MX-AOPC UA Suite

Cohesive, secure, and reliable connection between device, database, and SCADA

Features and Benefits

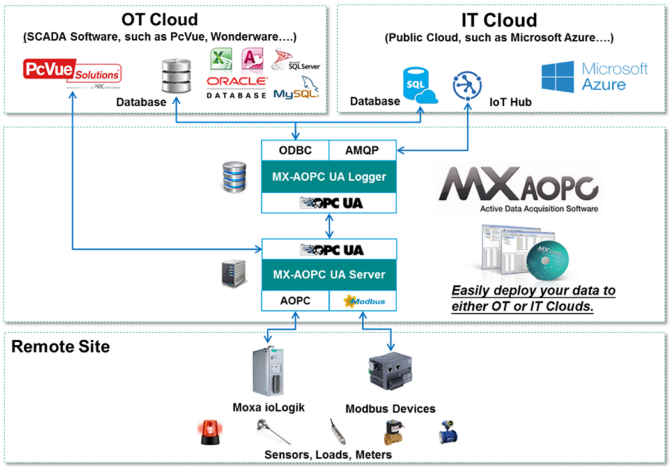
- Creates a secure data connection between OT and IT systems
- Efficient data acquisition through push-type transmission (report by interval or exception method)
- Automatic data updates from SD cards following network failures
- On-demand and on-schedule data supplement that is complementary to automatic data supplement

Introduction

The MX-AOPC UA Suite includes MX-AOPC UA Server, Viewer, and Logger, which are all based on the OPC UA (Unified Architecture) standard. OPC UA is the next generation OPC standard (IEC 62541), which provides a cohesive, secure, and reliable framework for accessing real-time and historical data. MX-AOPC UA Server not only inherits Moxa's patented active monitoring technology, but also supports Modbus protocol for polling data to provide a secure and reliable gateway bridging edge devices to the SCADA system. MX-AOPC UA Viewer is an OPC UA client that allows users to easily view tag values and server statuses. MX-AOPC UA Logger is another handy client for converting and uploading data logs to the central database. With Moxa's MX-AOPC UA Suite, users can now instantly receive alarms, real-time updates, and save historical data, allowing for both timely risk prevention and solid maintenance response.

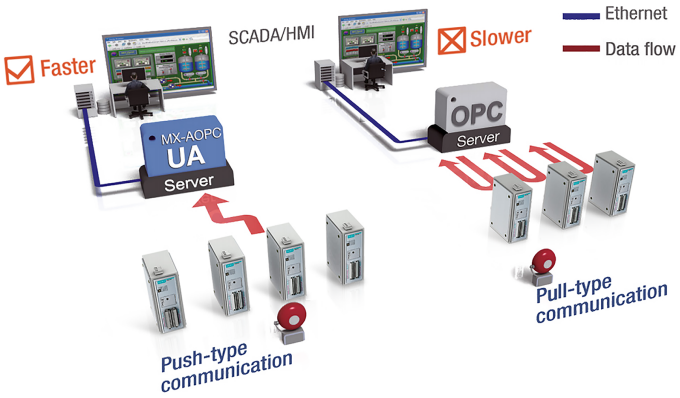
Create a Secure Data Connection between OT and IT Systems

Traditionally, it has been difficult for OT and IT engineers to write agent programs to poll the thousands of registers used for shop-floor data. The difficulty stems from the fact that shop-floor data is handled using fieldbus protocols, but the data needs to be written to an IT database. The difficulties are compounded considerably when it comes time to scale up a facility, particularly since the additional load created can put a tremendous strain on systems that rely on legacy data acquisition methods. MX-AOPC UA Suite can be used to collect data from shop-floor registers via a Modbus protocol. The data can then be provided to an OPC UA client, such as a SCADA system, or MX-AOPC UA Logger can be used to write the data to an IT database, all without the need for additional programming effort. As an added benefit, MX-AOPC UA Suite provides security policy options for encryption and certificate exchange to ensure the security of data connections and transmissions.



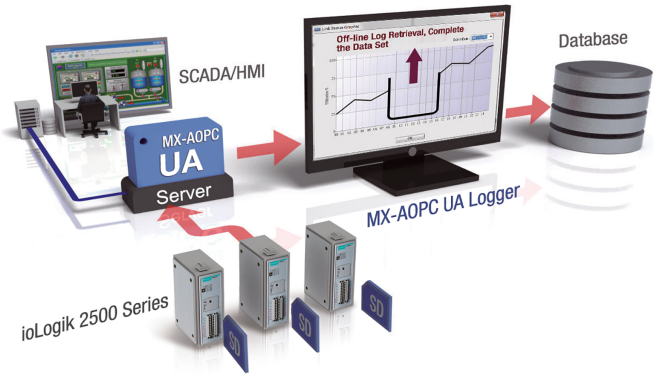
Efficient Data Acquisition through Push-Type Transmission (report by interval or exception method)

Moxa has pioneered the concept of “active type” OPC software in the automation industry. Our patented MX-AOPC UA Server offers both polling and non-polling architectures alongside the standard OPC UA protocol, giving users the alternative of using push-based communication from Moxa’s devices. With push technology, I/O status is updated to MX-AOPC UA Server only when there is an I/O status change, a pre-configured interval is reached, or when a request is issued by a user. This application of push technology cuts metadata overhead, resulting in faster I/O response times and more accurate data collection than traditional pull-based architectures. With Moxa’s “active technology” advantage, users can now instantly receive alarms and real-time updates, allowing for timely risk response.



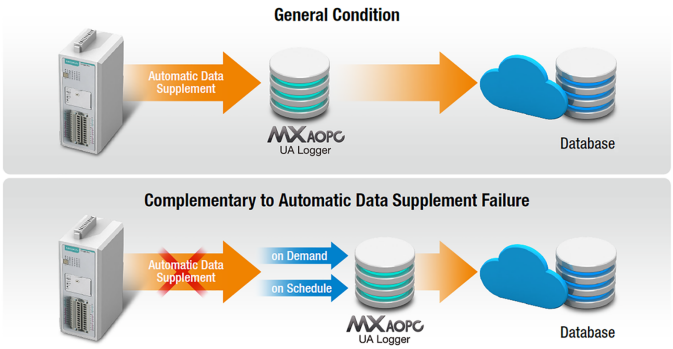
Automatic Data Supplement from SD Cards Following Network Failures

One of the benefits of using RTUs is that data can be collected over a network from a central site. In an ideal operation, following a network failure, RTUs should be able to transmit data logs that were collected while the network was offline. Moxa’s MX-AOPC UA Logger makes this not only possible, but easy. MX-AOPC UA Logger provides a standard OPC interface that interacts with MX-AOPC UA Server for real-time data collection. After each network connection, MX-AOPC UA Logger will compare historical data stored on the SD cards located in individual devices with the real-time data it has already stored locally, and then supplement any missing data by requesting that the RTU retransmit the lost data.



On-Demand and On-Schedule Data Supplements as a Complement to Automatic Data Supplements

Automatic data supplements could fail due to unstable network conditions or a failure to access the database. To help avoid these problems, MX-AOPC Logger also supports “on-demand” and “on-schedule” data supplements. “On-demand data supplements” allow users to manually trigger a data supplement at any time, whereas “on-schedule data supplements” allow users to specify a fixed time point for MX-AOPC Logger to automatically execute a data supplement every day.



Specifications

Ethernet Software Features

Industrial Protocols	MX-AOPC UA Server: Modbus TCP Client (Master), MX-AOPC UA Server: Moxa AOPC (Active Tag)

Serial Software Features

Industrial Protocols	MX-AOPC UA Server: Modbus RTU Client (Master)

OPC Specifications

OPC UA (Unified Architecture)	MX-AOPC UA Logger: 1.02 MX-AOPC UA Server: 1.01
OPC DA (Data Access)	MX-AOPC UA Server: 1.0a, 2.0, 2.05a, 3.0

Hardware Requirements

Communication Interface	Ethernet interface Serial interface
CPU	Intel Pentium 4 or above
RAM	512 MB (1024 MB recommended)

Software Requirements

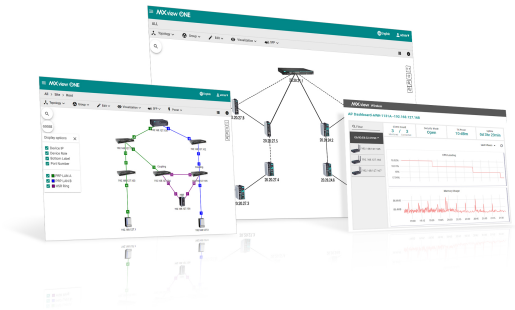
Cloud (optional)	MX-AOPC UA Logger: Microsoft Azure
Database (optional)	MX-AOPC UA Logger: Microsoft SQL Server (x86) MX-AOPC UA Logger: MySQL (x86) MX-AOPC UA Logger: Oracle database (x86)
Editor (optional)	MX-AOPC UA Logger: Microsoft Office 2003 (Access or Excel) or later
Microsoft .NET Framework	v3.5 Service Pack 1
Operating System	Microsoft Windows 7/8/10 Microsoft Windows Server 2003/2008/2012

Ordering Information

Model Name	Device Connections	MX-AOPC UA Server Connections	Database Connections	Runtime Operation Days	Purchasing Registration Code	Registration Required at license.moxa.com
MX-AOPC UA Server	Unlimited	–	–	Unlimited	✓	✓

MXview One Series

Next-generation industrial network management platform



Features and Benefits

- Discovers and visualizes network devices and physical connections automatically
- Central management of configurations and firmware for Moxa devices
- Multiple options for events and notifications with self-defined threshold and duration
- Comprehensive reports, including inventory, traffic, and availability reports
- Provides RESTful API and web widget to embed MXview One into industrial applications
- Dynamic topology view shows the status of wireless links and connection changes at a glance[1]
- Visual, interactive roaming playback function to review the roaming history of clients[1]
- Detailed device information and performance indicator charts for individual AP and client devices[1]
- Full visibility of A/B LAN redundancy through a visualized PRP/HSR network topology and substation packet flow information[2]
- GOOSE message path tracking for fast and efficient troubleshooting[2]
- Auto IED discovery within the network topology display by importing SCD files[2]

Introduction

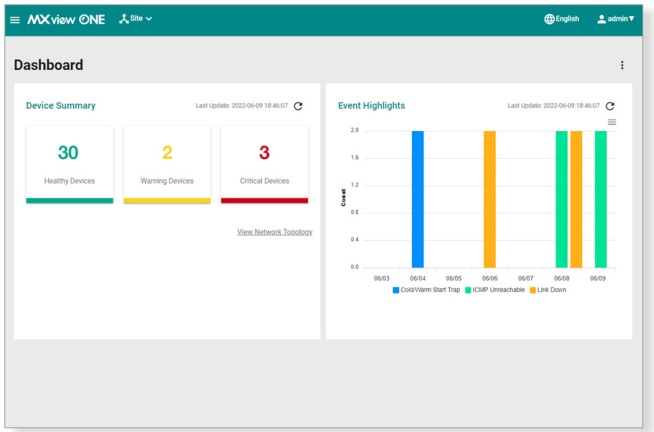
Moxa's MXview One next-generation network management software is designed for monitoring and diagnosing networking devices in industrial networks. MXview One provides an integrated management platform that can discover networking devices and SNMP/IP devices installed on subnets. All selected network components can be managed via a web browser from a local site or through remote access—anytime and anywhere.

In addition, MXview One supports the optional MXview Wireless[1] and MXview Power[2] add-on modules. MXview Wireless provides additional advanced functions for wireless applications to monitor and troubleshoot your network, and help you minimize downtime. MXview Power provides additional advanced functions for power applications based on IEC 61850 to monitor and troubleshoot substation networks in real-time.

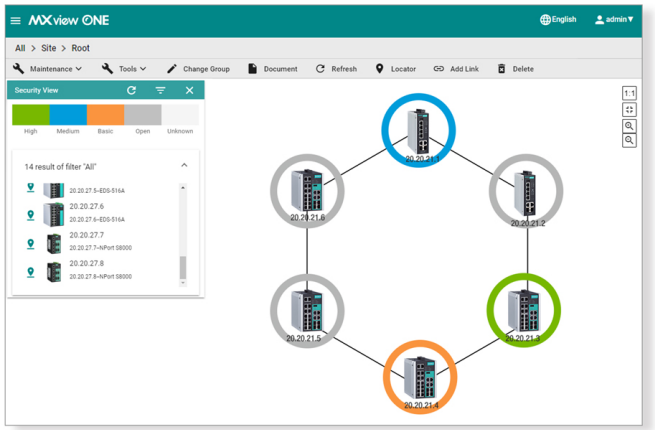
Visualization

- Discovers up to 2,000 Moxa devices and SNMP/ICMP devices within scan range
- Visualization of redundant link status and device roles of network redundancy protocols
- Security view for the security status of network devices with industrial security standard
- A network management dashboard to view the network status quickly
- Visualization of network traffic loading with color-coded links
- Visualization of managed PoE device power consumption
- SFP list for fiber check
- Wireless device dashboard that shows dynamic AP-client relationships and performance indicator charts for wireless devices[1]
- Roaming playback to review a client's roaming status[1]
- PRP/HSR visualization for power applications compliant with IEC-61850 [2]
- MMS protocol to identify related IED devices [2]

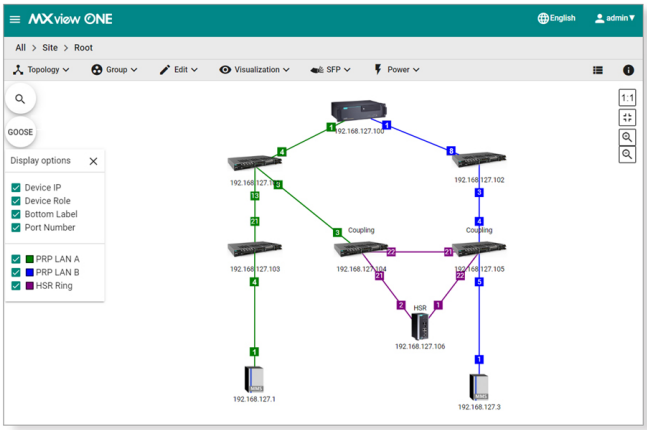
1. This feature requires the MXview Wireless add-on license (LIC-MXviewOne-ADD-WIRELESS-MR), which can be purchased separately. An active MXview One license is required in order to activate the add-on license.
2. This feature requires the MXview Power add-on license (LIC-MXviewOne-ADD-POWER-MR), which can be purchased separately. An active MXview One license is required in order to activate the add-on license.



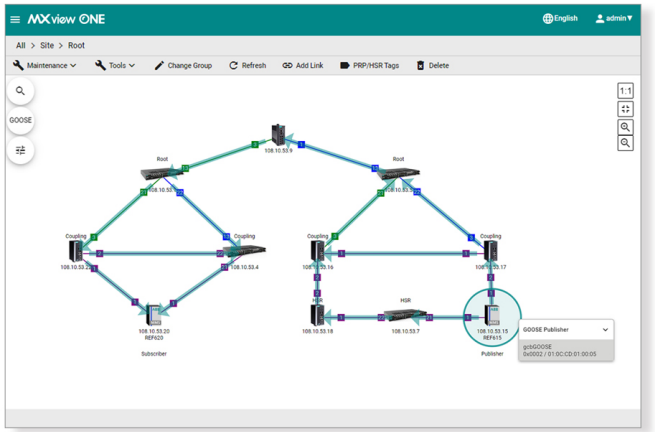
Main Dashboard



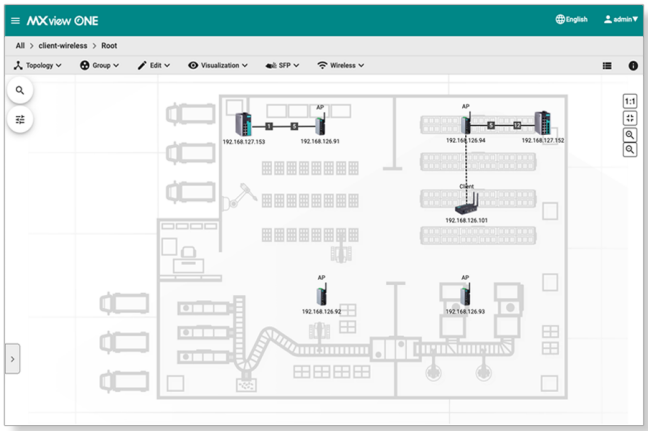
Security View



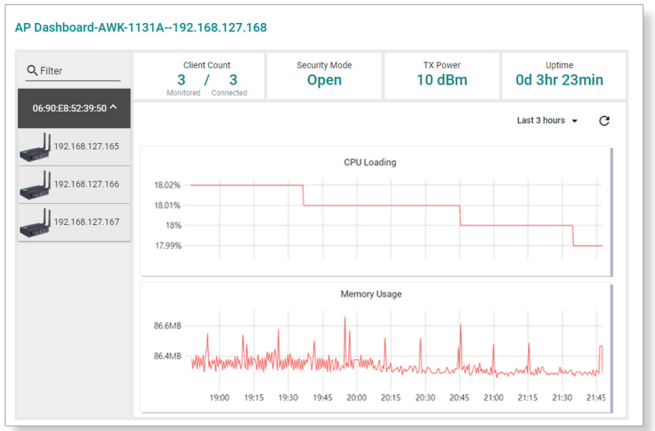
Power Redundancy Topology



GOOSE Message Visualization



Dynamic Topology



Device Dashboard

Network Diagnostics and Event Notifications

- Detect problems in real-time with SNMP trap/inform, or periodic polling
- Generate trend graphs to track bandwidth utilization and error packet rate statistics, accurate to four decimal places
- Supports Syslog server for centralized message management
- Configurable event notification alarms sent through email
- Multiple options for events with self-defined threshold and duration
- Real-time device availability monitoring
- Provides RESTful API and web widget for integrating MXview One into the existing system

Comprehensive Reports

- Generate an inventory report for each device on the network
- Compile comprehensive device properties report

Centralized Configuration and Firmware Management

- Manage device firmware from a single platform
- In one click, back up the configuration of multiple devices and the entire MXview One database, including topology, job scheduling, events, and device properties
- Scheduling for periodic configuration backup
- Save history of configuration changes
- Comparison tool for checking differences between two configurations

Flexible Licenses

- Demand-based licenses to increase node limit for monitoring
- Optional MXview Power and MXview Wireless add-on licenses to unlock advanced functions

Device Mass Configuration

- Run CLI scripts and configure customizable automation buttons
- Device management with quick access buttons to easily perform specific actions on devices

Account and Password Management

- View device accounts, conduct account and default password audits, and create temporary accounts for specific devices
- Generate and apply randomized passwords to multiple selected Moxa devices manually or via an automated schedule

Inventory Management

- Show warranty information for Moxa devices and configure warranty expiration notifications
- Rogue device detection to identify connected devices that are not in the current topology

Northbound Interface Integration

- Act as an OPC UA server to transmit information to OPC clients
- Syslog forwarding to send syslog events to a user-specified server

Specifications

Hardware Requirements

CPU	Quad-core CPU or better
RAM	16 GB or higher
Hardware Disk Space	1 TB SSD or higher
OS	Windows 10 (64-bit) Windows 11 (64-bit) Windows Server 2016 (64-bit) Windows Server 2019 (64-bit) Windows Server 2022 (64-bit) Linux Ubuntu 18.04 Linux Ubuntu 20.04 Linux Ubuntu 22.04

Management

Supported Interfaces	SNMPv1/v2c/v3 and ICMP

Supported Devices

AWK Products	AWK-1121 Series (v1.4 or higher) AWK-1127 Series (v1.4 or higher) AWK-1131A Series (v1.11 or higher) AWK-1137C Series (v1.1 or higher) AWK-1151C Series (v2.0 or higher) AWK-1161A Series (v1.0 or higher) AWK-1161C Series (v1.0 or higher) AWK-1165A Series (v1.0 or higher) AWK-1165C Series (v1.0 or higher) AWK-3121 Series (v1.6 or higher) AWK-3131 Series (v1.1 or higher) AWK-3131A Series (v1.3 or higher) AWK-3131A-M12-RTG Series (v1.8 or higher) AWK-3252A Series (v2.0 or higher) AWK-4121 Series (v1.6 or higher) AWK-4131 Series (v1.1 or higher) AWK-4131A Series (v1.3 or higher) AWK-4252A Series (v2.0 or higher)
DA Products	DA-820C Series (v1.0 or higher) DA-682C Series (v1.0 or higher) DA-681C Series (v1.0 or higher) DA-720 Series (v1.0 or higher)
EDF Products	EDF-G1002-BP Series (v3.10 or higher)
EDR Products	EDR-G903 Series (v2.1 or higher) EDR-G902 Series (v1.0 or higher) EDR-810 Series (v3.2 or higher) EDR-8010 Series (v3.1 or higher) EDR-G9004 Series (v3.10 or higher) EDR-G9010 Series (v1.0 or higher)
EDS Products	EDS-405A/408A Series (v2.6 or higher) EDS-405A/408A-EIP Series (v3.0 or higher) EDS-405A/408A-PN Series (v3.1 or higher) EDS-405A-PTP Series (v3.3 or higher) EDS-505A/508A/516A Series (v2.6 or higher) EDS-510A Series (v2.6 or higher) EDS-518A Series (v2.6 or higher) EDS-510E/518E Series (v4.0 or higher) EDS-528E Series (v5.0 or higher) EDS-G508E/G512E/G516E Series (v4.0 or higher) EDS-G512E-8PoE Series (v4.0 or higher) EDS-608/611/616/619 Series (v1.1 or higher) EDS-728 Series (v2.6 or higher) EDS-828 Series (v2.6 or higher) EDS-G509 Series (v2.6 or higher) EDS-P510 Series (v2.6 or higher) EDS-P510A-8PoE Series (v3.1 or higher) EDS-P506A-4PoE Series (v2.6 or higher) EDS-P506 Series (v5.5 or higher) EDS-4008 Series (v2.2 or higher) EDS-4009 Series (v2.2 or higher) EDS-4012 Series (v2.2 or higher) EDS-4014 Series (v2.2 or higher) EDS-G4008 Series (v2.2 or higher) EDS-G4012 Series (v2.2 or higher) EDS-G4014 Series (v2.2 or higher)
EOM Products	EOM-104/104-FO Series (v1.2 or higher)
ICS Products	ICS-G7526/G7528 Series (v1.0 or higher) ICS-G7826/G7828 Series (v1.1 or higher) ICS-G7748/G7750/G7752 Series (v1.2 or higher) ICS-G7848/G7850/G7852 Series (v1.2 or higher) ICS-G7526A/G7528A Series (v4.0 or higher) ICS-G7826A/G7828A Series (v4.0 or higher) ICS-G7748A/G7750A/G7752A Series (v4.0 or higher) ICS-G7848A/G7850A/G7852A Series (v4.0 or higher)
IEX Products	IEX-402-SHDSL Series (v1.0 or higher)

	IEX-402-VDSL2 Series (v1.0 or higher) IEX-408E-2VDSL2 Series (v4.0 or higher)
IKS Products	IKS-6524/6526 Series (v2.6 or higher) IKS-G6524 Series (v1.0 or higher) IKS-G6824 Series (v1.1 or higher) IKS-6726A/6728A Series (v4.0 or higher) IKS-G6524A Series (v4.0 or higher) IKS-G6824A Series (v4.0 or higher) IKS-6728A-8PoE Series (v4.0 or higher)
ioLogik Products	ioLogik E2210 Series (v3.7 or higher) ioLogik E2212 Series (v3.7 or higher) ioLogik E2214 Series (v3.7 or higher) ioLogik E2240 Series (v3.7 or higher) ioLogik E2242 Series (v3.7 or higher) ioLogik E2260 Series (v3.7 or higher) ioLogik E2262 Series (v3.7 or higher) ioLogik W5312 Series (v1.7 or higher) ioLogik W5340 Series (v1.8 or higher)
ioThinx Products	ioThinx 4510 Series (v1.3 or higher)
MC Products	MC-7400 Series (v1.0 or higher)
MDS Products	MDS-G4012 Series (v1.0 or higher) MDS-G4020 Series (v1.0 or higher) MDS-G4028 Series (v1.0 or higher) MDS-G4012-L3 Series (v2.0 or higher) MDS-G4020-L3 Series (v2.0 or higher) MDS-G4028-L3 Series (v2.0 or higher) MDS-G4012-4XGS Series (v3.0 or higher) MDS-G4020-4XGS Series (v3.0 or higher) MDS-G4028-4XGS Series (v3.0 or higher) MDS-G4012-L3-4XGS Series (v3.0 or higher) MDS-G4020-L3-4XGS Series (v3.0 or higher) MDS-G4028-L3-4XGS Series (v3.0 or higher)
MGate Products	MGate MB3170/MB3270 Series (v4.2 or higher) MGate MB3180 Series (v2.2 or higher) MGate MB3280 Series (v4.1 or higher) MGate MB3480 Series (v3.2 or higher) MGate MB3660 Series (v2.5 or higher) MGate 5101-PBM-MN Series (v2.2 or higher) MGate 5102-PBM-PN Series (v2.3 or higher) MGate 5103 Series (v2.2 or higher) MGate 5105-MB-EIP Series (v4.3 or higher) MGate 5109 Series (v2.3 or higher) MGate 5111 Series (v1.3 or higher) MGate 5114 Series (v1.3 or higher) MGate 5118 Series (v2.2 or higher) MGate 5119 Series (v1.0 or higher) MGate 5121 Series (v1.0 or higher) MGate 5122 Series (v1.0 or higher) MGate 5123 Series (v1.0 or higher) MGate 5134 Series (v1.0 or higher) MGate 5135/5435 Series (v1.0 or higher) MGate 5192 Series (v1.0 or higher) MGate W5108/W5208 Series (v2.4 or higher) MGate 5217I Series (v1.0 or higher)
MRX Products	MRX-G4064 Series (v1.0 or higher) MRX-Q4064 Series (v1.0 or higher)
NPort Products	NPort S8455 Series (v1.3 or higher) NPort S8458 Series (v1.3 or higher) NPort 5110 Series (v2.10 or higher) NPort 5130/5150 Series (v3.9 or higher) NPort 5200 Series (v2.12 or higher) NPort 5100A Series (v1.6 or higher) NPort P5150A Series (v1.6 or higher) NPort 5200A Series (v1.6 or higher)

	NPort 5400 Series (v3.14 or higher) NPort 5600 Series (v3.10 or higher) NPort 5610-8-DT/5610-8-DT-J/5650-8-DT/5650I-8-DT/5650-8-DT-J Series (v2.7 or higher) NPort 5610-8-DTL/5650-8-DTL/5650I-8-DTL Series (v1.6 or higher) NPort IA5000 Series (v1.7 or higher) NPort IA5150A/IA5150AI/IA5250A/IA5250AI Series (v1.5 or higher) NPort IA5450A/IA5450AI Series (v2.0 or higher) NPort 6000 Series (v1.21 or higher) NPort 5000AI-M12 Series (v1.5 or higher)
OnCell Products	OnCell G4302-LTE4 Series (v2.5 or higher)
PT Products	PT-7528 Series (v3.0 or higher) PT-7710 Series (v1.2 or higher) PT-7728 Series (v2.6 or higher) PT-7828 Series (v2.6 or higher) PT-508/510 Series (v3.0 or higher) PT-G503-PHR-PTP Series (v4.0 or higher) PT-G510 Series (v6.4 or higher) PT-G7728 Series (v5.3 or higher) PT-G7828 Series (v5.3 or higher)
RKS Products	RKS-G4028 Series (v3.0 or higher)
SDS Products	SDS-3008 Series (v2.1 or higher) SDS-3016 Series (v2.1 or higher)
TAP Products	TAP-213 Series (v1.2 or higher) TAP-323 Series (v1.8 or higher) TAP-6226 Series (v1.8 or higher)
TN Products	TN-4908 Full FE/FE+GbE Series (v3.4 or higher) TN-4908 Full GbE Series (v1.2 or higher) TN-4916-12 FE Series (v3.4 or higher) TN-4916-8PoE Series (v1.2 or higher) TN-4512A Series (v3.10 or higher) TN-4516A Series (v3.6 or higher) TN-4516A PoE Series (v3.6 or higher) TN-4520A PoE Series (v3.10 or higher) TN-4524A PoE Series (v3.6 or higher) TN-4528A PoE Series (v3.8 or higher) TN-G4516 PoE Series (v5.0 or higher) TN-G6512 PoE Series (v5.2 or higher) TN-5508A/5510A Series (v3.8 or higher) TN-5516A/5518A Series (v3.8 or higher) TN-5508A/5510A PoE Series (v3.8 or higher) TN-5516A/5518A PoE Series (v3.8 or higher)
UC Products	UC-2101-LX Series (v1.7 or higher) UC-2102-LX Series (v1.7 or higher) UC-2104-LX Series (v1.7 or higher) UC-2111-LX Series (v1.7 or higher) UC-2112-LX Series (v1.7 or higher) UC-2112-T-LX Series (v1.7 or higher) UC-2114-T-LX Series (v1.7 or higher) UC-2116-T-LX Series (v1.7 or higher) UC-1222A Series (v1.0 or higher) UC-2222A Series (v1.0 or higher) UC-8200 Series with Moxa Industrial Linux 3 (MIL 3) (v1.1 or higher)
V Products	V2406C Series (v1.0 or higher)
VPort Products	VPort 26A-1MP Series (v1.2 or higher) VPort 36-1MP Series (v1.1 or higher) VPort P06-1MP-M12 Series (v2.2 or higher)
WAC Products	WAC-1001 Series (v2.1 or higher) WAC-2004 Series (v1.6 or higher)

For MXview Wireless	AWK-1131A Series (v1.22 or higher) AWK-1137C Series (v1.6 or higher) AWK-1151C Series (v2.0 or higher) AWK-1161A Series (v1.0 or higher) AWK-1161C Series (v1.0 or higher) AWK-1165A Series (v1.0 or higher) AWK-1165C Series (v1.0 or higher) AWK-3252A Series (v2.0 or higher) AWK-3131A Series (v1.16 or higher) AWK-4131A Series (v1.16 or higher) AWK-4252A Series (v2.0 or higher) Note: To use advanced wireless functions in MXview Wireless, the device must be in one of the following operation modes: AP, Client, Client-Router.
For MXview Power	Supports PRP/HSR only: PT-G503 Series (v5.1 or higher) PT-G510 Series (v6.4 or higher) DA-820C Series with DN-PRP-HSR-I210 or DA-PRP-HSR-I210 (OS Windows 10 or higher) Supports PRP/HSR and GOOSE Check: PT-G7728/G7828 with LM-7000H-2GPHR module (v6.2 or higher)

Package Contents

Number of Supported Nodes	Up to 2000 (may require purchase of expansion licenses)

Ordering Information

Model Name	No. of Supported Nodes	Add-on Service
LIC-MXviewOne-NEW-XN-SR	Customizable (Can be used to expand node count)	–
LIC-MXviewOne-ADD-POWER-MR	–	MXview Power
LIC-MXviewOne-ADD-WIRELESS-MR	–	MXview Wireless