

Voltaire® Unified Fabric Manager™ Software

Managing Scale-Out InfiniBand Fabrics



Scale-Out Fabric Management with Voltaire Unified Fabric Manager

Voltaire's Unified Fabric Manager™ (UFM™) software is a powerful platform for managing scale-out computing environments. UFM enables data center operators to efficiently provision, monitor and operate the modern data center fabric. UFM boosts application performance and ensures that fabric utilization is optimized at all times.

Fabric Visibility & Control

UFM includes an advanced granular monitoring engine that provides real time access to switch and host data, enabling:

- Real-time identification of fabric-related errors and failures
- Real-time insight into fabric performance and potential bottlenecks
- Preventive maintenance via granular threshold-based alerts
- Workload correlated information such as bandwidth utilization or fabric health events per job

Solve Traffic Bottlenecks

Fabric congestion is difficult to detect when using traditional management tools, resulting in unnoticed congestion and fabric under-utilization. UFM's unique congestion tracking feature quickly identifies traffic bottlenecks and congestion events spreading over the fabric. This feature enables more accurate problem identification and quicker resolution to:

- Quickly identify topology issues, routing inefficiencies or non-optimal node placement
- Allow the administrator to improve fabric topology and configuration
- Enable increased performance and higher fabric utilization
- Correlate monitored data to application/service level, enabling quick and effective fabric analysis

Maximize Fabric Utilization

Consolidation of multiple clusters into a single environment with multi-tenant data centers and heterogenic application landscapes requires specific policies for the different parts of the fabric. UFM enables segmentation of the fabric into isolated partitions, increasing traffic security and application performance.

Each partition can be easily associated with a different service level, thus ensuring that critical applications receive adequate fabric resources.

Optimize Performance

Voltaire's Traffic Aware Routing Algorithm (TARA) is an innovative and major conceptual shift from static routing (based on path counting) to a traffic pattern-based algorithm. UFM optimizes routing algorithms by taking into consideration the fabric topology, the various services and active applications and their characteristics.

Solution Benefits

- ▶ Simplifies the management of large or complex environments
- ▶ Eliminates fabric congestion and hot spots
- ▶ Automates service provisioning on the fabric layer
- ▶ Seamlessly manages workload migration scenarios
- ▶ Tunes your fabric interconnect for highest performance
- ▶ Provides preventive maintenance and "soft degradation" alerts
- ▶ Quickly troubleshoots any connectivity problem
- ▶ Integrates and streamlines fabric information into your IT systems



Integration with Job Schedulers

UFM provides an open and extensible object model to describe data center infrastructure and conduct relevant actions. It includes a service oriented architecture that exposes a rich set of web-services (WSDL), enabling integration with job schedulers. UFM enables:

- Correlation of fabric related information to specific servers and jobs/workloads
- Automatic fabric resource allocation and seamless job rescheduling
- Fabric-wide QoS policy per job
- Optimized routing according to job placement

Integration packages exist for major job schedulers such as Moab Adaptive Suite, Platform Computing LSF and Altair PBS Pro. For more details visit voltaire.com/ufm.

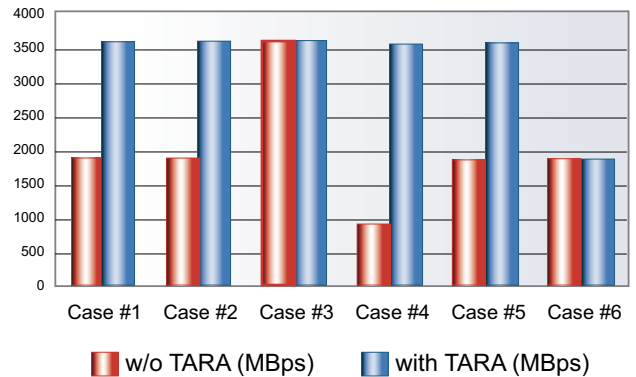
Integration with Fabric Collective Accelerator (FCA)

Fabric Collective Accelerator™ (FCA™) software is a unique patent-pending technology that significantly reduces the runtime of collective operations on any fabric and is available as an add-on to Voltaire Unified Fabric Manager (UFM).

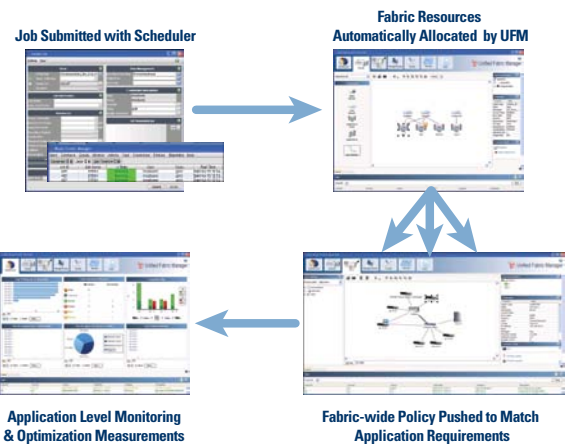
The FCA algorithm runs on Voltaire switches and is integrated with UFM's routing engine. FCA offloads the collective operations onto the switches, reducing the runtime of collective operations by more than 90%, and total MPI job runtime by up to 50%.

Enterprise Grade Platform

Fabric-wide maintenance tasks are performed from a central location and improve operational efficiency and control. Group operations such as switch firmware updates are enabled via a single mouse click. Failovers are handled seamlessly and are transparent to both the user and the applications running on the fabric. This significantly lowers downtime and makes UFM the ultimate management tool for the most demanding data center environments.



Performance improvement with TARA



UFM automatically provisions and optimizes the fabric according to workload needs

Technical Specifications

UFM Software Prerequisites

- UFM Server
 - ▶ x86_64
 - ▶ 2GB RAM Minimum, 4GB Recommended
 - ▶ 20GB Available Disk Space
 - ▶ HCA: ConnectX DDR/QDR
 - ▶ RedHat 5.3/5.4/5.5; CentOS 5.3/5.4/5.5
 - ▶ SLES 11 SP1
- UFM Host Based Agent
 - ▶ x86_64
 - ▶ HCA: ConnectX DDR/QDR
 - ▶ RedHat 5.3/5.4/5.5; Scientific Linux 5.3/5.4/5.5; CentOS 5.3/5.4/5.5
 - ▶ SLES 11 SP1
- UFM GUI Client: Any host running jre1.6 and up

Managed Devices

UFM manages a wide range of Voltaire products, including:

- DDR – Grid Director™ 9024, 2012, 2004 and 2036
- QDR – Grid Director™ 4036, 4200 and 4700
- 10GbE Gateways – sRB-20210G and Grid Director™ 4036E

Ordering Information

- UFM is offered in various packages and licensed per managed fabric node
- For more details please visit voltaire.com/ufm or contact info@voltaire.com