
N-TRON™ N-View Diagnostic Monitor

VERSION 10.0

Software Installation & Users' Guide

N-TRON™ N-VIEW Diagnostic Monitor Users' Guide

For use with all N-VIEW™ capable N-TRON™ switches, including:

300 Series (with –N extension)
500 Series (with –N or –A extension)
700 Series
7000 Series
NT24k Series

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3101 International Drive, Building 6
Mobile, AL 36606

US Patent 6,728,262

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Minimum System Requirements:

For minimum system requirements, check the system requirements for the OS to be used.

Windows XP with Service Pack 3(32/64 Bit), Windows 7 (32/64 Bit) or Windows 8 (32/64 Bit) with Administrator Privileges.

INSTALLING N-VIEW DIAGNOSTIC MONITOR SOFTWARE

1. Insert the N-Tron Product CD into your CD/DVD drive.
2. In the event the main index page is not displayed automatically, you may load the page by browsing to the root folder of the CD/DVD drive and Double-Clicking on the index.html file.
3. Click on the heading labeled SOFTWARE then expand the N-View folder.
4. Double-Click on the setup executable file to begin the software installation process. Note, some web browsers may require you to save a local copy to your system before running the setup executable.
5. Finish the setup by following the on screen prompts.

THEORY OF OPERATION

The N-TRON Switches that are N-VIEW capable generate a periodic multicast MAC packet for every port. This packet is then received and displayed by the N-View diagnostic monitor software.

N-View Diagnostic Monitor

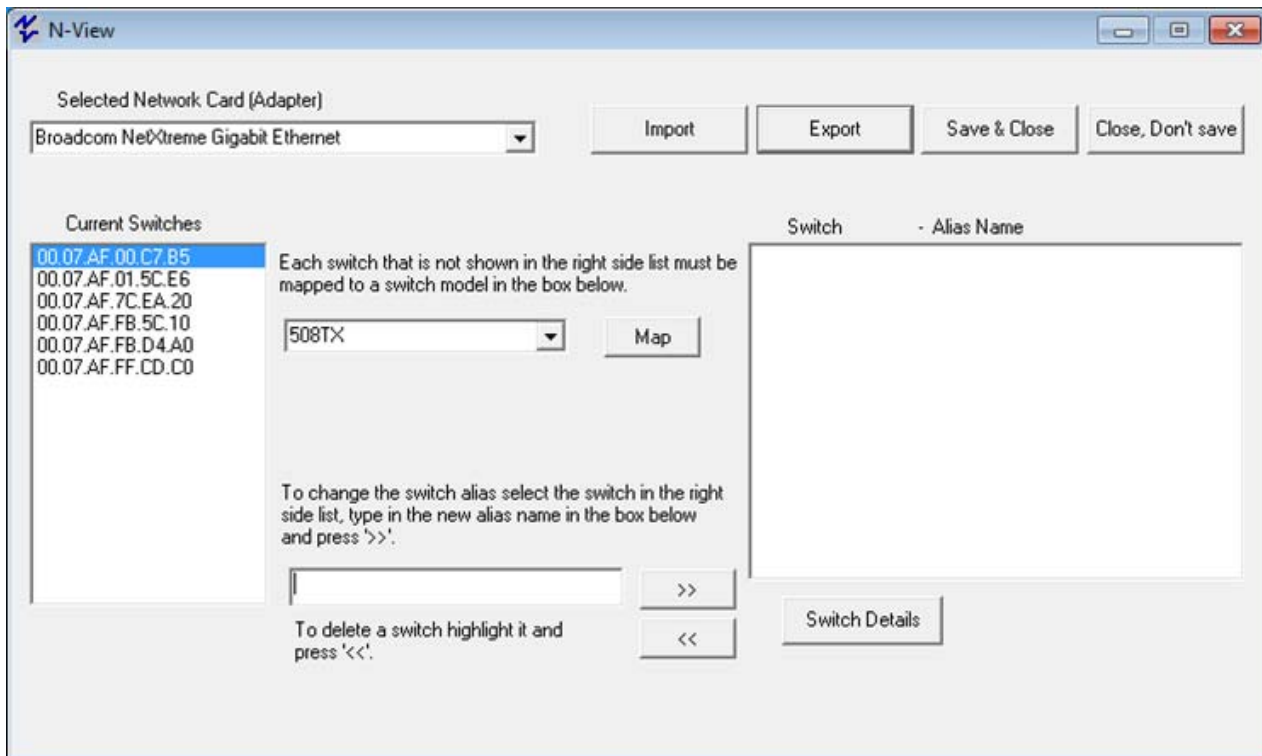
The N-VIEW Diagnostic Monitor is a Windows program that:

- can be used to monitor diagnostic data from the switch, and/or
- can launch N-View from a batch file, and have it generate a list of all the switch aliases that it found on-line in a text file.

LAUNCHING N-VIEW DIAGNOSTIC MONITOR

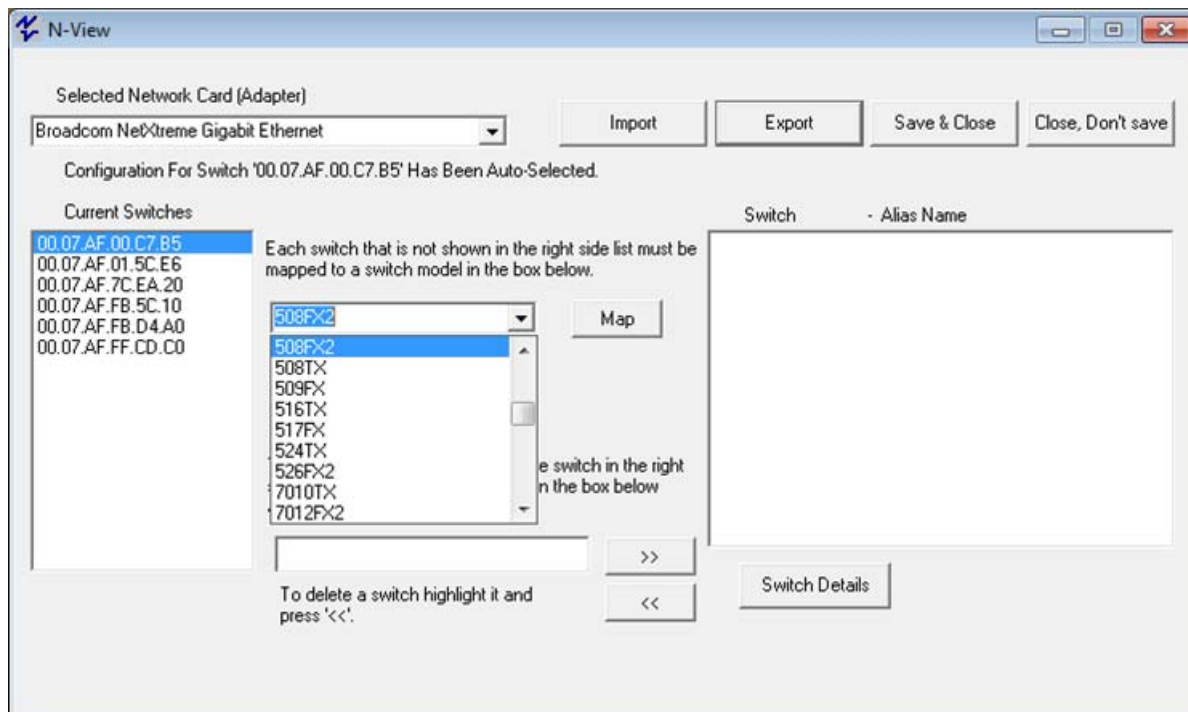
Select: Start > Programs > N-View

The following Screen appears:



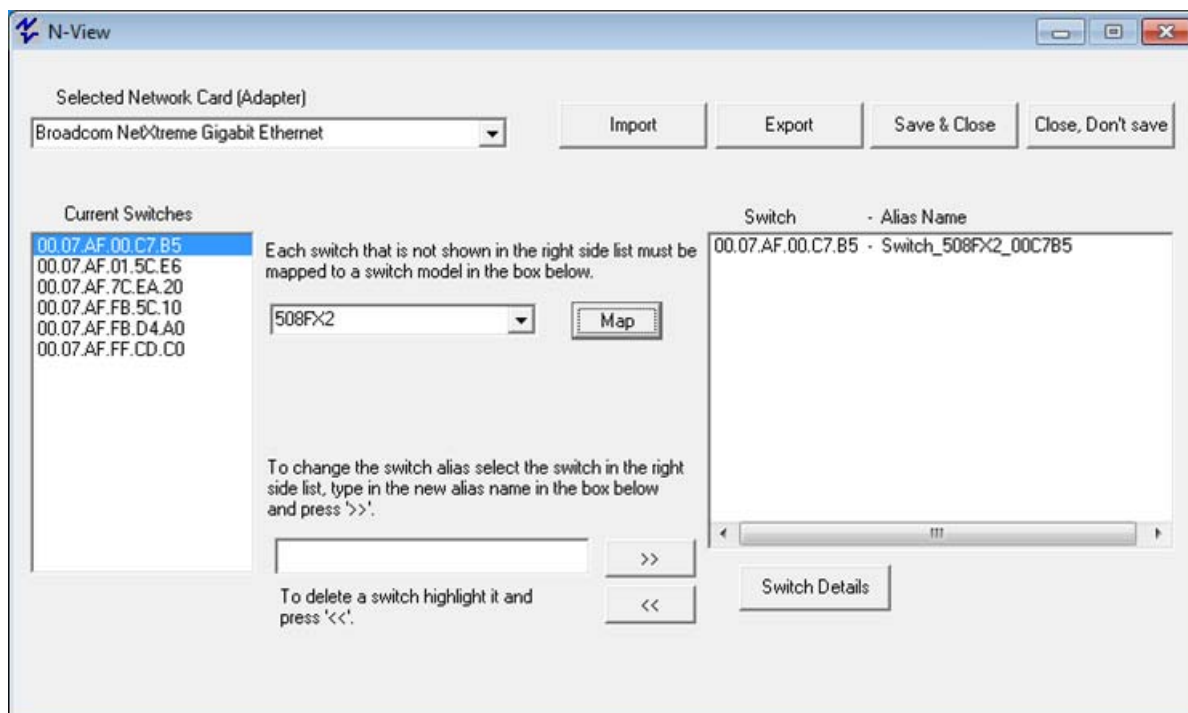
If the Network Adapter that is displayed by default is not the adapter to which the switches of interest are connected, then select the correct adapter.

Select the switch of interest in the “**Current Switches**” window, and define the switch model from the configuration pull downs:



Note: Several N-Tron switches report their model and configuration to N-View, and in those cases the switch model and configuration may automatically fill in the configuration values. These include all 700, 7000, NT24k and the –N and –A versions of several of the 500 series switches. Verify that these values are correct on both N-View and the switch before proceeding to map it. Note that the N-View values will reflect the user’s configuration for several switch versions.

If the selected switch does not contain slots or modules to be configured or verified, select the “**Map**” button:
(See more on configuring slots and modules below)



Configuration of Modular Switches with Slots:

Several switch models are modular and have slots which can be populated with several kinds of modules. The available modular slot configuration pull downs are shown after selecting the switch model.

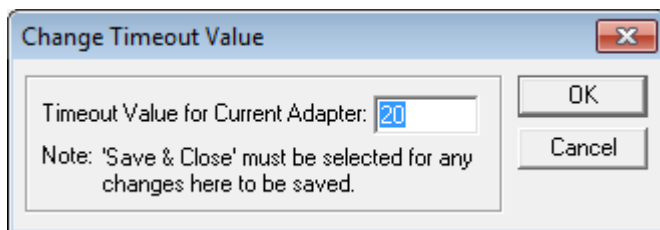
The GUI for several popular models is shown below:

<p>900 Series – 3 Modular Slots Model – ‘900B’</p> <p>Select configuration from the drop down lists below and press 'Map'.</p> <p>Slot 1 Slot 2 Slot 3</p> <p><input type="text" value="908TX"/> <input type="text" value="904FX"/> <input type="text" value="902FX"/></p> <p>To change the switch alias select the switch in the right side list, type in the new alias name in the box below and press '>>'.</p>	<p>7900 & 9000 Series – 4 Modular Slots Models – ‘7900’, ‘9000CPU’ and ‘9002CPU’</p> <p>Select configuration from the drop down lists below and press 'Map'.</p> <p>Slot A Slot B Slot C Slot D</p> <p><input type="text" value="9006TX"/> <input type="text" value="9006TX"/> <input type="text" value="9006TX"/> <input type="text" value="9006TX"/></p> <p>To change the switch alias select the switch in the right side list, type in the new alias name in the box below and press '>>'.</p>
<p>7000 – Gigabit – 2 Modular Slots Models – All 7000 Series and ‘7506GX2’</p> <p>Select configuration from the drop down lists below and press 'Map'.</p> <p>GB1 GB2</p> <p><input type="text" value="Gigabit"/> <input type="text" value="Blank"/></p> <p>To change the switch alias select the switch in the right side list, type in the new alias name in the box below and press '>>'.</p>	<p>NT24k Series – 3 Modular Slots Models – ‘NT24k’, and ‘NT24k_DR24’</p> <p>Select configuration from the drop down lists below and press 'Map'.</p> <p>Slot A Slot B Slot C</p> <p><input type="text" value="SFP8"/> <input type="text" value="FX8"/> <input type="text" value="TX8"/></p> <p>To change the switch alias select the switch in the right side list, type in the new alias name in the box below and press '>>'.</p>
<p>NT24k Series – 2 Modular Slots Model – ‘NT24k_DR16’</p> <p>Select configuration from the drop down lists below and press 'Map'.</p> <p>Slot A Slot B</p> <p><input type="text" value="SFP8"/> <input type="text" value="TX8"/></p> <p>To change the switch alias select the switch in the right side list, type in the new alias name in the box below and press '>>'.</p>	

Once the modules have been configured or verified, you may select the “**Map**” button.

CHANGING MONITOR TIMEOUT (OPTIONAL)

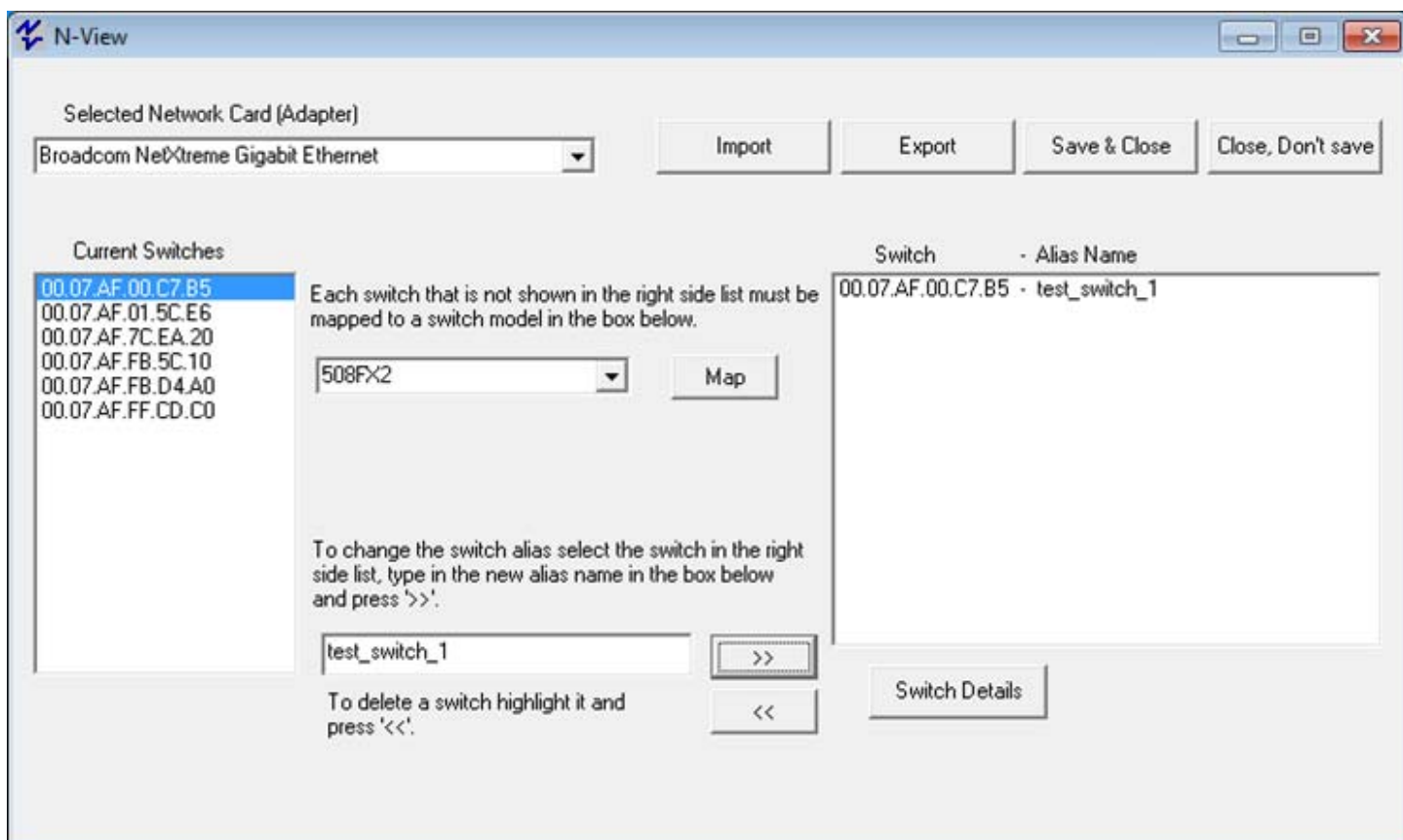
If desired, you can change the timeout value of the monitor by selecting **“Change Timeout Value...”** from the system menu, which is accessible by clicking the N-View icon located in the upper left corner of the main window. This value has a range of 20-1500 seconds. If a switch has become unreachable, after this time the values shown on the monitor will be invalidated (NA). If a switch hasn't sent data associated with a port on the switch, all items associated with the port will be invalidated (NA) after this time. Each adapter can have its own value for monitor timeout.



If changed, **“Save & Close”** must be selected to save this value.

ASSIGNING SWITCH ALIASES (OPTIONAL)

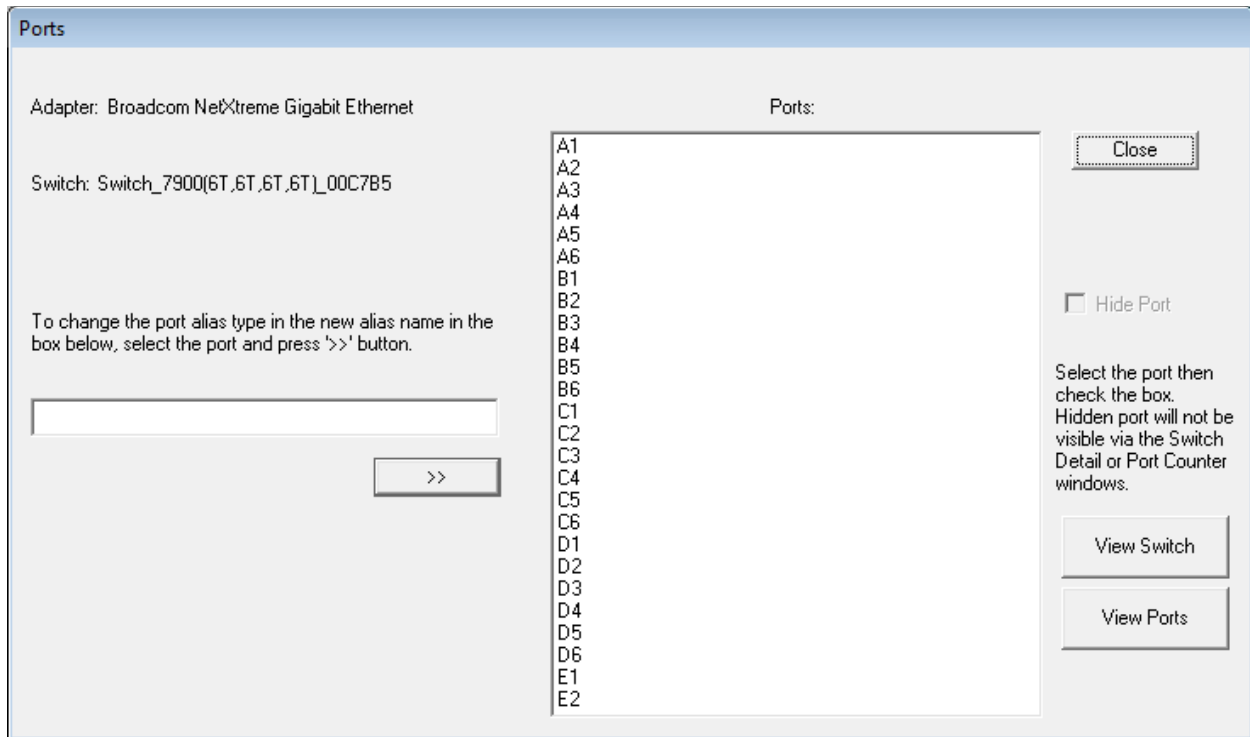
Next, if desired, you can give the switch an Alias Name by highlighting the switch in the right side window, typing an Alias Name, and selecting the **“>>”** button:



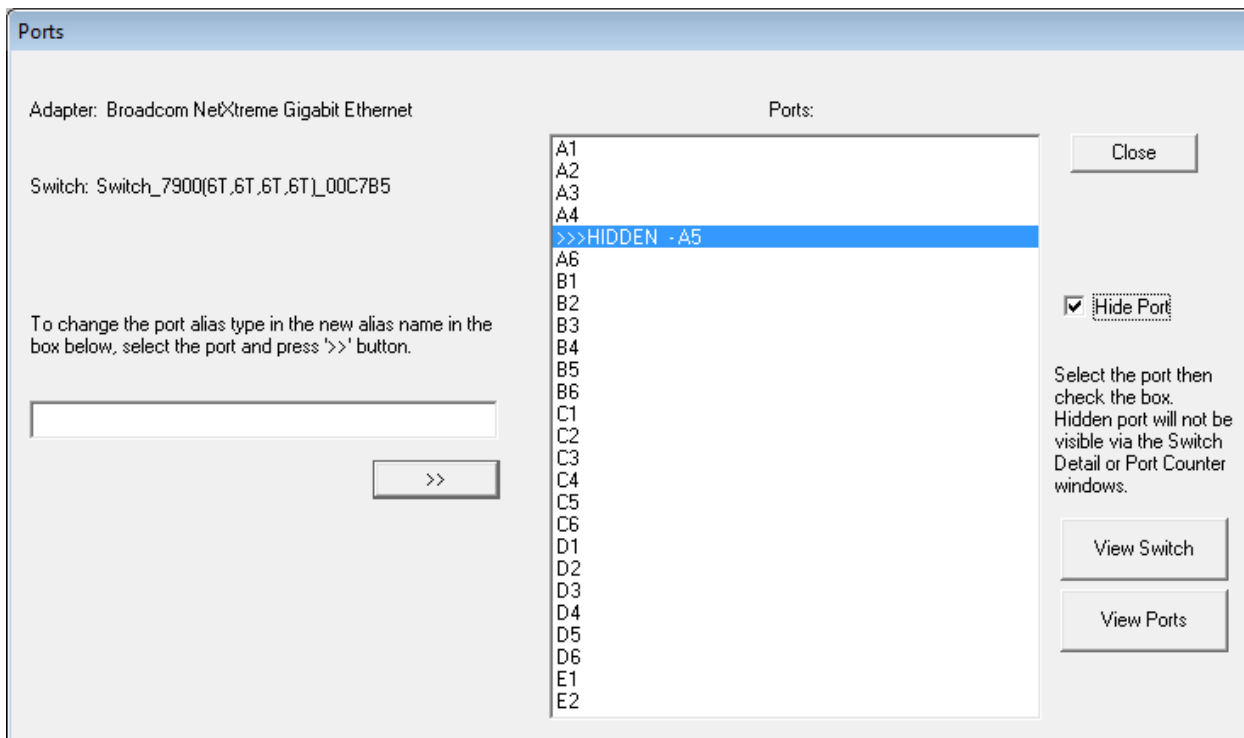
Note: Users can assign switches custom alias names to create meaningful values. A switch alias can contain up to 35 characters, and cannot contain spaces, periods, or hyphens. A switch alias can have underscores.

HIDING PORTS (OPTIONAL) AND ASSIGNING PORT ALIASES (OPTIONAL)

Next, select the switch and click on **“Switch Details”**. The following window will appear. This allows you to hide unused ports, or to assign an alias to a port.



Select the port to be hidden, and click the **“Hide Port”** checkbox:



If desired, follow the directions at left to assign a port alias. A port alias can contain up to 24 characters, and cannot contain spaces, periods, or hyphens. A port alias can have underscores.

SAVING THE CONFIGURATION

Once the remapping has been completed, the configuration must be saved to allow for use of the configuration next time the N-View monitor is opened.

After configuring the ports, close the windows back to the initial (main) window.

After configuring all switches and ports, select **“Save & Close”** at the main window.

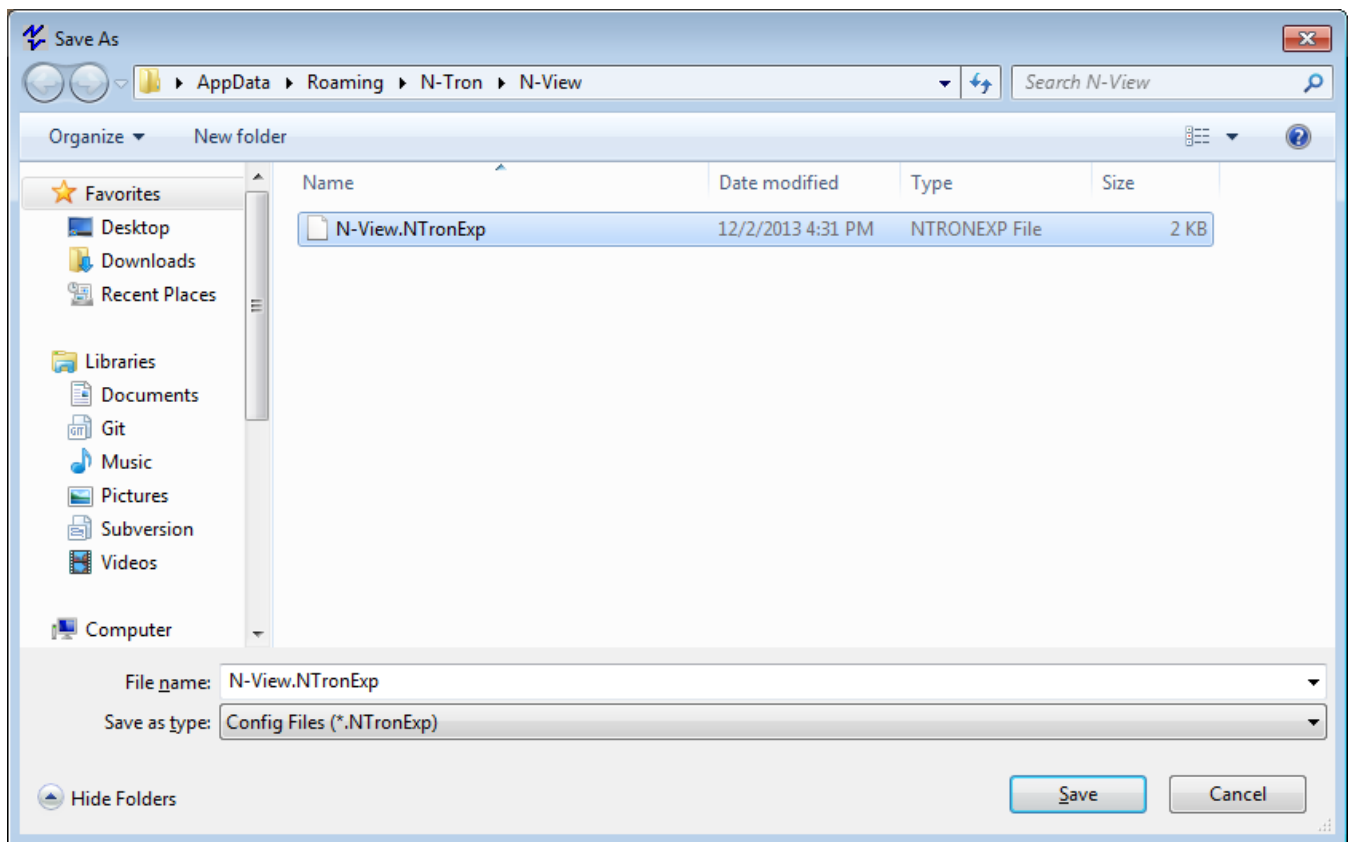
EXPORT/IMPORT CONFIGURATION FEATURE

N-View includes an export/import feature that allows easy and accurate transfers of switch and port alias configurations from one PC to another. Perform an export on a source PC, bring the exported file to the target PC, and import it there. Selecting **“Save & Close”** will result in the switch and port aliases from the source PC being available on the target PC.

EXPORTING THE CONFIGURATION

After configuring all switches and ports, select **“Save & Close”** at the main window.

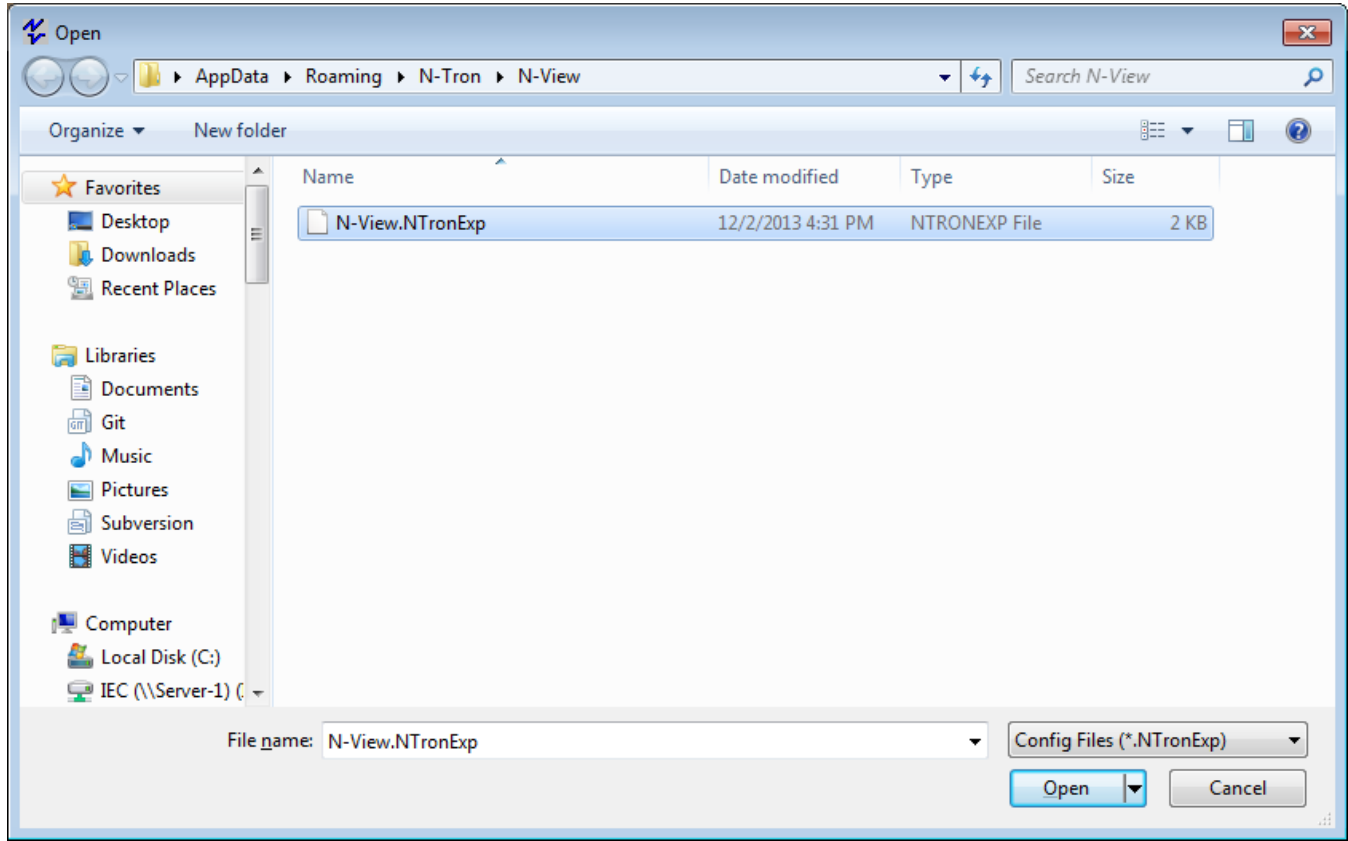
Open N-View and select **“Export”** on the main N-View screen and the following will be displayed:



This dialog defaults to the user’s application data folder, though that can be changed. By default, only the filename without extension need be entered.

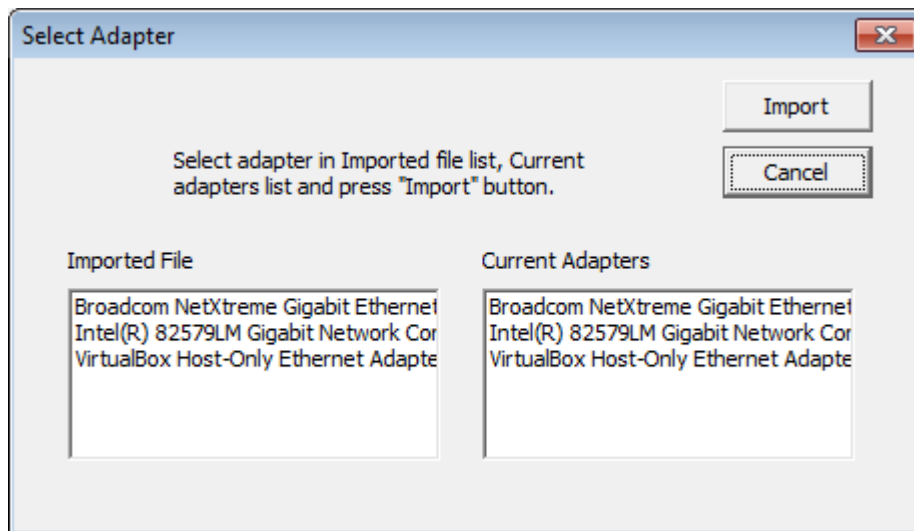
IMPORTING THE CONFIGURATION

Select **“Import”** on the main N-View screen and the following will be displayed:



This defaults to the user’s application folder, and there is a filter to show only files with the ‘NTronExp’ file extension, though both can be changed.

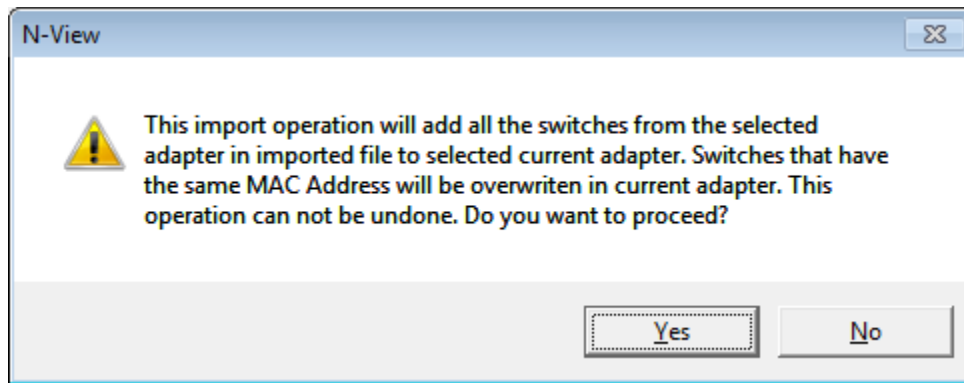
After selecting the file and pressing **“Open”**, the following will be displayed:



Select one NIC in each window to assign which LAN the mapped and aliased switches are coming from (on source PC) and going to (on target PC).

The import is cumulative (appendable), so the switches previously mapped to that NIC will remain. Note that if the same switch (same unique MAC) was already mapped and is *also* mapped on the import file, it will be remapped based upon the import file.

Confirm the operation:



The switch mapping and switch and port aliases show at this point in the right hand window of the main N-View screen.

Once the remapping has been completed, select **“Save & Close”** to save the configuration.

Values Available for Diagnostic Monitoring

If a switch becomes unreachable, all values associated with that switch are invalidated (NA) after a user definable timeout period. If a switch doesn't send any data associated with a port, all values associated with that port are invalidated (NA) after the same timeout period (Defaults to 20 seconds).

Switch Values:

Switch Values are shown on the Switch Details window and the Port Counters window.

The following is a list of Switch Values:

Switch	Switch Name/Alias
IP Address	Switch IP Address (Only shown on switches with IP Addresses)

N-Ring Values:

N-Ring Values are shown on the Switch Details window and the Port Counters window only on N-Ring capable switches. They will not be shown on switches that are not N-Ring capable.

The following is a list of N-Ring Values:

		Value
N-Ring Manager	Indicates if the switch is in N-Ring Manager Mode	Yes or No (N/A if no N-Ring Capability)
N-Ring Member	Indicates if the switch is an Active N-Ring Member	Yes or No (N/A if no N-Ring Capability)
N-Ring State	Indicates the current N-Ring State if the switch is an N-Ring Manager	Not Manager Ok Partial Fault (high port rx error) Partial Fault (low port rx error) Fault (N/A if no N-Ring Capability)
N-Ring Version	Indicates the version of the N-Ring Protocol	Example: 1 (0 if no N-Ring Capability)

Port Status Values:

Port Status Values are shown on the Switch Details window and/or the Port Counters window.

The following is a list of port status values:

Port	User assigned port alias name. A port alias can contain up to 24 characters, and cannot contain spaces.
Duplex	Reflects the current duplex of the particular port. Values can be Full, Half, or NA.
Link Status	The current status of the port (Up/Down)
Speed	The current speed of the port represented as 10, 100, 1000, or /NA
Usage	Current bandwidth utilization shown from 0 to 100 % RX or TX, whichever is greater.

Port Traffic Variables

Port Traffic Variables are shown on the Port Counters screen and have 32 bit accuracy. These parameters thus have a range of 0 to 4,294,967,295, and roll over through zero (to 1, 2...) if that number is exceeded.

The following is a list of port traffic variables:

64 Packets	The number of packets (including error packets) 64 bytes in size that have been received by the port, except that for the 9000 it is transmitted and received packets total.
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, except that for the 9000 it is transmitted and received packets total.
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, except that for the 9000 it is transmitted and received packets total.
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, except that for the 9000 it is transmitted and received packets total.
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, except that for the 9000 it is transmitted and received packets total.
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, except that for the 9000 it is transmitted and received packets total.
Rx Octets	The total number of bytes that have been received over the port, including bad packets.
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.
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.
Tx Octets	The total number of bytes that have been transmitted over the port.
Tx Collisions	The total number of collisions that have been experienced over the port during packet transmissions.
Tx Multiple Collision	The number of packets successfully transmitted by a port that experienced more than one collision.
Tx Single Collision	The number of packets successfully transmitted by a port that experienced exactly one collision.
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.
Tx Pause Packets	The number of PAUSE frames transmitted by a port.

Port Error Variables

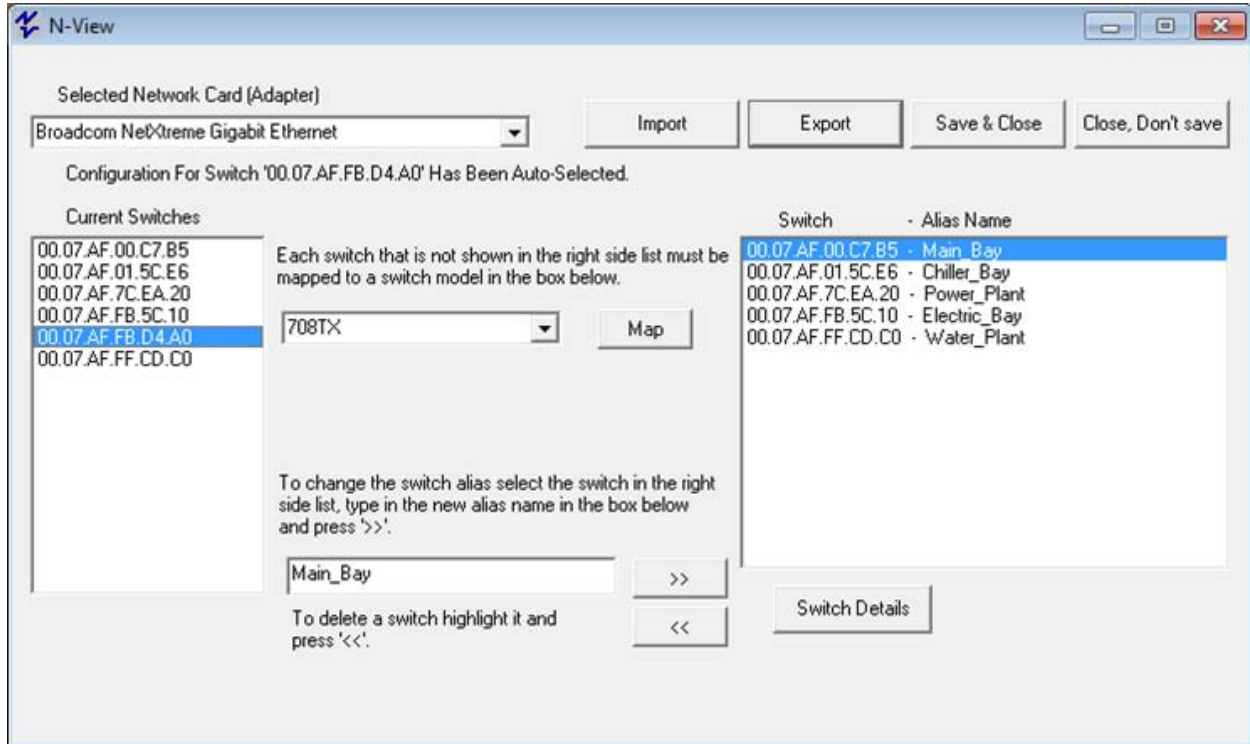
Port Error Variables are shown on the Port Counters screen and have 32 bit accuracy. These parameters thus have a range of 0 to 4,294,967,295, and roll over through zero (to 1, 2...) if that number is exceeded.

The following is a list of port error variables:

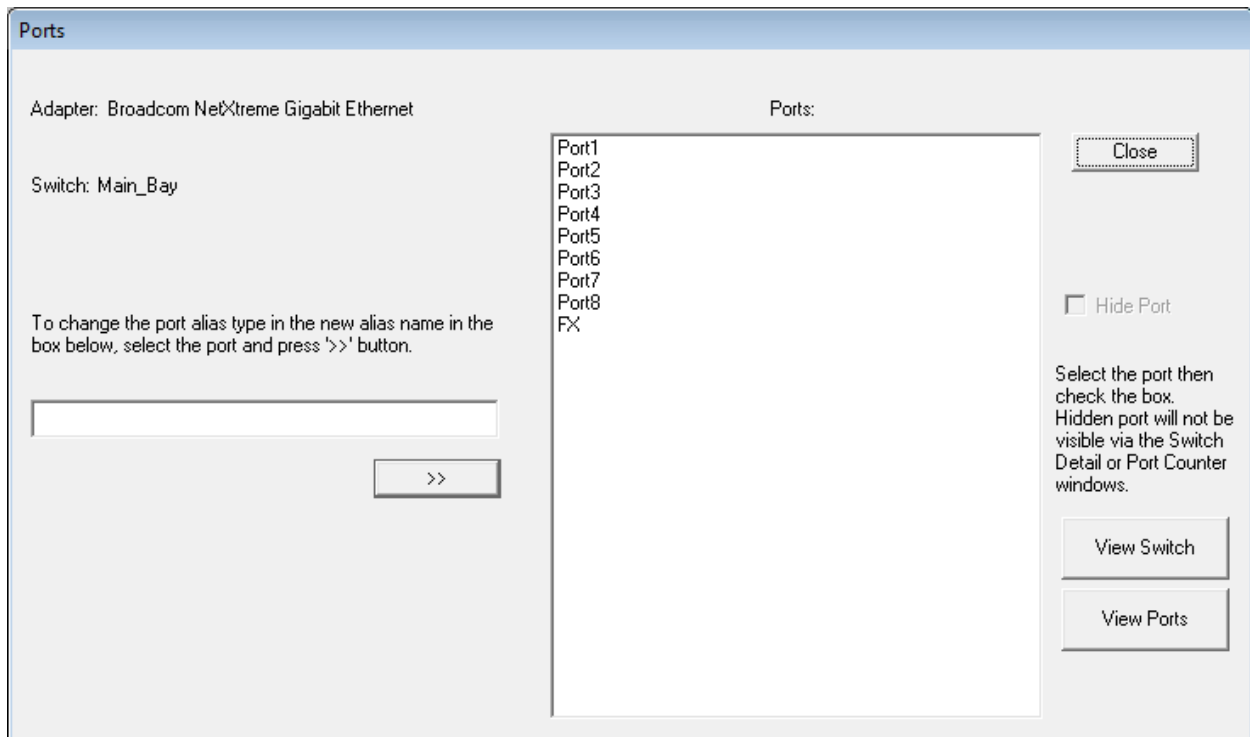
Rx Alignment Errors	The number of packets received by a port that have enough length between 64 and 1522 bytes, and have a bad FCS with a non-integral number of bytes.
Rx Dropped Packets	The number of good packets received by a port that were dropped due to the lack of resources. The counter is only incremented if the error was not counted by rx fcs errors, or rx alignment errors.
Rx FCS Errors	The number of packets received by a port that have enough length between 64 and 1522 bytes, and have a bad FCS with a non-integral number of bytes.
Rx Fragments	The number of packets received by a port that have less than 64 bytes, and have either an FCS error or an alignment error.
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 Oversize Packets	The number of good packets received by a port that are greater than 1522 bytes.
Rx SA Changes	The number of times the source address of good receive packets has changed from the previous value. A count of greater than one usually indicates the port is connected to a repeater based network.
Rx Symbol Errors	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 Excessive 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.
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 Dropped Packets	The number of transmit 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 Excessive Collision	The number of packets that are not transmitted from a port because the packet experienced 16 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 Late Collisions	The number of times that a collision is detected later than 512 bit-times into the transmission of a packet.

DIAGNOSTIC MONITOR

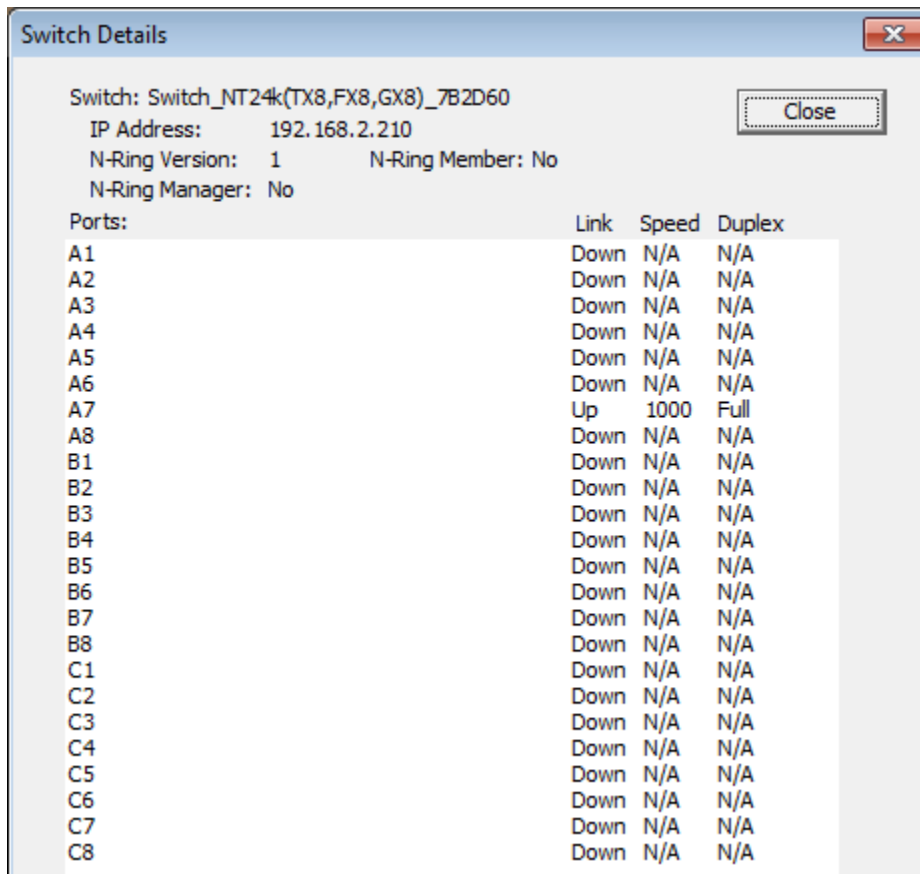
Starting from the main screen, as seen below, select a switch from the right hand window, then select **“Switch Details”**.



Choose **“View Switch”** to monitor switch details, or **“View Ports”** to monitor port counters:



Example of the “Switch Details” screen:



Note the IP Address and the N-Ring protocol version, which are presented from 700, 7000, 9000 and NT24k series switches.

Each 700, 7000, 9000 and NT24k series N-Ring Manager reports whether or not it is an N-Ring Manager, and the state of the N-Ring.

Each 700, 7000, 9000 and NT24k series switch also reports whether or not it is an active N-Ring member.

Example of the “Port Counters” screen:

The screenshot shows a window titled "Port Counters" with a close button in the top right corner. The window displays the following information:

Switch: Switch_NT24k(TX8,FX8,GX8)_7B2D60
IP Address: 192.168.2.210
Port: A7
Speed: 1000 Mbps Link: Up N-Ring Version: 1 N-Ring Member: No
Duplex: Full Enable: Yes N-Ring Manager: No

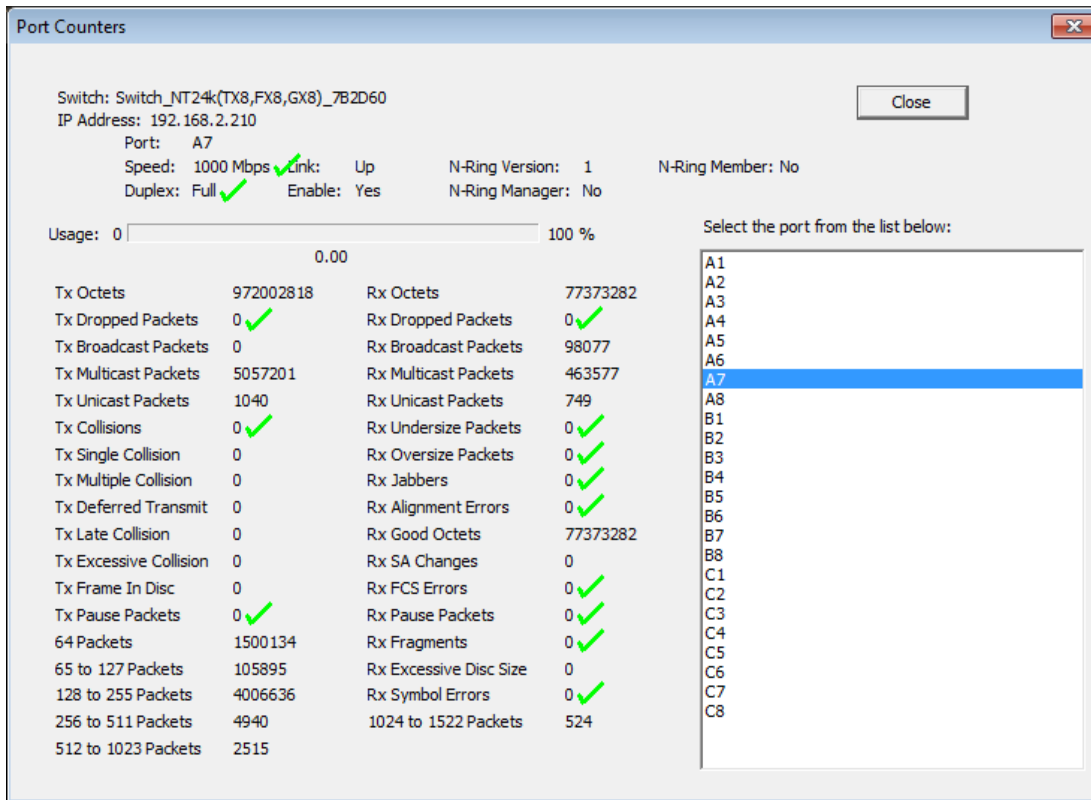
Usage: 0 / 100 % (0.00)

Tx Octets	451025716	Rx Octets	35519282
Tx Dropped Packets	0	Rx Dropped Packets	0
Tx Broadcast Packets	0	Rx Broadcast Packets	43755
Tx Multicast Packets	2348461	Rx Multicast Packets	213850
Tx Unicast Packets	8	Rx Unicast Packets	8
Tx Collisions	0	Rx Undersize Packets	0
Tx Single Collision	0	Rx Oversize Packets	0
Tx Multiple Collision	0	Rx Jabbers	0
Tx Deferred Transmit	0	Rx Alignment Errors	0
Tx Late Collision	0	Rx Good Octets	35519282
Tx Excessive Collision	0	Rx SA Changes	0
Tx Frame In Disc	0	Rx FCS Errors	0
Tx Pause Packets	0	Rx Pause Packets	0
64 Packets	696266	Rx Fragments	0
65 to 127 Packets	46158	Rx Excessive Disc Size	0
128 to 255 Packets	1860406	Rx Symbol Errors	0
256 to 511 Packets	2214	1024 to 1522 Packets	0
512 to 1023 Packets	1038		

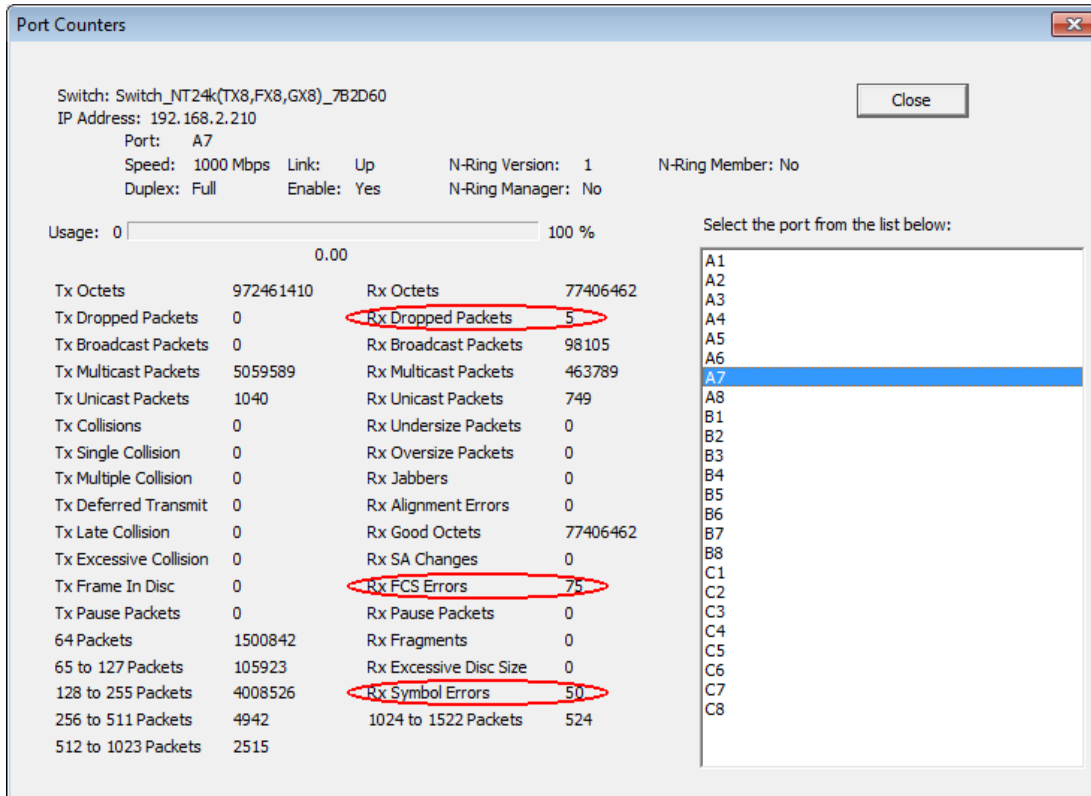
Select the port from the list below:

- A1
- A2
- A3
- A4
- A5
- A6
- A7**
- A8
- B1
- B2
- B3
- B4
- B5
- B6
- B7
- B8
- C1
- C2
- C3
- C4
- C5
- C6
- C7
- C8

Example of a healthy switch port:



Example of potential cabling issues:



AUTOMATED REPORT

N-View can be launched from a command line or from a batch file, and it can generate a list of all the switch aliases that it found on-line to a text file.

For example, this makes it possible for on-site servers to run a batch file each morning that queries the switches, records the results in a simple text file, which is then automatically emailed to Customer Service, who can deploy the field techs to check a switch to see why it is off line. Problems can be solved before the end users even know there was one.

1. If you start N-View.exe from a command line (or a batch file) with two arguments in single quotes it will run minimized for 6+ seconds, and produce a file named report.txt in the same directory where N-View.exe resides. If you selected the default, that directory will be the 32 bit program directory. For example, in Windows, this would be:

32 bit Windows: "C:\Program Files\N-Tron\N-View"

64 bit Windows: "C:\Program Files (x86)\N-Tron\N-View"

N-View will terminate itself.

2. Example of the command line (or a batch file) is below

```
N-View.exe 'FE575C-3COM 10/100 LAN CardBus-Fast Ethernet' 'report'
```

The first argument in the single quotes is the name of the adapter exactly as it is shown in the adapters list of N-View. For simplicity, copy it from the drop down box of N-View.

The word 'report' is not case sensitive.

3. The file produced (report.txt) will contain the creation time, MAC addresses and aliases for all the switches that were discovered during the 6+ second period. If report.txt already exists it will be overwritten with the new information. To keep a running log and/or to keep records on one or more adapters, a batch file or script will be needed to concatenate sequential report.txt files to another file or files.

Here is an example of a report.txt file:

Active Switches
12/05/2003 09:59:17 AM
00.07.AF.00.05.09 - Switch 509FX
00.07.AF.00.05.17 - Switch 517FX

4. If there are no command line arguments, or there are any mistakes in arguments, the N-View program will start normally.

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