



Power Systems Advanced Technical Skills

## BladeCenter PS700/701/702 POWER7 Blades

**Trina Bunting**

**Power Systems**

**Advanced Technical Skills**

**May 27, 2010**



# Power BladeCenter Wiki

Country/region [select] Terms of use  
All of dW Search

Home Products Services & solutions Support & downloads My account  
developerworks > My developerWorks > Dashboard > Power Systems > HOME > POWER Blades

developerWorks  
AIX and UNIX  
Information Mgmt  
Lotus  
Rational  
Tivoli  
WebSphere  
Java™ technology  
Linux  
Open source  
SOA and Web services  
Web development  
XML  
Feedback

Overview Connect Spaces Forums Wikis  
**POWER Blades**  
View Edit Attachments (2) Info

Added by Nicolette, last edited by TrinaB on Apr 23, 2010 (view change)  
Labels: (None) EDIT

**IBM POWER processor-based Blades**

**Hardware Blades**

- IBM BladeCenter PS700, PS701, PS702 Express
- IBM BladeCenter JS23 and JS43 Express
- IBM BladeCenter JS12 Express
- IBM BladeCenter JS22 Express
- IBM Server Proven - Compatibility for BladeCenter Products

**IBM i on Blades**

- About IBM i on Blades
- IBM i on Power Blades Readme File
- IBM i on Power Blades Supported Environments

**BladeCenter Components**

- IBM BladeCenter Chassis
- IBM BladeCenter Ethernet Switch Modules
- IBM BladeCenter FCoE Switch Modules
- IBM BladeCenter Fibre Channel Switch Modules
- IBM BladeCenter InfiniBand Switch Modules
- IBM BladeCenter SAS Switch Modules
- IBM BNT 10-port 10GB Ethernet Switch Module

**Downloads**

- Power6 Blade Servers Firmware
- Virtual IO Server 2.1
- Advanced Management Module Firmware Matrix
- BIOS/Firmware InfiniBand UpdateFirmware V3.03
- SAS Integrated Controller Microcode V03200066

**Documentation**

**Installation Guides**

- Installation and User's Guide - IBM BladeCenter JS23, JS43 (Type 7778)
- Problem and Determination Service Guide - IBM BladeCenter JS23, JS43 (Type 7778)
- Installation and User's Guide - IBM BladeCenter JS22 (Type 7998)
- Installation and User's Guide - IBM BladeCenter JS21 (Type 8844, 7998)
- Installation and User's Guide - IBM BladeCenter JS20 (Type 8842)

**Serial Over LAN**

- Serial Over LAN (SOL) Setup Guide

**Redpapers / Redbooks**

- IBM BladeCenter JS23 and JS24 Implementation Guide
- IBM BladeCenter JS12 and JS22 Implementation Guide
- IBM BladeCenter JS21 Technical Overview and Introduction
- IBM BladeCenter JS21: The POWER of Blade Innovation
- IBM eServer BladeCenter JS20 Programming Environment
- IBM BladeCenter eServer JS20
- IBM BladeCenter Products and Technology
- Integrated Virtualization Manager
- IBM System p Advanced Power Virtualization Best Practices
- IBM PowerVM Live Partition Mobility
- Implementing the IBM BladeCenter Chassis S
- BNT Virtual Fabric 10Gb Switch Module for IBM BladeCenter
- 10Gb Ethernet Pass-Thru Module for IBM BladeCenter
- Implementing the QLogic Intelligent Pass-thru Module for IBM BladeCenter
- 10Gb Ethernet Pass-thru Module
- IBM BladeCenter Layer 2-7 Network Switching

Related links  
• ISV resources  
• alphaWorks (emerging technologies)  
• IBM Academic Initiative  
• IBM Virtual Innovation Center (Bus. Partners)  
• IBM Redbooks  
• IBM Press books  
• IBM communities

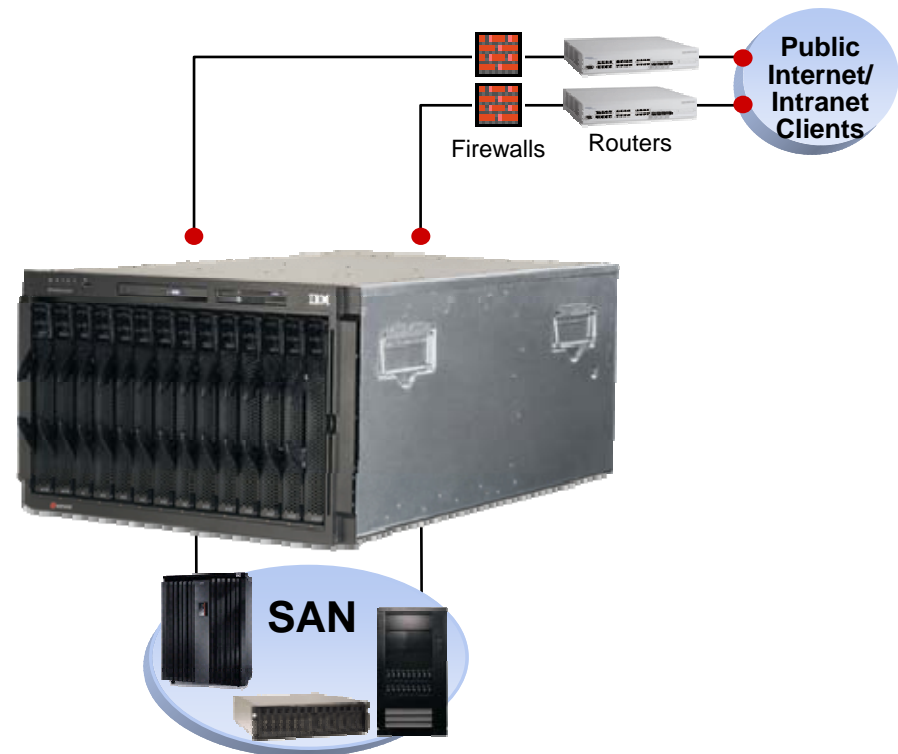
Local sites  
• developerWorks 中国  
• developerWorks Japan  
• developerWorks 한국  
• developerWorks Россия  
• developerWorks Brasil  
• developerWorks en español  
• developerWorks Việt Nam

<https://www.ibm.com/developerworks/wikis/display/WikiPtype/POWER+Blades>

# IBM BladeCenter can help you take control!

*IBM BladeCenter is a simple integration of servers, storage and networking. Its innovative, open design offers a true alternative to sprawling racks and overheated server rooms*

- ❑ Multiple server management tools reduced to one
- ❑ Storage Area Network (SAN) cables removed
- ❑ Local Area Network (LAN) cables removed
- ❑ Multiple external switches integrated inside the chassis
- ❑ Keyboard, Video, Mouse (KVM) costs eliminated (not supported with POWER7 Blades)
- ❑ Power Distribution Unit (PDU) costs drastically reduced
- ❑ Energy, heat and floor space conserved



# IBM BladeCenter

Delivering the innovation to simplify your IT environment

## Best in class Power Blade Portfolio

- The most popular UNIX Blade servers\*
- Industry leading Virtualization optimized for POWER
- First scalable POWER7-based Blades...
  - Most scalable & highest performance Power Blades ever!



## Best in class x86 Blade portfolio

- Complete x86 blade portfolio
- Virtualization optimized offerings for x86
- First scalable x86 blade offering
  - Enterprise x-Architecture technology



**IBM delivers the most robust blade server technology in the market – spanning the industry’s leading architectures: POWER and x86**

\* IDC 4Q2009 Server Tracker RISC/Itanium blades



# POWER7 Blades



# BladeCenter PS700



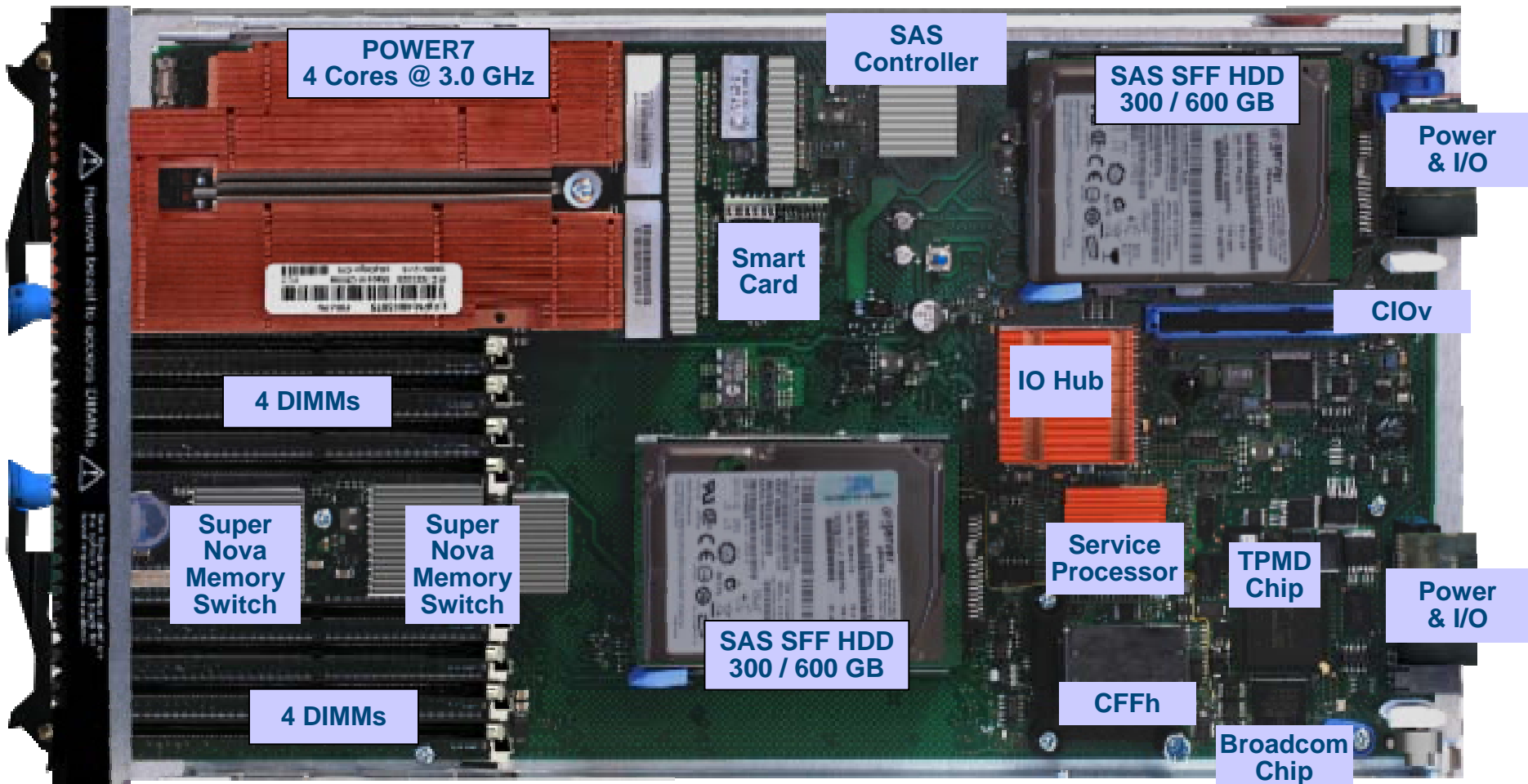
Model # 8406-70Y



PS700 Blade	
Architecture	4 Core / Single Socket / 3.0 GHz Single Socket
L3 Cache	4MB per core
DDR3 Memory	8GB to 64 GB (8 DIMMs)
DASD / Bays	0 - 2 SAS HDD
Daughter Card Options	One CIOv & one CFFh ( PCIe Adapters )
Integrated Options	Dual Port 10/100/1000 Ethernet, SAS Controller, USB
Fiber Support	Yes ( via Blade center )
Media Bays	1 Blade Center
Redundant Power	Yes Blade Center
Redundant Cooling	Yes Blade Center
Service Processor	Yes
Virtualization	PowerVM Partition Mobility
Systems Management	IBM Systems Director and CSM IBM EnergyScale™ Blade Center Open Fabric Manager Extreme Cloud Administrative Toolkit (xCAT) V2
OS Support	AIX, Linux, IBM i
rPerf	45
Chassis Support	BCH, BCHT, BCS, BCE IBM i supports BCH & BCS only

# BladeCenter PS700 Layout

GA 6/4/2010



# BladeCenter PS701



Model # 8406-71Y

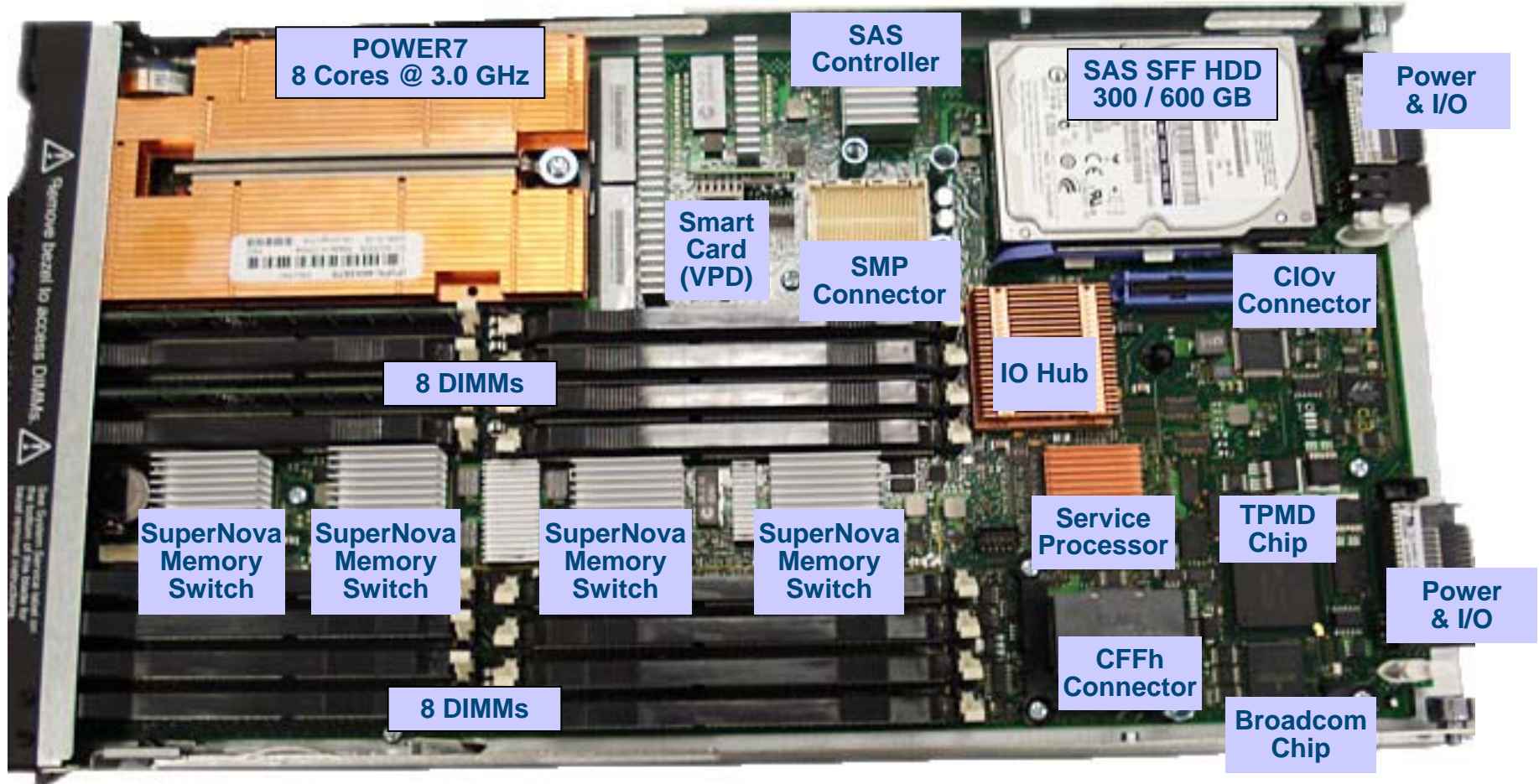


PS701 Blade	
Architecture	8-Core / Single Socket / 3.0 GHz Single Socket
L3 Cache	4MB per core
DDR3 Memory	8GB to 128GB (16 DIMMs)
DASD / Bays	0 - 1 SAS HDD
Daughter Card Options	One CIOv & one CFFh ( PCIe Adapters )
Integrated Options	Dual Port 10/100/1000 Ethernet SAS Controller, USB
Fiber Support	Yes ( via Blade center )
Media Bays	1 Blade Center
Redundant Power	Yes Blade Center
Redundant Cooling	Yes Blade Center
Service Processor	Yes
Virtualization	PowerVM Partition Mobility
Systems Management	IBM Systems Director and CSM IBM EnergyScale™ Blade Center Open Fabric Manager Extreme Cloud Administrative Toolkit (xCAT) V2
OS Support	AIX, Linux, IBM i
rPerf	81
BC Chassis	BCH, BCHT, BCS IBM i supports BCH & BCS only

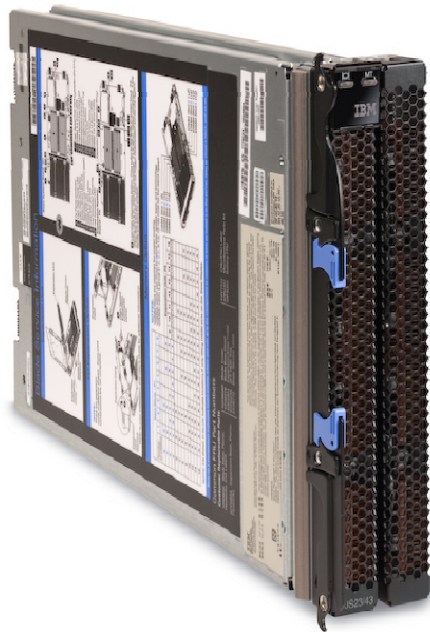


# BladeCenter PS701 Layout

GA 6/4/2010



# BladeCenter PS702

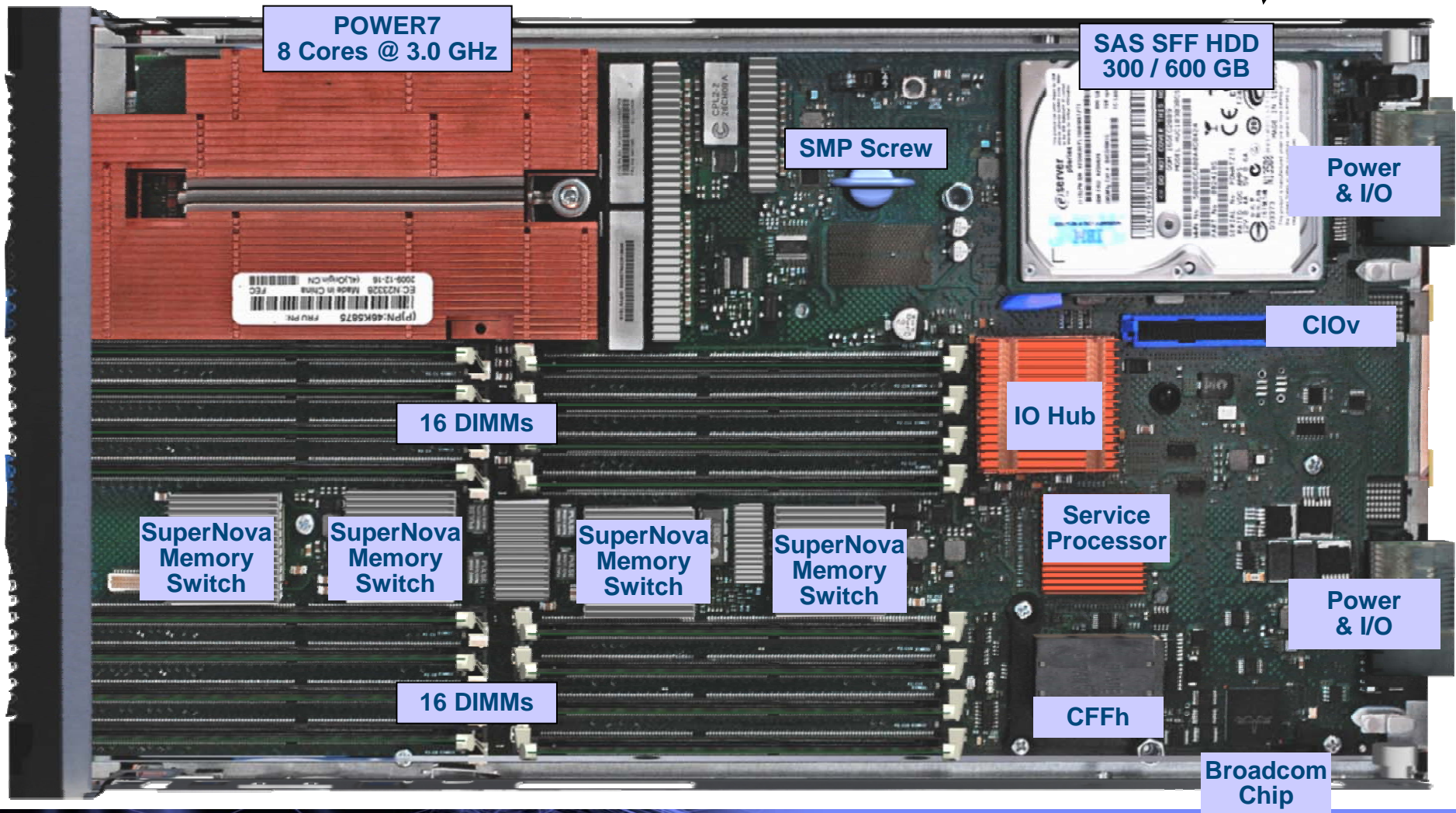
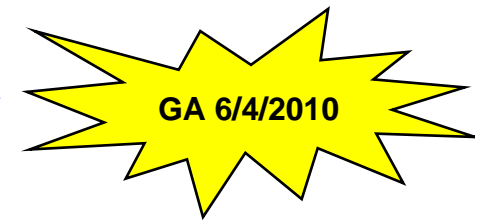


Model # 8406-71Y + FC 8358 = PS702



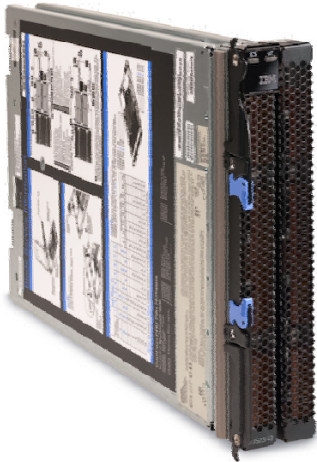
PS702 Blade	
Architecture	16-Cores / Two sockets / 3.0 GHz Two sockets (8 cores / socket )
L3 Cache	4MB per core
DDR3 Memory	8GB to 256GB (32 DIMMs)
DASD / Bays	0 - 2 SAS HDD
Daughter Card Options	Two CIOv & two CFFh ( PCIe Adapters )
Integrated Options	Two Dual Port 10/100/1000 Ethernet SAS Controller (base PS701), USB
Fiber Support	Yes ( via BladeCenter )
Media Bays	1 BladeCenter
Redundant Power	Yes Blade Center
Redundant Cooling	Yes Blade Center
Service Processor	Yes
Virtualization	PowerVM Partition Mobility
Systems Management	IBM Systems Director and CSM IBM EnergyScale™ Blade Center Open Fabric Manager Extreme Cloud Administrative Toolkit (xCAT) V2
OS Support	AIX, Linux, IBM i
rPerf	154
BC Chassis	BCH, BCHT, BCS IBM i supports BCH & BCS only

# Multi-Processor Expansion Unit Layout



# BladeCenter PS702 16-Core Blade

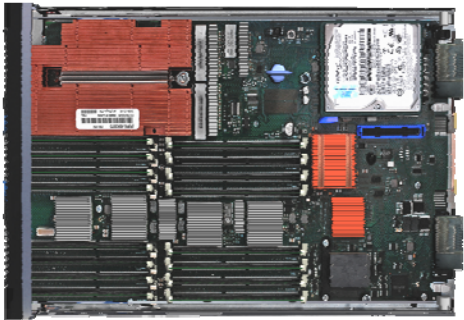
**PS701  
(Base Blade)**  
+  
**Multi-Processing  
Expansion Unit**  
=  
**PS702 Blade**



PS701

+

Expansion Unit

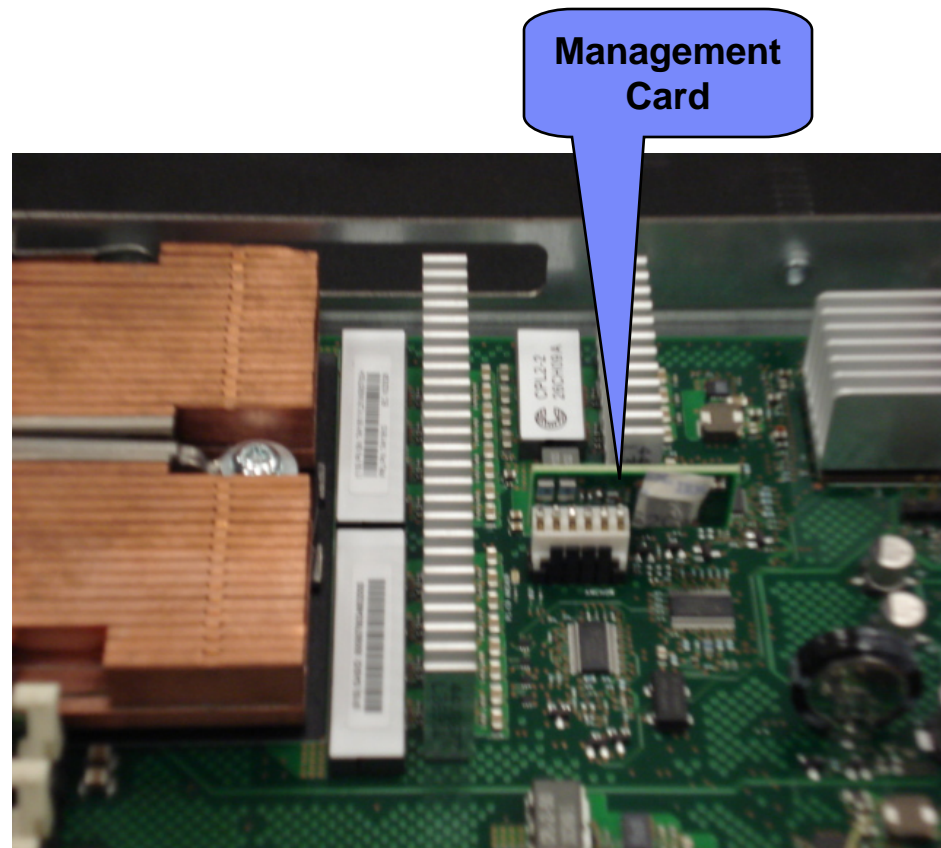


Model # 8406-71Y + FC 8358 = PS702

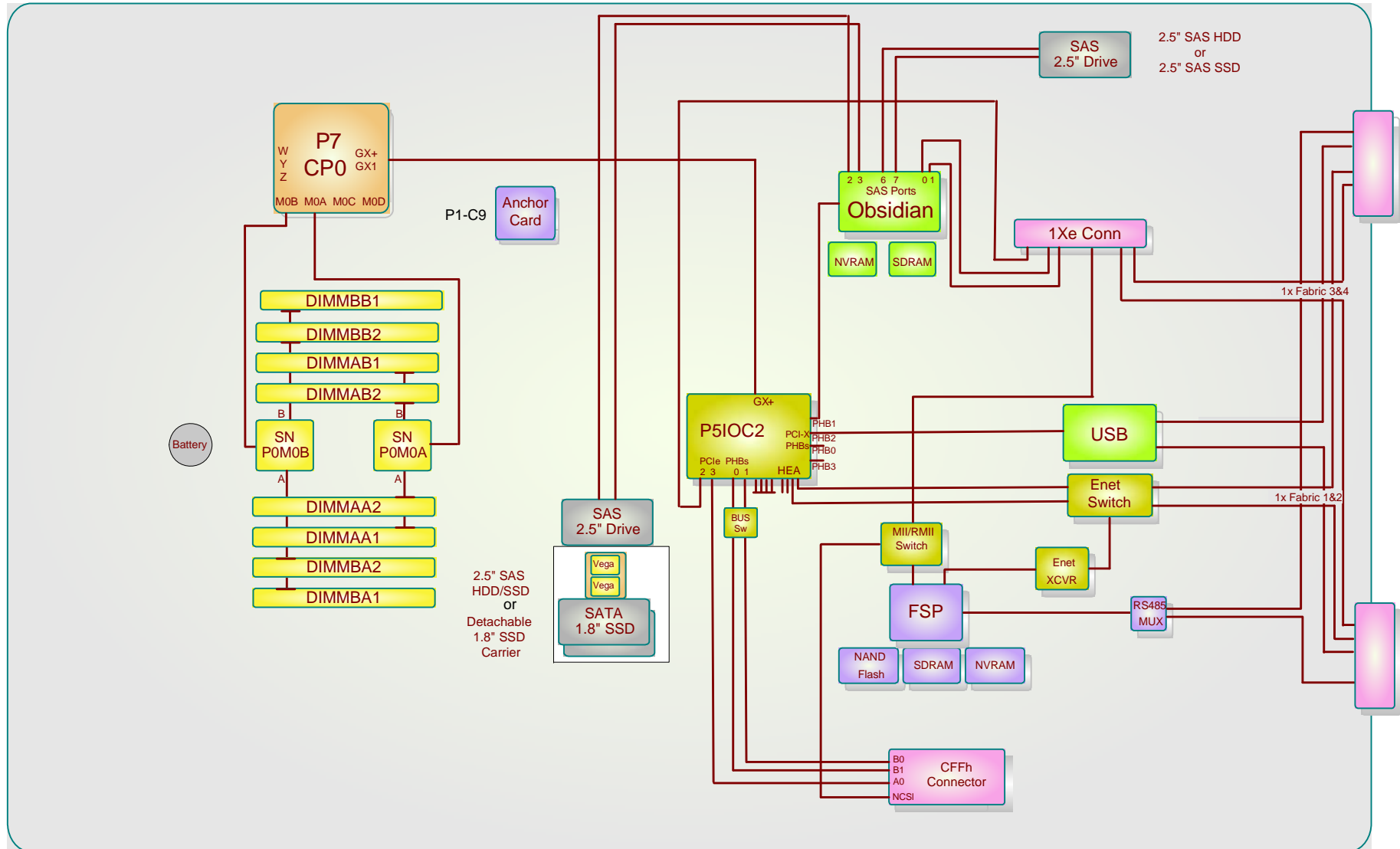


## Smart Card

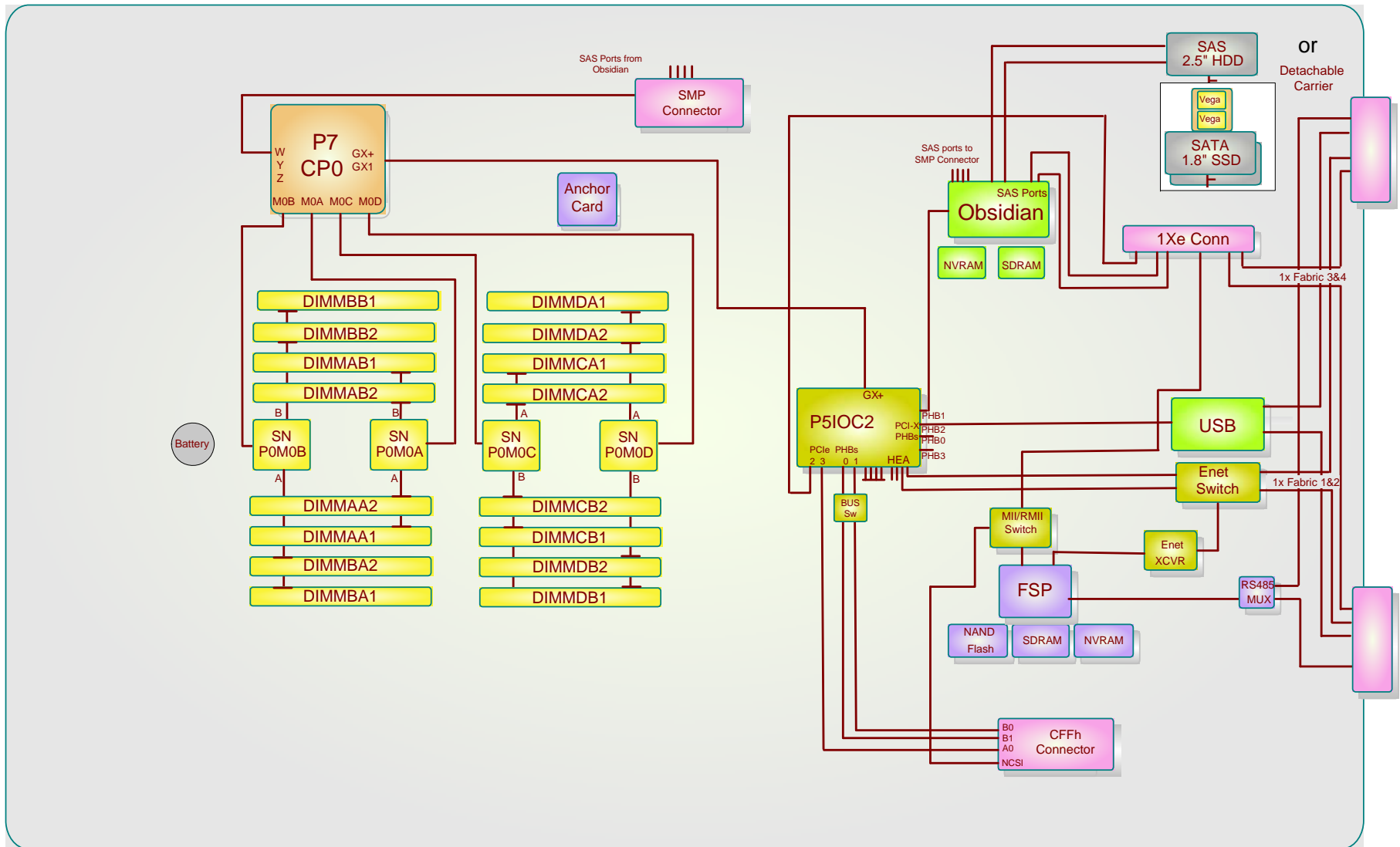
- ❑ **Management Card that contains information that did not fit on the Planar**
  - System Vital Product Data (VPD) Chip
- ❑ **If the planar is replaced make sure you transfer the smart card to the new planar or the blade may not boot**



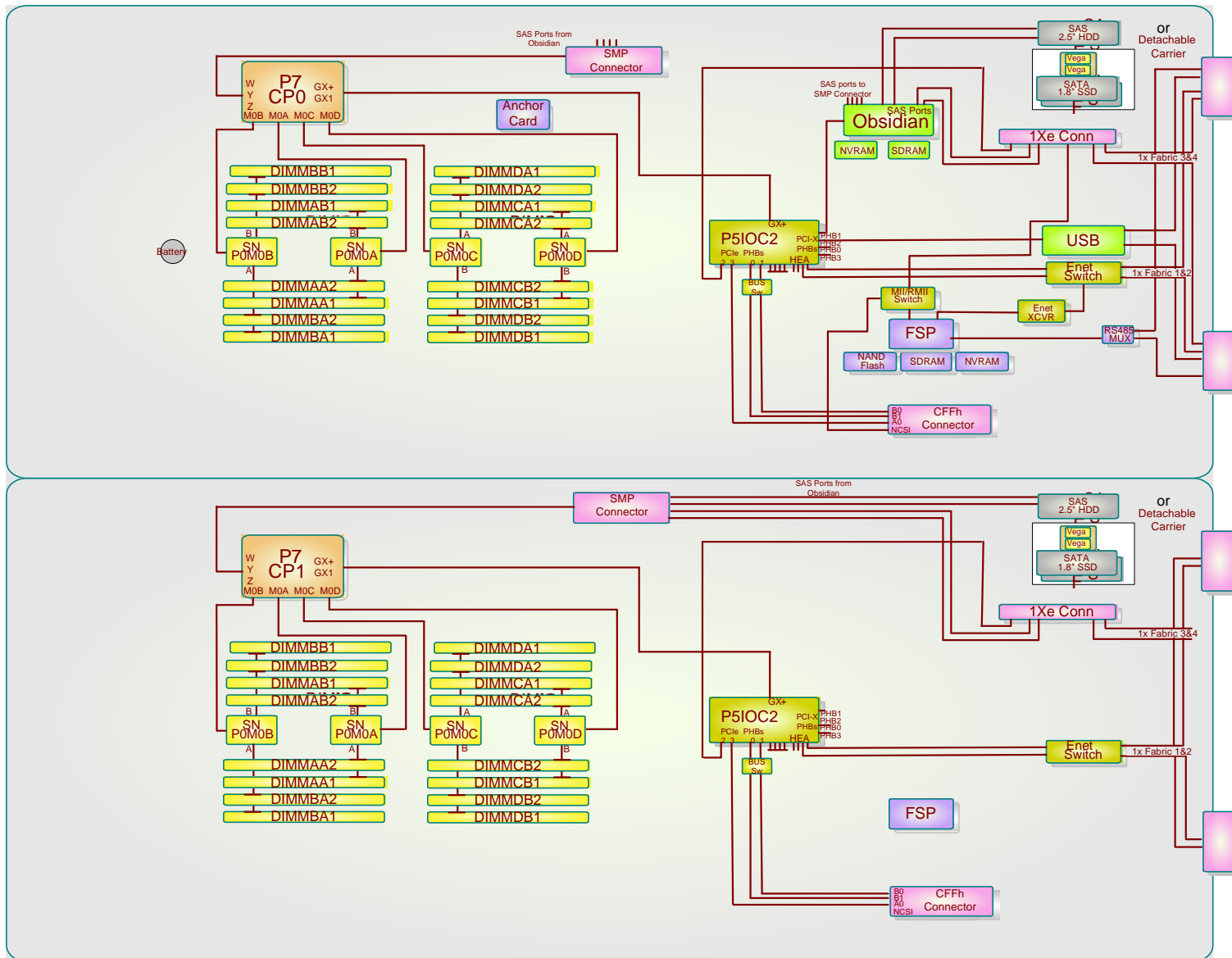
# Architecture – PS700



# Architecture – PS701



# Architecture – PS702





## Functional Comparison of PS700/PS701/PS702

Components or Functions	PS700 Blade	PS701 Blade	PS702 Blade	Comments
Single Core Module: 3.0GHz L3 Cache: 4MB per core	1 socket 4 cores	1 socket 8 cores	2 sockets 16 cores	PS700 plus SMP FC is PS702
DDR3 VLP (Very Low Profile) DIMMs	8 DIMMs 64GB max	16 DIMMs 128GB max	32 DIMMs 256GB max	4GB & 8GB @ 1066MHz
Service Processor	Yes	Yes	Yes on base	Full function Service processor is on the base
Graphics	No	No	No	
IO Bridge	Yes	Yes	Yes	
Integrated Ethernet Ports	2	2	4	
USB Ports	2	2	4	
SAS Storage Controller	Yes	Yes	Yes on base	RAID 0,1 in PS700 and PS702
SSD	No	No	No	
Operator Panel	Yes	Yes	Yes on base	
PCI-X Daughter Card (CFFv)	No	No	No	
High Speed Expansion Card (CFFh)	Yes	Yes	Yes	One CFFh card on base and one CFFh card on expansion unit
1Xe Daughter Card CIOv	Yes	Yes	Yes	One CIOv card on base and one CIOv card on expansion unit
Smart Management Card	Yes	Yes	Yes on base	

# BladeCenter PS Blade Overview

	IBM BladeCenter PS700 Express	IBM BladeCenter PS701 Express	IBM BladeCenter PS702 Express
Architecture	POWER7 4-Core (1 Socket x 4 Cores per blade) Single Wide	POWER7 8-core (1 Socket x 8 Cores per blade) Single Wide	POWER7 16-core (1 Socket x 8 Cores per blade) Double Wide
Memory	8GB to 64GB DDR3 (Chipkill) 4GB & 8GB @1066MHz	8GB to 128GB DDR3 (Chipkill) 4GB & 8GB @1066MHz	8GB to 256GB DDR3 (Chipkill) 4GB & 8GB @1066MHz
DASD / Bays	0-2 SAS disk	0-1 SAS disk	0-2 SAS disk
Expansion Card Slots	1 PCI-E CIOv Expansion Card 1 PCI-E CFFh ExpansionCard	1 PCI-E CIOv Expansion Card 1 PCI-E CFFh ExpansionCard	2 PCI-E CIOv Expansion Card 2 PCI-E CFFh ExpansionCard
Integrated Features	Dual Port 1Gb Ethernet SAS Controller Two USB ports	Dual Port 1Gb Ethernet SAS Controller Two USB ports	Quad Port 1Gb Ethernet SAS Controller Four USB ports
Scalability Support	No	Yes – Factory or Customer Upgrade	Yes – Factory or Customer Upgrade
Fibre Support	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)
Redundant Power	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)
Redundant Cooling	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)	Yes (via BladeCenter Chassis)
Service Processor	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)
Virtualization	IBM PowerVM (optional Editions)	IBM PowerVM (optional Editions)	IBM PowerVM (optional Editions)
Systems Management	IBM Director, CSM, xCAT IBM EnergyScale Technology	IBM Director, CSM, xCAT IBM EnergyScale Technology	IBM Director, CSM, xCAT IBM EnergyScale Technology
OS Support	AIX, i, Linux	AIX, i, Linux	AIX, i, Linux
rPerf	45	81	154
BladeCenter Chassis Support	BCE, BCH, BCHT, BCS IBM i - BCH, BCS only	BCH, BCHT, BCS IBM i – BCH, BCS only	BCH, BCHT, BCS IBM i – BCH, BCS only

# Power Blade Portfolio Comparison

	BladeCenter JS12 Express	PS700	BladeCenter JS23 Express	PS701	BladeCenter JS43 Express	PS702
Architecture	3.8 GHz POWER6 SCM 2-core (1 Socket x 2 Cores) Single Wide	POWER7 4-Core (1 Socket x 4 Cores) Single Wide	4.2GHz POWER6 DCM 4 core (2 Socket x 2 cores) Single Wide	POWER7 8-core (1 Socket x 8 Cores ) Single Wide	4.2GHz POWER6 DCM 8-core (4 Socket x 2 cores) Double Wide	POWER7 16-core (1 Socket x 8 Cores per blade) Double Wide
Memory	4GB to 64 GB DDR2 (Chipkill)	8GB to 64GB DDR3 (Chipkill) 4GB@1066MHz, 8GB@1066MHz	4GB to 64GB DDR2 (Chipkill)	8GB to 128GB DDR3 (Chipkill) 4GB@1066MHz, 8GB@1066MHz	4GB to 128GB DDR2 (Chipkill)	8GB to 256GB DDR3 (Chipkill) 4GB@1066MHz, 8GB@1066MHz
DASD / Bays	0-2 SAS disk (73 or 146 GB)	0-2 SAS disk (300 or 600GB)	0-1 SAS disk (73,146 or 300GB) or 0-1 Solid State (69GB)	0-1 SAS disk (300 or 600GB)	0- 2 SAS disk (73 ,146 or 300GB) or 0-2 Solid State (69GB)	0-2 SAS disk (300 or 600GB)
Daughter Cards	1 PCIe CIOv Expansion Card 1 PCIe CFFh Expansion Card	1 PCIe CIOv Expansion Card 1 PCIe CFFh Expansion Card	1 PCIe CIOv Expansion Card 1 PCIe CFFh Expansion Card	1 PCIe CIOv Expansion Card 1 PCIe CFFh Expansion Card	2 PCIe CIOv Expansion Card 2 PCIe CFFh Expansion Card	2 PCIe CIOv Expansion Card 2 PCIe CFFh Expansion Card
Integrated Features	Keyboard, Video and Mouse Dual Port 1Gb Ethernet SAS Controller USB	Dual Port 1Gb Ethernet SAS Controller USB	Keyboard, Video and Mouse Dual Port 1Gb Ethernet SAS Controller USB	Dual Port 1Gb Ethernet SAS Controller USB	Keyboard, Video and Mouse Quad Port 1Gb Ethernet SAS Controller USB	Quad Port 1Gb Ethernet SAS Controller USB
Scalability Support	No	No	Yes – Factory or Customer Upgrade	Yes – Factory or Customer Upgrade	Yes – Factory or Customer Upgrade	Yes – Factory or Customer Upgrade
Fibre Support	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)
Redundant Power	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)
Redundant Cooling	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)	Yes (via BladeCenter)
Service Processor	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)	FSP1 (IPMI, SOL)
Virtualization	PowerVM Standard Edition built-in	IBM PowerVM	PowerVM Standard Edition built-in	IBM PowerVM	PowerVM Standard Edition built-in	IBM PowerVM
Systems Management	IBM Director and CSM IBM EnergyScale Technology	IBM Director , CSM, xCAT IBM EnergyScale Technology	IBM Director and CSM IBM EnergyScale Technology	IBM Director, CSM, xCAT IBM EnergyScale Technology	IBM Director and CSM IBM EnergyScale Technology	IBM Director, CSM, xCAT IBM EnergyScale Technology
OS Support	AIX, i, Linux	AIX, i, Linux	AIX, i, Linux	AIX, i, Linux	AIX, i, Linux	AIX, i, Linux
rPerf	14.7	45	36.3	81	68.20	154
CPW	7,100	21,100	14,400	42,100	24,040	76,300
BladeCenter Chassis Support	BCE, BCH, BCHT, BCT, BCS	BCE, BCH, BCHT, BCS	BCH, BCHT, BCS	BCH, BCHT, BCS	BCH, BCHT, BCS	BCH, BCHT, BCS

## PS700/701/702 Speeds and Feeds

- ❑ **POWER7 Dual Core Design**
  - L1: 32 KB I Cache / 32 KB D Cache
  - L2: 256KB Cache per core
  - L3: 4MB Cache per core
  - Execution units: 1 BR/CR, 4 FXUs, 2 LSUs, 2 FPU, 1 Decimal Unit, 1 VMX
  - Advanced Power Management Functions
- ❑ **Operational Conditions on the PS700**
  - 1 Chips with 4 cores hence 4 cores running in SMP mode
  - 3.0 GHz core frequency
  - Can operate up to 150 Watts power dissipation per chip
  - 34.1GB/s Maximum memory bandwidth
- ❑ **Operational Conditions on the PS701**
  - 1 Chips with 8 cores hence 8 cores running in SMP mode
  - 3.0 GHz core frequency
  - Can operate up to 150 Watts power dissipation per chip
  - 68.2GB/s Maximum memory bandwidth
- ❑ **Operational Conditions on the PS702**
  - 2 Chips with 16 cores hence 32 cores running in SMP mode
  - 3.0 GHz core frequency
  - Can operate up to 150 Watts power dissipation per chip`
  - 136.4GB/s Maximum memory bandwidth
- ❑ **GX+ Bus with elastic interface to P5IOC2 Hub/Bridge**
  - 4 Bytes Wide, each direction w/ECC
  - Runs at 1:1, 2:1 or 4:1 ratio to processor frequency at 1.05 GHz

## PS700/PS701/PS702 Internal Disk Drives

- **Up to two internal 2.5" 10,000 RPM Small Form Factor Serial Attached SCSI (SAS) Hard Drives for up to 1.2 TB Storage on the PS702**
  - SCSI based enterprise reliability combined with increased performance
  - Server has Serial Attached SCSI SAS Interface
- **RAID Support**
  - RAID 0 (striping), RAID 1 (mirroring) are supported
  - Two Disk Drives are required for RAID Support (PS700 or PS702)
  - RAID 10 requires four internal disk drives and is **NOT supported**
  - RAID can be configured with dissimilar drives capacities



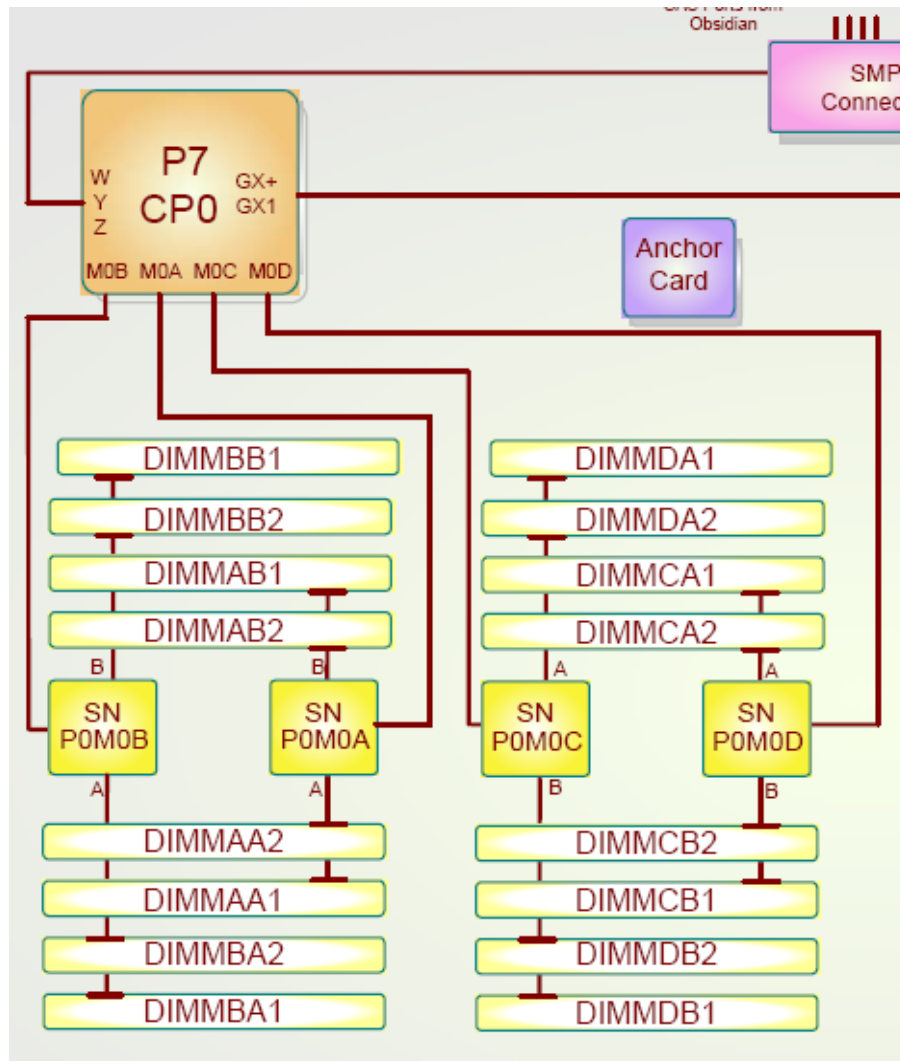
Description	PS700 Max Qty	PS701 Max Qty	PS702 Max Qty
300GB 2.5 "SAS 10K RPM SFF	2	1	2
600GB 2.5" SAS 10K RPM SFF	2	1	2

# Memory

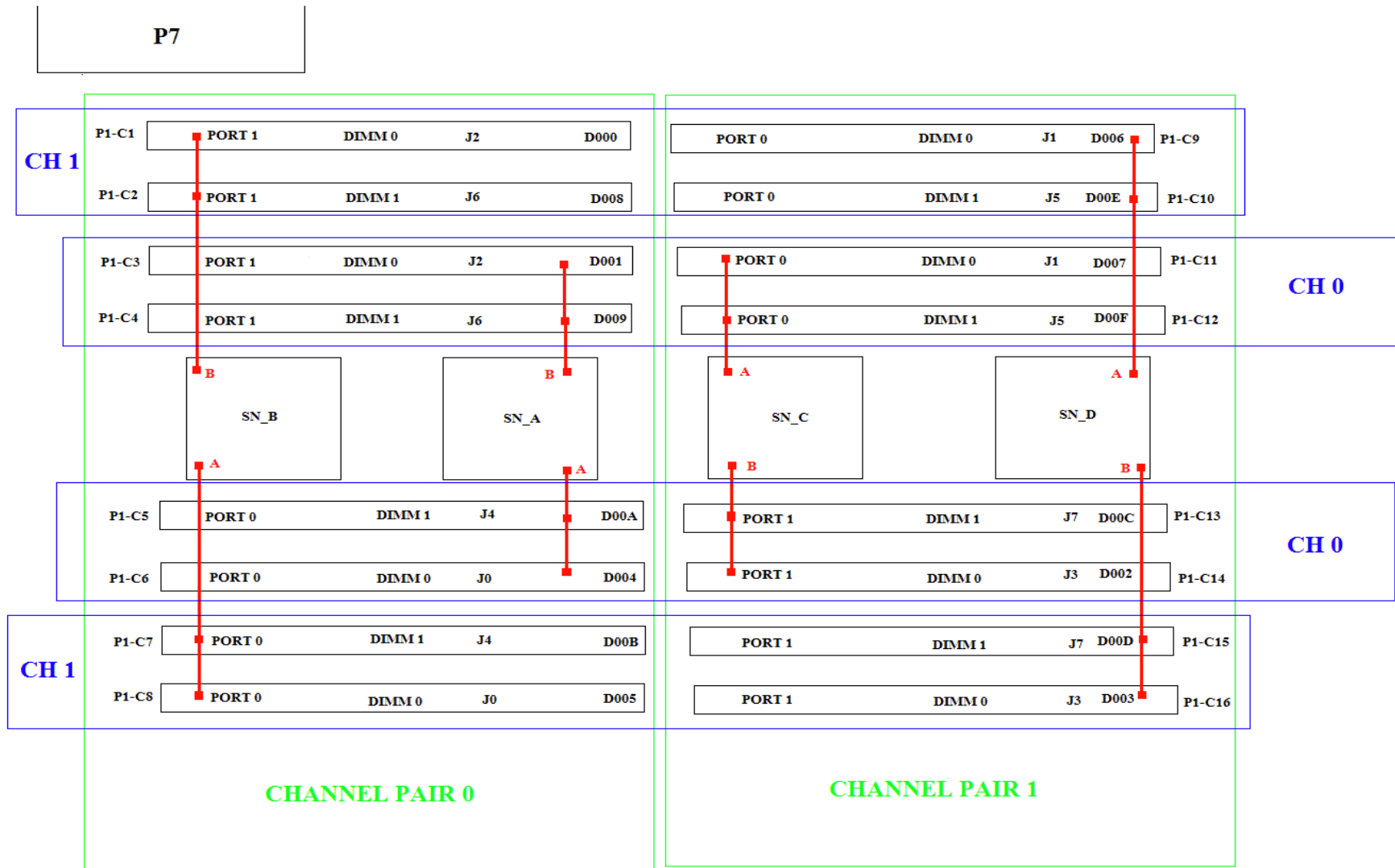
- ❑ **8GB standard up to 256GB max (PS702) ECC DDR3**
  - 4GB (2 x 4GB) DDR3 1066 MHz Very Low Profile (VLP) DIMMs
  - 8GB (2 x 8GB) DDR3 1066 MHz Very Low Profile (VLP) DIMMs
  - 256KB L2 Cache per core
  - 4MB L3 Cache per core
  
- ❑ **Support for up to 32 DDR3 DIMMs (PS702 only)**
  
- ❑ **Memory DIMMs can be mixed**

# PS701 & PS702 Memory Controller Wiring

The DIMMs are wired to the SuperNova switches, which in turn are wired to the processor chips, as shown in the figure below.



# POWER7 Blade Memory Mapping





## DIMM Plug Rules (update)

- ❑ DIMMs are installed in pairs
- ❑ Memory feature numbers may be mixed within a system according to the DIMM plug order and the DIMM-size-population-rules
- ❑ As pairs of DIMMs are added each DIMM in the incrementally-added pair must be the same size
- ❑ After the first eight of sixteen DIMMs are installed, each quad of DIMMs is completed using DIMMs of the same size
  - Each of the following sets of four location codes on single wide blade can be comprised of either 4GB or 8GB DIMMs. All DIMMs within each set are the same size:
    - P1-C1, P1-C2, P1-C3, P1-C4
    - P1-C5, P1-C6, P1-C7, P1-C8
    - P1-C9, P1-C10, P1-C11, P1-C12
    - P1-C13, P1-C14, P1-C15, P1-C16
  - Each of the following sets of four location codes on double wide blade can be comprised of either 4GB or 8GB DIMMs. All DIMMs within each set are the same size:
    - P2-C1, P2-C2, P2-C3, P2-C4
    - P2-C5, P2-C6, P2-C7, P2-C8
    - P2-C9, P2-C10, P2-C11, P2-C12
    - P2-C13, P2-C14, P2-C15, P2-C16

## Memory Placement Rules – Single Wide Blade

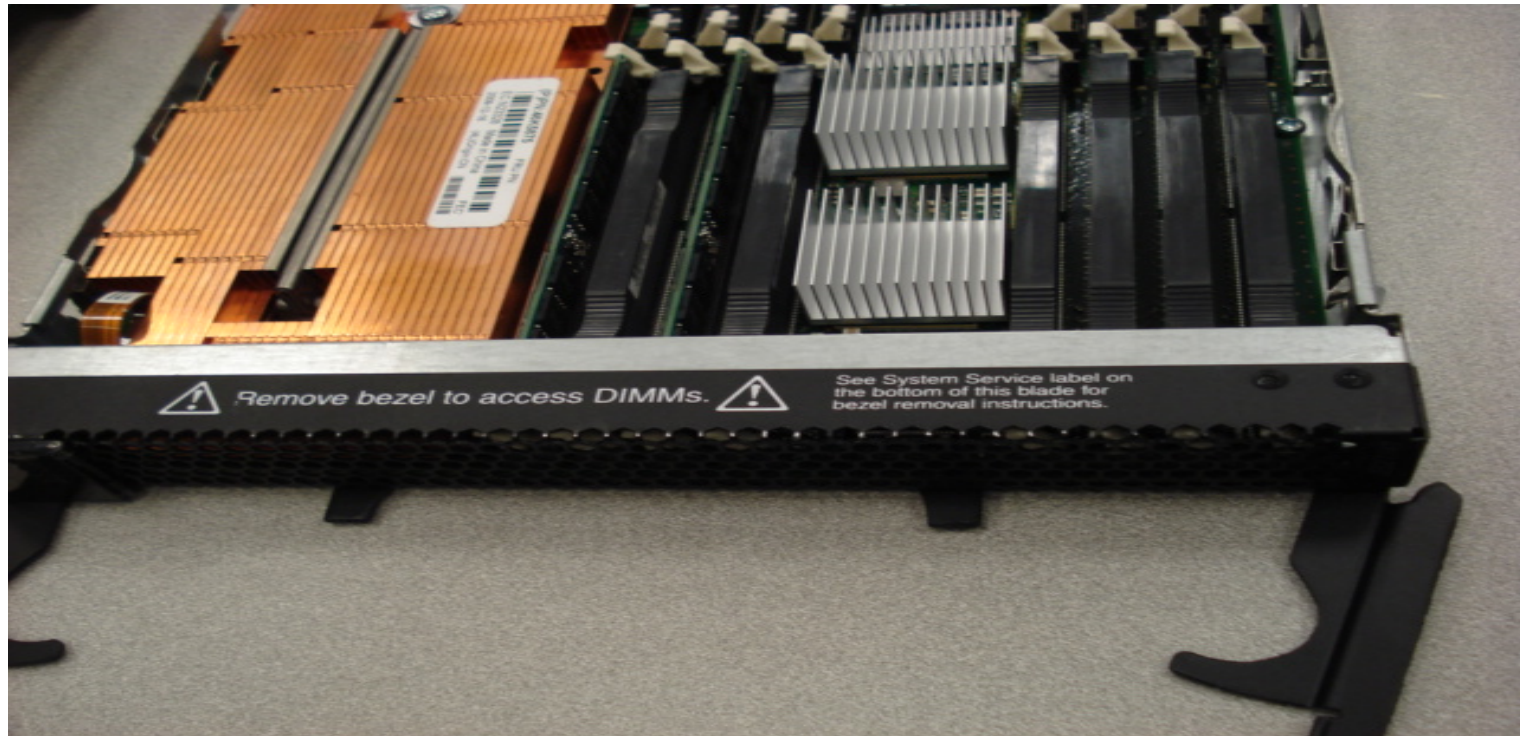
# of DIMMS	DIMM Plug Rules
2	P1-C1, P1-C3
4	P1-C1, P1-C3, P1-C14, P1-C16
6	P1-C1, P1-C3, P1-C6, P1-C8, P1-C14, P1-C16
8	P1-C1, P1-C3, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16
10	P1-C1, P1-C2, P1-C3, P1-C4, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16
12	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16
14	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C13, P1-C14, P1-C15, P1-C16
16	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C10, P1-C11, P1-C12, P1-C13, P1-C14, P1-C15, P1-C16

# Memory Placement Rules – Double Wide Blade

# of DIMMS	DIMM Plug Rules	
2	P1-C1, P1-C3	-
4	P1-C1, P1-C3	P2-C1, P2-C3
6	P1-C1, P1-C3, P1-C14, P1-C16	P2-C1, P2-C3
8	P1-C1, P1-C3, P1-C14, P1-C16	P2-C1, P2-C3, P2-C14, P2-C16
10	P1-C1, P1-C3, P1-C6, P1-C8, P1-C14, P1-C16	P2-C1, P2-C3, P2-C14, P2-C16
12	P1-C1, P1-C3, P1-C6, P1-C8, P1-C14, P1-C16	P2-C1, P2-C3, P2-C6, P2-C8, P2-C14, P2-C16
14	P1-C1, P1-C3, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C3, P2-C6, P2-C8, P2-C14, P2-C16
16	P1-C1, P1-C3, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C3, P2-C6, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
18	P1-C1, P1-C2, P1-C3, P1-C4, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C3, P2-C6, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
20	P1-C1, P1-C2, P1-C3, P1-C4, P1-C6, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C6, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
22	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C6, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
24	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C14, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C5, P2-C6, P2-C7, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
26	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C13, P1-C14, P1-C15, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C5, P2-C6, P2-C7, P2-C8, P2-C9, P2-C11, P2-C14, P2-C16
28	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C11, P1-C13, P1-C14, P1-C15, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C5, P2-C6, P2-C7, P2-C8, P2-C9, P2-C11, P2-C13, P2-C14, P2-C15, P2-C16
30	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C10, P1-C11, P1-C12, P1-C13, P1-C14, P1-C15, P1-C16	P2-C1, P2-C2, P2-C3, P2-C4, P2-C5, P2-C6, P2-C7, P2-C8, P2-C9, P2-C11, P2-C13, P2-C14, P2-C15, P2-C16
32	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C10, P1-C11, P1-C12, P1-C13, P1-C14, P1-C15, P1-C16	P1-C1, P1-C2, P1-C3, P1-C4, P1-C5, P1-C6, P1-C7, P1-C8, P1-C9, P1-C10, P1-C11, P1-C12, P1-C13, P1-C14, P1-C15, P1-C16

## Memory Installation Tip

- ❑ Remove bezel to access DIMMs



# Expansion Card Form Factors Supported

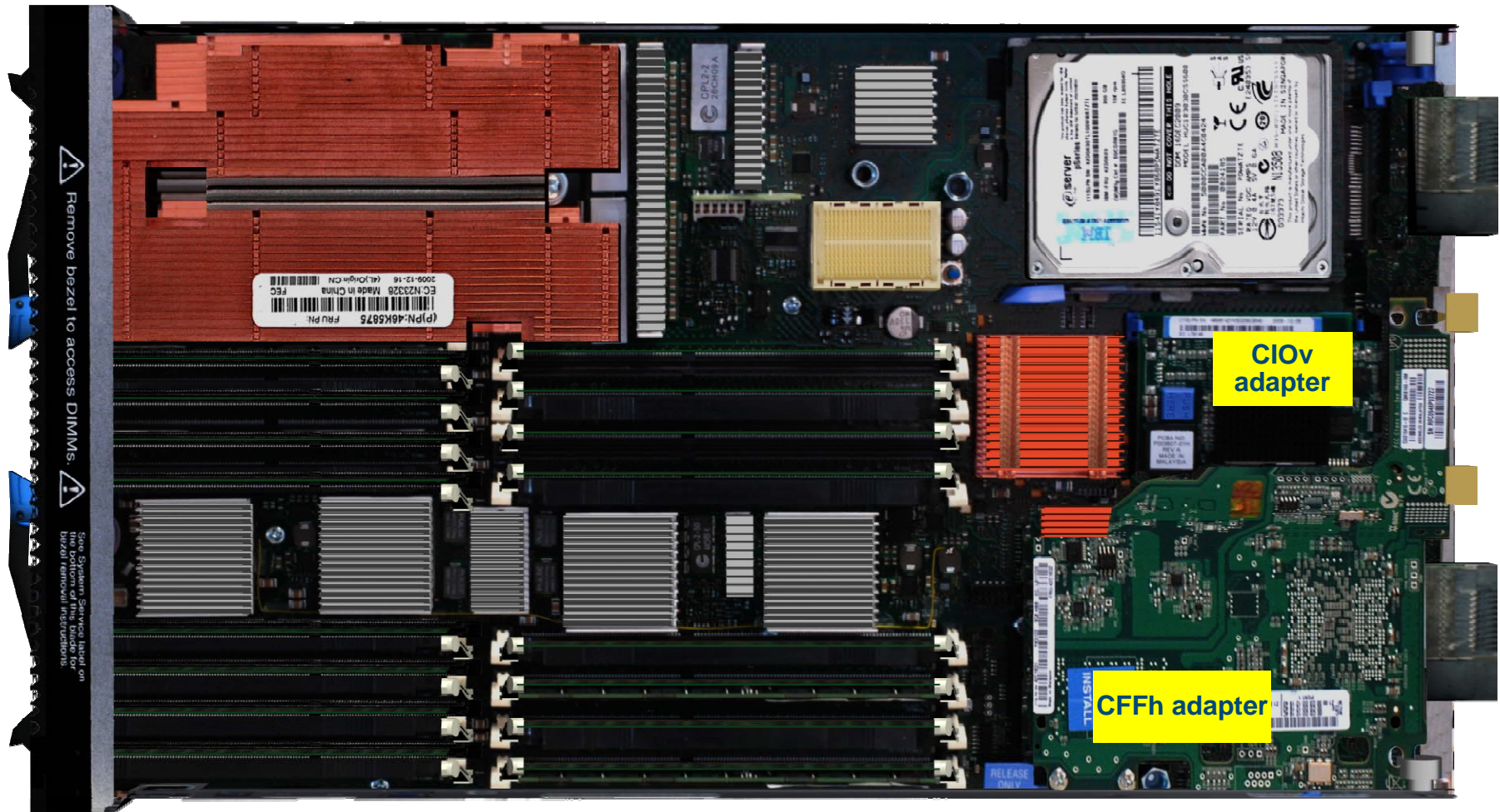
## ❑ Compact I/O Vertical (CIOv)

- 1Xe Connector
- Connects to the PCI-E bus to provide access to the Vertical Switch Modules
- Connects to Switch Bays 3 and 4
- Can co-exist with fixed disks in both the base and expansion unit

## ❑ High Speed Expansion Card (CFFh)

- CFFh connects to the PCI-E bus to provide access to the Horizontal High Speed Switch Modules
- Connects to Switch Bays 7 to 10 in BC-H and BC-HT
- MSIM / MSIM-HT required for BladeCenter H and BladeCenter HT

# Combined Usage of CFFh & CIOv Expansion Cards



# PS700 / PS701 / PS702 Supported Adapters

## ❑ Adapters / CIOv

- Emulex 8Gb Fibre Channel Expansion Card (CIOv)
- QLogic 4Gb Fibre Channel Expansion Card (CIOv)
- QLogic 8Gb Fibre Channel Expansion Card (CIOv)
- 3 Gb SAS Passthrough Expansion Card (CIOv)

## ❑ Adapters / CFFh

- QLogic Ethernet and 4 Gb Fibre Channel Expansion Card (CFFh)
- 4x DDR IB Expansion Card (CFFh)
- QLogic 8Gb Fibre Channel Expansion Card (CFFh)
- QLogic 2-port 10Gb Converged Network Adapter (CFFh)
- Voltaire 4x DDR IB Expansion Card (CFFh)


# BladeCenter PS700 IO ports for BladeCenter E

**CIOv options**

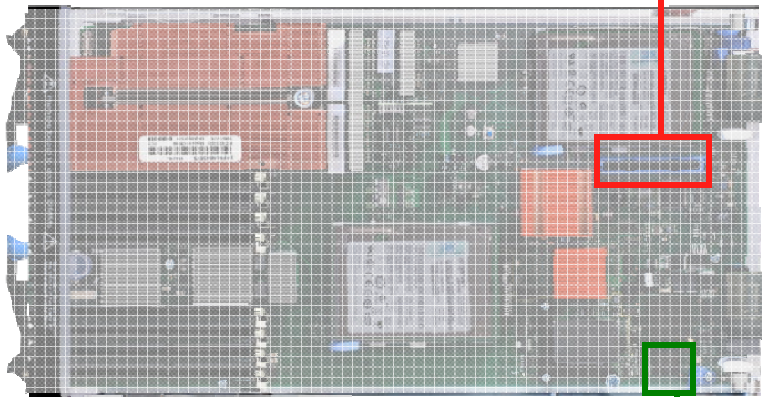


4/8Gb Fibre Channel  
3Gb SAS

**BladeCenter E**



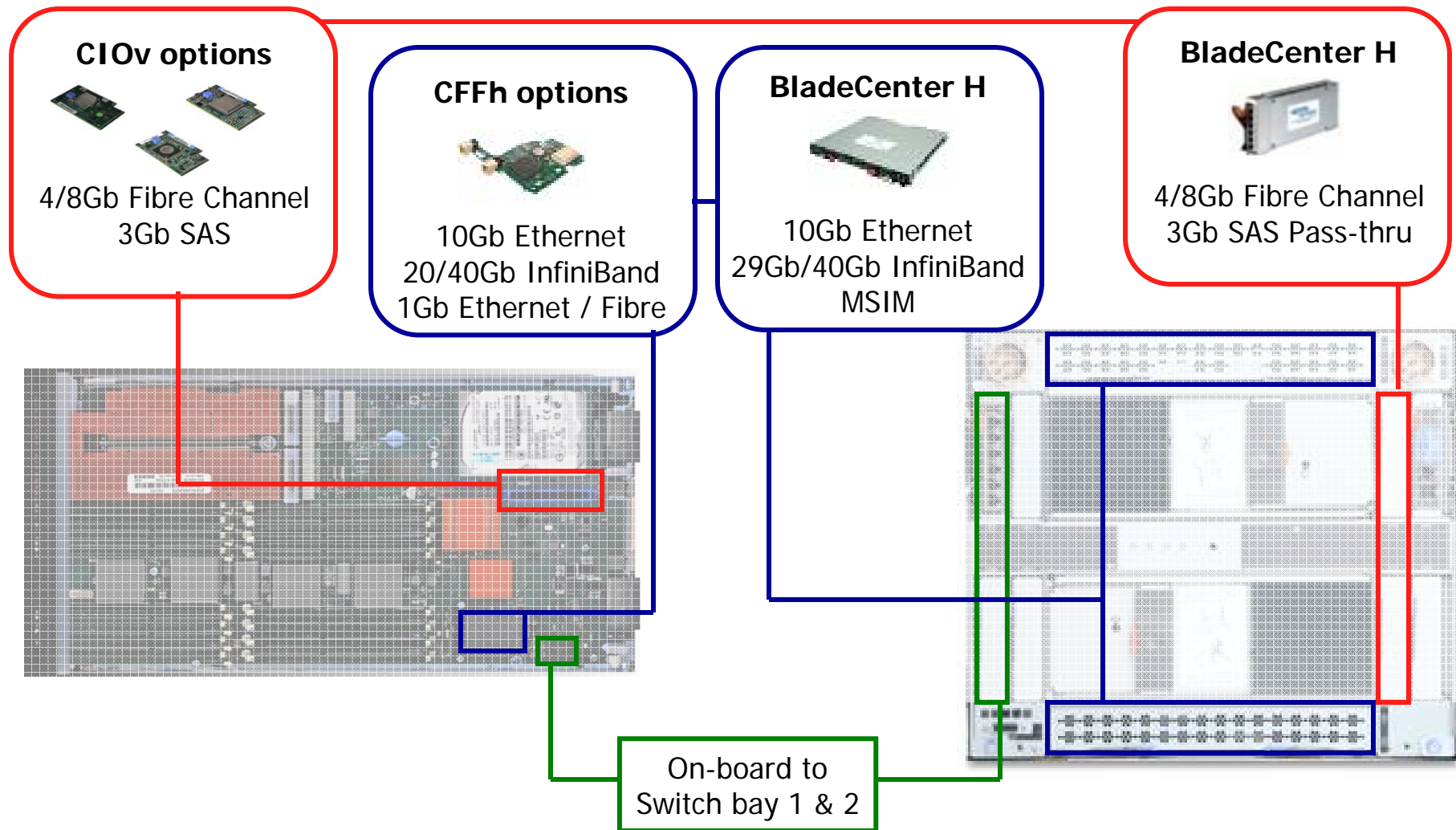
4/8Gb Fibre Channel  
3Gb SAS Pass-thru



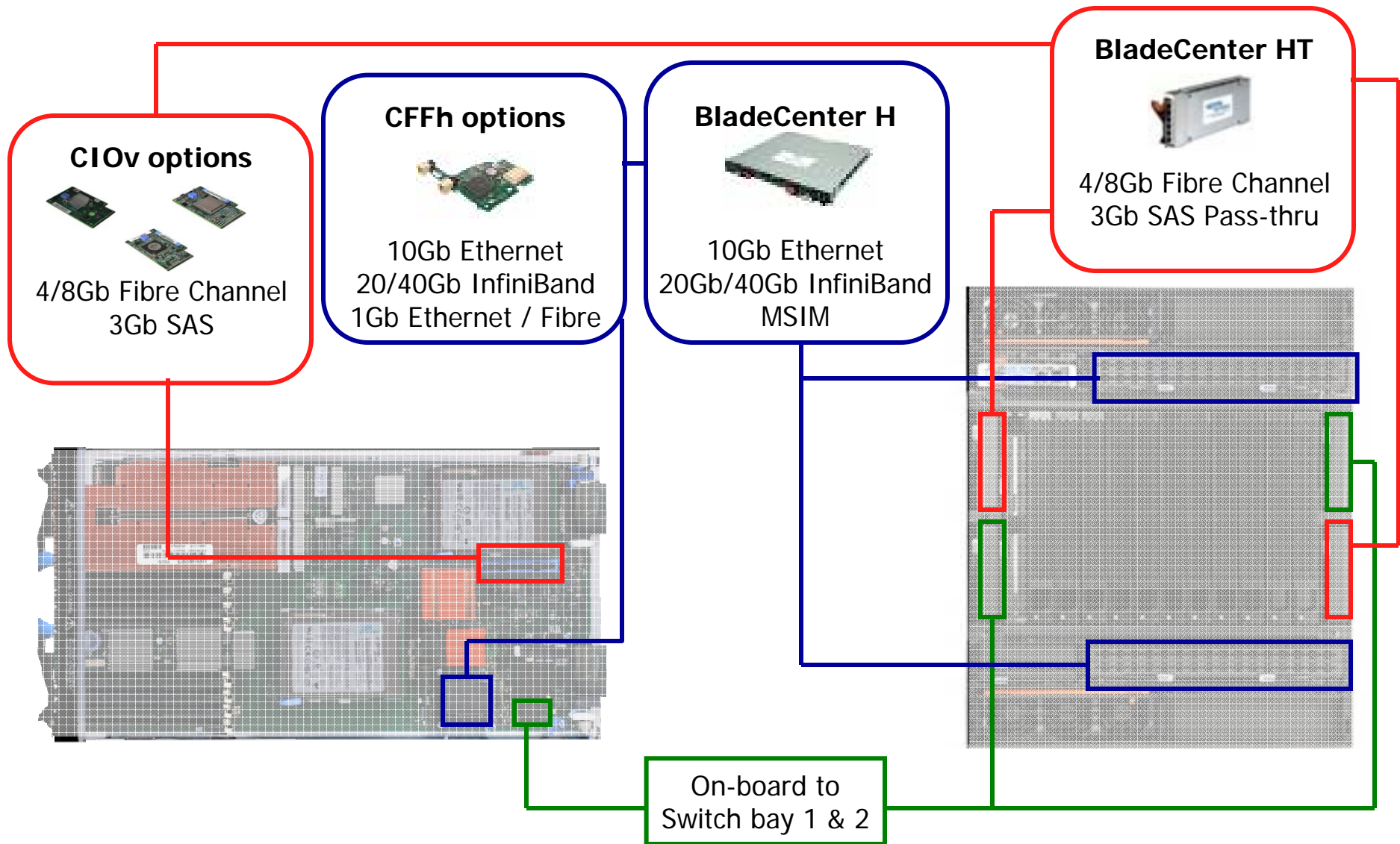
On-board to  
Switch bay 1 & 2



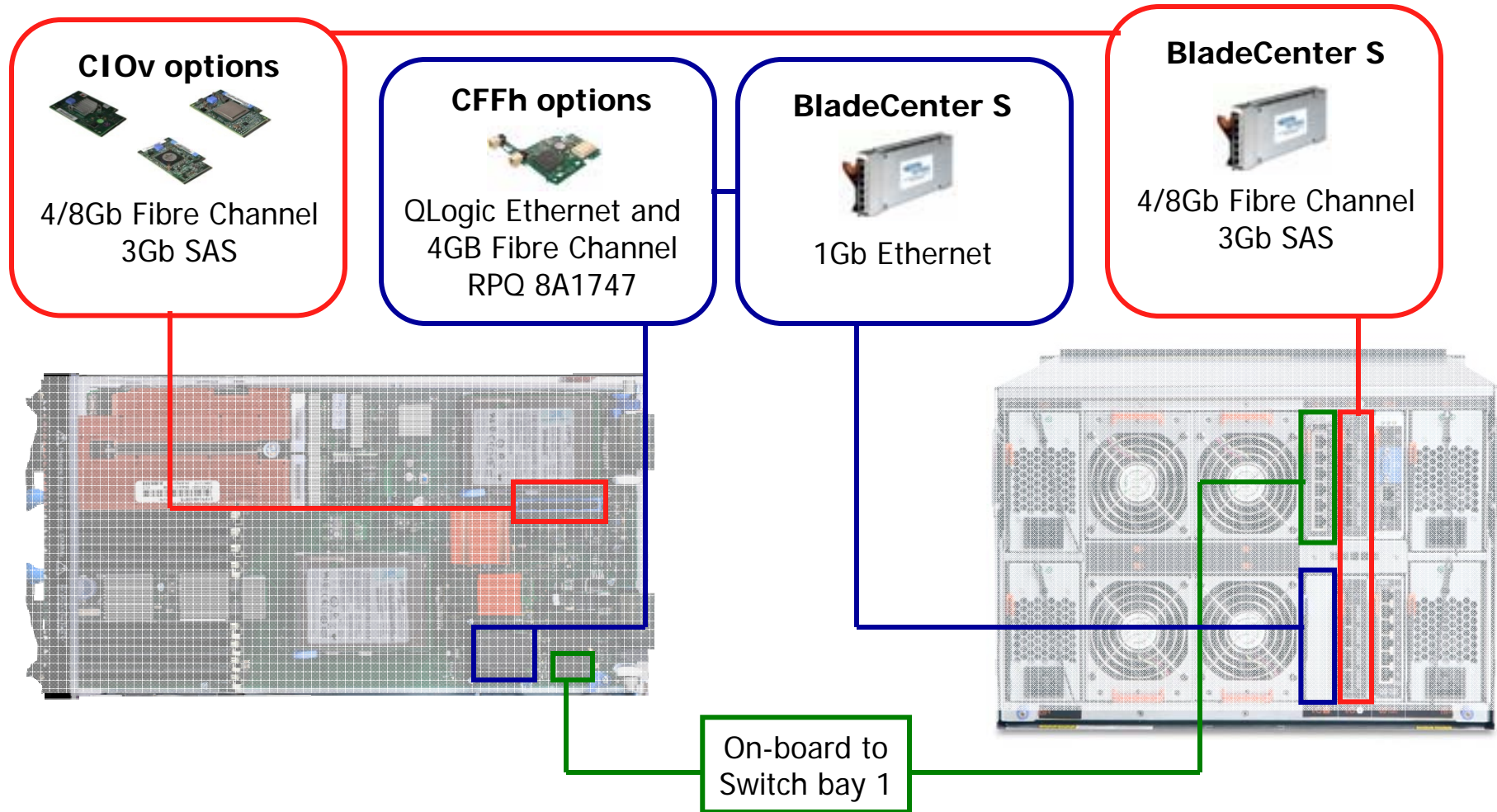
# BladeCenter PS701/702 IO ports for BladeCenter H



# BladeCenter PS700/701/702 ports for BladeCenter HT



# BladeCenter PS700/701/702 ports for BladeCenter S



## PS700/701/702 LEDs

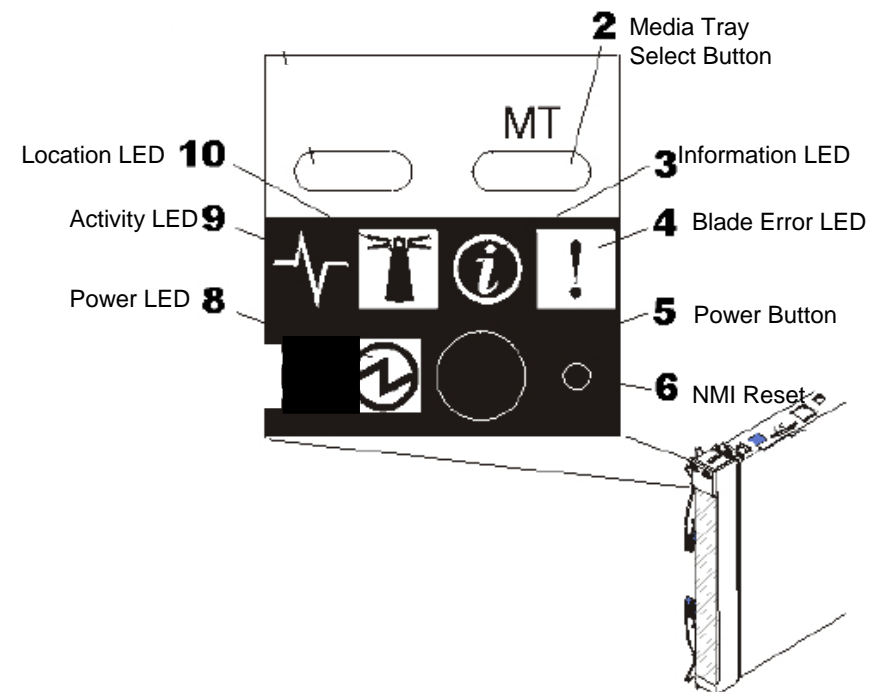
### ❑ Power on LEDs

- When a blade is inserted, the power LED fast blinks for at least 90 seconds while the FSP initializes the system
- When the blade is discovered by the AMM the frequency of the blinking slows down, allowing the power switch to function

### ❑ Media Select Button

- Select this button to associate the DVD and USB port with a blade server
- This button lights when the ownership of the DVD and USB port transfers to a blade server

### ❑ LEDs are managed from the Management Module



## Control Panel Buttons and LEDs

- Activity LED – green LED indicates activity on the hard disk drive or network**
- Location LED – blue LED manually turned on by system administrator to aide in locating blade server**
- Information LED – amber LED indicates system error**
- Blade-error LED – amber LED system error in blade server**
- Media-Tray select button - associates media tray with a blade server**

# POWER7 Blade Console Options

## Serial over LAN (SoL)

- Serial Data that flows to/from the Blade's COM port through network infrastructure of the BladeCenter chassis
- Can establish 20 separate telnet sessions to one AMM
  - One SOL Session active on all 14 blades
  - 6 additional sessions for BladeCenter chassis Management
- Ethernet Switch Modules or Intelligent Copper Passthru Module is required in Bay 1 for SoL Support
- Failure of the external switch should cause the SOL session to be routed to the second switch

## No KVM Support

## LAN Console required for IBM i

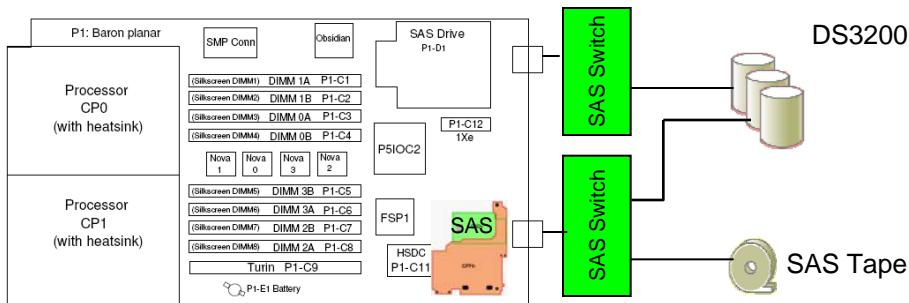


## TPMD: Thermal Power Management Device

- ❑ **TPMD card is part of the base hardware configuration**
- ❑ **Residing on the processor planar**
- ❑ **TPMD function is comprised of a risk processor and data acquisition**
- ❑ **TPMD monitor power usage and temperatures in real time**
- ❑ **Responsible for thermal protection of the processor cards**
- ❑ **Can adjust the processor power and performance in real time**
- ❑ **If the temperature exceeds an upper (functional) threshold, TPMD actively reduces power consumption by reducing processor voltage and frequency or throttling memory as needed**
- ❑ **If the temperature is lower than upper (functional) threshold, TPMD will allow POWER7 cores to “Over clock” if workloads demands are present**
  - Requires Active Energy Manager

# Storage Options for Power Blades

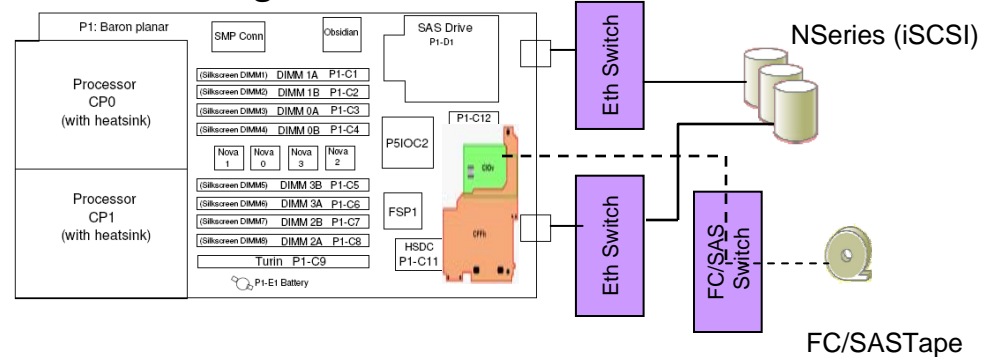
## SAS Storage Solutions



- Most economical storage Solution
- Limited scalability and management capabilities
- Requires SAS expansion card, up to two SAS switches (for independent failover paths to DS3200 and separate path to tape device)

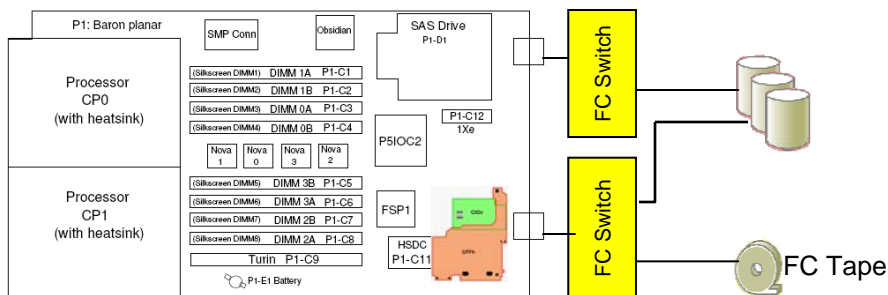
- More expensive solution than SAS, but more scalable
- Supports AIX and Linux
- Path failover support, RAID level 0-6

## iSCSI Storage Solutions



- Widest range of product offerings
- Best scalability and management options
- Path failover support, Raid level 0 - 6

## Fibre Channel Storage Solutions





# Operating System Support

## □ AIX

- AIX V5.3 with the 5300-12 Technology Level, or later
- AIX V6.1 with the 6100-05 Technology Level, or later

## □ IBM i

- IBM i 6.1 with i 6.1.1 machine code, or later
- IBM i 7.1, or later

## □ Linux

- SLES 10 Service Pack 3 for POWER, or later with current maintenance updates available from Novell to enable all planned functionality
- SLES 11 Service Pack 1 for POWER
- Red Hat Enterprise Linux 5.5 for POWER, or later

## □ VIOS

- VIOS 2.1.3.0, or later
- VIOS is required when installing the IBM i operating system



# PowerVM Virtualization



**PowerVM enables unrivaled consolidation of multiple AIX, IBM i and Linux workloads, allowing clients to:**

- *Reduce infrastructure costs:* less datacenter and rack space, less cabling
- *Reduce utility costs:* less energy and cooling
- *Reduce operational costs:* faster provisioning, simpler scaling and easier recoverability

**PowerVM Express Edition**

- Evaluations, pilots, proof of concepts, single server projects

**PowerVM Standard Edition**

- Production deployments, and server consolidation

**PowerVM Enterprise Edition**

- Large server or multi-server deployment
- Live Partition Mobility (AIX or Linux)

PowerVM Editions	Express Edition	Standard Edition	Enterprise Edition
Servers Supported	PS700/701/702	PS700/701/702	PS700/701/702
LPARS	1 + 2 / server	10 / Core	10 / Core
Management	IVM (HMC NOT Supported with blades)	IVM (HMC NOT Supported with blades)	IVM (HMC NOT Supported with blades)
Virtual I/O Server	One	One	One
Single Shared Processor Pools	✓	✓	✓
Shared Dedicated Capacity	✓	✓	✓
Live Partition Mobility			✓
Active Memory Sharing			✓

# Integrated Virtualization Manager (IVM)

**View/Modify Partitions**

This system does not have PowerVM Enterprise Edition enabled. PowerVM Enterprise Edition enables live partition mobility. To enable PowerVM Enterprise Edition, contact your sales representative to obtain a PowerVM Enterprise Edition key and [enter your key here](#).  
[Do not show this message again](#)

To perform an action on a partition, first select the partition or partitions, and then select the task.

**System Overview**

Total system memory:	8 GB	Total processing units:	12
Memory available:	6.5 GB	Processing units available:	10.8
Reserved firmware memory:	512 MB	Processor pool utilization:	0.08 (0.7%)
System attention LED:	Inactive		

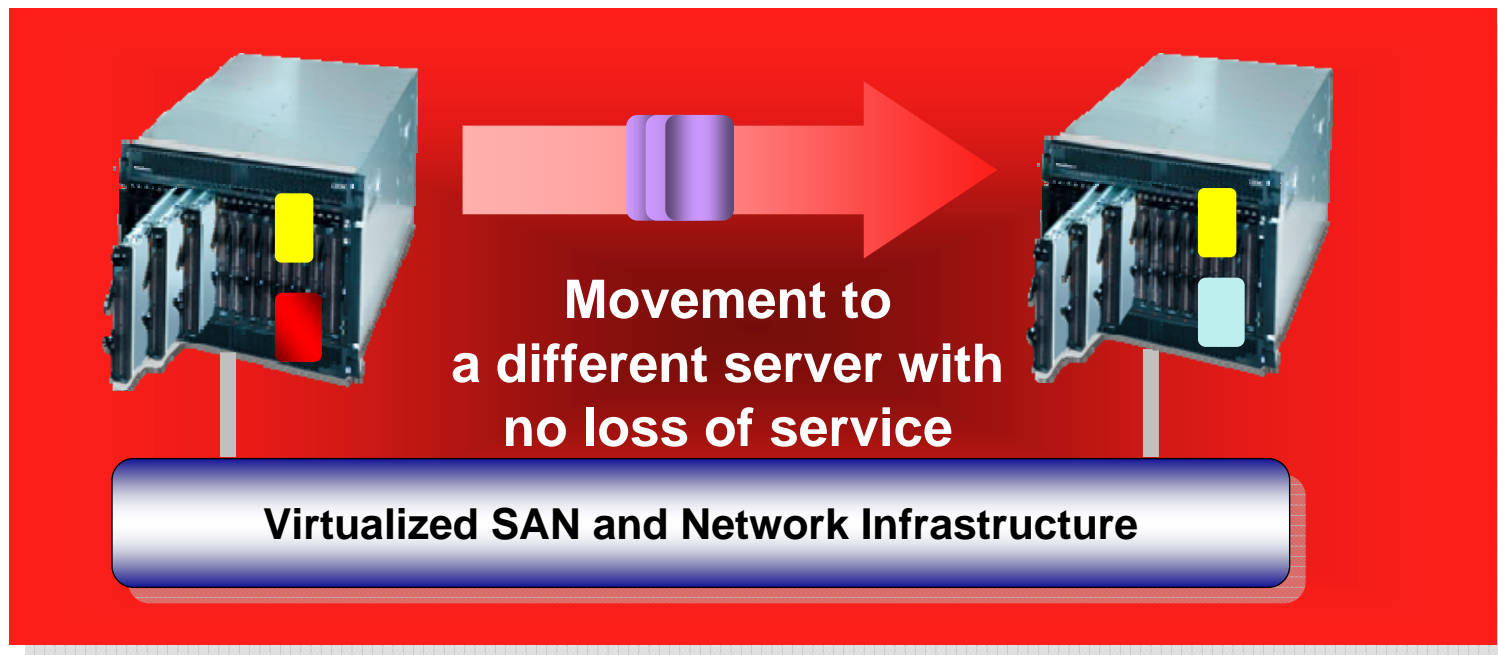
**Partition Details**

Select	ID ^	Name	State	Uptime	Memory	Processors	Entitled Processing Units	Utilized Processing Units	Reference Code
<input type="checkbox"/>	1	10-7CCBA	Running	4.07 Days	1 GB	12	1.2	0.08	

**Note: IVM does not support IEEE VLAN Tags for VLANS 1-4**

## Live Partition Mobility

- *Migrate a partition from one POWER processor-based server to another with no application downtime*





- Reduce planned downtime by moving workloads to another server during system maintenance

- Rebalance processing power across servers when and where you need it

**Live Partition Mobility requires the purchase of the optional PowerVM Enterprise Edition**

## Sustained IBM BladeCenter Investment for IBM i

2008	2009	2010
<ul style="list-style-type: none"> <li><input type="checkbox"/> Blade introduced for IBM i</li> <li><input type="checkbox"/> JS12 2-core</li> <li><input type="checkbox"/> Support for BladeCenter H, S</li> <li><input type="checkbox"/> Pre-install on BladeCenter S</li> <li><input type="checkbox"/> DS4000</li> <li><input type="checkbox"/> DS8000</li> <li><input type="checkbox"/> LTO3 LTO4 Tapes</li> <li><input type="checkbox"/> DS3200</li> <li><input type="checkbox"/> DS3400</li> <li><input type="checkbox"/> SVC</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> JS23 and JS43</li> <li><input type="checkbox"/> Virtual Tape</li> <li><input type="checkbox"/> RAID SAS Switch</li> <li><input type="checkbox"/> DS5000</li> <li><input type="checkbox"/> XIV</li> <li><input type="checkbox"/> i Edition with RAID and IBM i pre-install</li> <li><input type="checkbox"/> NPIV support for tape libraries</li> <li><input type="checkbox"/> DS8700</li> <li><input type="checkbox"/> DS5020</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> PS700, PS701, PS702</li> <li><input type="checkbox"/> Improved performance and energy efficiency</li> </ul> <div style="text-align: right; margin-top: 20px;">     </div>

# Firmware Image Management

- ❑ POWER systems hold 2 firmware images in flash, used as a fail safe
- ❑ Known as Temporary and Permanent side
- ❑ Systems typically run on Temp, Perm is “last back level”
- ❑ Customer can switch FW sides from AMM and PFW SMS Menu

IBM BladeCenter S Advanced Management Module Welcome causten

Bay 1: eswbc1

- Monitors
  - System Status
  - Event Log
  - LEDs
  - Power Management
  - Hardware VPD
  - Firmware VPD
  - Remote Chassis
- Blade Tasks
  - Power/Restart
  - Remote Control
  - Firmware Update
  - Configuration
  - Serial Over LAN

### Boot Mode ?

Follow the links in the Name column to edit the boot mode settings of individual blade servers.

Bay	Name	Active Boot Mode	Pending Boot Mode
1	<i>No blade present</i>		
2	<a href="#">bladefsp38-B3.0</a>	Temporary	Temporary
3	<a href="#">bladefsp20-M2.0</a>	Permanent	Permanent
4	<a href="#">bladefsp45-P2.0</a>	Temporary	Temporary
5	<a href="#">bladefsp27-M2.0</a>	Temporary	Temporary
6	<a href="#">bladefsp22-P2.0</a>	Temporary	Temporary

### Open Fabric Manager Parameters ?

# Firmware Level Identification

## ❑ Firmware level identification

- From Advanced Management Module
- Collected in the AMM Service Data
- From the Operating System level

IBM BladeCenter® H Advanced Management Module Welcome USERID

Bay 1: SYSTMPBCH

- Monitors
  - System Status
  - Event Log
  - LEDs
  - Power Management
  - Hardware VPD
  - Firmware VPD**
  - Remote Chassis
- Blade Tasks
- I/O Module Tasks
- MM Control
- Service Tools

### BladeCenter Firmware Vital Product Data

Use the following links to jump down to different sections on this page.

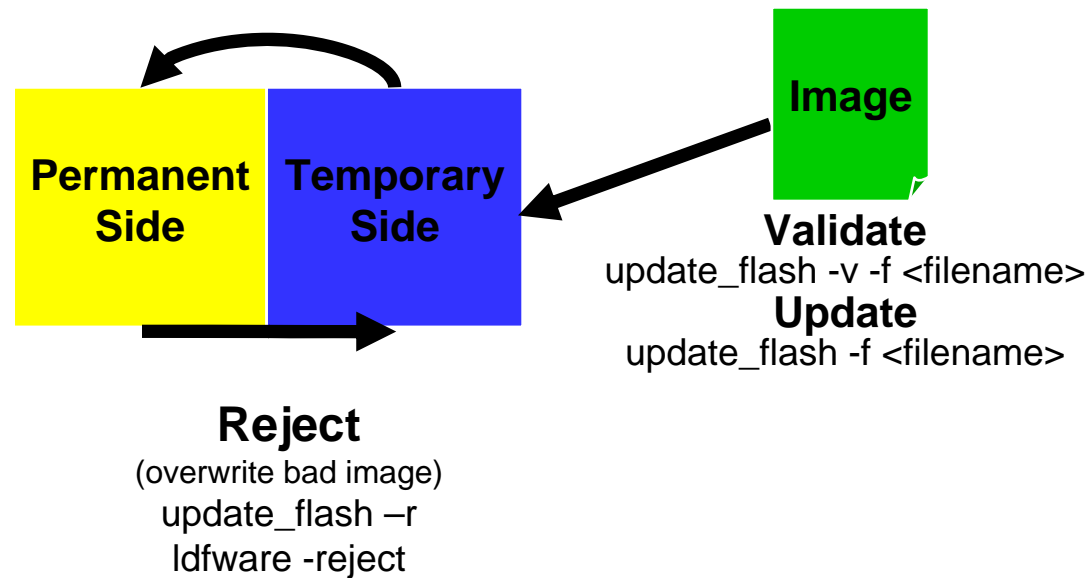
- [Blade Firmware Vital Product Data](#)
- [I/O Module Firmware Vital Product Data](#)
- [Management Module Firmware Vital Product Data](#)
- [Power Module Cooling Device Firmware Vital Product Data](#)
- [Chassis Cooling Device Firmware Vital Product Data](#)

**Firmware levels can be seen from AMM**

### Blade Firmware Vital Product Data

Bay(s)	Name	Firmware Type	Build	Released	Revision
1	P6_JS12_1	FW/BIOS	FA330_031	05/20/08	0821
		Blade Sys Mgmt Processor	BOBT001		2.00
2-3	P6_JS43	FW/BIOS	EA340_075	05/05/09	0918
		Blade Sys Mgmt Processor	BOBT001		3.42
4	P6_JS22_3	FW/BIOS	EA320_046	05/29/08	0818
		Blade Sys Mgmt Processor	BOBT001		1.10
5	BCH-JS21_5 NIM	FW/BIOS	MB246_060	02/20/2008	018
		Blade Sys Mgmt Processor	BYBT23A		1.23
6	P6_JS22_6	FW/BIOS	FA320_046	05/29/08	0818

# Updating Firmware



## ❑ To update firmware

- update\_flash -f filename (AIX/Linux)
- ldfwared -file filename (IVM)

## ❑ To commit firmware (must be running on TEMP image)

- update\_flash -c filename (AIX/Linux)
- ldfwared -commit filename (IVM)

## ❑ Reject requires that the system is running on the permanent side



## Power Blades with RAS features

*IBM POWER  
processor based  
blade servers*

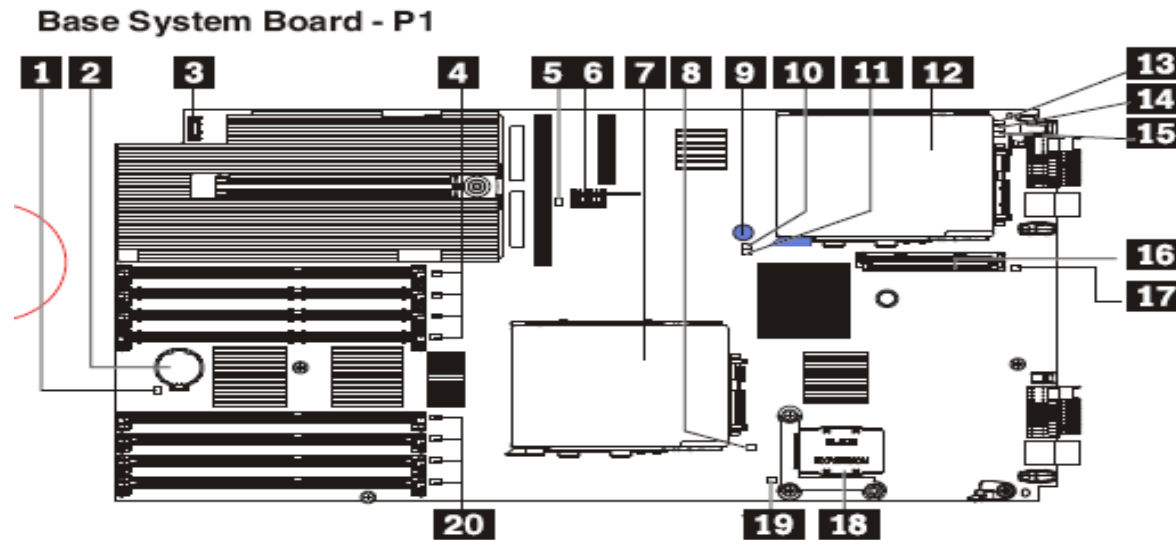


- First Failure Data Capture***
- Processor Instruction Retry with Alternate Processor Recovery***
- Chipkill and Bit Steering***
- I/O EEH***
- FW isolated partitions***
- Partition Availability priority***
- Live Partition Mobility & Application Mobility***

# Light Path Diagnostics

- ❑ **Diagnose a problem via LEDs**
- ❑ **Error logs drive Light Path**
- ❑ **Front Panel Error**
  - Isolated to a CRU
  - AMM LED page shows fault
  - Push Gold Cap will also show fault
  - “Not Me” LED, look at base planar
- ❑ **Front Panel Info**
  - Could not isolate to a CRU
  - Additional investigation required
  - Read AMM Event Log
- ❑ **Power is available to relight the path diagnostic LEDs for a short time after the blade is removed from the chassis (25 seconds or less)**

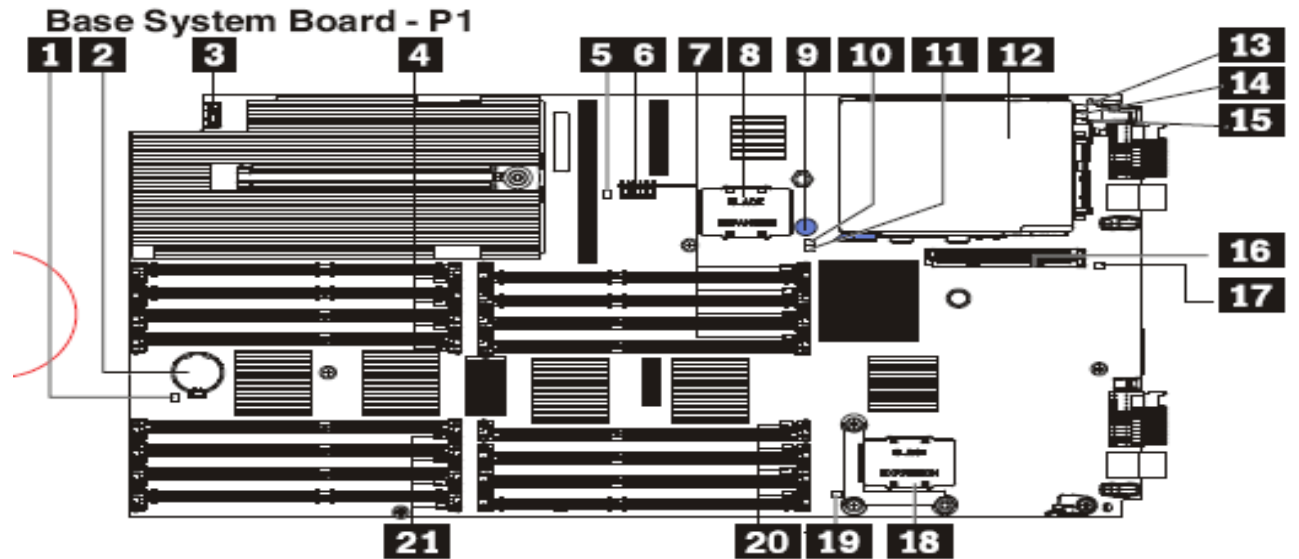
# PS700 Blade - Lightpath



- |                                 |                                             |
|---------------------------------|---------------------------------------------|
| <b>1</b> Battery LED (P1-E1)    | <b>11</b> System Board Fault LED            |
| <b>2</b> 3V Lithium Battery     | <b>12</b> HDD/SSD (P1-C10)                  |
| <b>3</b> Op Panel Connector     | <b>13</b> HDD/SSD 1 LED (P1-C18-D1)         |
| <b>4</b> DIMM 1-4 Error LEDs    | <b>14</b> SSD 2 LED (P1-C18-D2)             |
| <b>5</b> Anchor LED             | <b>15</b> Interposer LED (P1-C10)           |
| <b>6</b> Anchor (P1-C9)         | <b>16</b> 1xe Connector (P1-C11)            |
| <b>7</b> HDD (P1-D2)            | <b>17</b> 1xe Connector LED                 |
| <b>8</b> HDD LED                | <b>18</b> High Speed Exp Card Connector LED |
| <b>9</b> Light Path Blue Button | <b>19</b> High Speed Exp Card LED (P1-C12)  |
| <b>10</b> Light Path Power LED  | <b>20</b> DIMM 5-8 Error LEDs               |

**9** Light Path Diagnostics Button: Press button to find faults on system board. If a memory LED is on, reseal the component. If it is still on, replace component. If any of the other LEDs are on, check the *Problem Determination and Service Guide* to identify and solve the problem.

# PS701 Blade - Lightpath



- |                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>1</b> Battery LED (P1-E1)       | <b>12</b> HDD SSD Carrier                        |
| <b>2</b> 3V Lithium Battery        | <b>13</b> HDD/SSD 1 LED (Px-C18-D1)              |
| <b>3</b> Op Panel Connector        | <b>14</b> SSD 2 LED (Px-C18-D2)                  |
| <b>4</b> DIMM 1-4 Error LEDs       | <b>15</b> Interposer LED (Px-C18)                |
| <b>5</b> Anchor LED                | <b>16</b> 1xe Connector (Px-C19)                 |
| <b>6</b> Anchor (P1-C17)           | <b>17</b> 1xe Connector LED                      |
| <b>7</b> DIMM 9-12 Error LEDs      | <b>18</b> High Speed Exp Card Connector (Px-C20) |
| <b>8</b> Expansion Connector       | <b>19</b> High Speed Exp Card LED                |
| <b>9</b> Light Path Blue Button    | <b>20</b> DIMM 13-16 Error LEDs                  |
| <b>10</b> Light Path Power LED     | <b>21</b> DIMM 5-8 Error LEDs                    |
| <b>11</b> System Board Fault LED   | <b>22</b> Expansion Blade Retention screw        |
| <b>Expansion System Board - P2</b> | <b>23</b> Check Card Below LED                   |

# System Reference Codes (SRCs)

- ❑ **SRCs indicate hardware or software problems**
  - Can originate in hardware faults, system firmware, or the Operating System
- ❑ **An error code is generated when a problem is detected**
  - An SRC identifies the component that detected the error
  - The SRC describes the error condition
  - Use the SRC information to identify a list of possible failing items and to find information about any additional isolation procedures
- ❑ **SRCs information can be found in the PS700/PS701/PS702 Problem Determination & Service Guide**

IBM BladeCenter S Advanced Management Module

System Reference Codes ?

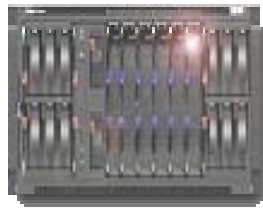
Follow the links in the System Reference Code column to obtain additional detailed data relating to the particular code.

Unique ID	System Reference Code	Timestamp
000000ff	<a href="#">AA00E1A9</a>	2009-03-25 17:58:47
000000fe	<a href="#">CA00E1A0</a>	2009-03-25 17:58:46
000000fd	<a href="#">CA00E1B5</a>	2009-03-25 17:58:46
000000fc	<a href="#">CA00E1F1</a>	2009-03-25 17:58:42
000000fb	<a href="#">CA00E1F0</a>	2009-03-25 17:58:42
000000fa	<a href="#">CA00E141</a>	2009-03-25 17:58:42
000000f9	<a href="#">CA00E1DC</a>	2009-03-25 17:58:42
000000f8	<a href="#">CA00D008</a>	2009-03-25 17:58:42
000000f7	<a href="#">CA00E100</a>	2009-03-25 17:58:42
000000f6	<a href="#">CA00E1FB</a>	2009-03-25 17:58:42
000000f5	<a href="#">CA00E1A0</a>	2009-03-25 17:58:42

Navigation menu:

- MM Control
  - General Settings
  - Login Profiles
  - Alerts
  - Serial Port
  - Port Assignments
  - Network Interfaces
  - Network Protocols
  - Chassis Int Network
  - Security
  - File Management
  - Firmware Update
  - Configuration Mgmt
  - Restart MM
- Service Tools
  - AMM Service Data
  - Blade Service Data
  - AMM Status

# BladeCenter Chassis Supported with the Power7 Blades



**IBM BladeCenter S:**  
*Distributed, small office,  
easy to configure*



**IBM BladeCenter E:**  
*Best energy efficiency,  
best density*



**IBM BladeCenter H:**  
*High performance*



**IBM BladeCenter HT:**  
*Ruggedized, high  
performance*

**Note: Only the BladeCenters S and BladeCenter H  
are supported with blades running IBM i**

# IBM BladeCenter I/O Switches

*More flexibility and choice in I/O*



## Ethernet

Cisco Catalyst 3012/3010G  
 Cisco Catalyst 10Gb Uplink  
 BNT 1/10 Gb  
 BNT Cop & Fib Layer 2/3  
 BNT Layer 2/7  
 BNT 10-port 10Gb  
 Server Connectivity Module  
 Pass-Thru 1 & 10Gb



## Fibre Channel

Brocade 10 / 20-port 4 & 8Gb  
 Cisco 10 / 20-port 4Gb  
 QLogic 10 / 20-port 4Gb  
 QLogic 20-port 8Gb  
 QLogic Intelligent Pass-Thru  
 (NPIV 4Gb & 8Gb)

## InfiniBand

Voltaire 40Gb InfiniBand  
 Ethernet & SAN Bridges



## SAS

IBM SAS Switch  
 IBM SAS RAID Controller



### Right sized for your needs

- Simple pass-thru designs
- Super low-cost, simple switches
- Powerful, standard layer 2/3 offerings
- Highly advanced layer 2/7
- High-performance 8Gb Fibre Channel
- High-speed 10Gb Ethernet and **FCoCEE**
- Low latency & high bandwidth 40Gb InfiniBand

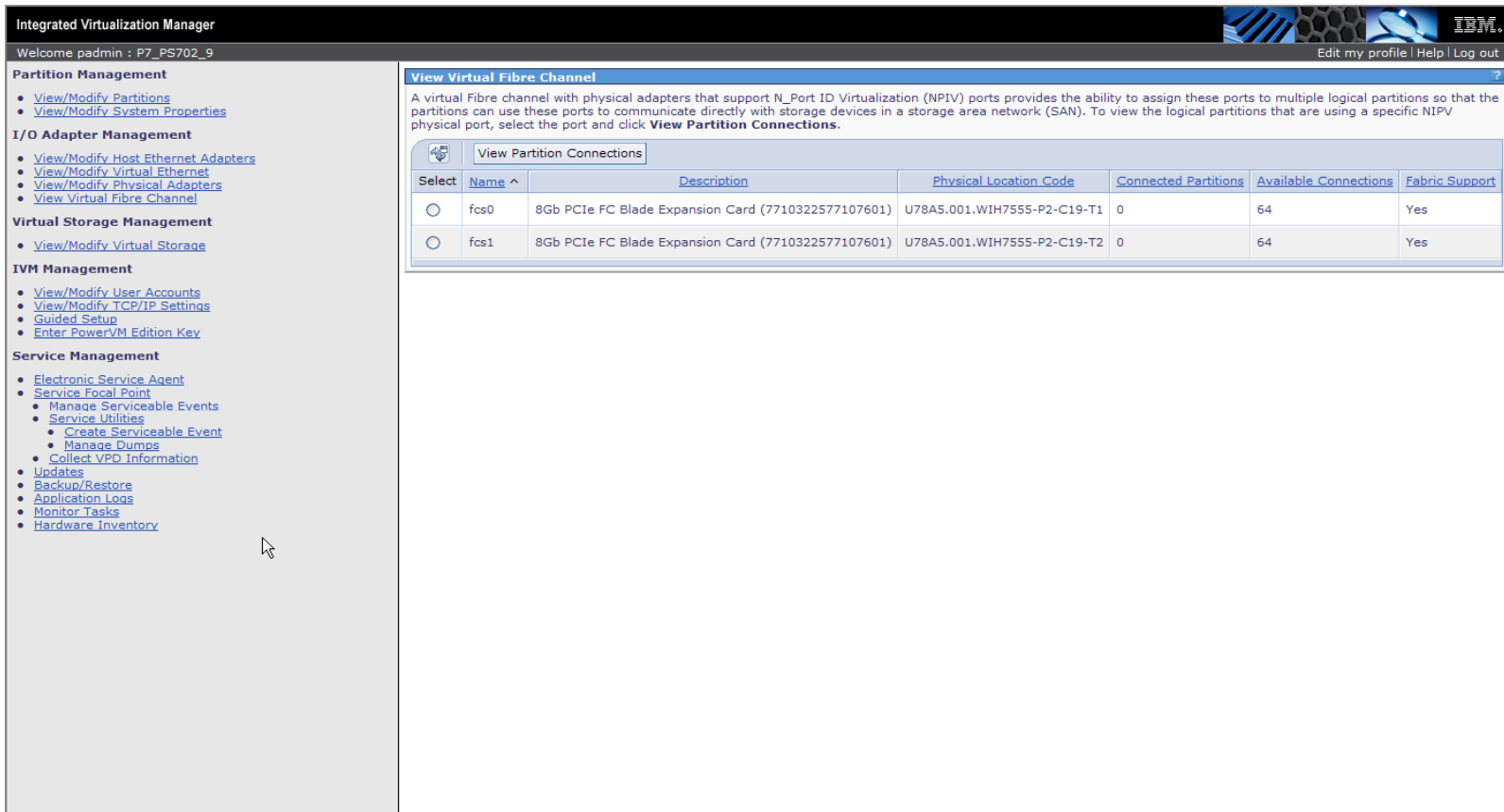


## MSIM

*(Multi-Switch Interconnect Module)*

# N\_Port ID Virtualization (NPIV) Support

- ❑ NPIV support is included with PowerVM Express, Standard and Enterprise Edition




The screenshot displays the Integrated Virtualization Manager (IVM) interface. The left sidebar contains a navigation menu with categories: Partition Management, I/O Adapter Management, Virtual Storage Management, IVM Management, and Service Management. The main content area is titled "View Virtual Fibre Channel" and includes a descriptive paragraph about NPIV support. Below the text is a table titled "View Partition Connections" with the following data:

Select	Name ^	Description	Physical Location Code	Connected Partitions	Available Connections	Fabric Support
<input type="radio"/>	fcs0	8Gb PCIe FC Blade Expansion Card (7710322577107601)	U78A5.001.WIH7555-P2-C19-T1	0	64	Yes
<input type="radio"/>	fcs1	8Gb PCIe FC Blade Expansion Card (7710322577107601)	U78A5.001.WIH7555-P2-C19-T2	0	64	Yes



# N\_Port Virtualization (NPIV) Support Matrix

NPIV Compatibility Matrix	<b>QLogic 8GB CIOV</b> Requires firmware version 5.02.01 or later	<b>QLogic 8Gb CFFh</b> Requires firmware version 5.02.01 or later	<b>Emulex 8Gb CIOv</b> Will Require firmware update; check Emulex site
<b>QLogic 4Gb Switch Modules</b> Requires firmware version 6.5.0.22.00 or later	AIX – yes IBM i – Virtual Tape Only Linux - Yes	AIX – Yes IBM i – Virtual Tape Only Linux - Yes	AIX – No IBM i – No Linux - No
<b>QLogic 8Gb Switch Modules</b> Requires firmware version 7.10.1.04 or later	AIX – yes IBM i – Virtual Tape Only Linux - Yes	AIX – Yes IBM i – Virtual Tape Only Linux - Yes	AIX – No IBM i – No Linux - No
<b>Brocade 4Gb Switch Modules Feature Codes</b>	AIX –No IBM i – No Linux - No	AIX – No IBM i – No Linux - No	AIX – Yes IBM i – Yes Linux – Yes 
<b>Brocade 8Gb Switch Modules</b>	AIX – Yes IBM i – Virtual Tape Only Linux – Yes	AIX – Yes IBM i – Virtual Tape Only Linux - Yes	AIX – Yes IBM i – Virtual Tape Only Linux - Yes

**Note:** No support for Cisco Switch Modules currently planned

# BladeCenter 10GB High Speed Support for Power



BNT 10-Port 10Gb ESM

- BladeCenter H and HT Chassis
- 14 down & 10-ports of Uplink bandwidth at less \$500 per port
- Can connect to 1Gb or 10Gb datacenter infrastructure
- Convergence Ready
- Up to 40Gb of Bandwidth per Blade
- Must be used with Top of Rack FCoEE Switch



10Gb Pass-Thru Module

- BladeCenter H and HT Chassis
- 14 internal and 14 external 10Gb Copper or Optical ports
- 10Gb End to end unblocked access with no packet drop
- Low cost solution for Clients to connect to any Top Of Rack 10Gb or Converged Enhanced Ethernet capable Switch
- Part of first FCoE Convergence solution offered on BladeCenter

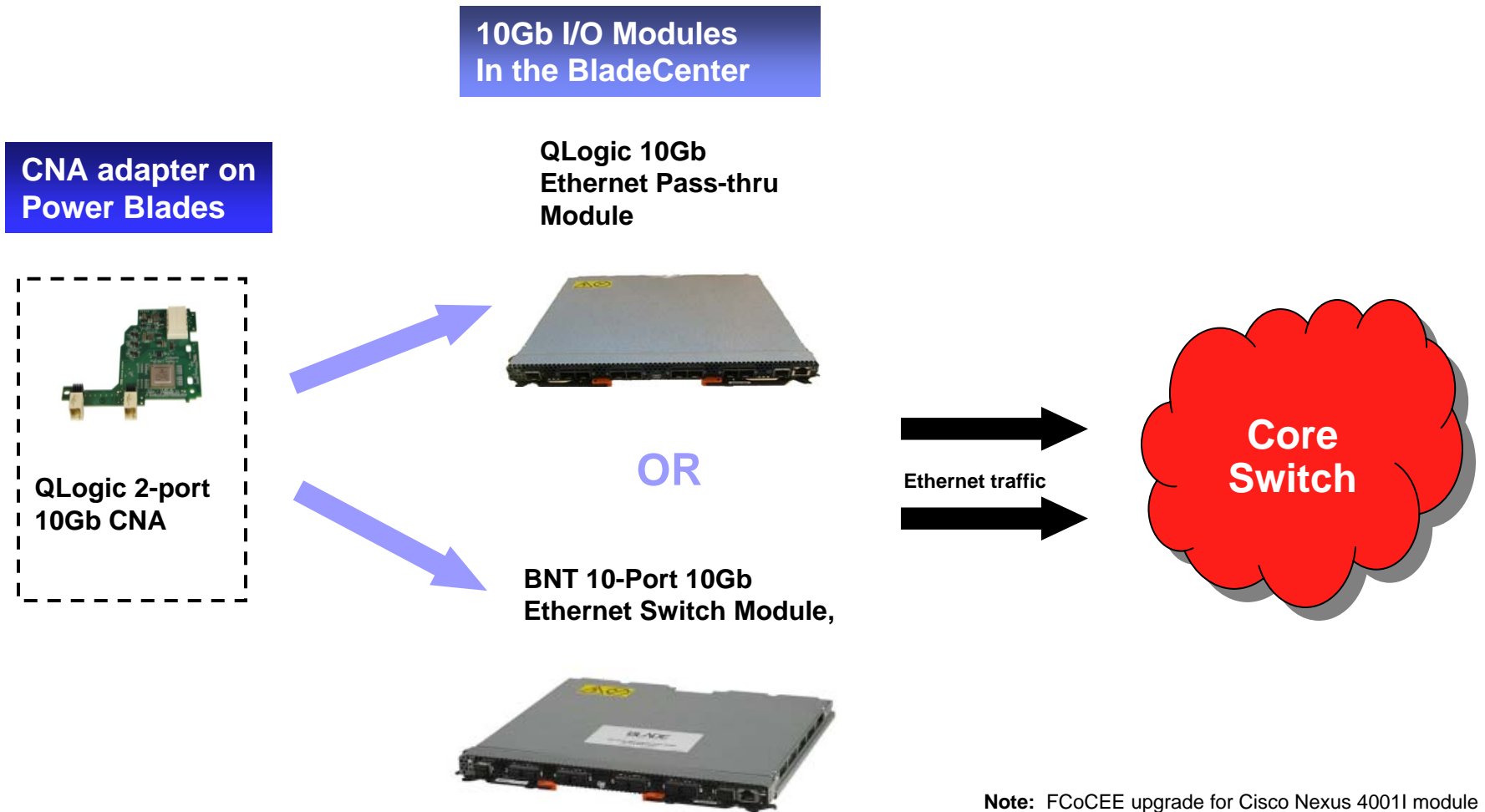


2-port Qlogic CNA

- 2 port 10Gb Converged Network Adapter (CFFh)
- Combines functions of a NIC and a HBA on a single adapter

**Note:** Cisco Nexus 40011 module is not supported with Power blades

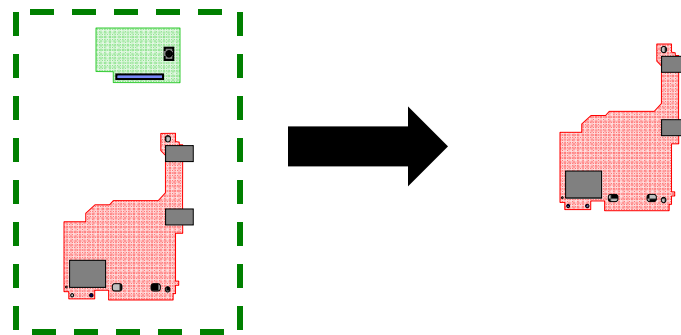
# 10 GB Ethernet Supported Configuration Options for Power



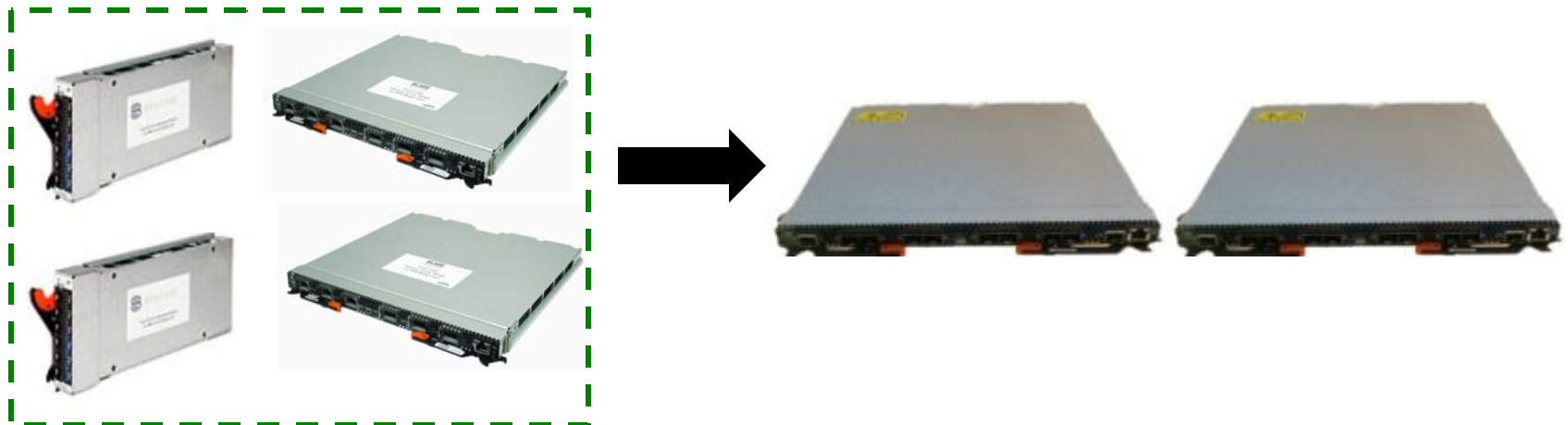
**Note:** FCoCEE upgrade for Cisco Nexus 4001I module not supported with Power blades

# Convergence means combining LAN & SAN on a single device..

**Fibre Channel adapter + Network adapter = Converged Network Adapter**

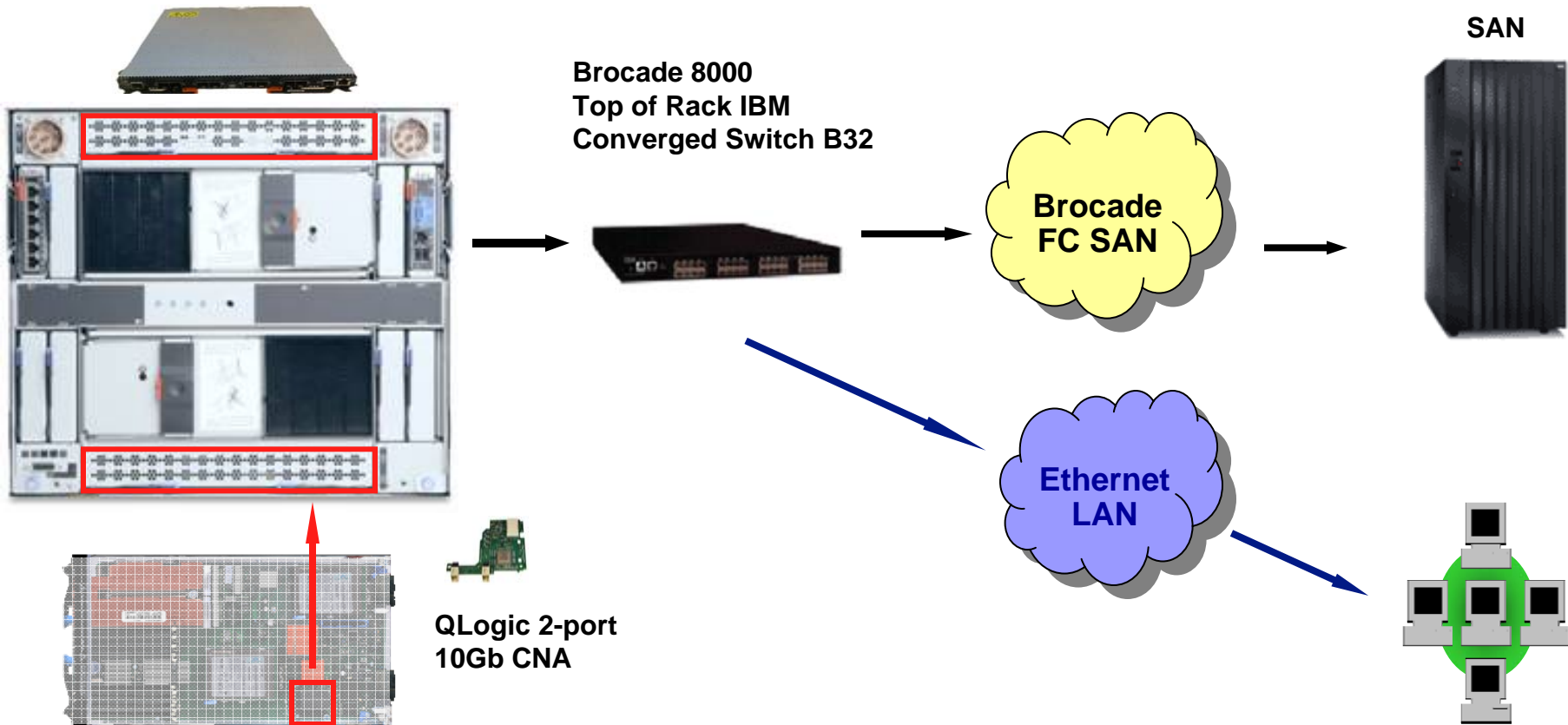


**Fibre Channel switch + Network switch = Converged Switch**



# FCoE Supported Configuration for Power

QLogic 10Gb  
Ethernet Pass-thru  
Module

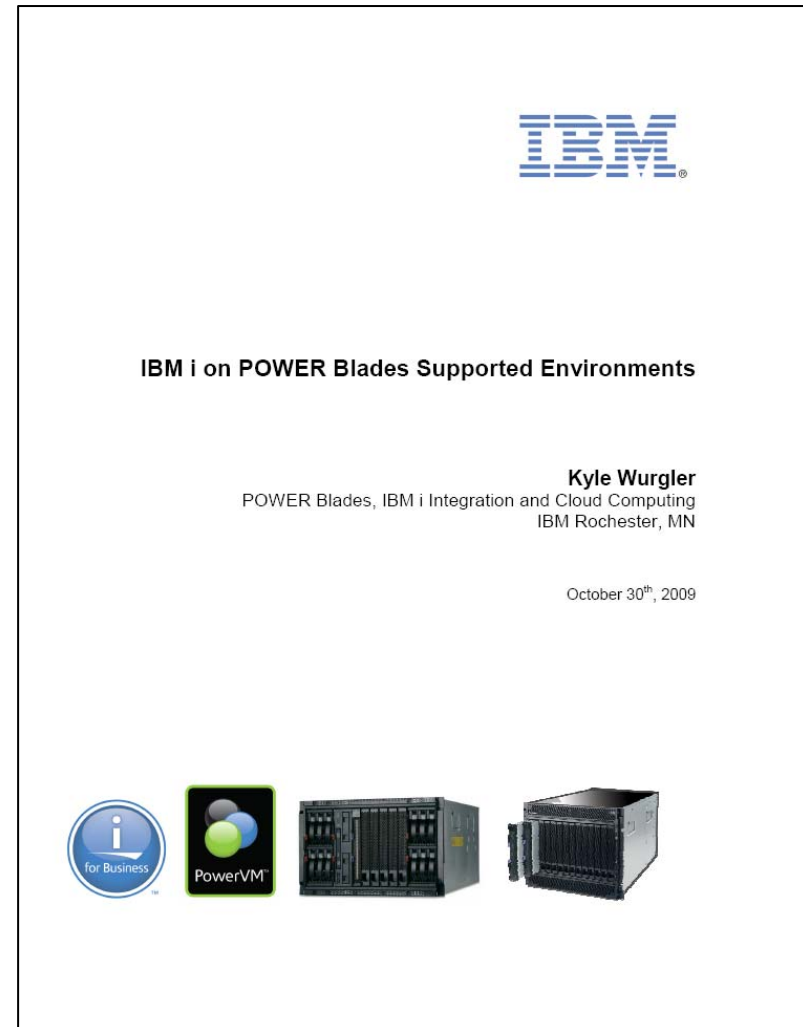
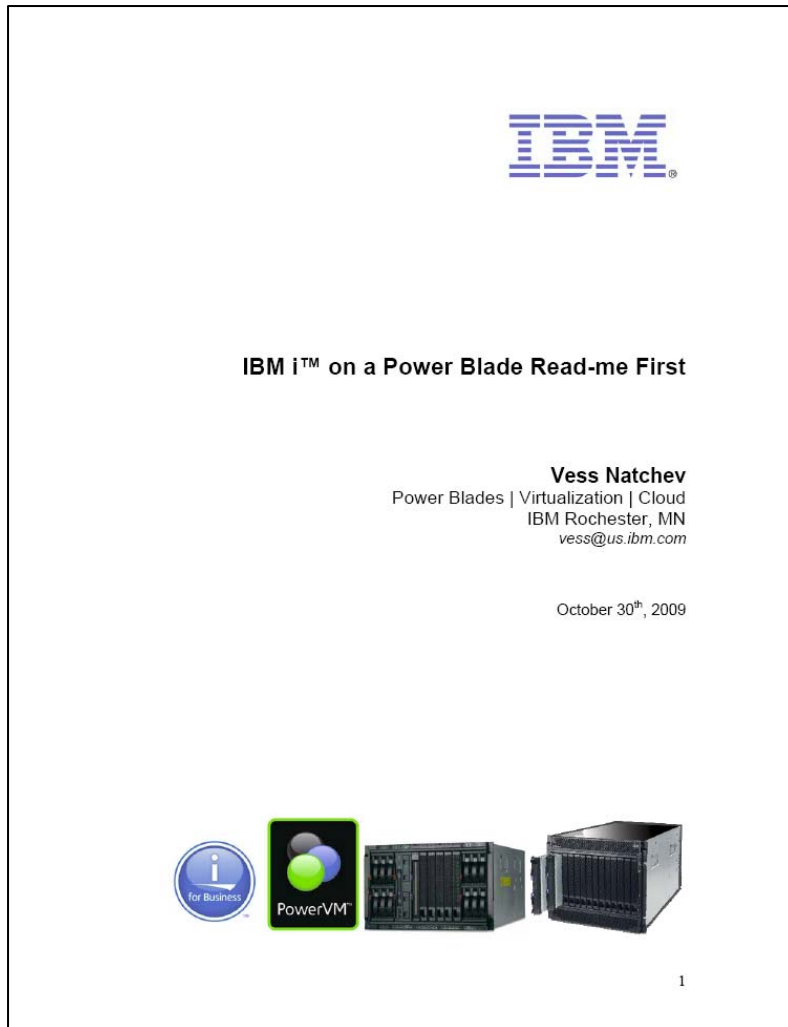


## For More Information...

- ❑ Power Systems BladeCenter Wiki <https://www.ibm.com/developerworks/wikis/display/WikiPtype/POWER+Blades>
- ❑ Compatibility for BladeCenter Products - Server Proven Website <http://www-03.ibm.com/servers/eserver/serverproven/compat/us/blade/7778.html>
- ❑ BladeCenter Interoperability Guide <http://www-947.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5073016&brandind=5000020>
- ❑ BladeCenter Sales Kit [http://w3-03.ibm.com/sales/support/ShowDoc.wss?docid=V272144X68861T10&infotype=SK&infosubtype=S0&node=doctype,S0|doctype,SLK|brands,B5000|brands,B5Z00&apname=CC\\_CFSS](http://w3-03.ibm.com/sales/support/ShowDoc.wss?docid=V272144X68861T10&infotype=SK&infosubtype=S0&node=doctype,S0|doctype,SLK|brands,B5000|brands,B5Z00&apname=CC_CFSS)
- ❑ IBM i on Blade Read-me First <http://www.ibm.com/systems/power/hardware/blades/ibmi.html>
- ❑ IBM i on Blade Supported Environments <http://www.ibm.com/systems/power/hardware/blades/ibmi.html>
- ❑ IBM i on Blade Performance Information <http://www.ibm.com/systems/i/advantages/perfmgmt/resource.html>
- ❑ Linux on Power Service and Productivity Tools <https://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html>

# Backup

# Where Do I Start with IBM i on a Power Blade?



- Latest versions at: <http://www.ibm.com/systems/power/hardware/blades/ibmi.html>



# What Power features are Supported in Linux

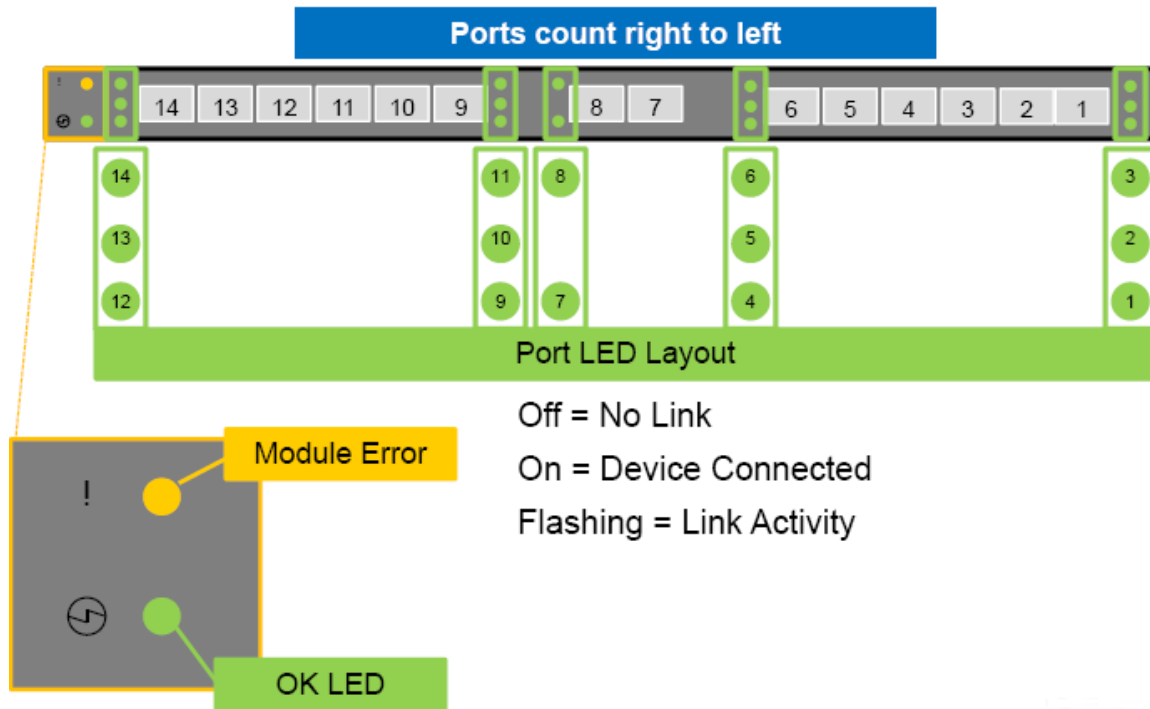
## ❑ Supported features for Linux on Power Systems

Feature	SLES 10 SP3	RHEL 5.5	SLES 11
Active Memory Sharing	No	No	Yes*
Dynamic logical partitioning (DLPAR) I/O adapter add/remove	Yes	Yes	Yes
DLPAR processor add/remove	Yes	Yes	Yes
DLPAR memory add	Yes	Yes	Yes
DLPAR memory remove	No	No	Yes
Dynamic simultaneous multi-threading enable/disable	Yes	Yes	Yes
POWER6 and POWER7 hardware concurrent maintenance and redundancy	Yes	No	Yes
Logical partition migration across Central Electronics Complexes (CEC)	Yes	Yes	Yes
Memory resilience	Yes	Yes	Yes
N-port ID virtualization	No	Yes	Yes
Non-Uniform Memory Access (NUMA) I/O affinity	Yes	Yes	Yes
NUMA-aware multipath I/O	Yes	Yes	Yes
Dynamic recovery for Logical Memory Block (LMB) failure	No	No	Yes
POWER6 CPU-tuned runtime libraries	Yes	Yes	Yes
Strategic RPA Dump	No	Yes	Yes
TCP/IP acceleration for Host Ethernet Adapter (HEA)	Yes	Yes	Yes
Vector exploitation on POWER BladeCenter servers and POWER6 servers	Yes	Yes	Yes

\* Not supported for POWER7, expected in future update of the distribution

<http://publib.boulder.ibm.com/infocenter/lnxinfo/v3r0m0/index.jsp?topic=/liaam/supportedfeaturesforlinuxonpowersystemsservers.htm>

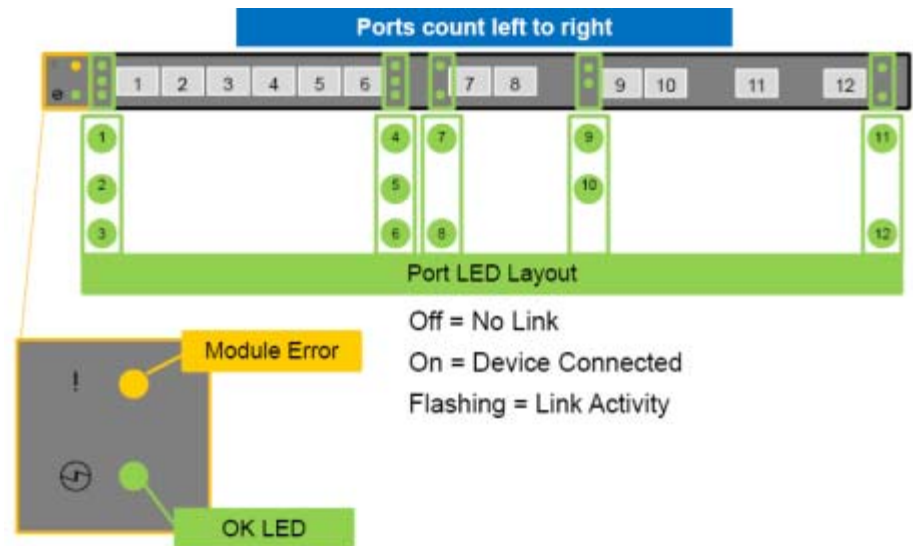
## 10Gb Pass-thru port numbering in BladeCenter H



- ❑ Port numbers look backwards, but remember, this is the back of the H chassis, so port 1 lines up with blade 1

## 10Gb Pass-thru port numbering in BladeCenter HT

- ❑ Since HSPM installs in front, ports count left to right
- ❑ Requires High-speed interposer
- ❑ Ship kit includes “conversion kit” to cover 2 unused ports



# Trademarks

## Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries. For a complete list of IBM Trademarks, see [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml): AS/400, DBE, e-business logo, ESCO, eServer, FICON, IBM, IBM Logo, iSeries, MVS, OS/390, pSeries, RS/6000, S/30, VM/ESA, VSE/ESA, Websphere, xSeries, z/OS, zSeries, z/VM

The following are trademarks or registered trademarks of other companies

Lotus, Notes, and Domino are trademarks or registered trademarks of Lotus Development Corporation  
Java and all Java-related trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries  
LINUX is a registered trademark of Linux Torvalds  
UNIX is a registered trademark of The Open Group in the United States and other countries.  
Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation.  
SET and Secure Electronic Transaction are trademarks owned by SET Secure Electronic Transaction LLC.  
Intel is a registered trademark of Intel Corporation  
\* All other products may be trademarks or registered trademarks of their respective companies.

## NOTES:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

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

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

References in this document to IBM products or services do not imply that IBM intends to make them available in every country.

Any proposed use of claims in this presentation outside of the United States must be reviewed by local IBM country counsel prior to such use.

The information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.