N-Tron® Series
N-View™ 2

Software Guide | January 2023
LP1003 | Revision B
Firmware | Version 1.0

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Preface

Disclaimer

Portions of this document are intended solely as an outline of methodologies to be followed during the maintenance and operation of the N-Tron® Series N-View™ 2 equipment. It is not intended as a step-by-step guide or a complete set of all procedures necessary and sufficient to complete all operations.

While every effort has been made to ensure that this document is complete and accurate at the time of release, the information that it contains is subject to change. Red Lion Controls, Inc. is not responsible for any additions to or alterations of the original document. Industrial networks vary widely in their configurations, topologies, and traffic conditions. This document is intended as a general guide only. It has not been tested for all possible applications, and it may not be complete or accurate for some situations.

Users of this document are urged to heed warnings and cautions used throughout the document.

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Document History and Related Publications

The hard copy and electronic media versions of this document are revised only at major releases and therefore, may not always contain the latest product information. Tech Notes and/or product addendums will be provided as needed between major releases to describe any new information or document changes.

The latest online version of this document and all product updates can be accessed through the Red Lion web site at www.redlion.net/support/documentation.

Additional Product Information

Additional product information can be obtained by contacting the local sales representative or Red Lion through the contact numbers and/or support website address listed on the inside of the front cover.

Chapter 1 Overview

Introduction

N-View 2 is designed to quickly and easily identify N-View enabled devices using the unique IEEE MAC address assigned to each unit. Intuitive, easy to read monitoring pages display switch status and port traffic information valuable for troubleshooting cabling and configuration issues. Advanced management functionality includes a visual topology of supported SNMP enabled N-Tron series managed switches, duplicate IP address identification, and centralized firmware management is easily scheduled individually or in groups for immediate or future action.

Monitoring

Network monitoring of N-View enabled devices
Display diagnostic port counters for each port of supported N-View capable devices

Discovery

Network discovery of supported N-Tron series devices using SNMP v1 and v2
Note: Discovery not supported for 7014 and 9000 devices.
Display a logical network view of discovered devices

Management

Perform upgrades/downgrades of firmware and bootloader of supported devices
Allow Alias designations for each device to simplify remote monitoring
Use the Scheduler to plan:
Upgrades/downgrades of firmware and bootloader to supported devices, individually or in groups.
Resetting of a device to factory defaults
Soft reset a device or group of devices

Compatibility

N-View™ Discovery and Statistics

For use with all N-View capable N-Tron switches, including:

- 200 Models (with –N extension)
- 300 Models (with –N extension)
- 400 Models (with –N extension)
- 500 Models (with –N or –A extension)
- 700 Models
- 900 Models (with –N extension)
- 7000 Models
- 9000 Models
- NT24k Models
- NT5000 Models

Note: N-View must be enabled on the device.

Firmware Upgrade/Downgrade and Logical Network View

For use with SNMP v1 and v2 capable N-Tron switches, limited to:

- 700 Models
- 7000 Models (except the 7014)
- NT24k Models
- NT5000 Models

Note: SNMP v1 or v2 must be enabled on the device. SNMP v3 is not currently supported.

Installing N-View™ 2

Minimum System Requirements

Windows

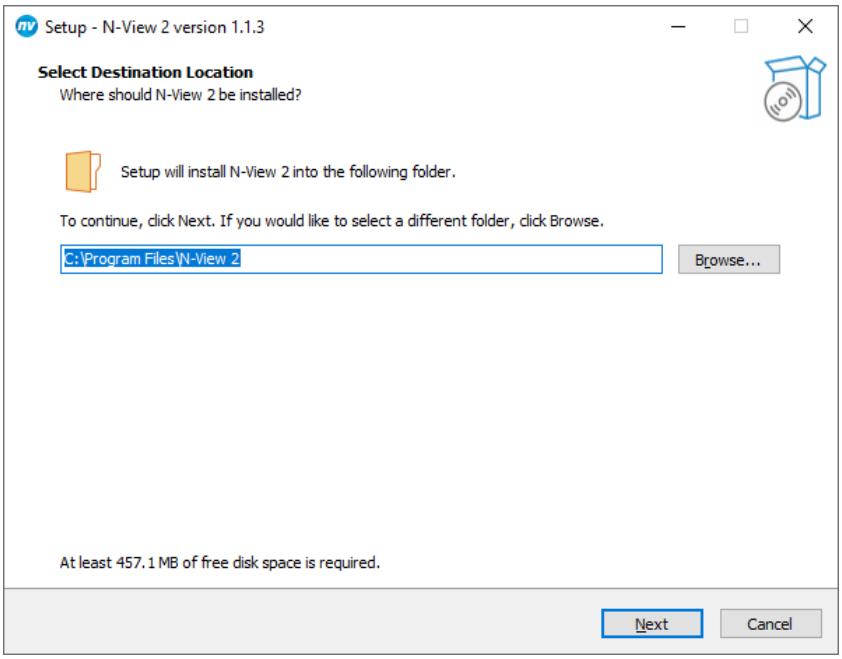
Operating System (64 bit only): 7, 8, 8.1, 10
RAM: 8Gb
Processor: Core i5, or equivalent 2GHz or faster
HDD: 350MB free

Installation

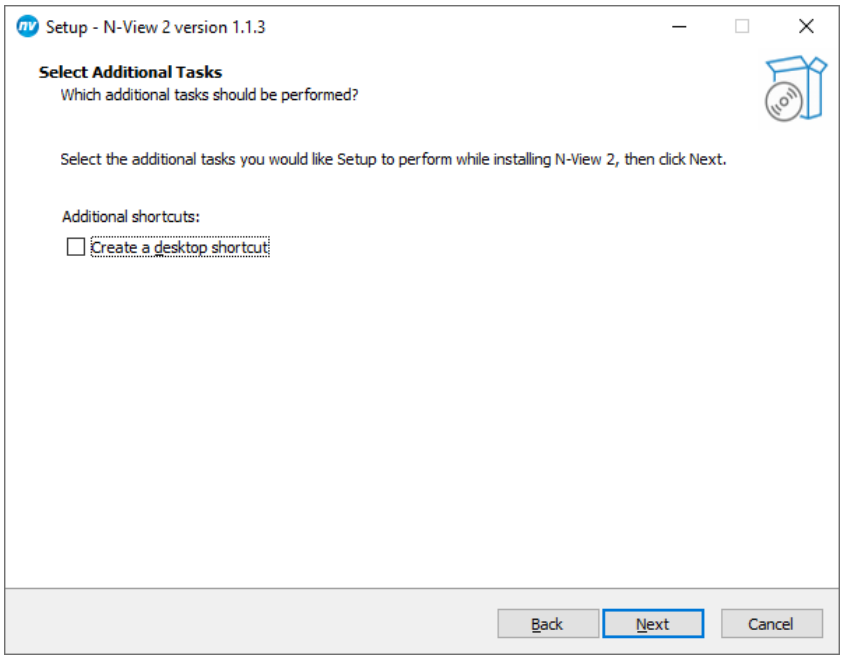
Perform the following procedure to install N-View 2.

Note: Installation of N-View 2 requires uninstalling any currently installed version of N-View 2. The N-View 2 uninstaller will wipe all existing data. If a deinstall is required to perform an upgrade it is recommended that a copy of the stores directory (C:\Program Files\NView 2\stores on a default install) be made. Then, after the new version is installed, copy the saved stores directory into the new installation directory.

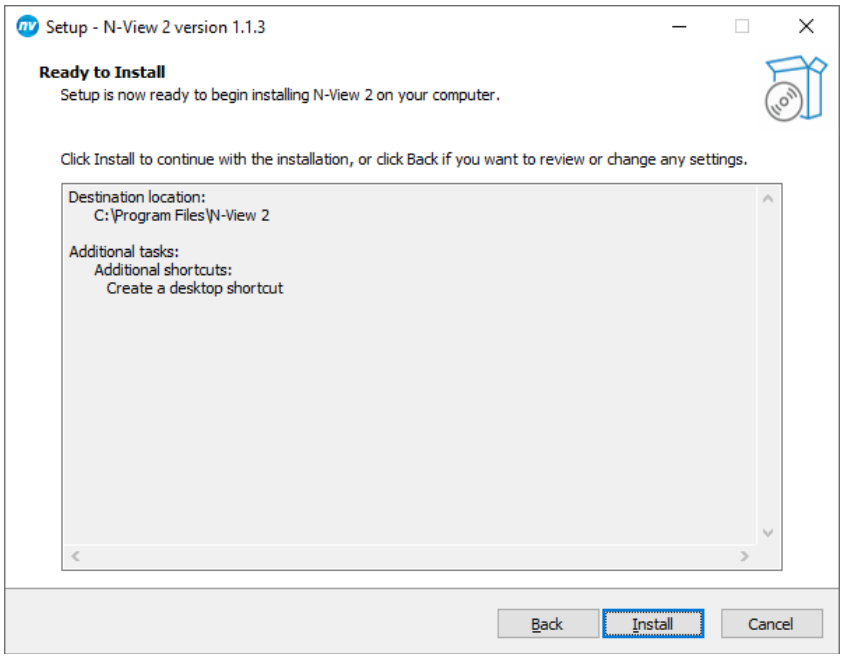
1. Launch the N-View installer by double clicking the N-View 2 installer.
2. If a Security Warning is seen click **Yes**.
3. Accept the default install location or if desired change the install location, then click **Next**.



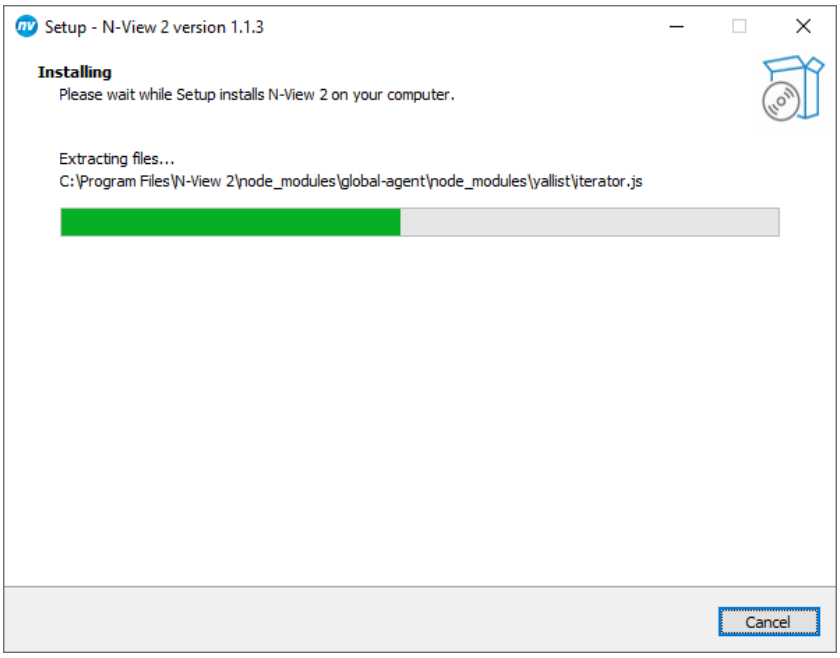
4. Check on **Create a desktop shortcut** if desired and click Next.



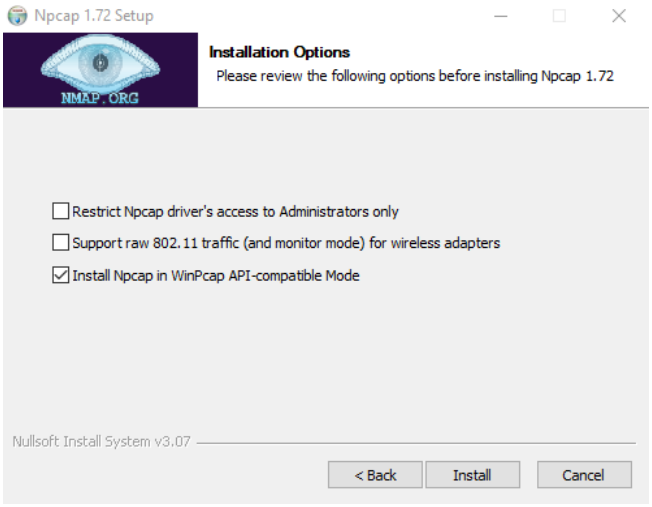
5. Click on **Install** to start the installation.



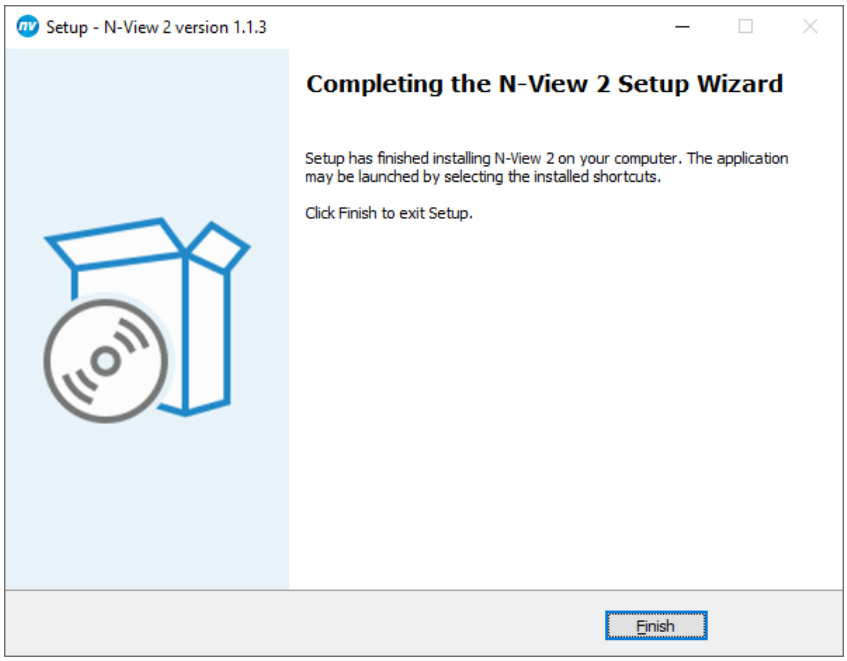
6. Installation will now proceed.



7. Next, the installation of Npcap will start. Make sure that the option to “Install Npcap in WinPcap API-compatible Mode” is checked:



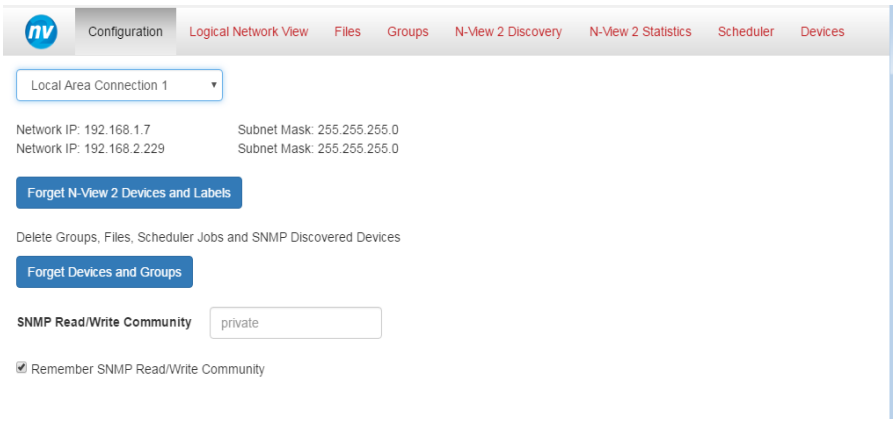
8. Once installation is complete click **Finish** to exit the installer



Chapter 2 Configure N-View™

Configuration Page

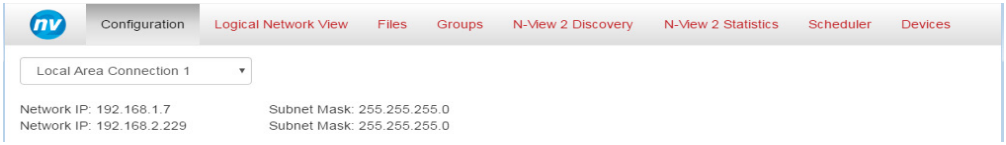
The Configuration page is used to set the desired configuration settings for the N-View application.



Configuration Settings

Current Interface

The current interface selection box allows selecting the desired Ethernet NIC. The Ethernet NIC selected from the supplied drop-down menu should be on the subnet as the devices that will be interfaced with using the N-View application. The configured IP and Subnet addresses of the Ethernet NIC selected in the drop-down box will be displayed below the selection box.



Forget N-View Devices and Groups

Selecting this button removes all devices from the N-View discovery page.

WARNING: All device data in the N-View Discovery and Statistics pages will be lost.

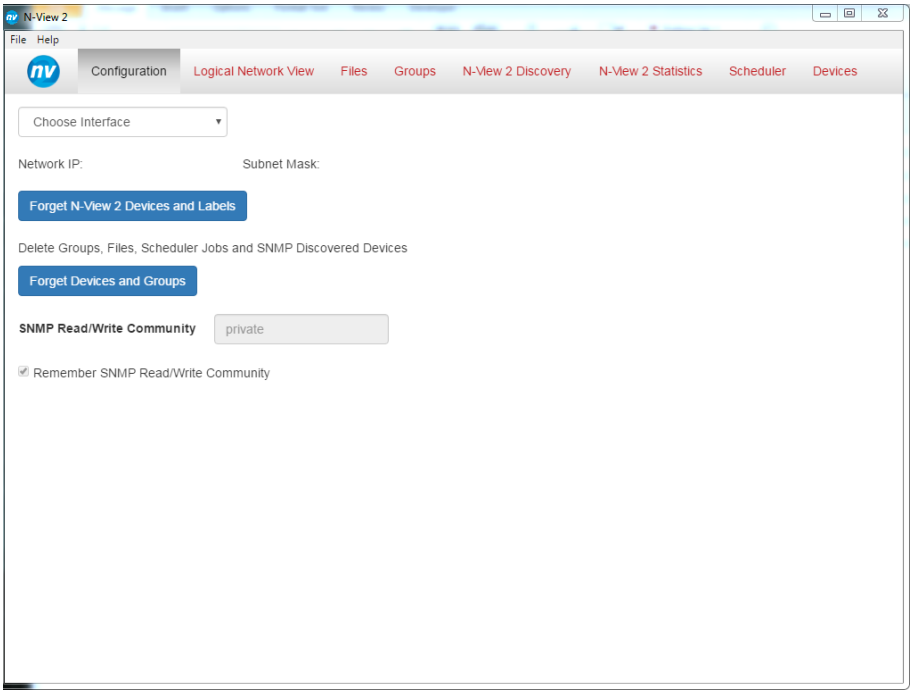
Upon performing this operation, the N-View discovery of N-View devices will automatically commence. The N-View device table will be populated with all active devices detected on the Ethernet NIC configured on the Configuration page.

Forget Devices and Groups

Selecting this button removes all discovered devices, defined groups and uploaded files from the N-View program.

WARNING: This action can not be reverted.

SNMP Read/Write Community



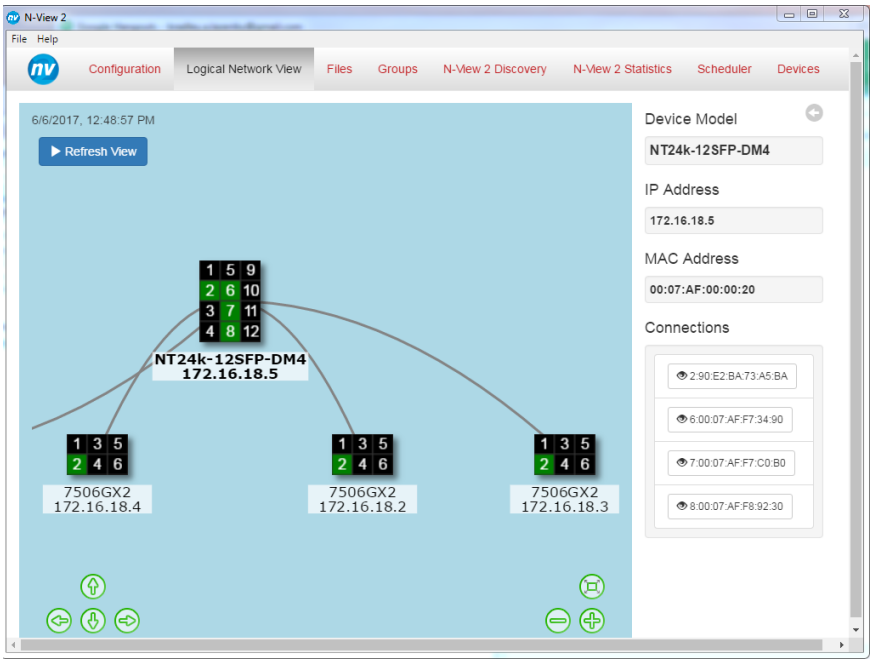
The default value for the SNMP Read/Write Community is “private”. The N-View™ application must access the SNMP read/write community in order to perform network discovery, accurately display the Logical Network View, and to complete firmware upgrades/downgrades. If the read/write community was changed on network devices to a custom value for security reasons, the custom value must be entered in the supplied field. The Remember Read/Write check box allows the custom SNMP read/write value remain persistent between N-View application sessions.

Logical Network View

The logical network page depicts a representation of the network segment where the N-View 2 host PC is installed. The page will only be populated with supported Red Lion N-Tron Series fully managed switches that have SNMP enabled. The ports depicted in green indicate connections between devices currently capable of data flow. An N-Ring™ or RSTP port that is currently in a blocking state would not be presented as an active connection. The model type and IP address is displayed below each device.

Hovering the mouse over a device displays the device's MAC address. Detailed information may be displayed about a device by clicking on a device representation in the logical network view.

The detailed information for the device will be displayed in a side pane that will look similar to the screen below.



The network view displayed corresponds to the last time a network discovery was performed. The time of the last Network Discovery is displayed in the top left corner.

Controls

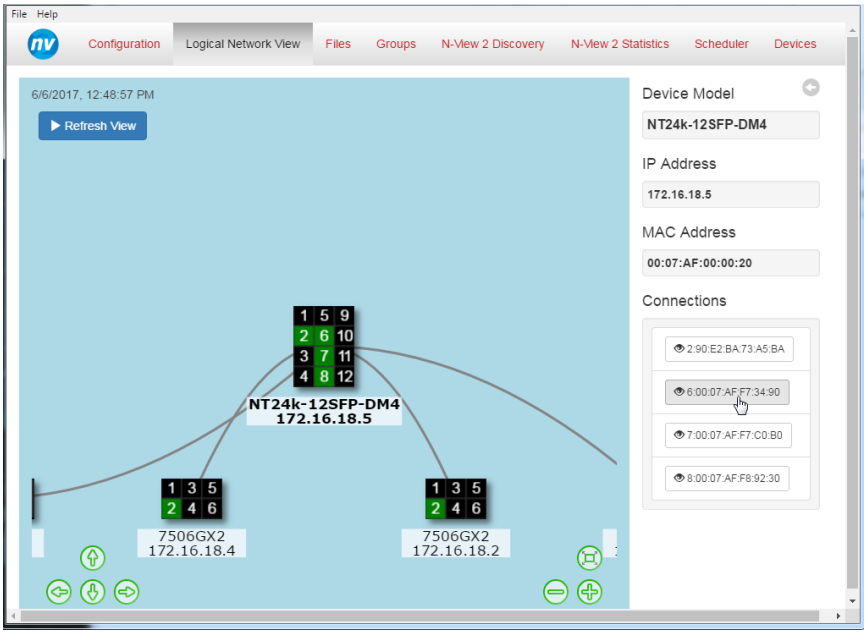
The following buttons are provided to control the *Logical Network View*.

CONTROL ICON	CONTROL FUNCTION
	Moves the display focus up
	Moves the display focus down
	Moves the display focus right
	Moves the display focus left
	Zooms in
	Zooms out
	Resets zoom and centers the image

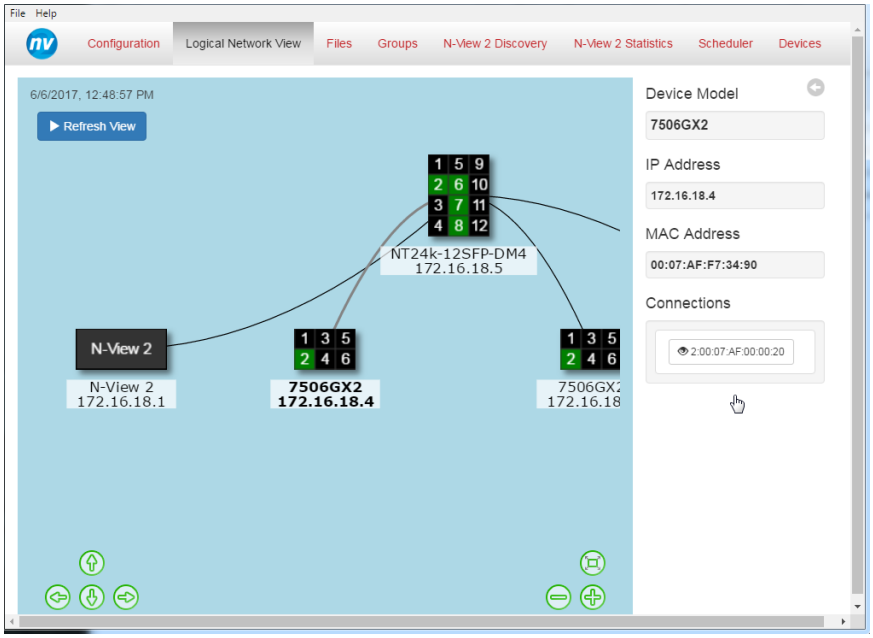
Device Information

The device model and its IP address are displayed at the bottom of each device graphical representation. To display more information about a particular device click on the device and a panel will be displayed on the right-hand side of the screen. The panel will show the model, MAC address and IP address of the device as well as a list of the devices connected to the selected device.

The selected device's model name and IP address are shown in bold font in the logical network view.



By clicking on the MAC addresses listed in the connections section of the device information panel the corresponding device is selected in the logical network view and the device information is updated.



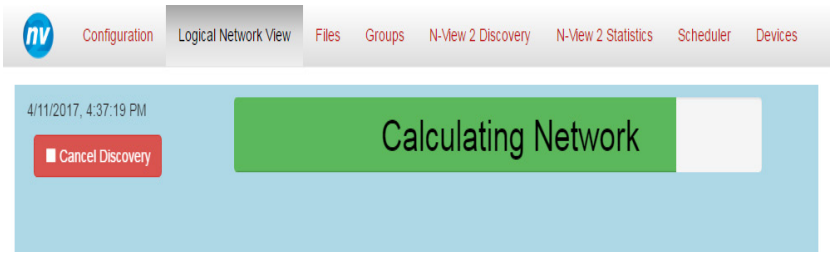
To hide the device information panel click on the arrow icon ( ) or click in any empty area of the logical network view.

Refresh View

The **Refresh View** button forces N-View™ to perform a device discovery. Once the discovery has completed the *Logical Network View* is re-drawn.

The discovery process includes a network calculation phase which may take over two minutes to complete. A discovery may increase network traffic and cause your network devices to become

unavailable while the discovery is running. During this time a bar displaying the current progress will be displayed and the **Refresh View** button will be replaced by a **Cancel Discovery** button:

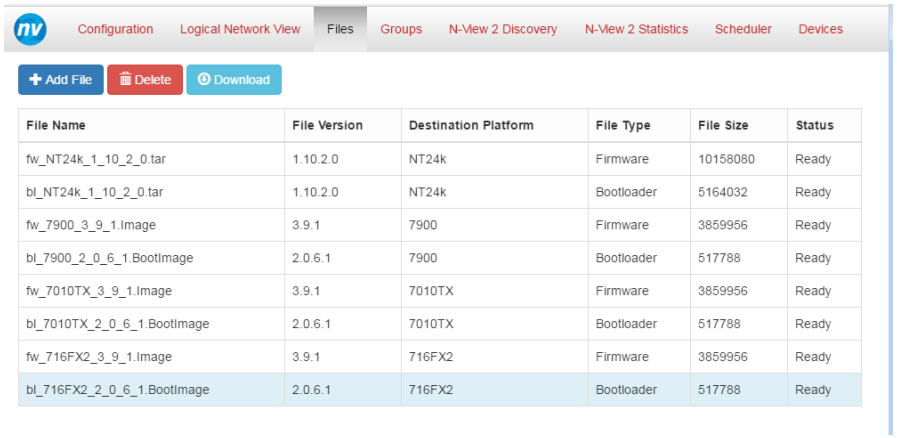


Note: The **Refresh View** button is disabled when no interface has been chosen on the Configuration page. An interface must be selected to perform device discovery.

Files Page

The *Files* page is used to add/view firmware versions by model for firmware management. Existing firmware or bootloader versions is displayed of Red Lion switches added by users. These files then can be used for upgrading or downgrading firmware/bootloader to the switches.

Click on the *Files* item and the following window appears:



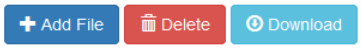
File Name	File Version	Destination Platform	File Type	File Size	Status
fw_NT24k_1_10_2_0.tar	1.10.2.0	NT24k	Firmware	10158080	Ready
bl_NT24k_1_10_2_0.tar	1.10.2.0	NT24k	Bootloader	5164032	Ready
fw_7900_3_9_1.Image	3.9.1	7900	Firmware	3859956	Ready
bl_7900_2_0_6_1.BootImage	2.0.6.1	7900	Bootloader	517788	Ready
fw_7010TX_3_9_1.Image	3.9.1	7010TX	Firmware	3859956	Ready
bl_7010TX_2_0_6_1.BootImage	2.0.6.1	7010TX	Bootloader	517788	Ready
fw_716FX2_3_9_1.Image	3.9.1	716FX2	Firmware	3859956	Ready
bl_716FX2_2_0_6_1.BootImage	2.0.6.1	716FX2	Bootloader	517788	Ready

The following information is shown for all files in the list:

- File Name
- File Version
- Destination Platform
- File Type
- File Size
- Status

Actions

The *File* page also contains actions for importing firmware and bootloader files into N-View™ 2, downloading the imported files and removing files.



Add File

This **Add File** button is used to import a valid firmware or bootloader file so it can be used for upgrading or downgrading a switch later.

To Add a File

1. Click the **Add File** button: This will open a new File Upload dialog for users to select a file.
2. Navigate to the location of the file that will be uploaded into N-View™ 2 and select a valid firmware or bootloader file and click **Open** in the File Upload window.
3. The file that was selected will then populate the Files table on the Files page. Additional information will be required before the file upload will complete:
   a. Switch platform: Select the appropriate switch platform with the file from the dropdown list of the **Destination Platform** field.
   b. Then click on **Upload** button. Once the upload succeeds, the file will be added to the File table with status *Ready*.

Delete

Use this action to delete a file that is no longer in use.

To Delete a File

1. Select a file (a row of the File table), this will enable the **Delete** button.
2. Click on the **Delete** button, the file will be removed from the File table.

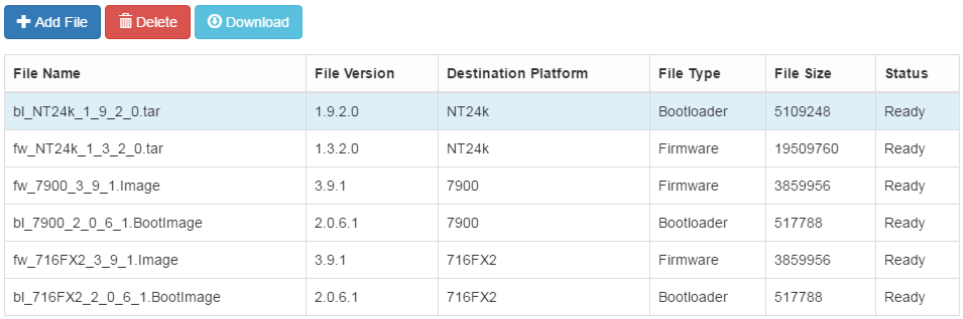
> **CAUTION:** Once the **Delete** button is clicked, the selected file is removed from the File table list. There is no way to recover the deleted file. Use Delete with caution.

Download

This action is used to download the firmware or bootloader file from the File table (previously added by users).

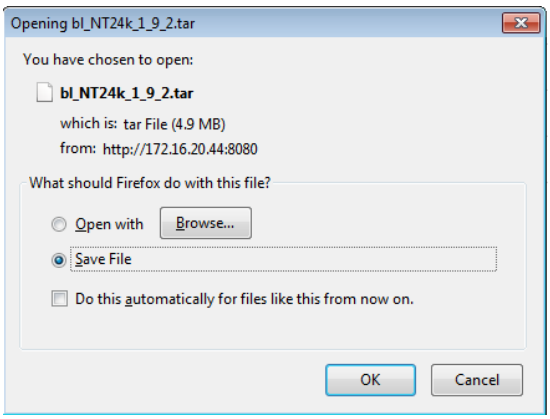
To Download a File

1. Select a file (a row of the File table), this will enable the Download button.



File Name	File Version	Destination Platform	File Type	File Size	Status
bl_NT24k_1_9_2_0.tar	1.9.2.0	NT24k	Bootloader	5109248	Ready
fw_NT24k_1_3_2_0.tar	1.3.2.0	NT24k	Firmware	19509760	Ready
fw_7900_3_9_1.Image	3.9.1	7900	Firmware	3859956	Ready
bl_7900_2_0_6_1.BootImage	2.0.6.1	7900	Bootloader	517788	Ready
fw_716FX2_3_9_1.Image	3.9.1	716FX2	Firmware	3859956	Ready
bl_716FX2_2_0_6_1.BootImage	2.0.6.1	716FX2	Bootloader	517788	Ready

2. Click on the **Download** button, a confirmation dialog will be displayed.



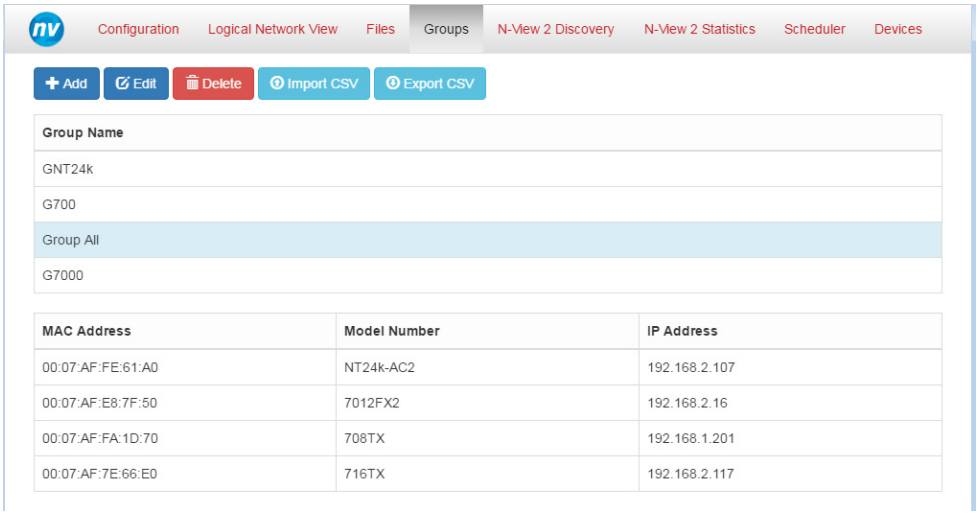
3. Select the **Save File** option and click **OK** button. The file will then be saved to local file system.

Groups Page

The *Groups* page displays information about the group(s) of devices created by the user. There are two tables, one lists the groups and the other shows device information for members of the group selected from table one. The information displayed is the MAC Address, Model Number and IP Address.

The table columns are sortable and the sorting is linked to the table on the *Devices* page. Whenever this table is sorted by an attribute, the table on the *Devices* page is sorted by the same attribute.

This page also contains buttons to create, modify or delete a selected group.

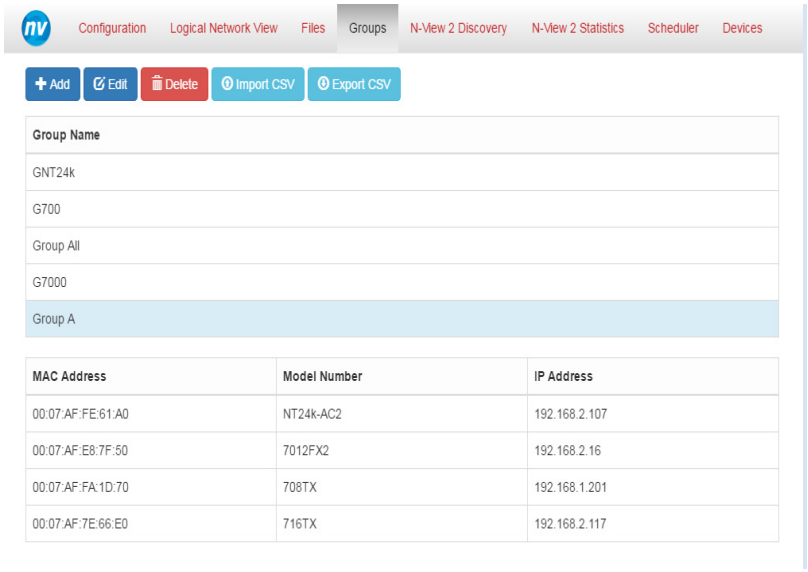


Actions

The *Group* page provides following actions: Add, Edit, Delete, Import CSV, Export CSV.

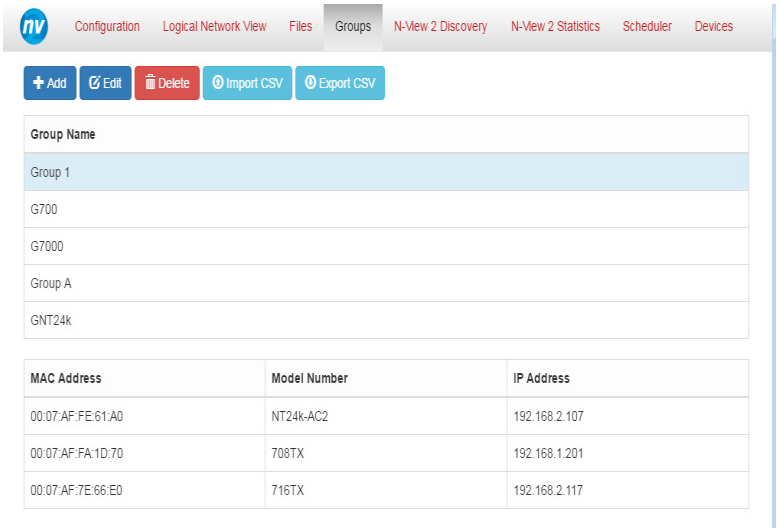
Add

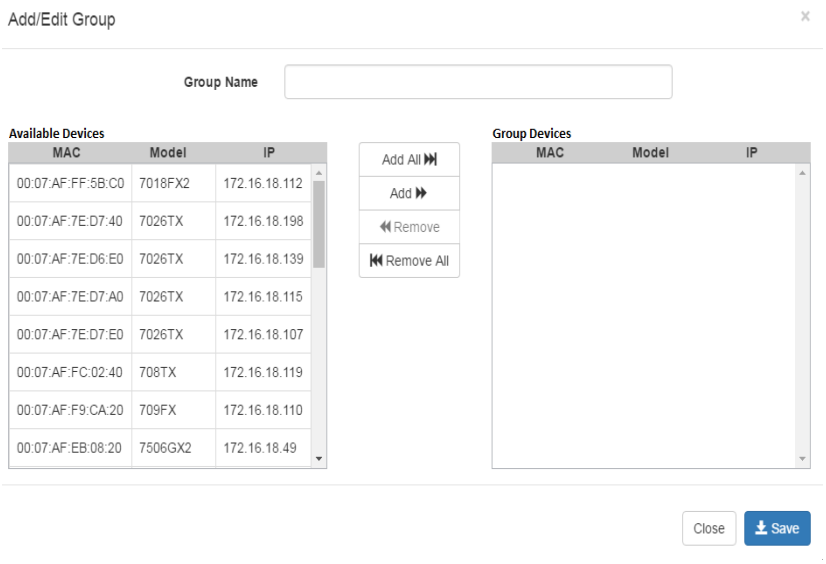
Use this action to add a new group of devices. Clicking on the **Add** button will display the Add Group dialog:



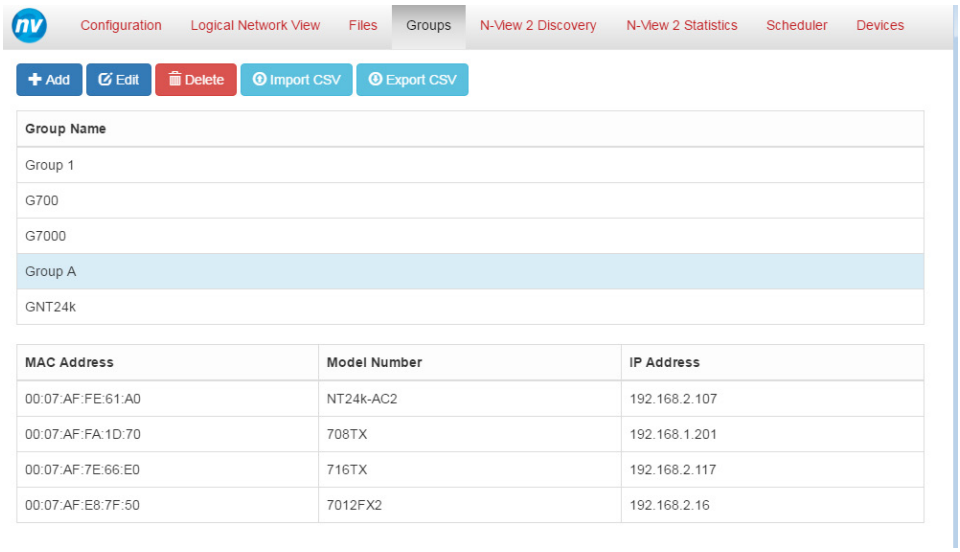
To Add a New Group

1. Enter a name for the group on the **Group Name** text field.
2. Select one or more devices from the **Available Devices** list and click **Add** button. If you want to select all of the available devices, click the **Add All** button.
3. Click on the **Save** button to create a new group.





4. Once created, a new group is added to the Group table on the *Groups* page:

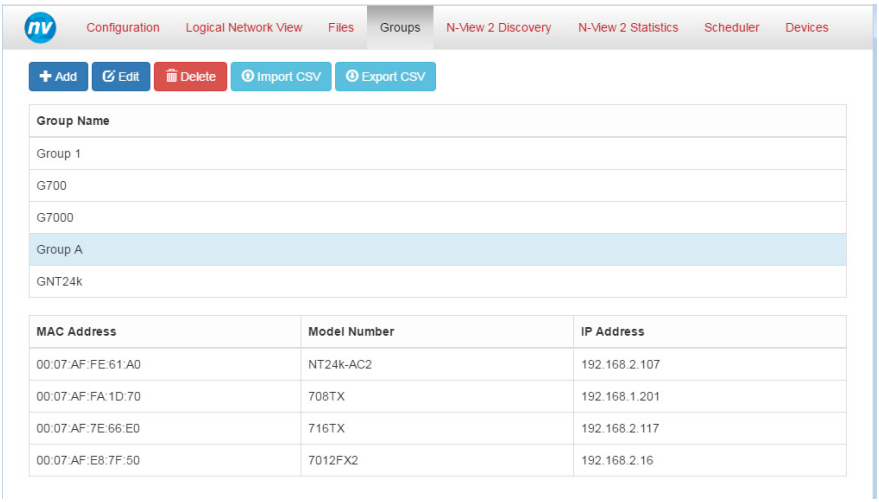


Edit

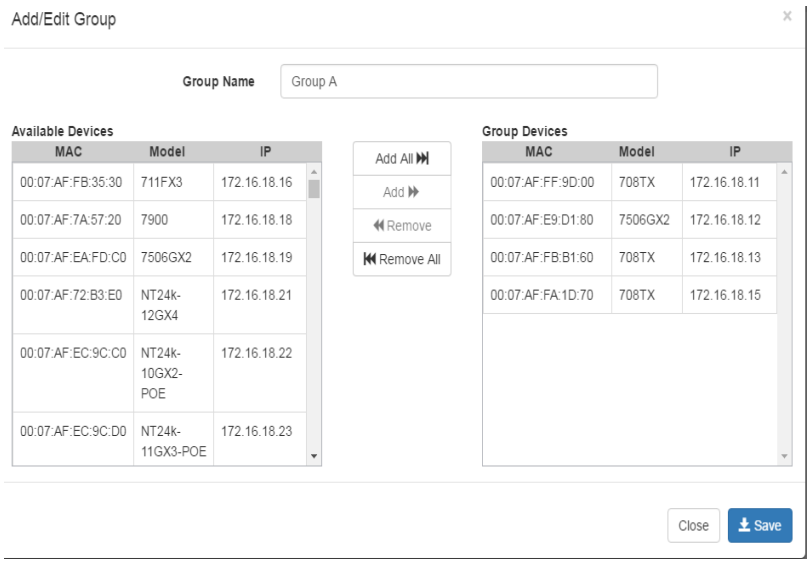
Use this action to edit an existing group, either to change the group name, or to change the devices list.

To Edit an Existing Group

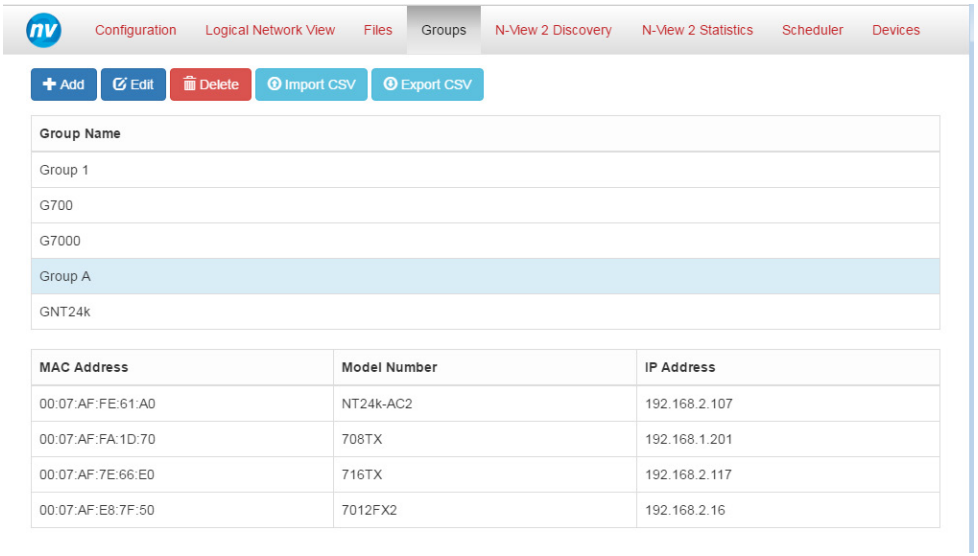
1. Select a group from the Group table. This will enable the **Edit** button.
2. Click on the **Edit** button.



3. Enter a new name for the group on the **Group Name** text field if you want to modify the group name.
4. To modify the devices list of the group:
   a. To add one or more devices: Select device(s) from the **Available Devices** list that you want to add and click **Add** button.
   b. To remove one or more devices from the current list: Select device(s) from the **Group Devices** list that you want to remove and click **Remove** button.
   c. Click on the **Save** button to save the new settings.



5. The settings of the new group will be on the Group table (new name) and Device table (new devices list).



Delete

Use this action to delete an existing group. It will remove the group from the Group table.

To Delete a Group

1. Select a group from the Group table. This will enable the **Delete** button.
2. Click on the **Delete** button, the selected group will be removed from the Group table.

Import CSV

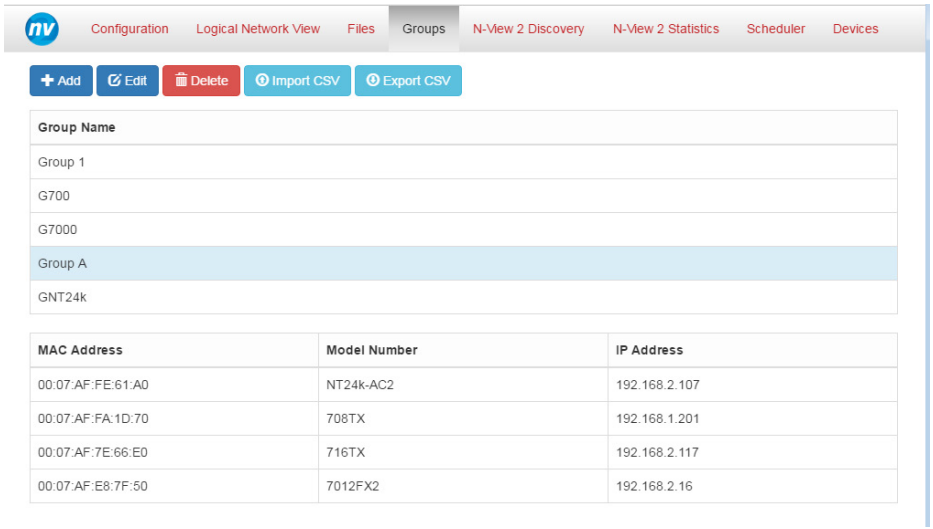
This action allows users to import a list of previously saved groups.

To Import a List of Previously Saved Group Settings:

1. Click on the **Import CSV** button: This will open a File Dialog for you to navigate the file system to locate the file to be uploaded.
2. Click **Open**.
3. If the upload succeeds, the imported list will be appended to the current list of groups in the Group table. Duplicate groups are checked for by group name and, if found, are handled by overwriting the existing group with what is contained in the file.

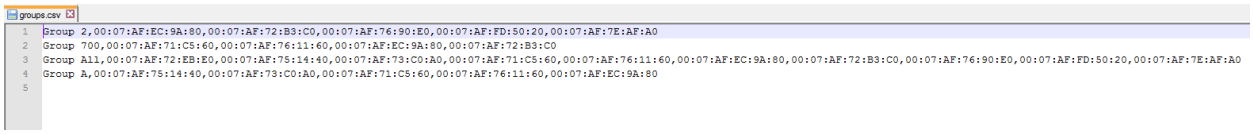
Export CSV

Use this action to export the group list and their settings.



To Export the Current List of Existing Groups and their Settings:

1. Click on the **Export CSV** button: This will open an Information Dialog to ask you if you want to open the file to view or save the file.
2. Select **Save File** and click **OK** button.
3. The group list is now saved to a file named groups.csv.
4. The file should have the information as below:



N-View™ 2 Discovery Page

The N-View 2 Discovery page displays the N-Tron Series devices that are discovered by listening to N-View traffic on the configured Ethernet NIC.

Discovery Device Table

The discovery device table is populated with devices that are either discovered or imported into N-View. There are two views that can be displayed in discovery device table. The default view for the table shows all devices that are active and inactive. Active devices are devices which N-View frames are currently being received. Inactive devices are devices that were active at one time, however, currently N-View frames are no longer being received from the device. Inactive devices remain in the table until the **Forget N-View Devices and Labels button** is selected on the Configuration page. The other view is the active device view. This view shows the active devices list in the table. The active device list is displayed until the Show All button is pressed.

MAC	Alias Name	Slot A	Slot B	Slot C	Slot D
00:07:af:fe:c4:e0	716FX2				
00:07:af:7a:68:60	NT24k-DR16	TX8	FX8		
00:07:af:fb:76:80	708FX2				
00:07:af:f8:e7:00	708FX2				
00:07:af:fe:8f:a0	7018FX2	BL	BL		
00:07:af:7a:2e:40	7900	6T	6T	4F	4F
00:07:af:fa:a0:70	708FX2				
00:07:af:02:fa:a4	Device				
00:07:af:77:71:00	NT24k-DR24	TX8	TX8	Empty	
00:07:af:74:47:20	NT24k-8TX				
00:07:af:e9:d1:10	7506GX2	BL	BL		
00:07:af:fb:43:60	708FX2				
00:07:af:ea:ab:70	7506GX2	BL	BL		

Discovery Device Table Data Fields

The discovery device table has the following data fields: MAC, Alias Name and Slot A,B,C,D.

MAC

The MAC address of the discovered or imported device. Clicking on the device **MAC** address will open the diagnostic *N-View™ 2 Statistics* page for the selected device.

Alias Name

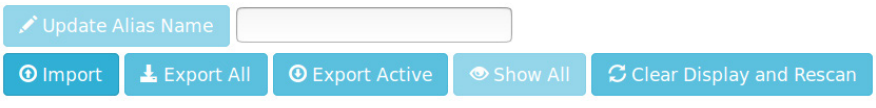
The default value for the Alias Name is the device type and model that is reported in the N-View packet. The user may choose to give the device a custom Alias Name to make the devices easier to locate in the table. The device type and model of N-Tron series legacy devices may not be identified in the table. In cases where the model and type are not reported, the user may select the Alias Name using the supplied drop-down menu. Upon selection of the appropriate type and model Alias Name from the drop-down menu, the Alias Name will be automatically updated.

Slot A, B, C, D

Information is only contained in these fields of the table if the device is a modular device. Depending on the version of the firmware that is installed on the supported device, it may be necessary to input the slot module information using the supplied drop-down menus.

Discovery Page Actions

The Discovery page provides following actions: Update Alias Name, Import, Export All, Export Active, Show All, and Clear Display and Rescan.



Update Alias Name

Select this button to specify a unique Alias Name for a supported device.

To Change a Device Alias Name:

1. Select the device from the discovery device table.
2. Enter the desired name in the **Update Alias Name** field.

3. Press the **Update Alias Name** button.
4. This change is updated and retained in the N-View 2 program but is not performed on the physical device.
   Note: A device that has been updated with a custom Alias name can be returned to the default Alias name.

To Return a Device to the Default Alias Name:

1. Select the device from the device list.
2. Leave the **Update Alias Name** field blank.
3. Select the **Update Alias Name** button.
4. The Alias name of the device is returned to the default Alias name consisting of the device type and model or may need to be selected from a drop-down menu if the device does not report its type and model in the N-View packet.

Import

Select this button to import a custom CSV file. See for an example of a CSV file format. The imported devices contained on the CSV file update the existing entry in the table if the device is already present. If the imported device is not currently contained in the table, the device will be appended to the bottom of the table.

Export All

Select this button to export a CSV file that will contain all active and inactive devices.

Export Active

Select this button to export a CSV file containing a list of the currently active devices.

Show All

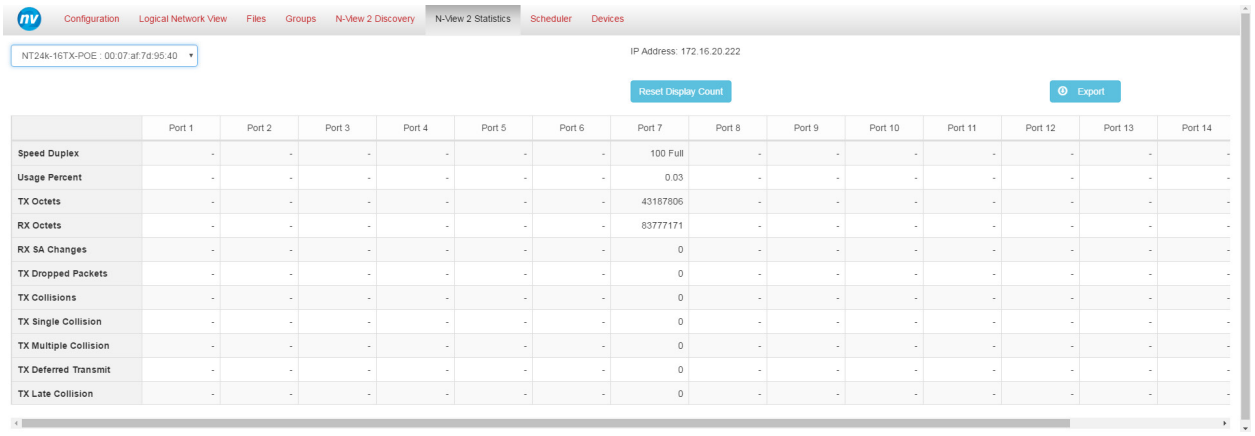
The **Show All** button becomes active after the selection of the **Clear Display and Rescan** button. **Show All** is used to toggle the table between active devices view and all devices view.

Clear Display and Rescan

Use this button to force the discovery of the currently active N-View devices on the configured Ethernet NIC. Selecting this button will clear the table and devices will appear as they are discovered. In order to view all devices in the devices table, select the **Show All** button, which is now selectable.

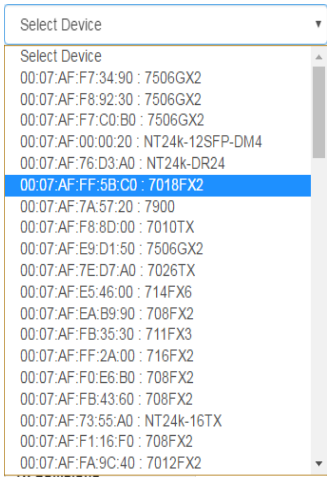
N-View™ 2 Statistics Page

Statistics from N-View capable switches can be viewed from the *N-View 2 Statistics* page.

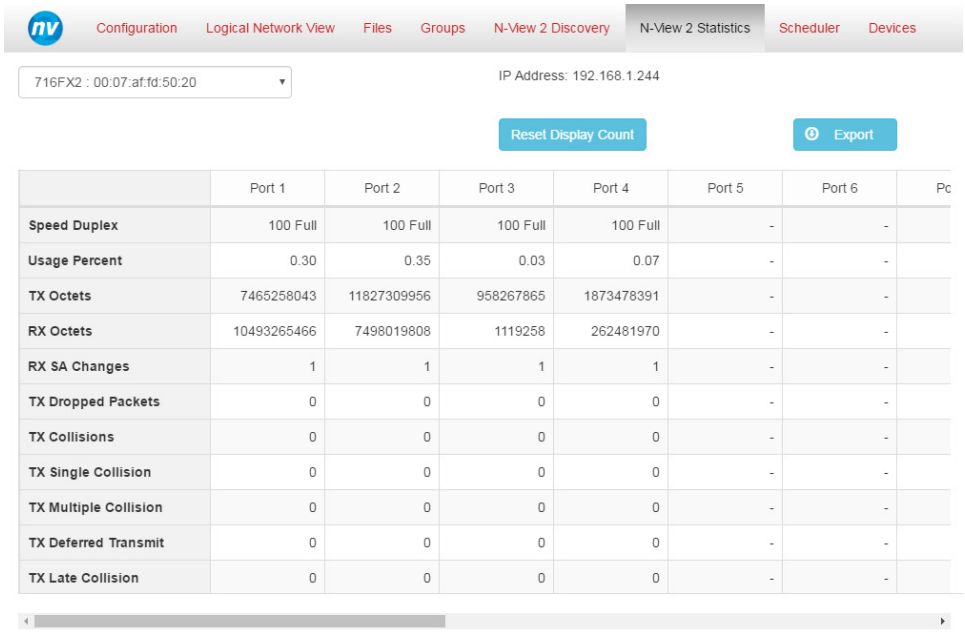


Device Selection

Select a device from the Device dropdown:



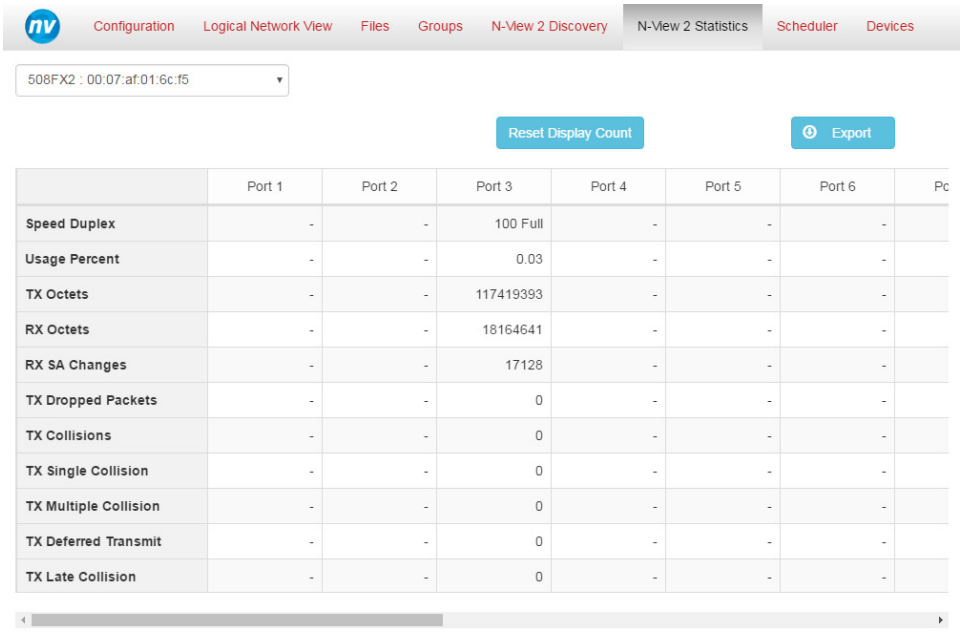
When a device is selected, the **N-View™ Statistics Table** is populated with most recently available port statistics.



	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Pc
Speed Duplex	100 Full	100 Full	100 Full	100 Full	-	-	
Usage Percent	0.30	0.35	0.03	0.07	-	-	
TX Octets	7465258043	11827309956	958267865	1873478391	-	-	
RX Octets	10493265466	7498019808	1119258	262481970	-	-	
RX SA Changes	1	1	1	1	-	-	
TX Dropped Packets	0	0	0	0	-	-	
TX Collisions	0	0	0	0	-	-	
TX Single Collision	0	0	0	0	-	-	
TX Multiple Collision	0	0	0	0	-	-	
TX Deferred Transmit	0	0	0	0	-	-	
TX Late Collision	0	0	0	0	-	-	

Descriptions of the individual port statistics are provided in Appendix A. A dash, -, is used to indicate that a port is disabled or link down. The text N/A is displayed for statistics that are not provided by some devices.

Unmanaged switches do not have an IP address. If the selected switch does not have an IP address, then the IP address field is omitted, as seen in the following example:

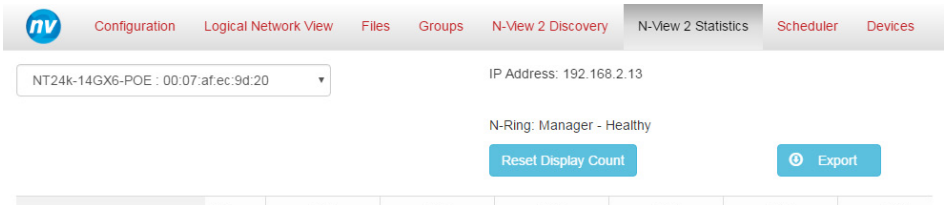


	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Pc
Speed Duplex	-	-	100 Full	-	-	-	
Usage Percent	-	-	0.03	-	-	-	
TX Octets	-	-	117419393	-	-	-	
RX Octets	-	-	18164641	-	-	-	
RX SA Changes	-	-	17128	-	-	-	
TX Dropped Packets	-	-	0	-	-	-	
TX Collisions	-	-	0	-	-	-	
TX Single Collision	-	-	0	-	-	-	
TX Multiple Collision	-	-	0	-	-	-	
TX Deferred Transmit	-	-	0	-	-	-	
TX Late Collision	-	-	0	-	-	-	

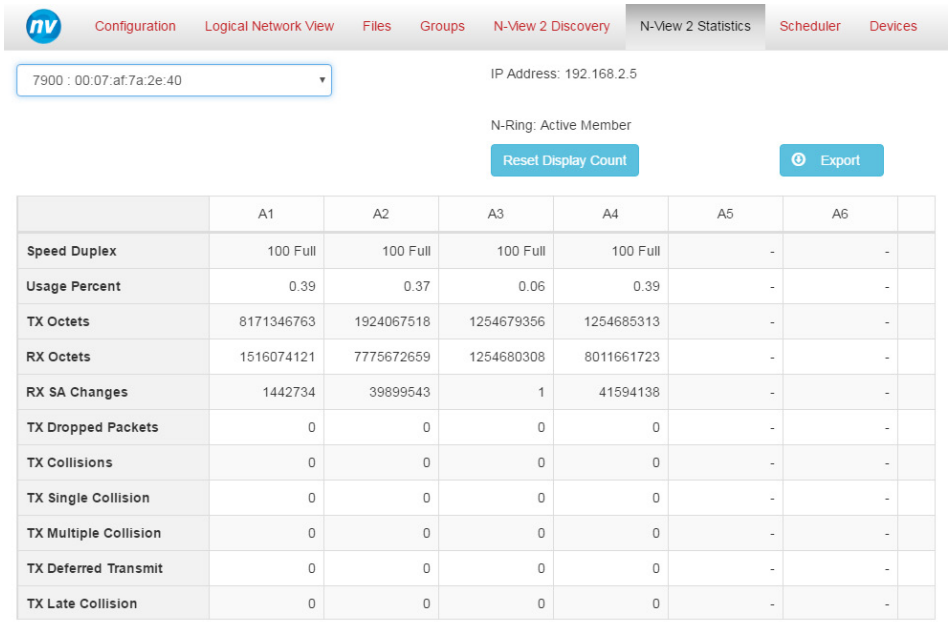
N-Ring™

When N-View™ 2 detects a device as an active N-Ring Manager or N-Ring Member, supplemental N-Ring information will be displayed at the top right below the IP Address field.

Note: The *N-Ring Status* (Healthy, Broken, Half Broken - Low port not rx, or Half Broken - High port not rx) is also reported with the N-Ring Manager.



	ırt 8	GX1	GX2	GX3	GX4	GX5	GX6
Speed Duplex	-	1000 Full	1000 Full	1000 Full	1000 Full	-	
Usage Percent	-	0.04	0.04	0.01	0.04	-	
TX Octets	-	22193917022	8922925850	6588666268	6600917770	-	
RX Octets	-	8244867472	21526774063	6588696324	21229780932	-	
RX SA Changes	-	0	0	0	0	-	
TX Dropped Packets	-	0	0	0	0	-	
TX Collisions	-	0	0	0	0	-	
TX Single Collision	-	0	0	0	0	-	
TX Multiple Collision	-	0	0	0	0	-	
TX Deferred Transmit	-	0	0	0	0	-	
TX Late Collision	-	0	0	0	0	-	

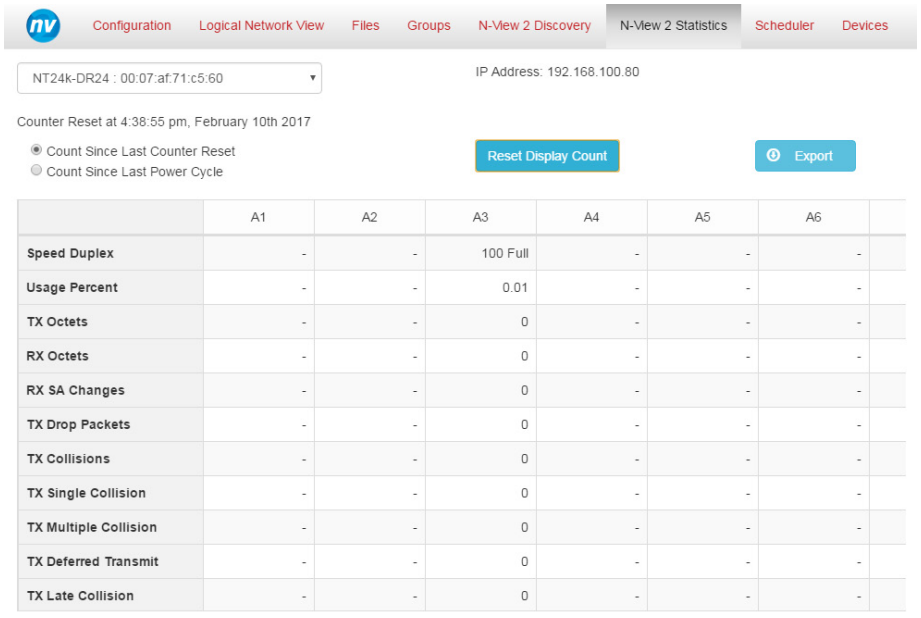


	A1	A2	A3	A4	A5	A6
Speed Duplex	100 Full	100 Full	100 Full	100 Full	-	-
Usage Percent	0.39	0.37	0.06	0.39	-	-
TX Octets	8171346763	1924067518	1254679356	1254685313	-	-
RX Octets	1516074121	7775672659	1254680308	8011661723	-	-
RX SA Changes	1442734	39899543	1	41594138	-	-
TX Dropped Packets	0	0	0	0	-	-
TX Collisions	0	0	0	0	-	-
TX Single Collision	0	0	0	0	-	-
TX Multiple Collision	0	0	0	0	-	-
TX Deferred Transmit	0	0	0	0	-	-
TX Late Collision	0	0	0	0	-	-

Reset Display Count

The **Reset Display Count** button allows a user to perform a soft reset of the counter values. The soft reset performed by the **Reset Display Count** button keeps a record of the statistics at the time the button is pressed and displays the difference of that record from the live values. This has no effect on the switch itself while allowing one to track recent changes easily. Switch counter values can be reset from the switch website or by resetting the device.

After the **Reset Display Count** button has been pressed for this device, the *N-View™ 2 Statistics* page will display the adjusted counter statistics. On the top left below the device drop-down, the last time the **Reset Display Count** button was reset, and options to toggle between the reset values and the full non-adjusted values are displayed.



	A1	A2	A3	A4	A5	A6
Speed Duplex	-	-	100 Full	-	-	-
Usage Percent	-	-	0.01	-	-	-
TX Octets	-	-	0	-	-	-
RX Octets	-	-	0	-	-	-
RX SA Changes	-	-	0	-	-	-
TX Drop Packets	-	-	0	-	-	-
TX Collisions	-	-	0	-	-	-
TX Single Collision	-	-	0	-	-	-
TX Multiple Collision	-	-	0	-	-	-
TX Deferred Transmit	-	-	0	-	-	-
TX Late Collision	-	-	0	-	-	-

Each time the **Reset Display Count** button is pressed, the Counter Reset time is updated and a new soft reset occurs.

It is also possible for a counter field to be populated with an * and the following warning shown at the bottom of the page:

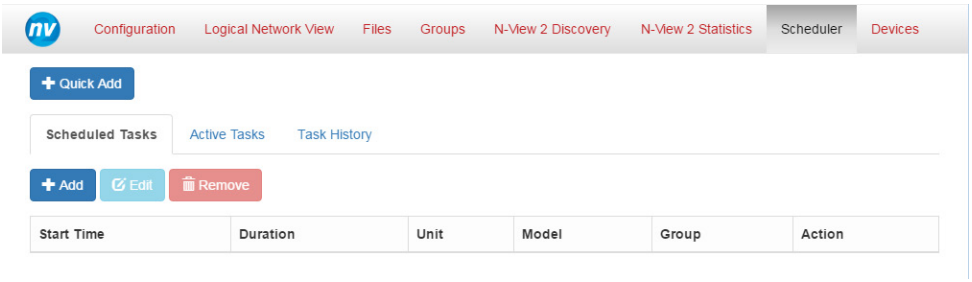
This warning indicates there was an error in the result of a calculation. The most likely cause for this is when a counter rolled over after a Reset Display Count function was performed or after a switch was reset. It could also be the case that the link was down at the time of reset but has since become link up. To correct this condition, select the Reset Display Count button again or select **Count Since Last Power Cycle**.

Export

Pressing the **Export** button will cause a CSV file consisting of the values from the currently displayed statistics table to be generated.

Scheduler Page

Schedule batch tasks to be completed at a future date, do batch operations on all devices of a specified model, view and stop any currently running tasks, review the status of completed tasks, and re-issue tasks to run again on N-View™ capable switches from the *Scheduler* page.



Available Tasks

The following tasks are available for scheduling:

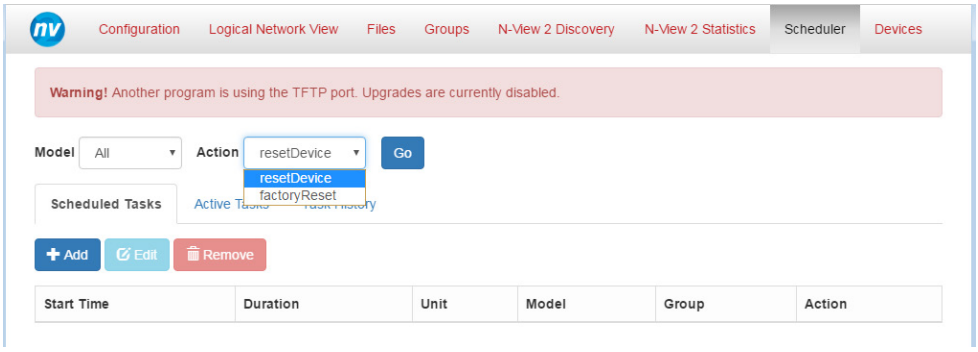
- Upgrade or downgrade a firmware
- Upgrade or downgrade a bootloader
- Reset, i.e. reboot
- Reset to factory default

> **CAUTION:** It is recommended that a single device be updated and verified prior to attempting a batch update.

TFTP

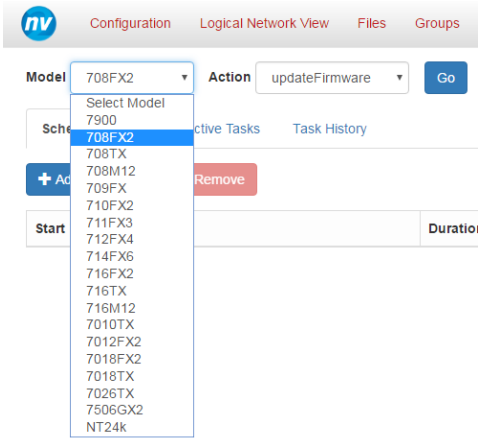
N-View 2 uses TFTP (Trivial File Transfer Protocol) to transfer files during the upgrade process. There can only be one TFTP server active on a system at a time. Should N-View 2 detect another TFTP server, a warning will be displayed and the options for upgrading firmware and bootloaders are removed.

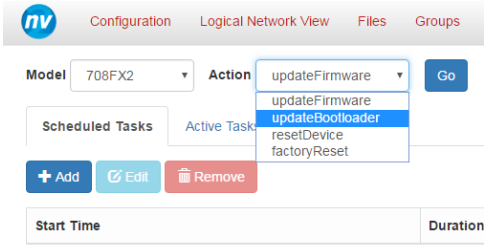
> **Note:** To resolve this issue, disable the TFTP server running outside of N-View 2 and then reload the network interface.



Quick Add Task

The **Quick Add** option is used to create a task that will be run immediately. When this button is selected the user will be prompted to choose a model and action (task) to apply.





Once valid options are chosen, the *Go* button initiates task commencement.

Scheduled Tasks

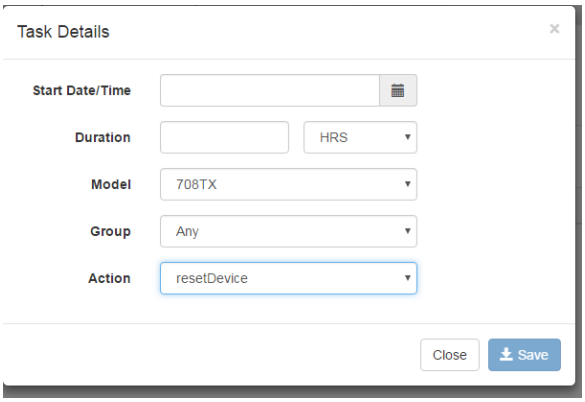
The *Scheduled Tasks* tab contains a list of all tasks which are currently scheduled to be run at a future date. Here you also have options to *Add* new tasks, *Edit* existing tasks, and *Remove* tasks.

Add

This action is used to create a new task to be run at a future date. In addition to being able to specify the starting time, this option also allows for specifying a group upon which this task will be applied and a duration for the task.

Groups, a list of devices, can be created from the *Groups* page. Duration is the time allotted for this task. Tasks will be stopped whenever the duration is exceeded. The duration can be specified in Hours (HRS) or Minutes (MIN).

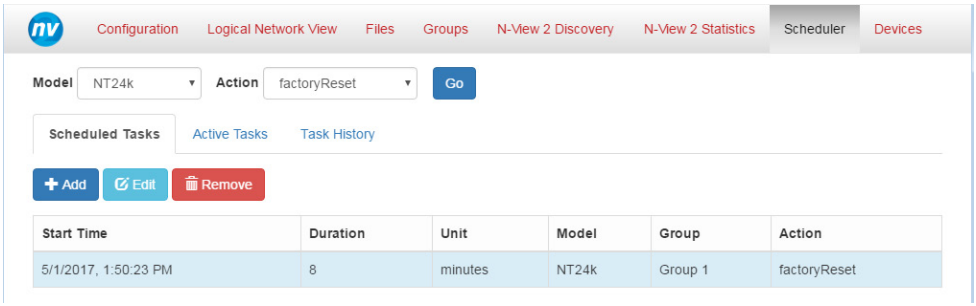
When the *Add* button is pressed, the user will be presented with a form dialog used to specify parameters of the task.

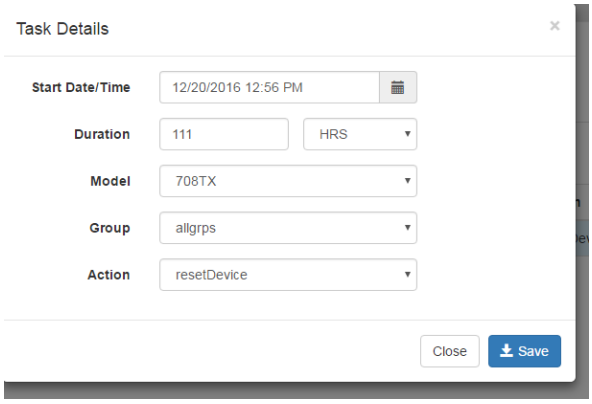


At any point, the creation of a task can be aborted with the **Close** button. Once valid options are chosen, selecting the **Save** button will cause the task to be created and added to the *Scheduled Task* list.

Edit

To edit a task, simply choose this task from the list of *Scheduled Tasks* and select the **Edit** button. The user will be presented with all the options present when the task was initially added and the form populated with the selections from the initial creation.





Selecting the **Close** button will cause any changes to be discarded and the task will remain as it was prior to the edit. Clicking the **Save** button will cause the task to be updated with the altered parameters.

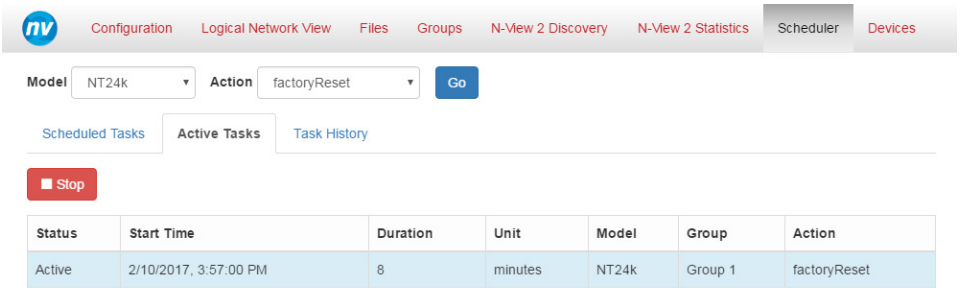
Remove

To remove a task, simply choose this task from the list of *Scheduled Tasks* and select the **Remove** button. This will remove the task from the *Scheduled Tasks* list and the task will not be run.

Active Tasks

Selecting the *Active Tasks* tab displays a list of any currently running tasks.

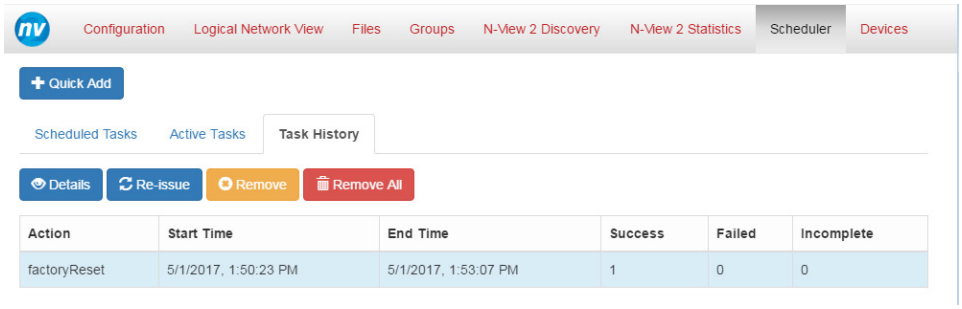
Choosing a task from the *Active Task* list will cause the **Stop** button to be enabled. Selecting the **Stop** button will stop the corresponding task at the earliest possible moment.



An active task is removed from the *Active Task* list when it terminates or is stopped.

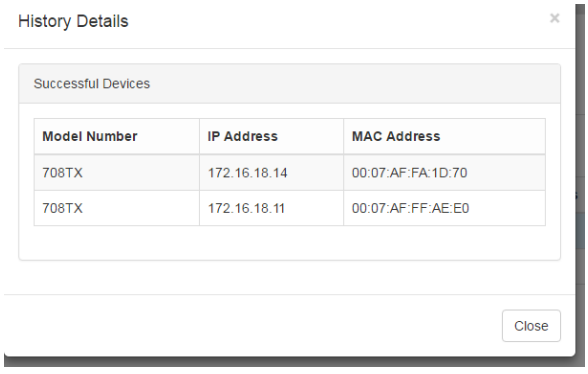
Task History

Selecting the *Task History* tab displays a list of all completed tasks.



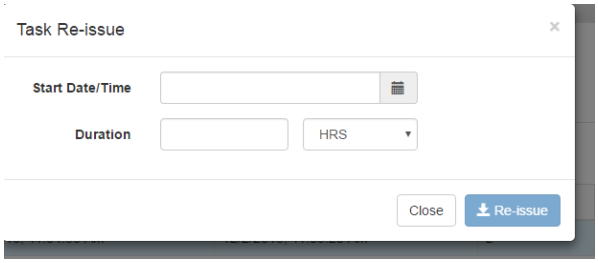
Details

To view the details of a completed task, select a task from the *Task History*. This will enable the **Details** button. When clicked the **Details** button will display a list of all devices for which the result of this task was *Success*, *Failed*, or *Incomplete*.



Re-issue

Tasks can be re-issued by choosing the desired task from the *Task History* and clicking the **Re-Issue** button. This will present the user with a form to choose a time and duration for the re-issuance of this task:



Remove

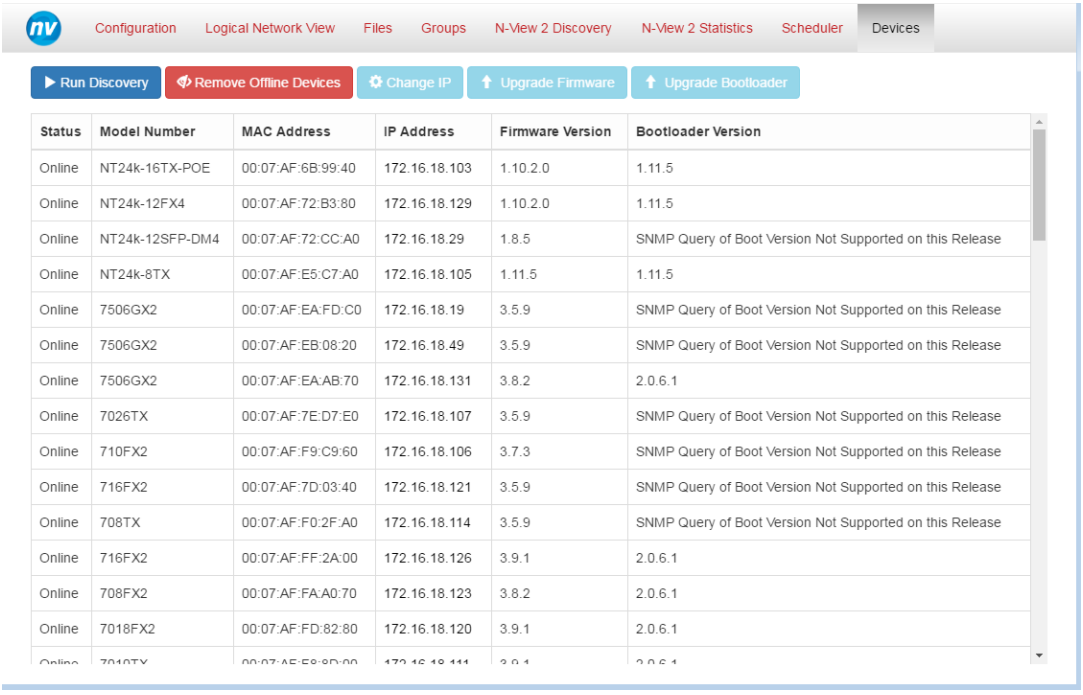
A single task may be removed from the *Task History* list by choosing the task and clicking the **Remove** button.

Remove All

Clicking the **Remove All** button will cause the Task History list to be cleared of any and all tasks.

Devices Page

The *Devices* page displays information about all the devices that have been discovered. It also contains buttons to enable running a network discovery, clear the device list, change the IP address of devices and upgrade or downgrade the firmware and bootloader of Red Lion switches.



Status	Model Number	MAC Address	IP Address	Firmware Version	Bootloader Version
Online	NT24k-16TX-POE	00:07:AF:6B:99:40	172.16.18.103	1.10.2.0	1.11.5
Online	NT24k-12FX4	00:07:AF:72:B3:80	172.16.18.129	1.10.2.0	1.11.5
Online	NT24k-12SFP-DM4	00:07:AF:72:CC:A0	172.16.18.29	1.8.5	SNMP Query of Boot Version Not Supported on this Release
Online	NT24k-8TX	00:07:AF:E5:C7:A0	172.16.18.105	1.11.5	1.11.5
Online	7506GX2	00:07:AF:EA:FD:C0	172.16.18.19	3.5.9	SNMP Query of Boot Version Not Supported on this Release
Online	7506GX2	00:07:AF:EB:08:20	172.16.18.49	3.5.9	SNMP Query of Boot Version Not Supported on this Release
Online	7506GX2	00:07:AF:EA:AB:70	172.16.18.131	3.8.2	2.0.6.1
Online	7026TX	00:07:AF:7E:D7:E0	172.16.18.107	3.5.9	SNMP Query of Boot Version Not Supported on this Release
Online	710FX2	00:07:AF:F9:C9:60	172.16.18.106	3.7.3	SNMP Query of Boot Version Not Supported on this Release
Online	716FX2	00:07:AF:7D:03:40	172.16.18.121	3.5.9	SNMP Query of Boot Version Not Supported on this Release
Online	708TX	00:07:AF:F0:2F:A0	172.16.18.114	3.5.9	SNMP Query of Boot Version Not Supported on this Release
Online	716FX2	00:07:AF:FF:2A:00	172.16.18.126	3.9.1	2.0.6.1
Online	708FX2	00:07:AF:FA:A0:70	172.16.18.123	3.8.2	2.0.6.1
Online	7018FX2	00:07:AF:FD:82:80	172.16.18.120	3.9.1	2.0.6.1

Note: The columns on the *Devices* page can be sorted by clicking on the column header.

The following information is shown for all devices in the list:

- Status
- Model Number

- MAC Address
- IP Address
- Firmware Version
- Bootloader Version.

Device Status

The device status shows the current status of a device.

Note: After a network discovery is performed all the devices are saved to permanent storage by the N-View™ 2 application. Therefore, even if a device is powered down or disconnected from the network it will still be shown in the devices list.

These are the possible status values for a device:

- **Online:** The device is connected to the network and is active.
- **Offline:** The device was discovered before but was not found during the last discovery.
- **Discovering:** A discovery is being performed and the status of the device has not yet been determined.
- **Changing IP:** A change IP operation is being performed on the device.
- **Polling Response:** The device is being queried by N-View 2.
- **Error:** The device is reporting an error state.
- **Resetting:** The device is performing a reboot.
- **Waiting for response after reboot:** The device has finished rebooting but it is still not responding.
- **Factory Reset:** The device is performing a factory reset request.

Actions

Various actions can be performed in the Devices page by clicking on the buttons at the top of the page.

Run Discovery

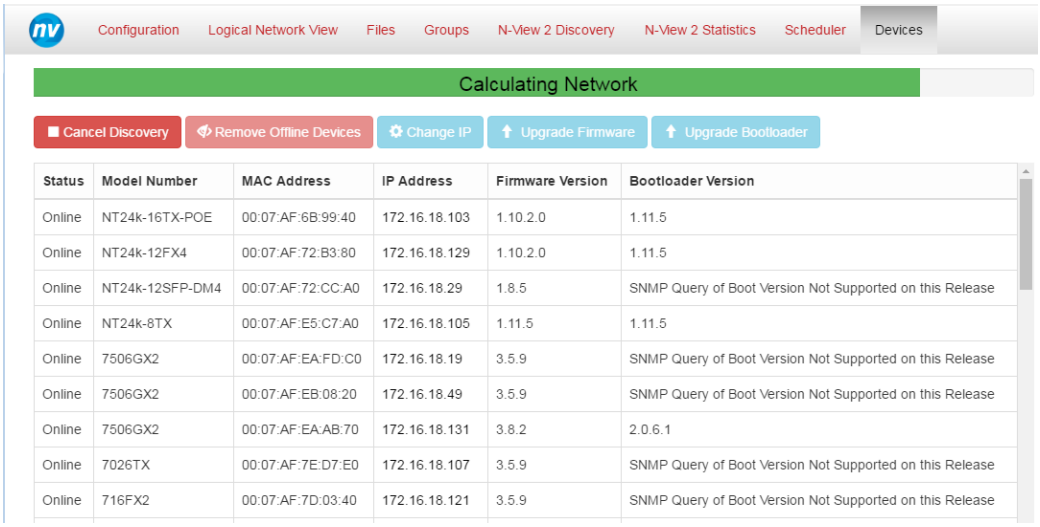
Clicking on this button starts the discovery process. The status of all devices change to *Discovering* while the discovery operation is being executed. When a device responds to the discovery requests its status will change to *Online*. After sufficient time has passed if a device has not responded its status is set to *Offline*.

Note: The **Run Discovery** button is disabled when no interface has been chosen on the Configuration page. An interface must be selected to perform device discovery.

If a new device is connected to the network the device will not be added automatically to the devices table until Discovery is run. Similarly, if a device is removed from the network or powered down it will not be removed from the devices list. After a Discovery the removed device will still be listed but its status will be set to *Offline*.

Note: After completing a discovery operation the *Logical Network View* will also be updated to include all the devices that have *Online* status.

The discovery process includes a network calculation phase which may take over two minutes to complete. During this time a bar displaying the current progress is displayed and the **Run Discovery** button is replaced by a **Cancel Discovery** button:



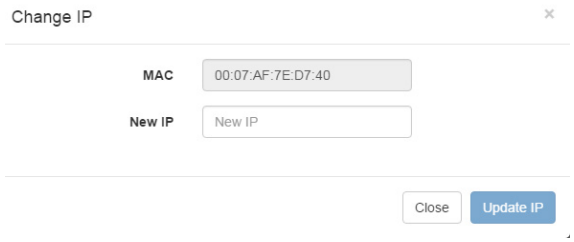
Remove Offline Devices

Clicking on this button will clear the devices table removing all devices and then start a discovery operation. The result will be that only the discoverable devices will be displayed in the list so initially there will not be any *Offline* devices.

Note: The **Remove Offline Devices** button is disabled when no interface has been chosen on the Configuration page, since it kicks off discovery. An interface must be selected to perform device discovery.

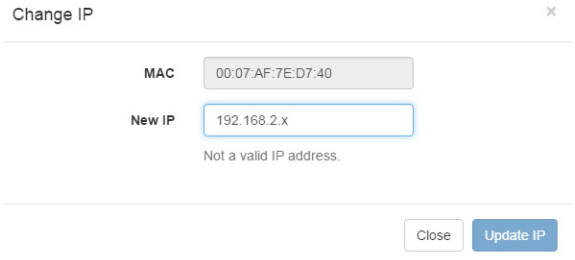
Change IP

Clicking on this button to change the IP of the selected device. When the **Change IP** button is clicked the following dialog is displayed:

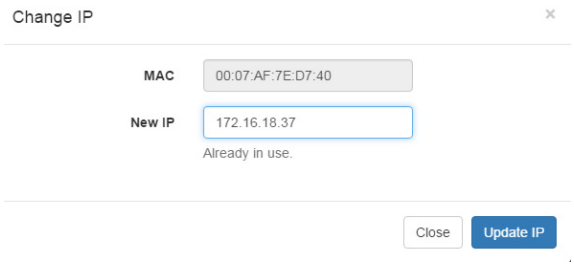


Type the new IP Address of the device and click on the **Update IP** button to change the IP address. To cancel the operation without performing any changes click on the **Close** button.

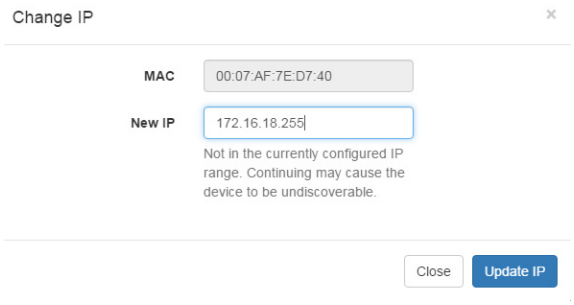
The **Update IP** button is only enabled when a valid IP address is entered in the New IP field. If an invalid IP address is entered an error message is displayed in the dialog:



Additional validations are done to ensure there are no duplicate IP addresses:

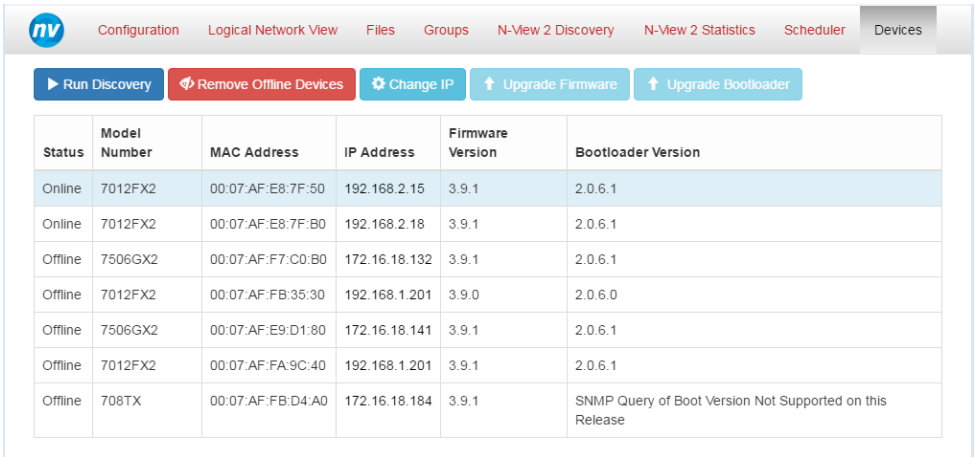


To be discoverable, the IP address must be within the subnet defined for the current NIC.



Note: For the case where the IP address to be set is not in the current IP addresses range or is a duplicate IP the **Update IP** button is still enabled, indicating that the IP can be set anyway. Be aware that changing the IP in this case may result in the device becoming unreachable by the N-View™ 2 application.

Once the **Update IP** button is clicked the status of the device in the table will change to *Changing IP* and a progress bar is displayed as the background of the corresponding row to indicate the task progress.



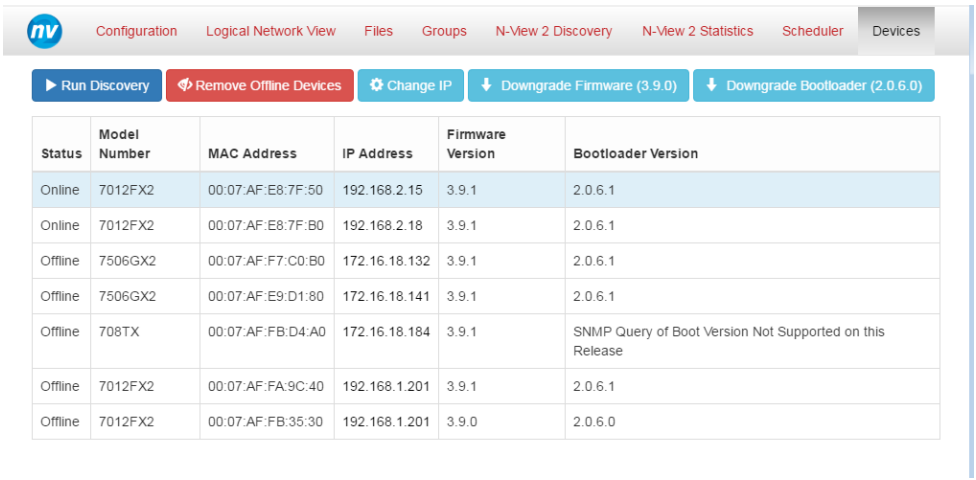
Once the process has completed the new IP address is displayed in the devices table.

Upgrade / Downgrade Firmware or Bootloader

The following buttons are used to load/send firmware or bootloader revisions to the selected device. The behavior of these buttons depends on the files that have been uploaded in the *Files* page and the device that is selected. By default, when no devices are selected the buttons display the text *Upgrade Firmware and Upgrade Bootloader*:

If a device is selected, but no firmware or bootloader files have been uploaded for that device in the *Files* page, the **Upgrade Firmware** and **Upgrade Bootloader** buttons will be disabled.

Each model can have only one firmware file and one bootloader file uploaded at a time. The file(s) available for a particular model should be uploaded in the *Files* page. If the version of the file specified when uploading a file is higher than the current version reported for a device, the button label will read *Upgrade Firmware* or *Upgrade Bootloader*. When the version of the firmware or bootloader file is lower than the current version reported by a device, the button labels will be *Downgrade Firmware* or *Downgrade Bootloader*. The following screen shows an example firmware file with a higher version number for a NT24k-AC1 device and a bootloader file with a lower version number.



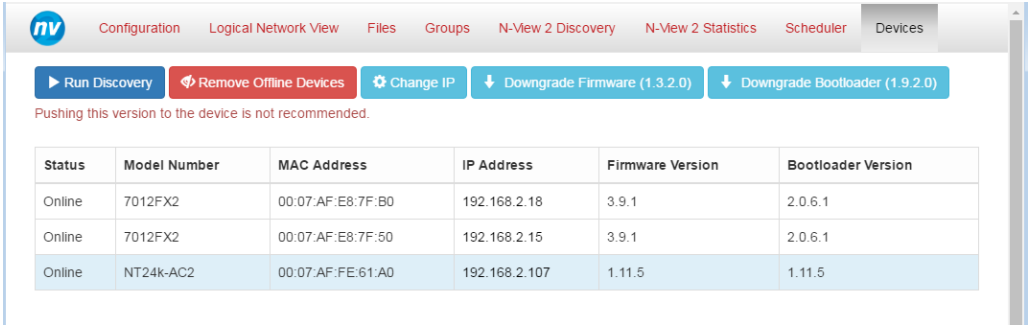
Status	Model Number	MAC Address	IP Address	Firmware Version	Bootloader Version
Online	7012FX2	00:07:AF:E8:7F:50	192.168.2.15	3.9.1	2.0.6.1
Online	7012FX2	00:07:AF:E8:7F:B0	192.168.2.18	3.9.1	2.0.6.1
Offline	7506GX2	00:07:AF:F7:C0:B0	172.16.18.132	3.9.1	2.0.6.1
Offline	7506GX2	00:07:AF:E9:D1:80	172.16.18.141	3.9.1	2.0.6.1
Offline	708TX	00:07:AF:FB:D4:A0	172.16.18.184	3.9.1	SNMP Query of Boot Version Not Supported on this Release
Offline	7012FX2	00:07:AF:FA:9C:40	192.168.1.201	3.9.1	2.0.6.1
Offline	7012FX2	00:07:AF:FB:35:30	192.168.1.201	3.9.0	2.0.6.0

The button to update the firmware has the word *Upgrade* in its label and the button to update the bootloader has the word *Downgrade* on it.

Note: The version of the uploaded files is also shown in the button labels.

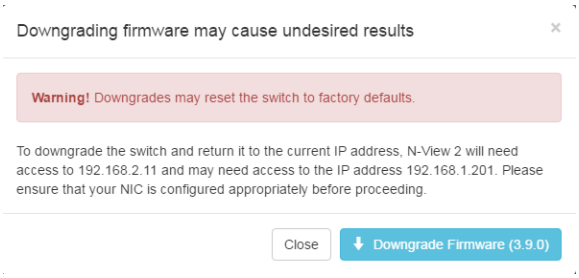
To perform a firmware or bootloader upgrade or downgrade click on the respective button. After the update is complete the device will show the new version in the corresponding column of the devices table.

If the version is lower than can be supported by N-View™ 2, alert text will be displayed under the button bar:



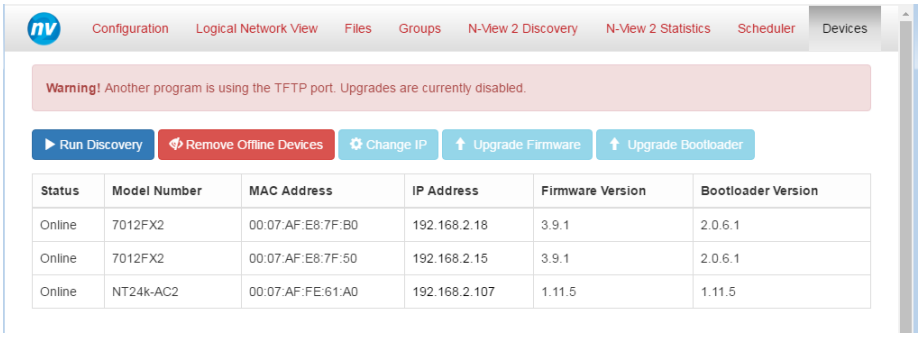
Status	Model Number	MAC Address	IP Address	Firmware Version	Bootloader Version
Online	7012FX2	00:07:AF:E8:7F:B0	192.168.2.18	3.9.1	2.0.6.1
Online	7012FX2	00:07:AF:E8:7F:50	192.168.2.15	3.9.1	2.0.6.1
Online	NT24k-AC2	00:07:AF:FE:61:A0	192.168.2.107	1.11.5	1.11.5

Because downgrades may reset the switch to factory defaults, a confirmation dialog is presented prior to starting a downgrade:



TFTP

N-View™ 2 uses TFTP (Trivial File Transfer Protocol) to transfer files during the upgrade process. There can only be one TFTP server active on a system at a time. Should N-View 2 detect another TFTP server, a warning will be displayed and the buttons for upgrading firmware and bootloader are disabled.



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Appendix A

Statistics Page Port Status Values

The Port Status Values are shown on the N-View™ *Statistics* page.

Note: These values can be exported for a selected device using the **Export** feature.

DATA ELEMENT	DESCRIPTION	VALUE
Speed Duplex	The current speed and duplex of the port.	Speed: 10, 100, 1000 Duplex: Full or Half
Usage Percentage	Current bandwidth utilization shown from RX or TX, whichever is greater.	
TX Octets	The total number of bytes that have been transmitted over the port.	
RX Octets	The total number of bytes that have been received over the port, including bad packets.	
RX SA Changes	The number of times the source address of good received packets has changed from the previous value. A count of greater than one usually indicates the port is connected to a repeater based network.	
TX Dropped Packets	The number of transmitted packets dropped by a port due to the lack of resources. The counter is only incremented if the error was not counted by tx late collision, or tx excessive collision.	
TX Collisions	The total number of collisions that have been occurred during packet transmissions.	
TX Single Collision	The number of packets successfully transmitted by a port that experienced exactly one collision.	
TX Multiple Collisions	The number of packets successfully transmitted by a port that experienced more than one collision.	
TX Deferred Transmit	The number of packets transmitted by a port for which the first transmission attempt is delayed because the medium is busy.	
TX Late Collision	The number of times that a collision is detected after a device has sent the 512th bit of its transmitted frame.	
TX Excessive Collision	The number of packets that are not transmitted from a port because the packet experienced 16 or more transmission attempts.	
TX Frame in Disc	The number of valid packets received which are discarded by the forwarding process due to lack of space on an output queue.	
Tx Pause Packets	The number of PAUSE frames transmitted by a port.	
RX Dropped Packets	The number of good packets received by a port that were dropped due to lack of resources. The counter is only incremented if the error was not counted by rx FCS errors, or rx alignment errors.	
RX Jabbers	The number of packets received by a port that are longer than 1522 bytes and have either an FCS error or an alignment error.	
RX Alignment Errors	The Number of packets received by a port that are between 64 to 1522 bytes inclusive, and have a bad FCS with a non-intergal number of bytes.	
RX FCS Errors	The Number of packets received by a port that are between 64 to 1522 bytes inclusive that failed the Frame Check Sequence.	

DATA ELEMENT	DESCRIPTION	VALUE
RX Pause Packets	The number of PAUSE frames received by a port. The PAUSE frame must: have a valid MAC Control frame EtherType field; have a destination MAC address of either the MAC control frame reserved multicast (01-80-c2-00-00- 01) or the unique MAC address associated with the specific port; have a valid PAUSE opcode, (00-01); be a minimum of 64 bytes in length; and have a valid CRC.	
RX Fragments	The number of PAUSE frames received by a port. The PAUSE frame must: have a valid MAC Control frame EtherType field; have a destination MAC address of either the MAC control frame reserved multicast (01-80-c2-00-00- 01) or the unique MAC address associated with the specific port; have a valid PAUSE opcode, (00-01); be a minimum of 64 bytes in length; and have a valid CRC.	
RX Excess DISC Size	The number of good packets received by a port that are greater than 1536 bytes (excluding framing bits but including the FCS) and were discarded due to excessive length. Note: The Port rx over size pkts counter alone is incremented for packets in the range 1523 – 1536 bytes inclusive, whereas both this counter and the Port rx over size pkts counter are incremented for packets of 1537 bytes and higher	
RX Symbol Error	The total number of times a valid length packet was received at a port and at least one invalid data symbol was detected. The counter only increments once per carrier event and does not increment if a collision occurs during that event.	
RX Undersize Packets	The number of good packets received by a port that are less than 64 bytes in length.	
RX Oversize Packets	The number of good packets received by a port that are greater than 1522 bytes.	
TX Broadcast Packets	The total number of good packets that have been transmitted over the port that are directed to the broadcast address.	
TX Multicast Packets	The total number of good packets that have been transmitted over the port that are directed to multicast addresses.	
TX Unicast Packets	The total number of good packets that have been transmitted over the port that are directed to unicast addresses.	
RX Good Octets	The total number of bytes in all good packets that have been received over the port.	
RX Broadcast Packets	The total number of good packets that have been received over the port that are directed to the broadcast address.	
RX Multicast Packets	The total number of good packets that have been received over the port that are directed to multicast addresses.	
RX Unicast Packets	The total number of good packets that have been received over the port that are directed to unicast addresses.	
64 Packets	The number of packets (including error packets) 64 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	
65 to 127 Packets	The number of packets (including error packets) between 65 and 127 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	
128 to 255 Packets	The number of packets (including error packets) between 128 and 255 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	
256 to 511 Packets	The number of packets (including error packets) between 256 and 511 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	

DATA ELEMENT	DESCRIPTION	VALUE
512 to 1023 Packets	The number of packets (including error packets) between 512 and 1023 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	
1024 to 1522 Packets	The number of packets (including error packets) between 1024 and 1522 bytes in size that have been received by the port. (This value includes both transmitted and received packets for the 9000).	
Enabled	The administrative enable/disable state of the port.	Yes or No
Link Up	The value of the link state.	Yes or No
N-Ring™ Version	Indicates the version of the N-Ring Protocol.	Ex.: 1

Appendix B

Export Discovery CSV File Examples

This appendix provides examples of **CSV** files exported from the N-View™ *Discovery* page.The examples are of an exported discovery file for all devices and one for only active devices.

All Devices CSV File

Filename: discoveryAll.csv

	A	B	C	D	E	F	G	H	I
1	Status	MAC	IP Address	Model	Alias Name	Slot A	Slot B	Slot C	Slot D
2	Active	00:07:af:f2:e0:50	172.16.20.22	708TX	Rack1				
3	Active	00:07:af:75:14:40	172.16.20.2	NT24k	Rack1_NT24k	TX8	TX8	TX8	
4	Active	00:07:af:f6:d2:80	136.129.6.0	708TX					
5	Active	00:07:af:ff:7a:40	192.168.1.202	708TX					
6	Active	00:07:af:fd:50:20	172.16.20.11	716FX2					
7	Active	00:07:af:77:71:00	172.16.20.136	NT24k-DR24		TX8	Empty	TX8	
8	Inactive	00:07:af:72:b3:c0	172.16.20.151	NT24k-10FX2					
9	Active	00:07:af:76:90:e0	172.16.20.135	NT24k-DR24		TX8	FX8	TX8	
10	Active	00:07:af:7b:2e:e0	172.16.20.222	NT24k-16TX-POE					
11	Active	00:07:af:01:8c:21	0.0.0.0						
12	Active	00:07:af:01:6c:f5	0.0.0.0	508FX2					
13	Active	00:07:af:71:c5:60	172.16.20.219	NT24k-DR24		TX8	FX8	GX8	
14									

Active Devices CSV File

Filename: discoveryActive.csv

	A	B	C	D	E	F	G	H	I
1	Status	MAC	IP Address	Model	Alias Name	Slot A	Slot B	Slot C	Slot D
2	Active	00:07:af:f2:e0:50	172.16.20.22	708TX	Rack1				
3	Active	00:07:af:75:14:40	172.16.20.2	NT24k	Rack1_NT24k	TX8	TX8	TX8	
4	Active	00:07:af:f6:d2:80	136.129.6.0	708TX					
5	Active	00:07:af:ff:7a:40	192.168.1.202	708TX					
6	Active	00:07:af:fd:50:20	172.16.20.11	716FX2					
7	Active	00:07:af:77:71:00	172.16.20.136	NT24k-DR24		TX8	Empty	TX8	
8	Active	00:07:af:76:90:e0	172.16.20.135	NT24k-DR24		TX8	FX8	TX8	
9	Active	00:07:af:7b:2e:e0	172.16.20.222	NT24k-16TX-POE					
10	Active	00:07:af:01:8c:21	0.0.0.0						
11	Active	00:07:af:01:6c:f5	0.0.0.0	508FX2					
12	Active	00:07:af:71:c5:60	172.16.20.219	NT24k-DR24		TX8	FX8	GX8	
13									

Note: Models without an IP address appear with the IP address of 0.0.0.0.