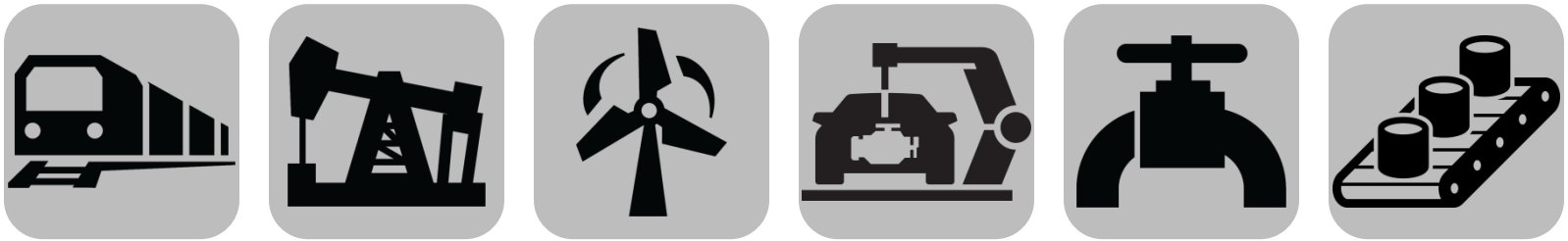
Introducing: NT24k-16M12

IP67-Rated Fully Managed Gigabit Switches

Agenda

- Industry Challenges
  - Optimizing capital investment
  - Increasing operational uptime
- Introducing: NT24k-16M12
  - Specifications, regulatory & certifications
  - PoE+ and Bypass Relay models
  - Feature highlights
    - Ease of configuration
    - Network redundancy
    - Management & monitoring
- Summary
  - The Red Lion Difference

Industry Challenges

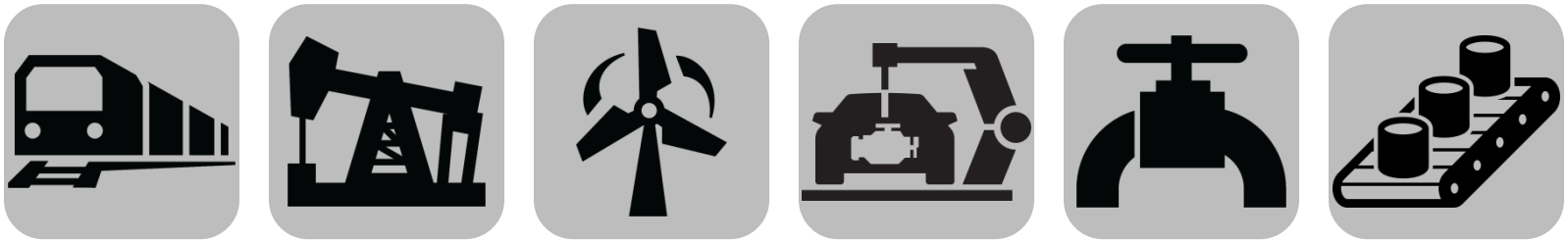


Optimizing Capital Investment

How can I cost effectively plan for future reconfiguration or feature upgrades *without* scrapping existing equipment?

In a market of ever-changing customer requirements and increasing rates of innovation, having equipment that can adapt to meet these needs is important. For example, as their capabilities have expanded, PoE Powered Devices like sensors, surveillance cameras with pan/tilt/zoom and jumbo frame transmission, and fully-featured communications devices have put greater demands on PoE switches.

Industry Challenges



Increasing Operational Uptime

How do I maximize uptime when installing or maintaining equipment?

Even a well-designed network, built to be fault-tolerant, will experience problems that threaten uptime, or worse yet, pose a safety risk. Adding new devices to a network can also cause reductions in operational effectiveness.

Introducing: NT24k-16M12

IP67-Rated Fully Managed Gigabit Ethernet Switch

NT24k-16M12 Key Specifications

- **IP67 Rated**
  - Dustproof, water-resistant design
- **16 10/100/1000Base copper ports**
  - M12 connectors for exceedingly reliable connectivity
- **Redundant 22-49 VDC power inputs**
  - PoE+ version boasts flexible PoE power budget
- **-40 to 80° C operating temperature**
  - Ideal for extreme conditions
- **200 g shock, 50 g vibration tolerance**
- **MTBF >2 million hours**

NT24k-16M12 Specifications

- IEEE 802.1x with RADIUS remote server authentication
- SNTP (Simple Network Time Protocol)
- IGMP auto configuration
- 802.1Q tag VLAN and port VLAN
- 802.1p QoS and port QoS
- 802.1d, 802.1w, 802.1D RSTP
- DHCP client
- TFTP/HTTP file transfer
- Event logging and syslog
- Port trunking/port mirroring
  - Support of multiple concurrent trunks (up to 8 ports per trunk)

NT24k-16M12 Specifications

- IEEE 802.3 compliant
- Managed operation
- Supports full/half duplex operation
- Auto sensing 10/100/1000Base-T(X), duplex and MDIX
- ESD and surge protection on all built-in ports
- Store-and-forward technology
- Full wire-speed communication
- LED status indicators
- USB configuration port
- Hardened metal enclosure
- Fast boot time

NT24k-16M12 Specifications

- Mass deployment capabilities
  - Fully human-readable configuration (XML)
  - SD and XML configuration backup and recovery options
- Jumbo frame support
- Supports up to 16k MAC addresses
- Fully managed features:
  - Multi-member N-Ring™ technology with ~30ms healing
  - Detailed ring map and fault location charting
  - N-Link™ redundant ring technology
  - N-View™ monitoring and firmware management technology
  - EtherNet/IP™ CIP™ messaging
  - SNMP v1, v2, v3
  - Web configuration and management

NT24k-16M12 Regulatory & Certifications

Class I Div 2

EN50155/EN50121 Rail Certification

EN45545 Fire Safety Certification

RoHS Compliant

FCC

Conformité Européene

Introducing: NT24k-16M12

PoE+ and Bypass Relay Models

What is Power over Ethernet (PoE)?

- PoE (Power Over Ethernet) is a method to transmit data **and** power, up to 100 meters, over a single CAT5E/CAT6/CAT6a Ethernet cable
- The benefits of PoE include:
  - Eliminating the need for separate power cabling
    - Reduced wiring and installation costs
    - No need for special electrical permits
  - Greater installation flexibility as devices no longer have to be located near power outlets

PoE+ is a feature available on the -PoE versions of the NT24k-16M12

PoE Powered Device Examples

- Surveillance cameras
  - Platform and premises monitoring
- Passenger Information Systems
- RFID readers and access control
- Sensors, meters and other industrial devices
- Wireless access points
- VoIP call stations & phones
- Traffic management
- Machine vision

PoE Standard Comparison

	PoE (IEEE 802.3af)	PoE+ (IEEE 802.3at)
Max power delivered by PSE	15.40 W	34.20 W
Power available at PD	12.95 W	25.5 W
Voltage range (at PSE)	44-57 VDC	50-57 VDC
Maximum current	350 mA	600 mA
Power management	Three levels	Four levels

Introducing: NT24k-16M12-POE

Powerful

- **240 watt** PoE+ (802.3af/at) power budget
  - Redundant 22-49 VDC power inputs and integrated boost circuitry means easier installation and maintenance than switches requiring an external supply

Adaptable

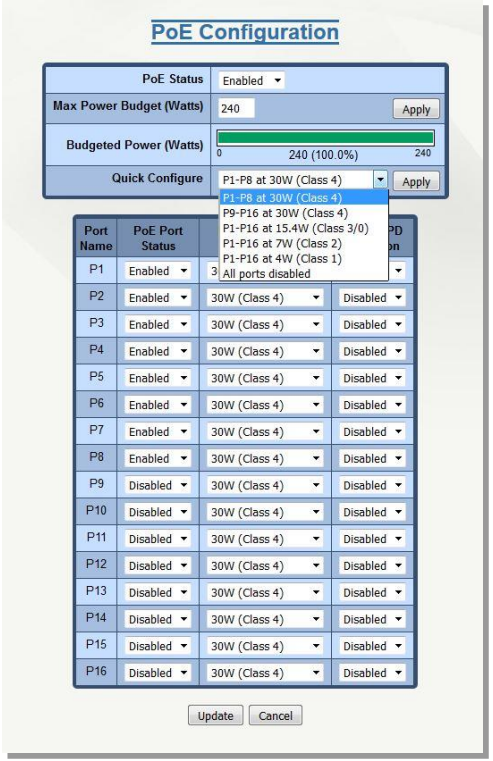
- Power budget can be assigned to **any of the 16 ports**

Easy to Use

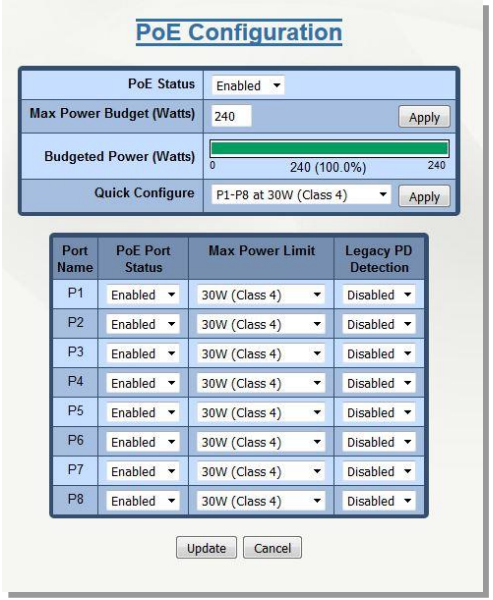
- Intuitive graphical user interface (GUI) enables quick setup or modification to meet your customers' evolving needs

PoE Configuration

PoE Configuration GUI enables users to easily allocate 240 W power budget across multiple ports.

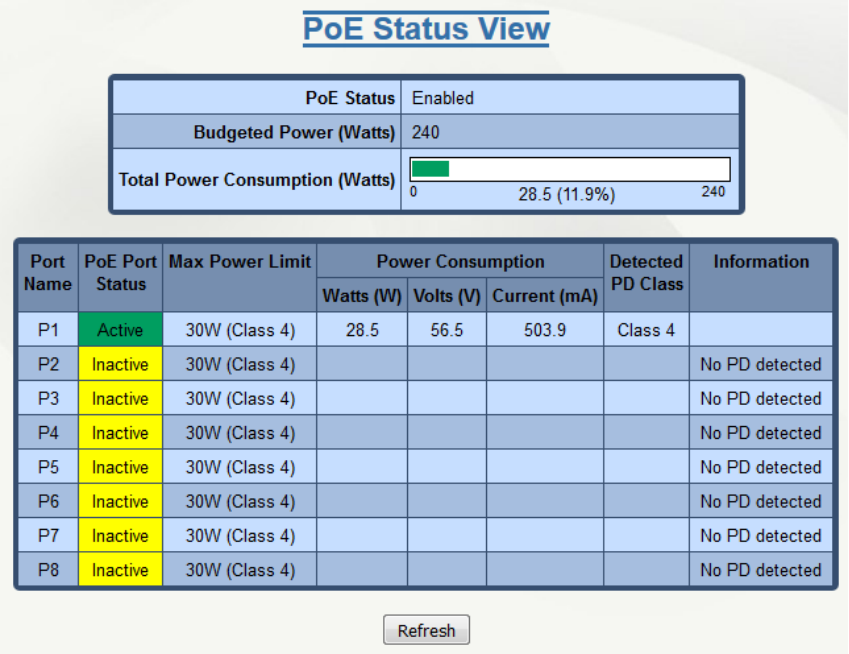


Quick configure feature allocates 30 W across the first eight (8) ports.



PoE Status View

- Easy-to-read, plain language information about each port
- Provides information on powered device power consumption versus budget



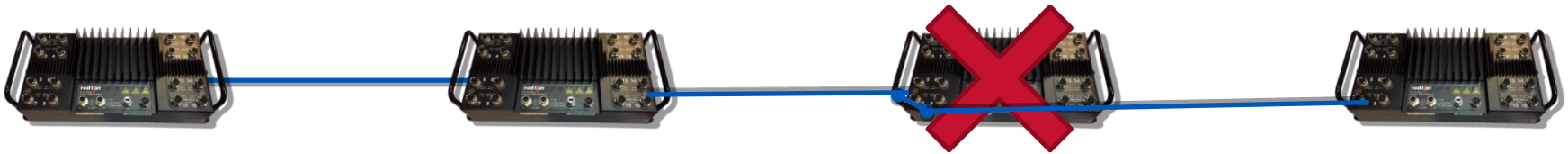
What is Bypass Relay?

- Allows network traffic to continue to flow through the switch's bypass ports in the event of a power outage.
- Hardware bypass mode is activated *automatically* when power is lost.

Bypass relay is a feature available on the -R versions of our PoE+ and non-PoE+ models

How the NT24k-16M12xx-R works

- Relay ports (7&8 and 9&10) function normally when the switch has power
  - Traffic physically and logically flows through all Ethernet switches when the bypass relay switch is powered on.
- In bypass mode, when power is off, each bypass pair is connected together to form two single wires, allowing data to flow through the switch.
  - Traffic physically flows through the relay, but from a logical standpoint, bypasses the powered-down Ethernet switch.



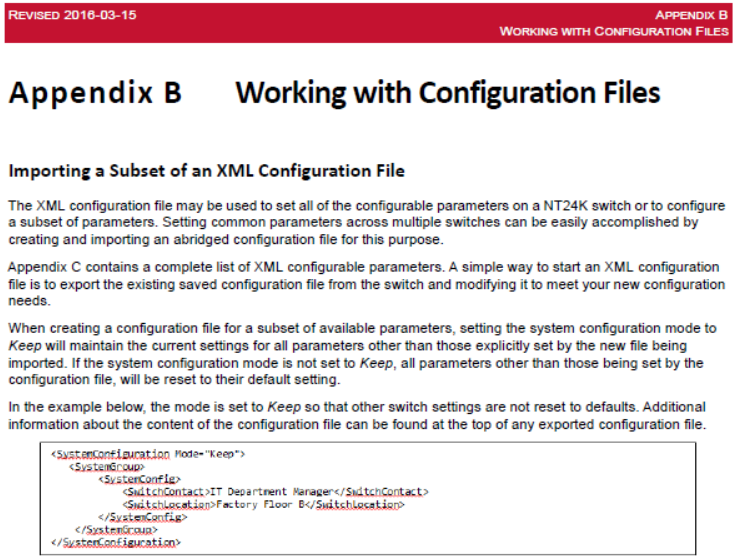
NT24k-16M12 Model Comparison

Model	Temp	Redundant Power Input	Input Current	Bypass Relay	POE Support
NT24k-16M12	-40 to 85C	10 – 49VDC	0.7A @ 24VDC	No	No
NT24k-16M12-POE	-40 to 80C	22 – 49VDC	11.5A @ 24VDC	No	240W
NT24k-16M12-R	-40 to 85C	10 – 49VDC	0.85A @ 24VDC	Port 7-8, 9-10	No
NT24k-16M12-POE-R	-40 to 80C	22 – 49VDC	11.6A @ 24VDC	Port 7-8, 9-10	240W

NT24k-16M12

Feature Highlights

Ease of Configuration



REVISED 2016-03-15 — APPENDIX B WORKING WITH CONFIGURATION FILES

Appendix B Working with Configuration Files

Importing a Subset of an XML Configuration File

The XML configuration file may be used to set all of the configurable parameters on a NT24K switch or to configure a subset of parameters. Setting common parameters across multiple switches can be easily accomplished by creating and importing an abridged configuration file for this purpose.

Appendix C contains a complete list of XML configurable parameters. A simple way to start an XML configuration file is to export the existing saved configuration file from the switch and modifying it to meet your new configuration needs.

When creating a configuration file for a subset of available parameters, setting the system configuration mode to *Keep* will maintain the current settings for all parameters other than those explicitly set by the new file being imported. If the system configuration mode is not set to *Keep*, all parameters other than those being set by the configuration file, will be reset to their default setting.

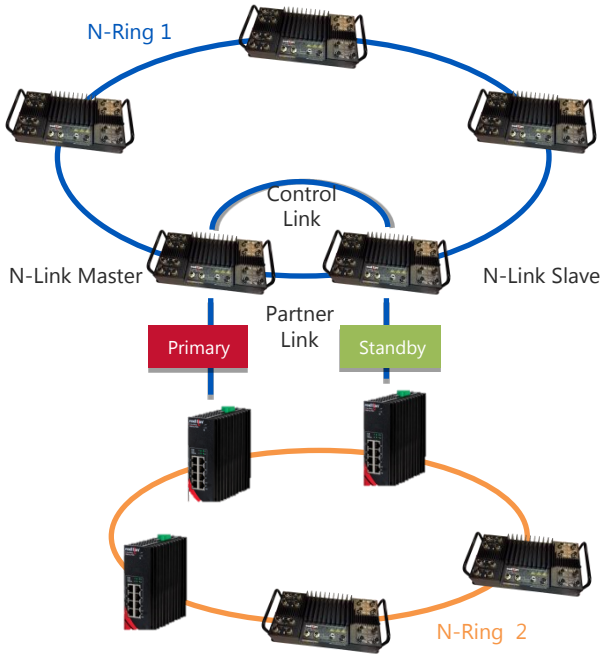
In the example below, the mode is set to *Keep* so that other switch settings are not reset to defaults. Additional information about the content of the configuration file can be found at the top of any exported configuration file.

```
<SystemConfiguration Mode="Keep">
  <SystemGroup>
    <SystemConfig>
      <SwitchContact>IT Department Manager</SwitchContact>
      <SwitchLocation>Factory Floor B</SwitchLocation>
    </SystemConfig>
  </SystemGroup>
</SystemConfiguration>
```

- Fully human-readable configuration (XML) for fast mass configuration
- The XML configuration file may be used to set all or a subset of the configurable parameters on the NT24k® switch series
- Setting common parameters across multiple switches can be easily accomplished by creating and importing an abridged configuration file

Network Redundancy

- Industry-standard RSTP
  - 802.1d, 802.1w, 802.1D RSTP
- Red Lion N-Ring provides 30ms default heal time for up to 250 managed switches per ring
- Support for N-Ring™ and RSTP concurrently on the same switch



Management & Monitoring: N-View™

- N-View provides complete remote network traffic and status monitoring for 300-N, 500-N, 500-A, 700, 7000, and NT24k® switch products.
- N-View enabled switches autocast a small Ethernet packet periodically containing a port-by-port status of the switch
  - 5 switch-level data points
  - 41 data points for each port
- These can be read by a PC running the Windows-based N-View 2 application, or Crimson™ 3 devices from Red Lion

Error Variables

- Count the number of packet errors seen at each port since the start of the switch

Traffic Variables

- Count the number of OCTETS (BYTES) of a specific type of Ethernet packet that have passed through a port since the start of the switch

Status Variables

- Indicate operating condition of switch

Switch Variables

Management and Monitoring: N-View 2

N-View 2 is a Windows-based application used to communicate with N-View enabled switches.

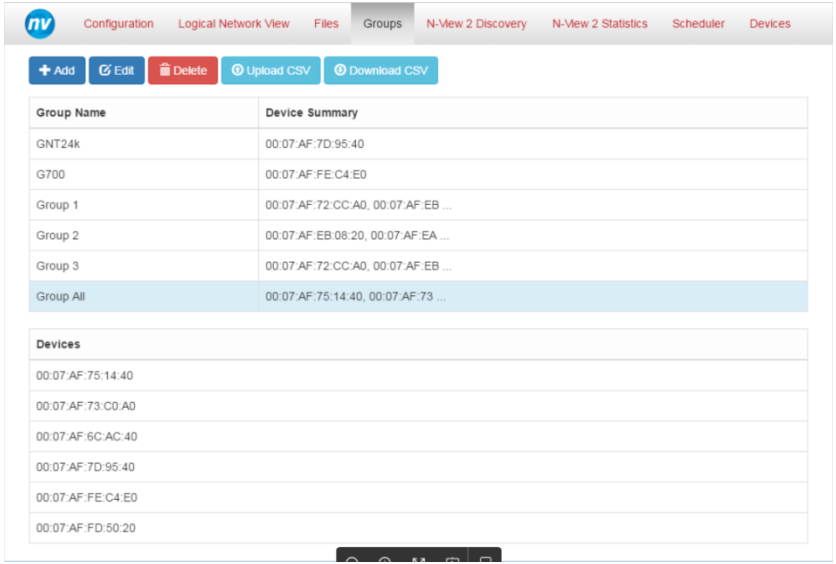
- N-View 2 Provides:
  - Enhanced discovery and management of managed switches
  - Auto-Discovery and topology view of supported devices based on a user-configurable IP range
  - Ability to change IP address on the discovery line
  - Automatic flagging and highlighting of duplicate IP addresses
  - Scheduling of firmware updates by model, individually or in groups; immediately or at a future date and time
    - Supported models initially will include the 700/7000/NT24k series

IMPORTANT Unlike some network management applications in the market, there is **no limit** to the number of devices that can be managed using N-View 2, and **no license or annual maintenance agreements**.

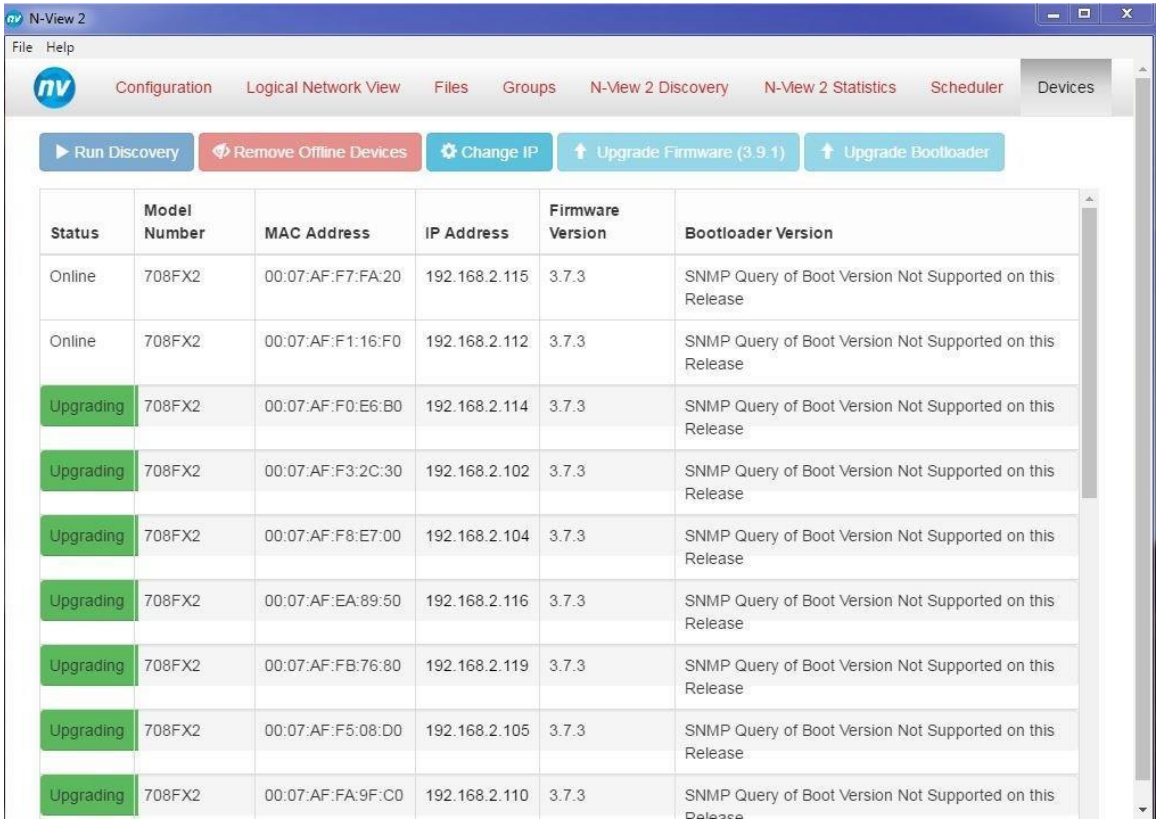
N-View 2 FW Management

- What it does
  - From within N-View 2, you can schedule firmware upgrades by individual device, model, or user-defined group either immediately, or at a future date and time.

- Why it matters
  - This enables you to schedule updates when and how it will be most convenient for your operation.

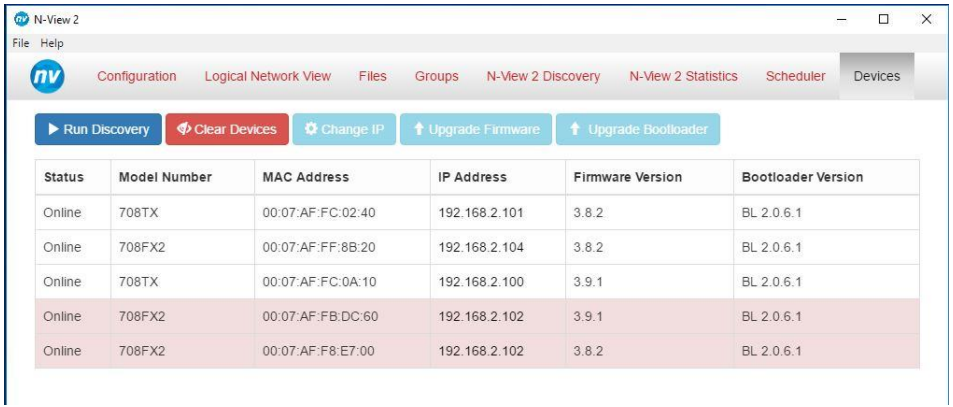


N-View 2 Firmware Updates

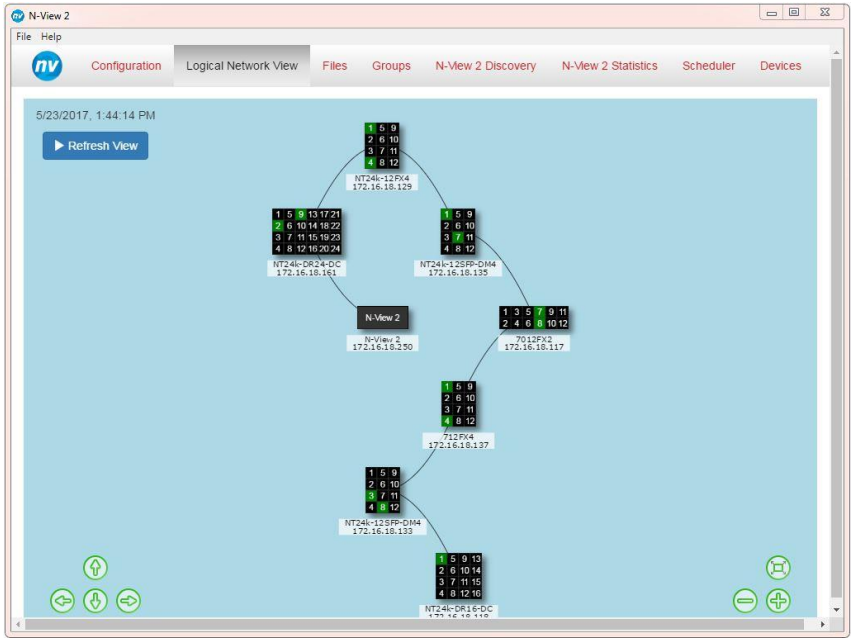


N-View 2 Device Discovery

- What it does
  - N-View 2 uses SNMP v1 and V2 to discover N-Tron series managed switches. It also highlights duplicate IP addresses and allows users to change IP addresses directly on the Devices tab.
- Why it matters
  - Makes it much easier to identify, troubleshoot and resolve issues.

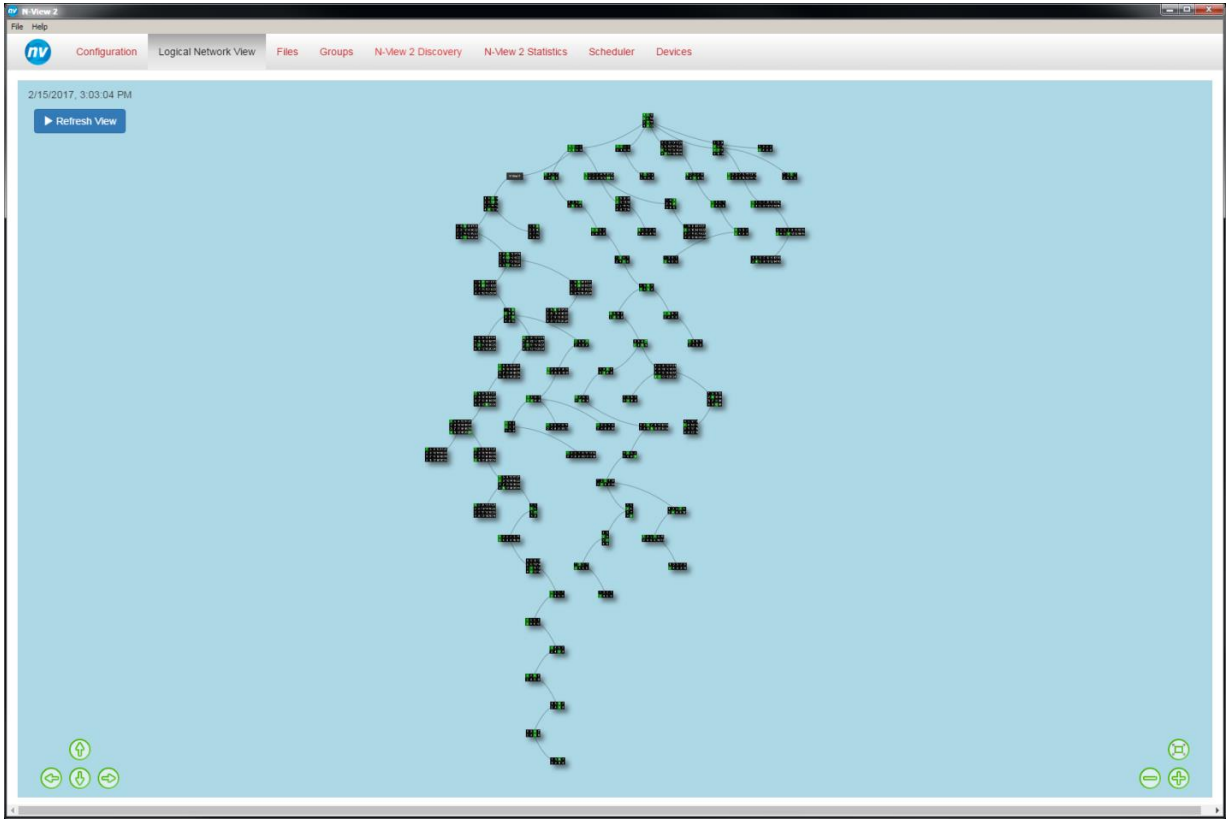


N-View 2 Logical Network View



- What it does
  - Allows a user to see their network (N-Tron switches) from a logical perspective
- Why it matters
  - It's an easier way to help troubleshoot common problems, understand which switch is connected where, which ports are active, etc., and eliminates the need to manually create a network drawing before diagnosing issues

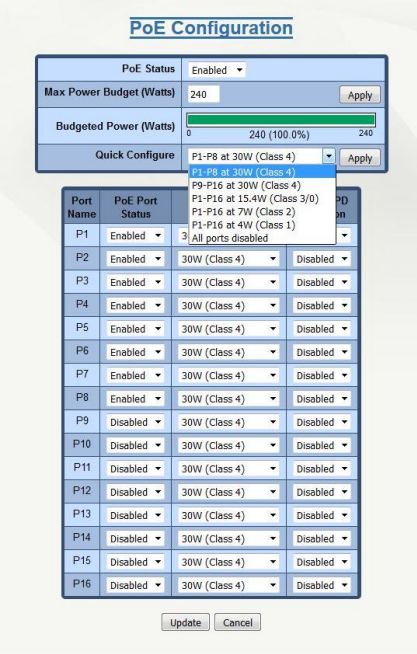
N-View 2 Logical Network View



Summary

The Red Lion Difference

Optimizing Capital Investment



Our **rugged, IP67-rated PoE+ switch** can easily scale to meet changing needs, in harsh environmental conditions, without special cabling or external power boost circuitry.

The Red Lion Difference

Red Lion offers all of this in one compact, rugged design:

- Gigabit speed on all ports
  - Future proof solution for growing data demands
- 802.3af/at (PoE+) on all 16 ports
  - Lower labor & materials costs
  - Easy-to-manage 240W budget
- Simplified network deployment
  - Plain-language configuration and automated features ensure consistent management

Improving Operational Uptime

Red Lion's NT24k-16M12 switches were developed to **maximize reliability, system scalability** and **ease of switch management**. In addition, M12 cable connections ensure connectivity in applications where motion or vibration exist.

The Red Lion Difference

- With 30 ms heal time for up to 250 nodes, **N-Ring™** technology from Red Lion delivers robust connectivity and increased uptime.
- Red Lion's auto IGMP feature means you can introduce new devices to a network with **minimal downtime** compared with traditional IGMP snooping.
- N-View™ monitoring data is gives you **easy-to-understand**, real-time detailed information about your network, *anywhere*.

Thank you.

For more information

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