

VC-600LT / VC-600RT

**G.fast Master Modem +
G.fast / VDSL2 / V35b Slave Modem
USER'S MANUAL**



Safety Warnings

For your 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 you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- ◆ **Use ONLY** the dedicated power supply for your device. Connect the power to the right plug type (AC support full range between 100Vac and 240Vac input. 12 Vdc / 2A or above output).
- ◆ **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 your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- ◆ **DO NOT** expose your 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 your 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 the 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 a 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.

VC-600LT/ VC-600RT 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 VC-600LT/VC-600RT works over existing copper wire infrastructure. VC-600LT is a Master(CO side) device. And VC-600RT is a Slave(CPE side).

VC-600LT/VC-600RT 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 Repeter, Unmanned store, Security...etc , over a standard copper phone wire. VC-600LT/ VC-600RT 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 VC-600LT/ VC-600RT is for **indoor** applications only. This product does not have waterproof protection, please do not use in outdoor applications.

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Chapter 1. Unpacking Information

1.1 Check List

Thanks for choosing VC-600LT/VC-600RT. 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 DC12V/2A Power Adapter, 1 x Power cord.	

Notes:

1. Please inform your dealer immediately for any missing or damaged parts. If possible, retain 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 VC-600LT/VC-600RT 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 VC-600RT may be installed on any level surface (e.g. a table or shelf). However, please take note of the following minimum site requirements before you begin. **The VC-600LT/VC-600RT has 2 pre-installed rubber feet.**

2.2 Pre-installation Requirements

Before you start the actual hardware installation, make sure you 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 an 6P4C connector, two of which are wired. The modem uses the center two pins. The pin out assignment for these connectors is presented below.

Please note that the line port is no polarity, therefore user 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 type line: 1 Terminal Block & 1 RJ-11 connector. It is used to connect with VC-600LT Master side over a single pair phone wire to VC-600RT Slave side (point to point application). (Figure 2.1)

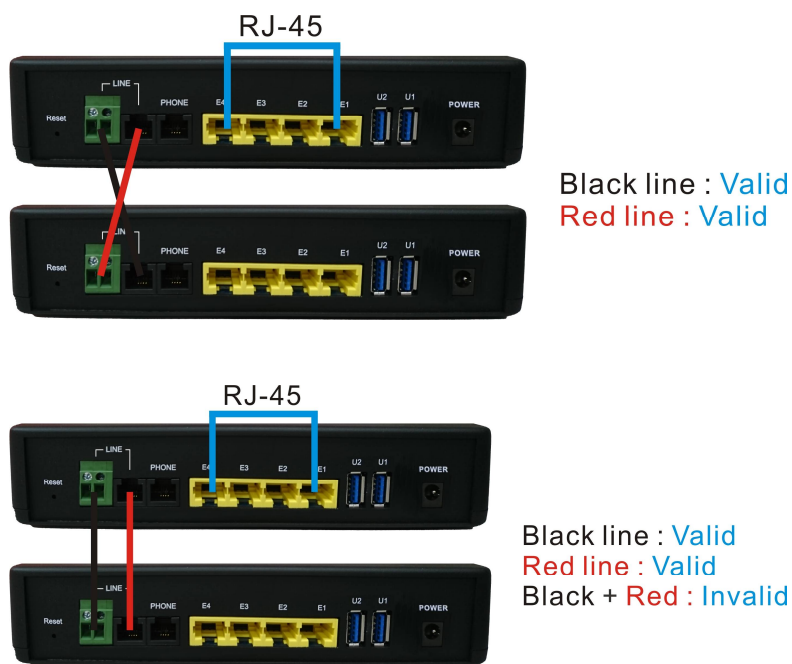


Figure 2.1 VC-600LT/VC-600RT line ports straight

- ◆ 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 a 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 you 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

connection

- VC-600RT/ VC-600LT 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.

VC-600LT/VC-600RT is a LAN extender leverages the extraordinary bandwidth promise of G.fast technology (max. 1Gbps) (Figure 2.2)

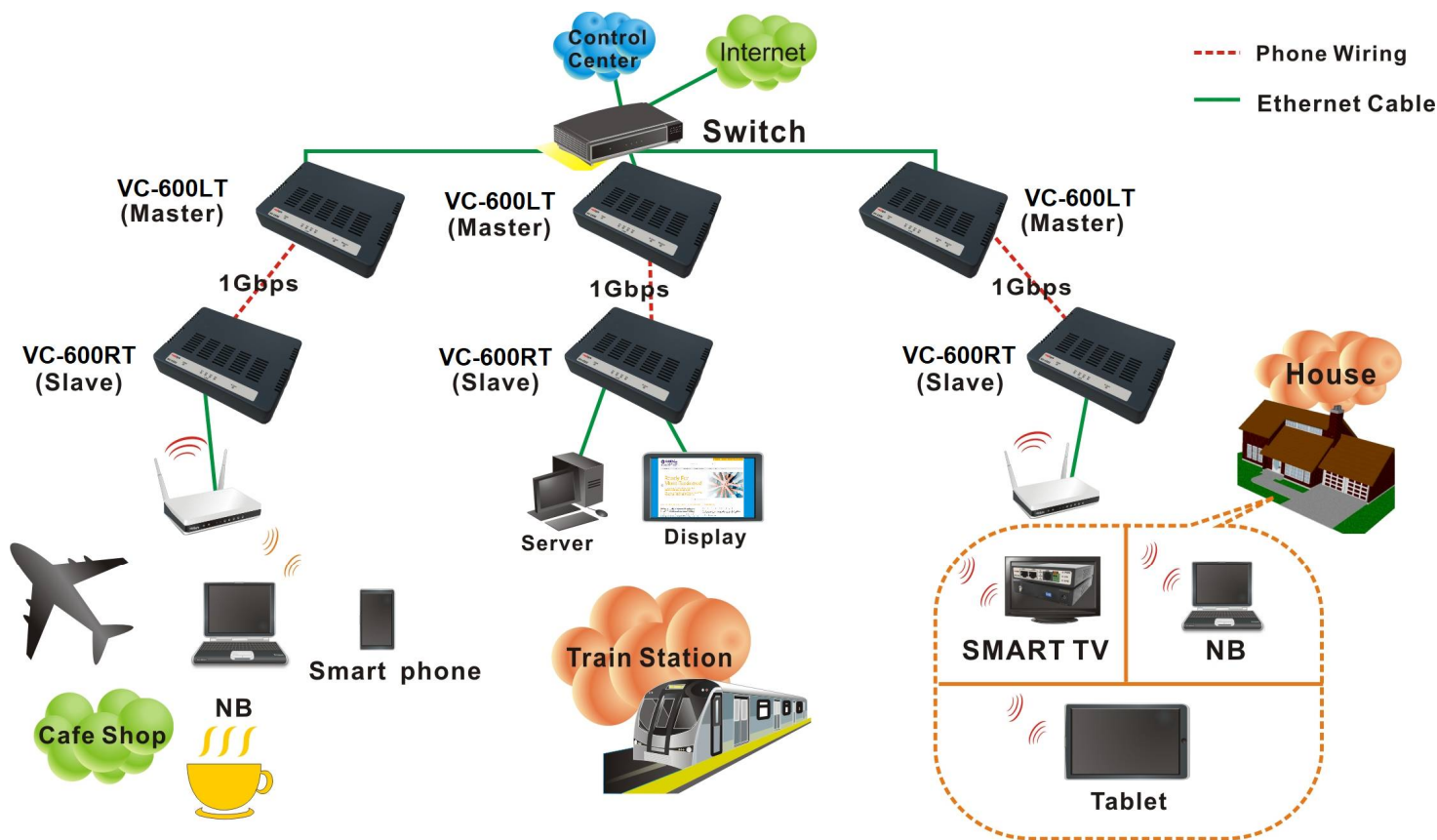


Figure 2.2 VC-600LT/VC-600RT Point to Point application

◆ **2.5.1 Connect the VC-600LT(Master) and the VC-600RT(Slave) to the Line**

The objective for LAN extender is to pass high speed data over a twisted pair cable. In the setup, connect VC-600LT(Master) to VC-600RT (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 VC-600LT(Master) and the VC-600RT(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 VC-600LT/RT. It features the front panel and rear panel.



VC-600 Physical appearance

3.1 Front Panel

The figure shows the front panel. (Figure 3.1)

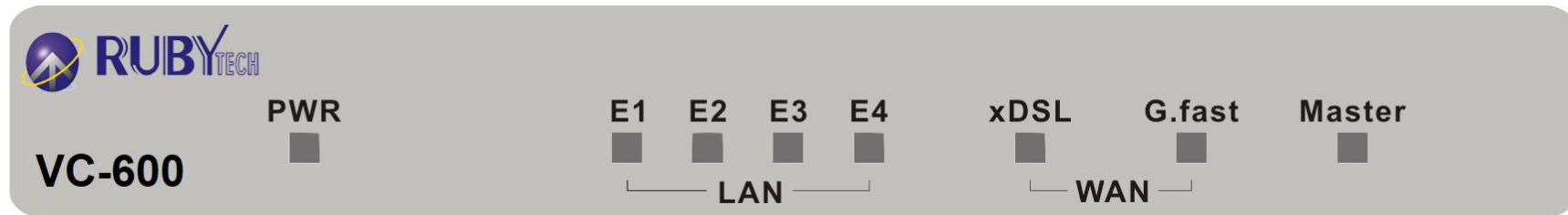


Figure 3.1 Front Panel(VC-600LT/VC-600RT)

Note :

1. Identifying of VC-600LT(Master) or VC-600RT Model(Slave) is by Master LED, when this LED turns on(steady), it indicates current firmware Mode as VC-600LT, and if LED is off, it indicates firmware Mode as VC-600RT.
2. For switching model between VC-600LT & VC-600RT, please update the modem to corresponding firmware, both model have its own firmware. For firmware updating guide, please refer to “Administration” section on manual page 29.
3. Please click “Factory reset” button on “Administration” webpage after 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.

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xDSL (xDSL LED for VC-600RT 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 VC-600LT(Master mode).
		Off	Device firmware on VC-600RT(Slave mode).

3.3 Rear Panel

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

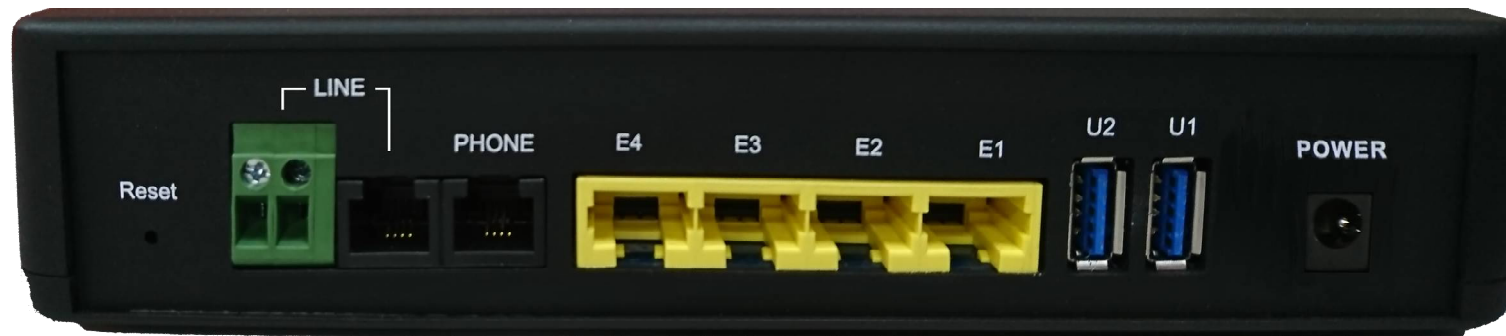


Figure 3.3 Rear Panel

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 allows users to reboot the LAN VC-600LT/ VC-600RT or load the default settings. Press and hold for 1-5 seconds: Reboot the VC-600RT 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:

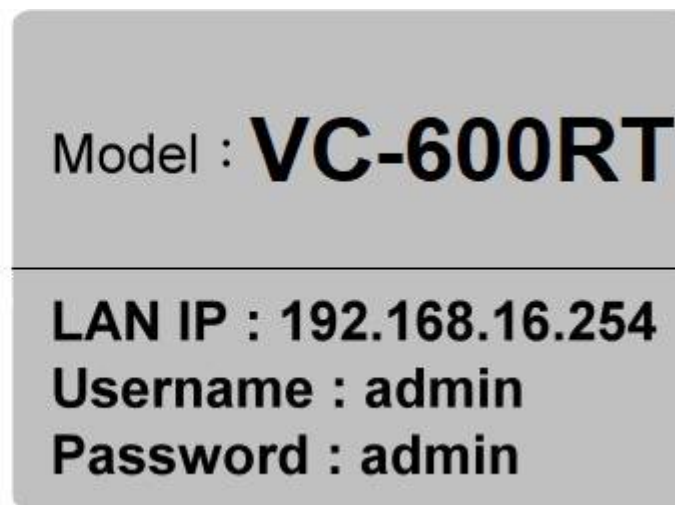
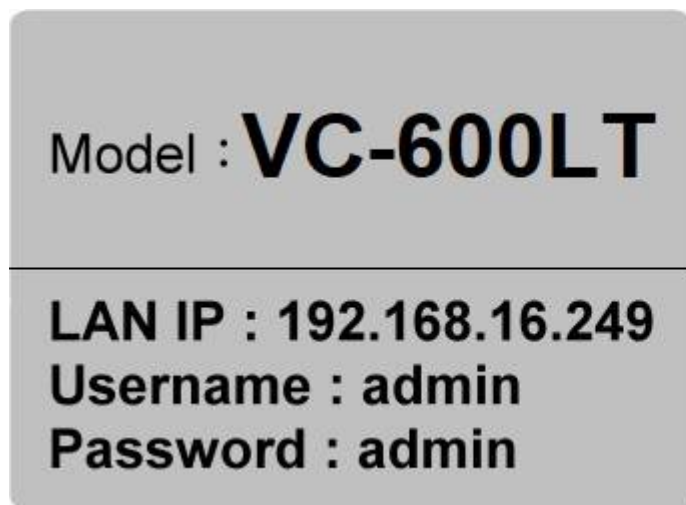
- ◆ Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

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.

- ◆ You 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.
- ◆ You should separate input wiring from output wiring.
- ◆ We recommend that you mark all equipment in 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 maunal download QR code, made of origin, default LAN IP and
web management login information.

Chapter 4. Configure the modem via Web management menu

The VC-600LT/ VC-600RT provides a built-in HTML based management interface that allows configuration of the VC-600RT via Internet Browser. Best viewed using Chrome or Firefox browsers.

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

- Web browser pop-up windows from your device. 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 your web browser and input the default IP address **192.168.16.249** (VC-600LT) / **192.168.16.254** (VC-600RT) in the Web page.

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”.



The screenshot shows a web browser window with a sign-in form. The form is titled "Sign in" and displays the URL "http://192.168.16.242". Below the URL, it states "Your connection to this site is not private". The form contains two input fields: "Username" with the value "admin" and "Password" with masked characters "*****". At the bottom right of the form, there are two buttons: a blue "Sign in" button and a white "Cancel" button.

Figure 4.1.1 Login Webpage

4.1.2 Display status

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

VC-600LT

The screenshot displays the web interface for the VC-600LT Managed G.fast Master Modem. The interface features a blue header with the RUBY logo, the device name 'VC-600LT', and the title 'Managed G.fast Master Modem'. A navigation menu on the left includes 'Basic' and 'Advanced' sections, with 'Advanced' expanded to show 'G.fast', 'LAN', 'System', and 'Routing'. The main content area is divided into three panels: 'Device Status' (teal header) showing 'Internet Status: Up' and 'Internet' details (Status: up arrow, PTM WAN, Proto: Bridged); 'System Info' (orange header) showing 'Software Version: B.4.3'; and 'DSL Line Status' (purple header) showing 'Upstream Data Rate (kbps): 665431' and 'Downstream Data Rate (kbps): 320845'. The top right corner shows a user profile 'admin' and a 'Logout' link.

Figure 4.1.2 Device Info

VC-600RT

The screenshot displays the web management interface for the VC-600RT modem. The top navigation bar includes the RUBYfast logo, the device name 'VC-600RT', the description 'Managed G.fast Slave Modem', and user information 'admin' with a 'Logout' link. A left sidebar contains a menu with 'Basic' and 'Advanced' sections, and sub-items for WAN Internet, DSL, LAN, System, Firewall, and Routing. The main content area is titled 'Device Status' and features three panels: 1) 'Internet Status : Up' with a green indicator and 'WAN IP :'. 2) 'Internet' configuration table showing 'Status' as 'Up', 'PTM WAN, Proto:' as 'Bridged', and fields for 'Internet Address', 'Default Gateway', 'Subnet Mask' (255.255.255.255), 'Primary DNS', and 'Secondary DNS'. 3) 'System Info' showing 'Software Version: B.4.3'. 4) 'DSL Line Status' showing 'Upstream Data Rate (kbps)' as 657229 and 'Downstream Data Rate (kbps)' as 320845.

Internet	
Status ↑	PTM WAN, Proto: Bridged
Internet Address	
Default Gateway	
Subnet Mask	255.255.255.255
Primary DNS	
Secondary DNS	

DSL Line Status	
Upstream Data Rate (kbps)	657229
Downstream Data Rate (kbps)	320845

Figure 4.1.2 Device Info

4.2 Select the Menu Basic

There is an easy Setup for end users at the setup of VC-600LT with **G.fast, LAN, System, Routing** and VC-600RT with **WAN Internet, DSL, LAN, System, Firewall, Routing** for more detail configurations.

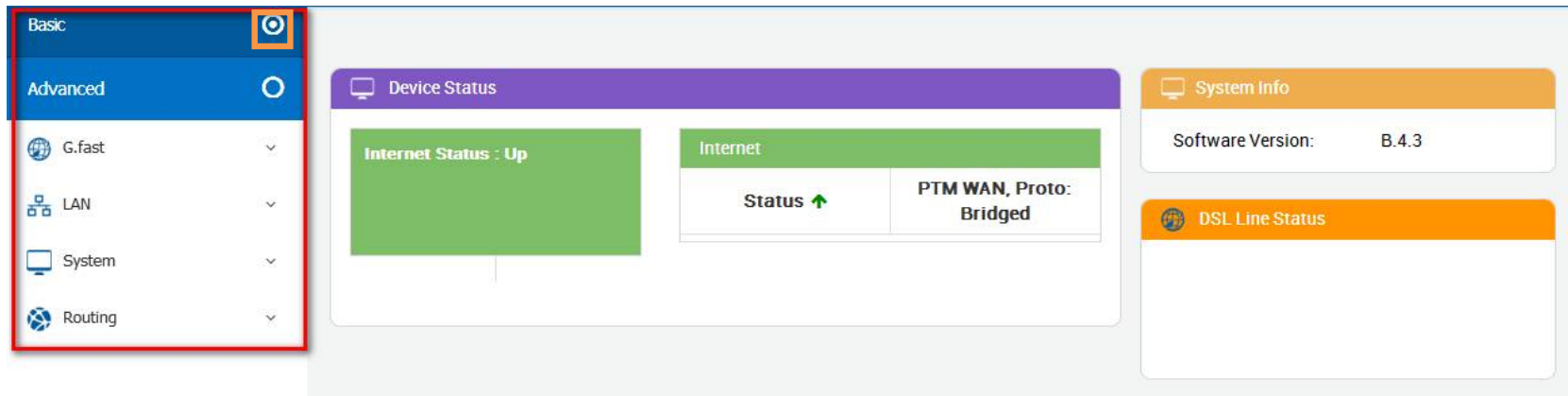


Figure 4.2 Select the Menu Basic

4.2.1 WAN Internet

This page allows you to view and configure various Internet connections

The screenshot displays the 'WAN Internet' configuration page. On the left is a sidebar with a menu containing 'Basic', 'Advanced', 'WAN Internet', 'DSL', 'LAN', 'System', 'Firewall', and 'Routing'. The main area shows the breadcrumb 'Basic > WAN Internet' and a title 'Internet Connections' with a subtitle 'This page allows you to view and configure various Internet connections.' Below this are tabs for 'IPv4' and 'IPv6'. A green header 'Internet Status' is followed by a table with the following data:

Description	IP Address	Interface	Status	Default Gateway	Actions
PTM WAN, Proto: Bridged		ptm0_wan9	Down	✓	Connect, Edit, Delete

An 'Add' button is located at the bottom right of the table area.

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 modes, various annex modes and upstream and downstream attributes.

The screenshot shows a web interface for configuring DSL settings. On the left is a navigation menu with 'Basic' and 'Advanced' tabs, and a list of settings including WAN Internet, DSL, LAN, System, Firewall, and Routing. The main content area is titled 'Mode Setting' and contains a 'Settings' section. The 'DSL' toggle is turned ON. Under 'DSL PHY - TC', the dropdown is set to 'Auto'. 'VDSL DS Retransmission' and 'VDSL DS Rate Adaptation' are both checked with green checkmarks. 'US Retransmission' and 'VDSL US Rate Adaptation' are also checked with green checkmarks. Under 'Vectoring', the dropdown is set to 'Auto'. A 'Modes' field contains 'VDSL2' with a green checkmark. An 'Apply' button is located at the bottom right.

Figure 4.2.2.1 Mode Setting

4.2.2.2 Status

This page provides the various status and statistics information

The screenshot displays the 'Status and Statistics' page for the DSL section. The left sidebar contains navigation options: Basic, Advanced, WAN Internet, DSL (selected), Mode Setting, Status (selected), LAN, System, Firewall, and Routing. The main content area shows a breadcrumb trail 'Basic > DSL > Status' and a title 'Status and Statistics' with a subtitle 'Provides the various status and statistics information'. Below this, a 'DSL' tab is active, showing two panels: 'Line Information' and 'Channel Information'.

Line Information	Channel Information
Modem Status Up	Mode Selected G.993.2_Annex_K_PTM
Power Management Mode L0	Upstream Data Rate (Kbps) 685944
	Downstream Data Rate (Kbps) 817677

Figure 4.2.2.2 Status

4.2.3 LAN

4.2.3.1 Configuration

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

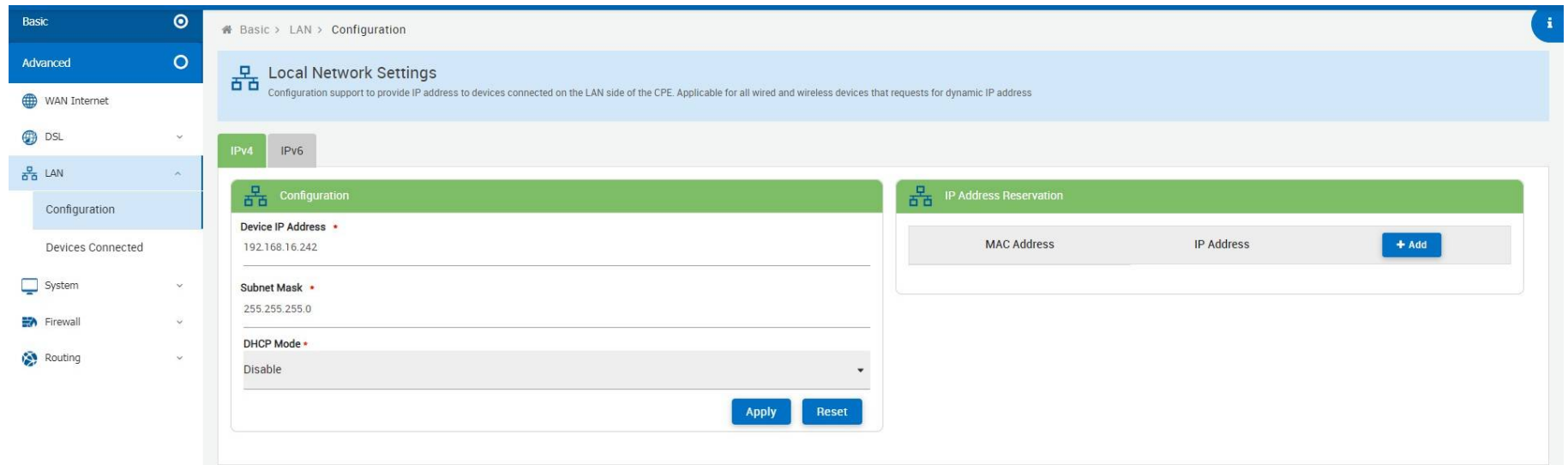


Figure 4.2.3.1 Configuration

4.2.3.2 Devices Connected

List of Clients Connected on the LAN Side of the device

The screenshot displays the 'Devices Connected' page within a network management interface. The left sidebar contains navigation options: Basic, Advanced, WAN Internet, DSL, LAN (selected), Configuration, Devices Connected (selected), System, Firewall, and Routing. The main content area shows the breadcrumb 'Basic > LAN > Devices Connected' and a title 'Devices Connected' with the subtitle 'List of Clients Connected on the LAN Side of the CPE'. Below this is a table with the following data:

MAC Address	Host Name	IP Address
10:c3:7b:46:06:8f	Unknown	192.168.16.3
00:1f:d0:a0:5c:3c	Unknown	192.168.16.17
00:05:6e:02:07:02	Unknown	fe80::1
30:e1:71:6a:6d:b3	Unknown	fc00:96d

A 'Refresh' button is located at the bottom right of the table area.

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.

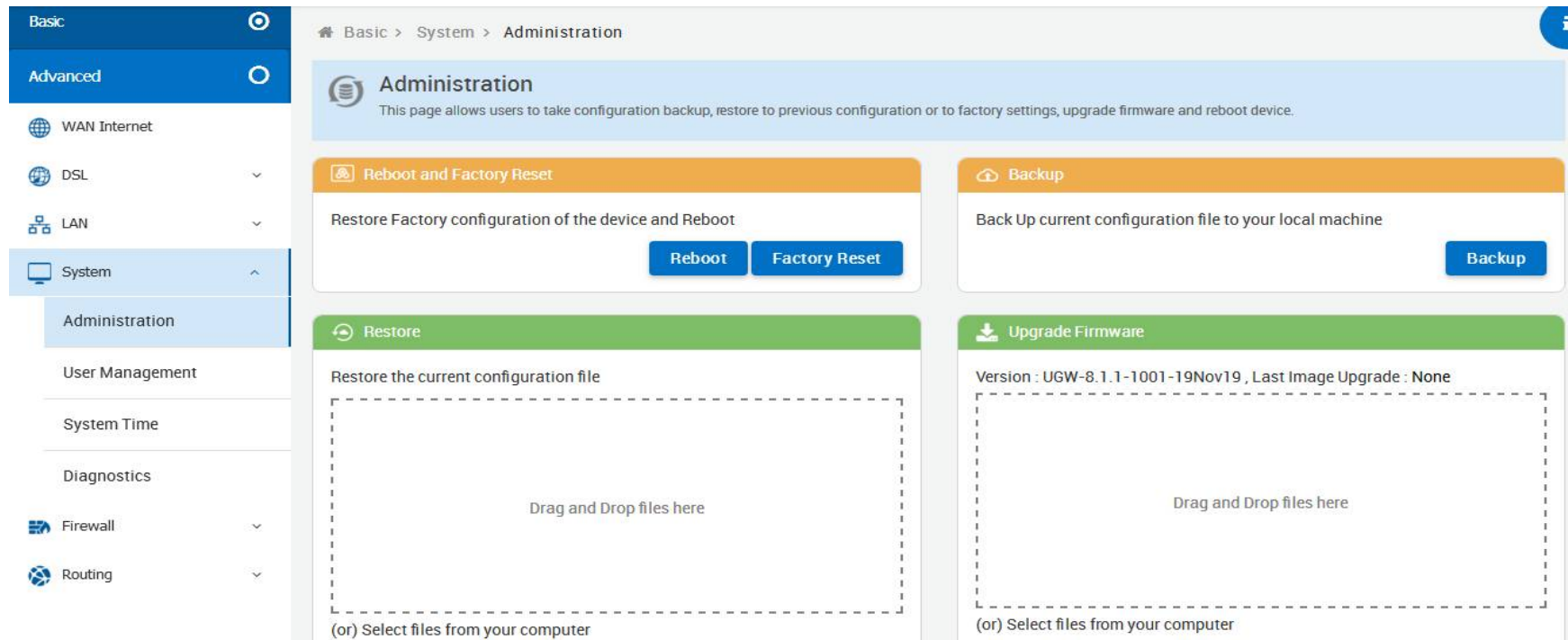


Figure 4.2.4.1 Administration

4.2.4.2 User Management

Configure new users with add delete and modify options

The screenshot displays the 'User Management' configuration page. The left sidebar shows the navigation menu with 'System' expanded to 'User Management'. The main content area features a breadcrumb trail 'Basic > System > User Management' and a title 'User Management' with the subtitle 'Configure new users with add delete and modify options'. Below this is a table with the following data:

Enable	Username	Role	Web	System, SSH & Telnet	Actions
✓	root	super_admin	✗	✓	[Edit] [Delete]
✓	admin	super_admin	✓	✓	[Edit] [Delete]

An 'Add' button is located at the bottom right of the table area.

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.

The screenshot shows a web interface for configuring system time. On the left is a navigation menu with categories: Basic, Advanced, WAN Internet, DSL, LAN, System, Administration, User Management, System Time, Diagnostics, Firewall, and Routing. The 'System Time' option is selected. The main content area has a breadcrumb trail 'Basic > System > System Time' and a title 'System Time' with a subtitle 'Configuration to enable the device to synchronize the system time with the time servers.' Below this is a 'Settings' section with a green header. The 'Enable' checkbox is checked with a green checkmark. There are five server entries: Server 1 (0.asia.pool.ntp.org), Server 2 (133.243.238.243), Server 3 (time.windows.com), Server 4 (time-a.nist.gov), and Server 5 (time-b.nist.gov). A 'Local Timezone' dropdown is set to 'Asia/Taipei'. On the right, the 'Status' is 'Synchronized' and the 'Current Local Time' is '2019-12-30T13:30:30Z'. An 'Apply' button is at the bottom right.

Server	Address
Server 1	0.asia.pool.ntp.org
Server 2	133.243.238.243
Server 3	time.windows.com
Server 4	time-a.nist.gov
Server 5	time-b.nist.gov

Local Timezone: Asia/Taipei

Current Local Time: 2019-12-30T13:30:30Z

Figure 4.2.4.3 System Time

4.2.4.4 Diagnostics

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

Basic > System > Diagnostics

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

Diagnostics

Restart

LAN

LAN Connectivity

- ✘ ETHERNET eth0_1: LINK DOWN
- ✘ ETHERNET eth0_2: LINK DOWN
- ✘ ETHERNET eth0_3: LINK DOWN
- ✘ ETHERNET eth0_4: LINK DOWN

Ping Test

Enter IP/Host Address Here

Ping Test

Traceroute Test

Enter URL Here

Trace Route

Figure 4.2.4.4 Diagnostics

4.2.5 Firewall

4.2.5.1 Packet Filter

This page allows the user to view and configure rules. Please make sure to enable Firewall and Packet filter feature. Note: New rules configured will not be applicable to existing running sessions !! Warning !!: Use this feature judiciously. Incorrect configuration may render device inaccessible.

Basic > Firewall > Packet Filter

Packet Filter

This page allows the user to view and configure rules. Please make sure to enable Firewall and Packet filter feature. Note: New rules configured will not be applicable to existing running sessions !! Warning !!: Use this feature judiciously. Incorrect configuration may render device inaccessible.

Packet Filter Feature

Save Reset

Rules

Rule Order	Protocol	Source IP Address	Source Port	Source Port Range	Destination IP Address	Destination Port	Destination Port Range	Source Interface	Destination Interface	Source MAC	Target	Actions

Add

Figure 4.2.5.1 Packet Filter

4.2.5.2 URL Filter

This page allows the user to configure URL Filter feature.

The screenshot shows a web interface for configuring the URL Filter feature. On the left is a navigation menu with categories: Basic, Advanced, WAN Internet, DSL, LAN, System, Firewall (expanded), Packet Filter, URL Filter (selected), and Routing. The main content area has a breadcrumb trail: Basic > Firewall > URL Filter. Below the breadcrumb is a blue header with the title 'URL Filter' and a sub-header 'This page allows the user to configure URL Filter feature.' The main configuration area contains a toggle for 'URLFilter Enable' which is currently unchecked. To the right of this toggle are 'Save' and 'Reset' buttons. Below this is a green header for 'Rules'. Underneath is a table with two columns: 'URL' and 'Actions'. At the bottom right of the main area is an 'Add' button.

Figure 4.2.5.2 URL Filter

4.2.6 Routing

4.2.6.1 Static Routing

Web Page to Add/Delete Static Route in the System

The screenshot displays the 'Static Routing Configurations' web page. The left sidebar contains a navigation menu with 'Basic', 'Advanced', 'WAN Internet', 'DSL', 'LAN', 'System', 'Firewall', 'Routing', and 'Static Routing'. The main content area shows the breadcrumb 'Basic > Routing > Static Routing' and the title 'Static Routing Configurations' with the subtitle 'Web Page to Add/Delete Static Route in the System'. There are two tables for configuration:

Destination IP Address	Destination Subnetmask	Gateway IP Address	Actions
------------------------	------------------------	--------------------	---------

[Add](#)

Enable	Destination IP Prefix	Next Hop	Actions
<input checked="" type="checkbox"/>			Delete

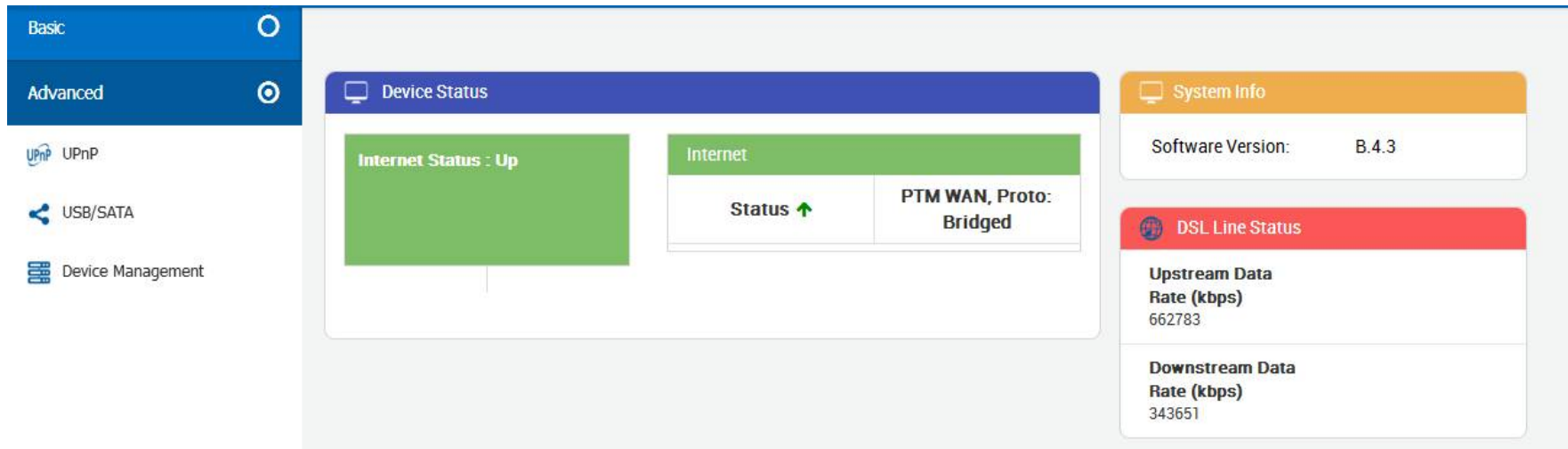
[Add](#)

Figure 4.2.6.1 Static Routing

4.3 Select the Menu Advanced

Select “Advanced”. The menu below will be used frequently. VC-600LT includes the sub-menus of **UPnP, USB/SATA, Device Management**. VC-600RT includes the sub-menus of **NAT, Multicast, Dynamic DNS, UPnP, QoS, Tunneling, USB/SATA, Device Management**. A screen is displayed as shown in [Figure 4.3](#)

VC-600LT



VC-600RT

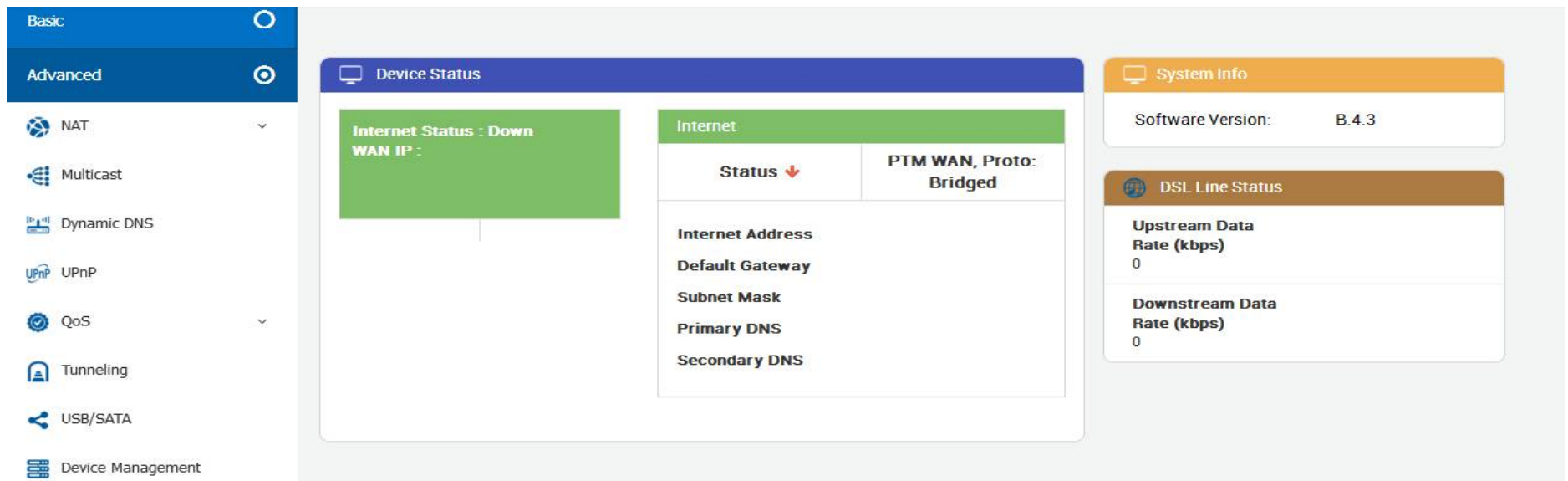


Figure 4.3 Advanced

4.3.1 NAT

4.3.1.1 DMZ

This page allows the user to view and configure the virtual DMZ Host. Such a configuration opens up the specified host to unrestricted two-way Internet access.

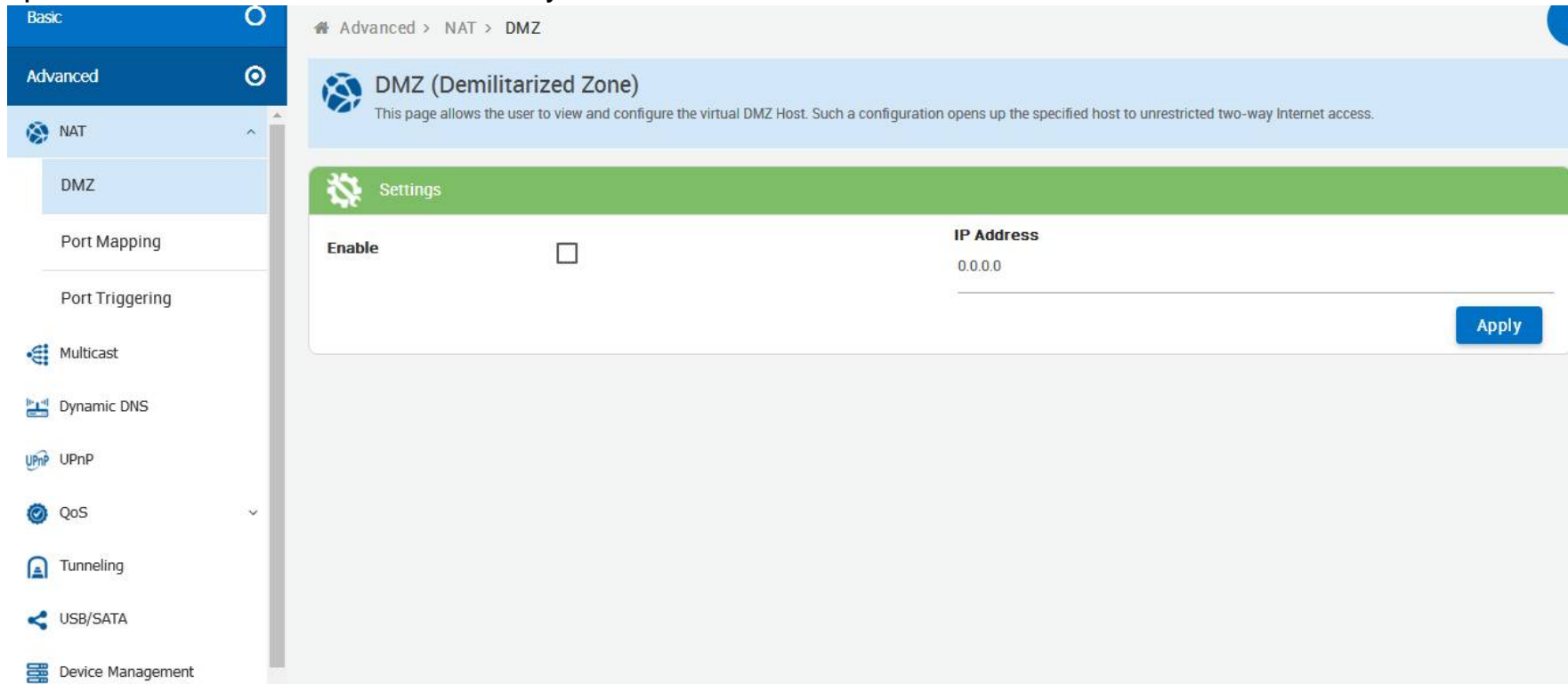


Figure 4.3.1.1 DMZ

4.3.1.2 Port Mapping

Configure a rule to allow remote computers (for example, computers on the Internet) to connect to a specific computer or service within a LAN.

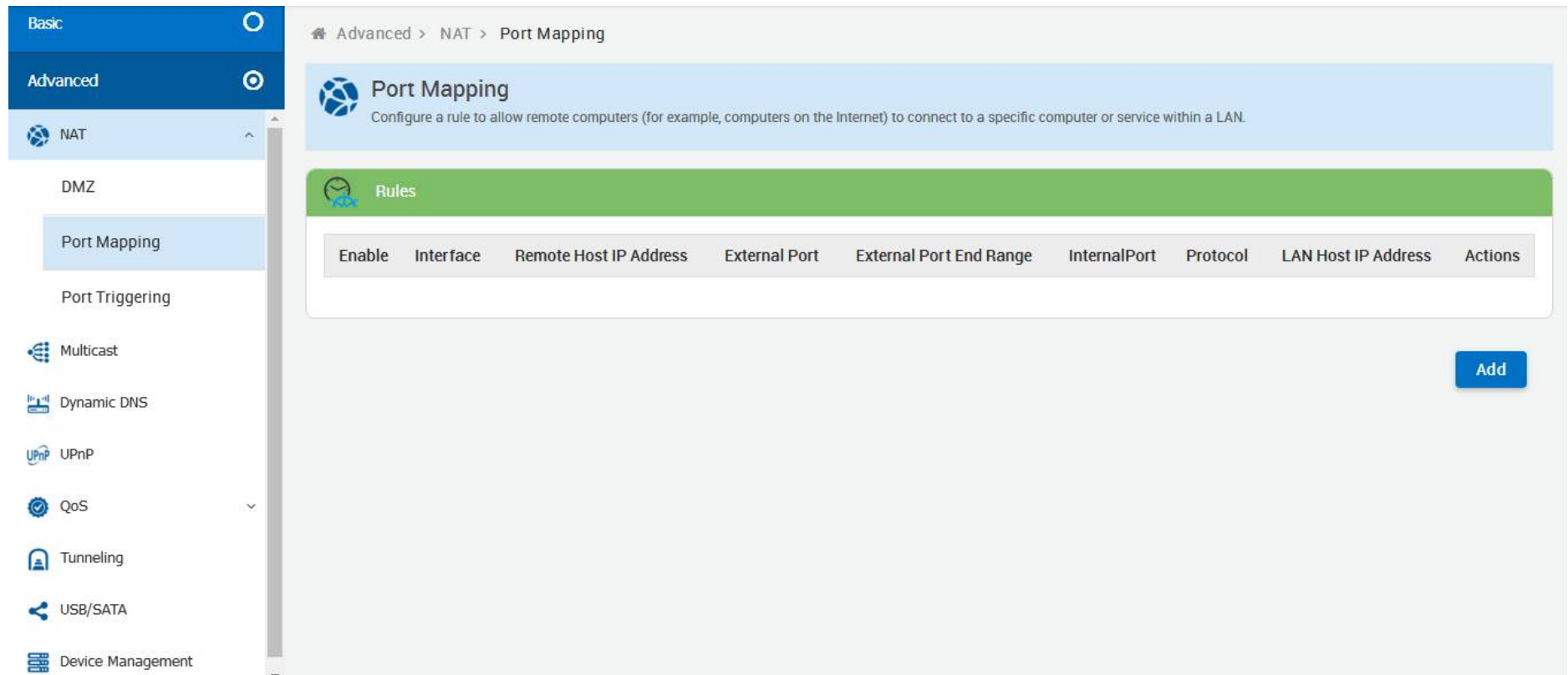


Figure 4.3.1.2 Port mapping

4.3.1.3 Port Triggering

Port triggering opens an incoming port when the user's computer is using a specified outgoing port(trigger) for specific traffic.

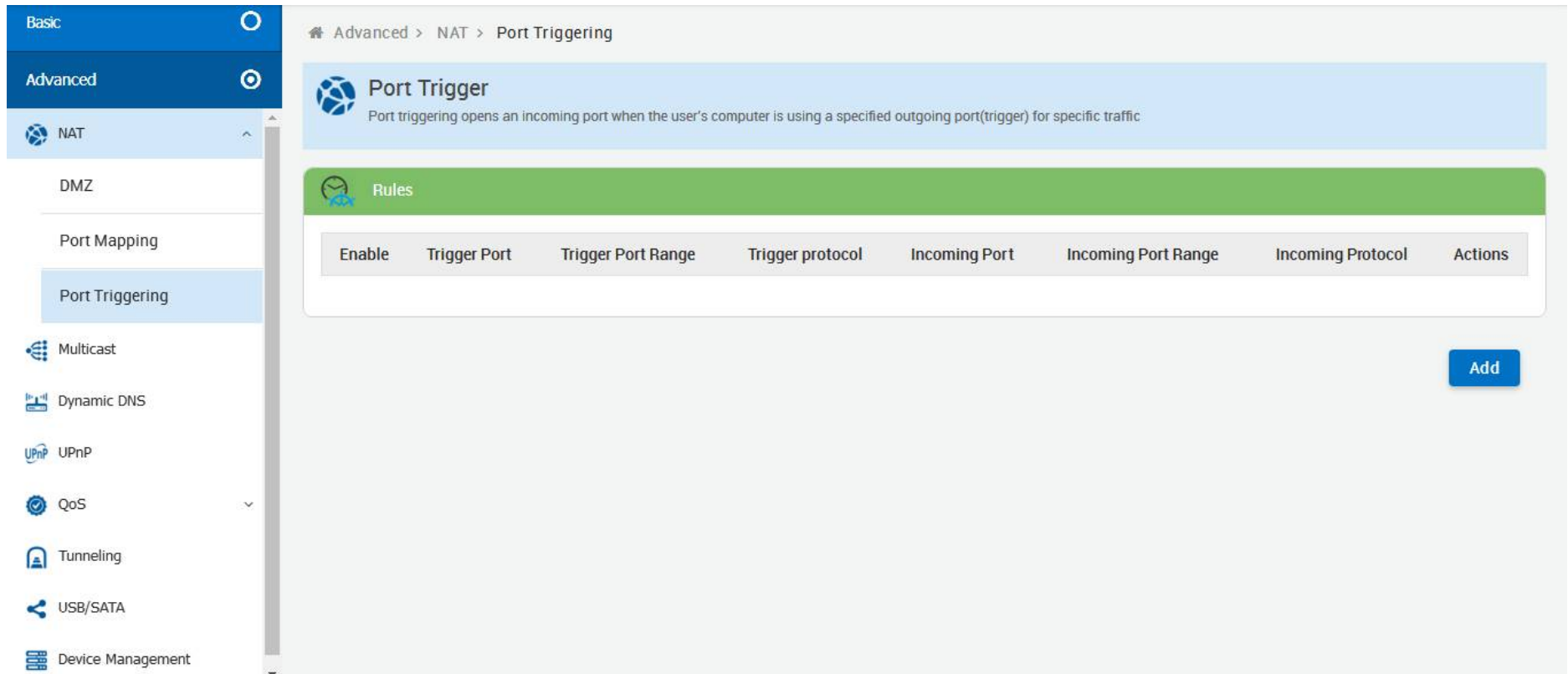


Figure 4.3.1.3 Port Triggering

4.3.2 Multicast

This page allows to configure the Multicast services.

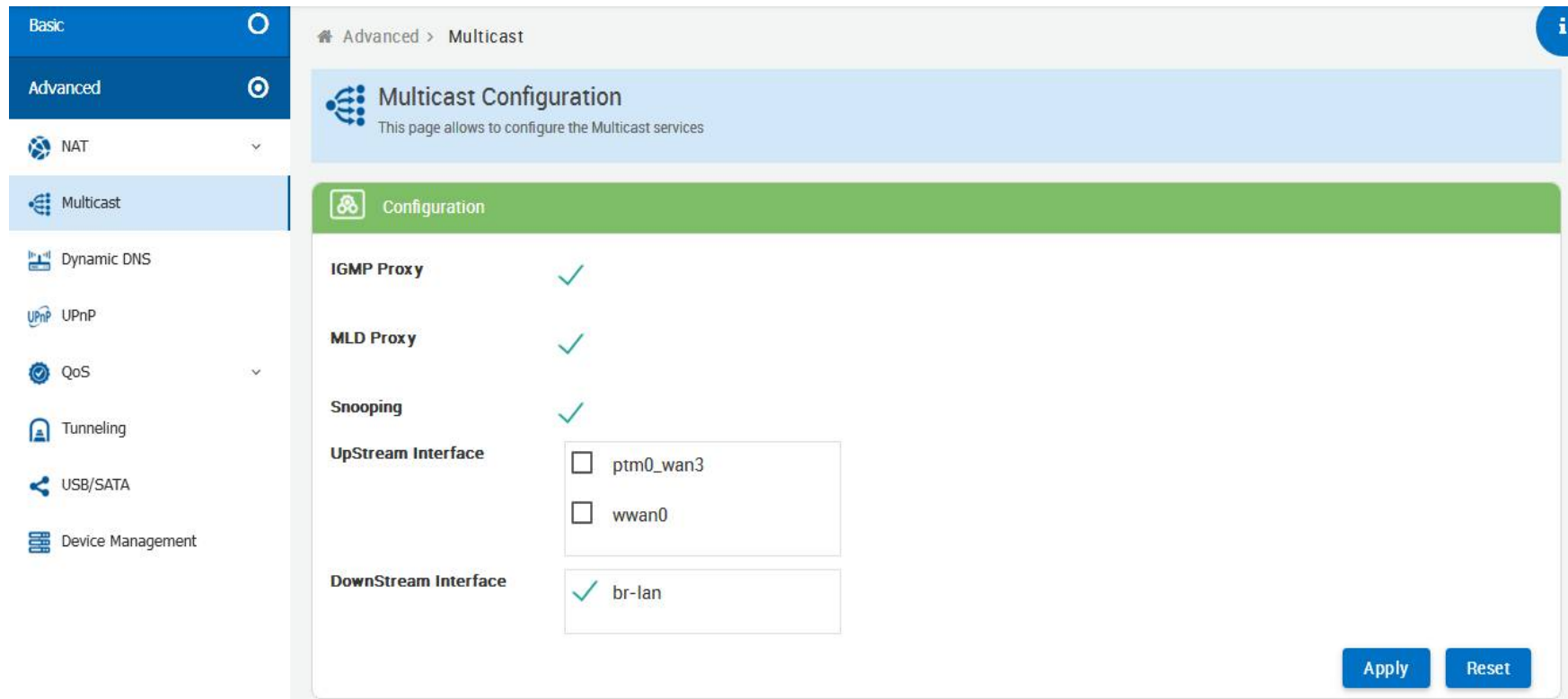


Figure 4.3.2 Multicast

4.3.3 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.

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.

Client Settings

Enable	Interface	Server	Actions

[Add](#)

Supported Servers

Enable	Name	ServiceName	ServerAddress	Actions
✓	dhs	dhs	dyn.dhs.org	
✓	dyndns	dyndns	dyndns.org	
✓	dyns	dyns	dyns.cx	

Figure 4.3.3 Dynamic DNS

4.3.4 UPnP

This page provides UPnP devices & service.

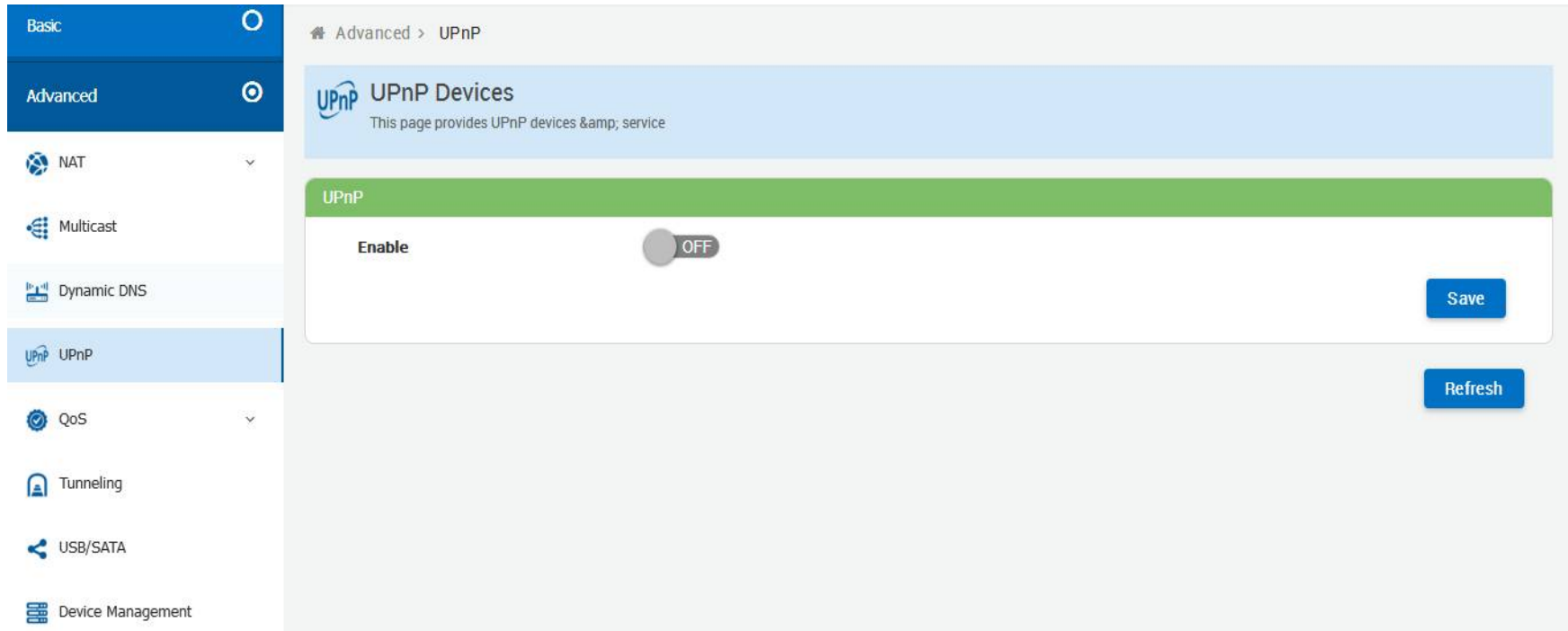


Figure 4.3.4 UPnP

4.3.5 QoS

4.3.5.1 QoS

Quality of Service (QoS) settings enables you 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.

The screenshot displays the QoS configuration page within a modem's web interface. On the left, a navigation menu lists various settings: Basic, Advanced, NAT, Multicast, Dynamic DNS, UPnP, QoS (selected), Queue Stats, Tunneling, USB/SATA, and Device Management. The main content area shows the QoS settings for the selected interface. At the top, a breadcrumb trail reads 'Advanced > QoS > QoS'. Below this, a blue header box contains the title 'QoS' and a descriptive paragraph: 'Quality of Service (QoS) settings enables you 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'. A green bar below the header is labeled 'QoS'. The central part of the page features a diagram of a router with two dropdown menus: 'LAN' and 'DSL WAN', indicating the selected interfaces for QoS configuration.

Queue + Add Q + Add CL

- ✓ ptmwan_def_queue More ▾
- ✓ ptmwan_mgmt_q More ▾

QoS Configuration

Traffic Class	Default DSCP Mark	Eth Priority Mark	Enable	Actions
0	-1	-1	✓	

Figure 4.3.5.1 QoS

4.3.5.2 Queue Stats

Shows statistics of configured queues.

The screenshot displays the 'Queue Stats' page in a network management interface. The left sidebar shows the navigation menu with 'QoS' selected and 'Queue Stats' highlighted. The main content area shows the 'Queue Statistics' page with a table of data.

Name	Interface	Input Packets	Input Bytes	Output Packets	Output Bytes	Dropped Packets	Dropped Bytes	Queue Occupancy Packets	Queue Occupancy Percentage
ptmwan_def_queue_stats	pppoe-wan0	24	4	1	0	16756	5	0	0
ptmwan_mgmt_q_stats	pppoe-wan0	24	4	1	0	16756	5	0	0

Figure 4.3.5.2 Queue Stats

4.3.6 Tunneling

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

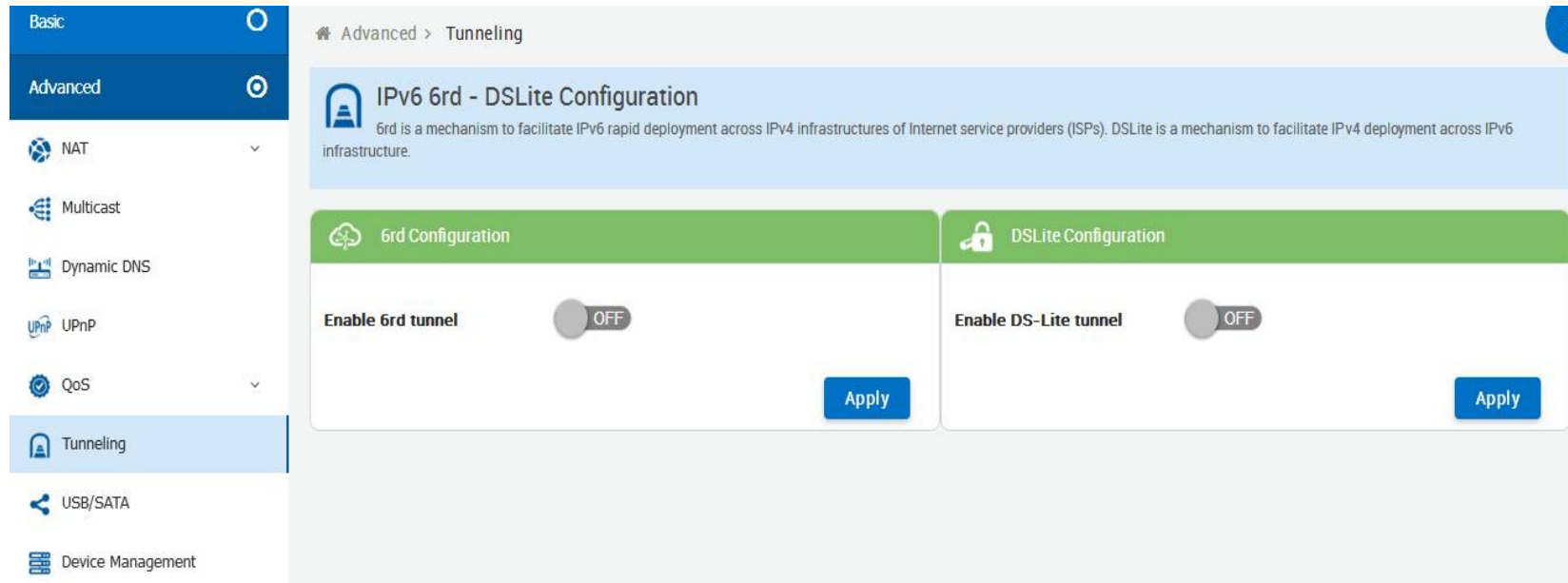


Figure 4.3.6 Tunneling

4.3.7 USB/SATA

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

Basic

Advanced

NAT

Multicast

Dynamic DNS

UPnP

QoS

Tunneling

USB/SATA

Device Management

Advanced > USB/SATA

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

Connected USB Devices

Type	USB Version	Manufacturer	Serial Number	Product Name
------	-------------	--------------	---------------	--------------

Refresh

Mounted Devices

Mount Path	File System	Total Size	Used Space	Free Space	Percentage Usage	Actions
------------	-------------	------------	------------	------------	------------------	---------

Refresh

Figure 4.3.7 USB/SATA

4.3.8 Device Management

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

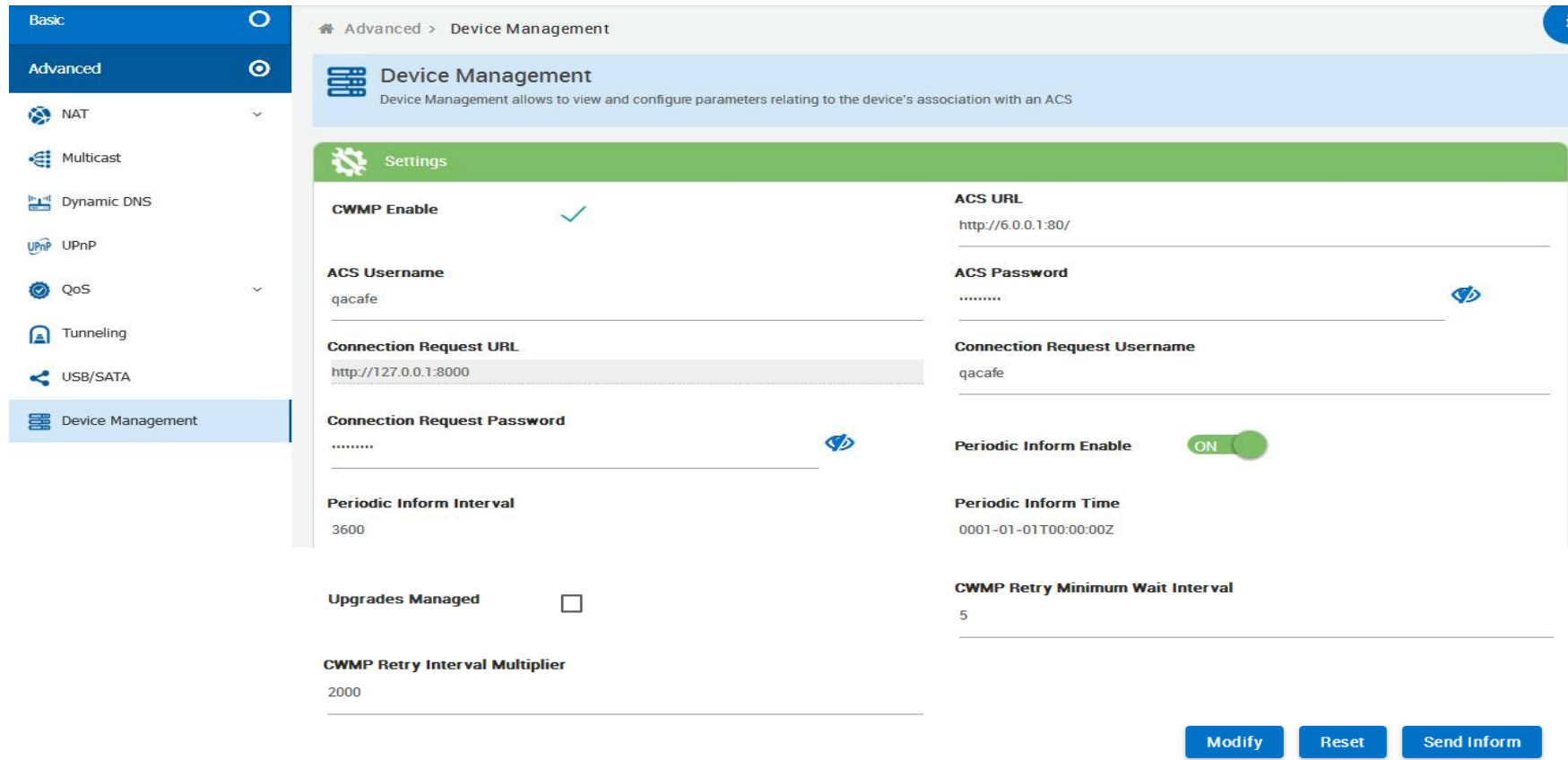


Figure 4.3.8 Device Management

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-

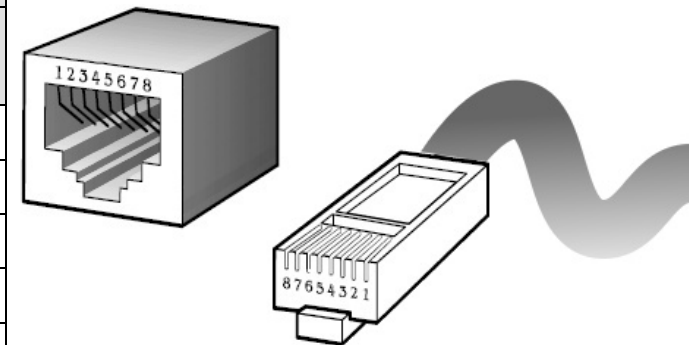


Figure A-1 Standard RJ-45 repectacle/connector



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

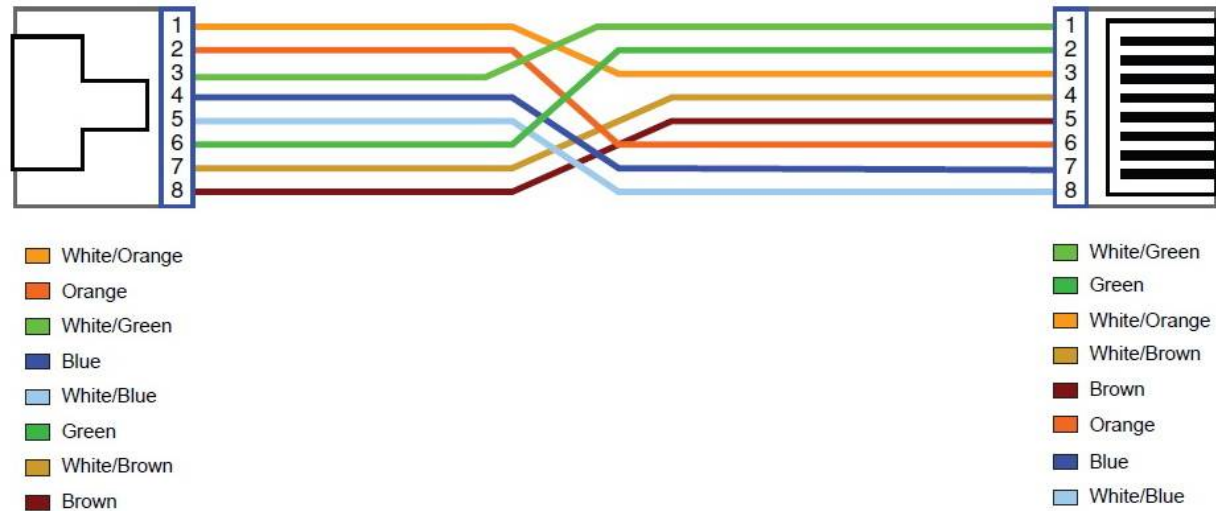


Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

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)

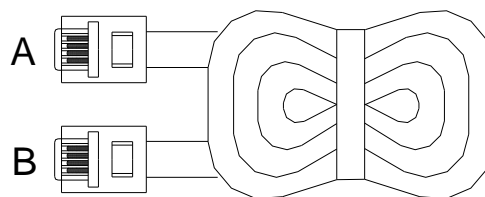


Figure A-4 Telephone cable

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 (VC-600RT only)
- ◆ Compliant with ITU-T G998.4 G.INP standard (VC-600RT only)
- ◆ Compliant with ITU-T G.9700/G.9701 G.fast standard
- ◆ Backward compatible VDSL2/V35b (VC-600RT only)
- ◆ Support 106a/b & 210a/b dual G.fast band profile
- ◆ Support super Vectoring for V35b / G.fast(VC-600RT only)
- ◆ Support Vectoring for VDSL2(VC-600RT only)
- ◆ Support High Bandwidth up to 1Gbps
- ◆ Support USB 3.0 for connecting USB Dongle
- ◆ Support static routing for IPv4 and IPv6 forwarding(VC-600RT only)
- ◆ Mac Address based filtering
- ◆ 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(VC-600LT bridge mode only)
- ◆ Support Dual Firmware Image Backup
- ◆ Support NTP Time Server.

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- ◆ 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 upgradeable 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 (VC-600RT 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 (VC-600RT only) 1 x Master(CO) LED(VC-600LT only)
Switch method:	Store and forward
Flow control:	Full duplex: IEEE 802.3x Half duplex: Back pressure
Typical Power Consumption:	VC-600LT: 7.92W (Full load, without USB port) 17.92W(Full load, with 2 x USB port)

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	VC-600RT: 8.16W(Full load, without USB port) 18.16W(Full load, with 2 x USB port)
Power Supply:	Input Voltage: 12 VDC (Commerical-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 you 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 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:	VC-600LT/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:	<ol style="list-style-type: none">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 VC-600RT first, when powered on.2.6 Replace the defective modem or cable if necessary.2.7 Checking Phone wire length if exceed 600m(1968ft)

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

4. Question:	I just bought a pair of VC-600RT/ VC-600RT 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 me internet when hooked up. All lights come on but no Link light. Is this the complete wrong application for this unit?
Answer:	Re: Please note VC-600RT is a Slave (CPE side), it must be connected to the VC-600LT Master(CO side) or IP-DSLAM to get link.

5. Question:	We need to set up a default gateway on a VC-600LT/ VC-600RT pair which are in Bridge mode, as they want to manage the units from a different network.
Answer:	<p>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), you must set up a gateway to connect different network segment.</p> <p>Regarding how to configure a default gateway at switch(bridged) mode for crossing various network segments .</p> <p>Configuration gateway example from Static Routing:</p> <p>Destination LAN IP: 0.0.0.0</p> <p>Subnet Mask: 0.0.0.0</p> <p>Gateway: 192.168.16.1</p> <p>Note: Static Routing functionality is used to define the connected Gateway between the LAN and WAN.</p>

6. Question:	What can I do if I forgot my password.
Answer:	<p>If you forgot your password, you must reset your modem. Unfortunately this process will change all your 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. VC-600LT default ip is 192.168.16.249. VC-600RT default ip is 192.168.16.254.When logging in, the default username and password both are "admin".</p>

7. Question: What is the maximum Ethernet frame MTU for these modems?

Answer: VC-600LT / VC-600RT 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, you 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 you still cannot isolate the problem, then the internal power supply may be defective. In this case, please contact your 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 you 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 VC-600RT. 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 you 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 support 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 new 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 you have completed all the preceding diagnoses, then contact your 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 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 void the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you 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, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

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

This equipment may not be used on 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 since 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 crossed-out wheeled bin symbol. Do not dispose of WEEE as 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

Warranty Void
If Removed

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.**