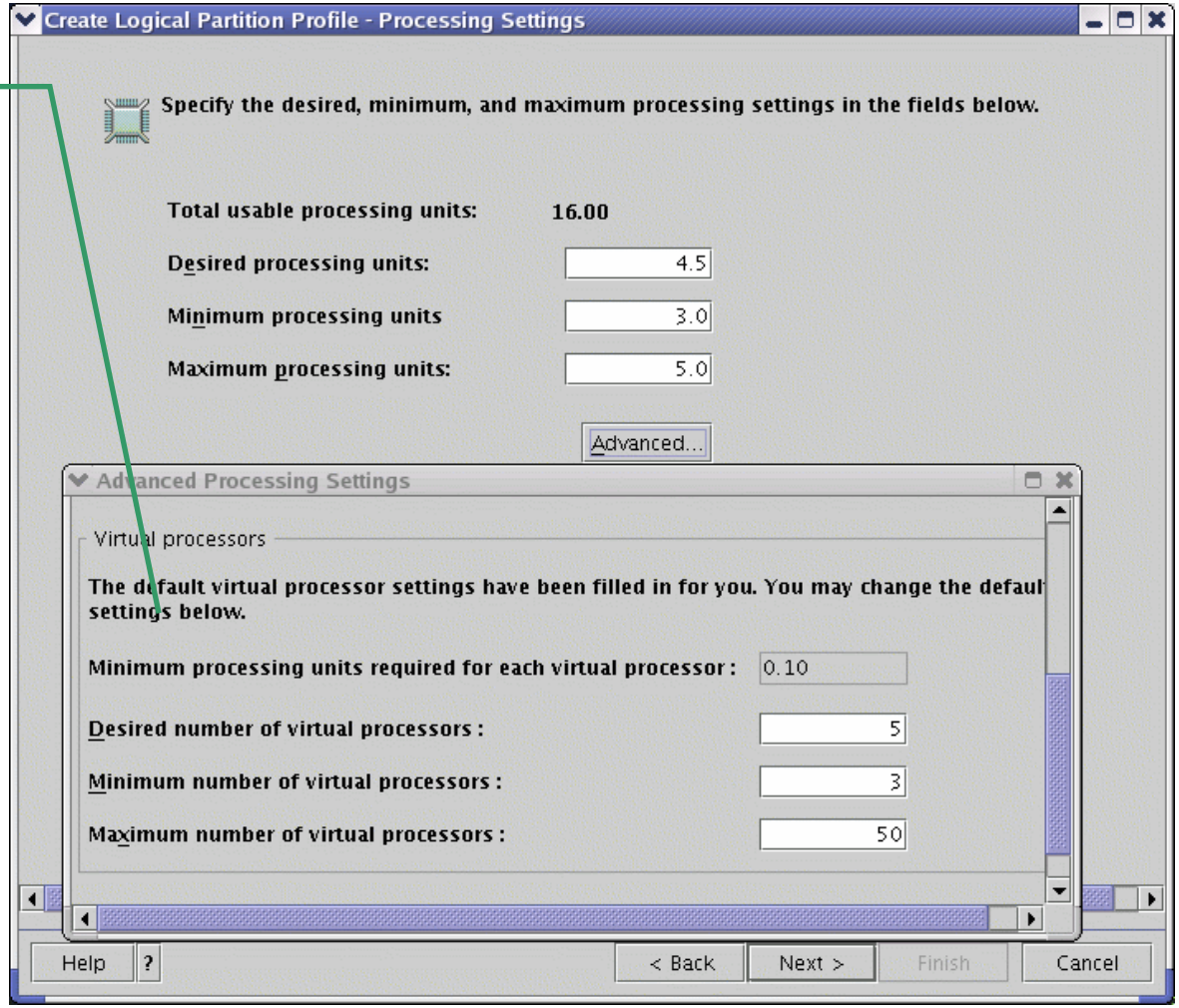
LPAR Creation Wizard – Virtual Processors

HMC automatically establishes appropriate defaults for virtual processor amounts, but these can be modified through advanced settings



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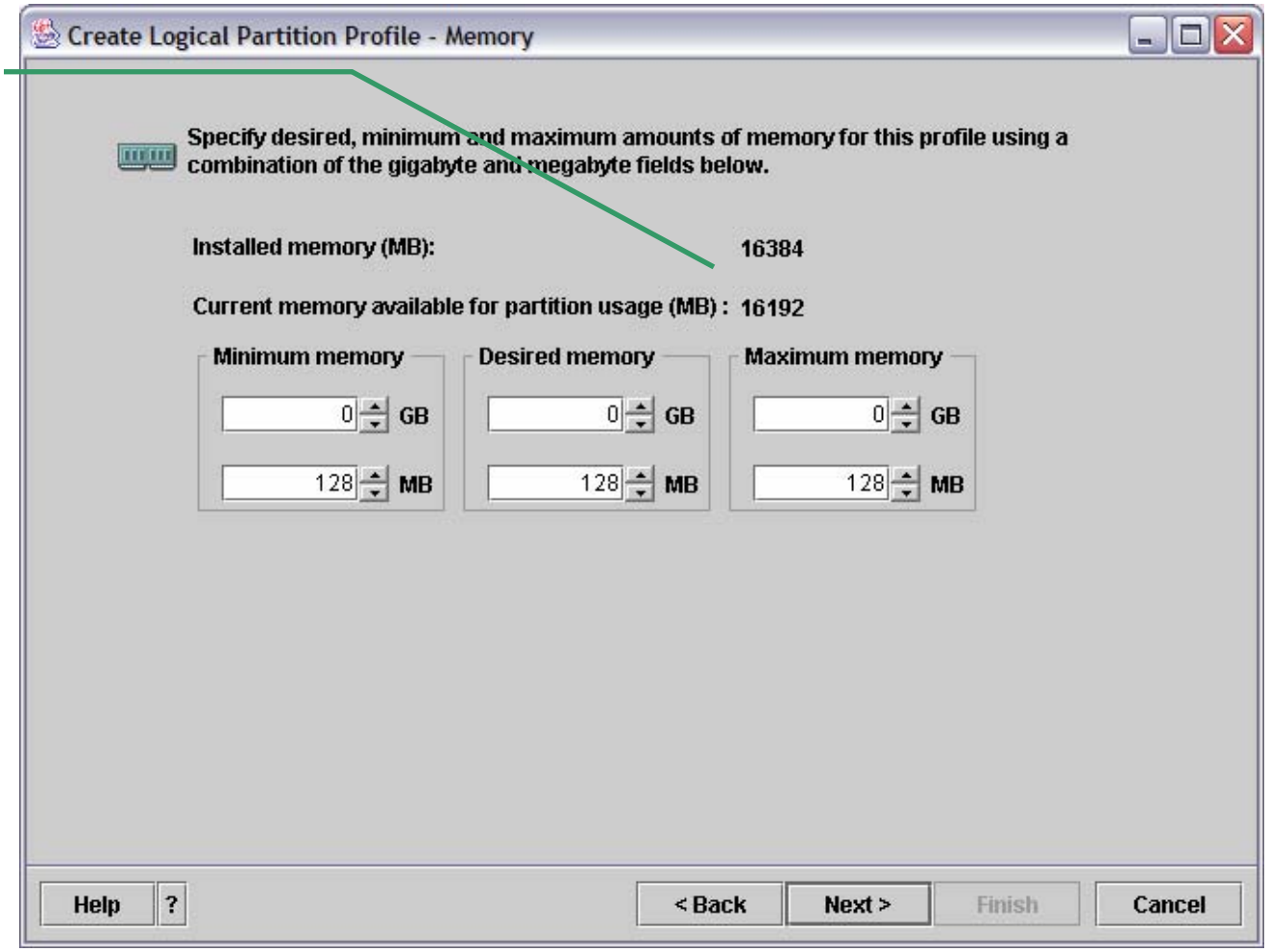
LPAR Creation Wizard – Memory Information

The memory panel for profile creation now shows both the installed memory, and the amount of memory available for use by partitions



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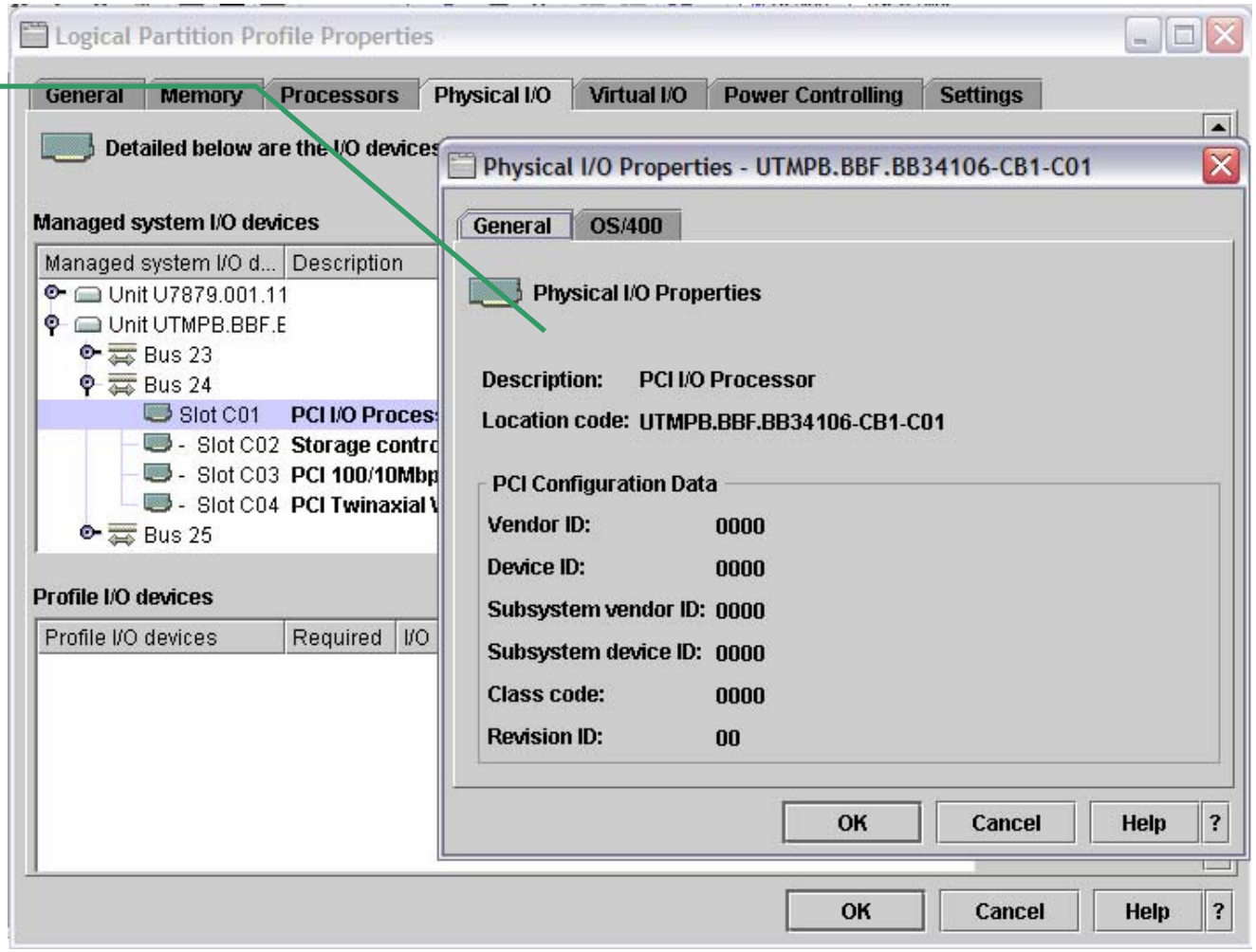
LPAR Creation Wizard – I/O Information

I/O Configuration panels provide additional detailed information on each adapter slot, accessed through a "Properties" button



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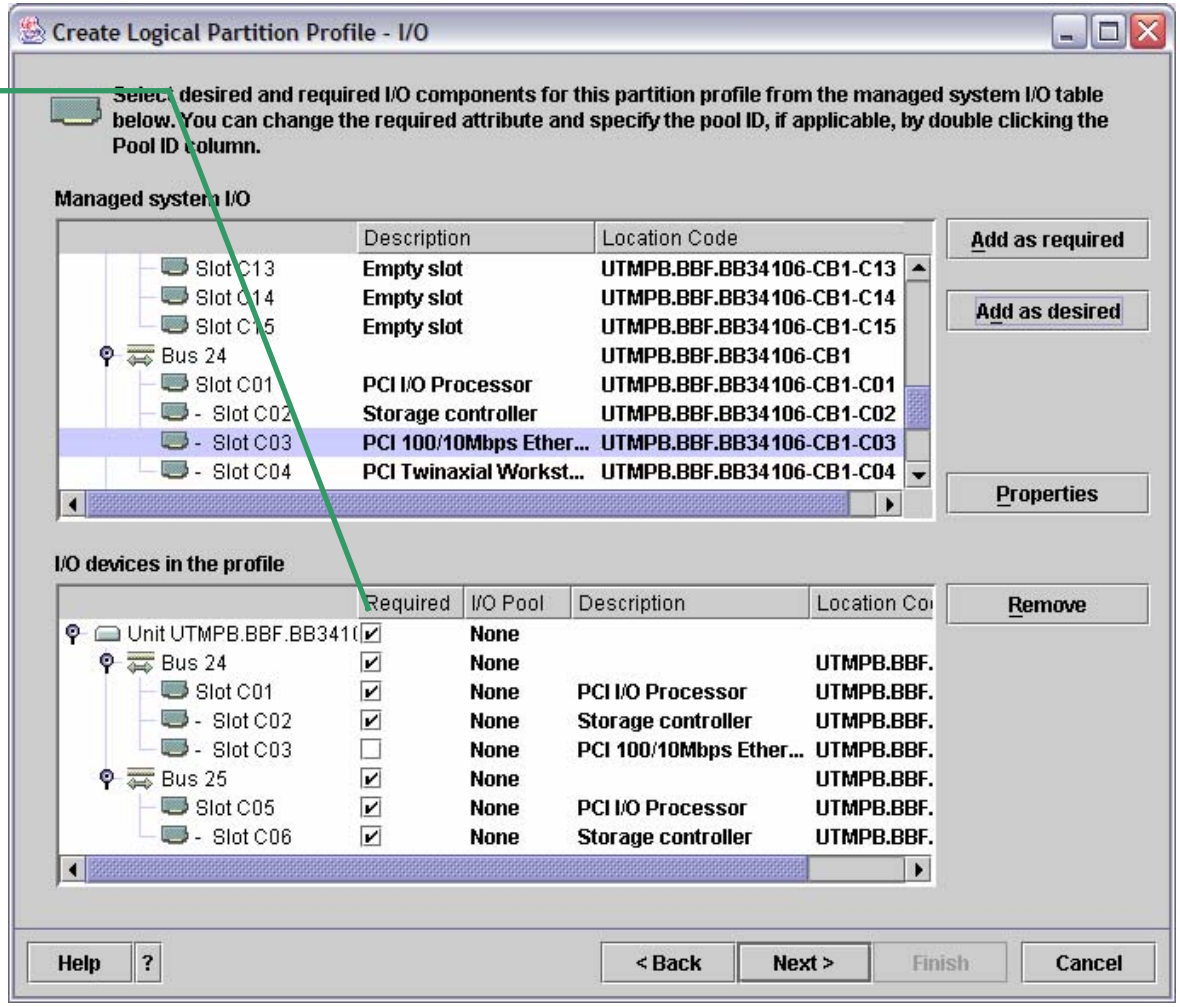
LPAR Creation Wizard – Required I/O

I/O Devices marked as "Required" will be reserved for the exclusive use of this partition, and cannot be accidentally moved through dynamic LPAR



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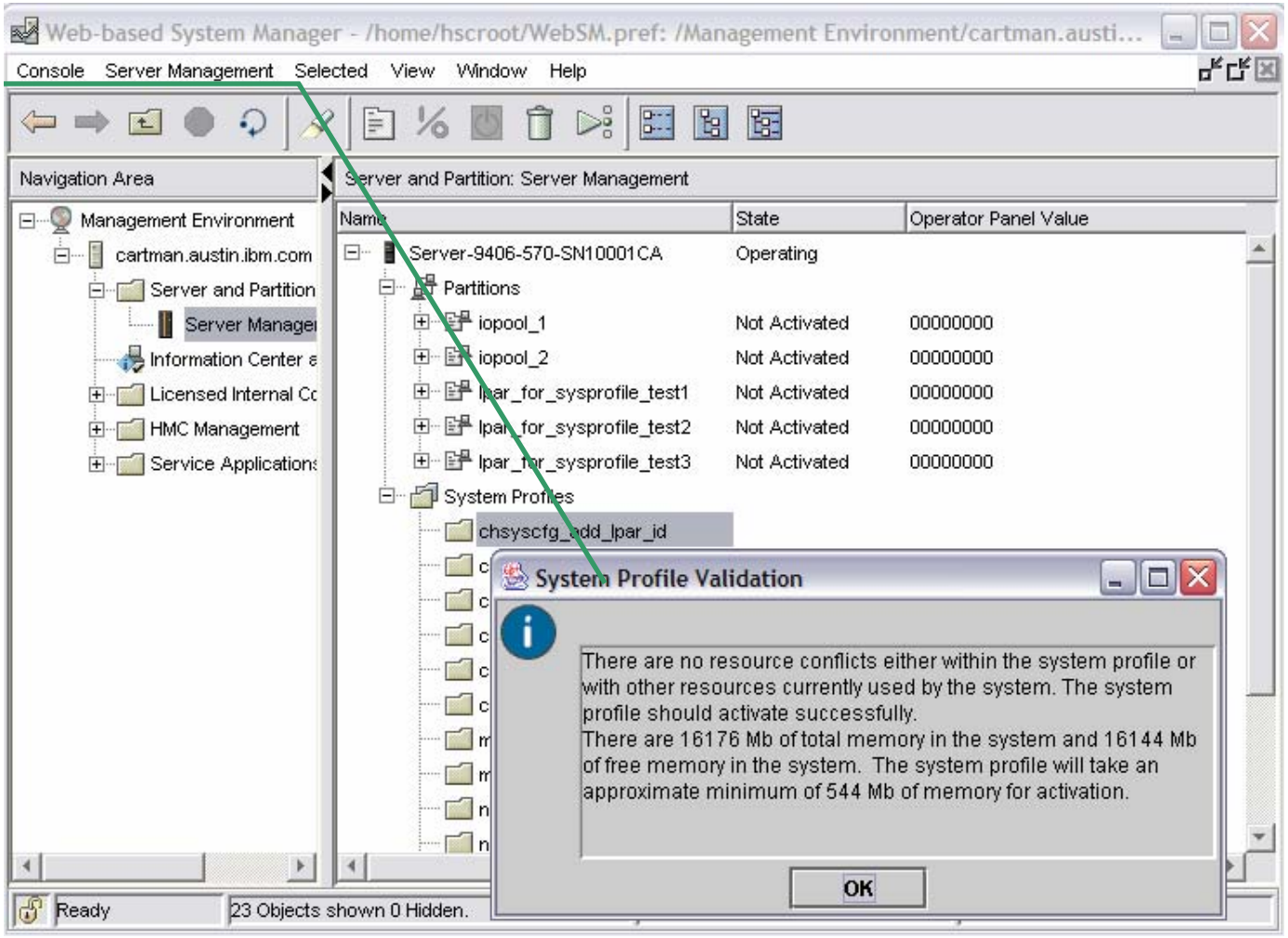
System Profile Verification

System Profile Validation can be used to ensure that there are sufficient resources and no resource conflicts, when activating a set of partitions



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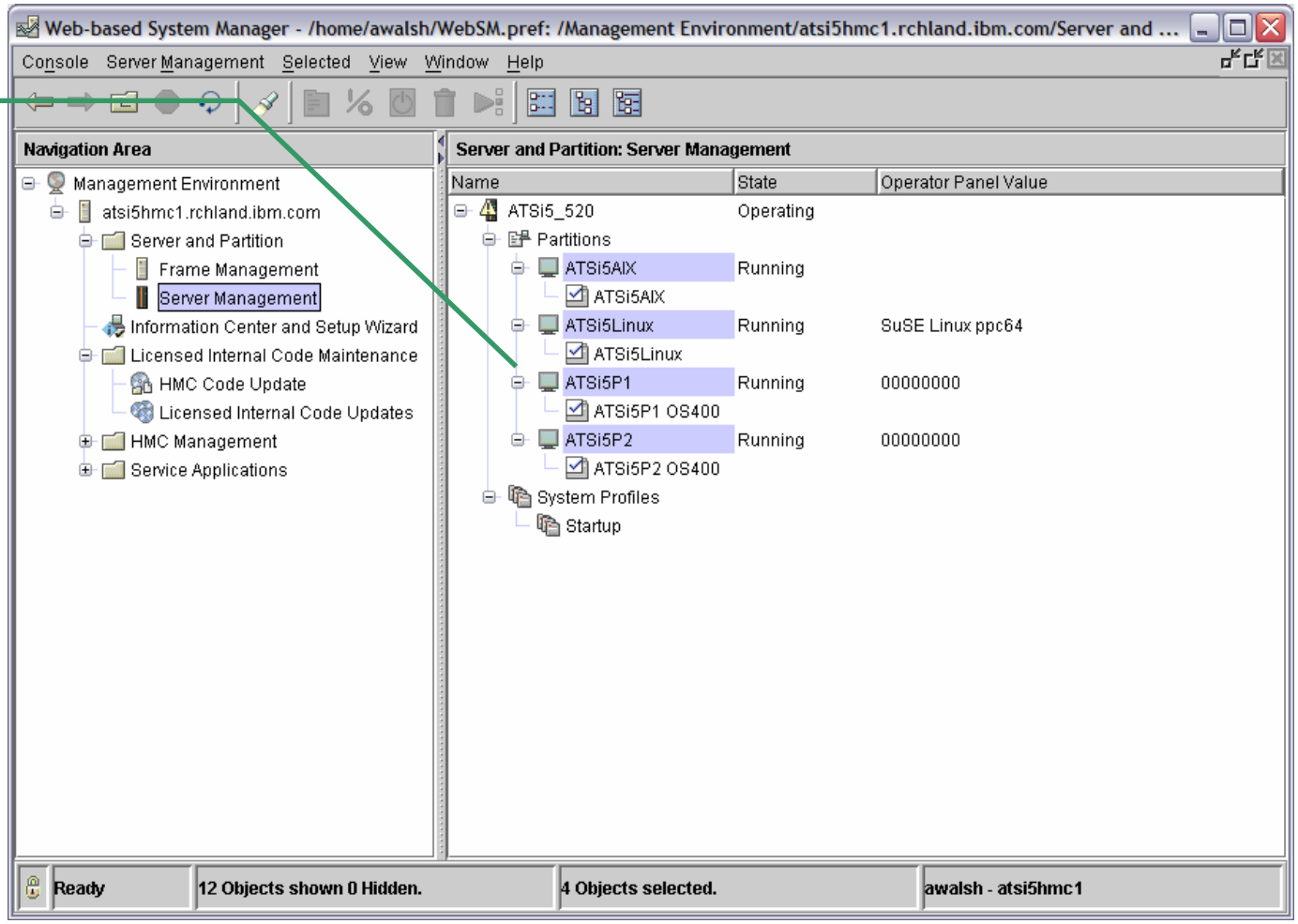
System and Partition State Names

State names have been changed. A running system is now shown as “Operating” state, and inactive partitions are now shown as “Not Activated” state



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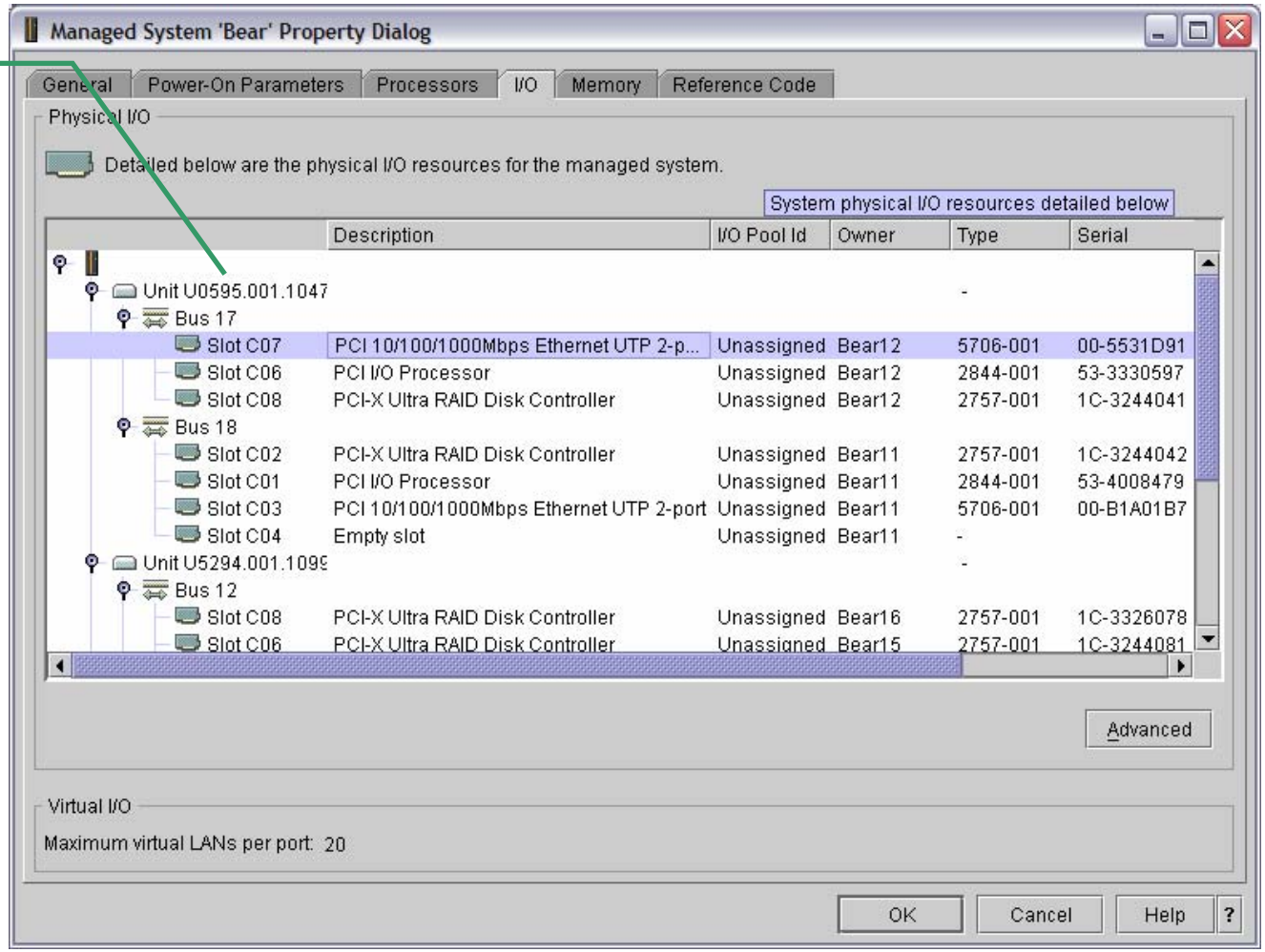
System Properties – I/O View

Overall list of I/O resources, by tower or CEC unit and their partition ownerships can be seen by selecting the “Properties” task on a managed system



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Overview of service utilities available through HMC

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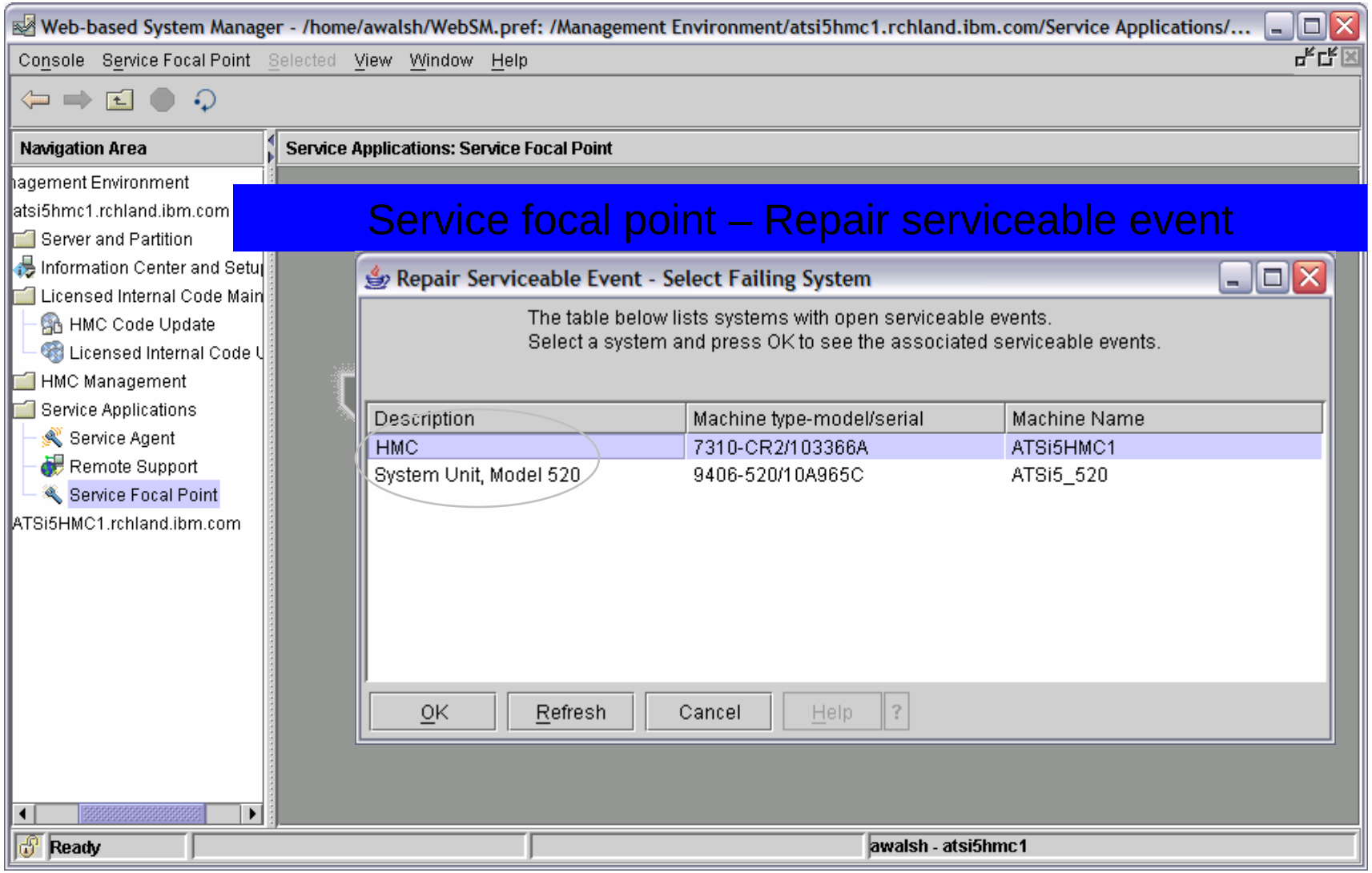
Service focal point provides multiple utilities



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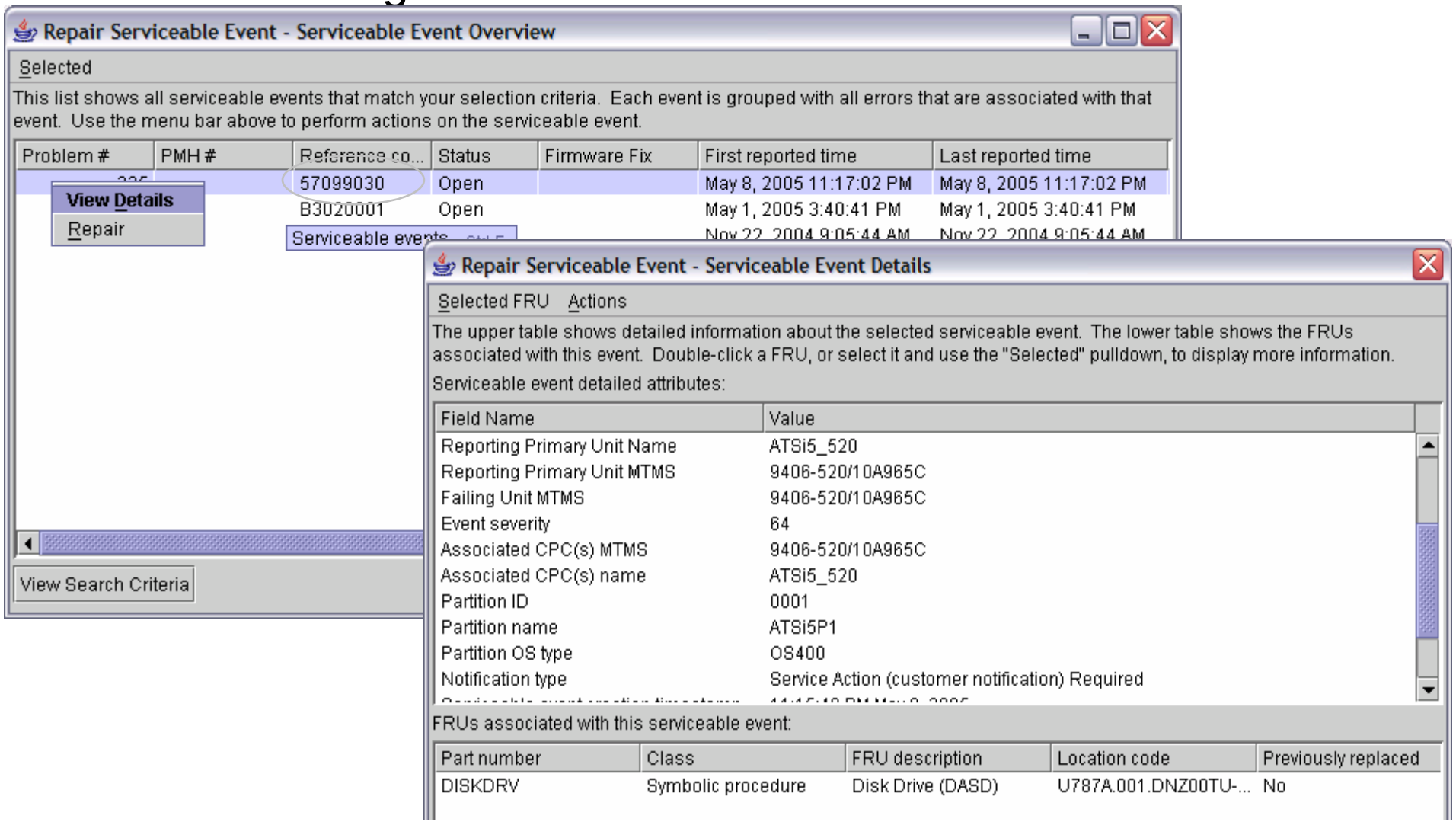
Service Event log – view details



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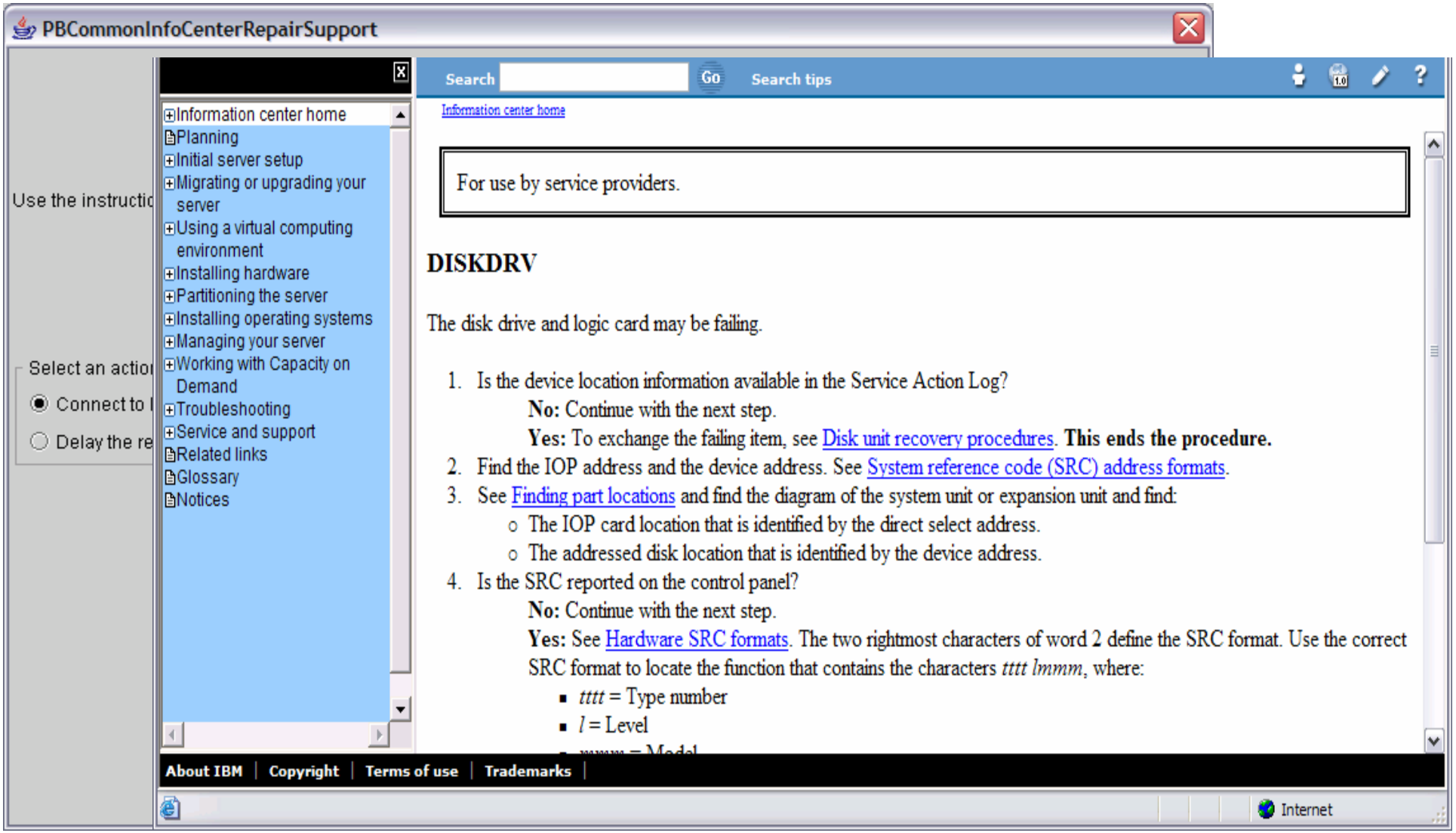
Repair serviceable event – auto search HMC Reference codes



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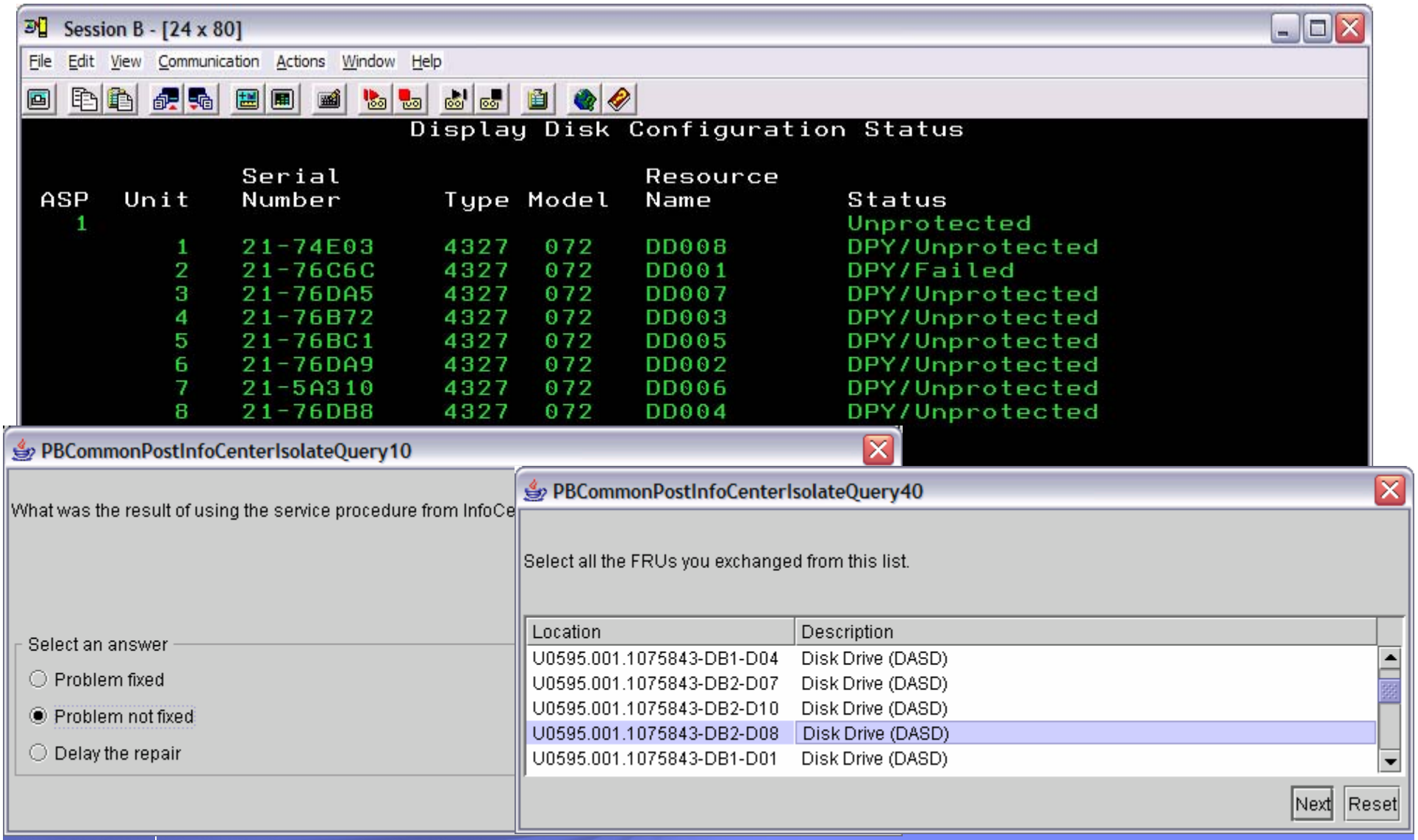
I have a disk failure – is problem fixed?



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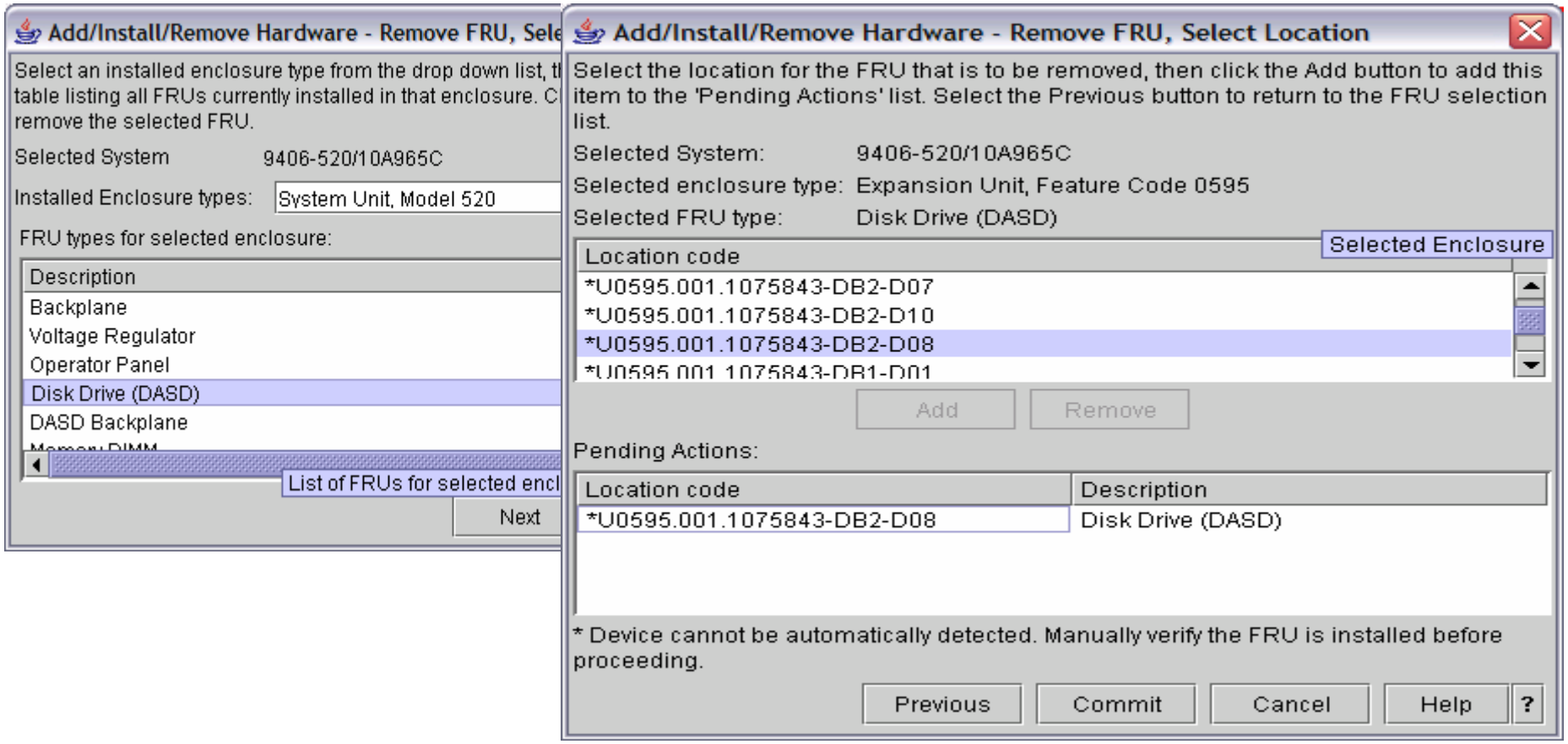
Add or remove hardware

Select the frame and FRU Type

Select the specific FRU



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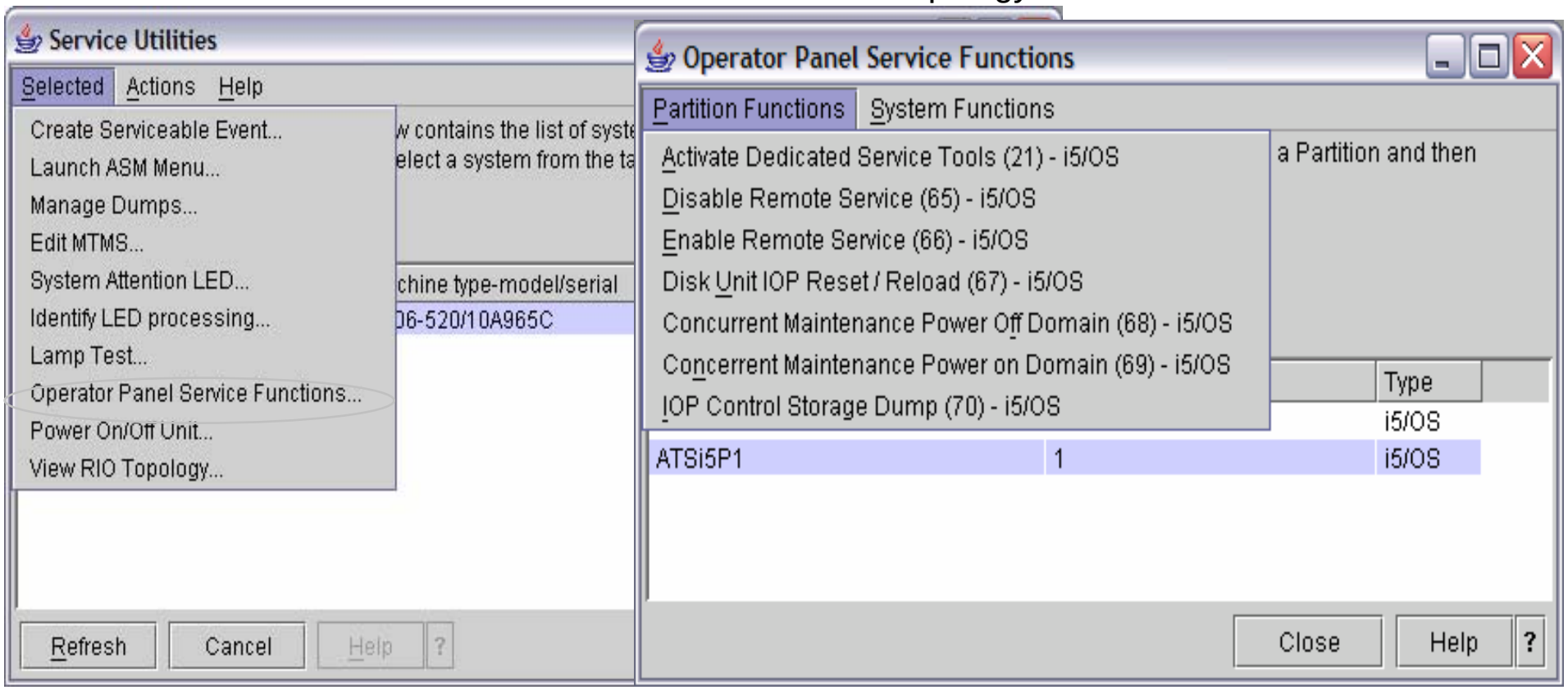
Service Utilities – multiple tools and functions.

- Operator Control Panel Service Functions, IE: Function 21
- Launch ASM
- Reset Attention LED
- And much more
- Manage dumps
- View HSL topology



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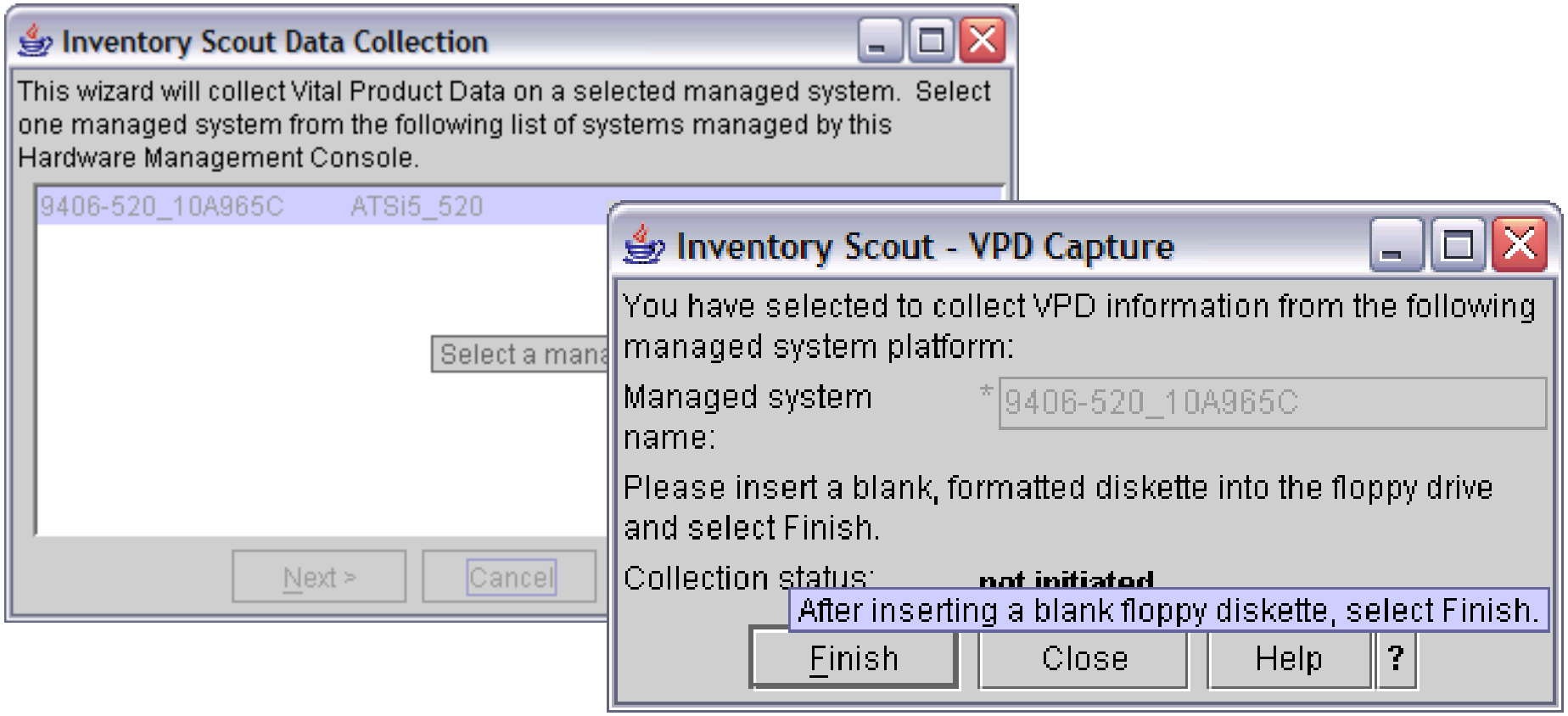
For a partitioned system – Inventory Scout can provide hardware resource information



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Sources of information and education

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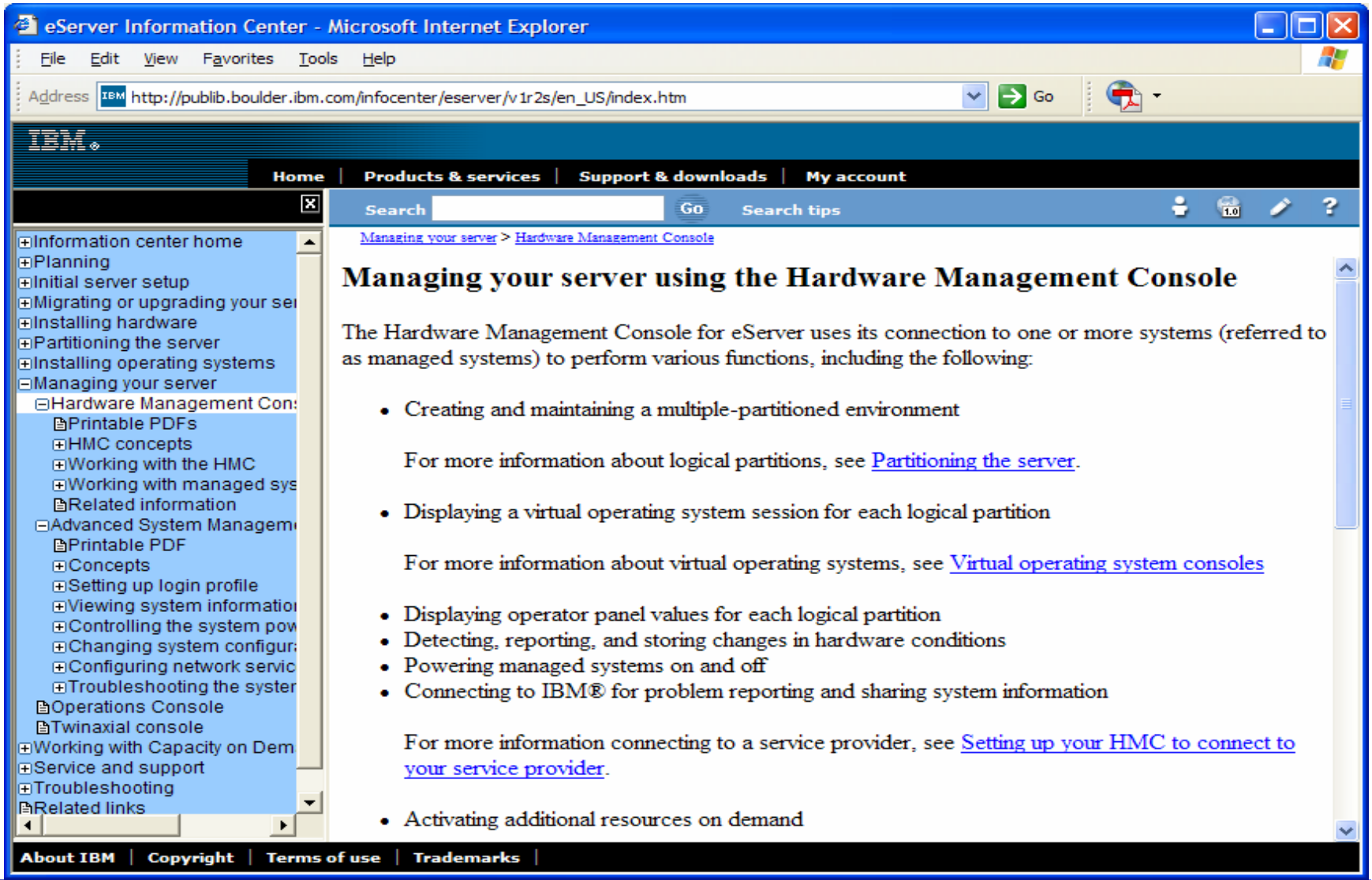
IBM eserver i5 Hardware Planning Site

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm



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IBM eserver Hardware Information Center

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm

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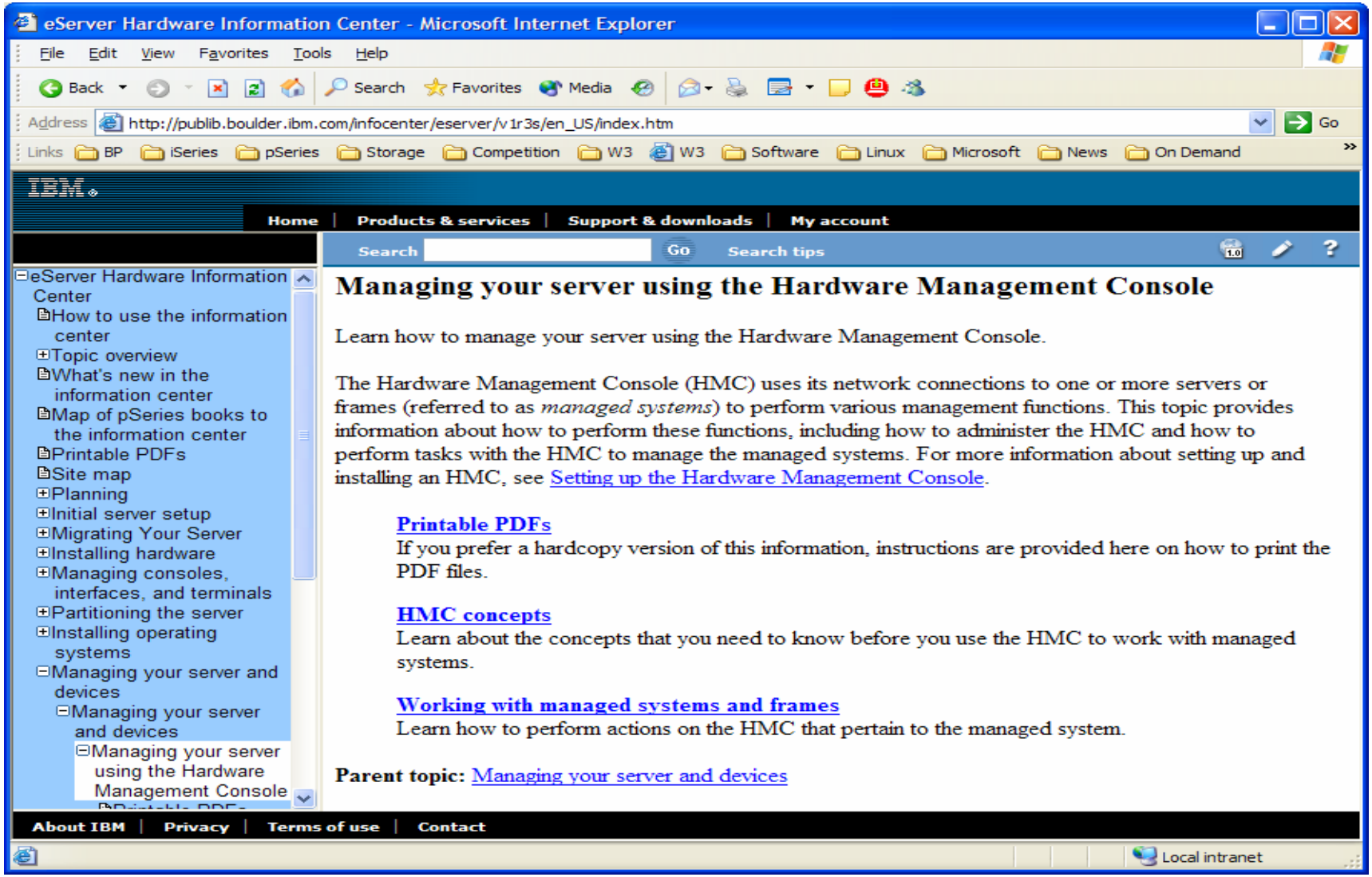
IBM eserver Hardware Information Center - HMC

http://publib.boulder.ibm.com/infocenter/eserver/v1r2s/en_US/index.htm



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Education

1. **Go to http://www.ibm.com/servers/resourcelink**
2. **On the Home page select "Register for a user ID and password**
3. **On the Register for Access page, select the type of userid requested**
4. **On the Self-registration page, fill in your email address and a preferred ID, then click Submit**

OR

Take an LPAR Class

http://www-306.ibm.com/services/learning/ites.wss?pageType=course_description&country=us&language=en&webLanguage=en&includeNotScheduled=y&courseCode=AS530&x=6&y=11

- **iTC class room education - http://www-1.ibm.com/servers/eserver/iseries/service/itc/educ.htm**

- **LPAR Redbook - http://www.redbooks.ibm.com/redbooks.nsf/RedpieceAbstracts/sg248000.html?Open**

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HMC Education

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HMC Education NEW Distance Learning class

http://www-304.ibm.com/jct03001c/services/learning/ites.wss/us/en?pageType=page&c=a0000050

The HMC distance learning class is A52A1

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Support Web Site for HMC and Firmware

- **IBM iSeries™ Hardware Management Console Frequently Asked Questions**
  - http://www-1.ibm.com/support/docview.wss?uid=nas148859a914db132a586256f42006003a7&rs=110
- **HMC** - http://techsupport.services.ibm.com/server/hmc/power5
- **iSeries Recommended Fixes - Server Firmware: Update Policy Set to Operating System**
  - http://www-912.ibm.com/s_dir/slkbase.nsf/c32447c09fb9a1f186256a6c00504227/604992740f846a4986256fd3006029b5?OpenDocument
- **iSeries Recommended Fixes - Server Firmware: Update Policy Set to HMC**
  - http://www-912.ibm.com/s_dir/slkbase.nsf/ibmscdirect/E58D7BBF0EAC9A2786256EAD005F54D8

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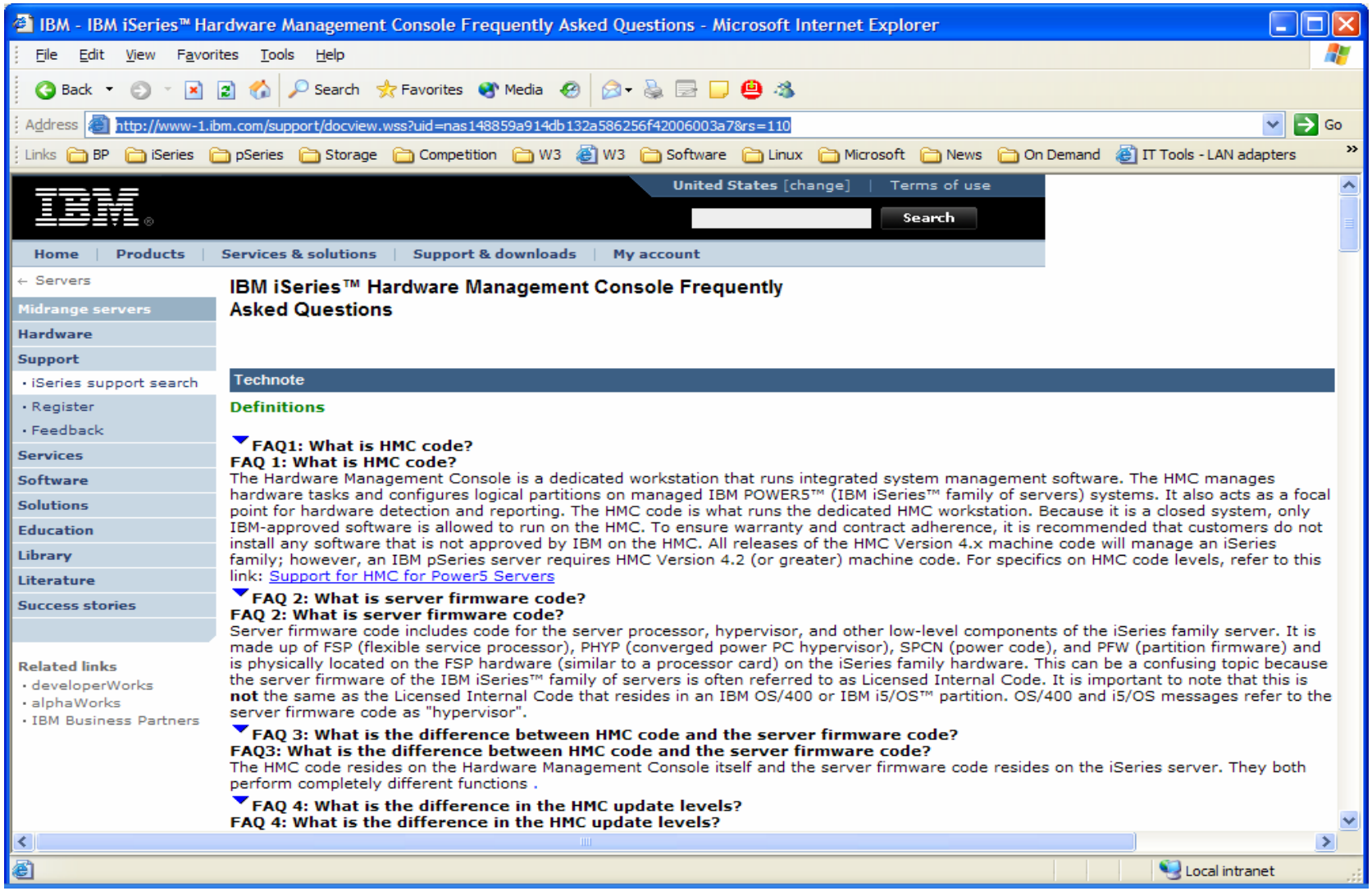
IBM iSeries™ Hardware Management Console Frequently Asked Questions

http://www-1.ibm.com/support/docview.wss?uid=nas148859a914db132a586256f42006003a7&rs=110



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Additional URL's

- **iSeries Operations Console - http://www-1.ibm.com/servers/eserver/iseries/access/console/**
- **Additional Operations Console information : http://www-1.ibm.com/servers/eserver/iseries/access/presentations.html**
  - this is a link to presentations on Console:
    - iSeries Operations Console Basics
    - iSeries Operations Console Intermediate Configuration
    - iSeries Operations Console Advanced Connectivity
- **Console white paper - http://www-1.ibm.com/servers/eserver/iseries/literature/iSeriesi5consolepositioningpaperJune3004.pdf**

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The End

Thank You !

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