FEDDATA

Comprehensive High-Performance Computing

High Performance Computing (HPC)

FedData provides complete High Performance Computing (HPC) solutions including technology assessment, acquisition, systems engineering, software engineering, benchmarking and performance engineering. Our fully-cleared core team of HPC subject matter experts (SMEs) has industry-leading experience including:

- Benchmarking & Performance Engineering (e.g., CPU, GPU, Memory, High-Speed Network, Storage, Libraries)
- System Integration (HW & SW) & Deployment
- Software Engineering (e.g., SHMEM, MPI, UPC)
- Systems Architecture & Engineering (HW, Networking, Storage)
- Artificial Intelligence, Machine Learning, Graph Analytics
- High-Performance Storage through Partnerships with Leading Technology Providers and Open-Source Offerings
- CONUS & OCONUS System Deployment & Sustainment

HIGH SPEED NETWORKING

FedData brings extensive experience in high bandwidth, low latency interconnects such as Nvidia's InfiniBand and Cornelis' OmniPath. Primarily used for specialized AI/Machine Learning and High-Performance Computing applications, these interconnects nonetheless provide ultra-low latency performance to any application where communications latency and bandwidth are critical. Our experience includes the architecture, administration, troubleshooting, and optimization of these specialized interconnects. Deep relationships with vendors Nvidia and Cornelis additionally ensure FedData access to extensive support and engineering resources within those organizations to bear on end user success.

INTEGRATION FACILITY

- Access controlled facility with dedicated air and direct liquid cooling (DLC) to test 17 racks simultaneously
- 3,600 sq. ft. accredited SCIF for IT hardware/software integration room with individual work cubes
- Flexible power delivery for different rack power solutions with the ability to support 30- and 60-AMP power feeds at 208-240volts
- Principal OEM relationships enable joint collaboration and execution of large-scale rack integrations at their facilities

TECHNOLOGY EXAMPLES

INFINIBAND & OMNIPATH

ULTRA ETHERNET

NVIDIA DGX

DELL HPC

WAREWULF

GPFS

LUSTRE

NFS/PNFS

SLURM

MPI - SHMEM - CUDA

SUPERMICRO HPC

Demo Lab Infrastructure Summary

POWER

- Entire lab covered by 225kVA Schneider Electric Galaxy VM UPS power protection
- Row 1 (8 racks)
  - 4.9kW capacity per rack
  - Two L6-30 receptacles per rack
  - Two Geist power distribution units (PDUs) per rack
- Monitored, 30A, 208V, (30) Locking IEC C13, (6) Locking IEC C19, 10 ft. power cord with L6-30P. Input power monitoring with breaker level current monitoring.
- Row 2 (8 racks)
  - 17.2kW capacity per rack
  - Four L21-30 receptacles per rack
  - Four Geist power distribution units (PDUs) per rack
- Monitored, 30A, 120/208V WYE, (36) Combination C13/C19, 10 ft. power cord with L21-30P. Input power monitoring with breaker level current monitoring.

SPACE

- 1,000 square-foot data center environment
- 16 oversized Great Lakes ES Series SEAL® Rack Enclosures (44 RU)
- Access control at building, room and rack level
  - Two-factor authentication
  - Fully programmable E-LINE by DIRAK Mechatronic Locks on racks
- Copper and fiber connectivity between racks
- Static dissipative epoxy floor

COOLING

- 65.5 tons of chilled water cooling
- Daikin Applied Outdoor Air-Cooled Chiller with Scroll Compressors
- Six Data Aire gForce IR chilled water cooling units
- Data Aire dap4 controllers
- Hot and cold aisle containment
- Six-zone leak detection system

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