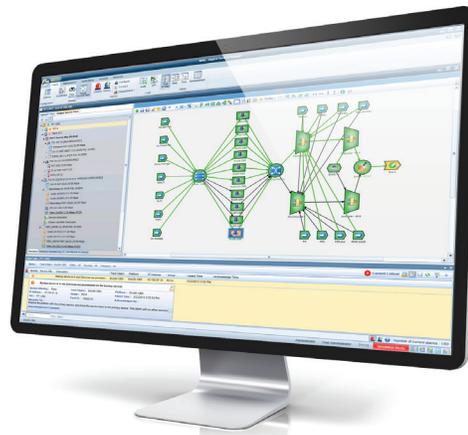# NMX™

DIGITAL SERVICE MANAGER

harmonic

Harmonic's NMX™ Digital Service Manager 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
- Simple Web GUI for day to day operations, including service configuration and monitoring
- 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
- Possible Harmonic Hub connectivity for improved support experience

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)

Statistics Package (VOD utilization statistics, alarm statistics, inventory reports)

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 bandwidth utilization for VOD systems
Statistical analysis of alarm behavior
Inventory and device status reports

CONNECTION TO HARMONIC HUB

Remote and safe repository for automatic and manual backup, alarm/event logs and other files
Direct access to Harmonic support for faster resolution time on issues
Direct access to software updates
Fully secured outbound connection

STANDARDS-BASED

SNMP
XML
TCP/IP
REST

RECOMMENDED SYSTEM REQUIREMENTS (VM DEPLOYMENT)

16 virtual CPUs (Intel® Xeon® processor E5-2620 equivalent)
16-GB memory 1333 MT/s equivalent or higher
160-GB (10K rpm) or higher hard disk
Four 1-GbE BaseT ports

MINIMUM SYSTEM REQUIREMENTS (VM DEPLOYMENT)

Four virtual CPUs (Intel® Xeon® processor E3-1220 equivalent)
8-GB memory 1333 MT/s equivalent or higher
120-GB (10K rpm) or higher hard disk
Two 1 GbE BaseT ports

SERVER MODELS

	NMX-HWP-3F-A/3F1-A	NMX-HWP-2F-A
System Characteristics		
Server	Intel R1304WT2GS	Dell PowerEdge R230 XL
Processors	Two Intel Xeon E5-2620 v3	One Intel Xeon E3-1220 v5
Memory	16 GB (2,133 MHz)	8 GB (2,133 MHz)
Hard Drives	One 480-GB SSD, 6 GBps SATA	Two 500-GB, 7.2k-RPM SATA
RAID	NA	RAID 1 (software)
NIC	Four 1-GbE ports (RJ45)	Two 1-GbE ports (RJ45)
Lights Out Management (IPMI)	Yes	Yes
Sound Card	No	No
Power		
Input Power Range	100/240 VAC, auto-ranging, 50/60 Hz	110/240 VAC, auto-ranging, 50/60Hz
Consumption (Full Load)	300 W	250 W
Heat Dissipation (Max)	1,023 BTU/hr	1,039 BTU/hr
Power Supply	Dual redundant 750 W, Platinum efficiency	Single 250 W, Bronze efficiency
Regulatory and Environmental		
Cooling	Six internal dual rotor fans	Three internal fans
Operating Temperature	+50° to +95° F +10° to +35° C	+50° to +95° F +10° to +35° C
Storage Temperature	-40° to +158° F -40° to +70° C	-40° to +149° F -40° to +65° C
Operating Humidity	10% to 80% (non-condensing)	10% to 80% (non-condensing)
Storage Humidity	5% to 90% (non-condensing) RH with wet bulb temp of 82° F/28° C	5% to 90% (non-condensing) RH with max dew point of 91° F/33° C
Airflow Rate (Peak)	Up to 85.6 cfm	Up to 25.8 cfm
EMC	Class A: FCC, CE, VCCI, KC, CCC, BSMI	Class A: FCC, CE, VCCI, KC, CCC, BSMI
Product Safety	US/CA NRTL, CB Scheme, CCC, BSMI, BIS, NOM	US/CA NRTL, CB Scheme, CCC, BSMI, BIS, NOM
Product Materials	EU RoHS, China RoHS, EU REACH	EU RoHS, China RoHS, EU REACH
Physical		
Form Factor	1-RU rack server	1-RU rack server
Dimensions (HxWxD)	1.7 in x 17.8 in x 28 in 4.3 cm x 45.2 cm x 71.1 cm	1.7 in x 19 in x 20.8 in 4.3 cm x 48.2 cm x 52.8 cm
Weight	33 lbs/14 kg	25 lbs/11 kg