Sun Update for IDC
September 9th, 2009

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What's up with Oracle?
Questions

What does a growth company need? - Unsolved problems

1. Are all problems solved in HPC?
2. Better still, are all Software problems solved?
3. Are there no Data Intensive problems left?
4. Would you care about OS Jitter and latency, if you were building a distributed database?
5. If you were a database and analytics company, would you care about the next grand challenges in data analytics? (Say Large Graph Algorithms)
6. Would a database vendor be interested in the faster memory cache hierarchies that Flash and SSD promise?
7. Would you be interested in a growing product line?
What's New in HPC at Sun?
Constellation Review: TACC Ranger

- Ranger 579 TFlops

6048 Rack
Pegasus Blade (4xAMD Barcelona)
DataCenter 3456 IB Switch (SDR/DDR)
x4500 Storage (Thumper)
Sun HPC Momentum

• NexGen Constellation Architecture

- C48+ Rack
  “Glacier” doors
  PCIe Gen2 Backplane

- Vayu Blade
  2x2xNehalem

- DataCenter 648 IB Switch
  (QDR)
  QNEM Leaf Switch

- J4400 Storage
  (Riverwalk)
Sun Blade 6000 Chassis
10-Rack-Unit Blade Chassis

• Modular Chassis Design
> 10RU, 10x SB6000-series servers
> Updated midplane supports PCIe Gen2 & SAS2
> 4x PCIe Gen2 x8 links per Blade Slot, 2x NEM per chassis

• Power, Cooling and Availability, 2x 5600W PSU (N+N), 1x CMM
> All redundant, hot-plug active components

Sun Blade 6048 Unibody Chassis
42-Rack-Unit Blade Chassis

• Unibody Chassis Design
> Full rack, 48x SB6000-series Blades, **Up to 96 nodes/768 Cores/Rack ~9 TF (Nehalem 2.93)**
> Updated midplane supports PCIe Gen2 & SAS2
> 4x PCIe Gen2 links, 2x PCIe EM per Blade Slot, 2x NEM per chassis

• Power, Cooling and Availability, 8x 8400W PSU (N+N)
> Glacier Cooling Door option
> All redundant, hot-plug active components
“Magnum 9”

Densest 2-tier CLOS switch using 36-p chips
> 648 QDR ports with 72-p CXP Line Card
> 41 Tbps total capacity
> 300ns latency (QDR)

Line Cards and Fabric Cards
> 9 Line Cards
> 72-p CXP
> 10G/FCoE/FC gateway
> 9 Fabric Cards

11RU 19” Enclosure
> Redundant Power and Cooling
> 7kW power consumption

Management
> Redundant hot-swap service processors
> External dual redundant subnet managers
Compute Node and M9 Fat-Tree Connectivity

- 24 Nodes per Shelf
- 48-port Leaf Switch
- 648-port Core Switch
- 648-port Core Switch
- 648-port Core Switch
- 648-port Core Switch

- 5,184 Compute Nodes (54 Racks)

1 12x connector to each core Switch from the Leaf Switches

24 Nodes per Shelf
1. 12 VAYU Blades + QNEM per Shelf

2. C48: 48 Vayu Blades + 4 QNEMs

3. XxYxZ - 4x3x8 Shown (1,152 Nodes)
   (576 Vayu/48 QNEMs/12 C48)
New Server Memory Hierarchy

- **Pico Sec.**
- **Nano Sec.**
- **Micro Sec.**
- **Milli Sec.**

- **L1 Cache**
- **L2 Cache**
- **L3 Cache**

- **RAM**
- **FLASH**
- **Disk**
Sun HPC Software – Linux Edition

Integration, Installation, Configuration

ISV Applications
- Open Source Compilers
- OpenMPI/MVAPICH
- Resource Scheduler
- OneSIS
- EXT3
- Linux Distro

Open Source Applications
- ISV Compilers
- Conman/Powerman
- NFS
- Lustre

Hardware

Conman/Powerman

Notes:
- OFED
Wins/Momentum

• Major wins in All Geographies (US, APAC, EMEA, EM)
• Mostly Research focused with a few Operational Centers
• Over 20 Systems Contracted at time of Nehalem Launch
• ~200 6048 Racks (Won/Contracted)
• ~9600 Vayu Blades
• ~38,000 Nehalems
• ~1.5 PFlops
200 C48/Vayu Racks (more than 1.5 Pflops)