IBM Power Systems Technical University

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WN15 - Essential Planning for POWER7 MES and Model Upgrades

John Hock – IBM Power Systems Advanced Technical Skills

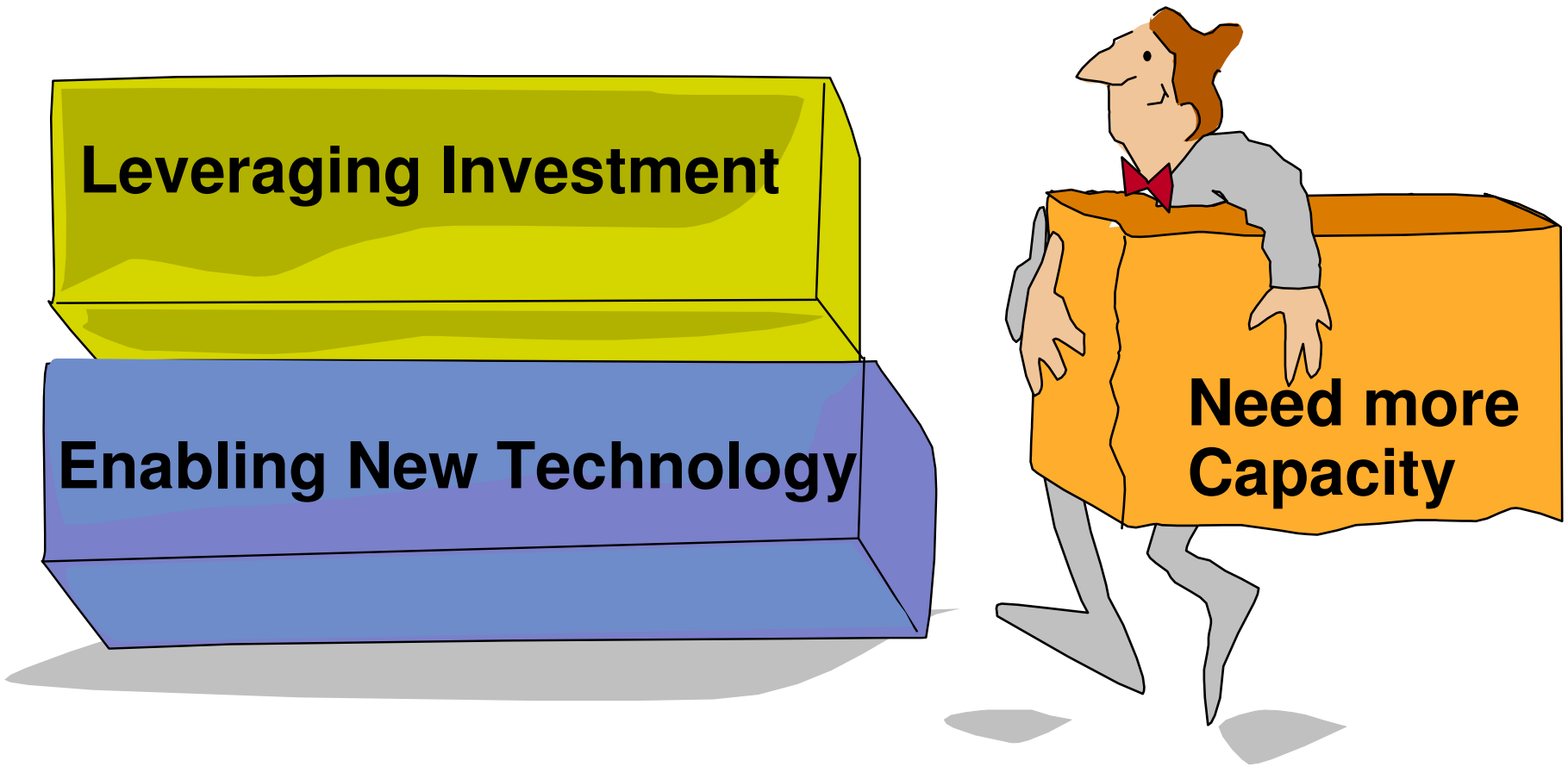
Authorized IBM Training

Definitions

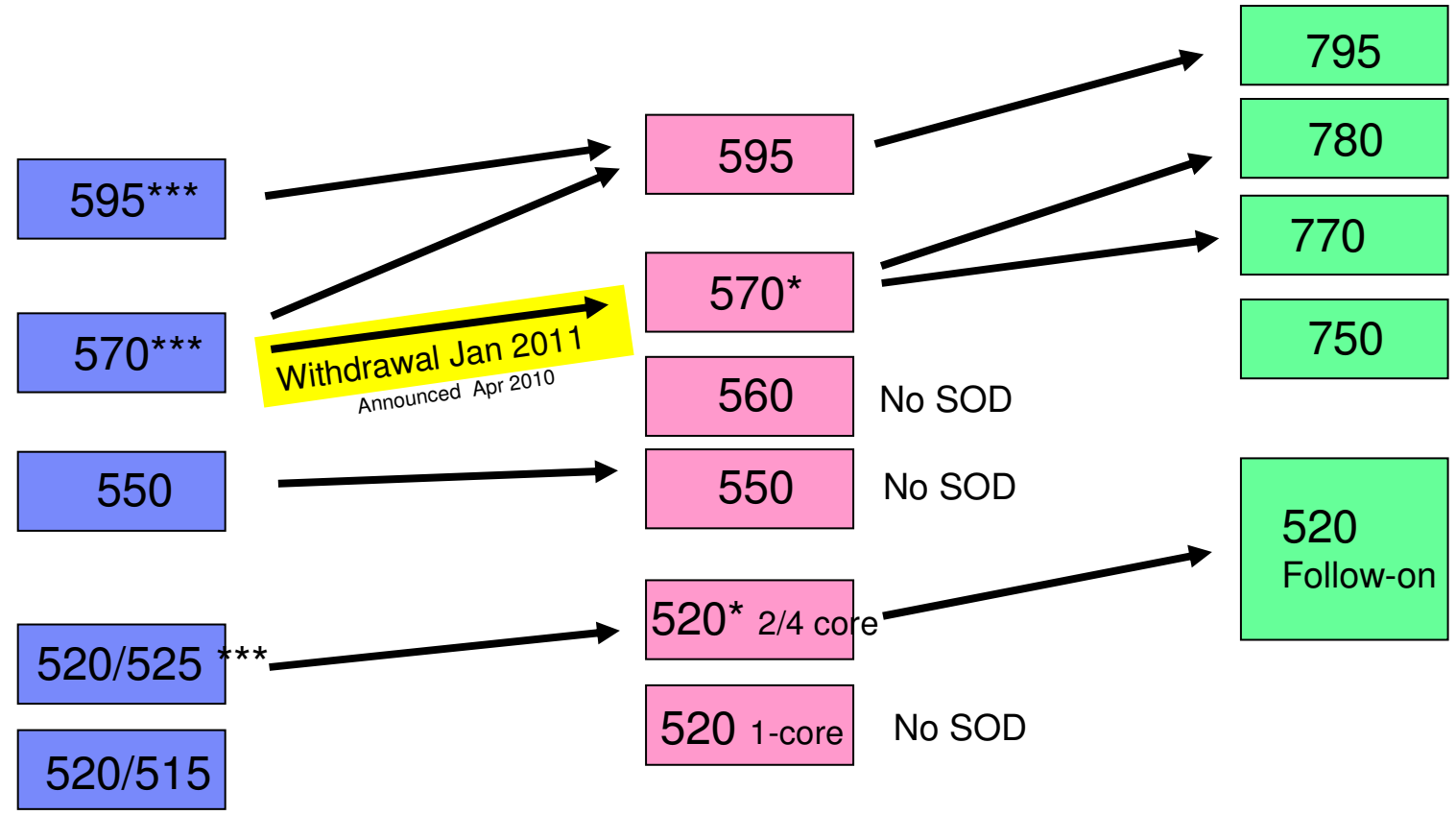
For the purpose of this presentation

- **Upgrades** new model keeping same serial number
  - (requires keeping minimum of 20% original asset)
- **Migrations** new model with new serial number

Why Upgrade/migrate your Server ?



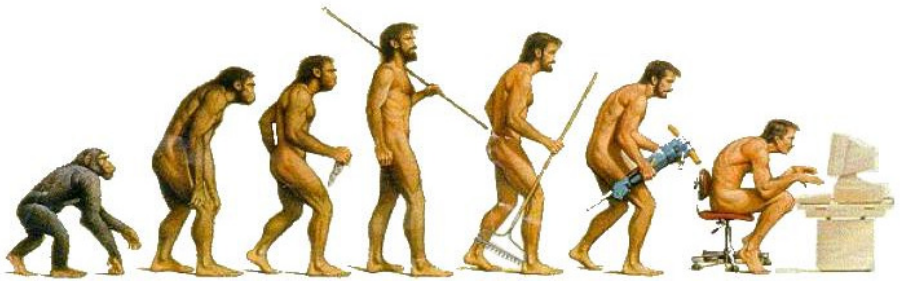
Model Upgrades (Same Serial Number) 4Q 2010



* from 9117 or 8203, convert 940x before upgrading
*** No 1-step POWER5 to POWER7 upgrades

Architecting the POWER Upgrade/migration

- Hardware
  - Systems, Drawers/Towers, Storage - integrated / external
- Virtualization
  - Micro partitioning, APV, PowerVM
    - Review activation codes POD/MOD,VET
- Software – Operating Systems
  - What are the prereq's levels/fixes
  - ISV application Code support for hardware (i.e. qprcfeat)
- Availability
  - Operating System Based or Storage Based
  - HA/DR solutions
- Sizing and Capacity Planning
  - Performance Monitoring – Performance reference guide
- System Management (Operations)
- Security
- Services & PowerCare



IBM Power Systems PowerCare

Now offered for Power 795 and Power 780

- PowerCare service offerings
  - PowerCare Availability Assessment
  - Systems Director and VMControl Enablement
  - Systems Director Active Energy Manager Enablement
  - PowerCare Security Assessment
  - Performance Optimization Assessment
  - PowerCare Technical Training (pick one)
    - Availability
    - Systems Director/VM Control
    - Systems Director/Active Energy Manager
    - Security
    - Performance Optimization
- The service must be selected within 90 days of installation and implemented within 6 months of the installation date.

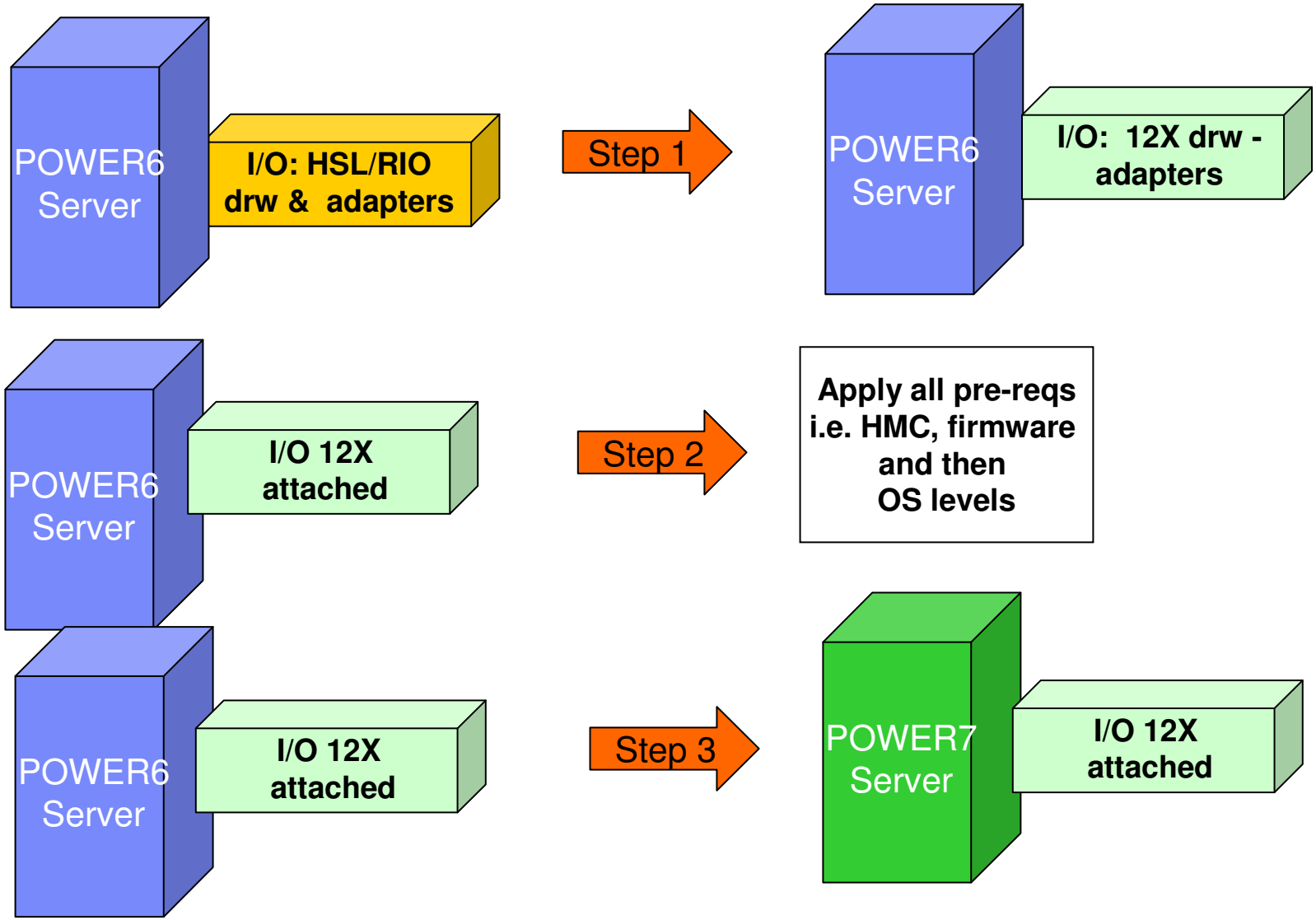
ACTIVE MEMORY EXPANSION (AME)

- Active Memory Expansion is a ***POWER7 technology*** that allows the effective maximum memory capacity to be much larger than the true physical memory maximum. Compression/decompression of memory content can allow memory expansion up to 100%. This can allow a partition to do significantly more work or support more users with the same physical amount of memory. Similarly, it can allow a server to run more partitions and do more work for the same physical amount of memory.
- Active Memory Expansion is available for partitions running ***AIX 6.1, or later***.
- A planning tool (*amepat*) is included with AIX 6.1 Technology Level 4 allowing you to sample actual workloads and estimate both how expandable the partition's memory is and how much CPU resource is needed. Any model Power System can run the planning tool.
- A one-time, 60-day trial of Active Memory Expansion is available to provide more exact memory expansion and CPU measurements. The trial can be requested using the CoD Web page http://www.ibm.com/systems/power/hardware/cod/
- AME is enabled by a **chargeable hardware feature, #4790**, which can be ordered with the initial order of the server or as an MES order. A software key is provided when the enablement feature is ordered that is applied to the server. An IPL is not required to enable the server. The key is specific to an individual server and is permanent. It can not be moved to a different server. The additional CPU resource used to expand memory is part of the CPU resource assigned to the AIX partition running Active Memory Expansion.
- Normal licensing requirements apply.

POWER7 Upgrade assumptions

- IBM i 6.1 with IBM i 6.1.1 LIC or IBM i 7.1
- AIX 7.1, 6.1, 5.3
- Linux RH, SUSE
- HMC
  - HMC V7 R7xx is the minimum level for POWER7 support
  - HMC used to manage any POWER7 processor based server, must be a CR3 or later model rack-mount HMC or C05 or later deskside HMC.
  - If IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3GB of RAM minimum and be a CR3 model or later rack-mount, or C06 or later deskside
- POWER7 upgrade to 795 is not a roll-in/roll-out as was in previous years
  - Books, bulk power controllers, light strips…..etc.
  - No side-by-side PRPQ available
- NO IOP SUPPORTED
- If not totally 12X before upgrade
  - Will add down time to upgrade …. (non-trivial additional time)
    - Partitions will not be recoverable, will have to rebuild
    - Add risk

Recommended Steps



Step 1 tips/considerations

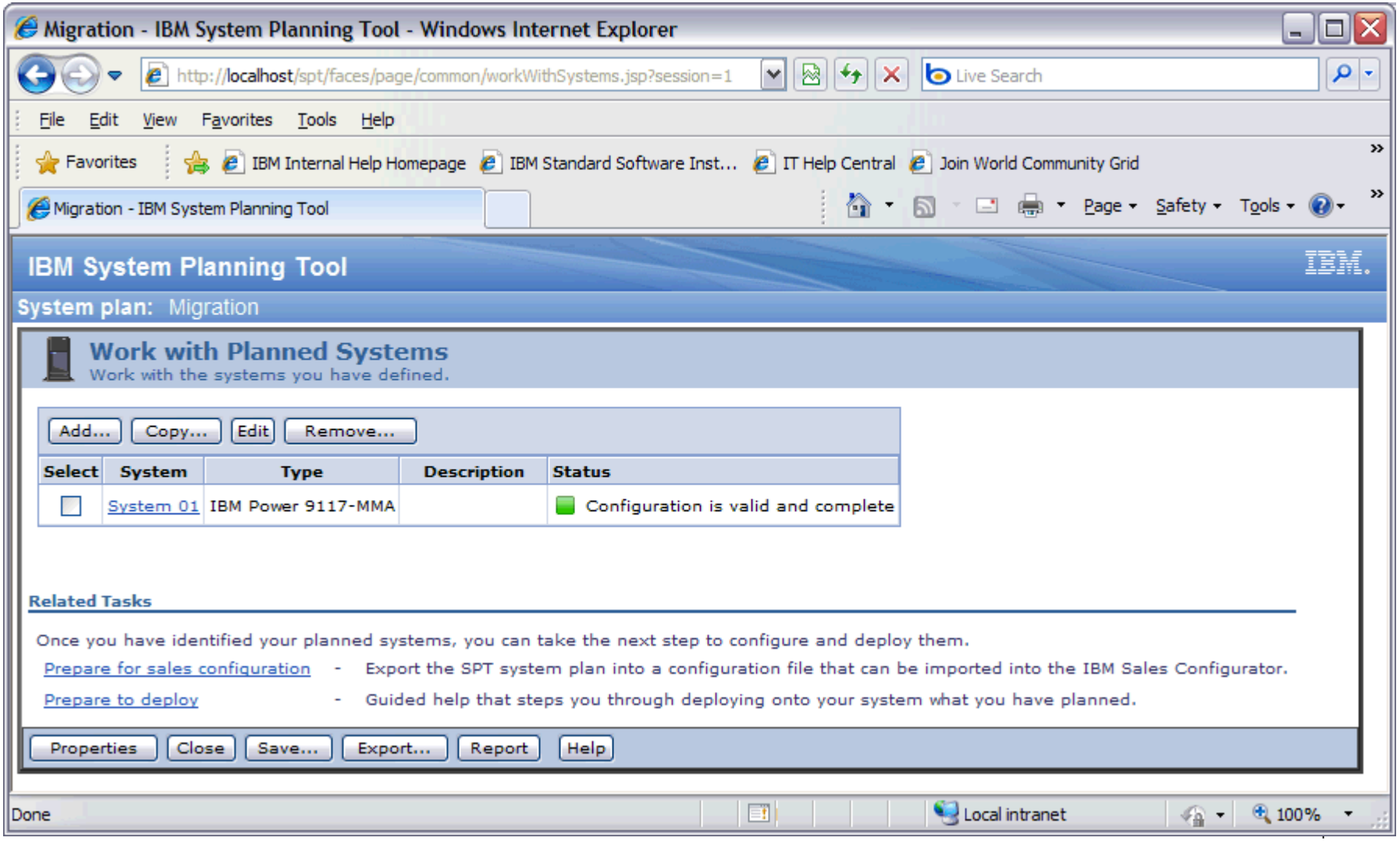
SPT tool can be used to identify unsupported hardware	Take current system plan created by HMC, copy partitions to new plan of target system, will identify unsupported hardware, New function in mid-June for reporting hardware not supported in POWER7
What functions are being run behind IOP	▪Tape drives/libraries, ▪twinax* devices, ▪comm: WAN/LAN … NOTE – carefully review communication protocols for IOP-only protocols: SNA, X.21, SDLC ▪Optical storage library ▪ProtectTier, Virtual Tape Library until IOP-less
HSL/RIO loops	Consider clustering options (switched I/O towers only for HSL)

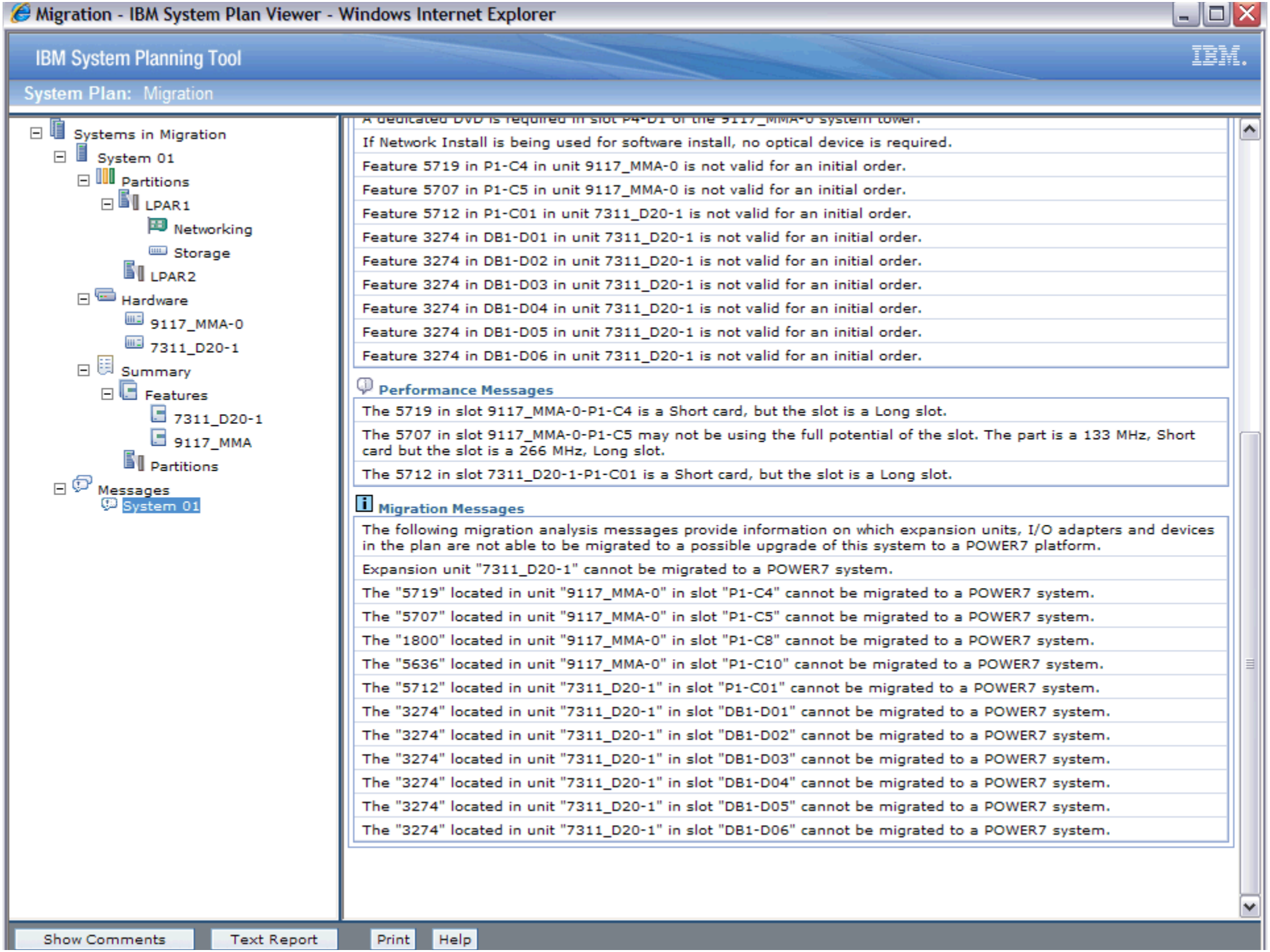
For more information www.ibm.com/systems/support/i/planning/upgrade/index.html

*** Consider OEM twinax protocol converters**

New SPT function

New reporting section that identifies hardware that will not migrate to POWER7




Migration - IBM System Plan Viewer - Windows Internet Explorer
IBM System Planning Tool
IBM.
System Plan: Migration
Systems in Migration
System 01
Partitions
LPAR1
Networking
Storage
LPAR2
Hardware
9117_MMA-0
7311_D20-1
Summary
Features
7311_D20-1
9117_MMA
Partitions
Messages
System 01
A dedicated DVD is required in slot P4-D1 of the 9117_MMA-0 system tower.
If Network Install is being used for software install, no optical device is required.
Feature 5719 in P1-C4 in unit 9117_MMA-0 is not valid for an initial order.
Feature 5707 in P1-C5 in unit 9117_MMA-0 is not valid for an initial order.
Feature 5712 in P1-C01 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D01 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D02 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D03 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D04 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D05 in unit 7311_D20-1 is not valid for an initial order.
Feature 3274 in DB1-D06 in unit 7311_D20-1 is not valid for an initial order.
Performance Messages
The 5719 in slot 9117_MMA-0-P1-C4 is a Short card, but the slot is a Long slot.
The 5707 in slot 9117_MMA-0-P1-C5 may not be using the full potential of the slot. The part is a 133 MHz, Short card but the slot is a 266 MHz, Long slot.
The 5712 in slot 7311_D20-1-P1-C01 is a Short card, but the slot is a Long slot.
Migration Messages
The following migration analysis messages provide information on which expansion units, I/O adapters and devices in the plan are not able to be migrated to a possible upgrade of this system to a POWER7 platform.
Expansion unit "7311_D20-1" cannot be migrated to a POWER7 system.
The "5719" located in unit "9117_MMA-0" in slot "P1-C4" cannot be migrated to a POWER7 system.
The "5707" located in unit "9117_MMA-0" in slot "P1-C5" cannot be migrated to a POWER7 system.
The "1800" located in unit "9117_MMA-0" in slot "P1-C8" cannot be migrated to a POWER7 system.
The "5636" located in unit "9117_MMA-0" in slot "P1-C10" cannot be migrated to a POWER7 system.
The "5712" located in unit "7311_D20-1" in slot "P1-C01" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D01" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D02" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D03" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D04" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D05" cannot be migrated to a POWER7 system.
The "3274" located in unit "7311_D20-1" in slot "DB1-D06" cannot be migrated to a POWER7 system.
Show Comments
Text Report
Print
Help

Step 2 tips/considerations

Use IBM Prerequisite site and Sales manual to determine required levels of operating systems, VIOS, HMC, firmware needed to support target system	www.ibm.com/e_dir/eServerPrereq.nsf
HMC updates….	If connected to multiple systems, use FLRT tool to determine if firmware levels on other systems are at a levels that work with new HMC level Information on FLRT www14.software.ibm.com/webapp/set2/sas/f/flrt/use.html Tool link www14.software.ibm.com/webapp/set2/flrt/
Good time to check to see if any product licenses (IBM and non-IBM) may need to be updated due to tier change or QPRCFEAT change	

Technology Transitions to Consider During Upgrade/Migration

1. SCSI to SAS
   - Disk Drives = SAS 3.5-inch moving to 2.5-inch SFF
   - Solid State SFF SAS Drives
   - Removable media SAS & SATA

2. PCI / PCI-X / PCI-X DDR to PCIe
   - 2008 PCIe slots available in 520/550/570 System Units
   - 2009 added 19” & 24” PCIe 12X DDR drawers

3. RIO-2/HSL-2 to 12X (SDR and DDR)
   - POWER6 supports RIO/HSL and 12X
   - POWER7 supports 12X

4. IOP-based* to IOPless IOA to Virtual I/O
   - POWER7 IOPless only adapters
   - NPIV Fiber and FCoE Adapters

Power RAS Feature Overview

● Standard
○ Optional
– Not available

IBM

RAS Item	Power 750	Power 770	Power 780	Power 595	POWER7 High-end
Redundant / Hot Swap Fans & Blowers	●	●	●	●	●
Hot Swap DASD / Media / PCI Adapters	●	●	●	●	●
Concurrent Firmware Update	●	●	●	●	●
Redundant / Hot Swap Power Supplies	○	●	●	●	●
Dual disk controllers (split backplane)	○	●	●	●	●
Processor Instruction Retry	●	●	●	●	●
Alternate Processor Recovery	●	●	●	●	●
Storage Key	○	○	○	○	○
PowerVM™/Live Partition Mobility/Live Application Mobility	–	●	●	●	●
Redundant Service Processors	–	● * New!	● *	●	●
Redundant System Clocks	–	● *	● *	●	●
Redundant / Hot Swap Power Regulators	–	○	○	○	○
Dynamic Processor Sparing	–	●	●	●	●
Memory Sparing	–	●	●	●	●
Hot GX Adapter Add and Cold Repair	–	●	●	●	●
Hot-node Add / Cold-node Repair	–	● * New!	● *	●	● *
Hot-node Repair / Hot-memory Add	–	● * New!	● *	●	● *
Dynamic Service Processor and System Clock Failover	–	● *	● *	●	●
Hot-node Repair / Hot-memory Add for all nodes**	–	● * New!	● *	– New!	● *
Enterprise Memory	–	–	–	●	●
Hot GX Adapter Repair	–	–	–	–	● New!

** Requires two or more nodes*
*** Planned for 2H10*

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Power Modes & Symmetric Multi-Threading Considerations

- **SMT4 Considerations**
  - Requires **POWER7 Mode**
- POWER6 Mode supports SMT1 and SMT2
- *Performance differences are likely between various modes.*
- Operating System Support
  - IBM i 6.1 and 7.1
  - Linux

POWER7 in POWER6 or POWER6+ compatibility mode	**POWER7 in ALL modes (POWER6, POWER6+, or POWER7)**
5.3 TL09 (Note: EOS is 10/2010) **5.3 TL10** **5.3 TL11** **5.3 TL12** **6.1 TL02 (Note: EOS is 10/2010)** **6.1 TL03**	**6.1 TL04** **6.1 TL05** **6.1 TL06** **7.1 TL00**
Minimum AIX TL levels for POWER7 modes	

I/O Upgrade Considerations

- **All the newer IBM I/O drawers, disk, SSD and PCI adapters used on POWER6 supported on POWER7 servers**
  - May need to move 3.5-inch SAS drives and PCI-X adapters

- Older I/O on POWER6 servers, but not on POWER7 servers
  - RIO/HSL I/O drawers
  - SCSI disk smaller than 69GB or SCSI drives slower than 15k rpm
  - QIC tape drives
  - IOPs and IOP-based PCI adapters (IBM i)

    2749, 5702, 5712, 2757, 5581, 5591, 2790, 5580, 5590, 5704, 5761, 2787, 5760, 4801, 4805, 3709, 4746, 4812, 4813
  - Older LAN adapters: #5707, 1984, 5718, 1981, 5719, 1982
  - Older SCSI adapters: #5776, 5583, 5777
  - Telephony adapter: #6412

  - See planning web page www.ibm.com/systems/power/hardware/sod2.html

Enterprise Power Systems I/O Drawers

- Power 595/795 has 4X the # GX adapters and loops vs. the Power 780

- Power 780 has 2 GX adapters per node for a total of 8 per system
  - Each Power 780 GX adapter may support up to 2 #5802 drawers
    - Each #5802 drawer may support up to 10 PCIe cards

- Power 595/795 has 4 GX adapters per node for a total of 32 per system
  - Each Power 595 GX adapter may support 1 #5803 drawer
    - Each #5803 drawer may support up to 20 PCIe cards

Server	Feature & Description	Max # PCIe adapters	Interface	Max 12X PCIe I/O Drawers
595/795	#5803 PCIe I/O Drawer	**640** 20 per drawer	12X	**32**
780	#5802 PCIe I/O Drawer	**184** 6 per node + 10 per drawer	12X	**16**

Power 750, 770, 780, 795 Licensing

	GHz	# Cores per Processor	Offerings	Capacity on Demand	Tier	Processor Group (IBM i)
750	3.0	8	8, 16, 24, 32	No	Small	P20
	3.3	6	6, 12, 18, 24	No	Small	P20
	3.3	8	8, 16, 24, 32	No	Small	P20
	3.55	8	32	No	Small	P20
770	3.1	8	4/16. 4/32, 4/48, 4/64	Yes	Medium	P30
	3.5	6	4/12, 4/24, 4/36, 4/48	Yes	Medium	P30
780	3.86	8	4/16, 4/32, 4/48, 4/64	Yes	Large	P50
	4.14 TurboCore Mode	4	4/8, 4/16, 4/24, 4/32	Yes	Large	P50
795		8		Yes	Large	P50
		6		Yes	Large	P50

Storage adapters not supported on POWER7

Feature	Description	CCIN	Replacement feature
2749	PCI Ultra Magnetic Media Controller (HVD)	2749	PCI-X SCSI 5736 (LVD)
2757	PCI-X Ultra RAID Disk Controller	2757	SCSI 5782 SAS 5903, 5908
2780	PCI-X Ultra4 RAID Disk Controller	2780	SCSI 5782 SAS 5903, 5908
5580	2780 Controller with auxiliary Write Cache	2780 5708	SCSI 5782 SAS 5903, 5908
5581	2757 Controller with auxiliary Write Cache	2757 5708	SCSI 5782 SAS 5903, 5908
5583	5777 Controller with auxiliary Write Cache	571E 574F	SCSI 5782 SAS 5903, 5908
5590	2780 Controller with auxiliary Write Cache	2780 574F	SCSI 5782 SAS 5903, 5908
5591	2757 Controller with auxiliary Write Cache	2757 574F	SCSI 5782 SAS 5903, 5908
5702	PCI-X Ultra Tape Controller	5702	PCI-X SCSI 5736
5712	PCI-X Dual Channel Ultra320 SCSI Adapter	5702	PCI-X SCSI 5736

Storage adapters cont….

Feature	Description	CCIN	Replacement feature
5776	PCI-X Disk Controller 90 MB no IOP	571B	SCSI 5782 SAS 5903, 5908
5777	PCI-X Disk Controller 1.5 GB no IOP	571E	SCSI 5782 SAS 5903, 5908
5778 (can move card, becomes new feat code)	PCI-X EXP24 Controller 1.5 GB no IOP	571F	SCSI 5782 SAS 5903, 5908
5806	PCI-X DDR Dual Channel Ultra320 SCSI Adapter	571A	PCI-X SCSI 5736
5911 SAS adapter for internal Split DASD option 57BA None	SAS adapter for internal Split DASD option	57BA	None (not needed)

Hard Disk Devices not supported on POWER7

Feature	Description	CCIN	Replacement feature
3273	36.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly	1967	SAS SFF 1881
4319 4326	35.16GB 10k rpm Disk Unit	4326	SAS SFF 1883
3277	36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly	1970	SAS SFF 1883
1968 3274	73.4 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly	1968	SAS SFF 1881
1969 3275	146.8 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly	1969	SAS SFF 1882
1973 3578	300 GB 10,000 RPM Ultra320 SCSI Disk Drive Assembly	3578	SAS SFF 1885

Optical devices not supported on POWER7

Feature	Description	CCIN	Replacement feature
3706	DVD-ROM (System i 4631)	6336	DVD RAM 5762
4430 4630	DVD-RAM	6330-002	DVD RAM 5762
4633	DVD-RAM	6333	DVD RAM 5762
5756	IDE Slimline DVD-ROM Drive	6337-002 6337-003	DVD RAM 5762
5757	IBM 4.7 GB IDE Slimline DVD-RAM Drive	6331-002	DVD RAM 5762

Tape devices not supported on POWER7

Feature	Description	CCIN	Replacement feature
3707	30 GB 1/4 in. Cartridge Tape (System i 4684)	No record	DAT 5907, 5619 LTO 5746
3708 4487	50 GB 1/4 in. Cartridge Tape (System i 4687)	63A0	DAT 5907, 5619 LTO 5746
5907	36/72 GB 4 mm DAT72 SAS Tape Drive	N/A	DAT 5907, 5619

Diskette devices not supported on POWER7

Feature	Description	CCIN	Replacement feature
2591	External USB 1.44 MB Diskette Drive	N/A	None

Displays not supported on POWER7

Feature	Description	CCIN	Replacement feature
3636	L200P Flat Panel Monitor	N/A	22 in. wide screen 3632

Fibre Channel controllers not supported on POWER7

Feature	Description	CCIN	Replacement feature
2787	PCI-X Fibre Channel Disk Controller	2787	PCI-X 4 GB 5774 8 GB 5735
5704	PCI-X Fibre Channel Tape Controller	5704	PCI-X 4 GB 5774 8 GB 5735
5760	PCI-X Fibre Channel Disk Controller	280E	PCI-X 4 GB 5774 8 GB 5735
5761	PCI-X Fibre Channel Tape Controller	280D	PCI-X 4 GB 5774 8 GB 5735

IXS not supported on POWER7 Servers

Feature	Description	CCIN	Replacement feature
4812	PCI Integrated xSeries® Server	4812-001	iSCSI attach 5713
4813	PCI Integrated xSeries Server	4812-001	iSCSI attach 5713

Ethernet controllers not supported on POWER7 Servers

Feature	Description	CCIN	Replacement feature
1981 5718	10 GB Ethernet-SR PCI-X Adapter	1981 5718	PCI-X 5769
1982 5719	IBM 10 GB Ethernet-LR PCI-X Adapter	1982 5719	PCI-X 5772
1984 5707	5707IBM 2-Port GB Ethernet-SX PCI-X Adapter	1984 5707	PCI-X 5768
3709	PCI 100/10 Mbps Ethernet IOA (System i® 2748)	2849	None

IOPs not supported on POWER7 Servers

Feature	Description	CCIN	Replacement feature
2844	PCI IOP	2844	None
2847	PCI IOP for SAN Load Source	2847	None
3705	PCI IOP (System i 2843)	2843	None

DTTA not supported on POWER7

Feature	Description	CCIN	Replacement feature
6312	Quad Digital Trunk Telephony PCI Adapter	6312	None

Cryptographic not supported on POWER7

Feature	Description	CCIN	Replacement feature
4801	PCI Cryptographic Coprocessor	4758-023	AIX and Linux 4807 IBM i 4764 till second half 2010
4805	PCI Cryptographic Accelerator	2058-001	AIX and Linux 4807 IBM i 4764 till second half 2010

Twinax not supported on POWER7

Feature	Description	CCIN	Replacement feature
4746	PCI Twinaxial Workstation IOA	2746	None if really need, consider OEM protocol converter

Key IBM i PCI Adapters

Type adapter	PCI-X	PCIe
WAN	2-port & 4-por 6805 w/2009,6833/34 w/2009, 6808/09 (hardware SNA with IOP/ alternative enterprise extenders)	2-port (1 modem) 2809/04 (SNA with enterprise extenders)
SCSI ▪ Tape/disk 0 cache ▪ Disk medium cache ▪ Disk big cache	 ▪ Y ▪ Y 90 MB ▪ Y 1500 MB	 ▪ No plans ▪ No plans ▪ No plans
SAS ▪ Tape/disk 0 cache ▪ Disk medium cache ▪ Disk big cache	 ▪ Y #5912 ▪ Y 175 MB #5902 ▪ Y 1.5GB Cache (#5904, #5906, #5908)	 ▪ Y #5901 ▪ Y 380 MB #5903 ▪ Future

IBM i License Transfer PRPQ

- **Enables IBM i entitlement to be transferred between selected systems**
  - Implemented WW via eConfig
  - SWMA required on From and To systems
  - From system must have been installed at least one year
  - Applicable to optional, not base licenses
  - Administrative fee plus license price difference
  - Applicable to 550 and larger systems
  - IBM i processor-core entitlement moves to new system

Making it Easier for Clients to

- Buy a replacement system
- Consolidate systems
- Move workloads

From POWER5, 6, 7		To POWER6, 7
9406-550, 570, 595		
Power 550 (9409-M50, 8204-E8A)		Power 550 (9409-M50, 8204-E8A)
Power 560 (8234-EMA)		Power 560 (8234-EMA)
Power 570 (9406-MMA, 9117-MMA)		Power 570 (9406-MMA, 9117-MMA)
Power 595 (9119-FHA)		Power 595 (9119-FHA)
Power 750, 770, 780		Power 750, 770, 780, 795

570-to-770/780 Upgrades

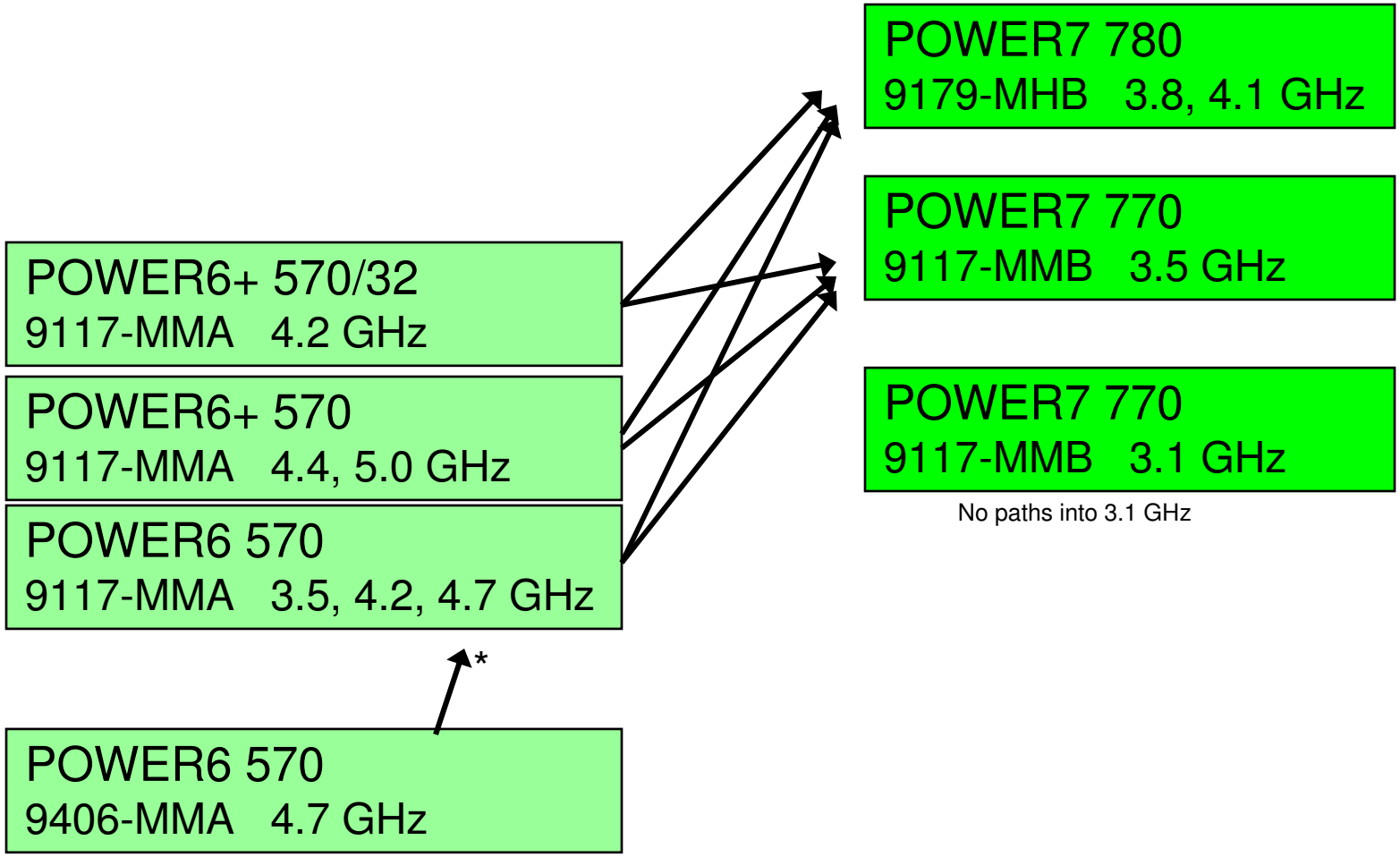
Power 770 9117-MMB

- ✓ 12 or 16 core 4U nodes
- ✓ Up to 4 nodes per system
- ✓ 3.1 and 3.5 GHz
- ✓ Capacity on Demand
- ✓ Enterprise RAS
- ✓ Up to 2 TB memory
- ✓ Up to 8 12X I/O loops
- ✓ Up to 292,700 CPW
- ✓ Up to 579.39 rPerf
- ✓ i P30 software tier

Power 780 9179-MHB

- ✓ New modular high-end
- ✓ Up to 64 Cores
- ✓ TurboCore Mode
- ✓ 3.86 or 4.14 GHz
- ✓ Up to 343,050 CPW
- ✓ Up to 685.09 rPerf
- ✓ Capacity on Demand
- ✓ Enterprise RAS
- ✓ Up to 2 TB memory
- ✓ Up to 8 12XI/O loops
- ✓ 24x7 warranty
- ✓ PowerCare
- ✓ i P50 software tier

Power 770 and Power 780 Upgrades (keep serial number)



770/780 Upgrade Offering

- You can upgrade the 9117-MMA with IBM POWER6 or POWER6+ processors to the IBM Power 770 or 780 with POWER7 processors.
- For upgrades from POWER6 or POWER6+ processor-based systems IBM will install new CEC enclosures to replace the enclosures you currently have.
- Your current CEC enclosures will be returned to IBM in exchange for the financial considerations that are identified under the applicable feature conversions for each upgrade.

770/780 Upgrade Offering, cont'd

- Feature conversions have been set up for the following:
  - POWER6 and POWER6+ processors to POWER7 processors
  - DDR2 memory DIMMs to DDR3 memory DIMMs
  - Trim kits (a new trim kit is needed when upgrading to a two-, three-, or four-drawer system)
  - Enterprise enablement
- The following features present on the current system can be moved to the new system:
  - PCIe adapters with cables
  - Line cords, keyboards, and displays
  - PowerVM (#7942 and #7995)
  - I/O drawers (#5786, #5796, #5802, #5877, and #5886)
  - Racks (#0551, #0553, and #0555)
  - Doors (#6068, #6069, #6248, #6249, and #6858)
  - Trim kits (#6246 and #6247) - for one-drawer configurations only or for racks holding only I/O and no 770/780 processor enclosures
  - SATA DVD-RAM (#5762)
- Feature number 8018 is available to support migration of the PowerVM feature 7942 during the initial order and build of the upgrade MES MHB order.
- IBM supports up to four concurrent migrations of dedicated memory partitions from the source system to the target system.
  - In rare cases, a migration may have to be re-tried if the mobility operation times out. The small probability of a retry can be further reduced by migrating one dedicated memory partition at a time
  - Active Memory Sharing (AMS) partitions should always be migrated one at a time.

Power 770 & 780 19-inch IO and Storage Drawers

Order Number	Description	Status	Interface
#5796	PCI-X I/O Drawer	Available	12X
#5802	PCIe I/O Drawer (w/ SFF Bays)	Available	12X
#5877	PCIe I/O Drawer (No SFF Bays)	Available	12X
#5886	EXP12S SAS Disk Drawer	Available	SAS
7314-G30	PCI-X I/O Drawer	Supported	12X
#5786	EXP24 SCSI Disk Drawer	Supported	SCSI
7031-D24 7031-T24	EXP24 SCSI Disk Drawer EXP24 SCSI Disk Tower	Supported	SCSI

- NOTE: no RIO/HSL drawers … (No IOPs)

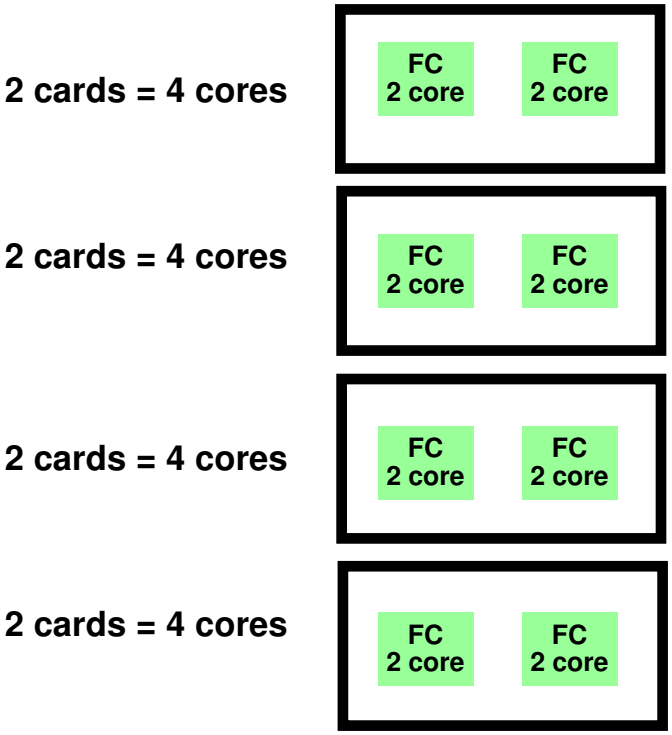
770/780 OS / HMC Requirements

- For current prerequisites of operating systems/firmware/HMC see the IBM Prerequisite site https://www-912.ibm.com/e_dir/eServerPrereq.nsf
- Make sure pre-requisite levels are loaded before upgrading to POWER7
- HMC
  - HMC V7 R710 is the minimum level for POWER7 support
  - HMC used to manage any POWER7 processor based server, must be a CR3 or later model rack-mount HMC or C05 or later deskside HMC.
  - If IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3GB of RAM minimum and be a CR3 model or later rack-mount, or C06 or later deskside.
- IBM i
  - IBM i 6.1.1
  - IBM i 7.1
- AIX
  - AIX Version 6.1 with the 6100-04 Technology Level and Service Pack 2, or later.
  - AIX Version 5.3 with the 5300-11 Technology Level and Service Pack 2, or later.
  - Some older technology levels will be supported as tested
- Linux
  - SUSE Linux Enterprise Server 10 Service Pack 3, or later.
  - SUSE Linux Enterprise Server 11, or later.
  - Redhat SOD
- VIOS
  - VIOS 2.1.2.12 with fix pack 22.1 and Service Pack 2, or later.

POWER7 770 & 780 Structure Differs from POWER6 570….. for example

POWER6 (9117-MMA)

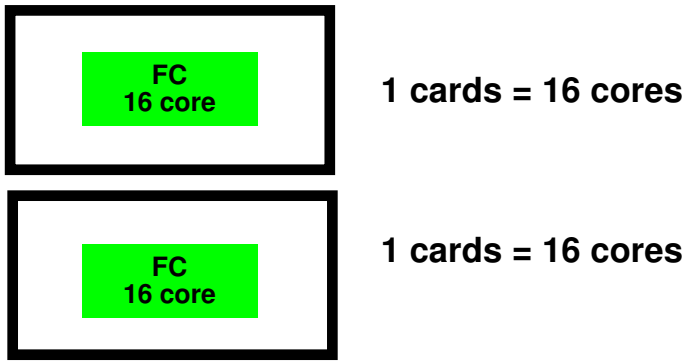
16 core server shown



processor activation feature codes

POWER7

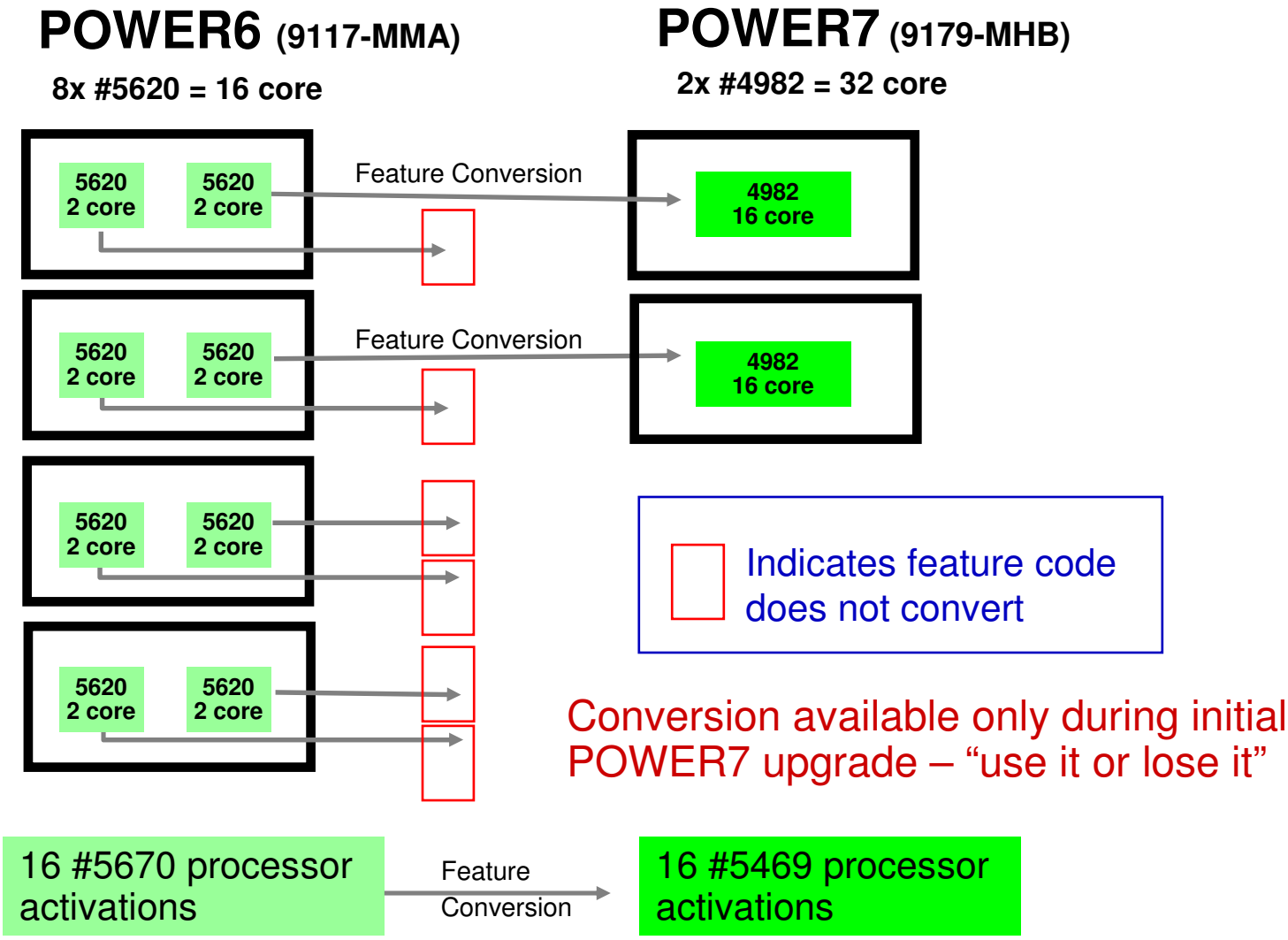
32 core server shown



processor activation feature codes

1. For pricing/ordering, upgrades use feature conversions
2. Feature conversion are 1-to-1, NOT many-to-1

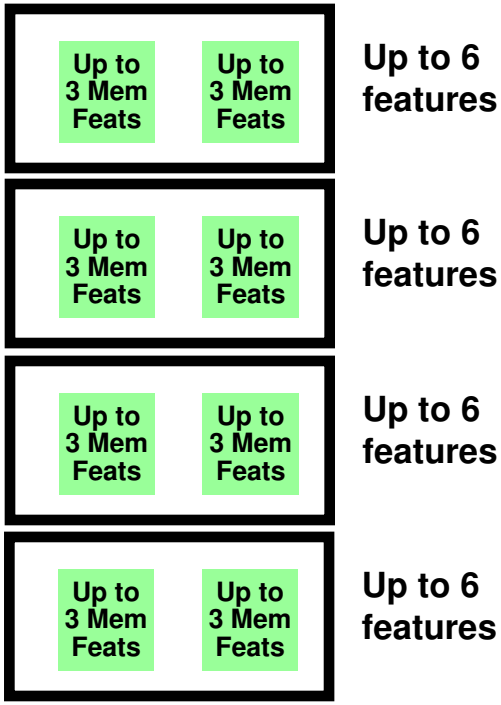
570 to 780 Example Upgrade 16-core (16 active) to 32-core (16 active)



POWER7 770 & 780 vs. POWER6 570 Memory Conversions – Similar

POWER6 (9117-MMA)

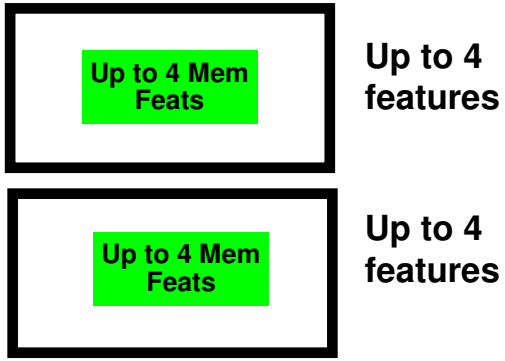
DDR2 memory

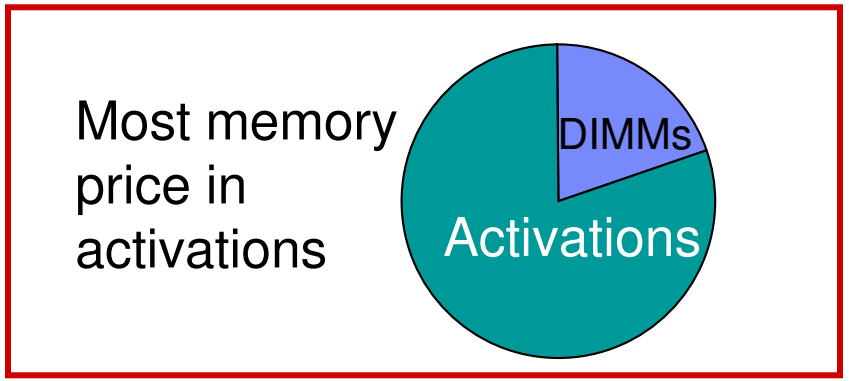


memory activation feature codes

POWER7

32 core server





memory activation feature codes

Upgrades - PEX & Side-by-side RPQ

When you need to run two systems in parallel while upgrading …

- Option A PEX (Power Exchange)
  - Flexible duration Trade-in through Global Finance
  - Additional software licensing required
  - Results in machine with **different serial number**

- Option B Only available for 770/780

  Side-by-Side RPQ Upgrade
  - For Power 770 or Power 780 RPQ #847212
  - 1 - 8 weeks duration
  - No additional IBM Power Systems licensing required

    Other non IBM Power Systems licensing may be needed
  - Results in machine with the **same serial number**
  - Requires a "roll-in – roll-out" upgrade --- **Not available for Power 795**

Start one server present
STEP 1 Bring in model upgrade or 2nd server
STEP 2 Run in parallel, gradually moving workload to new server
STEP 3 Ship original server back to IBM
Done one server present

Host Ethernet Adapter Considerations

- The Power 770/780 offers a choice of integrated host Ethernet adapters (HEA). The system supports virtualization of these integrated Ethernet adapters without the use of VIO Server.
- Now **four** port groups per HEA
- Choice of integrated HEA I/O options; one per enclosure
  - #1803 Quad 1 Gb Ethernet (copper)
  - #1804 Dual 10 Gb Optical (SR) + Dual 1 Gb Ethernet (copper)
  - #1813 Dual 10 Gb Copper Twinax + Dual 1 Gb Ethernet (copper)
- Each CEC enclosure must contain one Virtual Ethernet (HEA) Integrated I/O port card.
- One physical port per port group

Twinax Cable

for # 1813

SFP+ Copper (Twinax) cable

SFP+ OPTIC

This Twinax is referred to as "Direct Attach" or "SFP+ Copper". This type of connection is able to transmit at 10 Gigabit full duplex speed over 5 meter distances. *Suitable for rack-to-rack connections*.

HEA Port Groups & Physical Ports

One physical port per port group

Feature	Description	Port Group A	Port Group B	Port Group C	Port Group D
#1803	Quad 1 Gb Ethernet (copper)	1 1G	1 1G	1 1G	1 1G
#1804	Dual 10 Gb Optical (SR) + Dual 1 Gb Ethernet (copper)	1 10G	1 10G	1 1G	1 1G
#1813	Dual 10 Gb Copper Twinax + Dual 1 Gb Ethernet (copper)	1 10G	1 10G	1 1G	1 1G

Table 1. Number of physical ports available per port group on HEA adapters

Adapter **port groups** each support up to 16 virtual Ethernet ports (depending upon MCS setting) for up to 64 logical ports per 770/780 enclosure.

Power 770 and Power 780 CBU for i

Offering for IBM i HA/DR environments

Primary = 780, 770, 595, 570

IBM i processor license entitlement

Temporary transfers

5250 Enterprise Enablements

CBU Power 770

- Offering for IBM i HA/DR environments

Primary = 780, 595

IBM i processor license entitlement

Temporary transfers

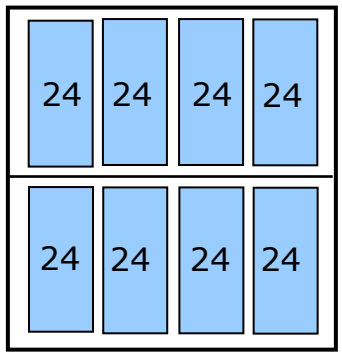
5250 Enterprise Enablements

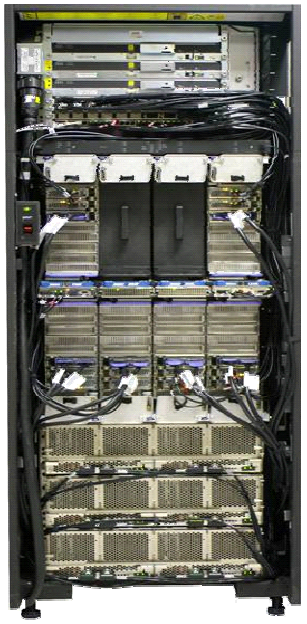
CBU Power 780

595-to-795 Upgrades

Power 795 - extensive scalability & new flexibility

- 192-core system
- 24-core books
- POWER7 6-core processors

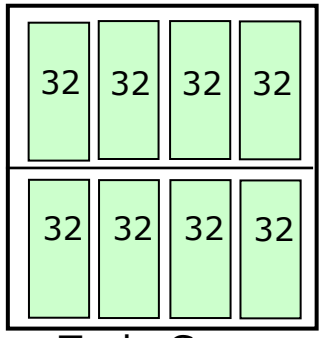




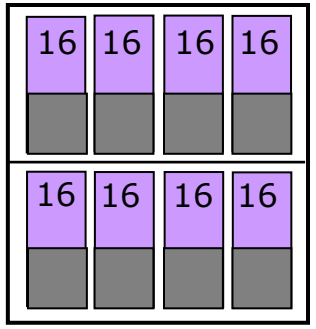
- Up to 32 IB I/O drawers
- Support for AIX, i, Linux
- Advanced EnergyScale Power Management & 480V AC or High-voltage DC capable input

- 256-core system
- 32-core books
- POWER7 8-core processors
- MaxCore or TurboCore Modes

MaxCore



TurboCore

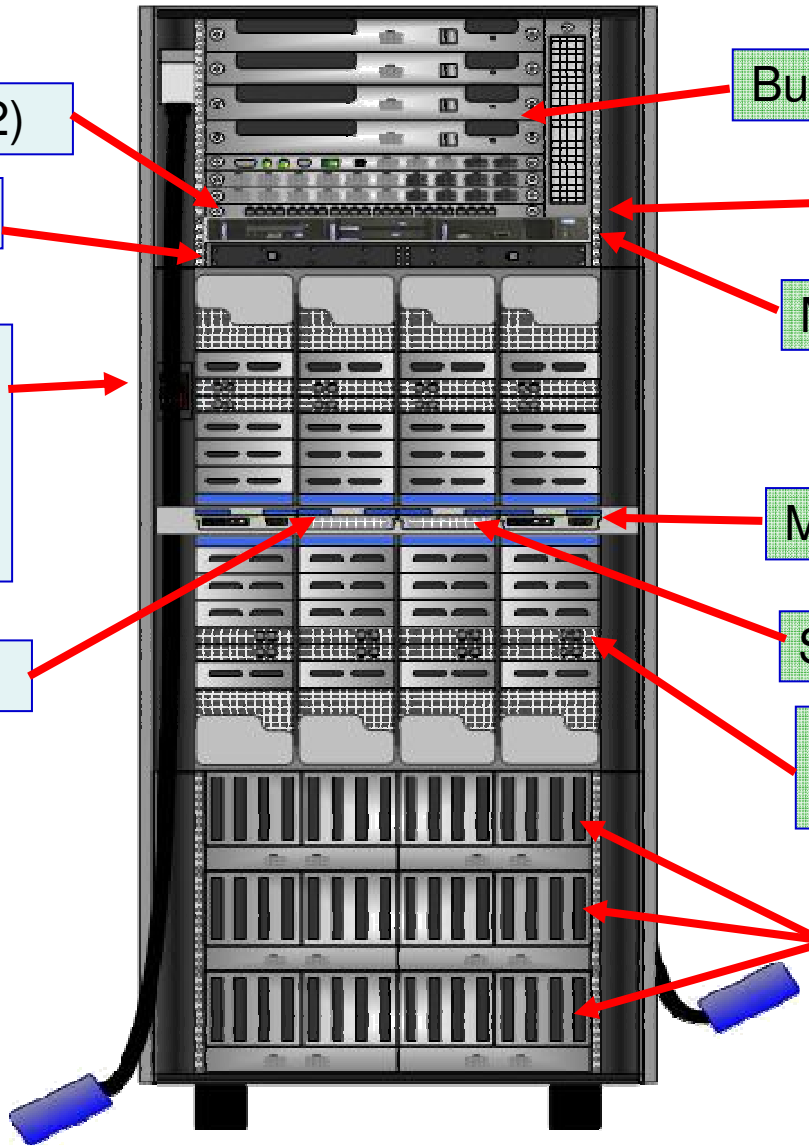


All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Power 795 Upgrade Components

Replaced

- Bulk Power Controllers (2)
- Light Panel
- Processor Books (8)
  - •CPU
  - •Memory
  - •Node Controllers (2)
  - •DCA (2)
- System Controllers (2)



Retained

- Bulk Power Supply
- Network Hub
- Media Drawer
- Midplane
- System Clocks (2)
- 12X GX Adapters Up to 4 per node
- 12X I/O Drawers (up to 3)

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Processor Book Conversions

Example of 4 processor books

POWER6 (9119-FHA)

16 core server shown

1 feat code = 1 processor book (8 core)	8 cores
1 feat code = 1 processor book (8 core)	16 cores
1 feat code = 1 processor book (8 core)	24 cores
1 feat code = 1 processor book (8 core)	32 cores

processor activation feature codes

Feature Convert 1 to 1

Feature convert

POWER7

32 core server shown

1 feat code = 1 process book (24 or 32 core)	24 or 32 cores
1 feat code = 1 process book (24 or 32 core)	48 or 64 cores
1 feat code = 1 process book (24 or 32 core)	72 or 96 cores
1 feat code = 1 process book (24 or 32 core)	96 or 128 cores

processor activation feature codes

Processor Upgrade Paths Supported

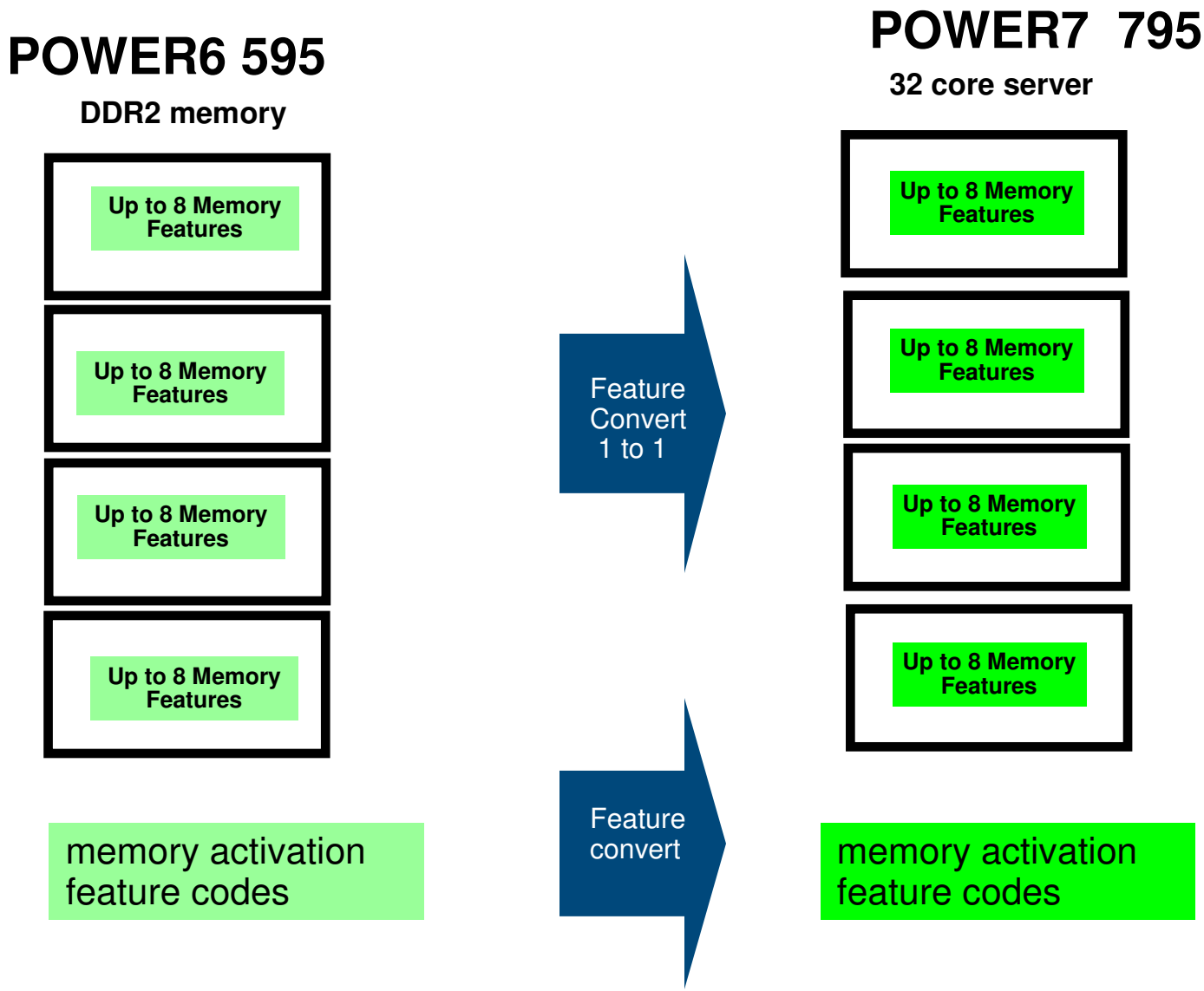
P6 to P7

	Processor Feature Codes	
	#4702 – P7 Node 3.5 GHz 0/24WAY*	#4700 – P7 Node 4.14/3.86 GHz 0/32WAY*
#4694 - P6 Node 4.2 GHz 0/8WAY	YES	YES
#4695 - P6 Node 5.0 GHz 0/8WAY	NO	YES
#4705– P6 Node 5.0 GHz 0/8WAY	NO	YES

*** NOTE**

1. **4 Core (16-Way) @ 4.14 GHz w/TurboCore**
2. **8 Core (32-Way) @ 3.86 GHz**
3. **6 Core (24-Way) @ 3.5 GHz**
4. **Active Energy Manager (AEM) will allow nominal frequency to increase 10% above the nominal (Not an orderable feature)**

Memory Feature Conversions



Memory Conversion Paths

P6 to P7	#5600 - 0/32GB (4x8GB) DDR3 1066MHZ	#5601 - 0/64GB (4x16GB) DDR3 1066MHZ	#5602 - 0/128GB (4x32GB) DDR3 1066MHZ
#5693 - 0/4GB DDR2 (4X1GB) 667MHZ DIMMS	YES	NO	NO
#5694 - 0/8GB DDR2 (4X2GB) 667MHZ, DIMMS	YES	YES	NO
#5695 - 0/16GB DDR2 (4X4GB) 533MHZ Tall DIMMS	YES	YES	YES
#5696 - 0/32GB DDR2 (4X8GB) 400MHZ Tall/Stacked DIMMS	NO	YES	YES
#5697 - 0/64GB DDR2 (4X16GB), 400MHZ, DIMMS	NO	NO	YES
#8201 -256KB Bundle 32 OF FC 5694 100% Activated	#8211 -256KB Bundle (8x #5600) 100% Activated		
#8202–256KB Bundle 16 OF FC 5695 100% Activated	#8211 -256KB Bundle (8x #5600) 100% Activated	#8218 -256GB Bundle (4x #5601) 100% Activated	
#8203- 512GB Bundle 32 OF FC 5695 100% Activated	#8214 - 512GB Bundle (16x #5600) 100% Activated	#8219 - 512GB Bundle (8x #5601) 100% Activated	#8221 - 1024GB Bundle (8x #5602) 100% Activated
#8204 - 512GB Bundle 16 OF FC 5696 100% Activated		#8219 - 512GB Bundle (8x #5601) 100% Activated	#8221 - 1024GB Bundle (8x #5602) 100% Activated

Processor Activation Conversions

P6 to P7	#4714– P7 Node 3.5 GHz 0/24WAY Single Proc. Activation (#4702)	#4713– P7 Node 4.14/3.86 GHz 0/32WAY Single Proc. Activation (#4700)
#4754 P6 FHA 4.2 GHz 1Way Activation	YES	YES
#4755 P6 FHA 5.0 GHz 1Way Activation	YES	YES

DDR2 Memory Activation Conversions

P6 to P7	#8212 - 1GB DDR3 Permanent Activation	#8213 - 100 x 1GB DDR3 Permanent Activation
#5680 Nebula DDR2 1GB Permanent Activation	YES	NO
#5681 Nebula DDR2 256 x 1GB Permanent Activation	NO	YES
#5684 Nebula DDR2 100 x 1GB Permanent Activation	NO	YES

Power 795 Maximum Partition Size

Processor Book(s)	1	2	3	*4*	5	6	7	8
24-core #4702	24	24	24	*96*	120	128	128	128
32-core #4700 std	32	32	32	*128*	128	128	128	128
32-core #4700 std	32	32	32	*128*	160[1]	192[2]	224[3]	256[4]
32-core #4700 TurboCore	--	--	48	*64*	80	96	112	128

In addition the HMC SPPL setting of *32* (packed mode) will limit maximum partition size to **32 cores** (8-core chip) or 24 cores (6-core chip). The *Maximum* setting (scattered mode) must be set if larger partition sizes are desired.

[1] Partition sizes greater than 128-cores (up to 256-cores) will require a software key to enable. Purchase will require lab services pre-analysis as a prerequisite to shipment. Software key requires feature #1256 to be installed.
[2] Ibid
[3] Ibid
[4] Ibid

Power 795 Memory Plugging Recommendations

A minimum of 2 to a maximum of 64 DDR3 POWER7 CoD Memory features are supported:
- ✓0/32 GB DDR3 Memory (4X8GB) DIMMs - 1,066 MHz - POWER7 CoD Memory (#5600)
- ✓0/64 GB DDR3 Memory (4X16GB) DIMMs - 1,066 MHz - POWER7 CoD Memory (#5601)
- ✓0/128 GB DDR3 Memory (4X32GB) DIMMs - 1,066 MHz - POWER7 CoD Memory (#5602)

For an 8 core module

If the customer plans to run OLTP type workload, database or a highly virtualized workload

If all 8 cores per module are licensed (i.e. all cores in the system),
all memory sites should be plugged

If 3/4 of the cores are licensed,
3/4 or more of the memory sites should be plugged

If 1/2 of the cores are licensed,
1/2 or more of the memory sites should be plugged.

For a 6 core module

If the customer plans to run OLTP type workload, database or a highly virtualized workload

If all 6 cores per module are licensed (i.e. all cores in the system),
3/4 or more of the memory sites should be plugged

If 3/4 of the cores are licensed,
1/2 or more of the memory sites should be plugged.

If 1/2 of the cores are licensed,
1/2 or more of the memory sites should be plugged.

In TurboCore mode

It is generally recommended that 1/2 or more of the memory sites be plugged

Memory feature codes contain 4 DIMMs, so to plug all memory sites,
there should be 8 memory features per book.

To plug 1/2 the memory sites,
there should be 4 memory features per book.

Memory Planning
Active Memory Mirroring for Hypervisor

- Active Memory Mirroring for Hypervisor is a new RAS feature being introduced on the Power 795 (only) that is designed to eliminate the potential for a complete system outage as a result of an uncorrectable error in memory.
- Enabled by default
- System will maintain two identical copies of the system hypervisor in memory at all times. Both copies are simultaneously updated with any changes. In the event of a memory failure on the primary copy, the second copy will be automatically invoked and a notification sent to IBM via the Electronic Service Agent (ESA).
- **If you are mirroring memory, 1/8 to 1/4 of the total systems memory could be consumed, and appropriate memory planning must be performed.**
- Use the System Planning Tool to assist in memory planning for Active memory Mirroring

Power Cords

New power cords may be required…

All new build CEC racks with **four or more** processor books,
and model FHB **upgraded CEC racks with five or more** processor books:

Feature	Breaker Rating	Voltage	 Geography	Gauge	Plug
8696	100A	200-240	USA, Canada, Japan	4AWG	100A
8695	100A	200-240	World Trade	4AWG	none
8694	63A	380-415	World Trade	6AWG	none
8699	60A	480	USA, Canada, Japan	6AWG	60A

Upgrade Times

- FHA-to-FHB upgrades are performed non-concurrently.
  - An outage will be required as estimated in the table below
- Actual time will be influenced by the number of processor books being installed and the number of IBM SSRs involved.
- Time for the I/O migration activity, which is *not included* in the table below, will depend on the complexity (number of drawers, GX adapters, replugging, recabling, etc.).
- Preparation time (unpacking, staging, packing, etc.) is also not included in the times below.

Nodes	Hours
1-2	5
3-4	6
5-6	7
7-8	8

Power 795 OS / HMC Requirements

- For current prerequisites of operating systems/firmware/HMC see the IBM Prerequisite site https://www-912.ibm.com/e_dir/eServerPrereq.nsf
- Make sure pre-requisite levels are loaded before upgrading to POWER7
- HMC
  - HMC V7 R720 is the minimum level for POWER7 support
  - HMC used to manage any POWER7 processor based server, must be a CR3 or later model rack-mount HMC or C05 or later deskside HMC.
  - If IBM Systems Director is used to manage an HMC or if the HMC manages more than 254 partitions, the HMC should have 3GB of RAM minimum and be a CR3 model or later rack-mount, or C06 or later deskside.
  - The HMC is capable of supporting multiple Power servers.
    Verify that the firmware level on earlier POWER servers will be at a minimum firmware level or greater required to be managed by a POWER7 HMC:
    POWER6 servers must be at server firmware level 350_049, or higher
    POWER5 servers must be at server firmware level 240_382, or higher

Power 795 OS / HMC Requirements, cont'd

- If installing the AIX operating system (one of these):
  - AIX V7.1
  - AIX V6.1, with the 6100-06 Technology Level
  - AIX V5.3, with the 5300-12 Technology Level and Service Pack 1, or later
  - AIX V5.3, with the 5300-11 Technology Level and Service Pack 5, or later
  - AIX V5.3, with the 5300-10 Technology Level and Service Pack 5, or later
- If installing the IBM i operating system:
  - IBM i 7.1, or later
  - IBM i 6.1, with 6.1.1 machine code, or later
- If installing the Linux operating system, one of these:
  - Red Hat Enterprise Linux AP 5 Update 5 for POWER, or later
  - SUSE Linux Enterprise Server 10 Service Pack 3, or later
  - SUSE Linux Enterprise Server 11 Service Pack 1, or later
- If installing VIOS:
  - VIOS 2.2, or later
- If installing Java 1.4.2 on POWER7 servers:
  There are unique considerations when running Java 1.4.2 on POWER7. For best exploitation of the outstanding performance capabilities and most recent improvements of POWER7 technology, IBM recommends upgrading Java-based applications to Java 6 or Java 5 whenever possible. For more information, refer to the following Web site
  http://www.ibm.com/developerworks/java/jdk/aix/service.html
- If installing IBM Systems Director:
  IBM Systems Director 6.2.0.1, or later

Software Preparation Requirements

- ✓ Prior to the CEC upgrade, the 595 software must be upgraded *and tested* running the same HMC, VIOS, OS, middleware, and application software as required for the for the Power 795
- ✓ The 9119-FHA should be upgraded to the latest available firmware and power levels prior to the upgrade
- ✓ The upgraded 9119-FHB server will require a new firmware level. The proposed HMC must be at a compatible code level as per the Power Code matrix at: https://www14.software.ibm.com/webapp/set2/sas/f/power5cm/power7.html
- ✓ Prior to the CEC upgrade IBM and ISV software—including application, infrastructure, and middleware software must be upgraded to the appropriate POWER7-supported release levels

Upgrade Guidelines
The ability to restore ALL 595 partitions on the 795 requires…

- ✓ The number of **processors** available on the 795 to be greater than or equal to the number of processors required for all LPARs on the 595 system.
- ✓ The amount of **memory** overhead on the 795 is greater than the amount required on the 595 system. The upgraded system must be able to accommodate this increased memory usage. NOTE: The growth in memory requirements is driven by default enablement of Active Memory Mirroring & increased use of memory to support new features typical in new releases.
- ✓ Only **I/O** assigned and connected to GX IB hubs can be in use on the 595 system, and ALL I/O & GX IB hubs will be migrated from the 595 to the 795. If the 595 LPARs use I/O connected via RIO, the RIO drawers MUST be removed, partitions redefined to utilize only IB-attached I/O, and the system IPL'd following removal of the RIO-attached drawers. An MES order that results in less physical GX slots than GX IB adapters must be carefully reviewed.
- ✓ In the event that equivalent resources (i.e. amount of memory, processors, I/O &/or GX Hubs) are not available following the upgrade, the customer may still be able to migrate all partitions (e.g. LPARs using shared processor pools, LPARs with lower minimum memory limits that fit with-in available resources, reconfiguration of I/O, etc). These situations require careful scrutiny, and the possibility exists that *some or all of the partitions may need to be manually recreated on the 795 system.*

Power 795 I/O Drawers

Drawers sold as new & supported	Attachment
5803 12X I/O Drawer PCIe 5873 12X I/O Drawer PCIe, No Disk	12X DDR
5886 EXP 12S Expansion Drawer	SAS
5724 DVD/Tape SAS External Storage Unit	SAS
7214-1U2 Tape and Optical Storage Device Enclosure	SAS
5797 12X I/O Drawer PCI-X, with repeater	12X SDR
5720 DVD/Tape SAS External Storage Unit	SAS

Drawers supported ONLY	Attachment
5798 12X I/O Drawer PCI-X, no repeater	12X SDR
5786, 7031-D24 TotalStorage EXP24 Disk Dwr	SCSI

Power 595 I/O Drawers/Towers Not Supported on Power 795

Drawer Type	Form Factor	Bus Type	PCI slots	SCSI / SAS drives
0588 / 5088	8U-19”	HSL / RIO	14 PCI-X	0 Disks
0595	4U-19”	HSL / RIO	7 PCI-X	12 SCSI
5094/5294	Tower	HSL / RIO	14 PCI-X	90 SCSI
5096/5296	Tower	HSL / RIO	14 PCI-X	0 Disks
5790	4U-19”	HSL / RIO	6 PCI-X	0 Disks
7311-D11	4U-19”	HSL / RIO	6 PCI-X	0 Disks
5791	4U-24”	HSL / RIO	20 PCI-X	16 SCSI*
5794	4U-24”	HSL / RIO	20 PCI-X	8 SCSI*
7040-61D	4U-24”	HSL / RIO	20 PCI-X	16 SCSI*

No HSL / RIO attached I/O drawers
(No IOPs)

POWER7 Systems I/O

External IBM Disk	Interface	MTM	OS support
DS8700	FC	2421, 2422, 2423, 2424 – 941/94E	AIX, Linux, IBM i
DS8300	FC	2107 - 922/932 2421 – 932, 2422 - 932 2423 – 932, 2424 - 932	AIX, Linux, IBM i
DS8100	FC	2107 - 921/931 2421 – 931, 2422 - 931 2423 – 931, 2424 - 931	AIX, Linux, IBM i
DS6800	FC	1750-522	AIX, Linux, IBM i
DS5300	FC	1818-53A	AIX, Linux, IBM i
DS5100	FC	1818-51A	AIX, Linux, IBM i
DS5020	FC	1814-20A	AIX, Linux, (IBM i w/ VIOS)
DS4800	FC	1815-80A/82A/84A/88A	AIX, Linux, (IBM i w/ VIOS)
DS4700	FC	1814-70A/72A/70S/72S	AIX, Linux, (IBM i w/ VIOS)
DS4200	FC	1814-7VA	AIX/Linux
DS3400	FC	1726-41X/42X/41E/42E	AIX, Linux, (IBM i w/ VIOS)
DS3300	iSCSI	1726 – 31X, 32X, 32T	Linux
DS3200	SAS	1726- 21X/22X	Blades - AIX/Linux (IBM i w/VIOS)
N-series	FC, iSCSI	2859, 2862, 2866, 2867	AIX, Linux, (IBM i to IFS only)
XIV	FC	2810 – A14	AIX, Linux, (IBM i w/ VIOS)

These are the controller boxes, there are also expansion frames for all these offerings

Upgrade Plan 9119-FHA to 9119-FHB

- Model Conversion upgrades will preserve the customer's System Serial Number
  - Processor upgrade will use a feature conversion process which preserves Maintenance Charges (one FHA feature to one new FHB feature)
    - ✓ Due to increased FHB processor book density, customer may choose to *not* convert all FHA books.
    - ✓ Unconverted FHA processor books remain the property of the customer (and cannot be upgraded later)
  - Memory upgrade will use feature conversion process (one FHA feature to one FHB feature)
  - Processor/Memory activations will use feature conversion process (one FHA feature to one FHB feature)

- IBM will reuse all existing 9119-FHA racks
  - CEC rack with FHA BPRs, BPDs & HUB reused - BPC replaced with new FHB BPC & new firmware
  - Powered Expansion rack (#6954) with FHA BPRs, BPDs & HUB reused - BPC replaced with FHB BPC & new firmware
  - Door Assemblies will not be returned, but rather reworked by SSR with Hollywood name
  - 600v DC NOT Supported with FHA to FHB Model Upgrade
    - ✓ FHB RPQ will support replacing an upgraded FHB CEC/Powered rack w/POWER7 new rack
  - Bolt-on rack (#6953)

- 9119-FHA POWER6 Features Converted to 9119-FHB POWER7 Features will be returned to IBM
  - POWER6 Processors and DDR2 Memory
  - POWER6 BPC & HUB

- Capacity Back Up Model Conversion is Not Supported
  - POWER6 595 CBU system must be converted to Non-CBU w/RPQ 8Axxxx before Model Upgrade

Changing primary I/O drawer from PCI-X to a 12X?

- **RPQ 8A1768** enables changing a PCI-X primary I/O drawer to a 12X PCIe primary I/O drawer, #5803
- Changing primary I/O drawer types from XG to PCIe requires that RPQ 8A1768 ship the (longer) power cable required to power a 9119 Media Drawer

IBM POWER7 STATEMENTS OF DIRECTION

- **Non-Raised Floor and Overhead Cabling Support:**
  IBM plans to support installations of selected Power 795 configurations in non-raised floor environments. IBM also plans to deliver options to route communications cables overhead through the top of a rack. Availability is planned for first half of 2011.
- **AIX 6.1, Prior TL support**
  On Power 795 servers, IBM plans to support the following AIX technology levels:
  AIX V6.1 with the 6100-05 Technology Level and Service Pack 3, or later
  AIX V6.1 with the 6100-04 Technology Level and Service Pack 7, or later
  AIX V6.1 with the 6100-03 Technology Level and Service Pack 7, or later
- **Red Hat Enterprise Linux 6**
  Red Hat intends for the upcoming release of Red Hat Enterprise Linux 6 to support the latest POWER7 models, Power 710, 720, 730, 740, and 795.
- **Power 795 Partition Level Energy Savings**
  IBM plans to provide the capability to establish partition level energy management for dedicated processor partitions and the shared processor pool. This enhancement is designed to increase the energy efficiency of virtualized environments on Power servers by allowing clients to enable EnergyScaleTM power management options for a subset of processor cores in a POWER7 system.
- **In addition, the availability of certain features will be staged as follows:**
  April 30, 2011 for Hot-node Add, Hot-node Upgrade (memory), Hot-node Repair, Hot GX Adapter Repair, Concurrent GX Adapter Add, Concurrent System Controller Repair, and Active Memory Mirroring for Hypervisor support for AIX 16GB pages

5250 Enterprise and IBM i Entitlements

POWER6 595 Being Upgraded

- **5250 Enterprise Enablement features**
- **IBM licensing – OS, License Programs, etc**

Other servers being migrated/consolidated

- **5250 Enterprise Enablement features**
- **IBM licensing – OS, License Programs, etc**

Transfer With Upgrade

Transfer With RPQ

POWER7 795

POWER7 Server Solution Assurance Review Requirements

Model	Pre-Sale TDA	Pre-Install TDA
Power 795	Expert-level review is Mandatory	Expert-level review is Mandatory with order hold

- *Mandatory* means the Expert-level TDA must be performed and is subject to audit. All Power 780/795 orders (worldwide) will default to "hold" status. Hold status will be lifted by completion of TDA as documented in the TDA Confirmation Form.

Model	Pre-Sale TDA	Pre-Install TDA
Power 770	Expert-level review is mandatory	Expert-level review is mandatory
Power 780	Expert-level review is mandatory	Expert-level review is mandatory *with order hold*

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Revised September 26, 2006

Special notices (cont.)

Revised February 9, 2010

Notes on performance estimates

rPerf for AIX

rPerf (Relative Performance) is an estimate of commercial processing performance relative to other IBM UNIX systems. It is derived from an IBM analytical model which uses characteristics from IBM internal workloads, TPC and SPEC benchmarks. The rPerf model is not intended to represent any specific public benchmark results and should not be reasonably used in that way. The model simulates some of the system operations such as CPU, cache and memory. However, the model does not simulate disk or network I/O operations.

- rPerf estimates are calculated based on systems with the latest levels of AIX and other pertinent software at the time of system announcement. Actual performance will vary based on application and configuration specifics. The IBM eServer pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to approximate relative IBM UNIX commercial processing performance, actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Note that the rPerf methodology used for the POWER6 systems is identical to that used for the POWER5 systems. Variations in incremental system performance may be observed in commercial workloads due to changes in the underlying system architecture.

All performance estimates are provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, and application sizing guides to evaluate the performance of a system they are considering buying. For additional information about rPerf, contact your local IBM office or IBM authorized reseller.

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CPW for IBM i

Commercial Processing Workload (CPW) is a relative measure of performance of processors running the IBM i operating system. Performance in customer environments may vary. The value is based on maximum configurations. More performance information is available in the Performance Capabilities Reference at: www.ibm.com/systems/i/solutions/perfmgmt/resource.html

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