Voltaire® Grid Director™ ISR 2004 Multi-Service Switch

Enterprise-Class InfiniBand Switch Delivers Superior Performance for HPC Clusters and Enterprise Grids

Product Overview

The Voltaire® Grid Director™ ISR 2004 multi-service switch enables high performance applications to run on distributed server, storage and network resources. Multiple Grid Director ISR 2004s can be interconnected to form very large high performance clusters and grids that can grow into the thousands of nodes with "pay as you grow" scalability.

Superior Performance

High performance environments require no-compromise solutions. The Voltaire Grid Director ISR 2004 delivers just that — with up to 96 ports of 20 gigabits per second InfiniBand connectivity. Ultra low latencies and an impressive 3.84 terabits per second of reliable non-blocking backplane bandwidth eliminate communication bottlenecks, allowing applications to perform at maximum efficiency.

20 Gbps By Design

The Grid Director ISR 2004 is Voltaire's second generation enterprise-class 20 Gbps InfiniBand switch. Voltaire's considerable experience deploying high performance interconnects in the world's fastest supercomputers and high performance data centers was used to create the perfect building block for clusters and grids that scale into the thousands of nodes.

The industry-leading design of the Grid Director ISR 2004 provides guaranteed packet delivery with the best signal quality available. The reliable delivery of packets increases application efficiency by avoiding costly packet drops and retransmissions associated with alternative solutions. With its excellent signal integrity, the Grid Director ISR 2004 supports the longest possible InfiniBand cable lengths extending the reach of high performance computing systems and increasing data center scalability.

Building Unified Fabrics

Unified Fabrics provide applications with access to high performance storage solutions and to multiple networks that span across InfiniBand, Fibre Channel and Ethernet. InfiniBand's high bandwidth and low latency with advanced QoS, congestion management and routing capabilities provide the ideal transport for speeding up storage, interconnect and networking traffic. By using a single virtual backplane that eliminates application bottlenecks, Unified Fabrics improve data center efficiency while reducing the cost and complexity associated with connecting servers to multiple IP and storage networks.

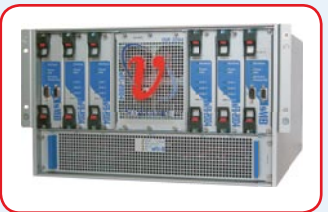### Built-in Reliability, Availability and Supportability (RAS)

The Grid Director ISR 2004 was designed for data center administrators who want to spend time delivering business results and less time worrying about infrastructure. All critical components including power supplies, fans and management controllers have built-in redundancy ensuring maximum system up time and supportability. Redundant management boards maintain synchronization so that a failure can be recovered without the loss of management information or any disruption in communication.

Comprehensive Management

The Grid Director ISR 2004 provides comprehensive and powerful management capabilities through GridVision™ InfiniBand Fabric Management Software. The advanced management capabilities of GridVision can be accessed via CLI, GUI or SNMP managers. GridVision delivers real-time proactive management by providing: aggregated fabric and resource views and access to a suite of fabric and switch diagnostics.

Also available for use with Voltaire solutions is the Voltaire GridStack™ High Performance InfiniBand Protocol Stack, a production-ready version of the open source OFED stack available through the OpenFabrics Alliance. GridStack is optimized for both application performance and supportability with advanced tools for deploying and troubleshooting large clusters and grids.

- Accelerated performance for industry-leading applications, services and resources

- Error-free packet delivery over cables up to 100m long

- Scalable solutions for large grid that reach into the thousands of nodes

- Integrated connectivity to high performance SANs and LANs

Voltaire Grid Director ISR 2004LE

- 4-slot, 19" rack mountable chassis, 6U height, configurable with redundant Power Supplies (sPSUs), Router Blades (sRBD-Ds), and Fan Units (sFUs).
- Each slot may accommodate one Line Board (of various types)

InfiniBand 4X Line Board (sLB-2024)

- Up to 4 InfiniBand 4x Line Boards supported per chassis
- 24 external 20 Gbps Double Data Rate (DDR) InfiniBand ports
  - Connectors: 8-pair Micro GigaCN / LANELINK F CONN (CX4)
  - Supports hot-pluggable Optical Media Converters and Optical InfiniBand Cables
  - Indicators: Physical connectivity and logical connectivity LEDs per port, power and info LEDs

Fabric Board (sFB-2004)

- Up to 4 Fabric Boards supported per chassis
- Indicators: Physical connectivity and logical connectivity LEDs per line board link port, power, info and hot-swap LEDs

Switch Specifications

- Bisectional Bandwidth: 3.84 Tbps
- Port-to-port Latency: less than 420 nanoseconds latency
- Data Virtual Lanes: 8
- Management Virtual Lanes: 1
- MTU: 4096 Bytes (max.)

Management Board (sMB)

- GridVision™ Integrated fabric management including: Fabric Management, Chassis and Device Management
- InfiniBand 1.1 compliant managers and agents
- Supported Management protocols: SNMPv2c, Telnet, SSH, HTTP, FTP, IBTA SMI/GSI
- Connectors: RS232 DB9-M, I2C DB9-F
- Indicators: Power, subnet manager active, chassis manager active, info and hot-swap LEDs

Control (rear)

- Connectors: EIA/TIA-232 Console DB-9, 10/100 Ethernet RJ45
- Indicators: Subnet manager activity (2 LEDs), chassis management activity 2 LEDs), Fabric Boards (4 LEDs) and temperature LED.
- Management/device reset button

Power Requirements

- 1 to 4 power supplies (for N:1 or N:N Redundancy)
- Power entry: 85-265 VAC, 50/60 Hz auto-sensing
- Total power consumption (configuration dependent): 1,000W max for full configuration
- Indicators — Operational AC and DC Status LED

Cooling

- Air flow: Front-to-back
- Heat dissipation (configuration dependent): 3,400 BTU/Hour max for full configuration

Physical Characteristics

- 19-inch rack-mountable
- Dimensions (H x W x D): 10.5 in. (266 mm) x 17.5 in. (444 mm) x 22.75 in. (578 mm)
- Optional front or rear rack mounting
- Weight: 77 to 110 lb (35 to 50 Kg), depending on configuration and packaging

Environmental

Operating

- Ambient temperature: 32º to 113º F (0º to 45º C)
- Humidity: 15 to 80%, non-condensing
- Altitude: 0 to 9843 ft (3000m) Storage

Storage

- Temperature: -13º to 158º F (-25º to 70º C)
- Humidity: 5 to 90 non-condensing
- Altitude: 0 to 15,000 ft (4570m)

Certifications

Safety (Voltaire Typical)

- UL60950
- CB IEC60950
- CSA-C22.2 No.60950-00

EMC (Voltaire Typical)

- 47CFR FCC part 15
- EN55022:98/EN55024:98/EN61000-3-2:00/EN61000-3-3:95

Contact Voltaire to Learn More

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