INFINIBAND UNIFIED FABRIC MANAGER (UFM) PORTFOLIO
AI-POWERED CYBER INTELLIGENCE AND ANALYTICS PLATFORMS

Data centers host many users and applications. They have become the competitive advantage for research organizations and manufacturing companies. Keeping the data center intact and healthy is critical—a data center shutdown means the loss of millions of dollars. What's more, malicious users often exploit data center access to misuse compute resources such as by running prohibited applications, resulting in higher operating costs.

The NVIDIA® Mellanox® UFM® platforms revolutionize data center networking management. By combining enhanced and real-time network telemetry with AI-powered cyber intelligence and analytics, the UFM platforms empower you to discover operation anomalies and predict network failures for preventive maintenance.

The UFM platforms comprise multiple levels of solutions and capabilities to suit your data center's needs and requirements. At the basic level, the UFM Telemetry platform provides network validation tools, and monitors the network performance and conditions. It captures, for example, rich real-time network telemetry information, workload usage data and system configuration, and streams it to a defined on-premises or cloud-based database for further analysis.

The mid-tier UFM Enterprise platform adds enhanced network monitoring, management, workload optimizations and periodic configuration checks. In addition to including all of the UFM Telemetry services, it provides network setup, connectivity validation and secure cable management capabilities, automated network discovery and network provisioning, traffic monitoring and congestion discovery. UFM Enterprise also enables job scheduler provisioning and integration with Slurm and Platform LSF, in addition to network provisioning and integration with OpenStack, Azure Cloud and VMware.

The enhanced UFM Cyber-AI platform includes all of the UFM Telemetry and UFM Enterprise services. The unique advantages of the Cyber-AI platform are based on capturing rich telemetry information over time and utilizing deep learning algorithms. The platform learns the data center's "heartbeat," operation mode, conditions, usage, and workload network signatures. It builds an enhanced database of telemetry information and discovers correlations between events. It detects performance degradations, usage and profile changes over time, and provides alerts of abnormal system and application behavior, and potential system failures. It can also perform corrective actions.

[†] For illustration only. Actual products may vary.

The Cyber-AI platform can translate and correlate changes in the data center heartbeat to indicate future performance degradations or abnormal usage of the data center computing resources. Such changes and correlations trigger the performing of predictive analytics, and initiate alerts that indicate abnormal system and application behavior, as well as potential system failures. System administrators can quickly detect and respond to such potential security threats, and address upcoming failures in an efficient manner, saving OPEX and maintaining end-user SLAs. Predictability is optimized over time with the collection of additional system data.
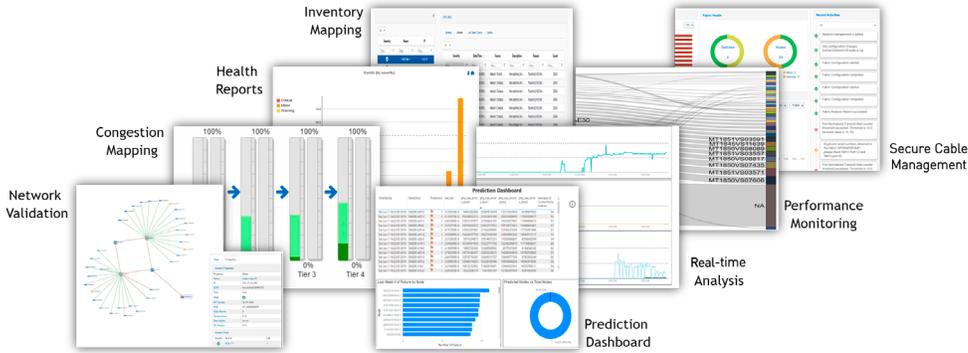
NVIDIA MELLANOX UFM TELEMETRY

REAL-TIME MONITORING

UFM Telemetry builds a rich database of real-time network telemetry, workloads, system configuration and more.

> Switches, adapters, cables telemetry
> System validation
> Network performance tests
> Streaming of telemetry information into on-premises or cloud-based database

NVIDIA MELLANOX UFM ENTERPRISE

FABRIC VISIBILITY & CONTROL

UFM Enterprise combines the benefits of UFM Telemetry with enhanced network monitoring & management.

> UFM Telemetry inside
> Automated network discovery and validation
> Secure cable management
> Congestion tracking identifying traffic bottlenecks
> Problem identification and resolution
> Global software updates
> Job scheduler provisioning, integrated with Slurm and Platform LSF
> Advanced reporting and comprehensive REST APIs
> Rich web-based GUI

NVIDIA MELLANOX UFM CYBER-AI

CYBER INTELLIGENCE & ANALYTICS

UFM Cyber-AI enhances the benefits of UFM Telemetry and UFM Enterprise, providing scale-out of preventive maintenance for lowering supercomputing OPEX.

> UFM Telemetry and UFM Enterprise inside
> Detects performance degradations
> Detects usage profile changes over time
> Detects abnormal cluster behavior
> Correlation between phenomena (that may seem non-related) powered by Artificial Intelligence
> Alerts when preventive maintenance is needed
> Continuous system data collection optimizes predictability

Robust UFM Cyber-AI Graphical User Interface

Part Number and Description

Appliance OPN	Description
MUA9502H-2SF	Mellanox® UFM appliance for UFM Telemetry or UFM Enterprise. 1U server with ConnectX®-6 HDR 200Gb/s InfiniBand adapter. UFM software package sold separately. Contact NVIDIA Mellanox Networking Support for availability.
MUA9652H-2SF	Mellanox® UFM 4.0 appliance for UFM Cyber-AI, UFM Enterprise, UFM Telemetry, 2U server with 2 ConnectX®-6 HDR 200Gb/s InfiniBand adapters. UFM software package sold separately. Contact NVIDIA Mellanox Networking Support for availability.