Cray Vendor Update

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VP Marketing and Business Development
We Build Computational Tools That Help Change The World

Supercomputing

- Compute
  - Supercomputers
  - Flexible Clusters
  - Hybrid Architectures

- Store
  - Integrated Storage & Data Management
  - Tiered Storage Archive

- Analyze
  - Graph Analytics
  - Hadoop Solutions

Big Data

Merging Big Data and Supercomputing
Cray Momentum

- Cray Lustre Connector for TACC
- Cray is leader for car2car benchmark
- First Cray XC in India at TIFR
- Cray joins OpenStack
- XC Next-Generation Supercomputing
  - NERSC8
  - KMA
  - Trinity
  - ~$300M
- Cray announces CS-Storm multi-accelerator system
- Cray appoints Steve Scott as CTO
A Next Generation Supercomputer Architecture

Cray Infrastructure for Trinity

Very-Very Fast Burst Adapted Tiering SW Tightly coupled to Applications

Big Fast Data Lustre Parallel FS (82 PB & 1.7TB/sec)

And a powerful, productive and efficient infrastructure with a complete software and programming environment
CS-Storm is a Performance Whirlwind

What is it?
• An Cray CS System with 8-GPU Nodes.
• Cray Programming Env. and Management
• A performance and productivity leader

Performance and Efficiency
• 176 NVIDIA® Tesla® K40 GPUs in a rack.
• >250 Tflops/rack. >1PF in 4 racks!
• 4.1 Tflops per kW & 24.7 Tflops per sq. ft.
• Maximize bandwidth to accelerators

Advantage vs conventional CPU-only systems
• Up to 4.7x more performance density
• Up to 4.4x more power efficiency
• Maximize floorspace and power efficiency

22 x 2U servers per 48U rack
A Perfect Storm for Today’s Business Needs

Accelerator Technology Evolution
NVIDIA K40 and future accelerators

Ecosystem Maturity
OpenACC
CUDA
Application Libraries
ISV readiness

Business Needs
Energy Exploration
Finance
Machine Learning
Government & Defense
Life Science

Cray CS-Storm accelerated system

Cray System Expertise
Cray power and cooling
Cray Programming Environment
Cray Management
Cray CS-Storm Innovative Design

- Six Local Disk Drives
- 2x4 NVIDIA K40s
  - 11.4TF/node
- Host Intel Processors and Memory
  - 16 DIMMS (1867MHz)
  - 8 Channels
  - 118 GB/sec memory BW
- 2U form factor
  - 22 Nodes/rack
  - 176 GPUs/rack
Cray Software Environment for the CS-Storm

Cray Advanced Cluster Engine (ACE™)
- Complete Cluster, Server, Network & Storage Management
  - Cluster Partitioning
  - Job Scheduler support
  - Revision System with Rollback
  - Automatic network and server discovery and failover

Cray Programming Environment on CS
- Cray Compiling Environment
  - C, C++, Fortran Compilers
- Cray Scientific and Math Libraries
  - LibSci with GPU accelerated routines
- Cray Performance Measurement and Analysis Tools

Complete SW Ecosytem
- Open Source and Partner Tools
Cray CS-Storm: Uncompromising Performance

**Powerful and Efficient**

- Uncompromising performance in a single-rack system
- Full system solution featuring Cray management and programming environment.
- Maximum efficiency for scalable GPU applications

**Performance by Design**

- Power and cooling to spare, allows GPUs to run at full power.
- Designed for upgradeability to protect your investment

**Cray Service and Reliability**

- Redundancy, data protection and serviceability
- Cray expertise

Simply, CS-Storm was designed to be the best GPU system for the most demanding customers
Thank You!