



Technical Forum & Executive Briefing

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2011

Imagine **PODER** Imagine **CAPACIDAD**

Power Systems High End Update

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Executive Briefing Center



POWER7 Overview

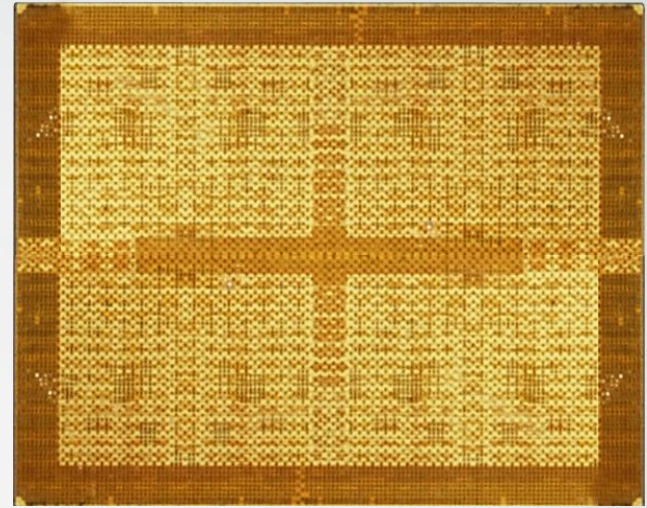
Power 770

Power 780

Power 795

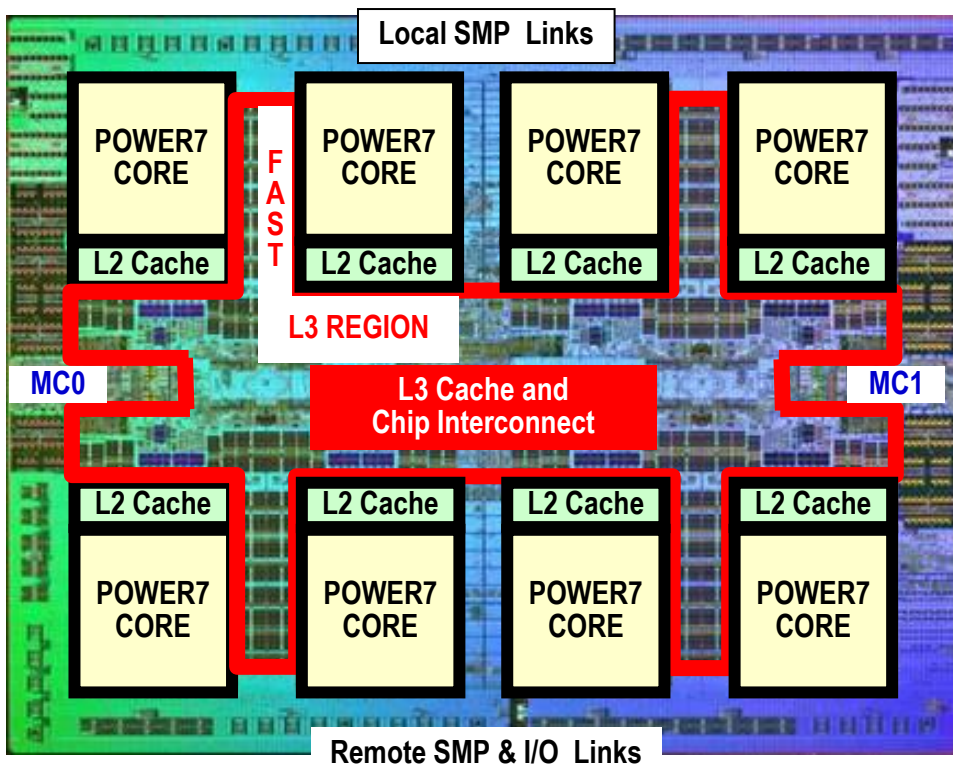
Power 750

RAS



POWER7

POWER7 Processor Chip



Cores : 8 with 4 / 6 core options

567mm² Technology:

- 45nm lithography, Cu, SOI, eDRAM

Transistors: 1.2 B

- Equivalent function of 2.7B
- eDRAM efficiency

Eight processor cores

- 12 execution units per core
- 4 Way SMT per core – up to 4 threads per core
- 32 Threads per chip
- L1: 32 KB I Cache / 32 KB D Cache
- L2: 256 KB per core
- L3: Shared 32MB on chip eDRAM

Dual DDR3 Memory Controllers

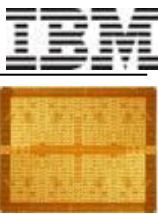
- 100 GB/s Memory bandwidth per chip

Scalability up to 32 Sockets

- 360 GB/s SMP bandwidth/chip
- 20,000 coherent operations in flight

**Binary Compatibility with
POWER6**

Power Blades / 710 / 720 / 730 / 740 / 750: Single Memory Controller
Power 770 / 780 / 795: Dual memory Controllers



POWER7 Systems Portfolio

1H / 2010



Power 780
MTM 9179-MHB

Power 770
MTM 9117-MMB



Power 750
MTM 8233-E8B

Power 755
MTM 8236-E8C



PS702
MTM 8406-71Y

PS701
MTM 8406-71Y

PS700
MTM 8406-70Y



2H / 2010

Power 795
MTM 9119-FHB



Power 720 / 740
MTM 8202-E4B
MTM 8205-E6B



Power 710 / 730
MTM 8231-E2B



1H / 2011

PS703
MTM 7891-73X



PS704
MTM 7891-74XY



2H / 2011

Power 780
MTM 9179-MHC

Power 770
MTM 9117-MMC



Power 720 / 740
MTM 8202-E4C
MTM 8205-E6C



Power 710 / 730
MTM 8231-E1C
MTM 8231-EC2



Power 770 & 780 Highlights

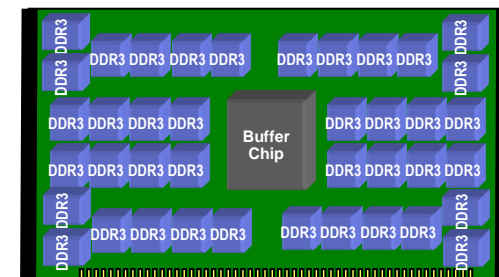
Twice the I/O bandwidth

- PCI Gen2 doubles the bandwidth compared to PCI Gen1



Twice the memory

- New 64 GB DIMM doubles the memory capacity to 4 TB
- Up to 64 GB per core with 64-core systems

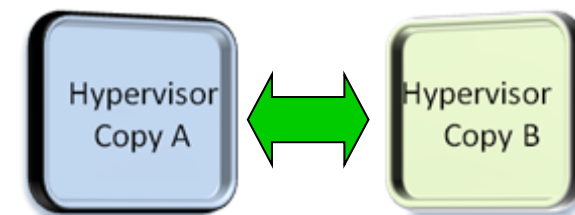


Twice the sockets for Power 780

- Doubles the number of sockets
- 6-core cores @ 3.44 GHz
- 780 system max configuration: 96 cores

Two copies of the hypervisor

- Hypervisor memory mirroring improves availability



Increased Clock speeds

- Power 770: 3.3 and 3.7 GHz
- Power 780: 3.92 GHz

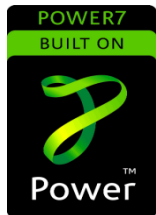
Upgrades from existing systems: POWER6 / POWER7



POWER7 Portfolio

Major Features:

- Modular systems with linear scalability
- PowerVM Virtualization
- Physical and Virtual Management
- Roadmap to Continuous Availability
- Binary Compatibility
- Energy / Thermal Management



Power 720 / 740



Power 750



Power 770



Power 780

Dual Socket

Quad Socket



Power 795

Power 775



Power 755



Power 710 / 730



BladeCenter PS700 / PS701 / PS702 PS703 / PS704





Power 770

Power 770



Power 770: 2S / 4U



**Capacity on Demand
Maint Coverage: 9 x 5**



9117-MMC		
Processor Packaging 8 Core Sockets 6 Core Sockets	<ul style="list-style-type: none"> 3.3 GHz Cores 3.7 GHz Cores 	
L3 Cache	On Chip	
Redundant Resources: <ul style="list-style-type: none"> Power & Cooling Serve Processor Redundant Clock 	<ul style="list-style-type: none"> Yes Yes / Two Enclosure minimum Yes / Two Enclosure minimum 	
Hot Add & Service Support	Yes	
Active Memory Mirroring	Optional	
	Single Enclosure	4 Enclosures
Processors	2 Sockets	8 Sockets
DDR3 Memory (Buffered)	Up to 1 TB	Up to 4 TB
SAS / SSD SFF Bays	6	24
Media Bays	1 Slim-line	4 Slim-line
SAS / SATA Controller	2 / 1	8 / 4
PCIe Gen2 (Internal)	6	24
GX++ Bus Slots	2	8
Ethernet Support: Dual 10 Gbt & Dual 1 Gbt	Standard	Nodes 1 & 2: Standard Nodes 3 & 4: Optional
USB	3	12
Max IO Drawers	PCIe: 4 PCI-X: 8	PCIe: 16 PCI-X: 32



Power 780

Power 780



Power 780: 2S4U



Capacity on Demand
Maint: 24 X 7
PowerCare Support



9117-MHC		
Processor Packaging 8 Core Sockets Turbo Core Sockets (4)	<ul style="list-style-type: none"> 3.92 GHz Cores 4.14 GHz Cores 	
L3 Cache	On Chip	
Redundant Resources: <ul style="list-style-type: none"> Power & Cooling Serve Processor Redundant Clock 	<ul style="list-style-type: none"> Yes Yes / Two Enclosure minimum Yes / Two Enclosure minimum 	
Hot Add & Service Support	Yes	
Active Memory Mirroring	Standard	
	Single Enclosure	4 Enclosures
Processors	2 Sockets	4 Sockets
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Max IO Drawers	PCIe: 4 PCI-X: 8	PCIe: 16 PCI-X: 32

Power 780 with FC #EP24



**Power 780 2S4U
With FC #EP24**

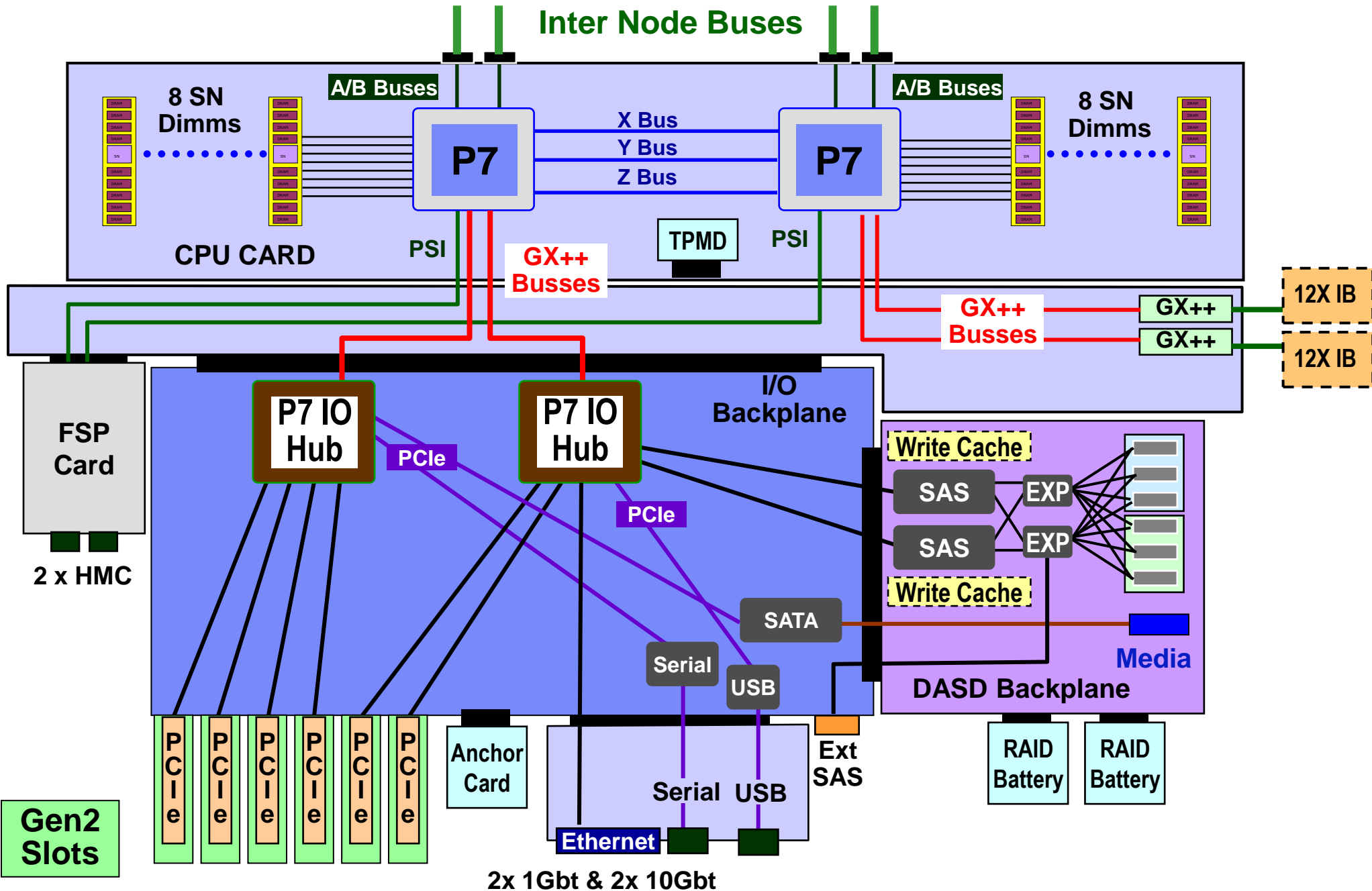


**Capacity on Demand
Maint: 24 X 7
Power Care Support**

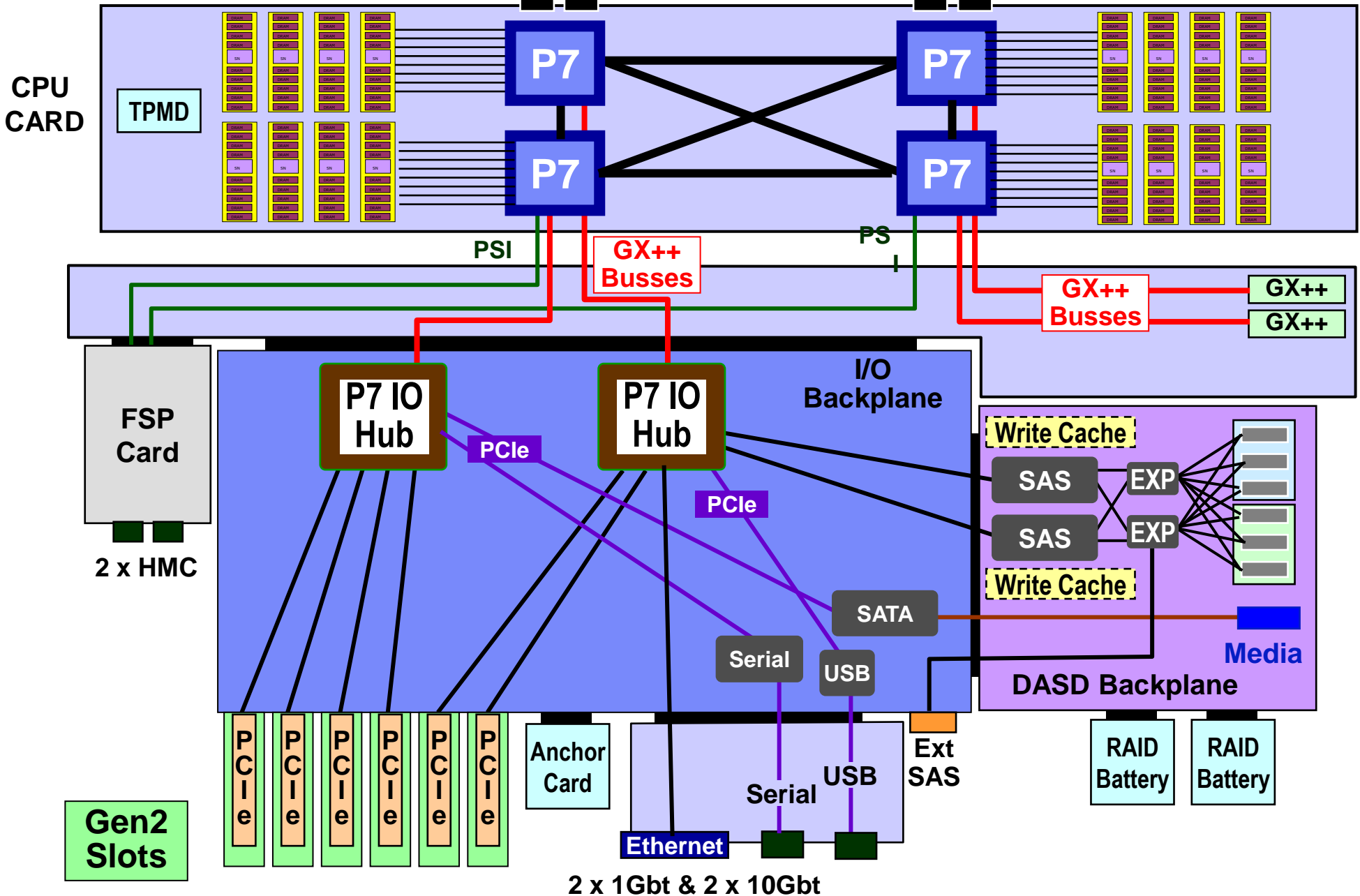


9117-MHC		
Processor Packaging 6 Cores Sockets	▪ 3.44 GHz Cores	
L3 Cache	On Chip	
Redundant Resources: ▪ Power & Cooling ▪ Serve Processor ▪ Redundant Clock	▪ Yes ▪ Yes / Two Enclosure minimum ▪ Yes / Two Enclosure minimum	
Hot Add & Service Support	Yes	
Active Memory Mirroring	Standard	
	Single Enclosure	4 Enclosures
Processors	4 Sockets	16 Sockets
DDR3 Memory (Buffered)	Up to 1 TB	Up to 4 TB
SAS / SSD SFF Bays	6	24
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PCIe Gen2 (Internal)	6	24
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Ethernet Support: Dual 10 Gbt & Dual 1 Gbt	Standard	Nodes 1 & 2: Standard Nodes 3 & 4: Optional
USB	3	12
Max IO Drawers	PCIe: 4 PCI-X: 8	PCIe: 16 PCI-X: 32

Power 770(MMC) / 780(MHC) Diagram.....



Power 780 FC #EP24 Block Diagram.....



Power 780 96-core Performance

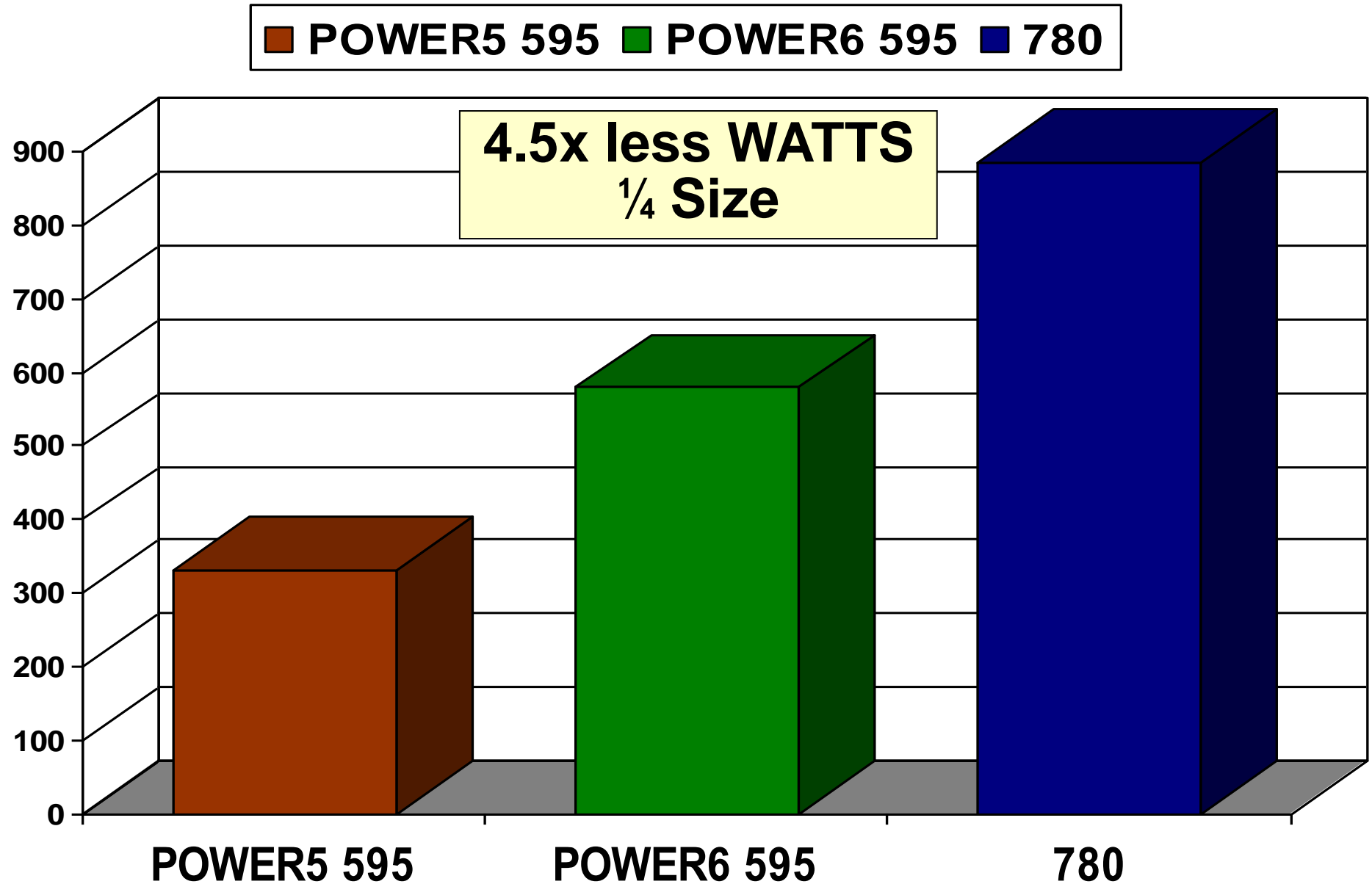
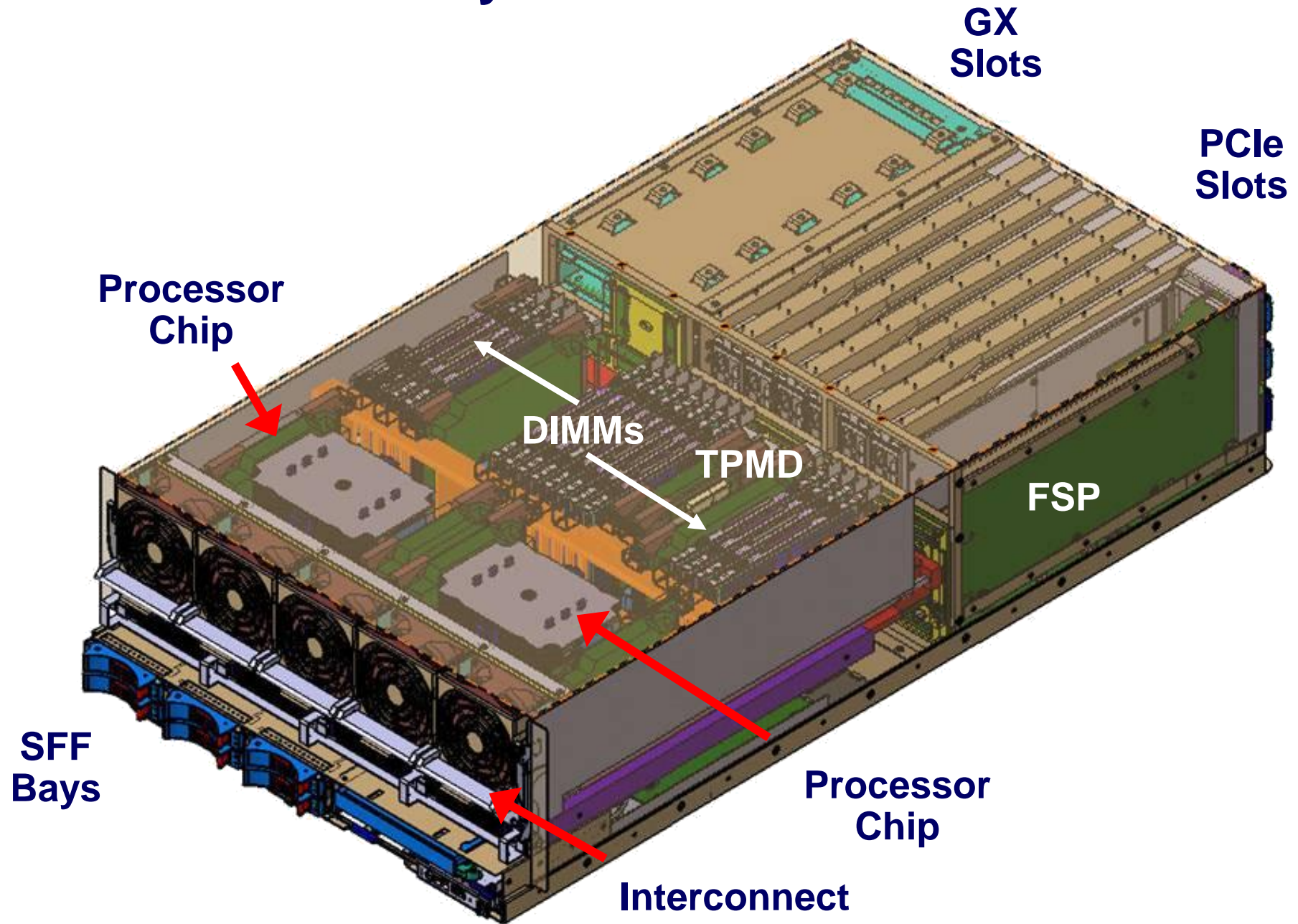


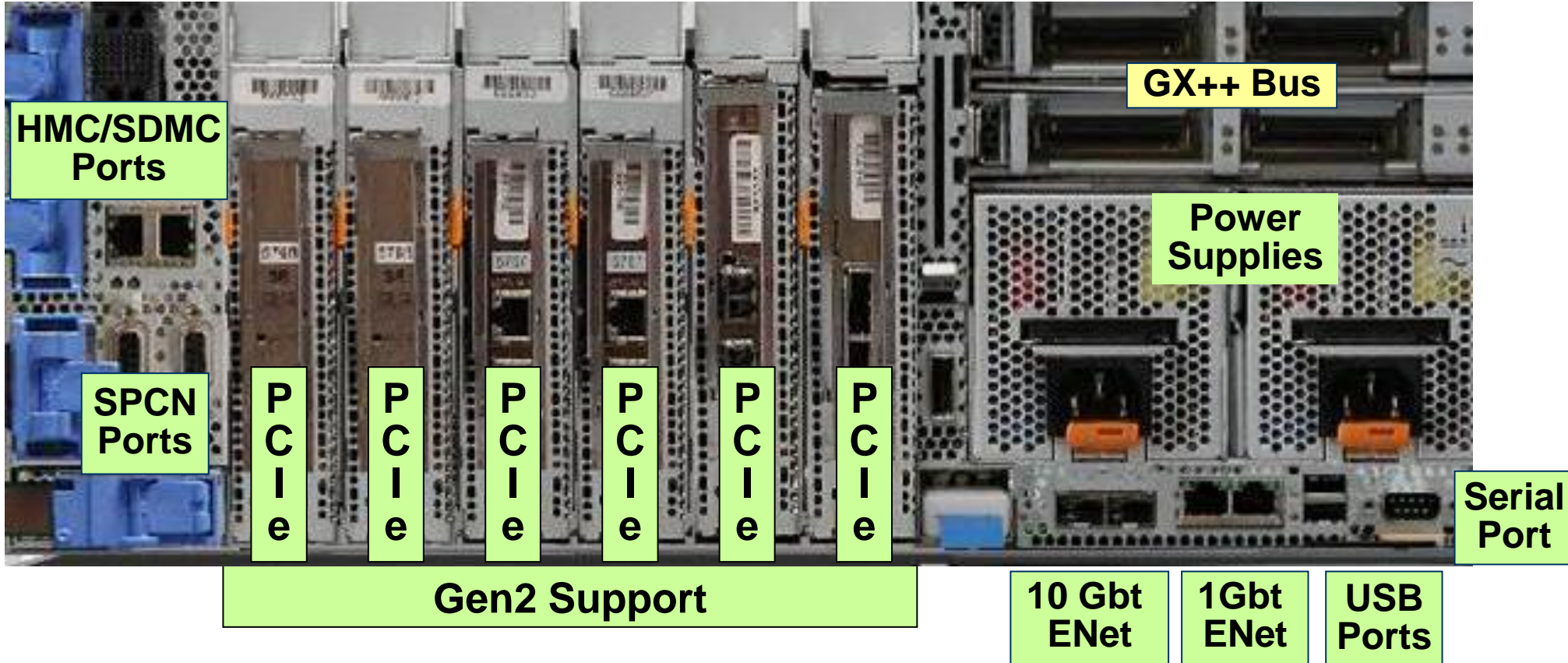
Chart uses rPerf values, CPW is similar

POWER7 Modular Layout

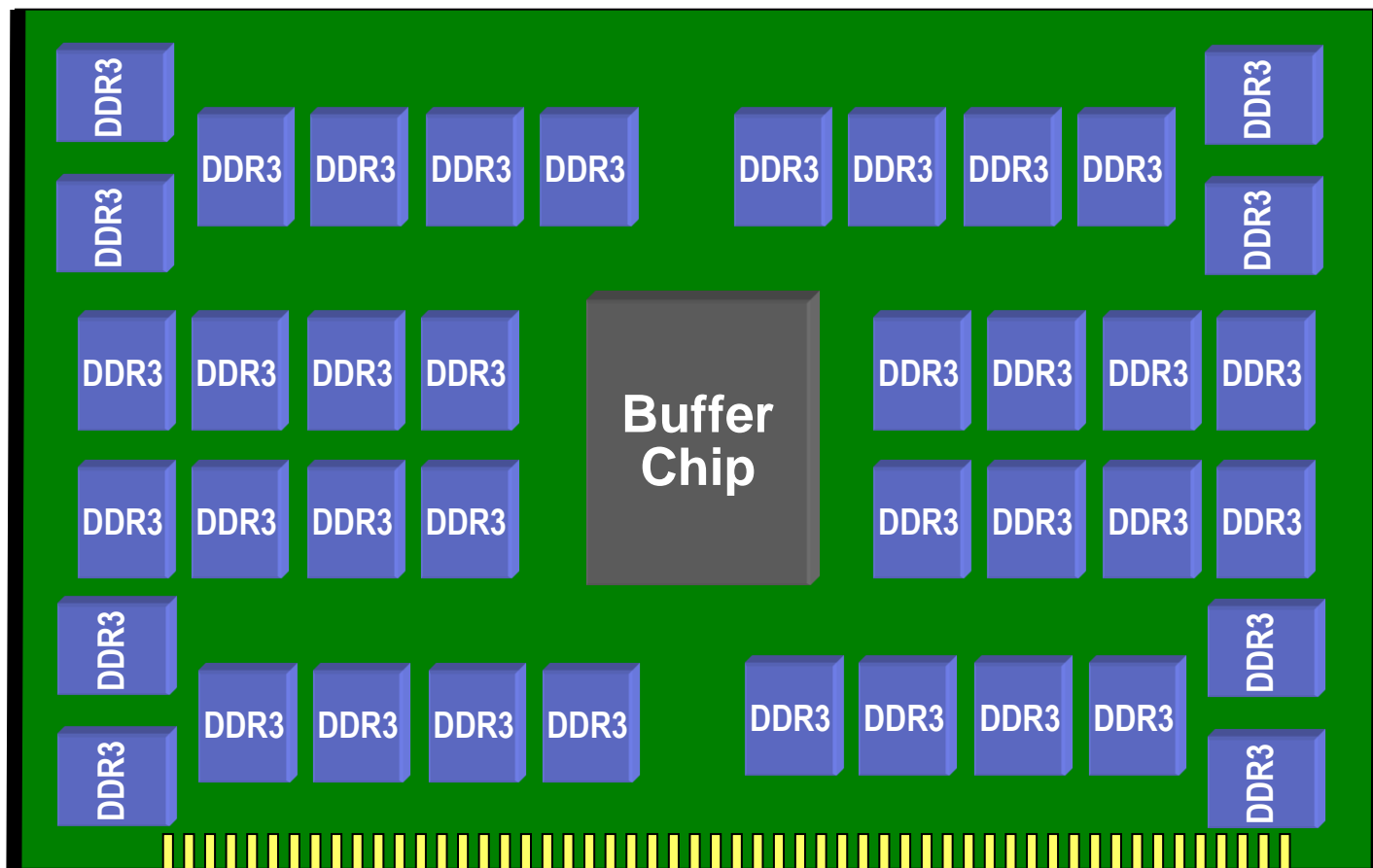


Power 770 / 780 Rear View

FSP Connectors

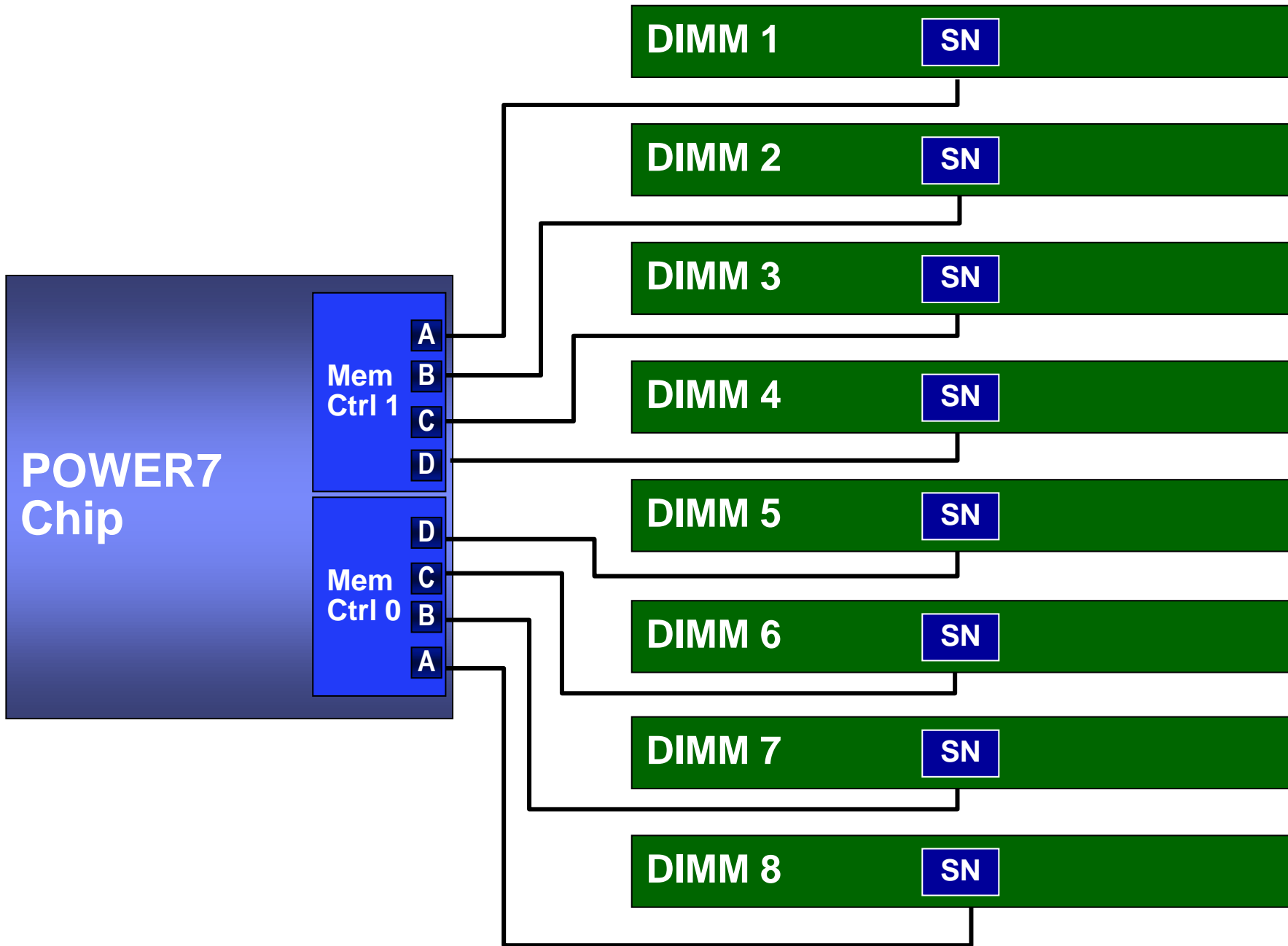


POWER7 Modular Memory Card Options

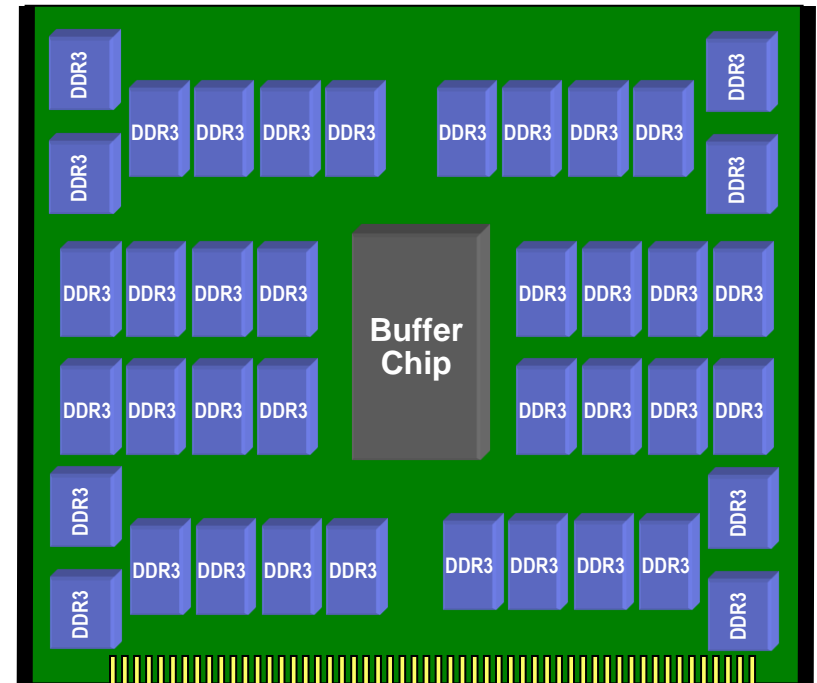
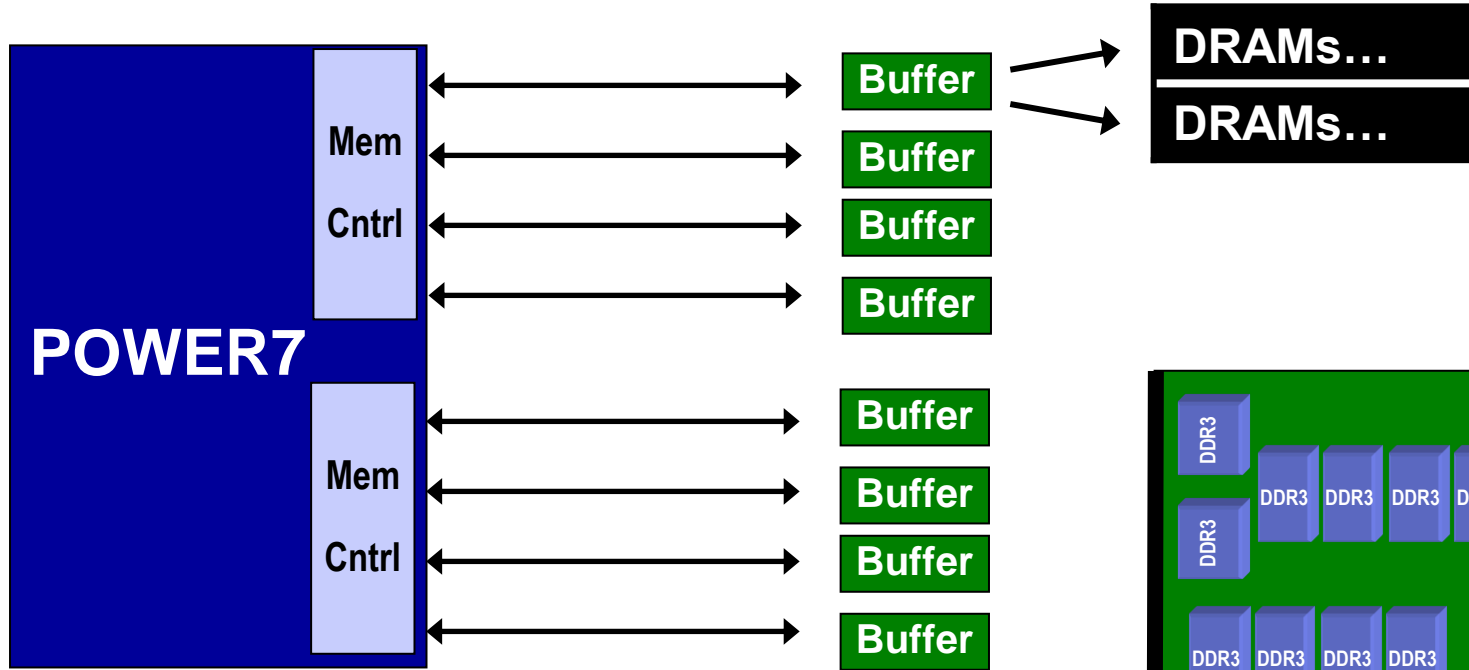


DIMM Size	Memory Speed	Offering Size	Max Memory
8 GB	1066 MHz	32 GB	512 GB
16 GB	1066 MHz	64 GB	1 TB
32 GB	1066 MHz	128 GB	2 TB
64 GB	1066 MHz	256 GB	4 TB

POWER7 Modular Memory Layout

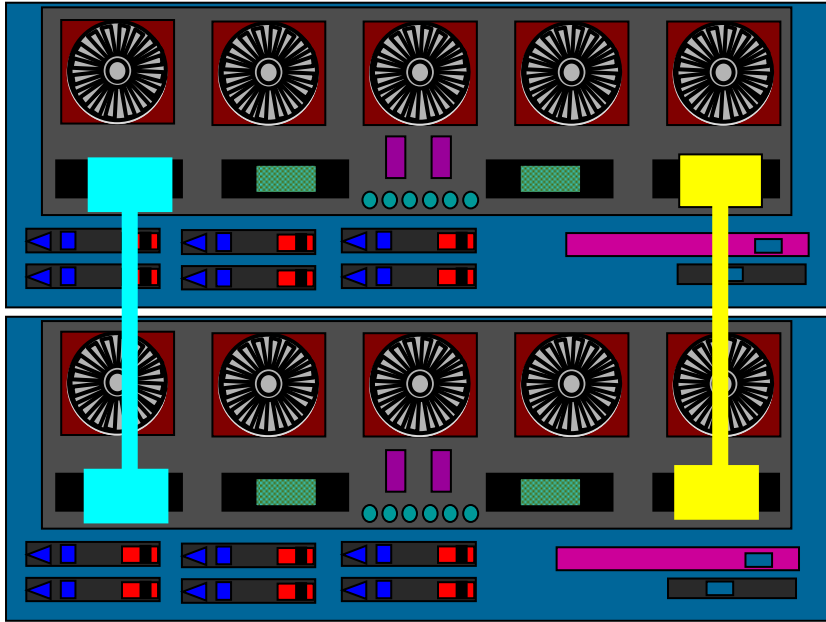


POWER7 Modular Memory Bandwidth

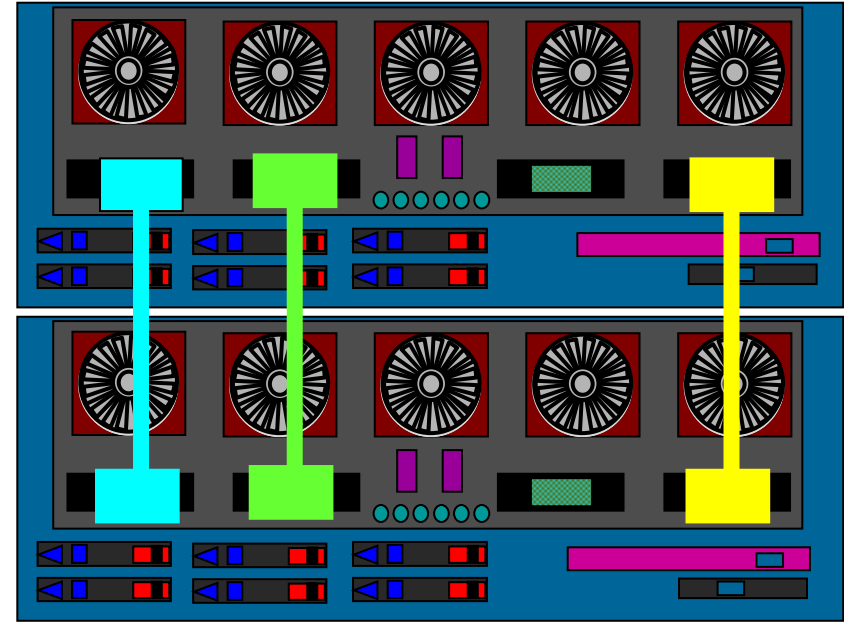


Max Read Bandwidth:	102.336 GB/sec
Max Write Bandwidth:	51.168 GB/sec
Max Combined Bandwidth:	136.448 GB/sec

Power 780 Quad Socket Enclosure Fabric Topology

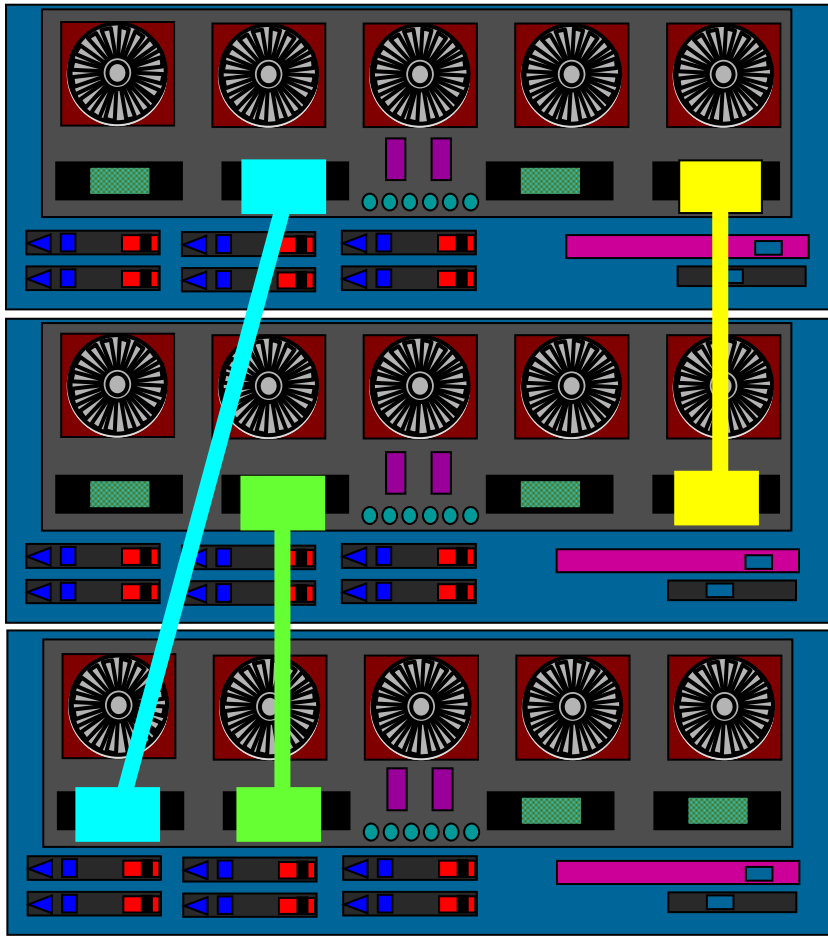


32 Cores

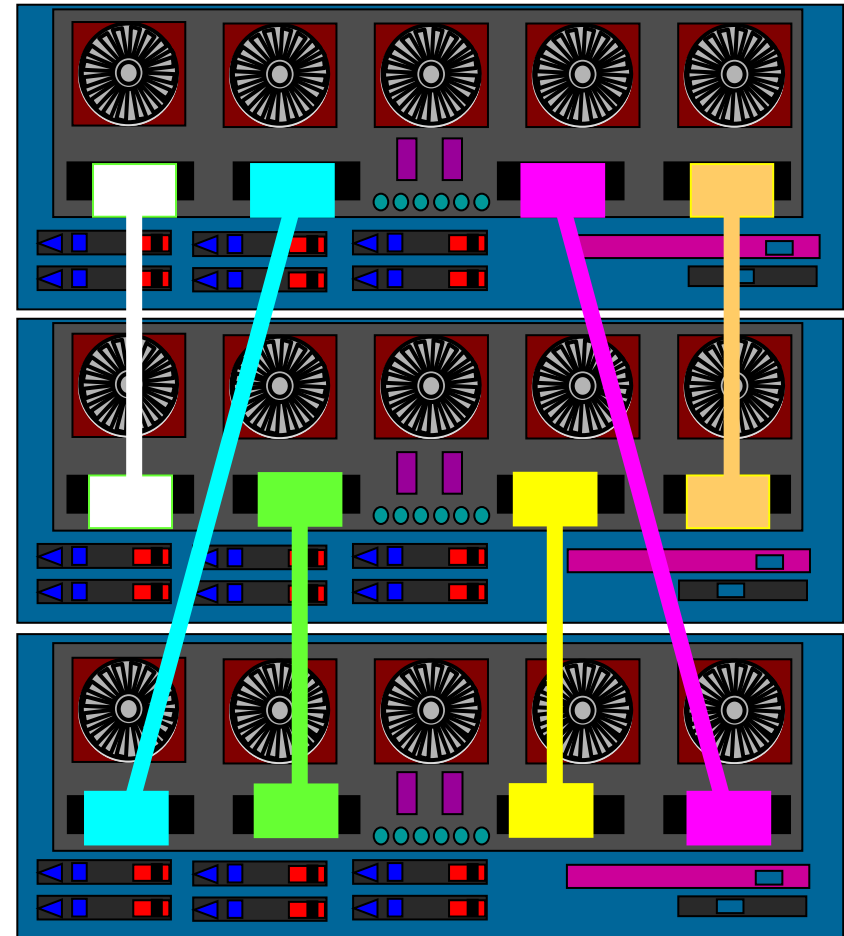


48 Cores

Power 780 Quad Socket Enclosure Fabric Topology

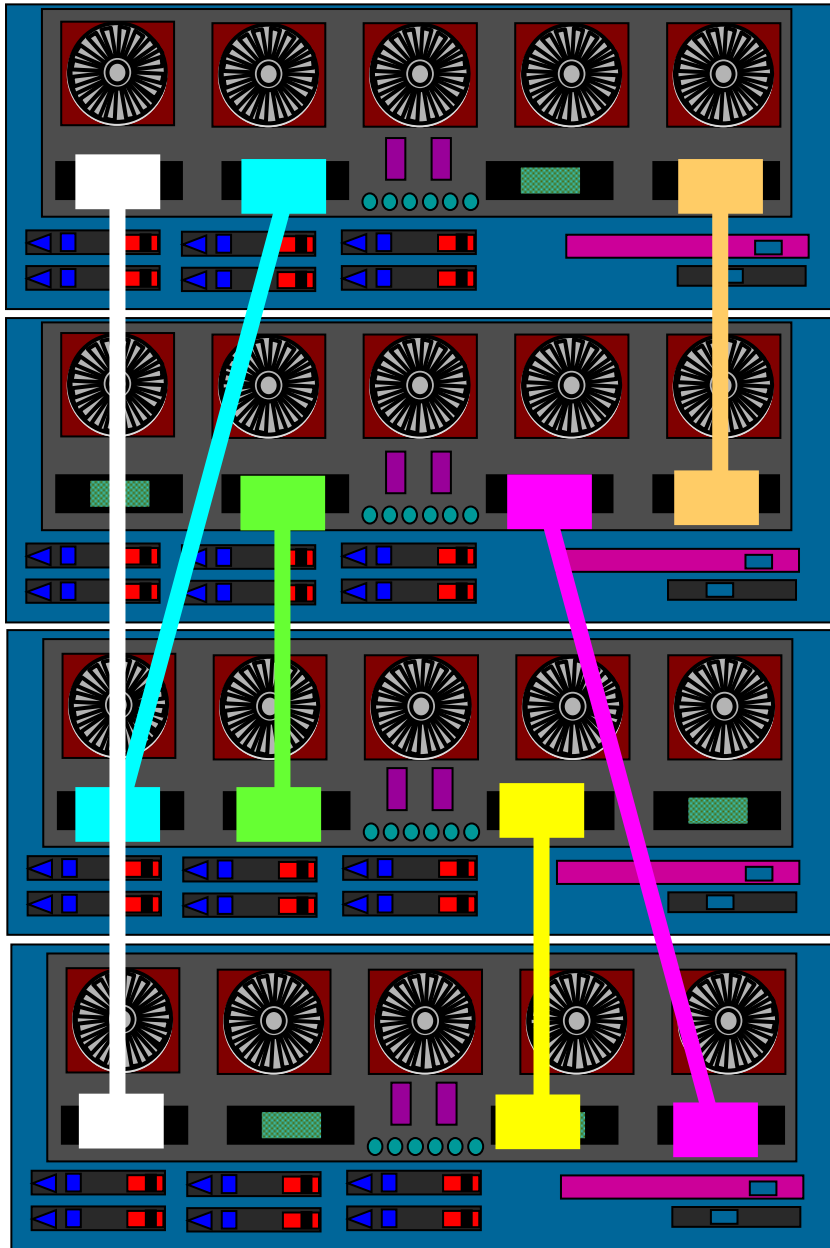


48 Cores

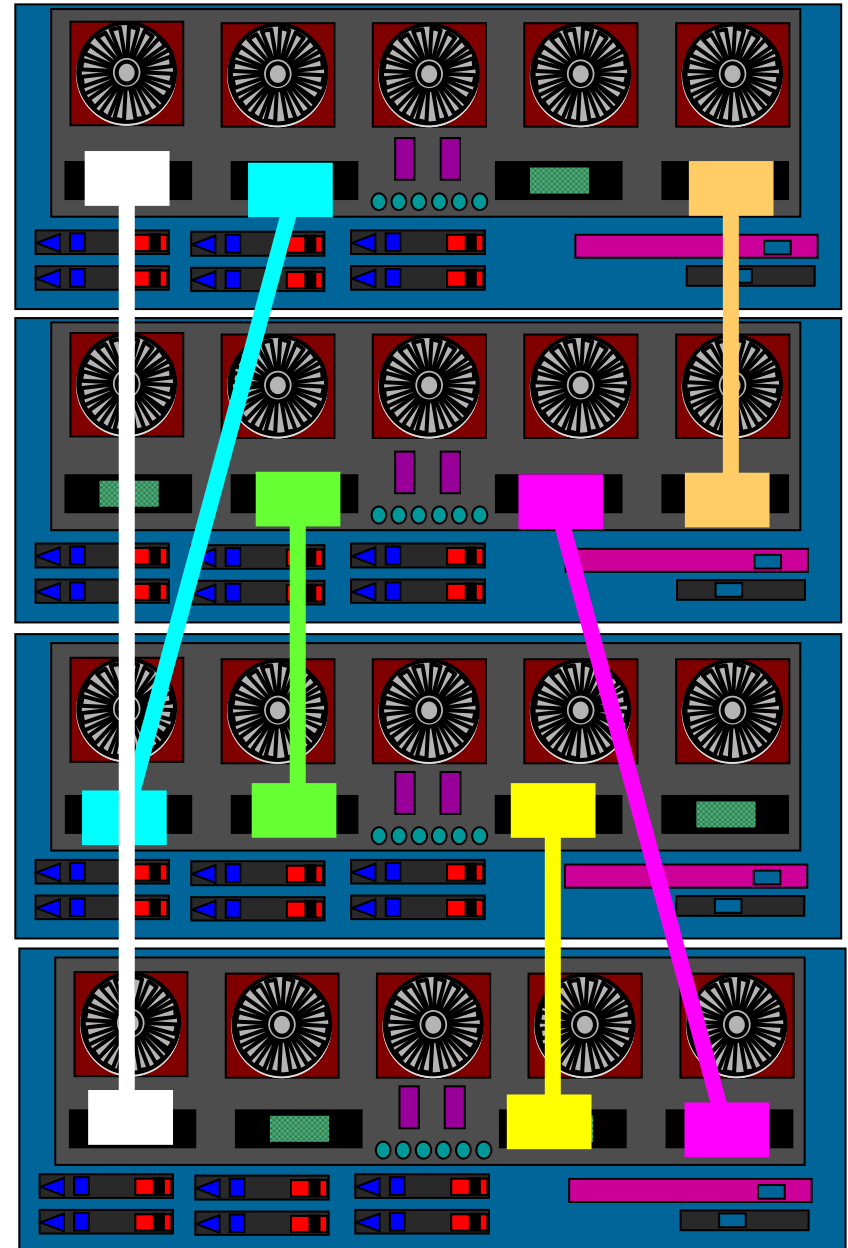


72 Cores

Power 780 Quad Socket Enclosure Fabric Topology

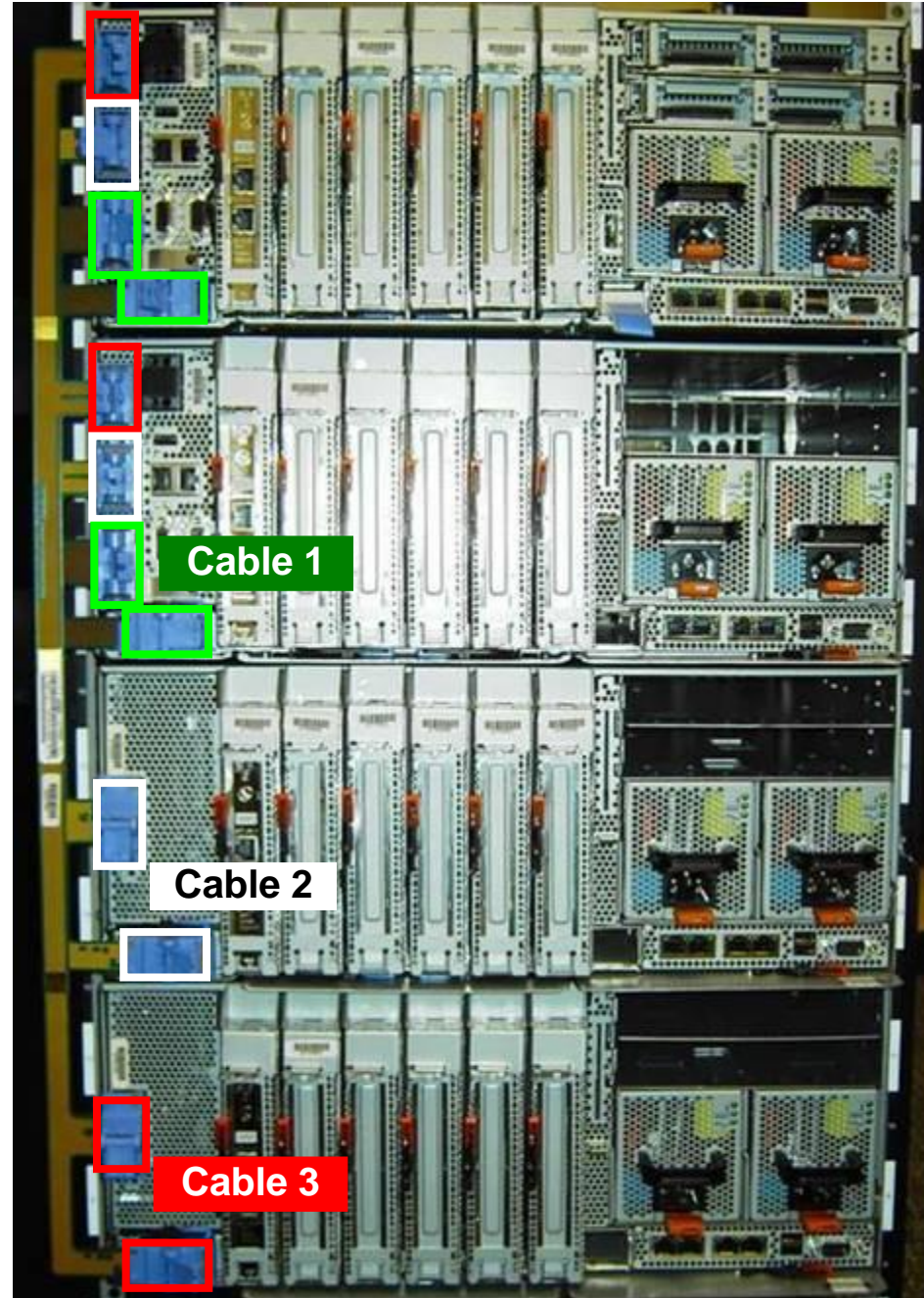
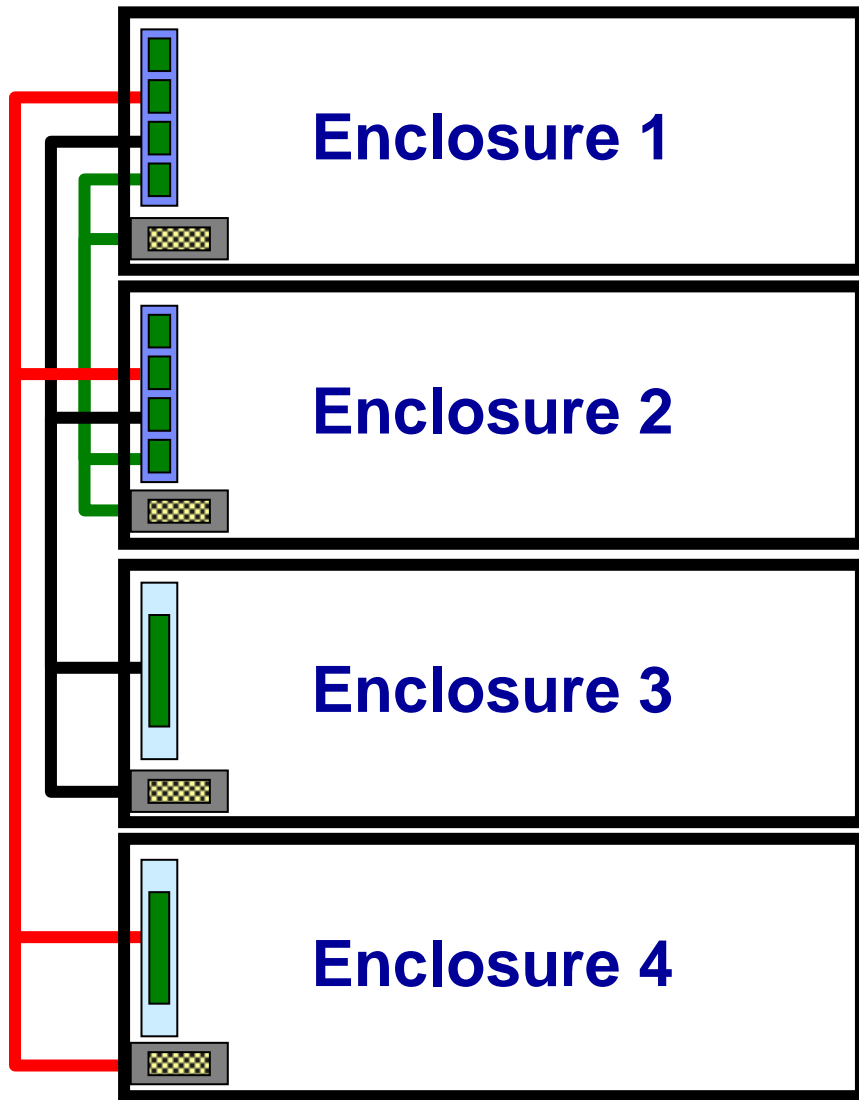


64 Cores



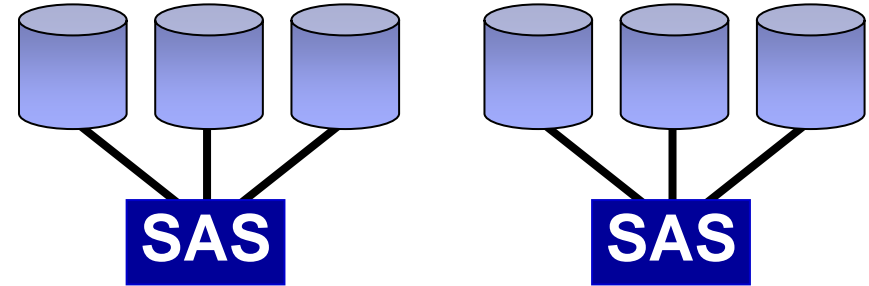
96 Cores

FSP 4 Enclosure Configuration

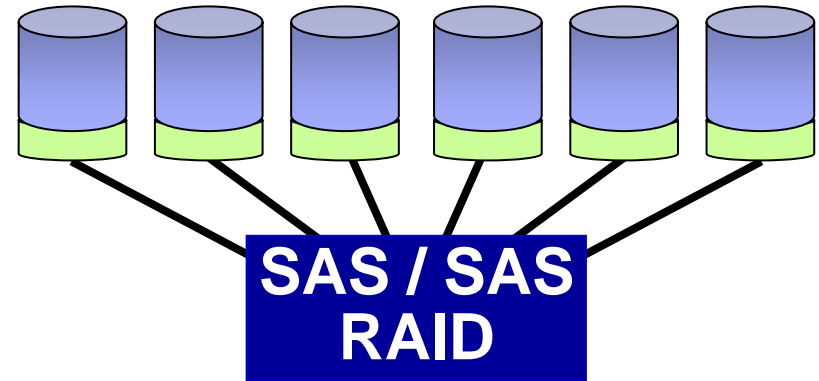


POWER7 Modular Internal Storage Options

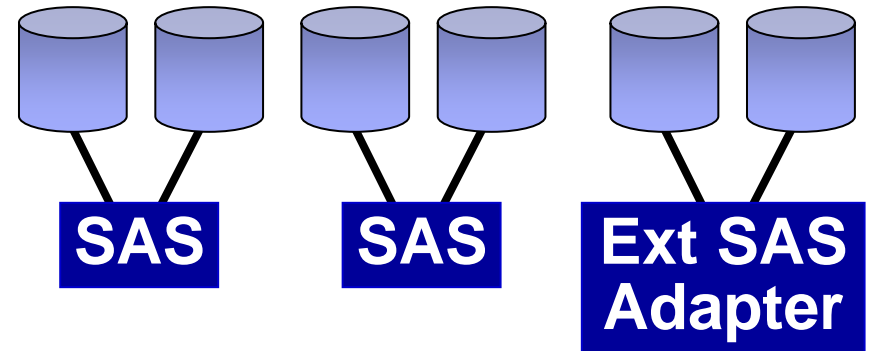
Base Configuration
Dual Split Backplane



Optional RAID



Optional Split Backplane
Triple Split Backplane



Active Memory Mirroring for Hypervisor

Eliminate Platform outages due to uncorrectable errors in memory (UEs)

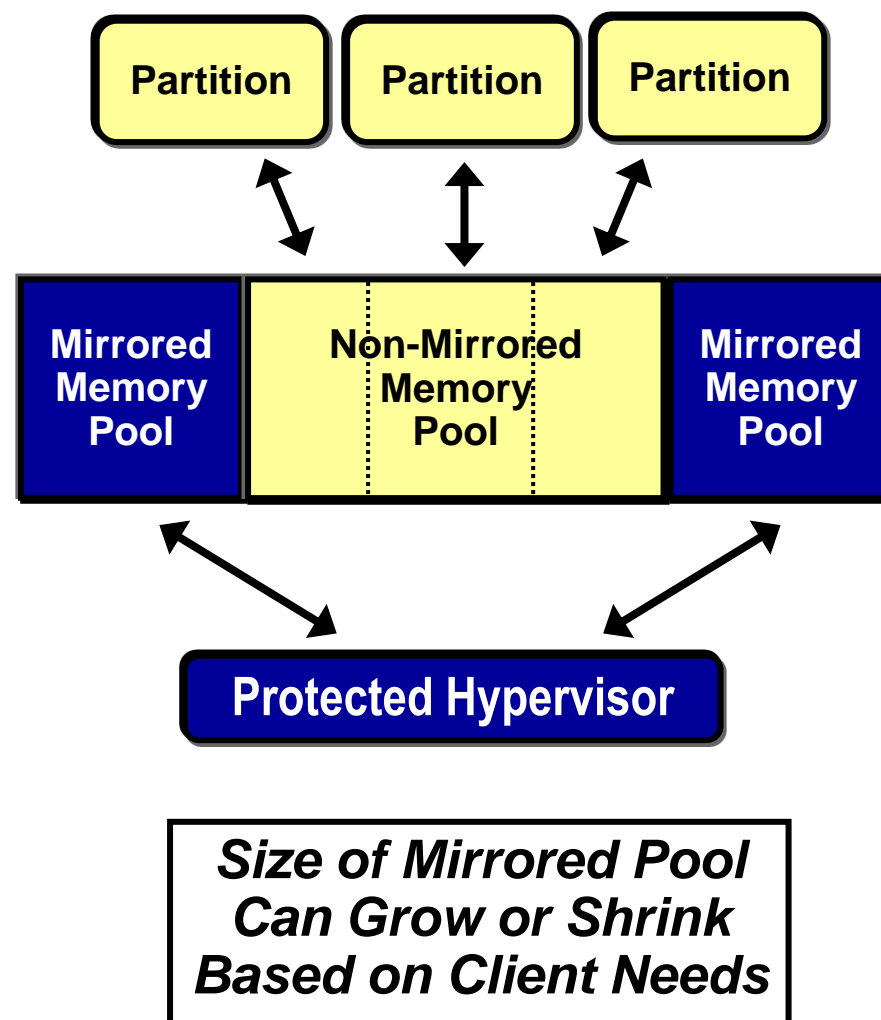
Maintains two identical copies of the system hypervisor in memory at all times

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)

Active Memory Mirroring available for:

- Power 770 / MMC (optional #4797)
- Power 780 / MHC (standard)
- Power 795 (standard)



Not available 770 / MMB or 780 / MHB

Enable/Disable Hypervisor Memory Mirroring / ASMI

Advanced System Management - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <http://ze29ae/cgi-bin/cgi> Go

Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid

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Log out User ID: dev ze29ae ZM720_033

Expand all menus Collapse all menus

- Power/Restart Control
- System Service Aids
- System Information
- System Configuration
 - System Name
 - Configure I/O Enclosures
 - Time Of Day
 - Firmware Update Policy
 - PCI Error Injection Policy
 - Monitoring
 - Interposer Plug Count
 - HSL Opticonnect Connections
 - I/O Adapter Enlarged Capacity
 - Hardware Management Consoles
 - Virtual I/O Connections
 - Virtual Ethernet Switches
 - Firmware License Agreement
 - Floating Point Unit Computation Test
 - Power Management Mode Setup
 - Selective Memory Mirroring

Selective Memory Mirroring

Current mode : Enabled

Requested mode: ?

Any setting change will not be effective until next system power cycle.

Local intranet



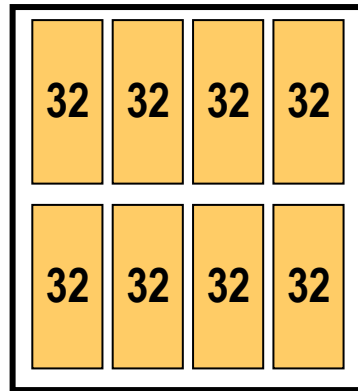
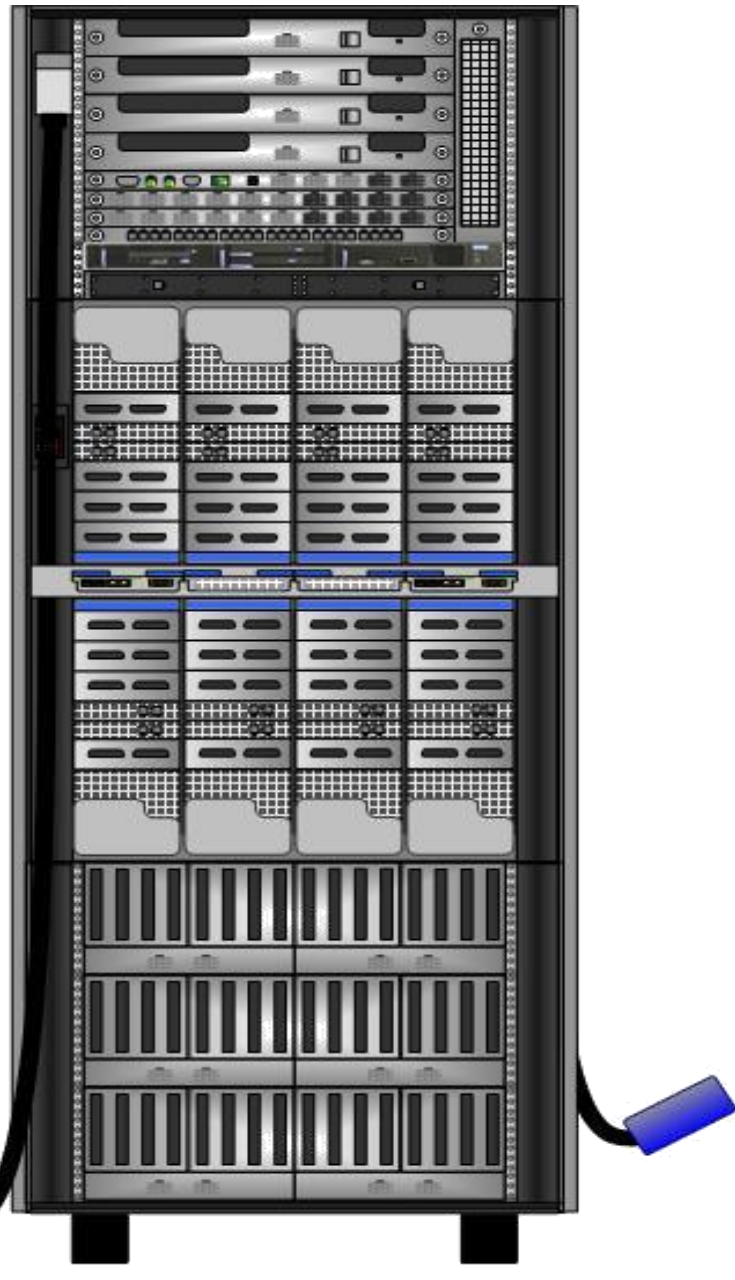
Power 795

POWER7 795

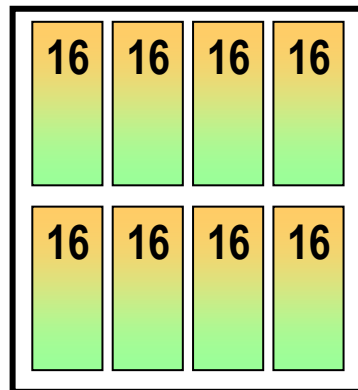


Power 795	
Architecture	Up to 32 Sockets (Max 256 Cores) 4 TurboCore / 8 Max Core & 6 Core
L2 & L3 Cache	On Chip
DDR3 Memory	Up to 8 TB
DASD / Bays	Remote I/O Drawer (SAS / SSD)
Book Interconnect	Point to Point
GX++ Bus	4 per System Book Max: 32 (8 Nodes)
Media Bays	Media drawer
Remote IO Drawers	1 – 32 drawers
LPARs	Up to 1000
Redundant Power & Cooling	Yes
Hot Maintenance	Yes
Cooling	Air
Redundant Clock	Yes
Power / Thermal (TPMD)	Advanced Energy Scale Optional DC power

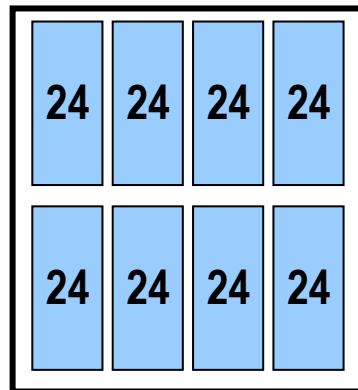
Power 795 Processor Core Options



**256 Cores / 32 Core Books
MaxCore Chips (8 Cores)
@ 4.0 GHz**



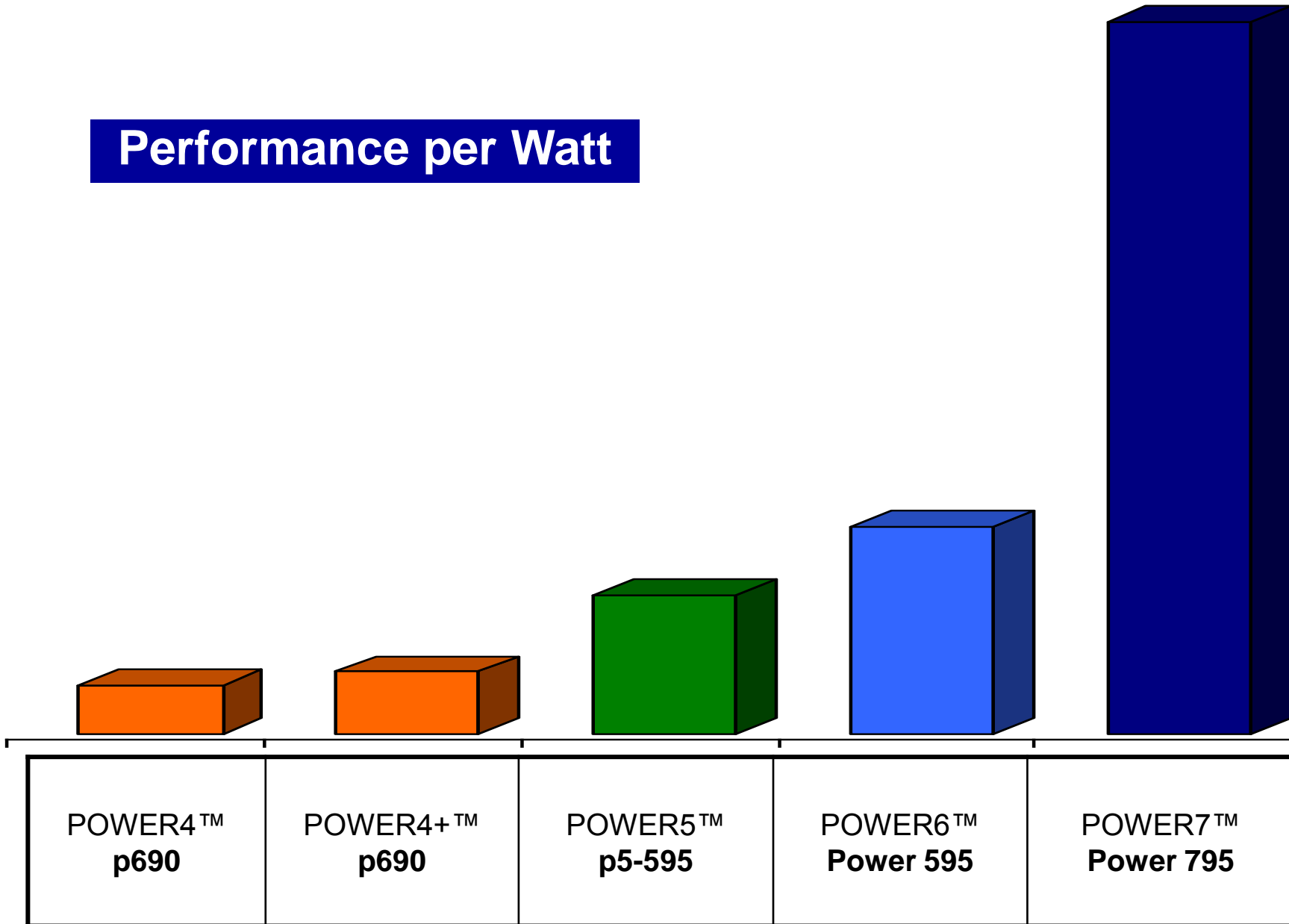
**128 Cores / 16 Core Books
TurboCore Chips (4 Cores)
@ 4.256 GHz**



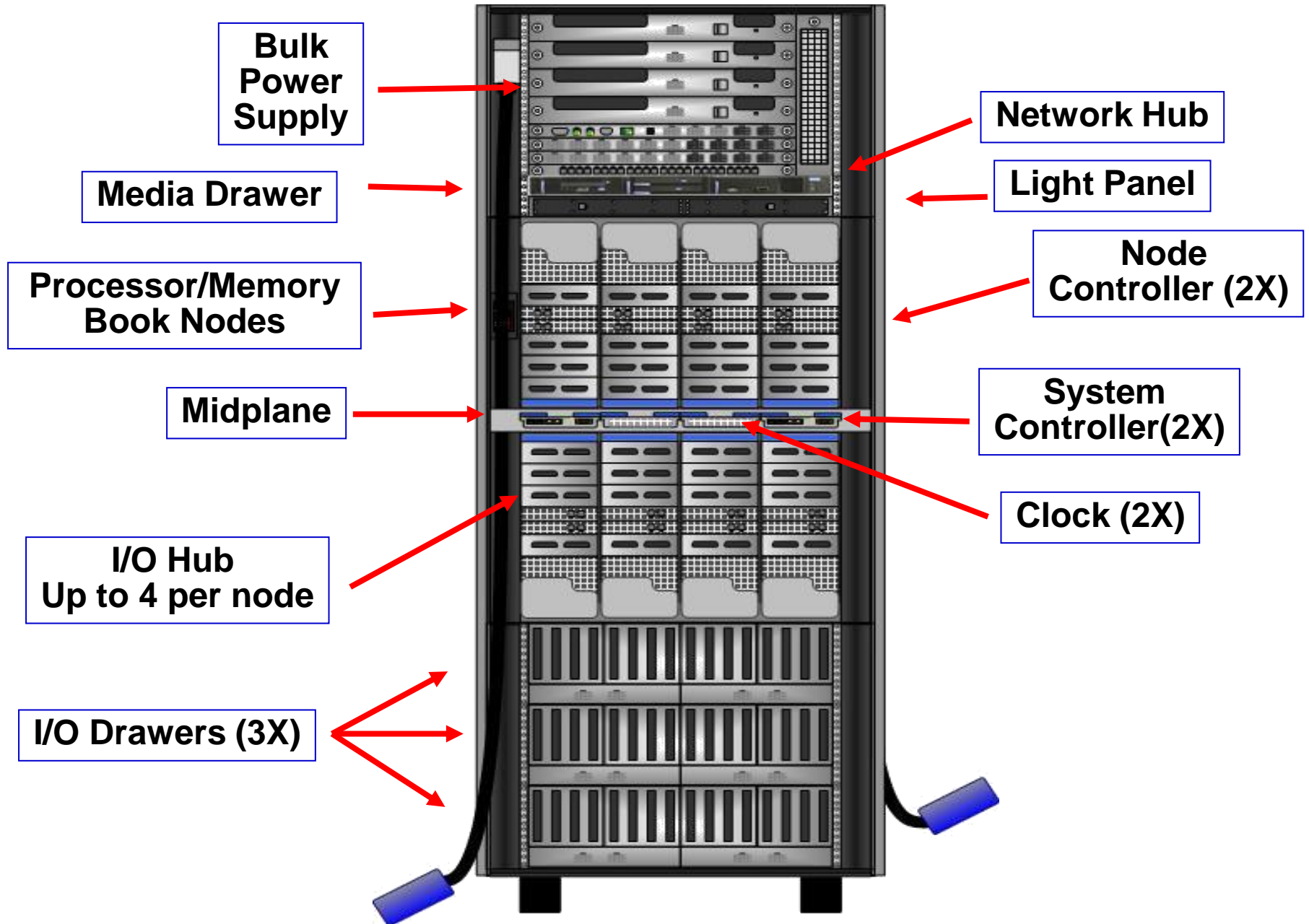
**192 Cores / 24 Core Books
6 Core Chips
@ 3.72 GHz**

High-end Energy Efficiency

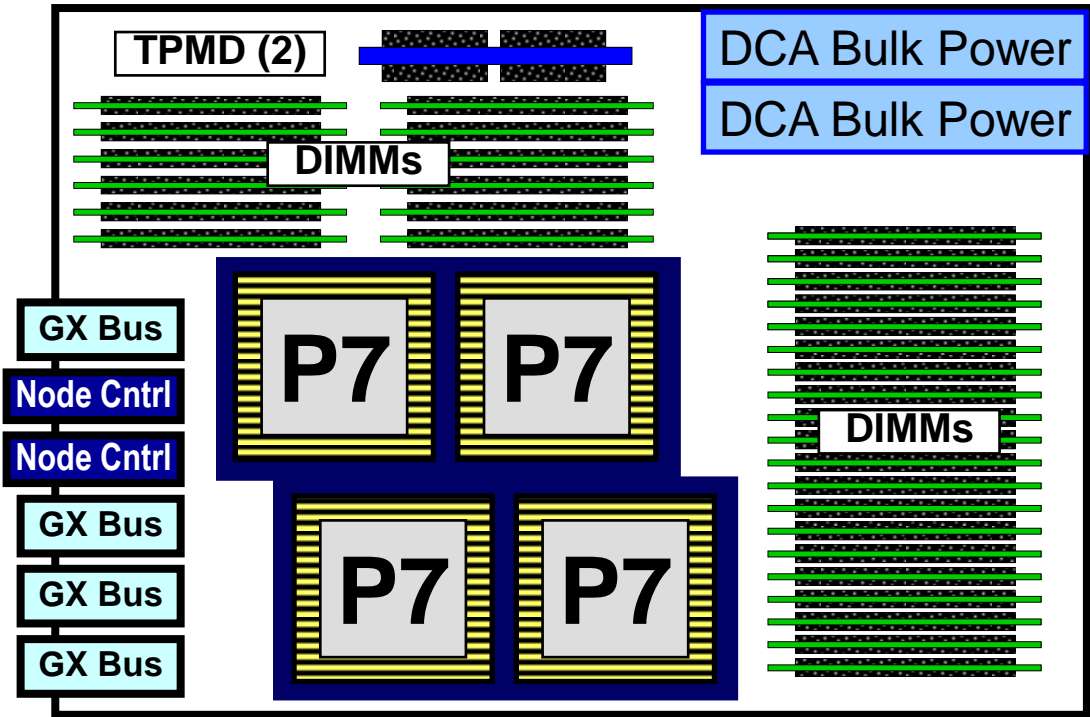
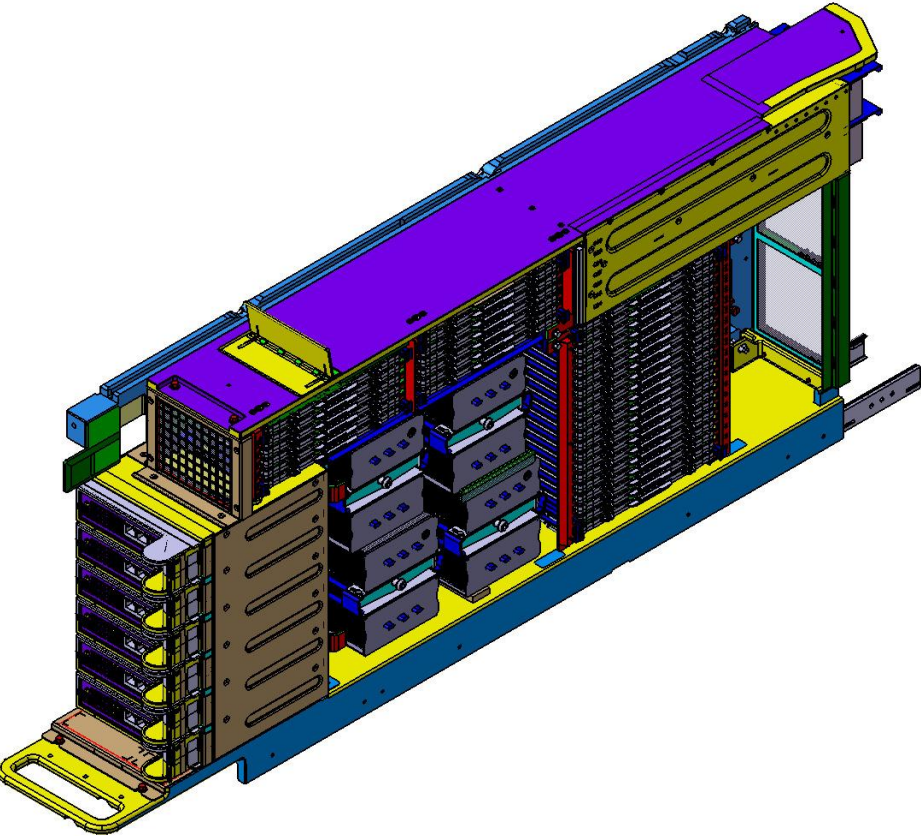
Performance per Watt



Power 795 Layout

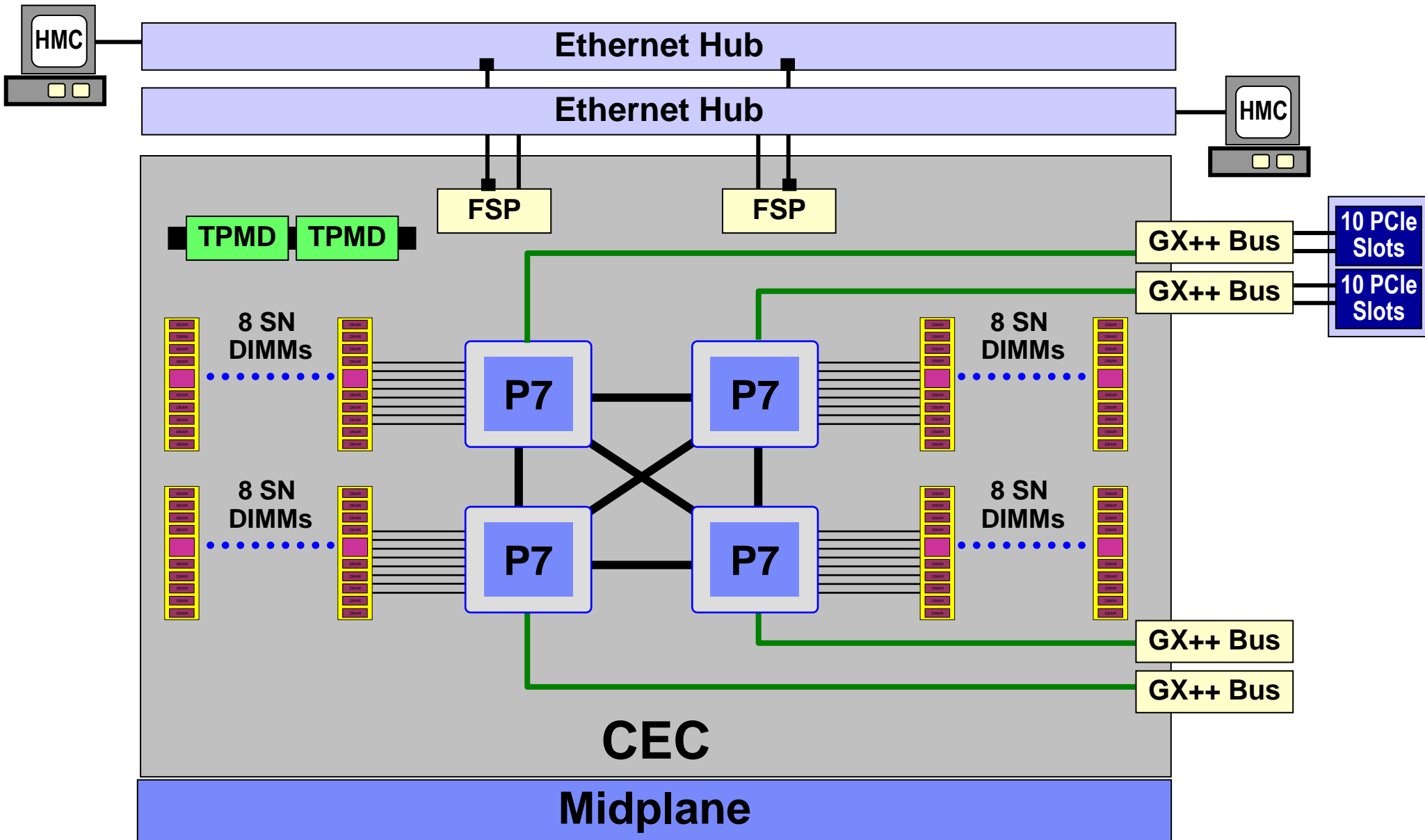


Power 795 Processor / Memory Book Node

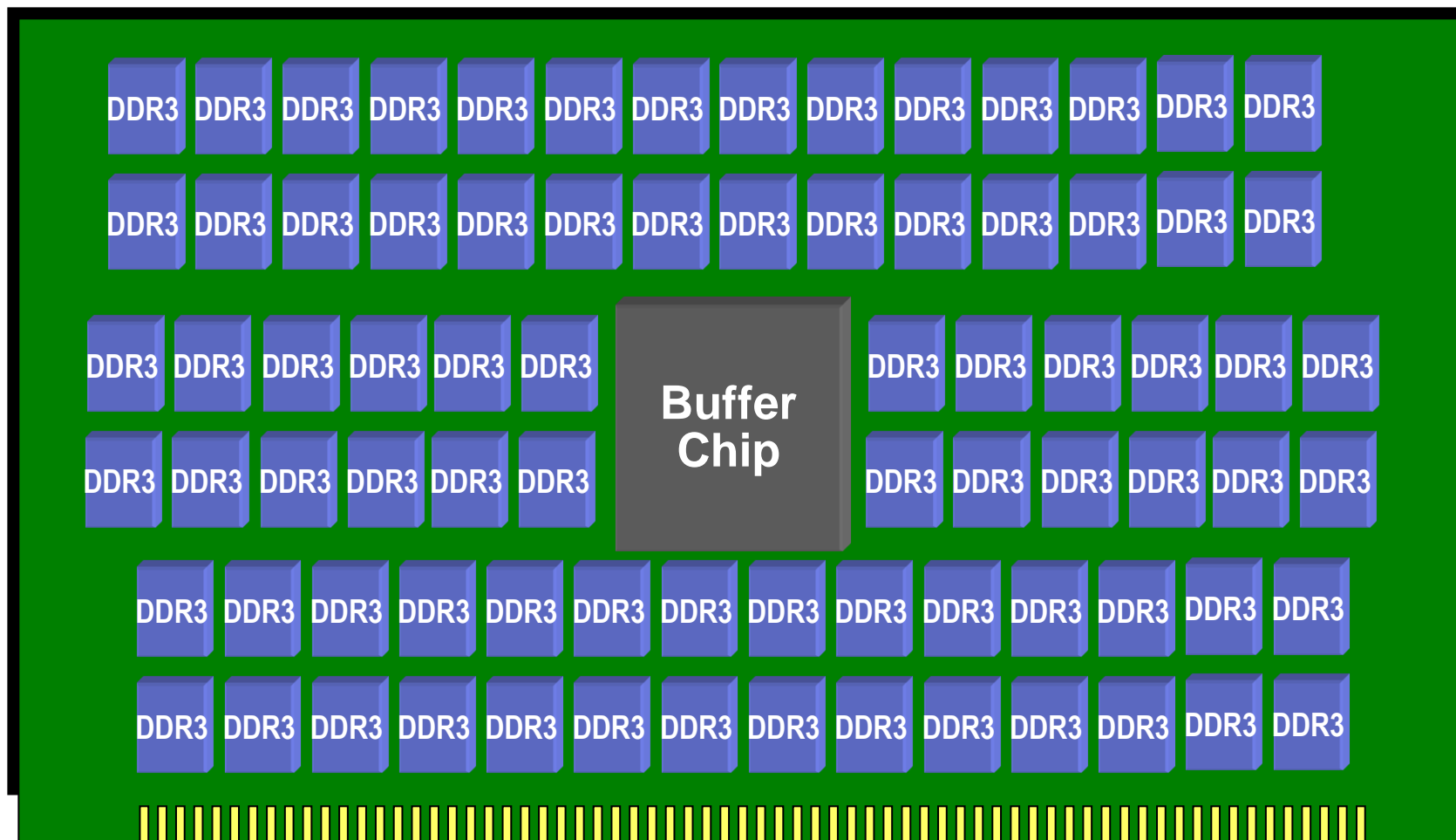


4 POWER7 Chips / Up to 1TB Memory
4 GX Ports / 2 Node Controllers
32 DIMM Slots per Node
2 TPMD / Node

Power 795 Logical Node Layout

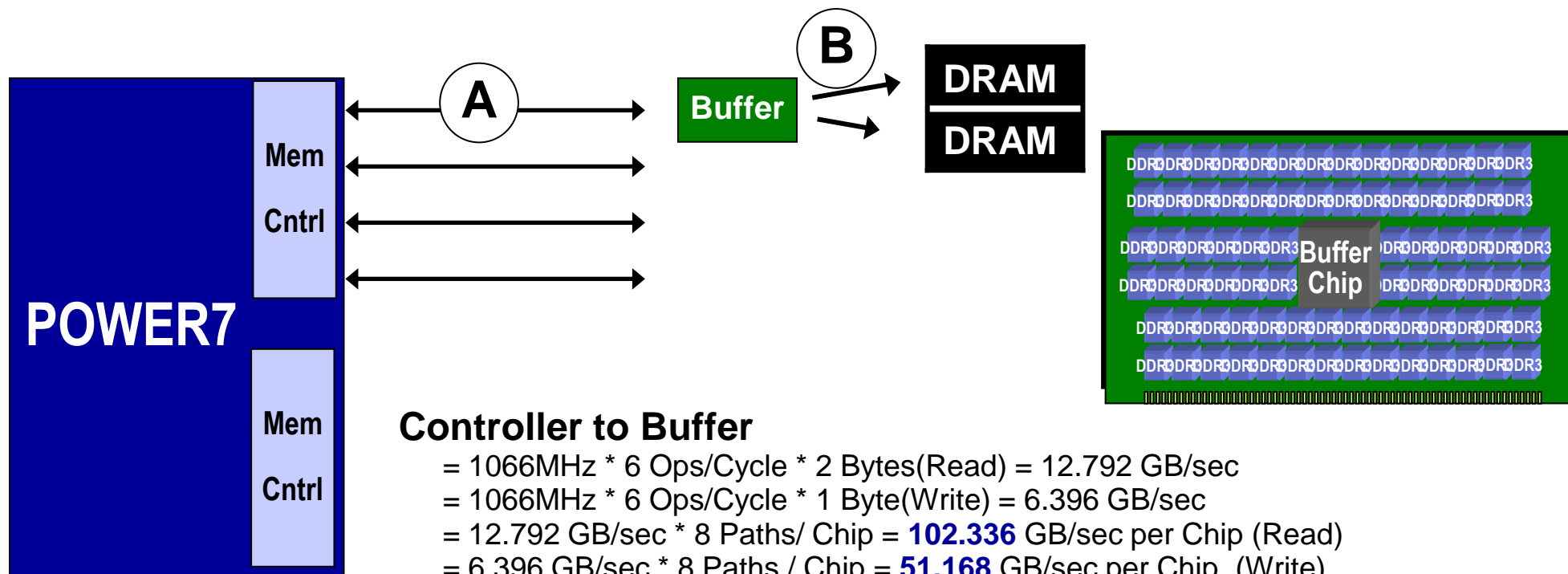


Power 795 Memory Packaging



DIMM Size	Memory Speed	Offering Size	Max Memory
8 GB	1067 MHz	32 GB	2 TB
16GB	1067 MHz	64 GB	4 TB
32 GB	1067 MHz	128 GB	8 TB

POWER7 Memory Bandwidth (Midrange & High End)



Controller to Buffer

= 1066MHz * 6 Ops/Cycle * 2 Bytes(Read) = 12.792 GB/sec
 = 1066MHz * 6 Ops/Cycle * 1 Byte(Write) = 6.396 GB/sec
 = 12.792 GB/sec * 8 Paths/ Chip = **102.336** GB/sec per Chip (Read)
 = 6.396 GB/sec * 8 Paths / Chip = **51.168** GB/sec per Chip (Write)
 = 102.336 + 51.168 = **153.504** GB / sec per Chip
 = **76.752** GB / sec per Memory Controller

Buffer to DIMM

= 1066MHz * 2 Ports / DIMM * 8 Bytes / Ports = **17.056** GB/sec per Port
 = 17.056 GB/sec * 8 DIMMs / Socket = **136.448** GB/sec per Chip

Max Read Bandwidth:	102.336 GB/sec
Max Write Bandwidth:	51.168 GB/sec
Max Combined Bandwidth:	136.448 GB/sec

Power 795 Bandwidth @ 4 GHz

Memory	Bandwidth
L1 (Data)	= 192 GB/sec
L2	= 192 GB/sec
L3	= 128 GB/sec
Memory 8 Nodes	136.448 GB/sec per socket Total = 4366.366 GB/sec
Intra-Node Buses System	= 31.06 GB/sec per Socket = 186.368 GB/sec per Node = 1490.944 GB/sec per System
Inter-Node Buses System	= 26.7GB/sec 28 * 26.7 = 746.7 GB/sec per System
GX Bus	= 20 GB/sec 640 GB/sec per System

POWER5/6/7 High End Bandwidth

Component	Bandwidth		
	POWER5	POWER6	POWER7
L1 (Data) GB/sec	55.2	80	192
L2 GB/sec	220.8 (110.4)	160	192
L3 GB/sec	36.8	80	128
Memory GB/sec	811 per system	1,366 per system	4,366.366 per system
Intra-Node Buses GB/sec	147.2 per node	160 per node	186.368 per node
Inter-Node Buses GB/sec	515.2 per system	746.7 per system	746.7 per system
GX Bus GB/sec	32 (24 for IO) 196.26	32 640 per system	32 640 per system
I/O GB/sec	72	180 - 200	180 - 200

Power 795 Power Flex

Consists of **Two to Four Power 795 systems**

Each with four or more processor books

- 8 Core or Turbo Core

50% or more permanent activations

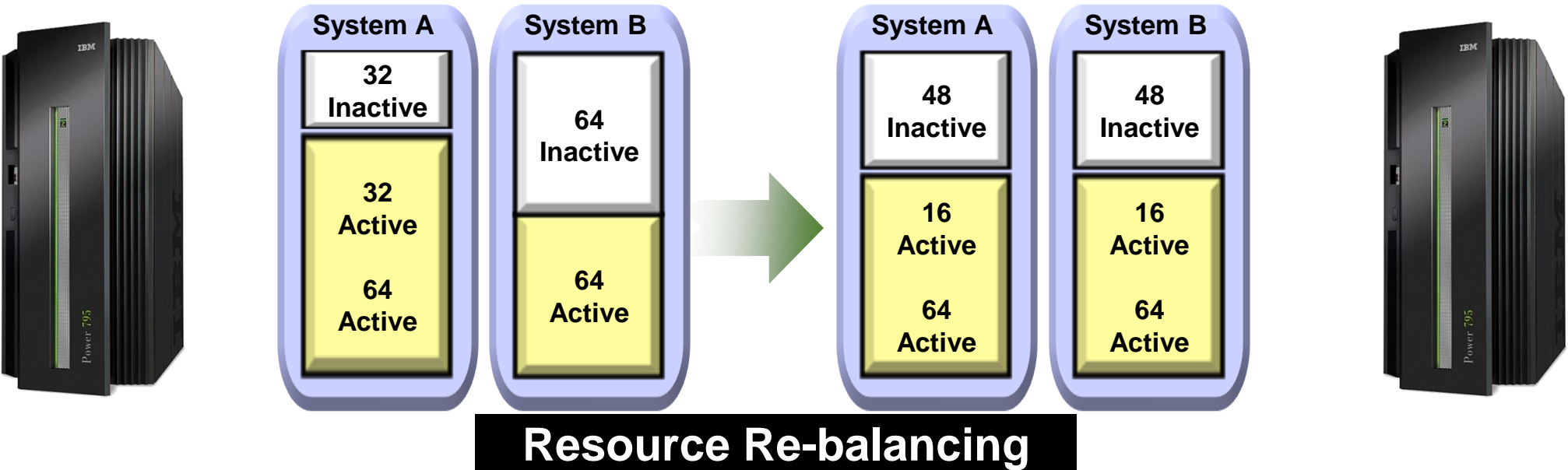
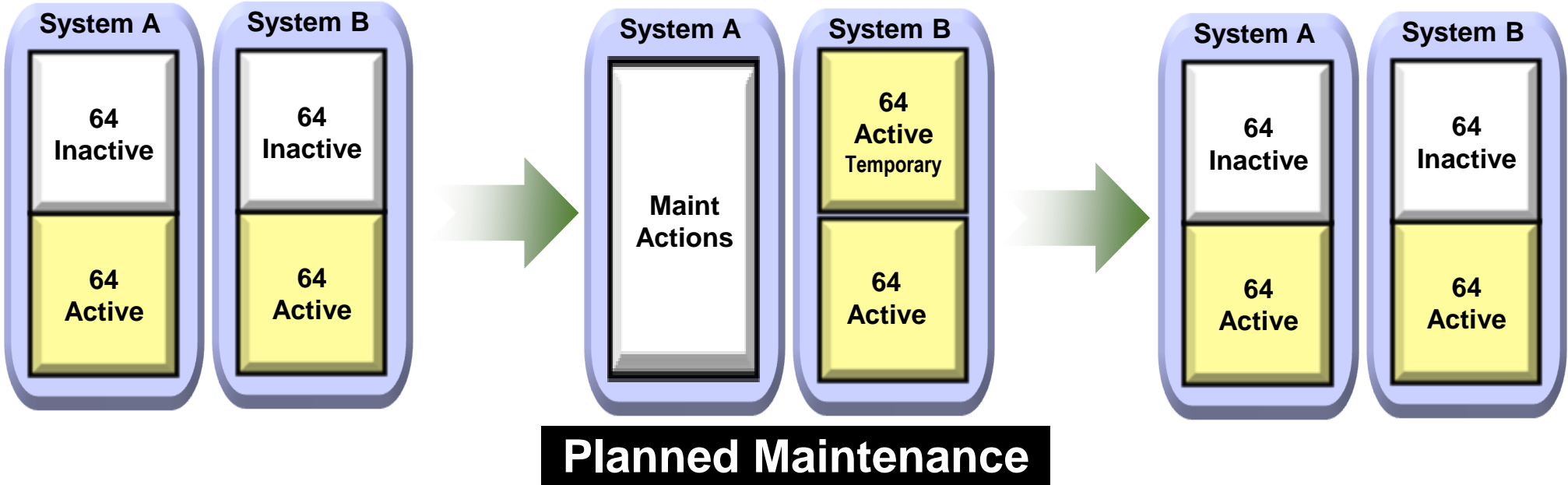
- Processor & Memory



- **Allocate and rebalance** processor and memory
- Live Partition Mobility for **flexible workload movement**
- **Seamless growth** with Capacity on Demand
- On/Off Processor days for **extra capacity**
- 960 days per 32-core processor book May be re-balanced
 - ❖ Up to 12 times per year
- **RPQ 8A1830**



Power Flex Examples....



Large LPAR support on Power 795

Power 795 requires a minimum number of inter-node links to support LPAR > 32-cores

- 4+ books on 3.7 or 4.0 GHz systems
- 3+ books on 4.25 GHz TurboCore systems

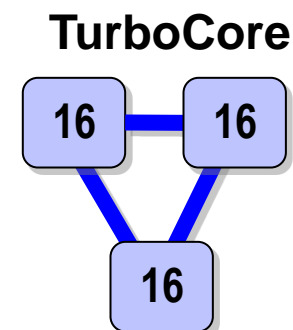
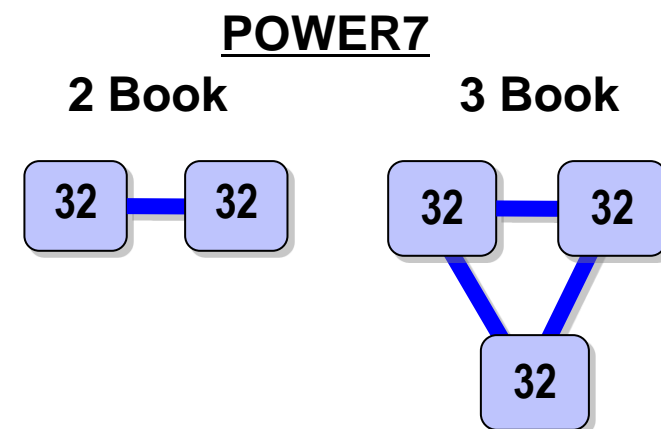
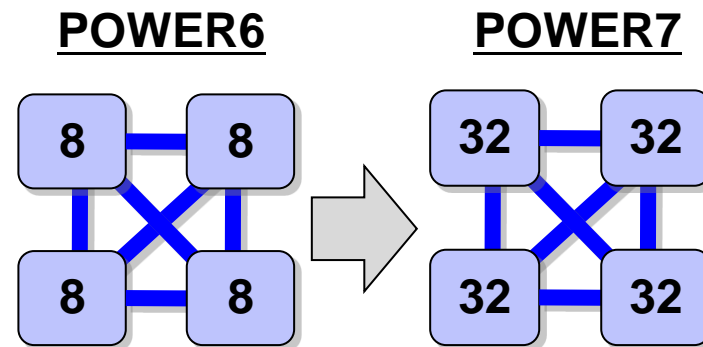
Power 795 supports up to 128-core LPAR

LPARs >128-core (up to 256-way) are supported on Power 795 systems with 4GHz processors

- Key enabled via feature #1256
- Requires pre-sales performance assessment; (RPQ)

System Partition Processor Limit (SPPL):

- Four books or more
- Establishes the max the # cores for LPAR on a book basis. (24/32 or Max)



Active Memory Mirroring for Hypervisor

New Hardware/firmware function in POWER7 for 795

POWER7 chip provides the ability to create two copies (mirror) of data in memory

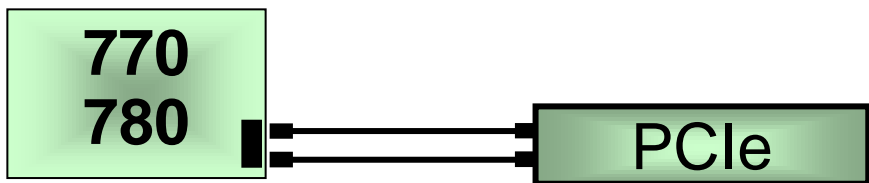
Having two copies eliminates a system wide outage due to the failure of a single DIMM

Memory used by the hypervisor is mirrored since any hypervisor read that incurs an unrecoverable error will result in system wide outage

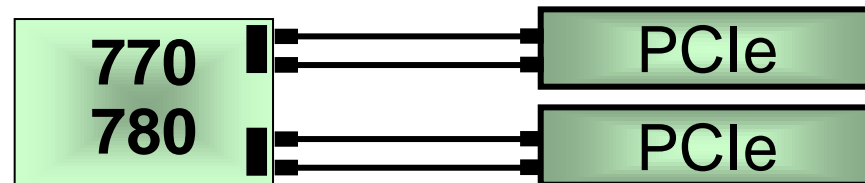
Power 770 / 780 IO Options

Power Systems

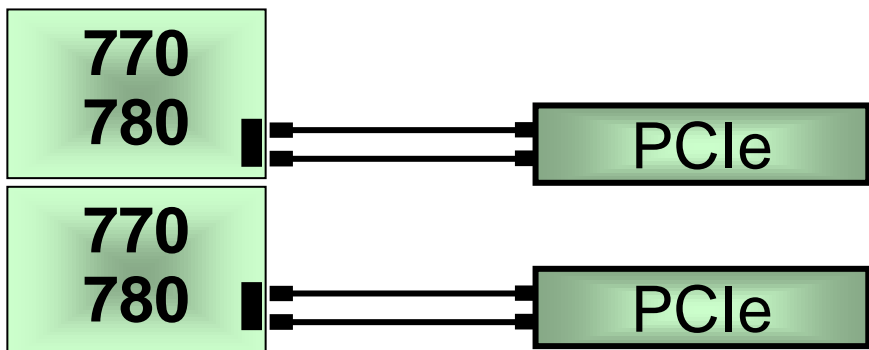
Power 770/780 PCIe IO Drawer configurations



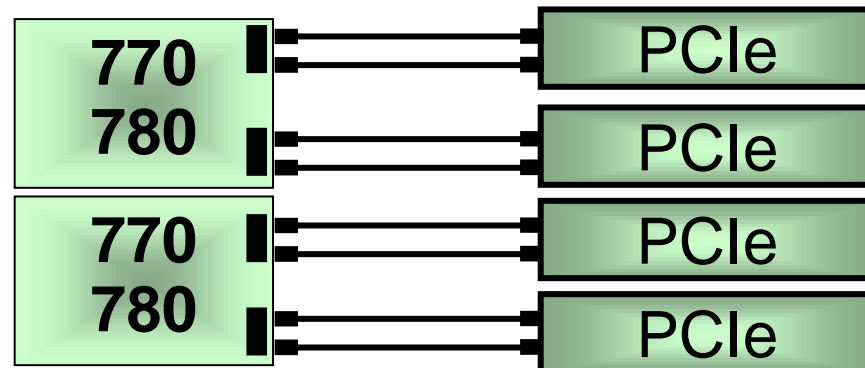
One PCIe IO Drawer



Three PCIe IO Drawers



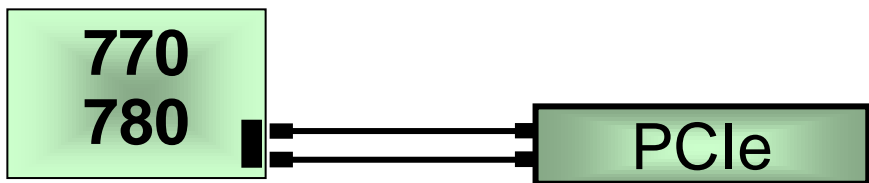
Two PCIe IO Drawers



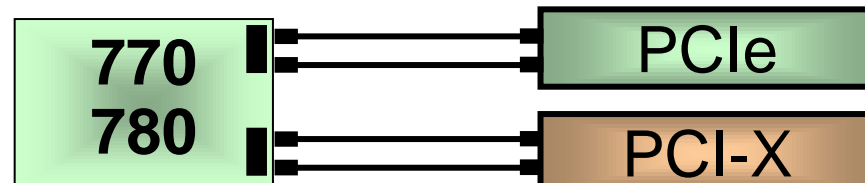
Four PCIe IO Drawers

**Multiple GX++ cards (12X)
Use as many as possible**

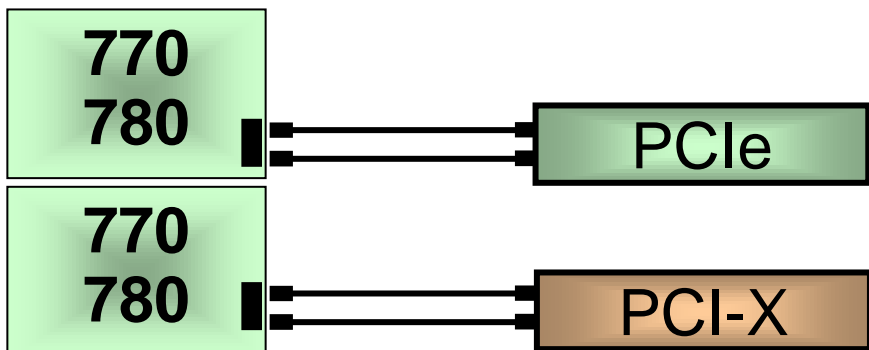
Power 770/780 PCIe / PCI-X IO Drawer configurations



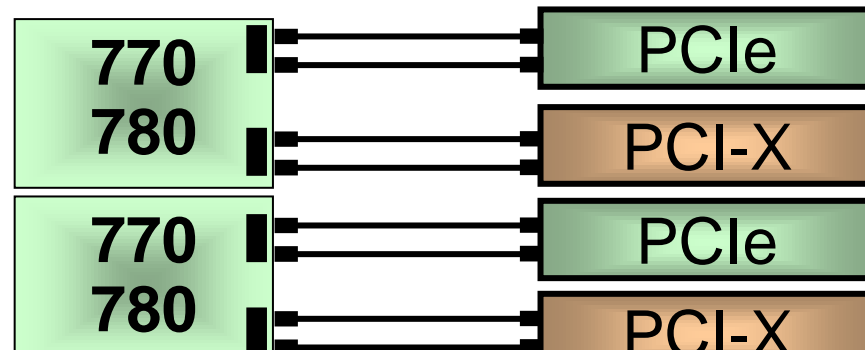
One PCIe IO Drawer



Three PCIe IO Drawers



Two PCIe IO Drawers



Four PCIe IO Drawers

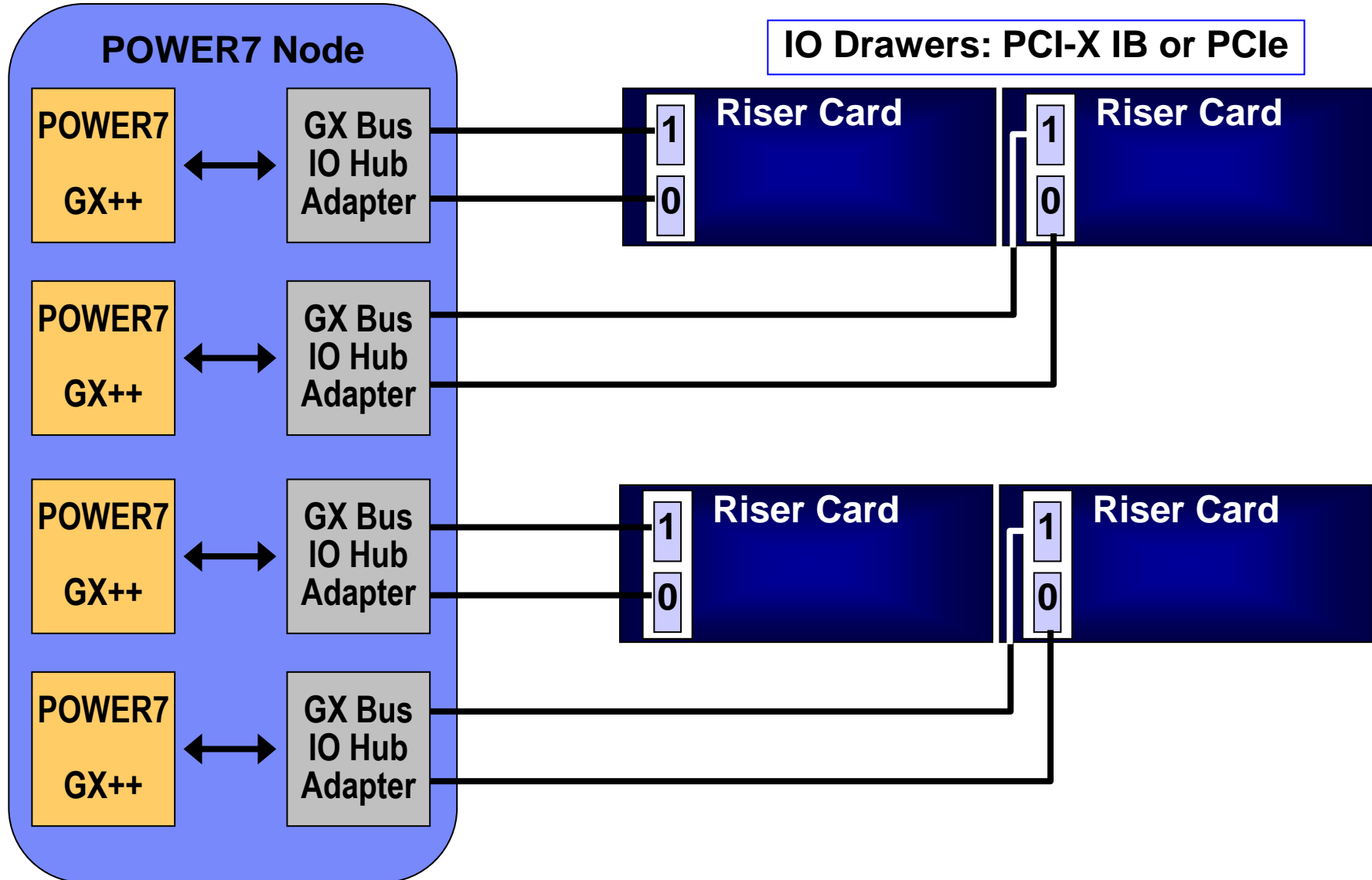
**Multiple GX++ cards (12X)
Use as many as possible**

Power 795 IO

Power Systems

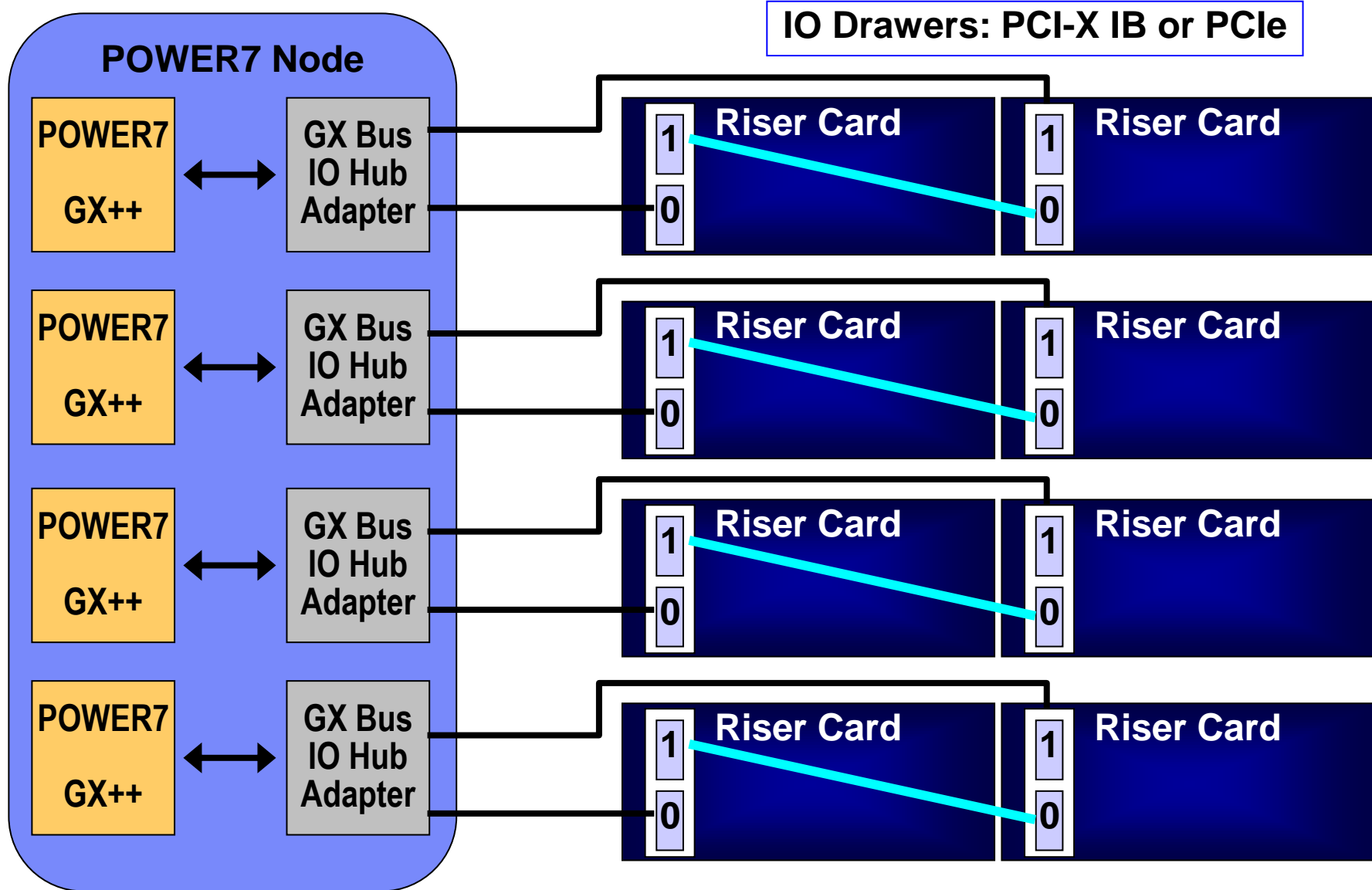
Double Barrel (Dual Loop) Connection Mode

Connects both ports of a hub adapter to both ports of one planar in an I/O drawer
 Provides maximum bandwidth and is the preferred mode in most cases.



Looped Connection Mode

Both ports of one hub adapter to connect to two planars in an I/O drawer
 Preferred in cases where I/O bandwidth is less important.



I/O Drawers and Connections

Power 795 supports standard PCI-X, PCI-X 2.0 and PCI-E via I/O drawers.

IO Drawers: PCIe or PCI-X

Two modes: Double Barrel and Loop

When adding I/O hub cards to existing Nodes, follow the plugging order outlined in the later pages describing plugging rules.

When adding I/O hub cards to newly added nodes, add I/O hub cards to the new nodes using the following rules:

1. Populate slots farthest from the midplane first.
 2. Distribute hub cards amongst all new PU nodes, in node plug order until the new nodes have as many hub cards as an existing node with the least hub cards.
 3. Continue adding any remaining hub cards in node plug order starting with the node with the least hub cards and in the lowest plug order, following the plugging order outlined later in the plugging rules section.
- NOTE: Concurrent (hot) rebalancing of I/O hub cards is not supported



Power 750

Power 750 System

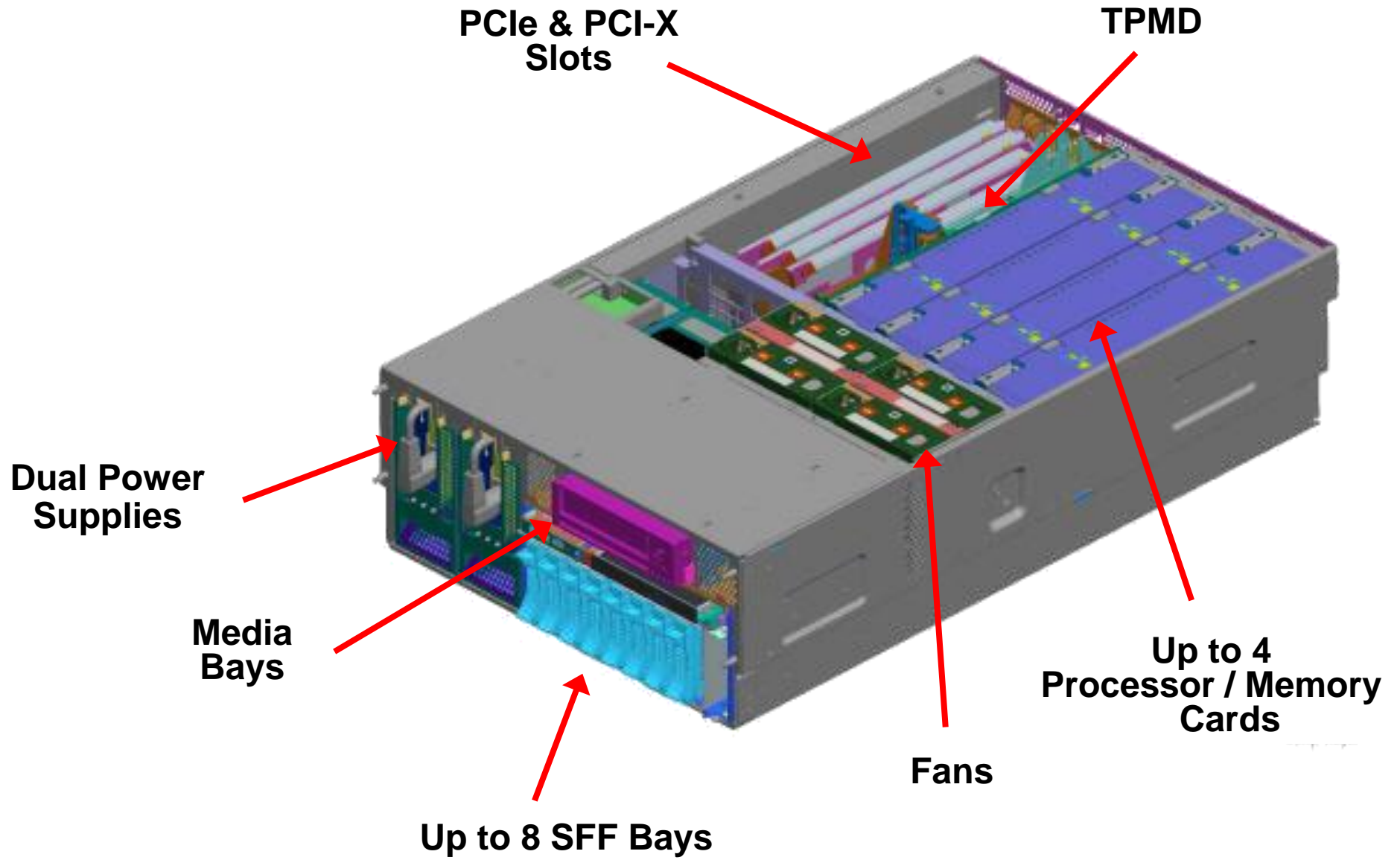


Power 750: 4S4U

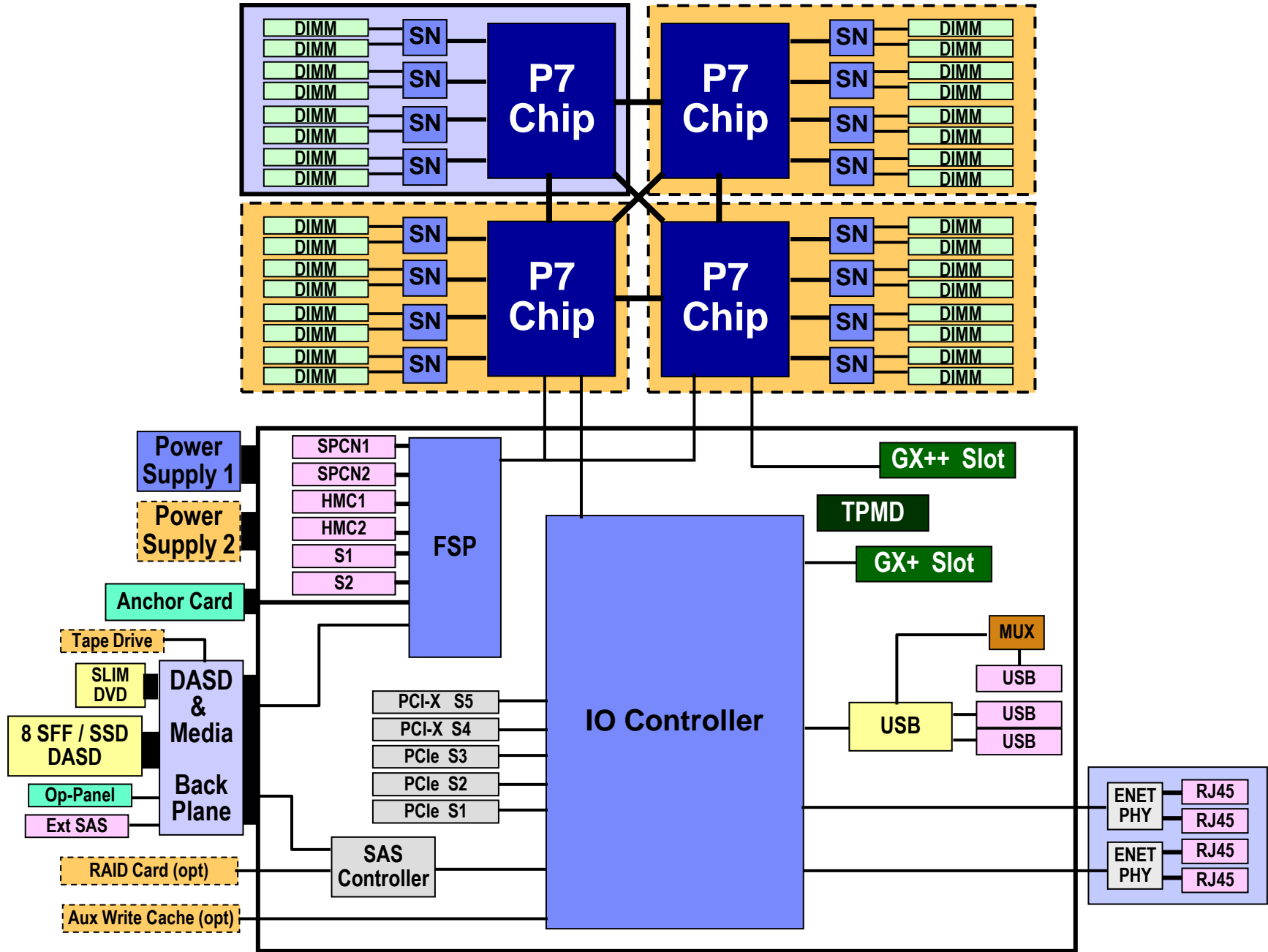


8233-E8B	
POWER7 Architecture	6 Cores @ 3.3 GHz 8 Cores @ 3.0, 3.3, 3.55 GHz Max: 4 Sockets
DDR3 Memory	Up to 512GB
DASD / Bays	Up to 8 SFF SAS DASD (2.4TB) 73 / 146 / 300GB @ 15k (Opt: RAID)
IO Expansion Slots	PCIe x8: 3 Slots (2 shared) PCI-X DDR: 2 Slots GX+ & GX++ Bus
Integrated SAS / SATA	Yes
Integrated Ports	3 USB, 2 Serial, 2 HMC
Integrated Virtual Ethernet	Quad 10/100/1000 Optional: Dual 10Gbt
Media Bays	1 Slim-line & 1 Half Height
Max IO Drawers	PCIe: 4 PCI-X: 8
Cluster	IB 12X SDR / DDR
Redundant Power and Cooling	Yes (AC or DC Power) Single phase 240vac or -48 VDC
Certification (SoD)	NEBS / ETSI for harsh environments
EnergyScale	Active Thermal Power Management Dynamic Energy Save & Capping

Power 750 System Overview



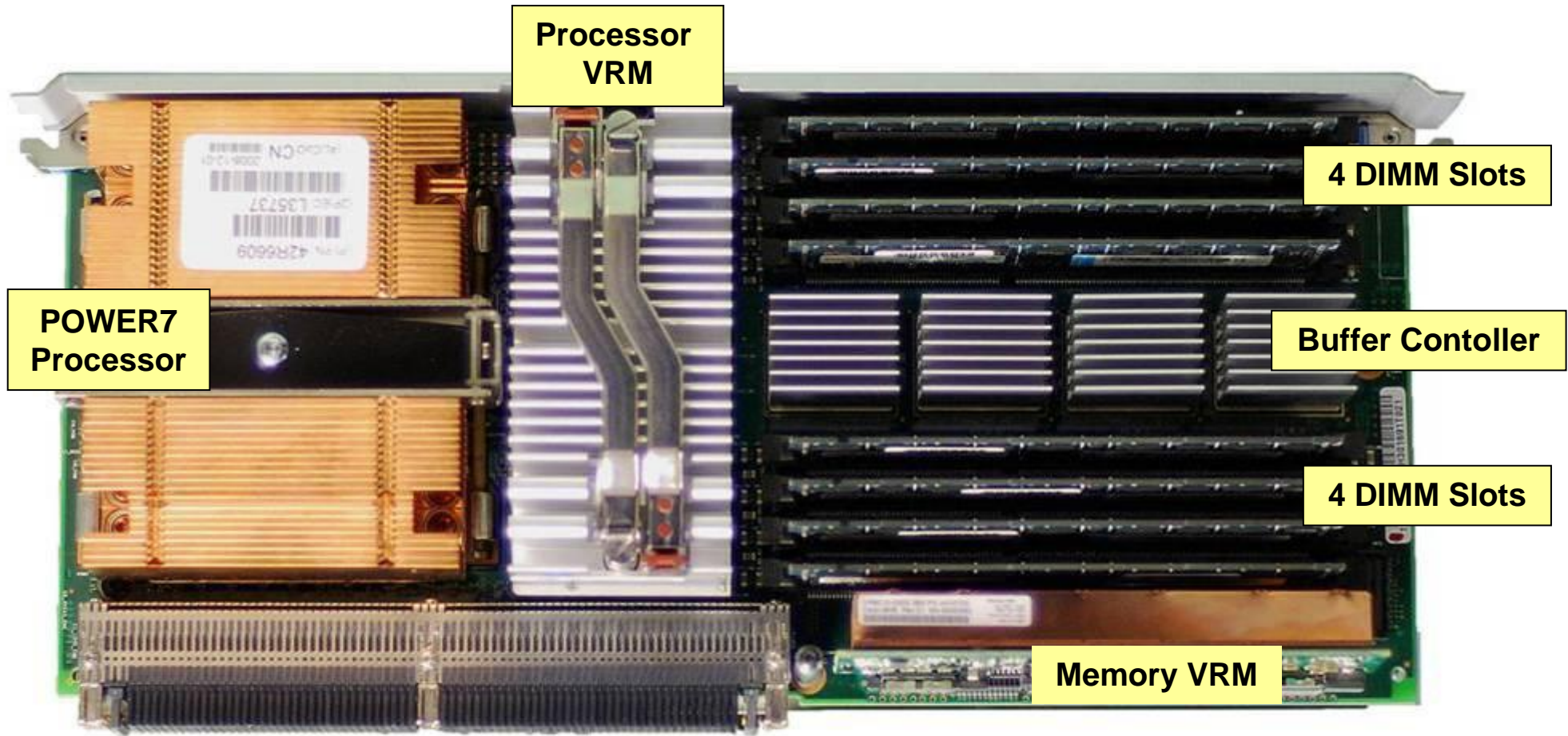
Power 750 System Layout



Power 750 Bandwidth @ 3.55 GHz

Memory	Bandwidth
L1 (Data)	170.4 GB/sec
L2	170.4 GB/sec
L3	113.6 GB/sec
Memory	68.224 GB/sec per Socket 272.896 GB/sec per System
Intra-Node Buses	46.4 GB/sec
GX++ Bus GX+ Bus	20 GB/sec 10 GB/sec (Shared)
GX Bus Slot 1 GX Bus Slot 2 Internal IO Slots Total IO Bandwidth	20 GB/sec 5** GB/sec (Shared) 5** GB/sec (Shared) 30 GB/sec

Processor Card



Processor Cards		
▪ 6-core	3.3 GHz	1 to 4 per server
▪ 8-core	3.0 GHz	1 to 4 per server
▪ 8-core	3.3 GHz	1 to 4 per server
▪ 8-core	3.55 GHz	1 to 4 per server

Functional Differences

Power 550	Power 750
Up to 4 Sockets / 8 Cores 3.5 to 5.0 GHz POWER6 In-Order Execution Over Clocking: N / A Active Memory Expansion: N / A	Up to 4 Sockets / Up to 32 Cores 3.0 to 3.55 GHz POWER7 Out-of-Order Execution Over Clocking: Supported Active Memory Expansion: Supported
Up to 256 GB Memory 32 DIMM slots	Up to 512 GB Memory 32 DIMM slots
DDR2 DIMMS	DDR3 DIMMs
6 3.5 in or 8 SFF SAS DASD	8 SFF SAS DASD / SSD
3 PCIe & 2 PCI-X slots	3 PCIe & 2 PCI-X slots
Max LPARs: 40	Max LPARs: IVM: 80 HMC: 320
GX++ Bus & GX+ Passthru Slots	GX++ Bus & GX+ Passthru Slots
IVE: Dual Gbt Optional: Quad Gbt, ot 10 Gbt	IVE: Quad Gbt Optional: Dual 10 Gbt
TPMD	Enhanced TPMD
Guiding Light	Light Path



Support

Power Systems

AIX / VIOS Software Support

	Power 750 / 755	Power 770 / 780	PS700 PS701 PS702	Power 710 / 730 720 / 740 795	PS703 PS704	Power 710 ¹ / 730 ¹ 720 ¹ / 740 ¹ 770 ¹ / 780 ¹
AIX.5.3 TL9	SP7	SP7	N / A	N / A	N / A	N / A
AIX.5.3 TL10	SP4	SP4	SP5	SP5	N / A	N / A
AIX.5.3 TL11	SP2	SP2	SP5	SP5	SP7	N / A
AIX.5.3 TL12	New	New	New	SP1	SP4	SP5
AIX 6.1 TL2	SP8	SP8	N / A	N / A	N / A	N / A
AIX 6.1 TL3	SP5	SP5	SP7	SP7	N / A	N / A
AIX 6.1 TL4	SP2	SP3	SP7	SP7	SP10	N / A
AIX 6.1 TL5	New	New	New	SP3	SP6	SP7
AIX 6.1 TL6	New	New	New	New	SP5	SP6
AIX 6.1 TL7	New	New	New	New	New	New
AIX 7.1 TL0	New	New	New	New	SP3	SP4
AIX 7.1 TL1	New	New	New	New	New	New
VIOS	2.1.2.11 FP 22.1 + SP1	2.1.2.12 FP 22.1 + SP2	2.1.3	2.2	2.2.0.12 FP24 + SP2	2.2.1

1 = New Models

Power High End RAS

Power Systems



POWER7 RAS Feature Overview

- Standard
- ◻ Optional
- Not Available

* Requires two or more nodes

RAS Item	Power 750	Power 770	Power 780	Power 795
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 Keys	●	●	●	●
PowerVM™/Live Part. Mobility/Live App Mobility	◻	◻	◻	◻
Redundant Service Processors	—	●*	●*	●
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	—	●*	●*	●*
Hot-node Repair / Hot-memory Add	—	●*	●*	●*
Dynamic Service Processor & System Clock Failover	—	●*	●*	●
Hot-node Repair / Hot-memory Add for all nodes**	—	●*	●*	●*
Enterprise Memory	—	●	●	●
Hot GX Adapter Repair	—	●	●	●
Active Memory Mirroring for Hypervisor	—	◻	●	●
PowerFlex	—	—	—	●

* Requires two or more nodes

Power Systems RAS vs x86

RAS Feature	POWER7	x86
Application/Partition RAS		
Live Partition Mobility	Yes	Yes
Live Application Mobility	Yes	No
Partition Availability priority	Yes	No
System RAS		
OS independent First Failure Data Capture	Yes	No
Memory Keys (including OS exploitation)	Yes	No
Processor RAS		
Processor Instruction Retry	Yes	No
Alternate Processor Recovery	Yes	No
Dynamic Processor Deallocation	Yes	No
Dynamic Processor Sparing	Yes	No
Memory RAS		
Chipkill™	Yes	Yes
Survives Double Memory Failures	Yes	No
Selective Memory Mirroring	Yes	No
Redundant Memory	Yes	Yes
I/O RAS		
Extended Error Handling	Yes	No
I/O Adapter Isolation (PI-Bus and TCEs)	Yes	No

See the following URLs for addition details:

<http://www-03.ibm.com/systems/migratetoibm/systems/power/availability.html>

<http://www-03.ibm.com/systems/migratetoibm/systems/power/virtualization.html>

Questions

Smarter systems for a Smarter Planet

