Voltaire 40Gb/s InfiniBand Portfolio

Fabric provisioning and performance monitoring

Application Acceleration

40Gb/s InfiniBand Switching Platforms

4036
36 x IB ports

4036E
34 x IB ports + 2 x 1/10GbE

4200
162 x IB ports

4700
324/648 x IB ports
Voltaire Grid Director™ - More than Just a Switch

- Lowest Latency
- 4th Generation Silicon

- Fully IBTA Compliant
- Automatic Signal Optimization

- Secure Device Management
- Advanced Cable Management
- SM on board
- SNMP-based monitoring

- Isolation & QoS
- Traffic Aware Routing
- Congestion Management
- Collective Offload
Scalable Architectures

► Fat Tree
  • Full bi-sectional bandwidth at any node count
  • Uniform oversubscription options

► HyperScale
  • Scale to thousands of nodes with linear performance
  • Large non-blocking islands (more than 2,000 cores)
  • 4-hops maximum latency to any port
  • Lowest number of switches and cables

► Torus
  • Lowest cost solution
  • Built entirely with edge switches and copper cables
  • Voltaire actively involved in new projects leveraging Red-Sky (Torus2Qos going into UFM)
UFM – Unified Fabric Manager
Maximizing Cluster Utilization

► Provides unprecedented fabric visibility and control
► Maximizes the performance of existing equipment
► Solves traffic bottlenecks
► UFM TARA (Traffic Aware Routing Algorithm) integrates with leading job schedulers to optimize routing based on actual communication patterns:

Before

Random Routing Causes Congestion

After

UFM Traffic Aware Routing™ Algorithm (TARA) Applied - No Congestion
FCA—Fabric Collective Accelerator
Unmatched Application Scalability

► First and only system-wide solution for offloading MPI collectives
► Accelerates MPI collective computation by as much as 100X
► 10-40% improvement in application runtime
► Integrated with leading MPI implementations
Meeting Strict Quality Requirements

- Voltaire Grid Director™ QDR switches selected by Fujitsu after months of extensive tests, including:
  - Minimal BER over days of full load traffic (Zero Errors)
  - Extreme operating temperature conditions for more than 24 hours (> 45°C)
  - Beyond standard ESD (Electrostatic Discharge) test (9kV)
  - Full Shock & Vibration tests
  - Beyond standard Drop Test (2m)
  - Visual inspection of assembly and soldering
  - Force measurements on mechanical insertion of cables
  - Full software monitoring capabilities – real-time error reporting and statistics collection

The End Result:
More Reliable Products for Voltaire, The most Reliable Solution for Fujitsu
Summary

► Most Reliable, Scalable InfiniBand-based HPC Clusters

► The foundation for maintaining Japan’s supercomputer leadership

► Continuing the partnership into FDR InfiniBand…

Thank You!