NewRiver Compute System and Storage – FY15

HPC-General Compute Engine
Target: Scalable, Distributed Workloads
100 nodes, 2400 cores
Each node with:
  2 Intel Xeon E5-2680v3 2.5 GHz
  12-core processors
  128 Gigabytes of 2133 MHz memory
  1.8 Terabyte 10K RPM SAS drive
  Dual 10 Gbps Ethernet
  EDR-Infiniband (100 Gbps, low latency)

Interactive Development Compute Engine
8-node engine for interactive jobs and rapid development

HPC-Large Memory Compute Engine
Target: Very Large Datasets and Graph Analytics
2 nodes, 120 cores
Each node with:
  4 Intel Xeon E7-4890v2 2.8 GHz 15-core processors
  3072 Gigabytes (3 TB) of 1600 MHz memory
  6.8 Terabyte 10K RPM SAS drives
  Dual 10 Gbps Ethernet
  EDR-Infiniband (100 Gbps, low latency)

HPC-Large Memory and Accelerator Compute Engine
Target: Code acceleration and Data Visualization
8 nodes, 192 cores
Each node with:
  2 Intel Xeon E5-2680v3 2.5 GHz
  12-core processors
  512 Gigabytes of 2133 MHz memory
  2.18 Terabyte 10K RPM SAS drives
  1.8 Terabyte NVidia GPU (room for second K80)
  Dual 10 Gbps Ethernet
  EDR-Infiniband (100 Gbps, low latency)

HPC-Large Memory and Large Direct Attached Storage Compute Engine
Target: Big Data and Analytics
16 nodes, 384 cores
Each node with:
  2 Intel Xeon E5-2680v3 2.5 GHz
  12-core processors
  512 Gigabytes of 2133 MHz memory
  24.18 Terabyte 10K RPM SAS drives
  2 400GB SSD drives
  Dual 10 Gbps Ethernet
  EDR-Infiniband (100 Gbps, low latency)

Storage
GPFS parallel filesystem
Raw capacity 2.88 Petabytes
(480 6TB 7.2k rpm NL-SAS drives)
Usable capacity 2.25 Petabytes
Storage enclosures connected via 12G SAS to 4 file servers (NSD servers).
NSD servers interconnected via 100 Gbps EDR Infiniband network
NSD servers connected to compute engines via 100 Gbps EDR-IB and 40 Gbps Ethernet.
4 additional NSD servers available for doubling the storage capacity

Interactive Development Compute Engine
48-port 10Gbps Ethernet switches
6 switches support dual 10 Gbps Ethernet for every node in the compute engines

Interactive Development Compute Engine
36-port 40Gbps Ethernet switches
4 switches cross-connected for bandwidth and redundancy

Interactive Development Compute Engine
48-port 1Gbps Ethernet switches
Server management network traffic

Interactive Development Compute Engine
40 Gbps Ethernet
Dual 10 Gbps Ethernet
1 Gbps Ethernet

Virginia Tech
Advanced Research Computing