POWER Systems Virtualisation from IBM
- Technical Webinar User Group

Today

Updating Power Systems, I/O and HMC
Starting at 10:00 am UK time by Steve Harnett

Series details, registration and replays of previous webinars from

http://tinyurl.com/UK-PowerVM-VUG

Register by sending email to Jyoti Dodhia – jyoti_dodhia@uk.ibm.com

Upcoming sessions …..

Information will be posted to …..

http://tinyurl.com/UK-PowerVM-VUG

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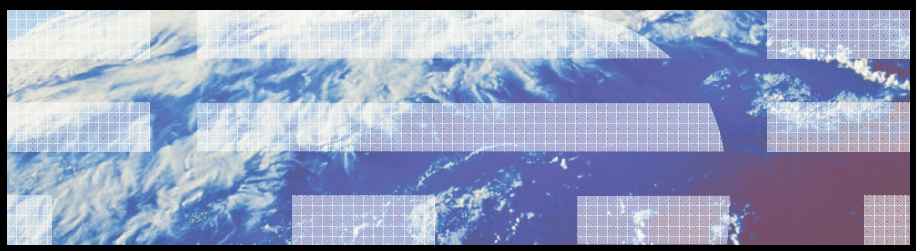
Steve Harnett – POWER Systems Specialist
October 2012

Firmware management strategies for Power Systems, I/O and HMC



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Today's agenda

Firmware and microcode, what are they ?

Inventory and automation tools

Hardware Management Console – How to

System Firmware – How to

I/O device management

Summary

Source: If applicable, describe source origin

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Firmware and microcode, what are they?

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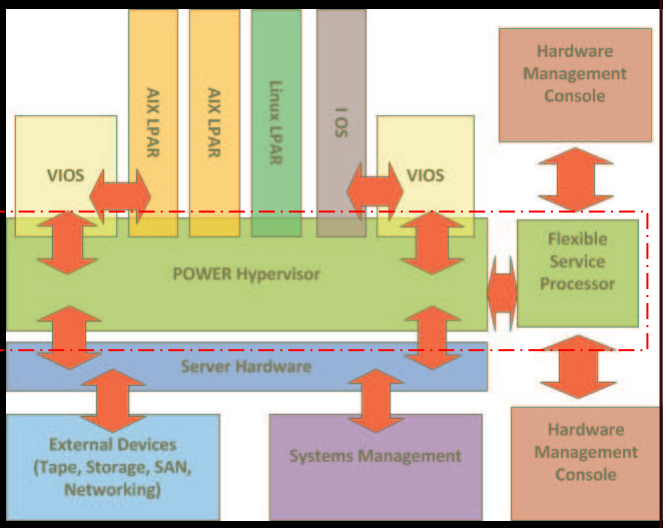
IBM POWER Systems Firmware

Definition of **firmware noun**
'[mass noun] Computing permanent software programmed into a read-only memory'

- Firmware or 'POWER Hypervisor' is fully integrated with every component of a POWER System



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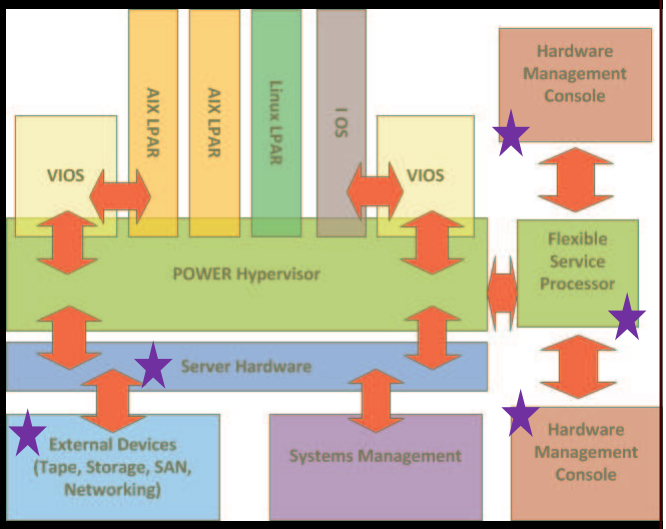
IBM Microcode

Definition of **microcode noun**
'[mass noun] Computing a very low-level instruction set which is stored permanently in a computer or peripheral controller and controls the operation of the device'.



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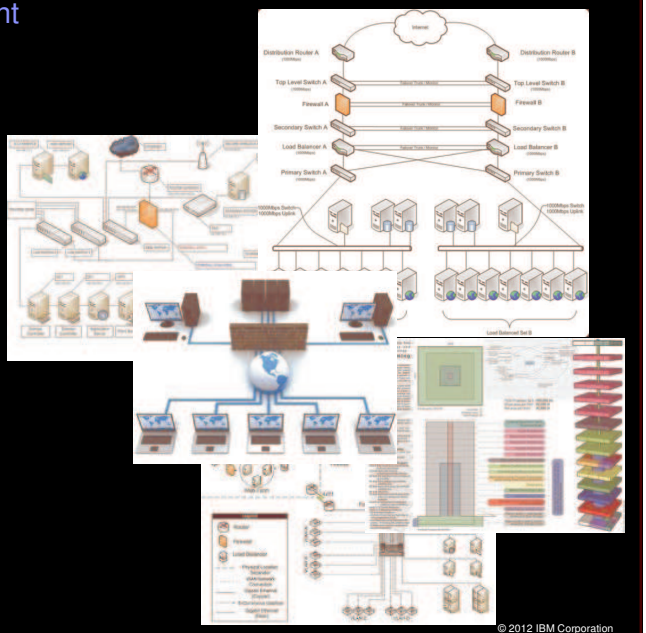
Know your environment

Every clients infrastructure Is unique to them, its is key that this is fully understood in order to properly evaluate:

- Dependencies
  - SAN, Storage, HMC,AIX, IBM I, Linux, SDMC, Systems Director, etc,
- Risks
  - Business impact
  - Back out strategy
  - Skills
- Timescales
  - Update schedule – what first?
  - Disruptive – Non-disruptive
- Tools
  - Inventory tools
    - Systems Director
    - HMC



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IBM Electronic Service Agent

- A key tool in overall system availability and monitoring
- Fully integrated into the POWER Hypervisor, AIX, IBM I, POWER Linux, HMC, Systems Director, etc, etc
- 'No charge' option with warranty or maintenance
- Demonstrated to significantly improve system availability by over 30%

http://www-01.ibm.com/support/esa/

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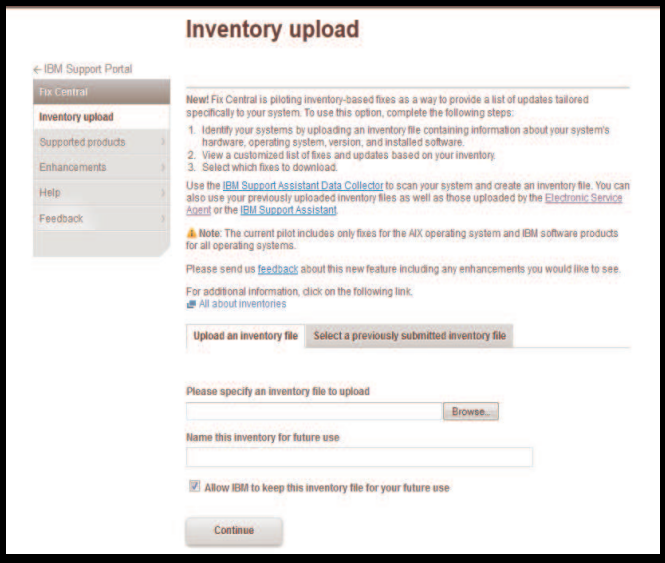
Inventory Upload

- Brand new tool for individual inventory analysis
- Client can download and run the Support Assistant Data Collector OR select inventory files from ESA



http://www-933.ibm.com/support/fixcentral/inventory/entry#

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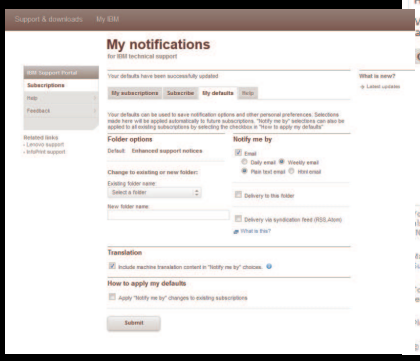
My Notifications

- Tailored to match your Inventory
- Electronic Service Agent linked
- Tuneable



https://www-947.ibm.com/systems/support/myview/subscription/css.wss/subscriptions

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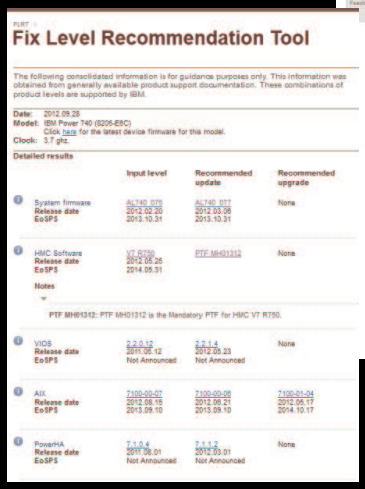
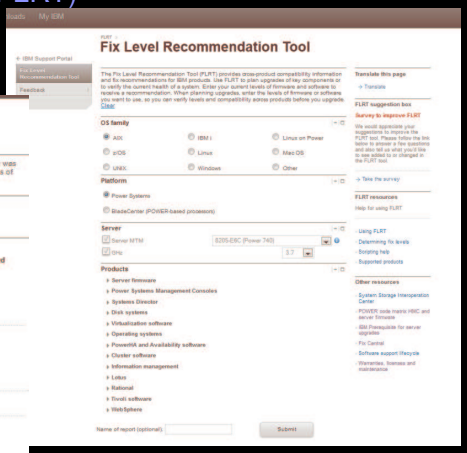
Fix Level Recommendation Tool (FLRT)

- Specific recommendations based on actual values





http://www-304.ibm.com/support/customercare/flrt/

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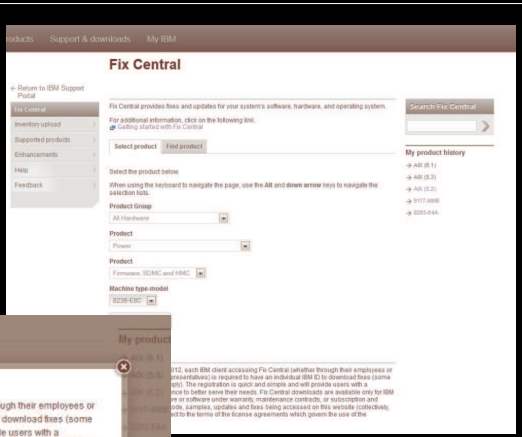
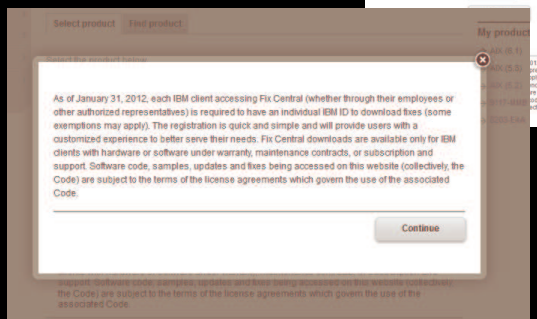
IBM Fix Central

As of 31st January 2012 Fix Central is now Entitlement checked, access is only allowed for

- Warranty
- Maintenance
- Subscription





http://www-933.ibm.com/support/fixcentral/

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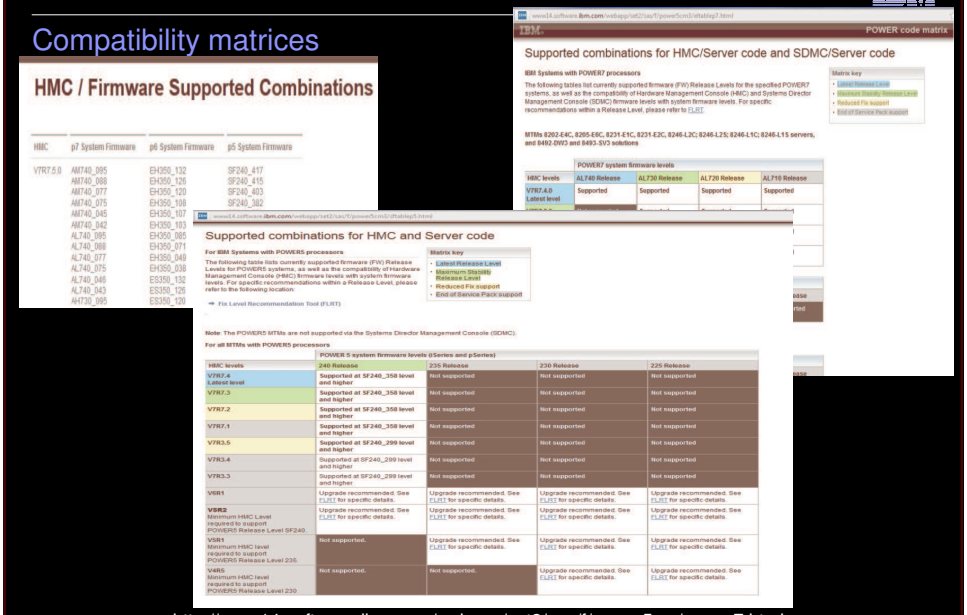
Compatibility matrices



http://www14.software.ibm.com/webapp/set2/sas/f/power5cm/power7.html

http://www-933.ibm.com/support/fixcentral/firmware/supportedCombinations

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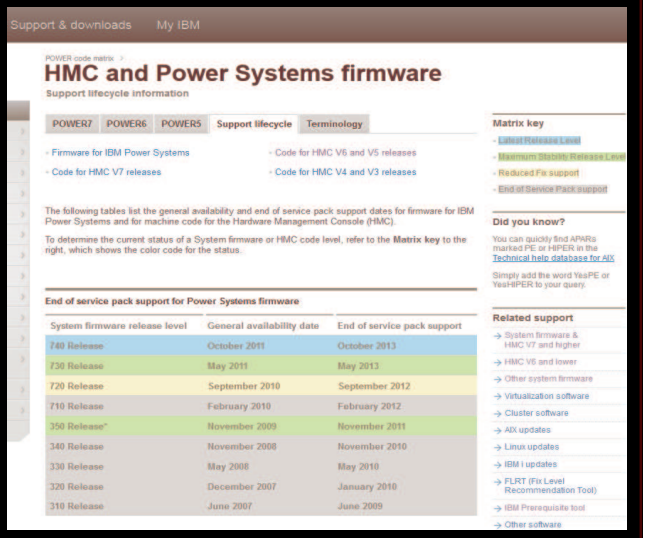
Firmware End Of Service

- Good practice to be on recent code levels but this will not affect your maintenance contract should it not be the case



http://www14.software.ibm.com/webapp/set2/sas/f/power5cm/eoss.html

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Firmware Terminology

- **POWER5**

  The file naming convention for POWER5 System Firmware is as follows:

  01SF*XXX_YYY_ZZZ* **01BP*XXX_YYY_ZZZ***

  where
  XXX is the *release* level,
  YYY is the *service pack* level, and
  ZZZ is the *last disruptive service pack* level.

  Using the above example, System Firmware 01SF235_185, as displayed on the Firmware Download page, would be described as Release Level 235, Service Pack 185.

- **POWER6**

  The file naming convention for POWER6 Midrange System Firmware is as follows:

  01EM*XXX_YYY_ZZZ* **01BP*XXX_YYY_ZZZ***

  where
  XXX is the *release* level,
  YYY is the *service pack* level, and
  ZZZ is the *last disruptive service pack* level.

  Using the above example, System Firmware 01EM310_048, as displayed on the Firmware Download page, would be described as Release Level 310, Service Pack 048.

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Firmware Terminology cont'd

- With POWER6 upwards FW we introduced 4 streams
  - High
  - Medium
  - Low
  - 'S' for HPC

  This allows any fix packs to be targeted to specific system products and reduces the frequency of firmware releases

730 Release

Component	Version
System firmware	AS730_103 Firmware for MTM: 9125-F2C
	AH730_095 Firmware for MTM: 9119-FHB
	AM730_095 Firmware for MTMs: 9117-MMB and 9179-MHB
	AL730_095 Firmware for MTMs: 8202-E4B, 8205-E6B, 8231-E2B, 8233-E8B, 8236-E8C servers, and 8492-DW2 and 8493-SV2 solutions
Power subsystem firmware	AP730_086 (9125-F2C only) AB730_095 (9119-FHB only)
Hardware Management Console	Version 7 Release 7.5.0 Service Pack 1 + MH01325
List of new HMC features & functionality	Hardware Management Console V7 R750
Systems Director Management Console	SDMC Version 6 Release 7.3.0

http://www14.software.ibm.com/webapp/set2/sas/f/power5cm/home.html

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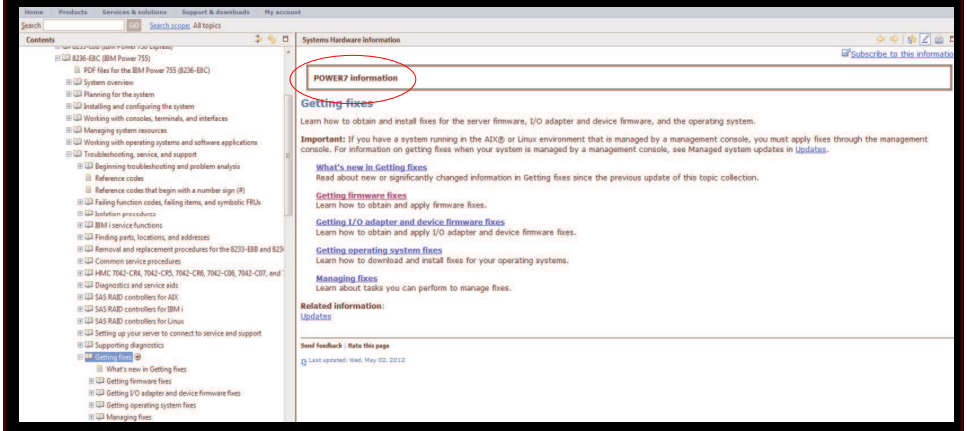
IBM Infocenter



Hardware Infocenter can provide guidance on obtaining and applying firmware and microcode but can sometimes be vague or difficult to navigate.

http://pic.dhe.ibm.com/infocenter/powersys/v3r1m5/

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Planning code updates – HMC code and System Firmware

- In a HMC managed environment
  - The HMC must always be installed with code equal to that of the highest managed system
  - In a dual HMC environment only upgrade one HMC at a time, however the pair MUST be running identical versions, fix packs and fixes
  - A HMC update can be performed without affecting the managed systems
  - A full HMC backup should be done prior and post to an update of the HMC
  - Always have valid recovery media for the current and target code levels (Fix Central)
  - Multiple managed servers can be updated at once but this may add extra time when compared with a single install
  - ALWAYS back up system profile data regardless of the service action
- Without a HMC
  - Always use the operating system to update the system firmware
  - This is always disruptive regardless of the OS type or fix status
  - Do not use the USB option of updating firmware without contacting support first
- SDMC or Systems Director
  - Neither are covered in this presentation but should be used to update system firmware

These are suggested best practices which I have developed over several years of updating code and may not be reflected by IBM publications

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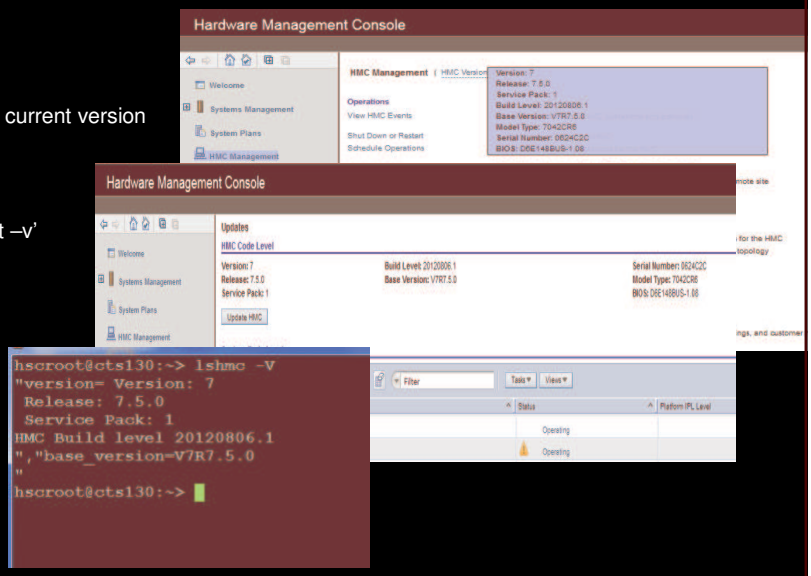
Hardware Management Console

- Identify the current version

'lshmc –V not –v'



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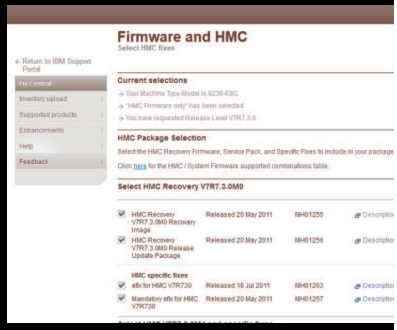
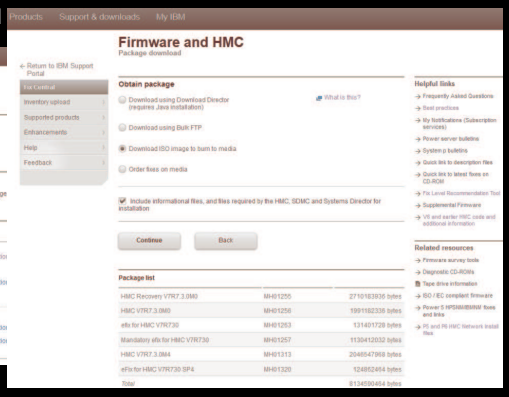
Hardware Management Console

- Installation method is personal choice
  - CD/DVD – The only option in DMZ/ secure environments
  - Local repository – Useful for management of images single install reference
  - Internet - IBM FTP site – network install requires minimal user input

- ISO images can be found on Fix Central





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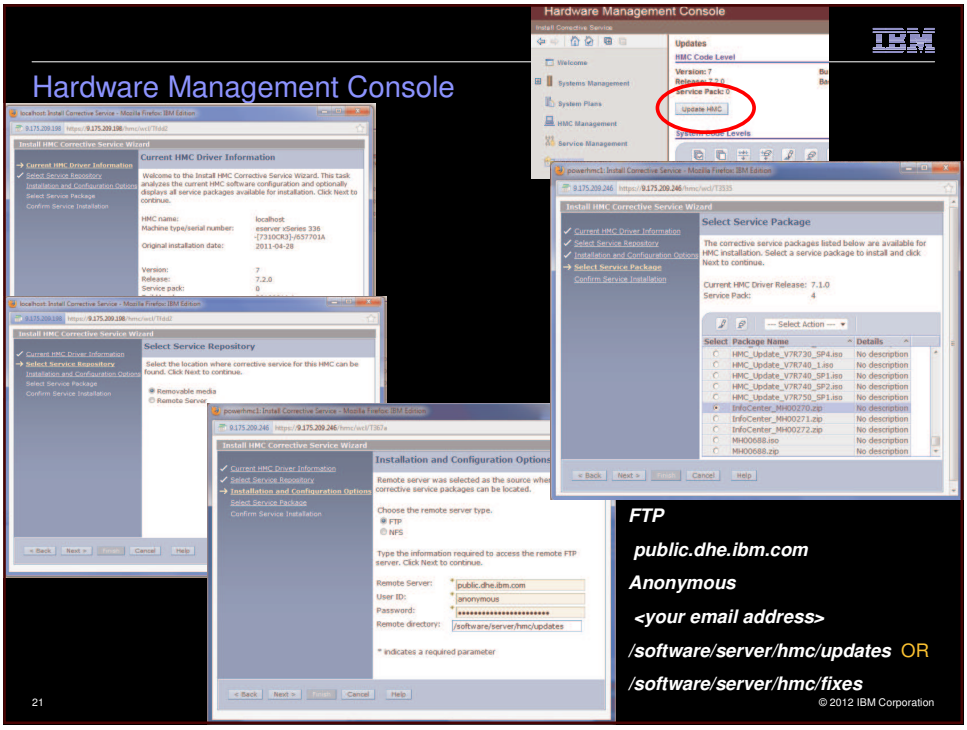
Hardware Management Console



FTP

public.dhe.ibm.com

Anonymous

<your email address>

/software/server/hmc/updates OR

/software/server/hmc/fixes

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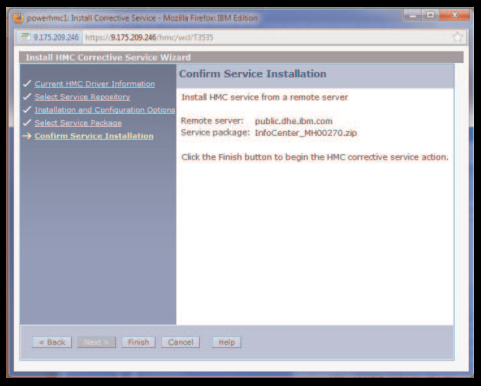
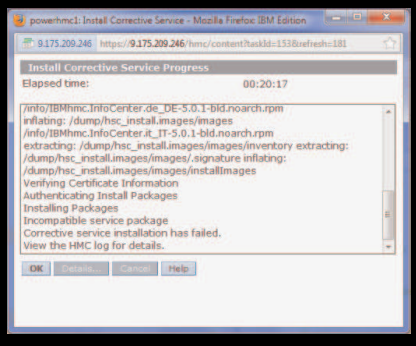
Hardware Management Console



In this instance I attempted to install an update for V7R74 onto a HMC running V7R1 demonstrating that the process does have some fail safe elements.



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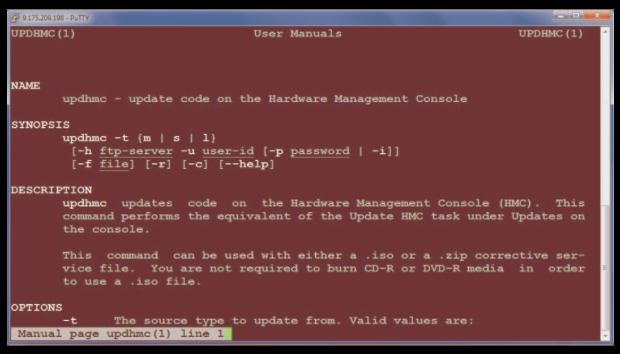
HMC command line

updhmc -t s -h <myservername> -f </home/updates/corrrective_service.iso> -u <HMC_username> -i



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System Firmware considerations

- With a HMC
  - Ensure a good network connection – reset connection
  - Ensure that all FSP's are connected - reset connection
  - Reboot the HMC to ensure that it is in a clean stable state
  - Check for serviceable events relating to the managed system(s)
  - Check for deferred fixes

  - Update OR upgrade ?
    Update is usually concurrent
    Upgrade is disruptive and will require a system outage
- Without a HMC
  - All updates must be done from the operating system
    - AIX – 'lsmcode -c' will display :
      The current permanent system firmware image is EM310_005
      The current temporary system firmware image is EM310_006
      The system is currently booted from the temporary image.
      Then use SMIT to install OR DIAG >Tasks and Service aids >Update and manage flash
    - IBM I you can use 'GO PTF' to display and install specific fixes

  In either situation the system MUST be booted from the temporary side

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System Firmware

- On HMC V7 the update process is simple:
  - Updates
  - Select system
  - Options for that system then appear
    - This is possible from the systems management screen but does not give the summary view seen below

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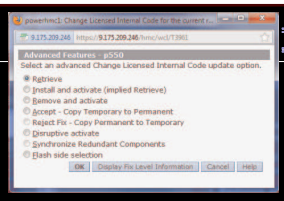
Advanced Features Options



Use with caution

- **Retrieve** Allows you to copy updates from the selected repository location to either the hard drive on the HMC or to removable media on the HMC. If the updates are copied to the hard drive, they are available to be installed.
- **Install and activate (implied Retrieve)** Installs and activates available LIC updates from the selected repository location.
- **Remove and Activate** Returns the system back to the update level on the permanent side. You can use this option to back off an update level.
  Note: This procedure is estimated to take 60 minutes to complete. When a remove and activate procedure is disruptive, it may take up to 2 1/2 hours because of the time necessary to power off and power on the system. Schedule your time accordingly.
- **Accept - Copy Temporary to Permanent** Copies the currently running level to the permanent side. This applies a fix permanently, which cannot be backed off the system.
- **Reject Fix - Copy Permanent to Temporary** Copies the currently running level to the temporary side. This can be used to reject a fix that has been applied.
- **Disruptive activate** A system restart is performed. This completes the **Concurrent install only, with deferred disruptive activate** procedure. To ensure your system is ready for the disruption, first quiesce, or close, all applications that are running on the system.
- **Synchronize Redundant Components** Synchronizes Licensed Internal Code on redundant components. LIC will be synchronized from the primary Service Processor to the secondary Service Processor, and from the Side-A Bulk Power Controller to the Side-B Bulk Power Controller. **Flash side selection** Selects which flash side will be active after the next activation, t-side (temporary side) or p-side (permanent side).

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I/O device management

'If it isn't broken don't fix it !'
- Unless you have a specific reason to update device driver or adapter code don't do it.
  - Exceptions to this are EOS code levels, new installations, new functionality, etc,

- All devices should be updated from the owning operating system, VIOS, AIX, Linux 'I'
  - PTF's on IBM I
  - Device downloads on Fix Central
- Follow the installation instructions from Fix central or IBM Support
- Only install microcode from Fix Central or IBM Support NOT from 3rd party vendor sites such as Emulex or Qlogic as they will not be tested with AIX or I
- Ensure that you fully read the instructions particularly the cautionary notes
- If you are using VIOS on your system then any updates must be performed from the VIOS
- Ensure that all compatibility checks are done prior to any update

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Summary

'PPPPP' Prior Preparation Prevents 'really bad' Performance
- Ensure that you receive regular updates on the whole of your infrastructure
  - My notifications
  - Survey tools – Systems Director, TPC, HMC, ESA,
  - IBM Support Portal
  - Technical Account Manager

- Plan a full review of you infrastructure stack (Microcode, Sys FW, OS, VIOS, Applications, SAN) every 6 months

- 'Try' to have in place regular maintenance windows for your systems and ensure that they are not taken up just with application updates, backups, etc

- Don't rush to have the latest code on your systems N – 1 is a good place to be unless you have a 'cast iron' reason to install the latest

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Additional information

- ESA / HMC security whitepaper : http://www-01.ibm.com/support/docview.wss?uid=isg3T7000236&aid=1
- AIX developer Works : http://www.ibm.com/developerworks/aix/
- Fix Central : http://www-933.ibm.com/support/fixcentral/
- Infocenter : http://pic.dhe.ibm.com/infocenter/powersys/v3r1m5/index.jsp
- IBM Support Portal : http://www-947.ibm.com/support/entry/myportal/overview

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