

Solution Demonstration:

Building Scale-out 10 GbE Data Centers with End-to-End Virtual Machine Connectivity



Introducing the Industry's First Fully Virtualized and Managed Multi-Vendor 10 GbE Data Center Fabric

The dynamic nature of today's virtualized data center and cloud computing environments is creating new application performance and network management challenges. While advanced management applications have been developed to consolidate and virtualize both server computing and storage, networking concepts have not advanced at the same pace to address these challenges.

Resolving these challenges requires a new kind of network management solution that can bridge the gap between servers, applications, and fabric elements in a virtualized data center environment.

Visit Voltaire's booth (#643) at Interop Las Vegas 2010 to see the industry's first and only Ethernet fabric management software that supports end-to-end virtual machine connectivity for multi-vendor environments.

The Solution

Voltaire's innovative Unified Fabric Management™ (UFM™) software enables the world's first fully virtualized and managed multi-vendor 10 GbE data center fabric. The demonstration also features the Voltaire Vantage™ 8500, a low latency 10 GbE Layer 2 core switch, which provides CEE capabilities such as lossless traffic and 802.1Qau AKA QCN, as well as third-party top of rack (TOR) switches from BLADE Network Technologies and HP ProCurve, NICs from Intel and Emulex, and virtualization software from VMware. Voltaire UFM software manages all of these elements to deliver an end-to-end scale-out data center solution.

Voltaire UFM software automatically matches and configures fabric resources to applications running on physical or virtual servers to ensure virtual machine connectivity. Using an innovative application-centric, real-time approach, UFM software enables data center operators to efficiently monitor and manage the entire fabric, maximize fabric resource utilization, increase application performance, and automatically provision fabric resources. For large data centers and cloud computing environments UFM essentially functions as the fabric operating system.

Solution Configuration

The solution demonstrates a cloud computing environment running multiple isolated services, including an enterprise resource planning (ERP) application and a mail service over a converged and fully virtualized infrastructure. The switches are arranged in a classic core/edge topology, where the Voltaire Vantage 8500 switch is connected to the HP ProCurve and BLADE's RackSwitch G8124 top of rack switches, and to FC SAN storage via the Voltaire SR4G 10GbE to FC Gateway. The HP ProCurve switch and the BLADE Network Technologies switch are connected to physical servers running VMware ESX 4.0 and RedHat Linux. The servers are equipped with Converged Ethernet NICs (CNAs) from Intel and Emulex. The entire fabric is orchestrated and monitored by Voltaire UFM.

The services are made up of VMware-based virtual machines (running web and application workloads) and a physical server (running Oracle) connected to dedicated virtual networks (VLANs) and accessing data stored in a virtualized shared SAN.

INTEROP®

Solution Partners



Solution Benefits

- One management system instead of three
- One-step virtual machine mobility configuration
- One console for fabric and virtual machine discovery, eliminating the need for manual configuration
- Total application-networking performance assurance and monitoring

Solution Building Blocks

Core Switching

- Voltaire Vantage 8500

Top of Rack Switching

- BLADE RackSwitch G8124
- HP ProCurve 6600-24XG

Management & Virtualization

- Voltaire Unified Fabric Manager (UFM)
- VMware ESX 4.0

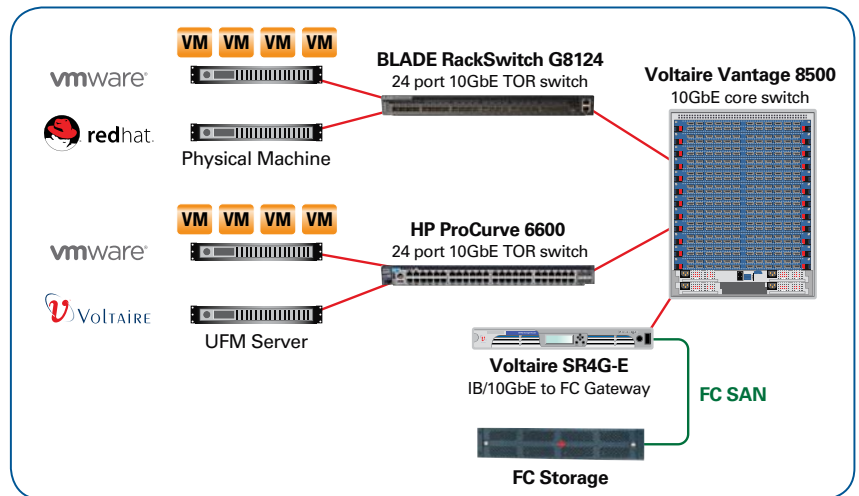
NICs

- Intel® Ethernet Server Adapter X520-DA2
- Emulex OneConnect™ Universal Converged Network Adapter (UCNA)

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Capabilities Demonstrated

- **Multi-vendor fabric management:** Interoperability with multiple NIC and switch vendors under one fabric management system
- **A converged fabric solution:** One fabric for LAN, IPC, and storage, as well as FC virtualization
- **Service provisioning on the network level:** Uses UFM to create multiple isolated cloud environments on the same infrastructure
- **End-to-end fabric provisioning:** Automates fabric provisioning across multiple virtual and physical switches
- **End to end visibility:** Provides real-time insight into fabric performance and potential bottlenecks



Solution Configuration

Solution Components

Voltaire Unified Fabric Manager™ (UFM™) Software

UFM is the first Ethernet scale-out fabric management application for virtualized data centers that can be applied in multi-vendor environments. By using an innovative application-centric approach, UFM enables data center operators to efficiently monitor and operate the entire fabric, increase application performance, and maximize fabric resource utilization.

Voltaire Vantage™ 8500

The Voltaire Vantage 8500 switch is a completely modular, high-performance, high-density Layer-2 core switch, optimized for enterprise data center and cloud computing environments. It features the industry's most power-efficient and lowest latency capabilities on Ethernet, with up to 288 ports of 10GbE connectivity.

HP ProCurve 6600-24XG

HP ProCurve 6600-24XG includes 10/100/1000Base-T and 10-GbE SFP+ 1U rack-mount switches optimized for server edge connectivity with front-to-back (reversible) airflow, redundant hot-swappable power, and redundant hot-swappable fans.

BLADE RackSwitch™ G8124

BLADE Network Technologies™ lossless, low latency, low power and low cost RackSwitch G8124 is designed for data center networks and agile virtualization. With 24 SFP+ 10G ports, its ultra-low latency is ideal for HPC clusters and financial applications.

VMware ESX 4.0

VMware ESX 4.0 is one of the most widely deployed hypervisors, enabling companies of all sizes to reduce IT costs and improve flexibility with server consolidation, decrease downtime and improve reliability with business continuity and disaster recovery, and increase energy efficiency by running fewer servers.

Intel® Ethernet Server Adapter X520-DA2

The X520 server adapter family addresses the demanding needs of the next generation data center by providing unmatched features for virtualization, flexibility for LAN and SAN networking, and proven, reliable performance.

Emulex OneConnect™ Universal Converged Network Adapter (UCNA)

Emulex OneConnect UCNAs are a family of single-chip, high-performance 10Gbps Ethernet (10GbE) multi-function adapters that provide server connectivity for network and storage traffic.



Contact Voltaire to Learn More

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