netsys

Networking your world

NV-450M /NV-450S

G.fast Master Modem +

G.fast / VDSL2 / V35b Slave Modem

USER'S MANUAL

Http://www.netsys.com.tw

Safety Warnings

For user'sr safety, be sure to read and follow all warning notices and instructions before using the device.

- **DO NOT** open the device or unit. Opening or removing the cover may expose users to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact the user's vendor for further information.
- **Use ONLY** the dedicated power supply for user's device. Connect the power to the right plug type (AC support full range between 100Vac and 240Vac input. 12 Vdc / 2A or above).
- **Place** connecting cables carefully so that no one will step on them or stumble over them. DO NOT allow anything to rest on the power cord and do NOT locate the product where anyone can work on the power cord.
- **DO NOT** install nor use user's device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- **DO NOT** expose user's device to dampness, dust, or corrosive liquids.
- **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- **Connect ONLY** suitable accessories to the device.
- **Make sure** to connect the cables to the correct ports.
- **DO NOT** obstruct the device ventilation slots, as insufficient air flow may harm user's device.
- **DO NOT** place items on the device.
- **DO NOT** use the device for outdoor applications directly, and make sure all the connections are indoors or have waterproof protection place.
- **Be careful** when unplugging power because it may produce sparks.
- **Keep** the device and all its parts and accessories out of the reach of children.
- **Clean** the device using soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleaning it.
- This product is **recyclable**. Dispose of it properly.

Attention:

Be sure to read this manual carefully before using this product. Especially Legal Disclaimer, Statement of Conditions and Safety Warnings.

NV-450M/ NV-450S is a Managed Single Master/Slave LAN Extender that leverages the extraordinary bandwidth promise of G.fast technology (max. 1Gbps), the next generation in the delivery of new high-speed Internet applications in commercial environments. Quick, easy, economical to install and maintain, the NV-450M/NV-450S works over existing copper wire infrastructure. NV-450M is a Master (CO side) device. And NV-450S is a Slave (CPE side).

NV-450M/NV-450S will allow operators worldwide to compete with cable and satellite operators by offering services such as IP-TV、VOD、Video conference、Remote lecture、Telemedicine、Triple play Internet access and advanced applications including AI、IOT、Smart City、Smart traffic、5G Repeaters、Unmanned store、Security…etc , over a standard copper phone wire. NV-450M/ NV-450S is seen by many operators as an ideal accompaniment to a FTTdp rollout, where for instance fiber optic is supplied direct to an apartment block and from there copper cable is used to supply residents with high-speed G.fast.

Caution:

The NV-450M/ NV-450S is for **indoor** applications only. This product does not have waterproof protection, please do not use it in outdoor applications.

Table of Contents

Chapter 1. Unpacking Information

1.1 Check List

Thanks for choosing NV-450M/NV-450S. Before installing the modem, please verify the contents inside the package.

Package Contents:

			 
1 x Modem	1 x QR code for user's manual hyperlink.	1. Accessory Kit: 1 x Ethernet Cable, 1 x Phone wire, 1 x DC12V/2A Power Adapter, 1 x Power cord.	

Notes:

1. Please inform the user's dealer immediately for any missing or damaged parts. If possible, keep the carton including the original packing materials. Use them to repack the unit in case there is a need to return for repair.
2. Do not use sub-standard power supply. Before connecting the power supply to the device, be sure to check

compliance with the specifications. The NV-450M/NV-450S uses a DC12V/2A or above Switching power supply.

Chapter 2. Installing the Modem

2.1 Hardware Installation

This chapter describes how to install the modem and establish the network connections. The NV-450S may be installed on any level surface (e.g. a table or shelf). However, please take note of the following minimum site requirements before users begin. **The NV-450M/NV-450S has 2 pre-installed rubber feet.**

2.2 Pre-installation Requirements

Before the user starts the actual hardware installation, make sure users can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected.

Verify the following installation requirements:

- Power requirements: **DC 12 V / 2A or above**
- The modem should be located in a cool dry place, with at least **10cm/4in** of space at the front and back for ventilation.
- Place the modem away from direct sunlight, heat sources, or areas with a high amount of electromagnetic interference.
- Check if the network cables and connectors needed for installation are available.
- Do not install phone lines strapped together with AC power lines, or telephone office line with voice signal.

- Avoid installing this device with radio amplifying stations nearby or transformer stations nearby.

2.3 General Rules

Before making any connections to the modem, please note the following rules:

- **Ethernet Port interface: RJ-45**

  All network connections to the modem Ethernet port must be made using Category 5e UTP/STP or above for 1000 Mbps, Category 5 UTP or above for 100Mbps Category 3, 4 UTP or above for 10Mbps.

  No more than 100 meters of cabling may be use between the MUX or HUB and an end node.

- **G.fast Port interface: RJ-11 & Terminal block combo**

  All network connections to the RJ-11/ terminal block (sharing port) must use **24~26** gauge with single **twisted pair** phone wire.

  We **do not recommend** the usage of the other gauge phone wire.

  The RJ-11 is a 6P4C connector, two of which are wired. The modem uses two pins at the center. The pin out assignment for these connectors is shown below.

  Please note that the line port is without polarity, therefore users can reverse the two wires of the phone cable when installed.

RJ-11 Pin out Assignments.

Pin#	MNEMONIC	FUNCTION
1	NC	Unused
2	2a	Pass through
3	**1a**	**G.fast / xDSL**
4	**1b**	**G.fast / xDSL**

5	2b	Pass through
6	NC	Unused

2.4 Connecting the RJ-11 / RJ-45 Ports

There are two types of line: 1 Terminal Block & 1 RJ-11 connector. It is used to connect with NV-450M Master side over a single pair phone wire to NV-450S Slave side (point to point application). (Figure 2.1)

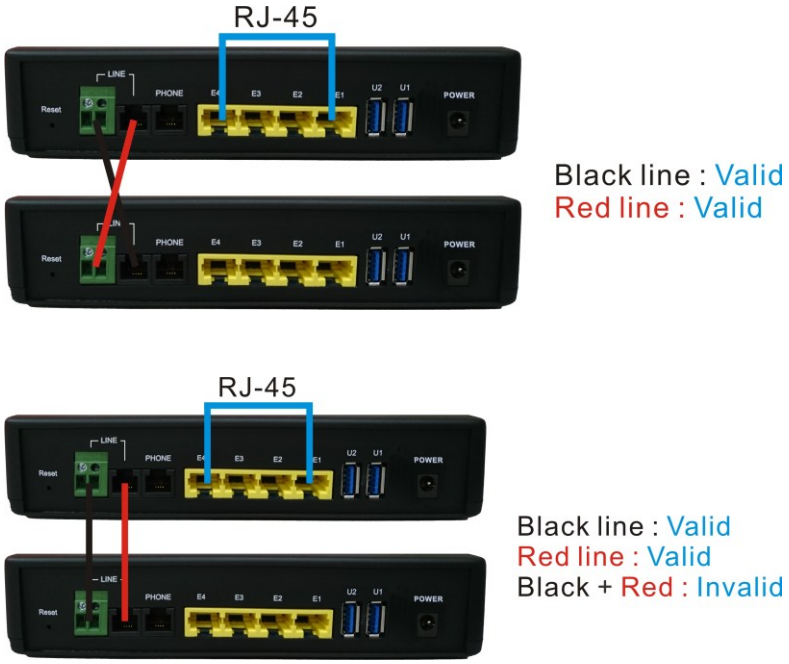


Figure 2.1 NV-450M/NV-450S line ports straight connection

- When inserting a RJ-11 plug, make sure the tab on the plug clicks into position to ensure that it is properly seated.
- **Do not** plug an RJ-11 phone jack connector into the Ethernet port (RJ-45 port). This may damage the modem. Instead, use only twisted-pair cables with RJ-45 connectors that conform to Ethernet standard.

Notes:

1. Be sure each twisted-pair cable (RJ-45 Ethernet cable) does not exceed 100 meters (333 feet).
2. We advise using Category 5~7 UTP/STP cables for making Ethernet connections to avoid any confusion or inconvenience in the future when users attach high bandwidth devices.
3. Use 24 ~ 26 gauge twisted pair phone wiring, we do not recommend the usage of the other gauge phone wire.
4. Be sure phone wire has been installed before the NV-450S/ NV-450M boot.
5. Do not connect Line port with RJ-11 and Terminal block

to two Master / Slave device

2.5 Point to Point Application

First a quick overview on a complete setup of LAN extender Master/Slave LAN extender.

NV-450M/NV-450S is a LAN extender that leverages the extraordinary bandwidth promise of G.fast technology (max. 1Gbps) (Figure 2.2)

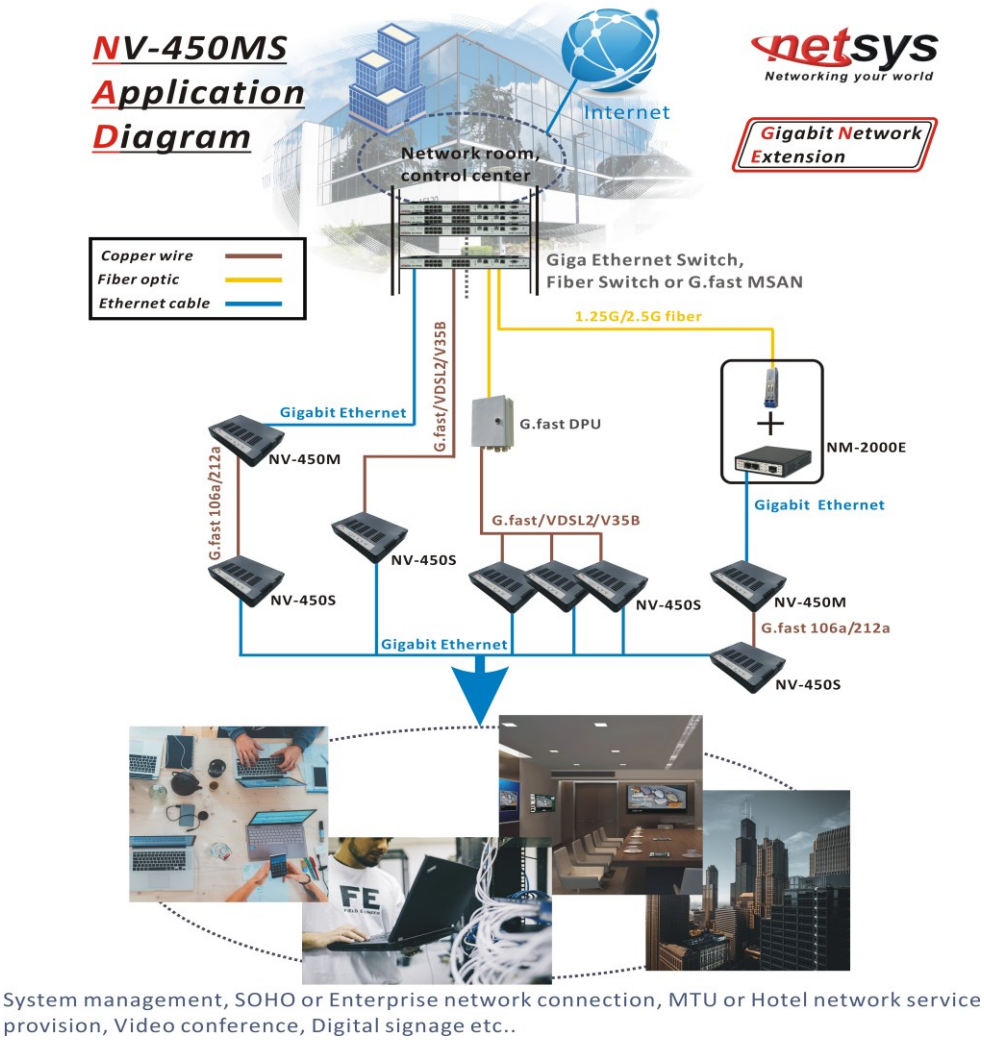


Figure 2.2 NV-450M/NV-450S Point to Point application.

◆ 2.5.1 Connect the NV-450M(Master) and the NV-450S(Slave) to the Line

The objective for LAN extender is to pass high speed data over a twisted pair cable. In the setup, connect NV-450M(Master) to NV-450S (Slave) through phone wire (24~26 AWG) or line simulator or any other hardware representation of a cable network, with or without noise injection and crosstalk simulations.

◆ 2.5.2 Connect the NV-450M(Master) and the NV-450S(Slave) to LAN Devices

In the setup, usually an Ethernet tester serves as a representation of the LAN side as well as a representation of the WAN(Line) side.

◆ 2.5.3 Run Demos and Tests

The Ethernet tester may send data downstream as well as upstream. It also receives the data in order to check the integrity of the data transmission. Different data rates can be tested under different line conditions.

Chapter 3. Hardware Description

This section describes the important parts of the NV-450M/S. It features the front panel and rear panel.

NV-450 Physical appearance

3.1 Front Panel

The figure shows the front panel. (Figure 3.1)

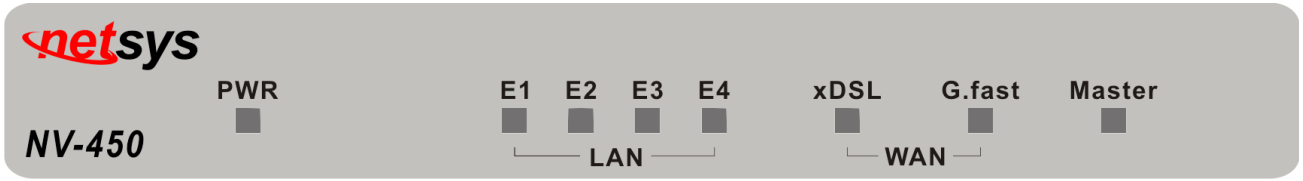


Figure 3.1 Front Panel (NV-450M/NV-450S)

Note:

1. **Identifying NV-450M(Master) or NV-450S Model (Slave) is by Master LED, when this LED On(steady) indicates firmware Model as MV-450M, and LED Off indicates firmware Model as NV-450S.**
2. **If want to change NV-450M to NV-450S Model, just update firmware to NV-450S. The reverse is also do the same step. Fireware update menu please refer to administration webpage on page 30.**
3. **Please click default reset menu on administration webpage after model firmware updating.**

3.2 Front Indicators

The Modem has **Seven** LED indicators. The following Table shows the description. (Table 3-1)

Table 3-1 LED Indicators Description and Operation

LED	Color	Status	Descriptions
PWR (Power LED)	Green	On (Steady)	Lights to indicate that modem had power good
		Off	The device is not ready or has malfunctioned.
LED	**Color**	**Status**	**Descriptions**
E1 ~ E4 (Ethernet LED)	Green	On (Steady)	The device has a good Ethernet connection.
		Blinking	The device is sending or receiving data.
		Off	The LAN is not connected or has malfunctioned.
G.fast (G.fast LED)	Green	On (Steady)	The G.fast connection is up.
		Fast Blinking	The Master device has detected a Slave device and ready to connect.
		Off	The Internet or network connection is down.

xDSL (xDSL LED for NV-450S only)	Green	On (Steady)	The xDSL connection is up.
		Fast Blinking	The Master device has detected a Slave device and ready to connect.
		Off	The Internet or network connection is down.
Master	Green	On (Steady)	Device firmware on NV-450M (Master mode).
		Off	Device firmware on NV-450S (Slave mode).

3.3 Rear Panel

The following figure shows the rear panel. (Figure 3.2)

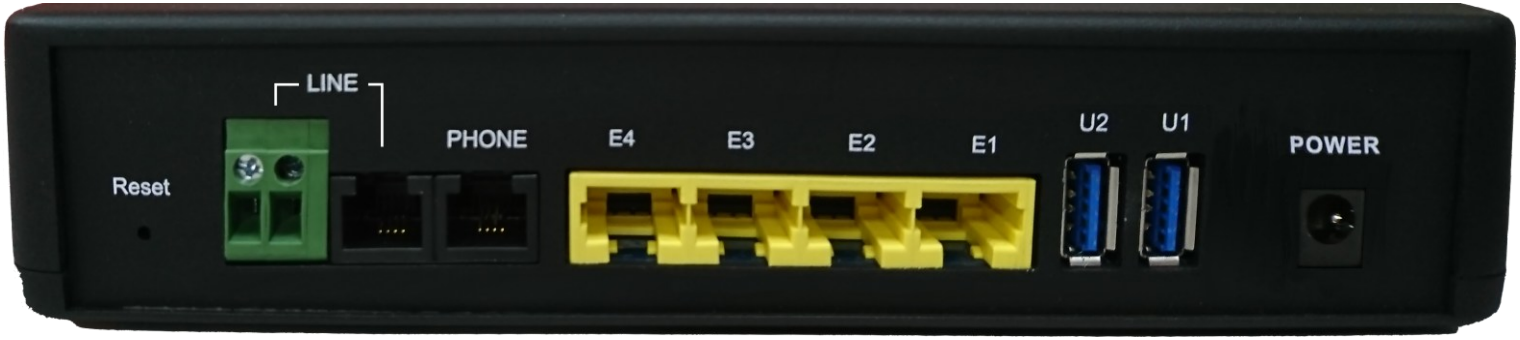


Figure 3.3 Rear Panel

And the table shows the description. (Table 3-2)

Table 3-2 Description of the modem rear connectors

Type	Connector	Description
Reset	Tact Switch Button	The reset buttons allow users to reboot the LAN NV-450M/ NV-450S or load the default settings. **Press and hold for 1-5 seconds: Reboot the NV-450S.** **Press over 5 seconds: Load the default settings**
Power	DC Jack	External switching Power Adapter: Input: AC 85~240Volts/50~60Hz. Output: DC 12V/2A.
Line	RJ-11	For connecting to a Master/Slave device.

Type	Connector	Description
phone	RJ-11	For connecting to the POTS equipment or ISDN.
Ethernet (E1-E4)	RJ-45	For connecting to an Ethernet equipped device.
USB3.0 (U1-U2)	USB Type A	For connecting to the USB dongle.

Before user installed power and device, please read and follow these essentials:

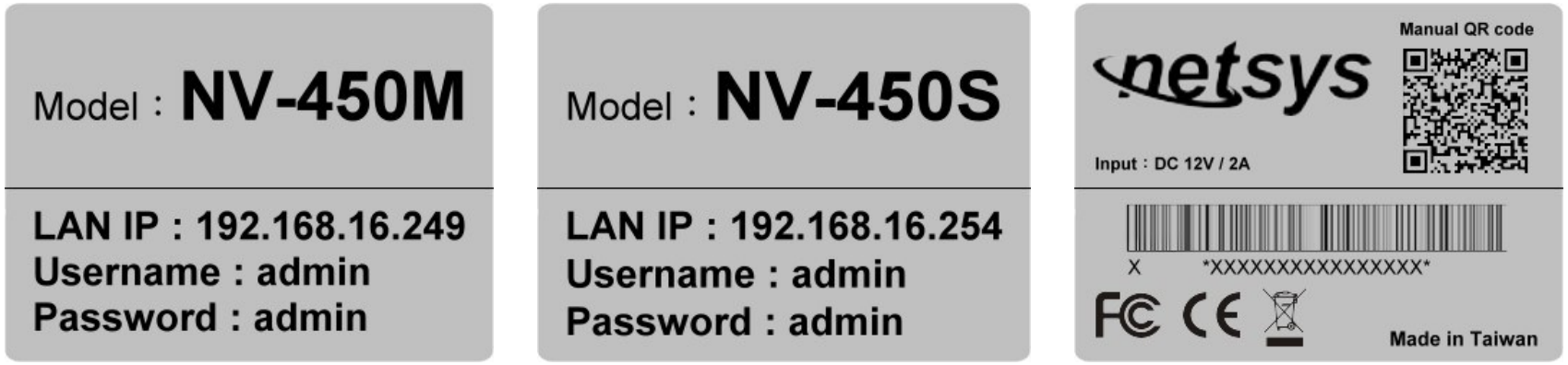
- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

Note:

Do not run signal or communications wiring and power wiring through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- Users can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring sharing similar electrical characteristics can be bundled together.
- Users should separate input wiring from output wiring.
- We recommend that users mark all equipment into the wiring system.

3.4 Back sticker



Note : 1.Default factory model shown as back sticker including default model name, S/N、FCC CE Mark, Input DC voltage information, User's manual download QR code, made of origin, default LAN IP and web management login information.

Chapter 4. Configure the modem via Web management menu.

The NV-450M/ NV-450S provides a built-in HTML based management interface that allows configuration of the NV-450S via Internet Browser. Best viewed using Chrome or Firefox browsers.

In order to use the web browser to configure the device, users may need to allow:

- Web browsers pop-up windows from user's devices. Web pop-up blocking is enabled by default in windows XP SP2 or above.
- Java Scripts. (Enabled by default)
- Java permissions. (Enabled by default)

Launch user's web browser and input the default IP address 192.168.16.249 (NV-450M) / 192.168.16.254 (NV-450S) on the Web page.
The following section user can find default username and password.

4.1 BASIC Setup

4.1.1 Login Webpage

The default username and password are "admin".

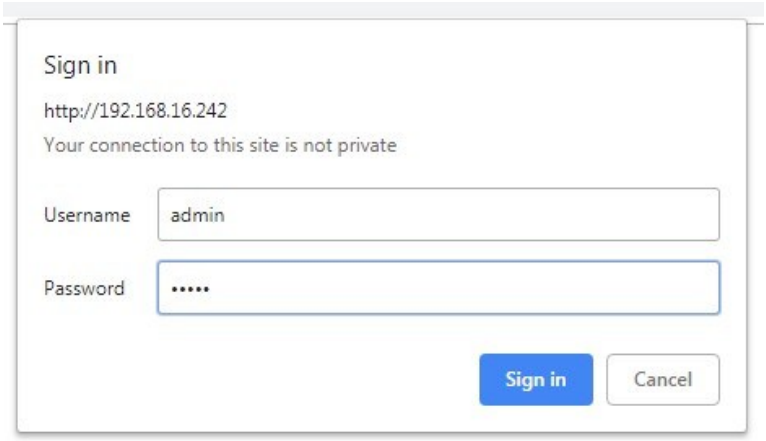


Figure 4.1.1 Login Webpage

4.1.2 Display status

When the device is running, the status page will display the device information (Internet Status, Software Version and DSL Line Status etc.), as shown in Figure 4.1.2.

NV-450M

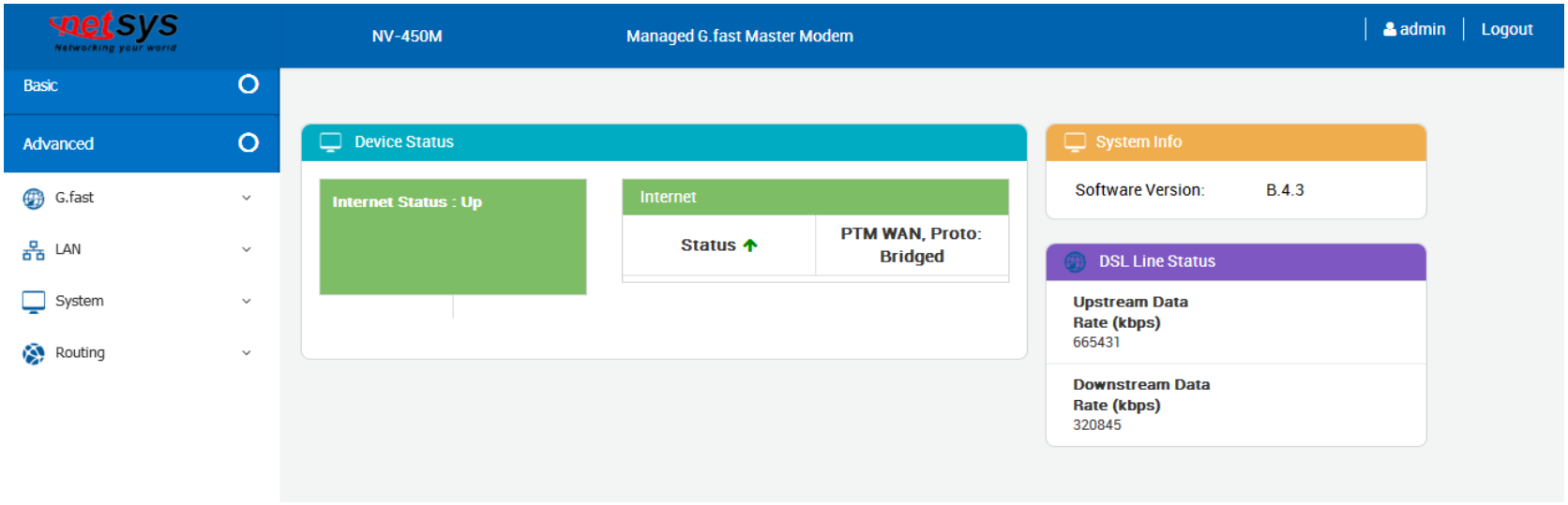


Figure 4.1.2 Device Info

NV-450S

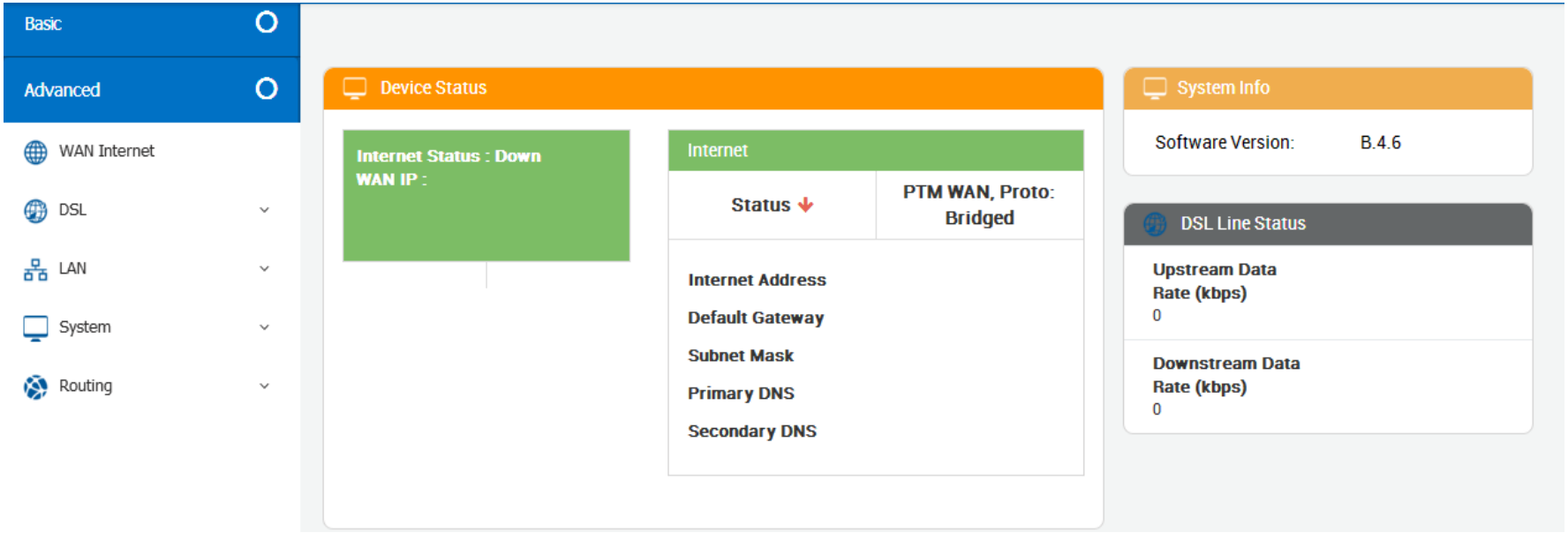


Figure 4.1.2 Device Info

4.2 Select the Menu Basic

There is an easy Setup for end users at the setup of NV-450M with **G.fast, LAN, System, Routing** and NV-450S with **WAN Internet, DSL, LAN, System, Routing** for more detail configurations.

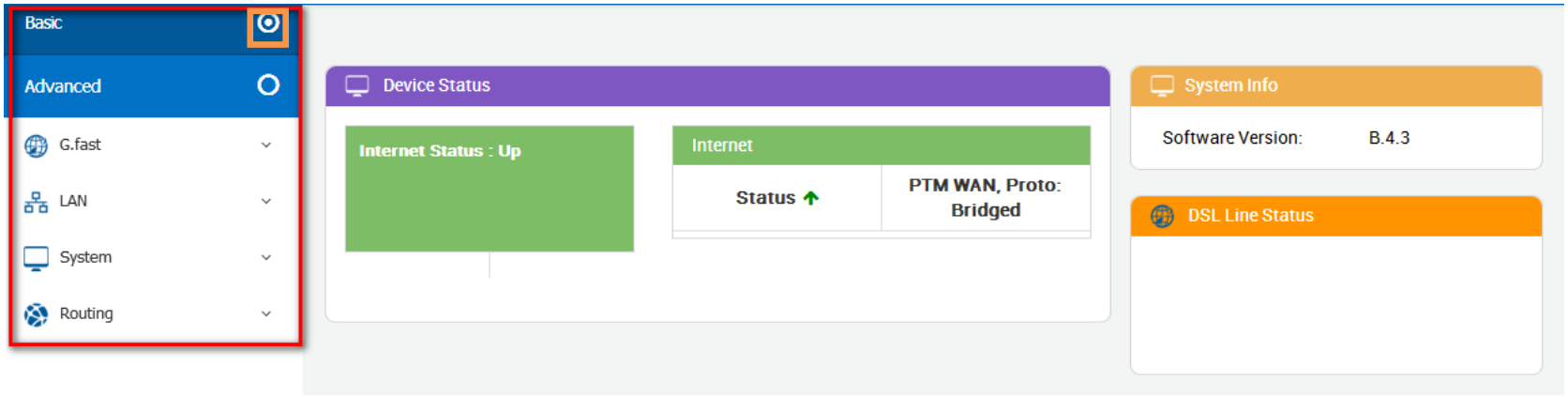


Figure 4.2 Select the Menu Basic

4.2.1 WAN Internet

This page allows users to view and configure various Internet connections.

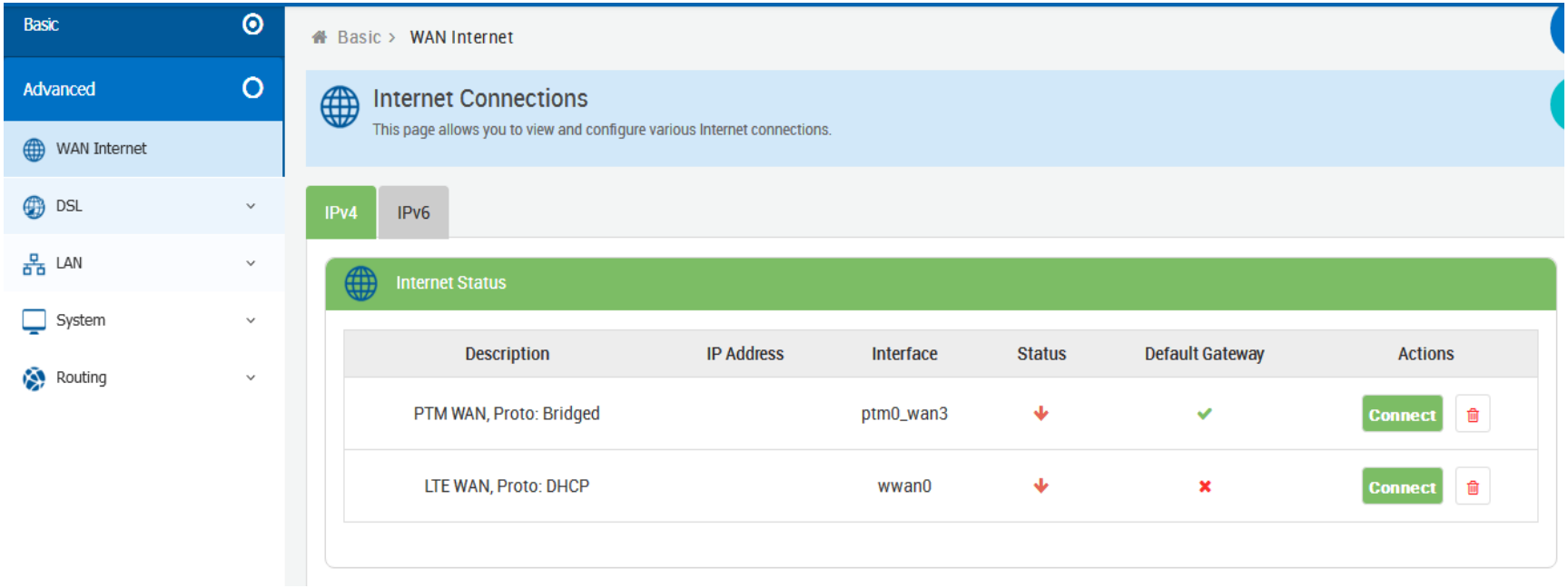


Figure 4.2.1 WAN Internet information

4.2.2 G.fast DSL

4.2.2.1 Mode Setting

DSL (Digital Subscriber Line) offers WAN DSL Connectivity on various DSL Modes. Provides configuration for xDSL/G.fast modes, and upstream & downstream attributes.

NV-450M:

NV-450M provides G.fast mode configuration for customized unitization, which users can simply select profile 106a/212a & mode symmetry/asymmetry from G.fast mode setting.

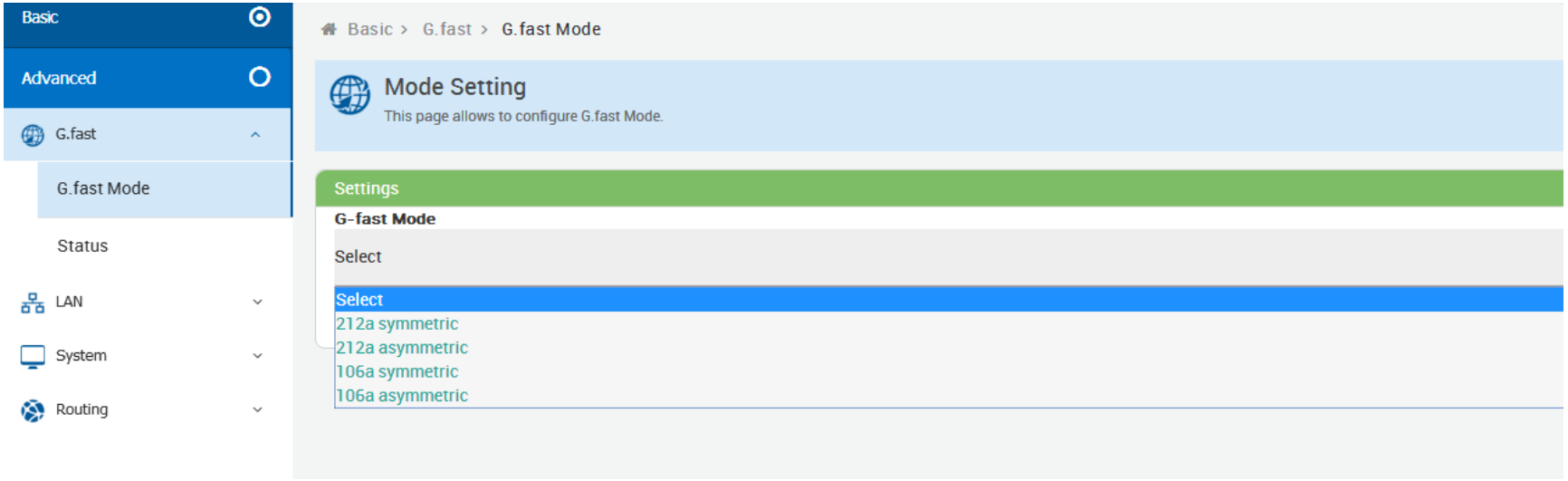


Figure 4.2.2.1 G.fast Mode Setting

NV-450S:

The NV-450S is defaulted to connect and auto follow the NV-450M Master side. Therefore, do not change the mode settings on the NV-450S when connecting to a Netsys NV-450M. The default settings are configured to connect and pass data at the fastest available speeds based on the current line conditions.

When connecting the Netsys NV-450S to a modem or DSLAM from another manufacturer, the following mode settings are available:

∗**VDSL US/DS Rate Adaptation**: Using this technique the line is more tolerant of errors caused by noise and signal loss. As the parameters are adjusted, the bandwidth may be markedly decreased if there is a large amount of line noise or signal degradation.

∗**VDSL US/DS Retransmission**: This technique is to resend damaged or lost packets. Please select it to activate the function.

∗**Vectoring**: Vectoring is a transmission method that employs the coordination of line signals for reduction of crosstalk levels and improvement of performance. To configure the vectoring function, please select it from the drop-down Vectoring menu.

∗**DSL PHY-TC**: To configure DSL mode, please select from DSL PHY-TC drop-down menu.

The default settings for the NV-450S are as follows:

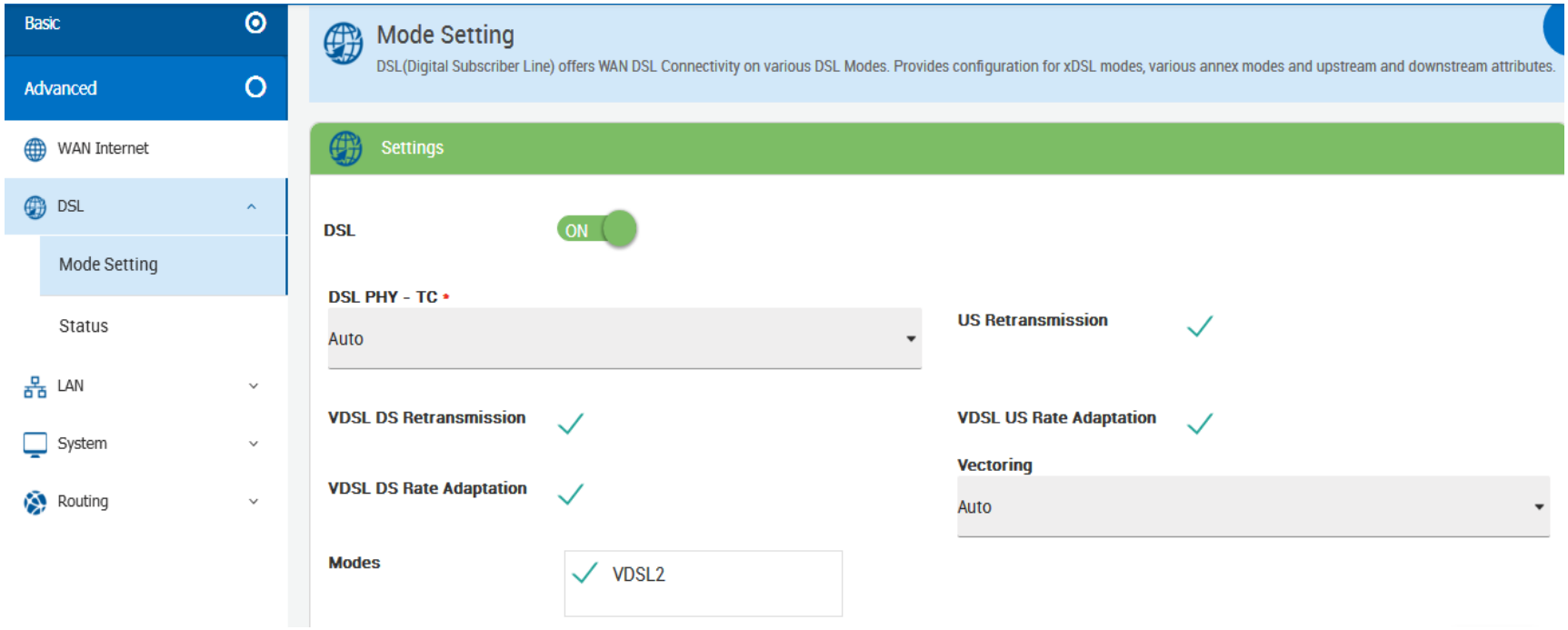


Figure 4.2.2.1 Mode Setting

4.2.2.2 Status

This page provides various status and statistical information.

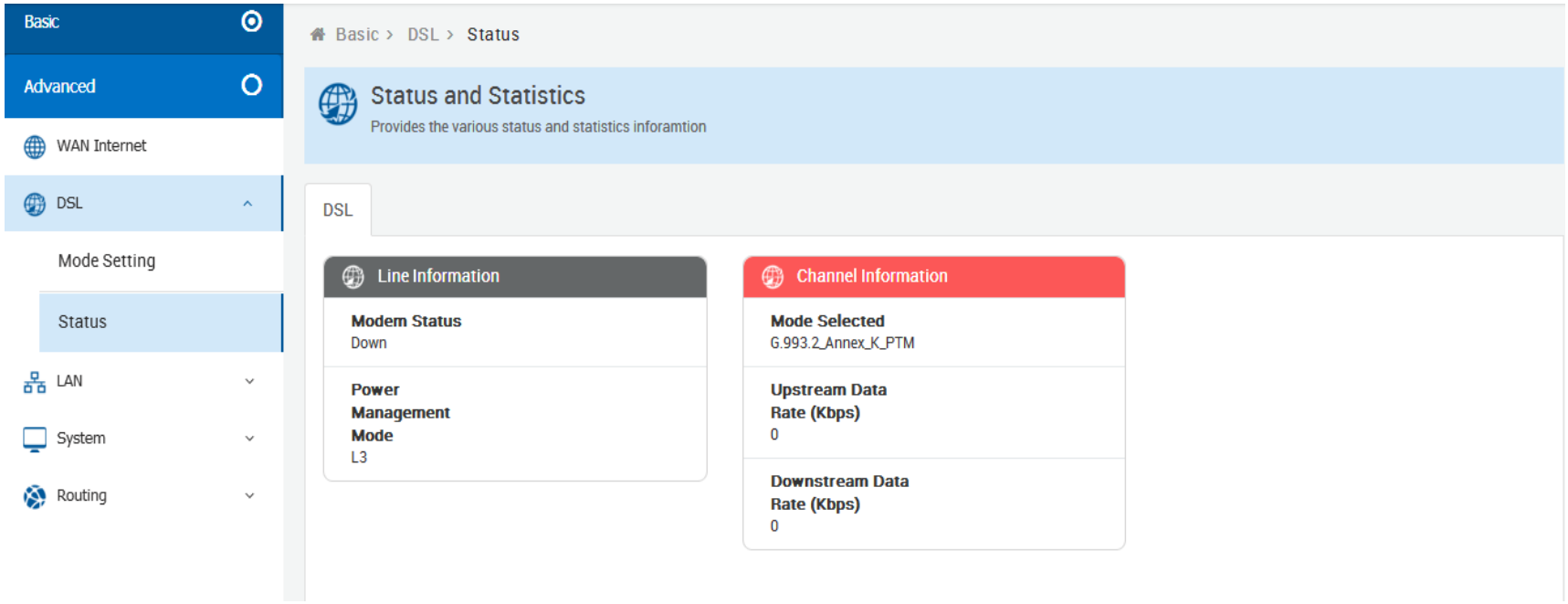


Figure 4.2.2.2 Status

4.2.3 LAN

4.2.3.1 Configuration

Configuration support to provide IP addresses to devices connected on the LAN side of the CPE. Applicable for all wired and wireless devices that request dynamic IP address.

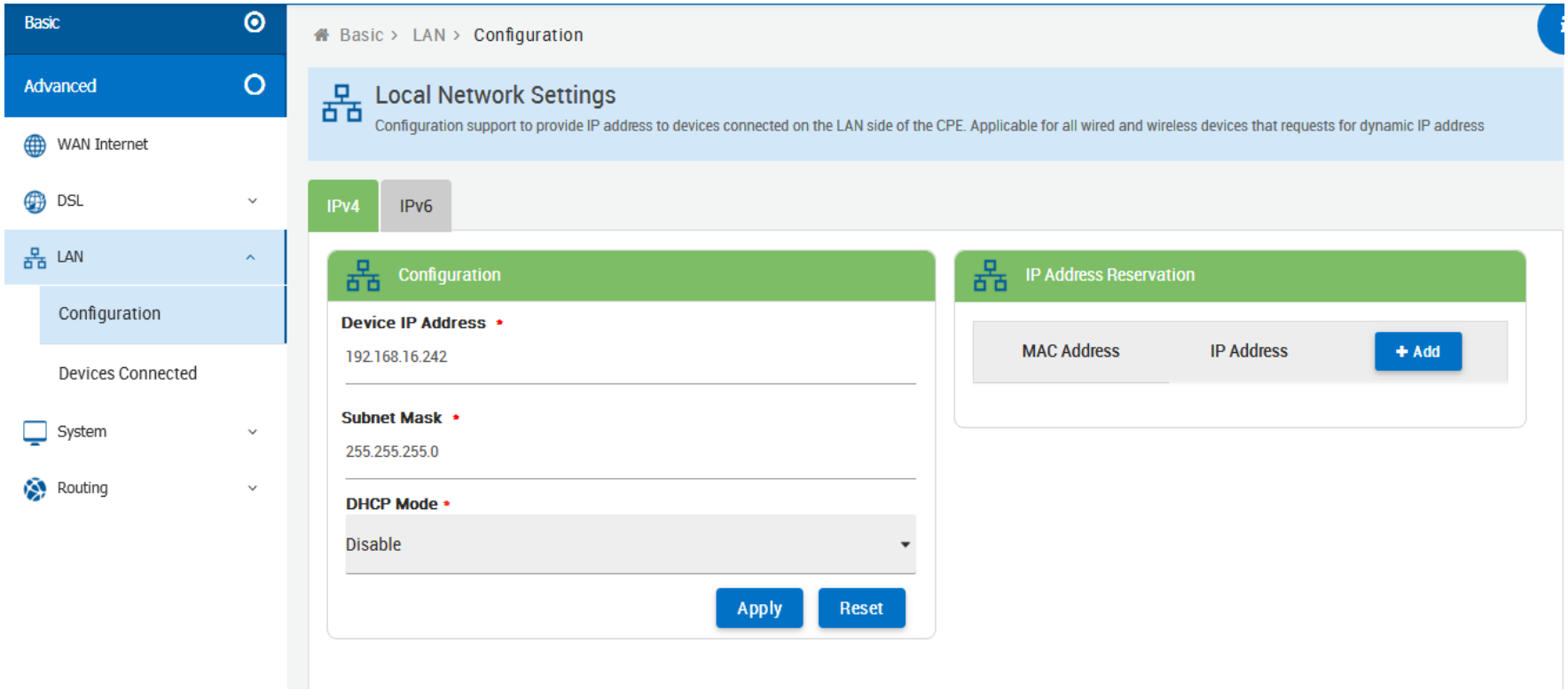


Figure 4.2.3.1 Configuration

4.2.3.2 Devices Connected

List of Clients Connected on the LAN Side of the device.

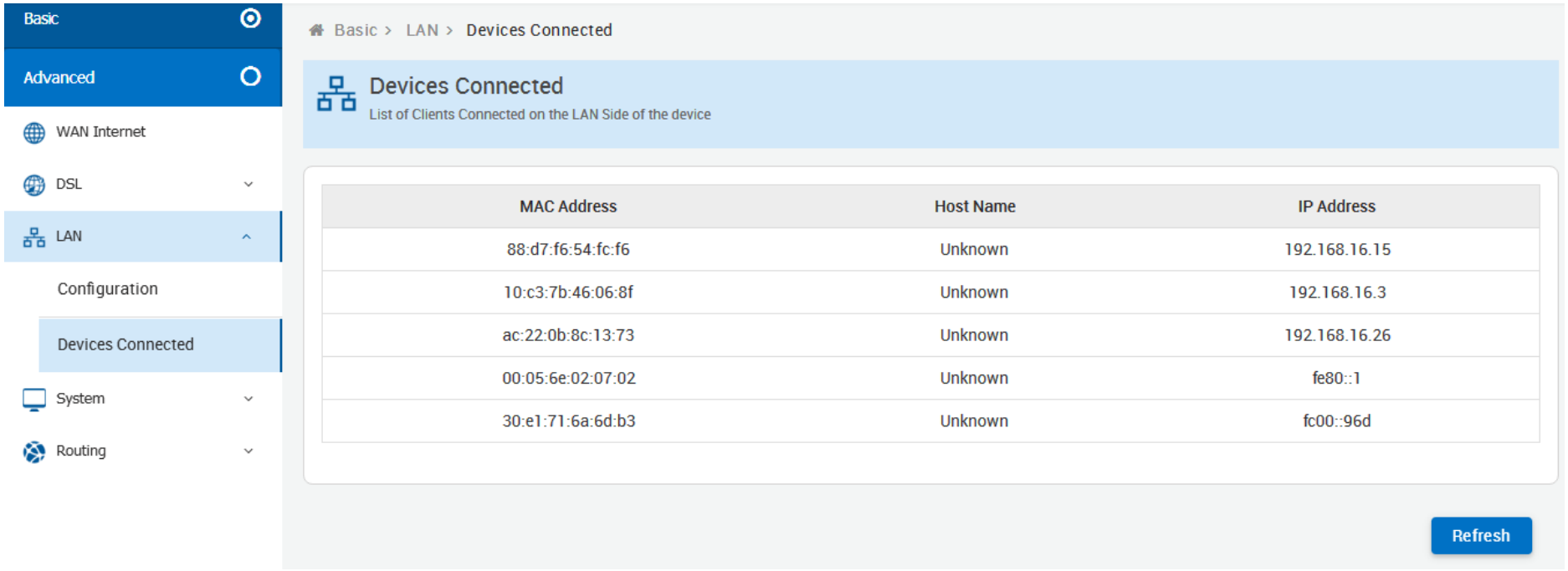


Figure 4.2.3.2 Devices Connected

4.2.4 System

4.2.4.1 Administration

This page allows users to take configuration backup, restore to previous configuration or to factory settings, upgrade firmware and reboot device.

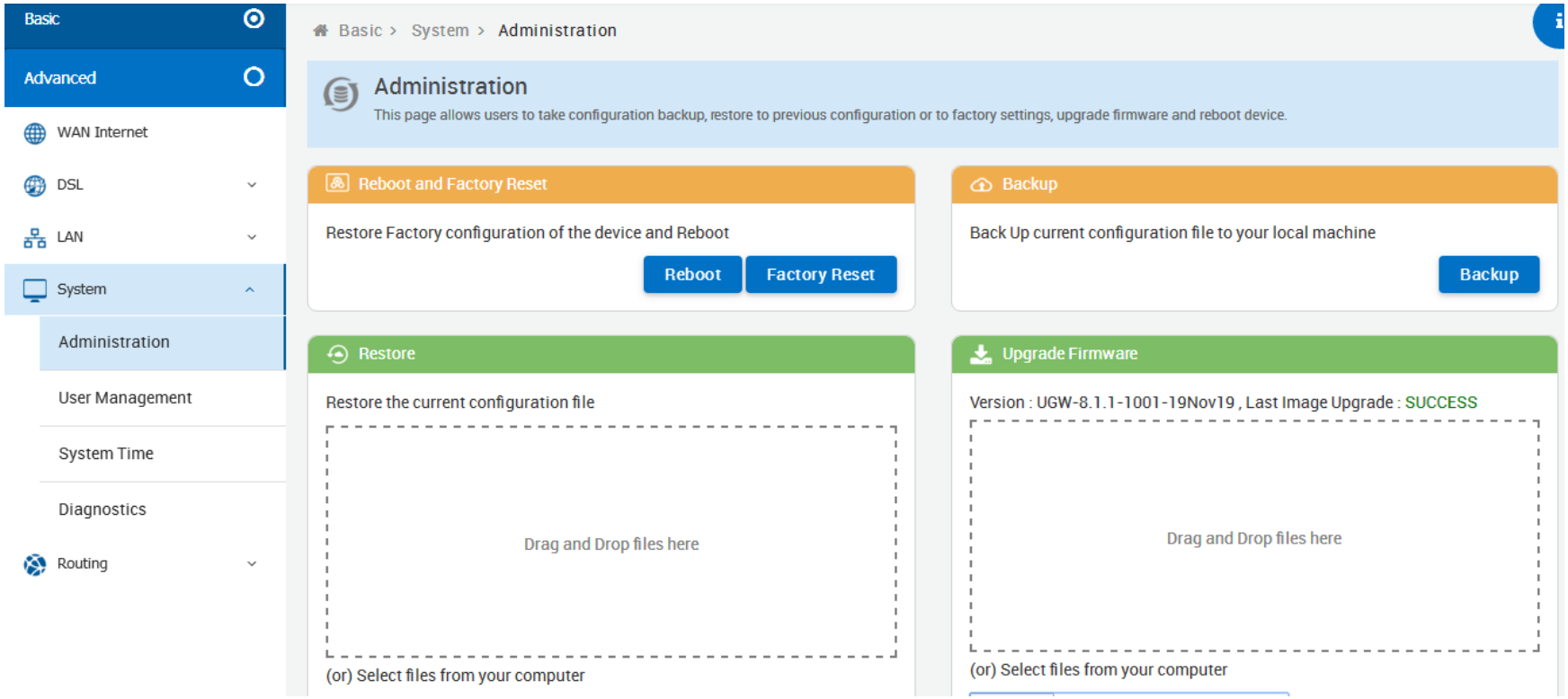


Figure 4.2.4.1 Administration

4.2.4.2 User Management

Configure new users with add delete and modify options.

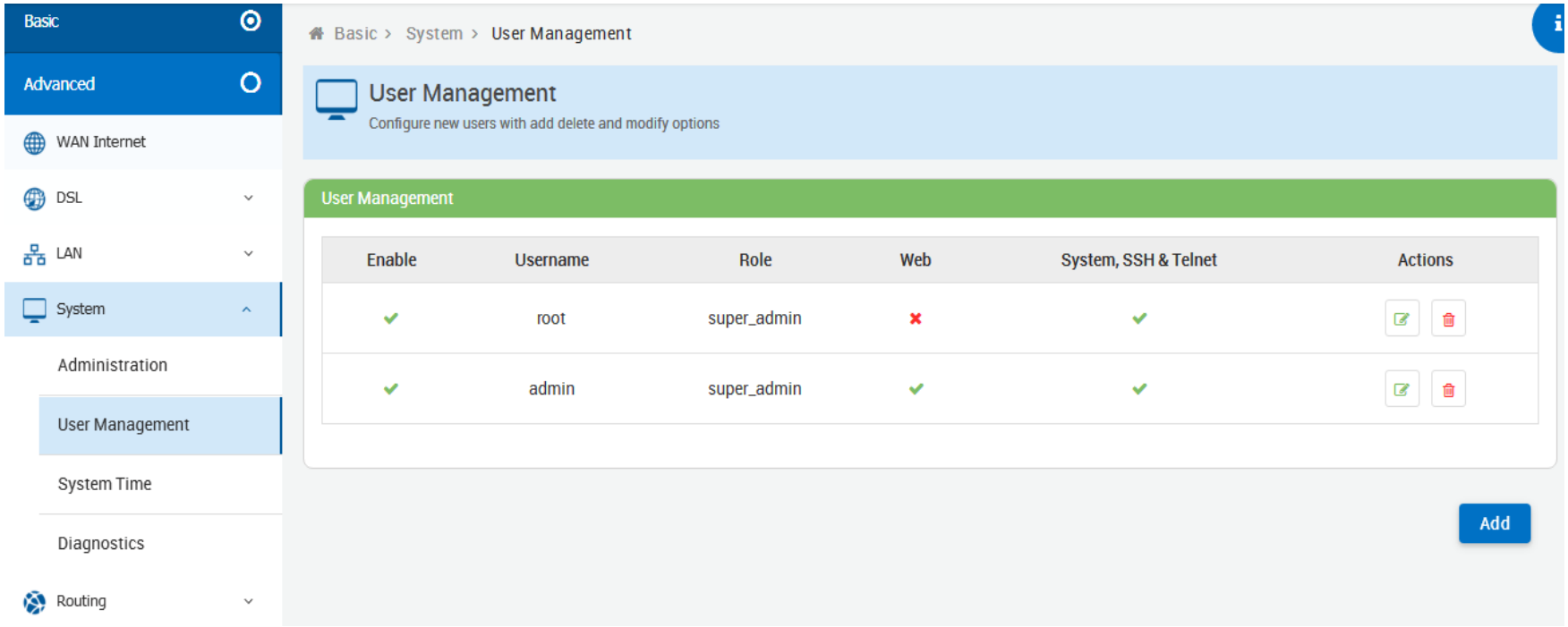


Figure 4.2.4.2 User Management

4.2.4.3 System Time

Configuration to enable the device to synchronize the system time with the time servers.

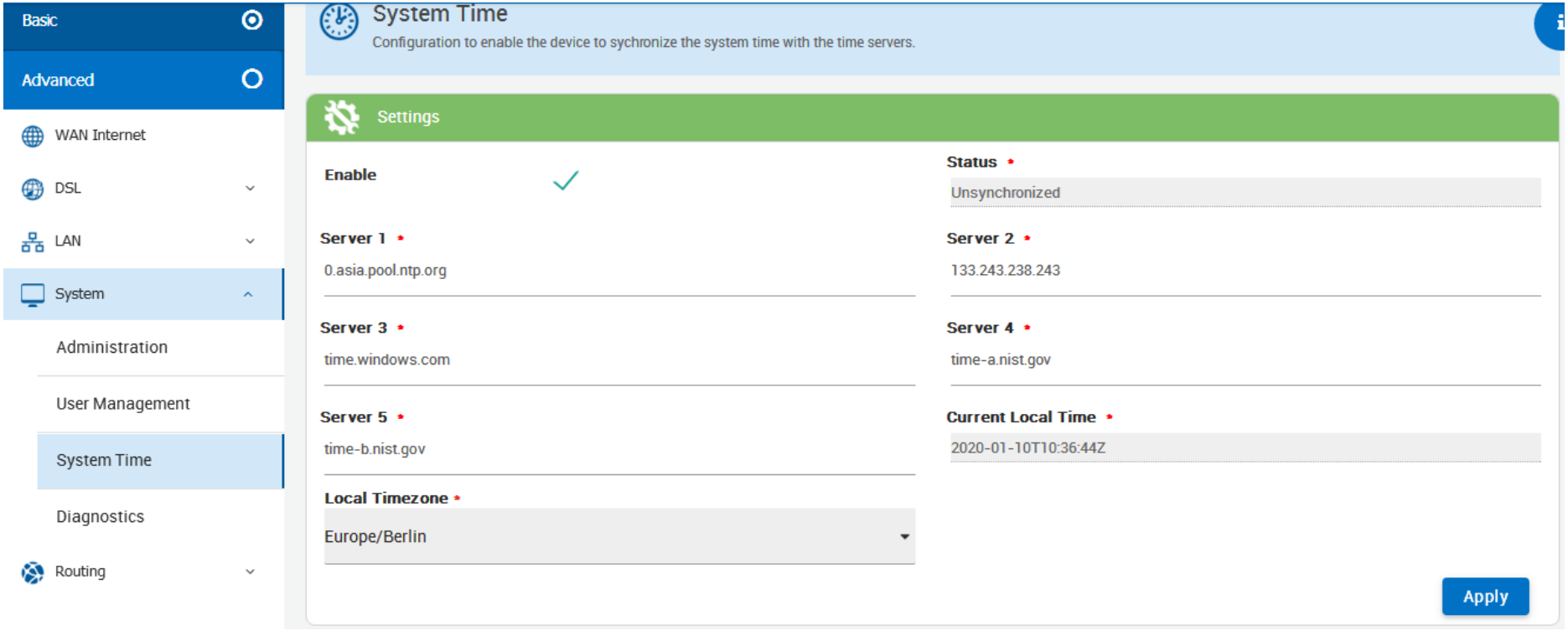


Figure 4.2.4.3 System Time

4.2.4.4 Diagnostics

Allows to perform diagnosis on various sub-systems of this device.

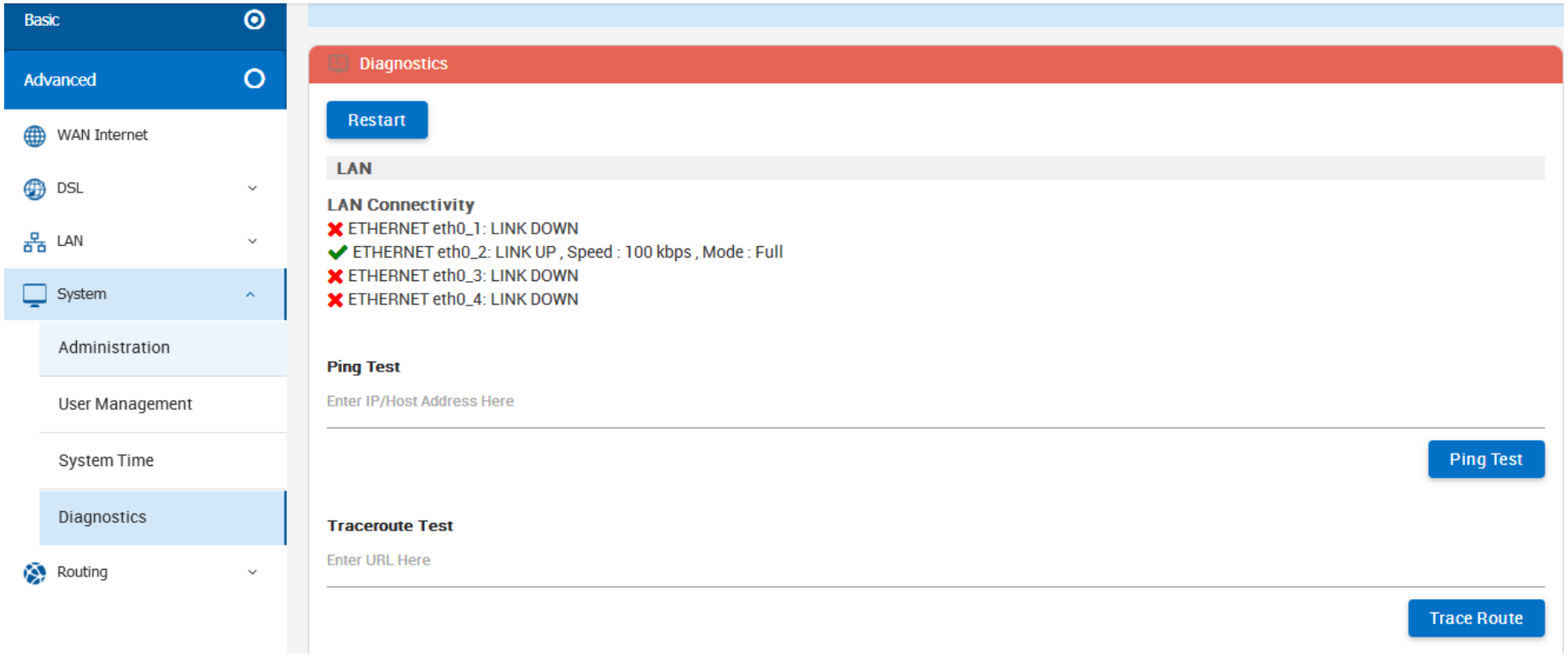


Figure 4.2.4.4 Diagnostics

4.2.5 Routing

Web Page to Add/Delete Static Route in the System

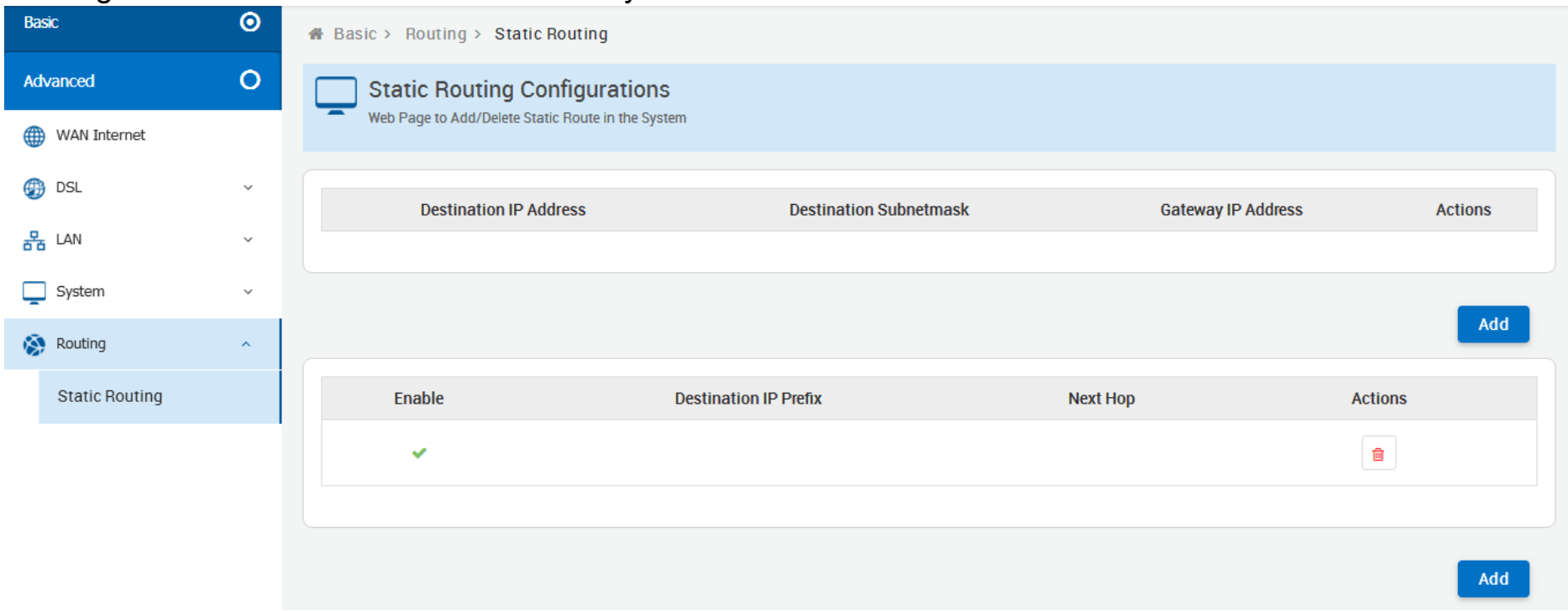
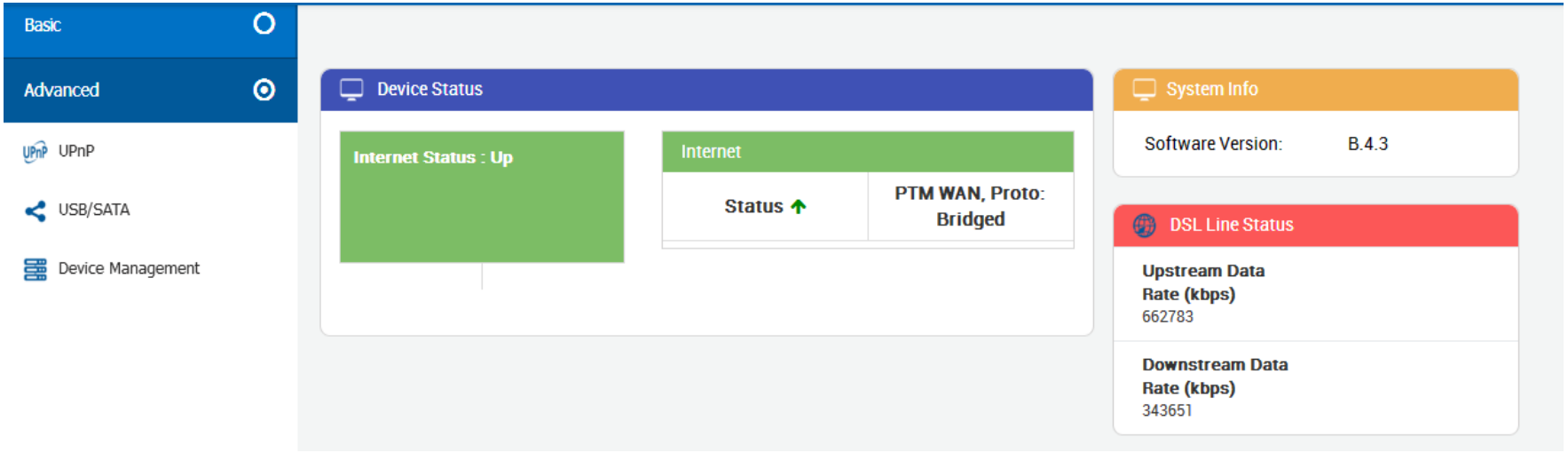


Figure 4.2.5 Static Routing

4.3 Select the Advanced Menu

Select "Advanced". The menu below will be used frequently. NV-450M includes the sub-menus of **UPnP**、**USB/SATA**、**Device Management**. NV-450S includes the sub-menus of **Multicast**、**Dynamic DNS**、**UPnP**、**QoS**、**Tunneling**、**USB/SATA**、**Device Management**. A screen is displayed as shown in Figure 4.3

NV-450M



NV-450S

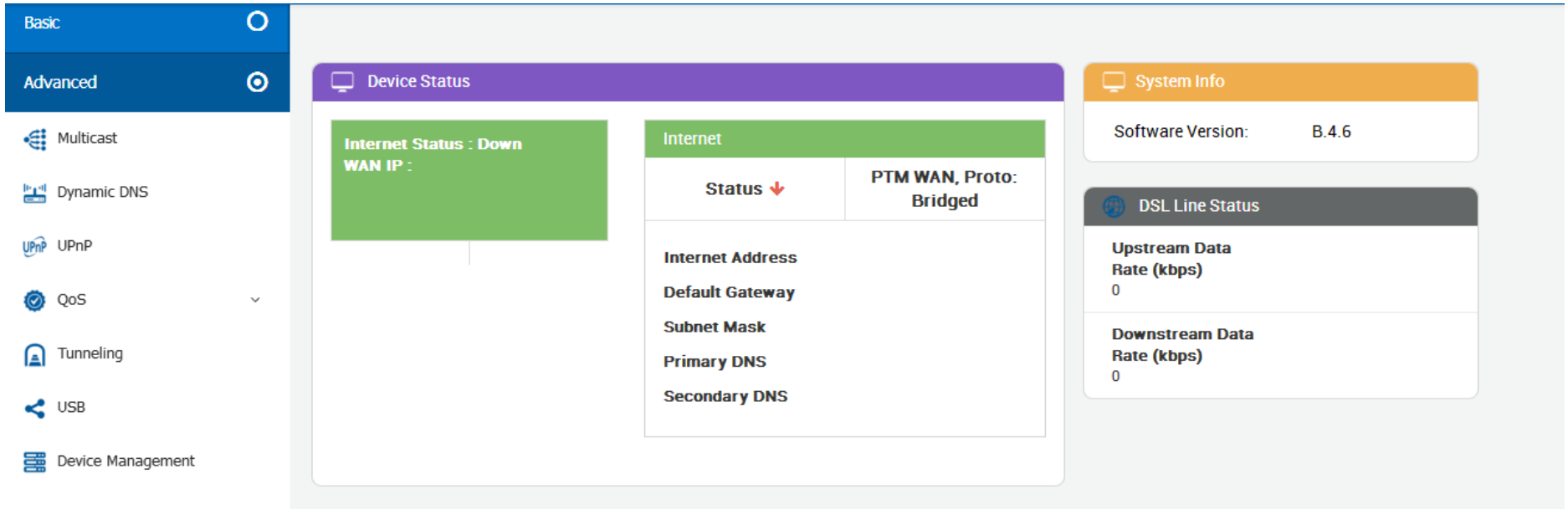


Figure 4.3 Advanced

4.3.1 Multicast

This page allows you to configure the Multicast services.

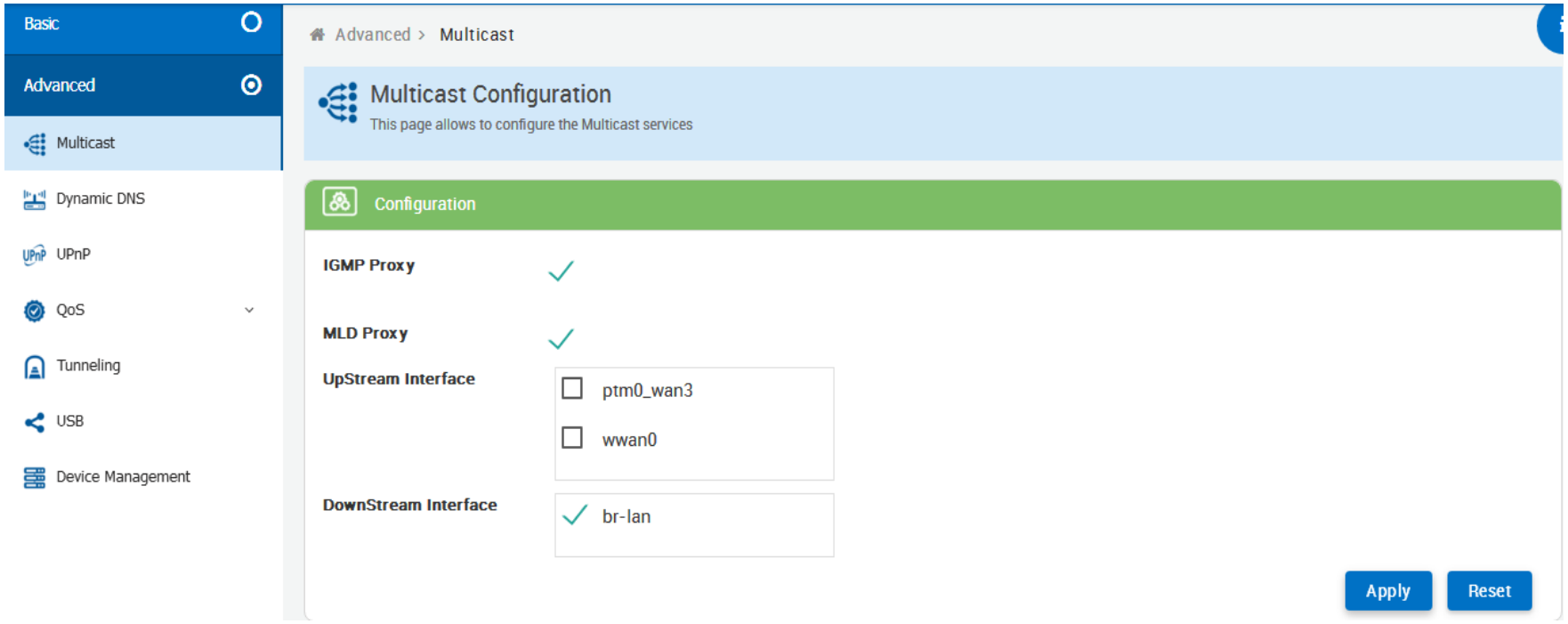


Figure 4.3.1 Multicast

4.3.2 Dynamic DNS

Dynamic DNS allows the user to update WAN IP address with one or many dynamic DNS services. So, anyone can access services on computer using DNS-like address.

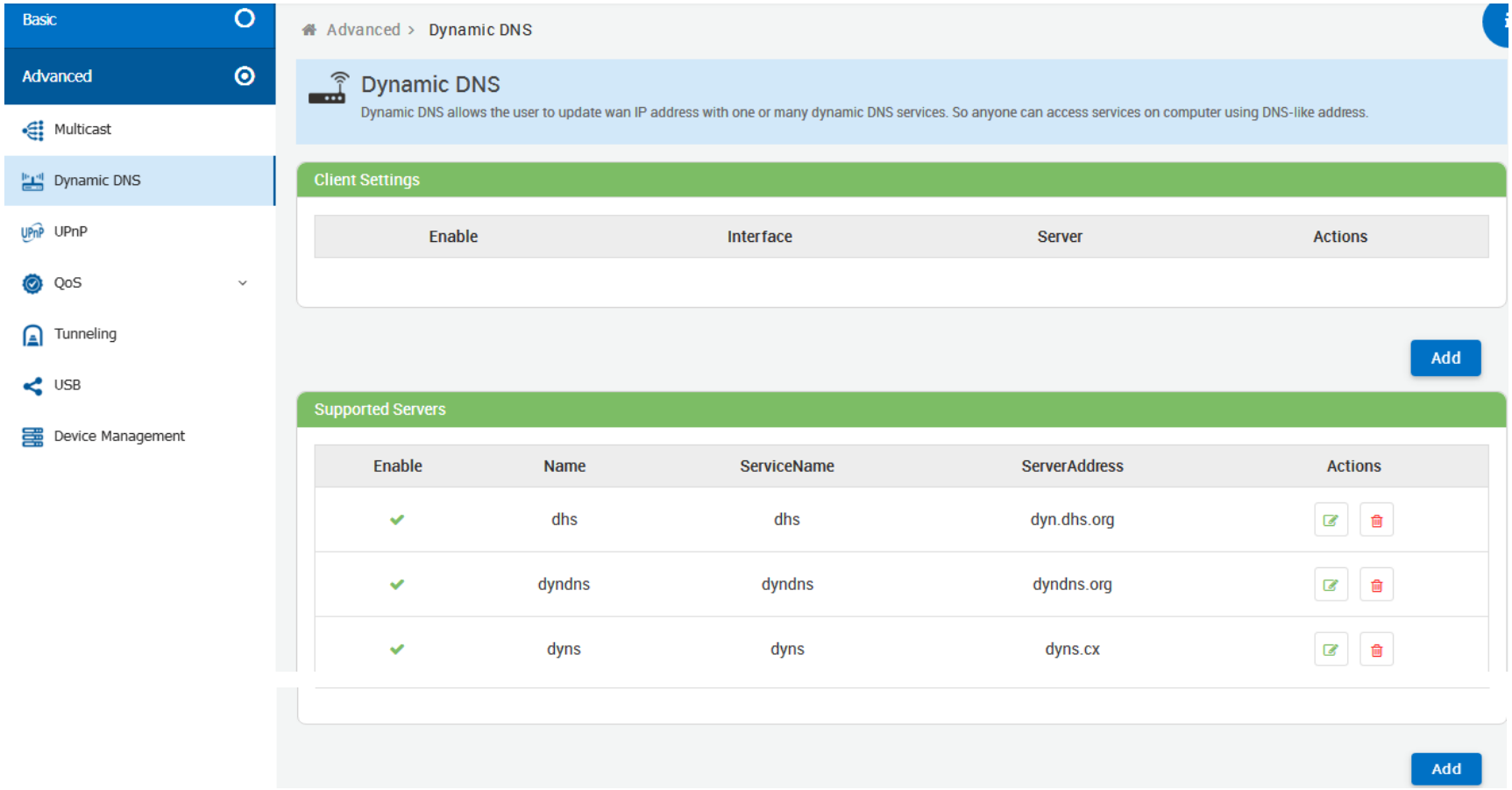


Figure 4.3.2 Dynamic DNS

4.3.3 UPnP

This page provides UPnP devices &amp, service.

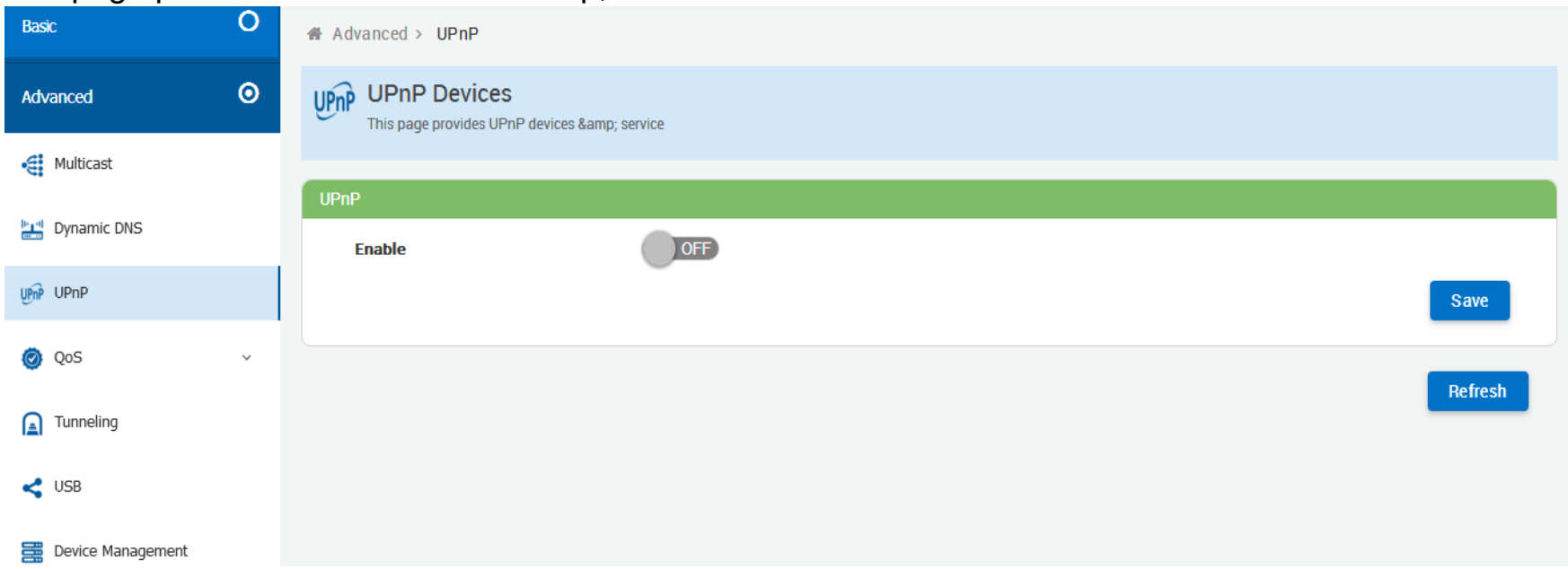
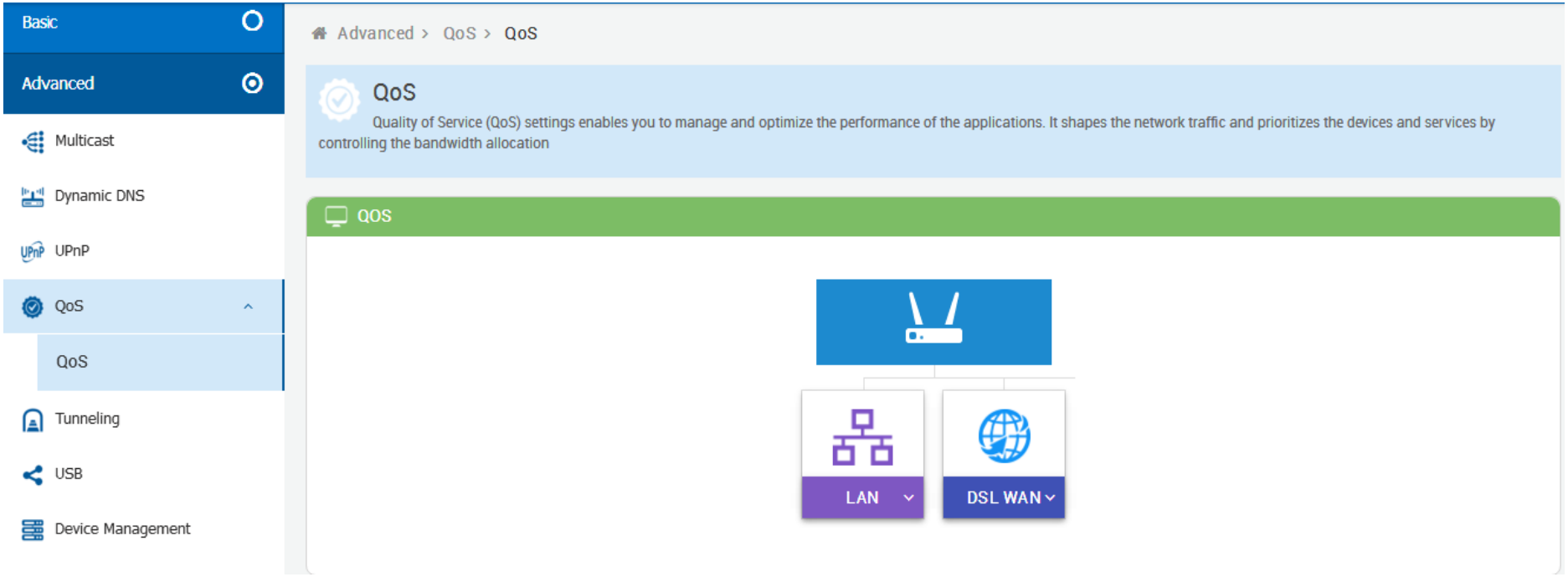


Figure 4.3.3 UPnP

4.3.4 QoS

Quality of Service (QoS) settings enables users to manage and optimize the performance of the applications. It shapes the network traffic and prioritizes the devices and services by controlling the bandwidth allocation.



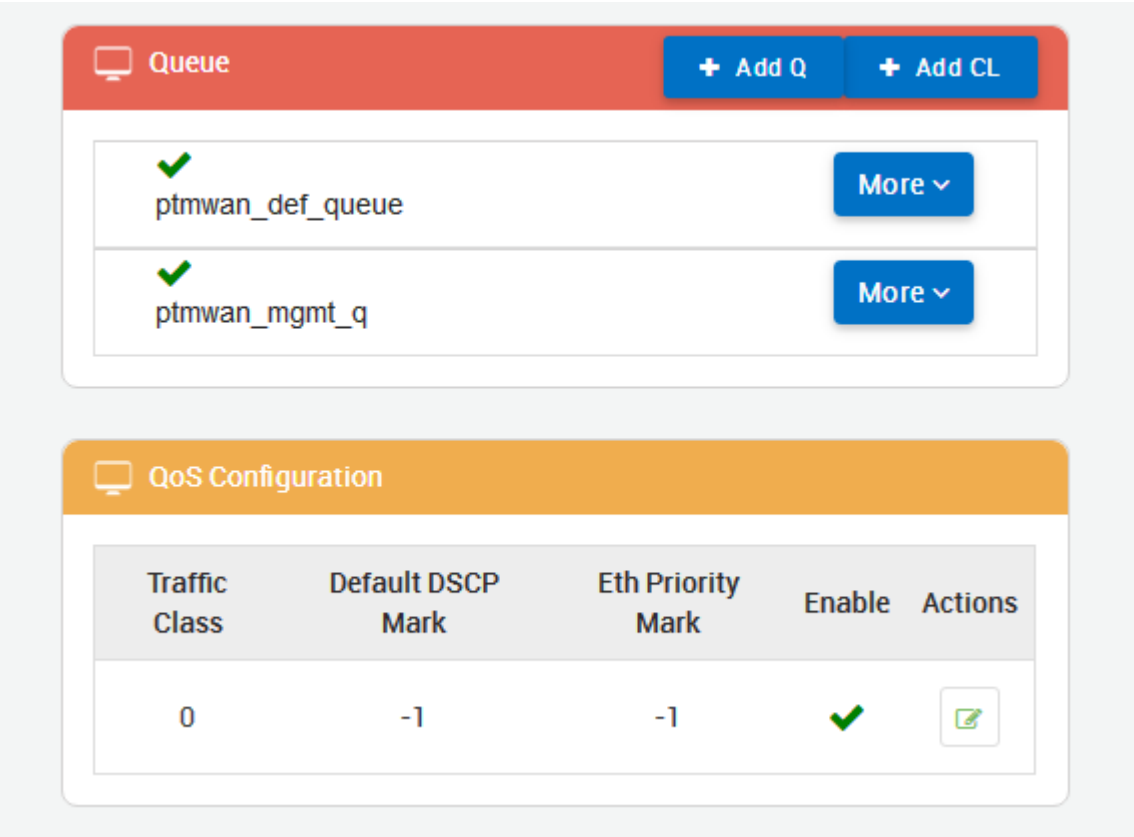


Figure 4.3.4 QoS

4.3.5 Tunneling

6rd is a mechanism to facilitate IPv6 rapid deployment across IPv4 infrastructures of Internet service providers (ISPs). DSLite is a mechanism to facilitate IPv4 deployment across IPv6 infrastructure.

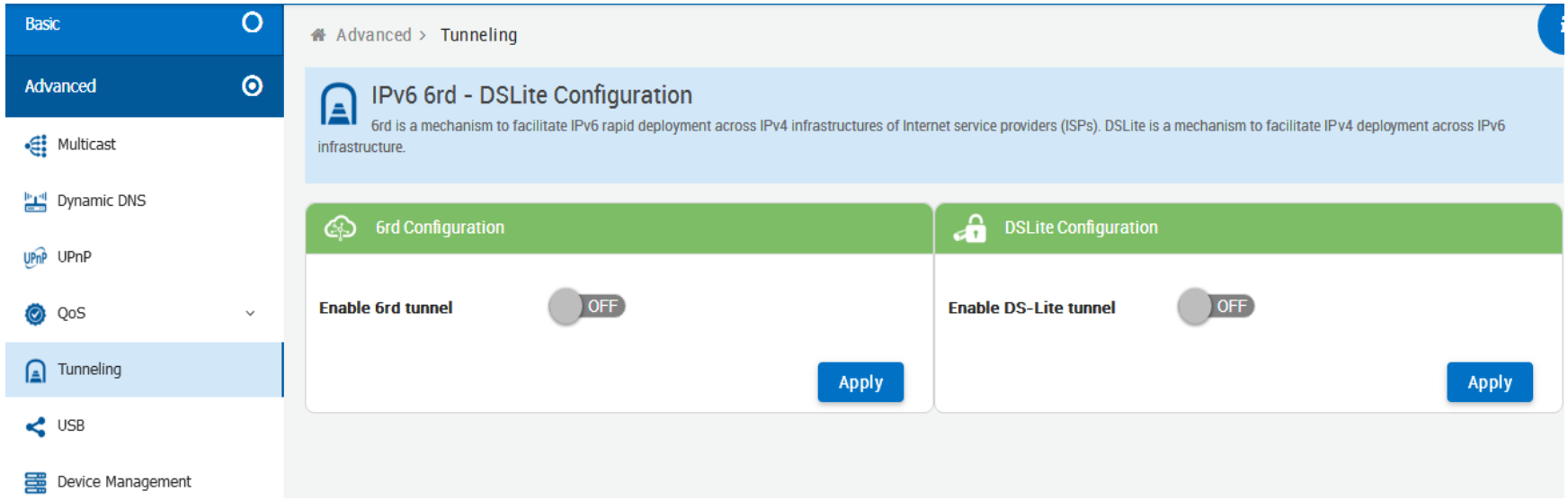


Figure 4.3.5 Tunneling

4.3.6 USB/SATA

Always ensure that user's click on the Safe Remove button to safely remove respective USB/SATA storage devices.

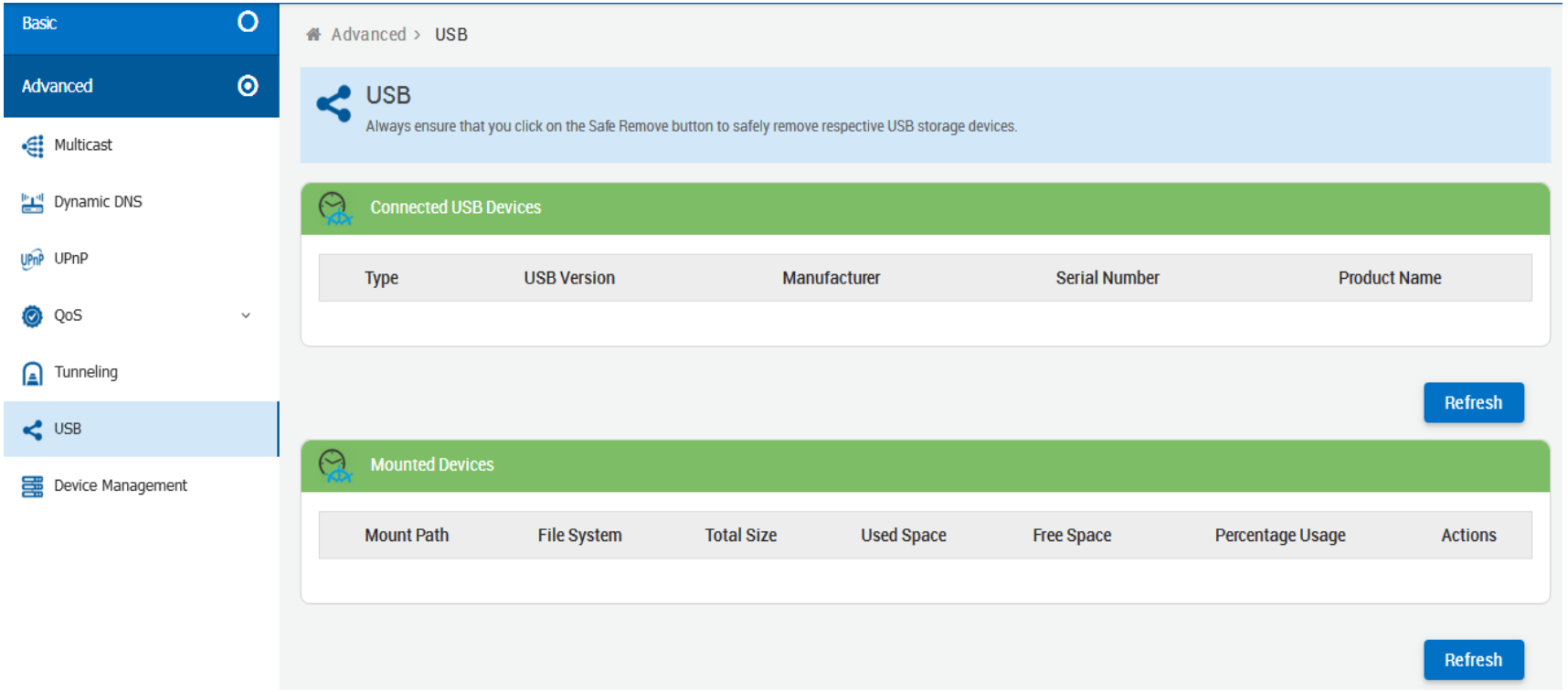


Figure 4.3.6 USB/SATA

4.3.7 Device Management

Device Management allows you to view and configure parameters relating to the device's association with an ACS.

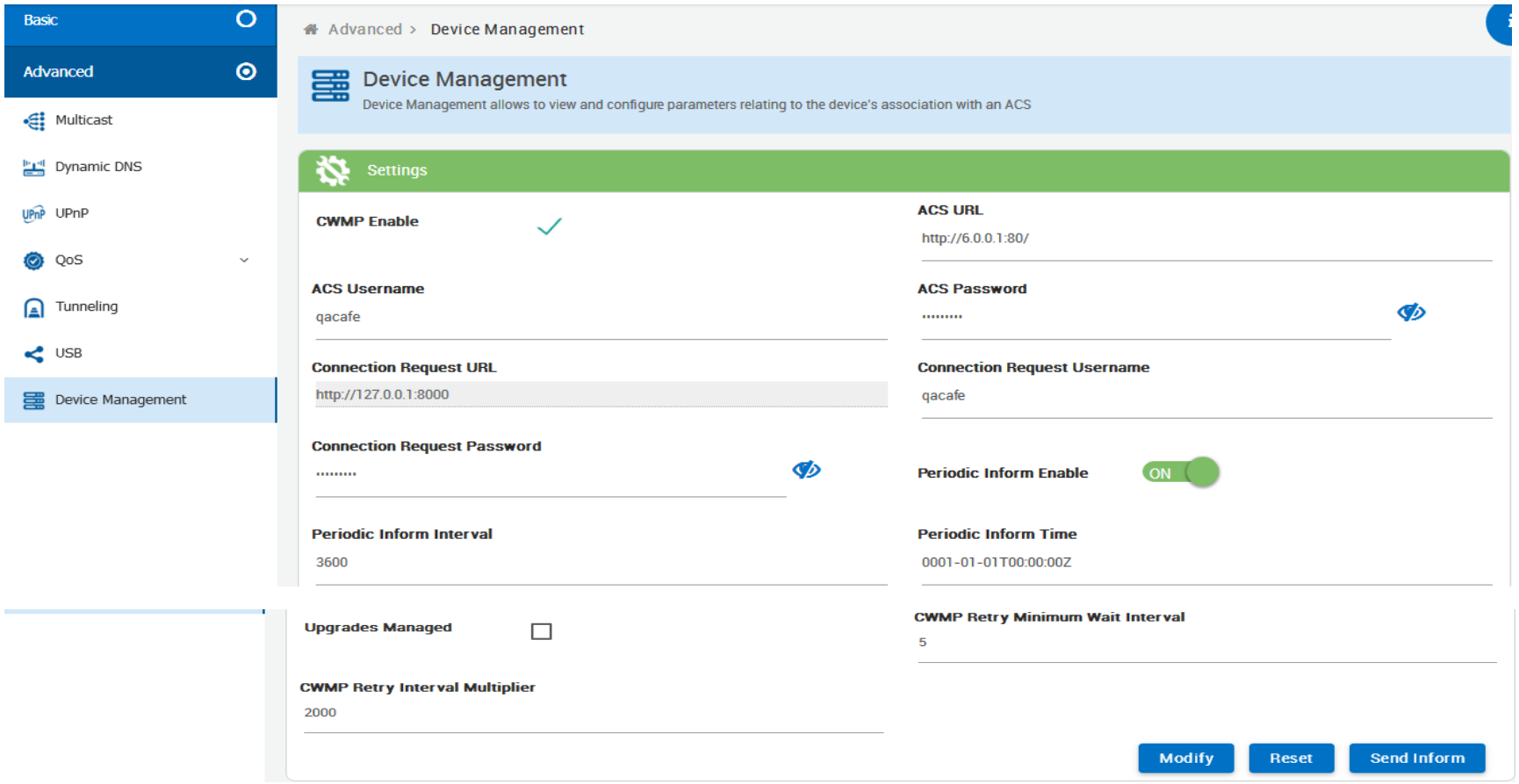


Figure 4.3.7 Device Management

Appendix A: Cable Requirements

A.1 Ethernet Cable

A CAT 3~7 UTP (unshielded twisted pair) cable is typically used to connect the Ethernet device to the Modem. A: 10/100TX cable often consists of four pairs of wires, two of which are used for transmission. The connector at the end of the 10/100TX cable is referred to as a RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3 and 6 for data transmission purposes. (Table A-1 10/100TX)

B: 1000TX cable often consists of four pairs of wires, all of which are used for transmission. The connector at the end of the 1000TX cable is referred to as a RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3, 4, 5 and 6 for data transmission purposes. (Table A-1 1000TX)

Table A-1 RJ-45 Ethernet Connector Pin Assignments

PIN #	10/100TX		1000TX	
	Signal	Media Dependant interface	**Signal**	Media Dependant interface-cross
1	TX+	Transmit Data+	BI_DA+	Bi-directional pair A+
2	TX-	Transmit Data-	BI_DA-	Bi-directional pair A-
3	RX+	Receive Data+	BI_DB+	Bi-directional pair B+
4	NC	Unused	BI_DC+	Bi-directional pair C+
5	NC	Unused-	BI_DC-	Bi-directional pair C-
6	RX-	Receive Data-	BI_DB-	Bi-directional pair B-
7	NC	Unused	BI_DD+	Bi-directional pair D+
8	NC	Unused	BI_DD-	Bi-directional pair D-

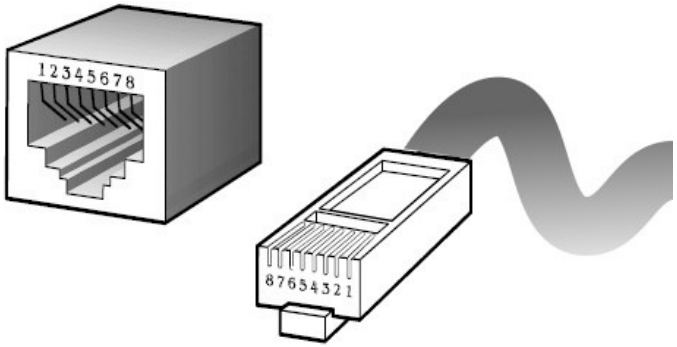


Figure A-1 Standard RJ-45 receptacle/connector

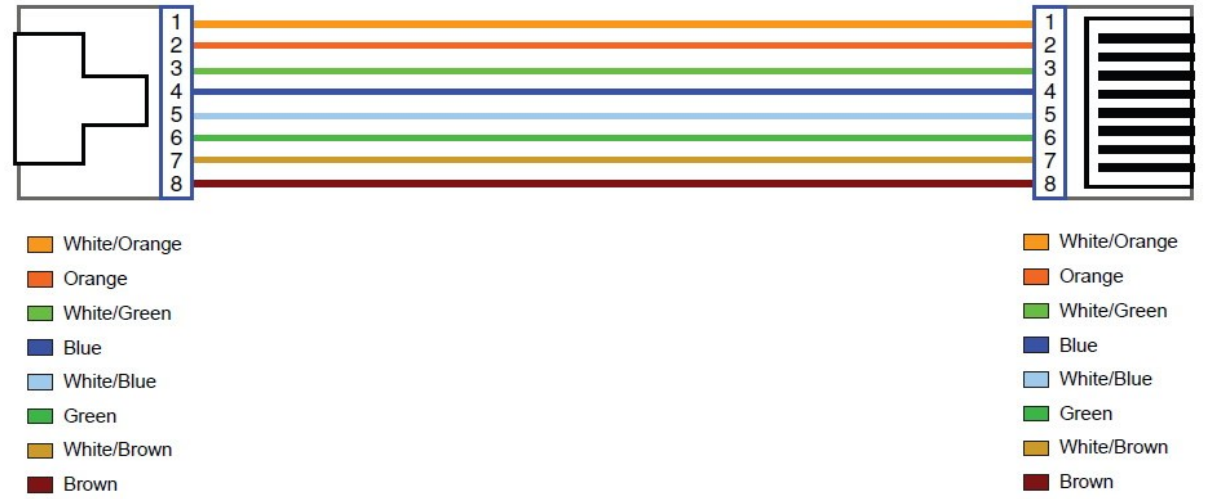


Figure A-2 Pin Assignments and Wiring for an RJ-45 Straight-Through Cable

Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

A.2 Telephone wire

Standard telephone wire of any gauge or type-flat, twisted or quad is used to connect the Modem to the telephone network. A telephone cable typically consists of three pairs of wires, one of which is used for transmission. The connector at the end of the telephone cable is called an RJ-11 connector and it consists of six pins. POTS (plain old telephone services) use pins 3 and 4 for voice transmission. A telephone cable is shown below. (Figure A-4)

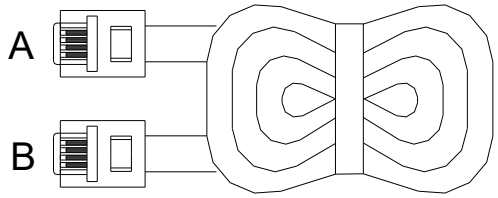


Figure A-4 Telephone cable.

The A and B connectors on the rear of the Modem are RJ-11 connectors. These connectors are wired identically. The RJ-11 connectors have six positions, two of which are wired. The Modem uses the center two pins. The pin out assignment for these connectors is presented below. (Table A-2)

Table A-2 RJ-11 Pin out Assignments.

Pin#	MNEMONIC	FUNCTION
1	NC	Unused
2	NC	Unused
3	**TIP**	**POTS**
4	**RING**	**POTS**
5	NC	Unused
6	NC	Unused

Appendix B: Product Specifications

Key Features & Benefits

- Compliant with IEEE 802.3 / 802.3u / 802.3ab Ethernet Standard
- Compliant with ITU-T G993.2 VDSL2 standard (NV-450S only)
- Compliant with ITU-T G998.4 G.INP standard (NV-450S only)
- Compliant with ITU-T G.9700/G.9701 G.fast standard
- Backward compatible ADSL/VDSL2/V35b (NV-450S only)
- Support 106a & 212a dual G.fast band profile
- Support super Vectoring for V35b / G.fast(NV-450S only)
- Support Vectoring for VDSL2(NV-450S only)
- Support High Bandwidth up to 1Gbps.
- Support USB 3.0 for connecting USB Dongle
- Support static routing for IPv4 and IPv6 forwarding (NV-450S only)
- Support 8 queue MFC/DSCP both type QoS
- Support HTTP/HTTPS web management.
- Support SSL security.
- Support remote management and monitor.
- Support configuration backup and restore.
- On board surge protection for Line port
- Support bridge(switch) / Router mode (NV-450M bridge mode only)
- Support Dual Firmware Image Backup
- Support NTP Time Server.
- Support TR-0693.

- Support RJ-11 / Terminal block combo Line port.
- On board POTS/ISDN splitter
- Support Jumbo frame (MTU) up to 1600 bytes.

Note:

1. Features and specifications in this manual are subject to change without prior notice.
2. (*) Firmware is upgradable for future enhancement.

Product Specification

Standard:	IEEE802.3/802.3u/802.3ab standards ITU-T G9700/G9701 standards ITU-T G993.2/G998.4 standards (NV-450S only)
Regulatory Compliance:	FCC CE RoHS Compliance
Physical Interface:	4 x RJ-45 10/100/1000 Mbps Ethernet port 1 x RJ-11 / Terminal block combo for line port 1 x RJ-11 connector for POTS/ISDN phone device 1 x Reset Button for resetting to factory default. 2 x USB3.0 for connecting USB dongle
LED Indicators:	1 x Power LED 4 x Link/Active Status for Ethernet port 1 x Link LED for G.fast mode 1 x Link LED for xDSL mode (NV-450S only) 1 x Master (CO) LED (NV-450M only)
Switch method:	Store and forward
Flow control:	Full duplex: IEEE 802.3x Half duplex: Back pressure
Typical Power Consumption:	NV-450M: 7.92W (Full load, without USB port) 17.92W(Full load, with 2 x USB port)

	NV-450S: 8.16W(Full load, without USB port) 18.16W(Full load, with 2 x USB port)
Power Supply:	Input Voltage: 12 VDC (Commercial-grade power adapter)
Operating Temperature:	0°C ~ 50°C (32°F ~ 122°F)
Storage Temperature:	0°C ~ 50°C (32°F ~ 122°F)
Humidity:	10% to 90% (non-condensing)
Dimensions:	196 x 146 x 40 mm (7.2" x 5.74" x 1.57")
Weight:	approx.0.4 kg
EMC Certification:	EMI Compliant: FCC EMS Compliant: CE mark

Appendix C: Troubleshooting

Diagnosing the Modem's Indicators

The modem can be easily monitored through its comprehensive panel indicators. These indicators assist the network manager in identifying problems the hub may encounter. This section describes common problems users may encounter and possible solutions.

1. Symptom:	POWER indicator does not light up (green) after power on.
Cause:	Defective External power supply
Solution:	Check the power plug by plugging in another that is functioning properly. Check the power cord with another device. Check the terminal block and make sure to fasten the power cord. If these measures fail to resolve the problem, have the unit power supply replaced by a qualified distributor?

2. Symptom:	NV-450M/S both cannot handshaking after making a connection.
Cause:	Network interface (ex. a network adapter card on the attached device), network cable, or switch port is defective.
Solution:	2.1 Verify that the switch and attached device are power on. 2.2 Be sure the cable is plugged into both the switch and corresponding device. 2.3 Verify that the proper cable type is used, and its length does not exceed specified limits. 2.4 Check the modem on the attached device and cable connections for possible defects. 2.5 Make sure that the phone wire must be connecting NV-450S first, when powered on. 2.6 Replace the defective modem or cable if necessary. 2.7 Checking Phone wire length if exceed 600m(1968ft)

3. Symptom:	Line Link cannot be established.
Cause:	NV-450M/ NV-450S setting failure or phone cable length is over the specification limit(600m=1968ft).
Solution:	3.1 Please make sure that the phone wire must be connected between NV-450M(Master) side and NV-450S(Slave) side when both are power on. NV-450M Master side will do link speed function depending on phone wire length, therefore if NV-450M Master side can't detect Slave Side over phone wire while both power on, this will cause the Link to fail. 3.2 Please check phone wire, we recommend using 24-26 gauge with twisted pair and without rust. 3.3 Please reinsert power when changing cable length or link time over 3 minutes. 3.4 If NV-450S connects to IP-DSLAM and link failure, please try to change band profile to 17a to get long reach.
Note:	Phone wire must meet CAT. 3 or above twisted pairs, otherwise will cause more crosstalk and return loss issue hence to reduce Line power driving.

4. Question:	I just bought a pair of NV-450S/ NV-450S to replace my Quest DSL modem for my home. I was told any G.fast modem would replace and give me higher communication speeds. It doesn't get users on the internet when hooked up. All lights come on but no Link light. Is this the completely wrong application for this unit?
Answer:	Re: Please note NV-450S is a Slave (CPE side), it must be connected to the NV-450M Master (CO side) or IP-DSLAM to get link.

5. Question:	We need to set up a default gateway on a NV-450M/ NV-450S pair which are in Bridge mode, as they want to manage the units from a different network.
Answer:	When the application is used within the LAN, the switch(bridged) mode is not necessary to set up a gateway. However, if the application crosses various network segments (LAN to WAN(Line) or WAN(Line) to LAN), users must set up a gateway to connect different network segment. Regarding how to configure a default gateway at switch(bridged) mode for crossing various network segments. Configuration gateway example from Static Routing: Destination LAN IP: 0.0.0.0 Subnet Mask: 0.0.0.0 Gateway: 192.168.16.1 **Note:** Static Routing functionality is used to define the connected Gateway between the LAN and WAN.

6. Question:	What can I do if I forgot my password.
Answer:	If users forgot user's password, users must reset user's modem. Unfortunately, this process will change all user's settings back to the factory defaults. To reset the modem, locate the reset on the rear panel of the unit. With the modem powered on, use a paperclip to hold the button down for over 5 seconds. Release the button and the modem will go through its reboot process. NV-450M default ip is 192.168.16.249. NV-450S default ip is 192.168.16. 254.When logging in, the default username and password both are "admin".

7. Question:	What is the maximum Ethernet frame MTU for these modems?
Answer:	NV-450M / NV-450S Jambo frame (MTU) up to 1600 bytes.

System Diagnostics

Power and Cooling Problems

If the POWER indicator does not turn on when the power cord is plugged in, users may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit power is off after running for a while, check for loose power connections, power losses or surges at the power outlet. If users still cannot isolate the problem, then the internal power supply may be defective. In this case, please contact the user's local dealer.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g. the power cord or network cabling), test them in an alternate environment where users are sure that all the other components are functioning properly.

Transmission Mode

The default method of selecting the transmission mode for RJ-45 Ethernet ports is 10/100/1000 Mbps, for RJ-11-line port are auto-follow CO side band profile for NV-450S. Therefore, if the Link signal is disrupted (e.g. by unplugging the network cable and plugging it back in again, or by resetting the power), the port will try to reestablish communications with the attached device via auto-negotiation. If auto-negotiation fails, then communications are set to half duplex by default. Based on this type of commercial-standard connection policy, if user's are using a full-duplex device that does not support auto-negotiation, communications can be easily lost (i.e. reset to the wrong mode) whenever the attached device is reset or experiences a power fluctuation. The best way to resolve this problem is to upgrade these devices to a version that supports Ethernet auto-negotiation.

Physical Configuration

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the latest changes, one step at a time. Ensure that cable distances and other physical aspects of the installation do not exceed recommendations.

System Integrity

As a last resort verify the switch integrity with a power-on reset. Turn the power to the switch off and then on several times. If the problem still persists and users have completed all the preceding diagnoses, then contact the user's dealer.

Appendix D: Compliance Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to the radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could prevent the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify users in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, users will be advised of the user's right to file a complaint with the FCC if users believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper functioning of the user's equipment. If they do, users will be notified in advance in order to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on the coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

FCC Warning

This equipment has been tested to comply with the limits for a **Class A** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.

CE Mark Warning

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

RoHS Mark Warning

RoHS stands for Restriction of Hazardous Substances and impacts the entire electronics industry and many electrical products as well. The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market from July 1, 2006, must pass RoHS compliance. Directive 2011/65/EU was published in 2011 by the EU, which is known as RoHS-Recast or RoHS 2. RoHS 2 includes a **CE-marking directive**, with RoHS compliance now being required for CE marking of products. RoHS 2 also added Categories 8 and 9 and has additional compliance recordkeeping requirements. Directive 2015/863 was published in 2015 by the EU, which is known as RoHS 3. RoHS 3 adds four additional restricted substances (phthalates) to the list of six.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the cross-out wheeled bin symbol. Do not dispose of WEEE is unsorted municipal waste and have to collect such WEEE separately.

Warranty

The original product that the owner delivered in this package will be free from defects in material and workmanship for one-year parts after purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose or any warranty arising out of any proposal, specification or sample. We shall not be liable for incidental or consequential damages. We neither assume nor authorize any person to assume for it any other liability.

WARNING:

1.DO NOT TEAR OFF OR REMOVE THE WARRANTY STICKER AS SHOWN, OR THE WARRANTY IS VOID.

2.WARRANTY VOID IF USE COMMERCIAL-GRADE POWER ADAPTER IS USED AT HARSH ENVIRONMENTS.

Chinese SJ/T 11364-2014

部件名称	有毒有害物质或元素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬[Cr(VI)]	多溴联苯(PBB)	多溴二苯醚(PBDE)
结构壳体	○	○	○	○	○	○
电路组	○	○	○	○	○	○
包装及配件	○	○	○	○	○	○

○：表示该有毒物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。

╳：表示该有毒物质至少在该部件的某依均质材料中的含量超出 GB/T 26572 标准规定的限量要求。

上述规范仅适用於中国法律