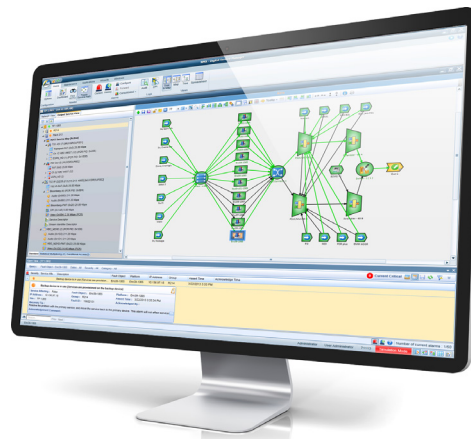


# NMX™

## NETWORK MANAGEMENT SYSTEM



### Harmonic's NMX™ Network Management System is the definitive video network management solution, encompassing a powerful set of tools for monitoring and managing Harmonic compressed digital video and audio systems.

NMX allows operators to run their technical infrastructure in a way that parallels their business — as a series of revenue-generating workflows rather than as a set of discrete hardware components. Available for both traditional hardware-based infrastructures and next-generation, virtualized environments, NMX offers a simple and intuitive interface for creating and modifying channel lineups. It can also be used to set system parameters, whether encoding or rate-shaping; in this instance, the underlying equipment is automatically reconfigured to accommodate the new settings. Status for services and hardware, including alarms, is passed through to the top level, ensuring that problems are quickly detected and resolved. Redundancy is automated.

Adding, reconfiguring or removing services or equipment is fast, easy and error-free with NMX. Templating, wizards, consolidated data views and powerful cut-and-paste functions are available for both service and system modifications. A three-pane layout affords the operator an easier overview into their service paths through the network elements.

NMX is designed for 24x7 management of Harmonic Electra® encoders, ProStream® stream processors, the new generation of XOS appliances including packager for OTT applications and other components in the workflow. It can run on a single computer or be distributed across multiple servers for maximum availability. Service and configuration data are stored in a reliable, industrial-strength database. NMX provides multi-level security, ensuring full control of operational privileges. In addition, a comprehensive audit trail and consolidated alarm log pinpoint hardware or operational problems.

In a virtualized video infrastructure featuring the VM versions of Electra X and ProStream X, NMX is used to perform the application-level management and provisioning. NMX provides the video network group creation, service configurations, application alarm/events/fault monitoring and failover in the same way it manages and provisions dedicated video-processing appliances. NMX server itself can be deployed as a VM running under VMware vSphere®.

NMX is highly scalable and extensible, growing in tandem with the environment it supports. The client/server architecture supports both the centralized management of even the most geographically distributed environments, as well as the remote management of a centralized environment, all using standard TCP/IP LAN/WAN technologies. The use of standard-based interfaces enables NMX to interconnect with other subsystems, including umbrella management, conditional access, automation, and scheduling. As the managed environment grows in scope and scale, NMX can distribute its processes across multiple PC platforms, as necessary, providing inexpensive raw processing power.

Moreover, through historical analysis, NMX offers detailed reporting of bandwidth usage and alarm behaviors, allowing operators to identify system-wide trends and improve overall network stability.

## HIGHLIGHTS

- Service-oriented to work the way operators work
- “Input to output” GUI and functionality
- Template, spreadsheet, and wizard-based configuration for fast system setup
- Scalable to any size system
- Manage traditional hardware-based and virtualized video infrastructures
- Centralized management of geographically distributed systems
- Distributed processing for high availability
- Flexible redundancy management
- Global Recovery System management through umbrella NMX feature
- Powerful automation interface
- Internal DPI server supports SCTE standard digital program insertion cue message injection
- User administration/security/audit trail tools
- Extensible third-party device monitoring using GPI closures and SNMP
- Historical and statistical analysis of bandwidth and alarm behaviors
- Advanced automation and scheduling engine

## FEATURE SUMMARY

- Network, Service Control & Provisioning
- Redundancy Support (1:1, N:1, N:M)
- Basic Alarm Package (Pending alarms, history alarms, status colors on icons)
- PSI/SI Package (PSI/SI table support, private descriptors)
- CAS Package
- Advanced Alarm Package (Advanced alarm configuration, alarm forwarding, consolidated alarm viewer)
- Security Management Package (Full user administration tools, audit trail)
- Automation Server Package (Access the automation server and scheduling engine)
- Distributed Management Package (Monitoring and control of geographically distributed systems)
- NMX PC Fail-Safe Package (NMX 1:1 redundancy, auto-restart)
- Available as a VM
- Maximum number of connected client applications: 25

## APPLICATIONS

- Satellite
- Centralized or distributed cable
- Virtualized Video Infrastructure
- VOD
- Multiscreen
- Terrestrial
- Telco
- Network distribution
- Backhaul
- Network PVR

## USER-FRIENDLY

- Templates at device and system level
- Cut, copy and paste functions
- Wizard-based setup
- Batch-driven automation tools
- Spreadsheet tool User-friendly

## SERVICE MANAGEMENT

- Simple template-based service setup
- Extraction of service information
- Service level or PID level manipulation
- Service tracking across topology
- Dynamic PSI/SI table generation
- Completely flexible private descriptor generation
- Virtual service and stream management
- Service-oriented alarms and analysis
- Program suspend/resume

## TOPOLOGY MANAGEMENT

- Graphical view of network and devices
- Geographical background maps
- Multi-level maps
- Component backplane views
- Cut, copy and paste replication
- Template-based topologies
- Online and offline operation

## CONFIGURATION MANAGEMENT

- Device, module and port-level configuration
- Consolidated views for easy setup
- Template-based configuration

## FAULT MANAGEMENT

- Manual or automatic redundancy switching
- Router-based, path-based or IP-based redundancy mechanisms
- GPI (contact closure) device monitoring tool
- SNMP-based monitoring of third-party hardware
- Alarm configuration
- Monitoring and alarm logging, highlights affected services and hardware
- Standard PERL scripting tool for automatic emails, pages or SMS messaging on fault conditions
- SNMP-based alarm forwarding agent with alarm filtering

## SECURITY MANAGEMENT

- Full user administration tools for multi-user environments
- LDAP user authentication support
- Multi-level access privilege
- Access can be geographically limited
- Lockouts to manage secure modifications in multi-user operations
- Comprehensive audit trail

## TABLE SUPPORT

- MPEG-2, DVB, ATSC compliant
- PSI/SI generation
- Flexible descriptor generation
- Accepts PSI/SI from external sources

## CONDITIONAL ACCESS SUPPORT

- DVB Simulcrypt V3
- OpenCAS
- AES
- Full CAS redundancy support
- Internal EIS

## TRAFFIC/AUTOMATION/EIS INTERFACES

- Advanced scheduler with timeline user interface
- Easy external triggering of user-defined service/configuration states
- DVB EIS-Muxconfig support
- DVB SIMPCOMP-MUXNOTIFY support
- Internal EIS
- Extensive coverage and easy to integrate RESTful API
- Internal DPI server supports SCTE standard DPI cue message injection

## SOFTWARE MANAGEMENT

- Storage and distribution of software for easy update across distributed networks
- Background download

## NMX FAIL-SAFE MANAGEMENT

- Automatic 1:1 NMX server redundancy
- Auto-restart capability
- Powerful catalog and service plan backup/restore management

## MONITORING SOLUTIONS

Integrated with multiple monitoring solution vendors for an integrated headend  
Control and integration with a wide array of decoders

## STATISTICAL ANALYSIS

Statistical analysis of alarm behavior  
Inventory and device status reports

## STANDARDS-BASED

SNMP  
XML  
TCP/IP  
REST

## DEPLOYMENT OPTION: APPLIANCE

Server model	HPE ProLiant DL360 Gen10
Hard Drives	Dual SSDs - RAID 1 – hot swappable
NIC	Four 1GbE ports (RJ45)
Power	Dual redundant power supplies, hot swappable 100/240 VAC, 50/60 Hz input Max power @ Room temp – 265W (904 BTU) Max power @ Max temp – 325W (1109 BTU)
Environmental	Operating temperature: 10°C to 35°C (50°F to 95°F) Non-operating temperature: -30°C to 60°C (-22°F to 140°F) Operating humidity: 8% to 90% EMC Class A: FCC, CE, VCCI, KC, CCC, TCVN, CTick, BSMI Product Safety: US/CA NRTL, CB Scheme, BIS, CCC, EAC, BSMI Product Materials: EU RoHS, China RoHS, EU REACH, WEEE
Physical	1-RU server Dimensions (HxWxD): 4.3 x 43.5 x 70.7 cm (1.7 x 17.1 x 27.8 in) Weight: 15kg (33 Lbs)
Management (IPMI)	Yes. HW alarm monitoring Integrated in NMX SW (thru iLO).
Operating System	Windows Server 2019 / SQL Server 2017

## DEPLOYMENT OPTION: VM OR CUSTOM HARDWARE

### Recommended System Requirements:

Processor	16 virtual CPUs (Intel® Xeon® processor E5-2620 equivalent)
Memory	32 GB RAM
Disk size	480 GB
NIC	Four 1GbE ports
Operating System (for Custom Hardware)	Windows Server 2019 / SQL Server 2017 (included in NMX ova file)

## ORDERING INFORMATION

NMX-HWP-3G-A	NMX 1RU, High performance HPE server, for NMX SW version 8.5 and beyond. Windows Server 2019 and SQL 2017 included.
LIC-NMX-BASE	NMX Software Enterprise version 7 and beyond – License
LIC-NMX-BASE-BCKP	NMX Software Base Backup License (for 1+1 Redundancy).
LIC-NMX-BASE-VM	NMX (VM) Software Enterprise version 8.5 and beyond – License
LIC-NMX-BASE-BCKP-VM	NMX (VM) Software Base Backup License (for 1+1 redundancy), version 8.5 and beyond
SW-NMX-REST-API-E	Software license for Managing and Monitoring devices and services using NMX Restful API
SW-NMX-EIS-E	Software license to enable NMX Internal EIS (Event Information Scheduler) – ProStream CAS
SW-NMX-DCO-E	NMX Client License (Designer, Operator) – one is provided in NMX base SW. One license per additional client to be connected at the same time
SW-NMX-SEO-E	NMX Software Stream Editor License. Stream editor client – one is provided in NMX base SW. One license per additional client to be connected at the same time
LIC-NMX-DEVICE-CONF	Software license for Management of device whose configuration is under NMX control (Electra X/XOS, ProStream X, SDI routers and 2:1 switches, etc). Per device. Monitoring-only devices does not require any license
SW-NMX-DEMO-E	NMX Demo license – Temporary enables all software option - 90 Days

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