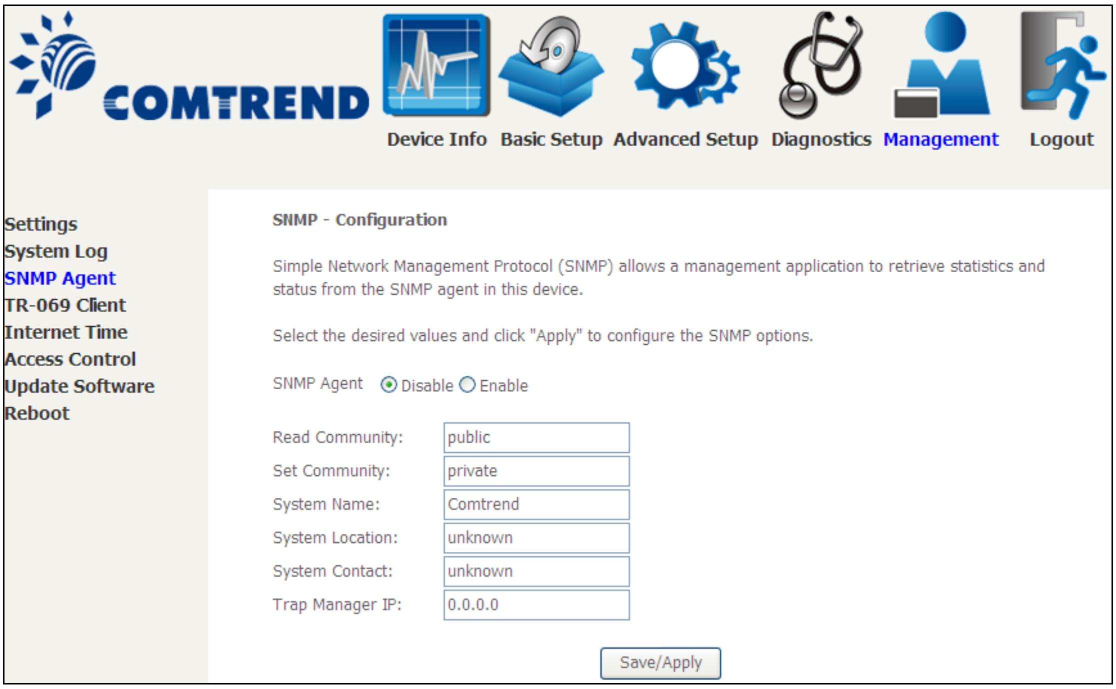
8.3 SNMP Agent

Simple Network Management Protocol (SNMP) allows a management application to retrieve statistics and status from the SNMP agent in this device. Select the **Enable** radio button, configure options, and click **Save/Apply** to activate SNMP.



SNMP - Configuration

Simple Network Management Protocol (SNMP) allows a management application to retrieve statistics and status from the SNMP agent in this device.

Select the desired values and click "Apply" to configure the SNMP options.

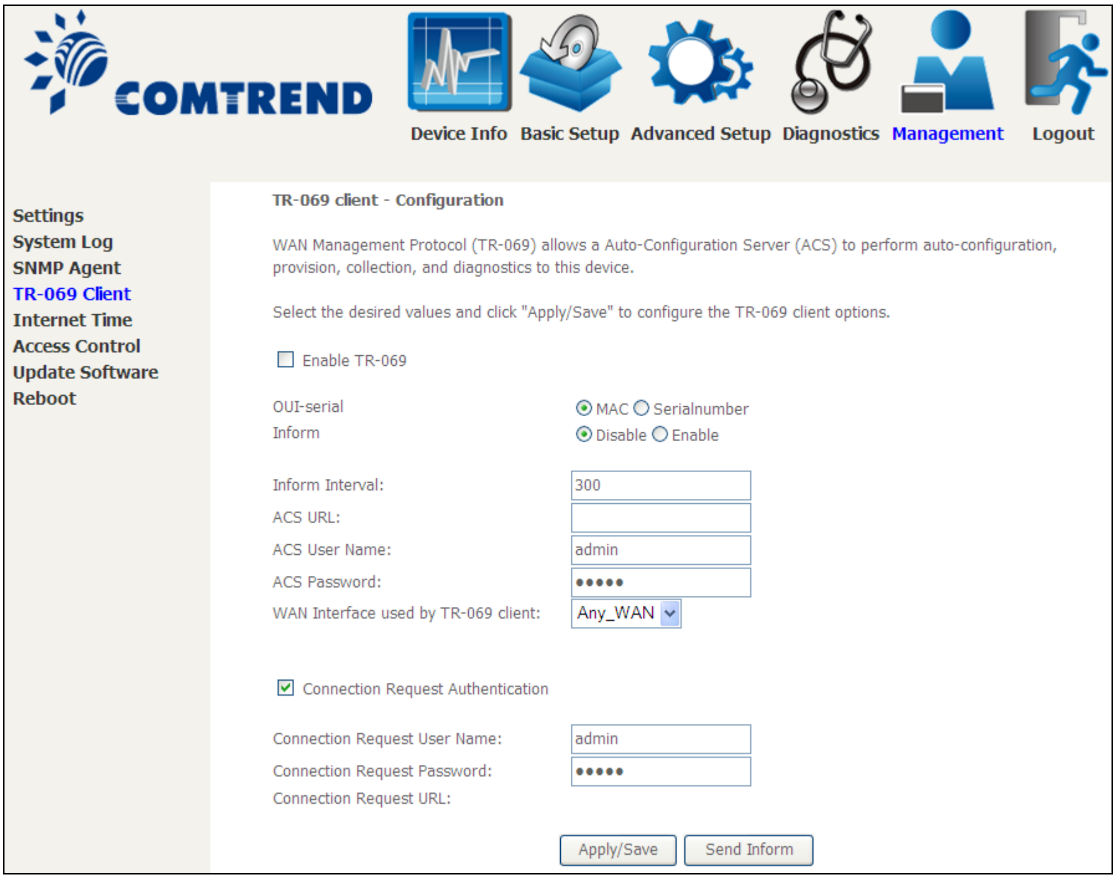
SNMP Agent ● Disable ○ Enable

Read Community:	public
Set Community:	private
System Name:	Comtrend
System Location:	unknown
System Contact:	unknown
Trap Manager IP:	0.0.0.0

Save/Apply

8.4 TR-069 Client

WAN Management Protocol (TR-069) allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device. Select desired values and click **Apply/Save** to configure TR-069 client options.



TR-069 client - Configuration

WAN Management Protocol (TR-069) allows a Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

Select the desired values and click "Apply/Save" to configure the TR-069 client options.

□ Enable TR-069

OUI-serial	● MAC ○ Serialnumber
Inform	● Disable ○ Enable
Inform Interval:	300
ACS URL:	
ACS User Name:	admin
ACS Password:	•••••
WAN Interface used by TR-069 client:	Any_WAN

☑ Connection Request Authentication

Connection Request User Name:	admin
Connection Request Password:	•••••
Connection Request URL:	

The table below is provided for ease of reference.

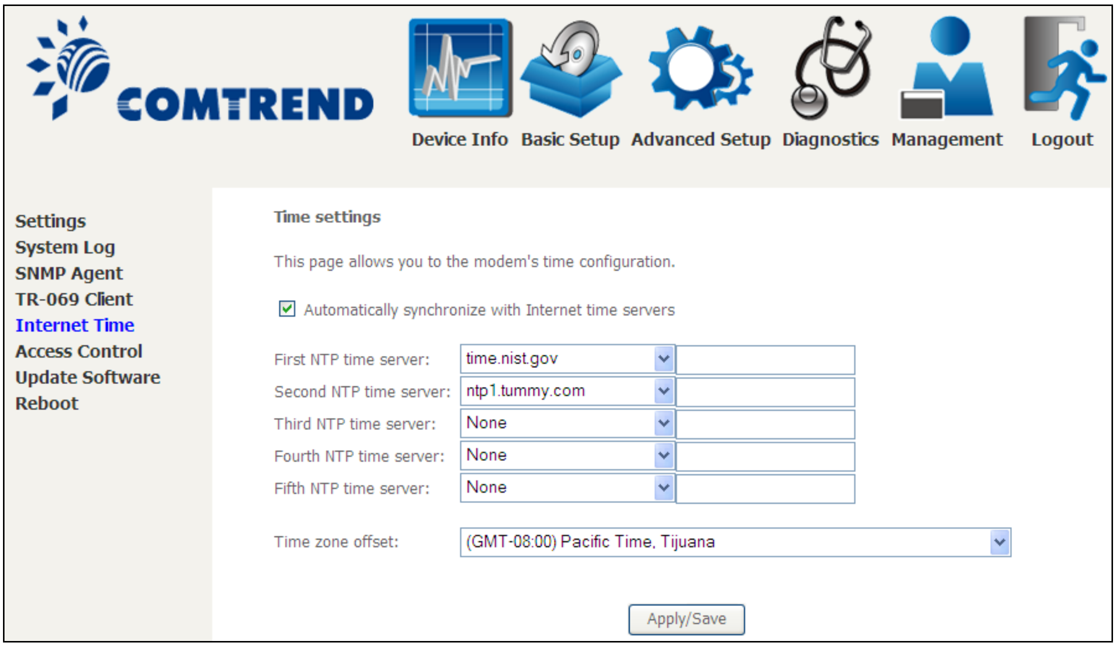
Option	Description
Enable TR-069	Tick the checkbox ☑ to enable.
OUI-serial	The serial number used to identify the CPE when making a connection to the ACS using the CPE WAN Management Protocol. Select MAC to use the router's MAC address as serial number to authenticate with ACS or select serial number to use router's serial number.
Inform	Disable/Enable TR-069 client on the CPE.
Inform Interval	The duration in seconds of the interval for which the CPE MUST attempt to connect with the ACS and call the Inform method.

Option	Description
ACS URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP or HTTPS URL. An HTTPS URL indicates that the ACS supports SSL. The “host” portion of this URL is used by the CPE for validating the certificate from the ACS when using certificate-based authentication.
ACS User Name	Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This username is used only for HTTP-based authentication of the CPE.
ACS Password	Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol. This password is used only for HTTP-based authentication of the CPE.
WAN Interface used by TR-069 client	Choose Any_WAN, LAN, Loopback or a configured connection.
Connection Request	
Authentication	Tick the checkbox ☑ to enable.
User Name	Username used to authenticate an ACS making a Connection Request to the CPE.
Password	Password used to authenticate an ACS making a Connection Request to the CPE.
URL	IP address and port the ACS uses to connect to router.

The **Send Inform** button forces the CPE to establish an immediate connection to the ACS.

8.5 Internet Time

This option automatically synchronizes the router time with Internet timeservers. To enable time synchronization, tick the corresponding checkbox ☑, choose your preferred time server(s), select the correct time zone offset, and click **Save / Apply**.



Time settings

This page allows you to the modem's time configuration.

☑ Automatically synchronize with Internet time servers

First NTP time server:	time.nist.gov	
Second NTP time server:	ntp1.tummy.com	
Third NTP time server:	None	
Fourth NTP time server:	None	
Fifth NTP time server:	None	

Time zone offset: (GMT-08:00) Pacific Time, Tijuana

Apply/Save

NOTE: Internet Time must be activated to use 5.5 Parental Control. In addition, this menu item is not displayed when in Bridge mode since the router would not be able to connect to the NTP timeserver.

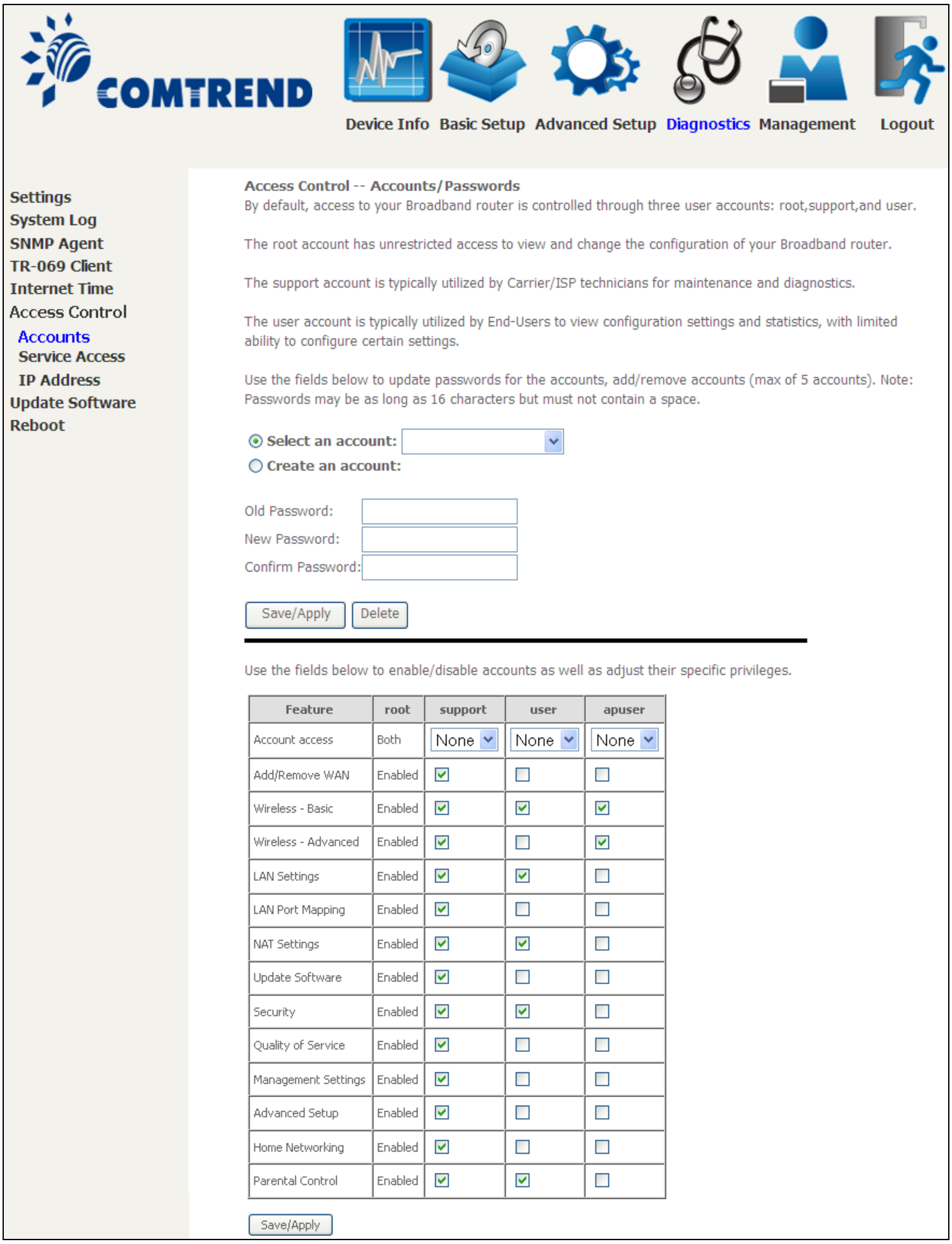
8.6 Access Control

8.6.1 Passwords

This screen is used to configure the user account access passwords for the device. Access to the NexusLink 3112u is controlled through the following user accounts:

- The root account has unrestricted access to view and change the configuration of your Broadband router.
- The support account is typically utilized by Carrier/ISP technicians for maintenance and diagnostics.
- The user account is typically utilized by End-Users to view configuration settings and statistics, with limited ability to configure certain settings.
- The apuser account is typically utilized by End-Users to view configuration settings and statistics, with limited ability to configure wireless settings.

Use the fields to update passwords for the accounts, add/remove accounts (max of 5 accounts) as well as adjust their specific privileges.



Access Control -- Accounts/Passwords

By default, access to your Broadband router is controlled through three user accounts: root,support,and user.

The root account has unrestricted access to view and change the configuration of your Broadband router.

The support account is typically utilized by Carrier/ISP technicians for maintenance and diagnostics.

The user account is typically utilized by End-Users to view configuration settings and statistics, with limited ability to configure certain settings.

Use the fields below to update passwords for the accounts, add/remove accounts (max of 5 accounts). Note: Passwords may be as long as 16 characters but must not contain a space.

● Select an account:

○ Create an account:

Old Password:

New Password:

Confirm Password:

Save/Apply   Delete

Use the fields below to enable/disable accounts as well as adjust their specific privileges.

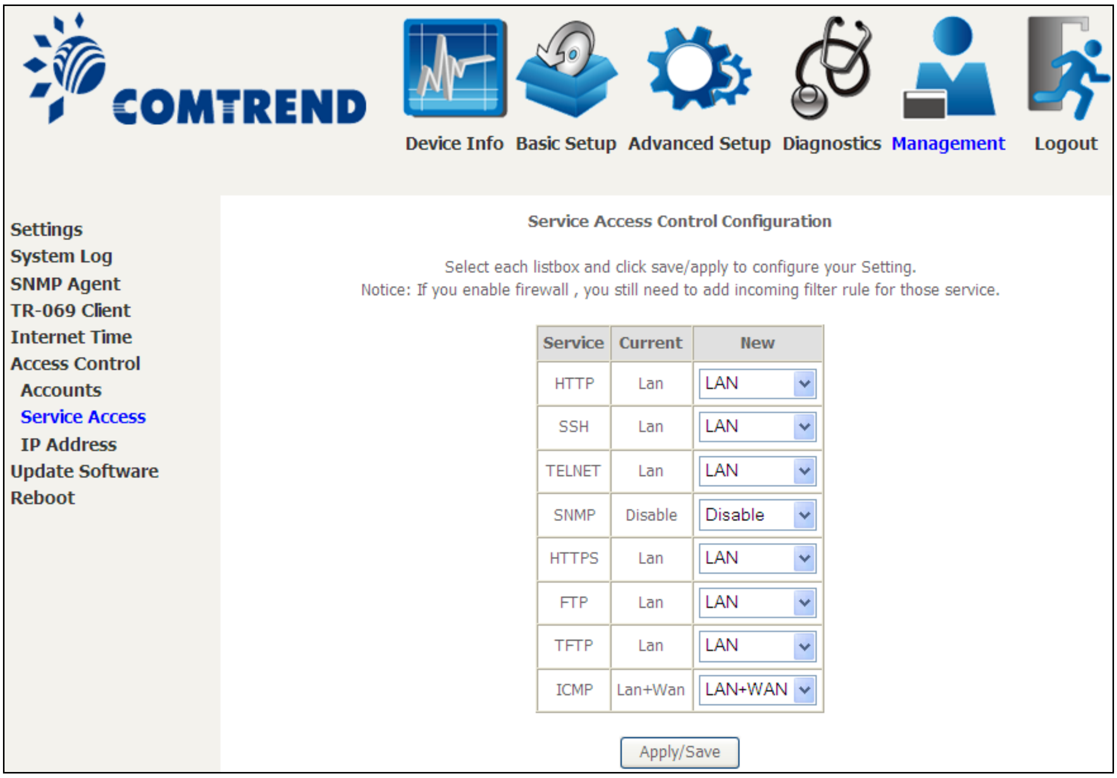
Feature	root	support	user	apuser
Account access	Both	None	None	None
Add/Remove WAN	Enabled	☑	☐	☐
Wireless - Basic	Enabled	☑	☑	☑
Wireless - Advanced	Enabled	☑	☐	☑
LAN Settings	Enabled	☑	☑	☐
LAN Port Mapping	Enabled	☑	☐	☐
NAT Settings	Enabled	☑	☑	☐
Update Software	Enabled	☑	☐	☐
Security	Enabled	☑	☑	☐
Quality of Service	Enabled	☑	☐	☐
Management Settings	Enabled	☑	☐	☐
Advanced Setup	Enabled	☑	☐	☐
Home Networking	Enabled	☑	☐	☐
Parental Control	Enabled	☑	☑	☐

Save/Apply

Note: Passwords may be as long as 16 characters but must not contain a space. Click **Save / Apply** to continue.

8.6.2 Service Access

The Services option limits or opens the access services over the LAN or WAN. These access services available are: FTP, HTTP, ICMP, SNMP, TELNET and TFTP. Enable a service by selecting its dropdown listbox. Click **APPLY / SAVE** to activate.



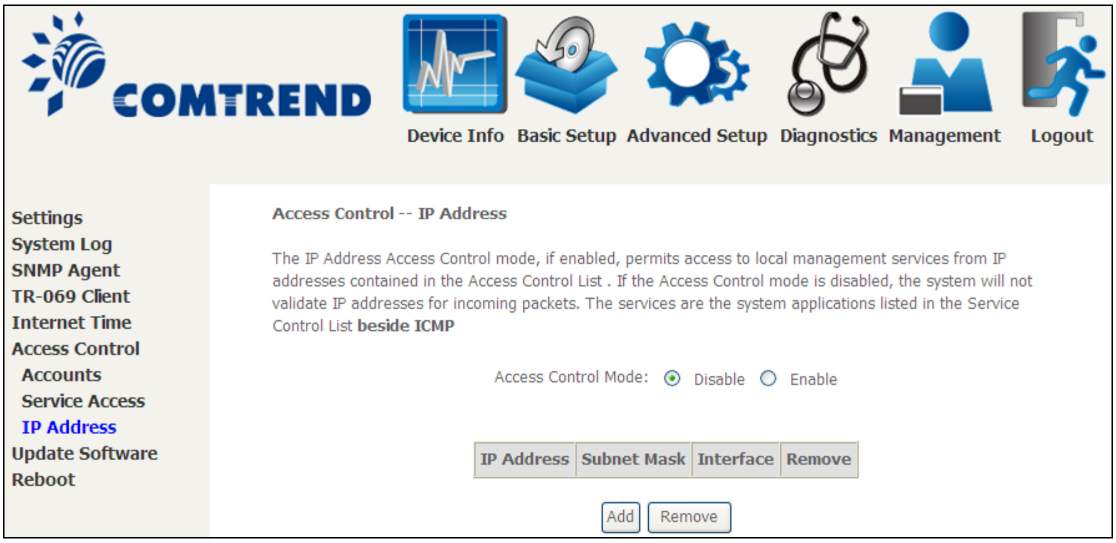
Service Access Control Configuration

Select each listbox and click save/apply to configure your Setting.
Notice: If you enable firewall , you still need to add incoming filter rule for those service.

Service	Current	New
HTTP	Lan	LAN
SSH	Lan	LAN
TELNET	Lan	LAN
SNMP	Disable	Disable
HTTPS	Lan	LAN
FTP	Lan	LAN
TFTP	Lan	LAN
ICMP	Lan+Wan	LAN+WAN

8.6.3 IP Address

The IP Address Access Control mode, if enabled, permits access to local management services from IP addresses contained in the Access Control List. If the Access Control mode is disabled, the system will not validate IP addresses for incoming packets. The services are the system applications listed in the Service Control List **beside ICMP**.



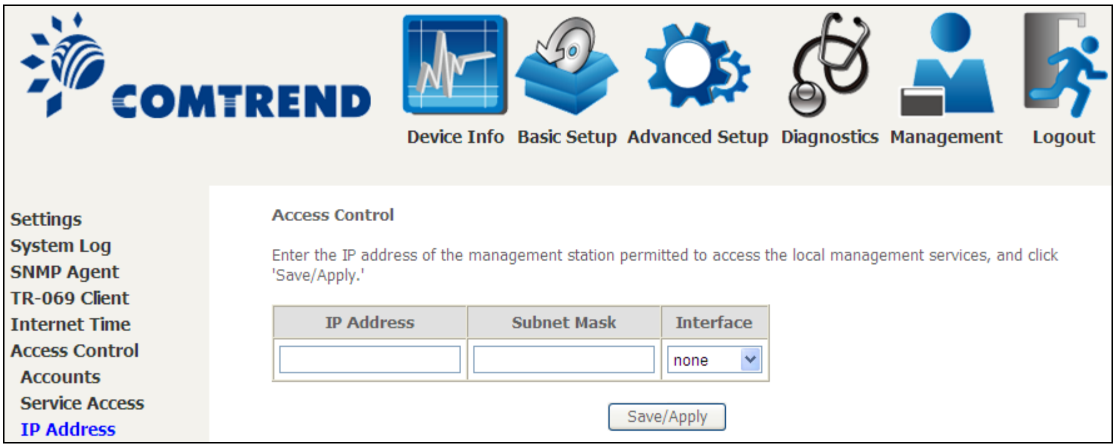
Access Control -- IP Address

The IP Address Access Control mode, if enabled, permits access to local management services from IP addresses contained in the Access Control List . If the Access Control mode is disabled, the system will not validate IP addresses for incoming packets. The services are the system applications listed in the Service Control List **beside ICMP**

Access Control Mode: ● Disable ○ Enable

IP Address	Subnet Mask	Interface	Remove

Click the **Add** button to display the following.



Access Control

Enter the IP address of the management station permitted to access the local management services, and click 'Save/Apply.'

IP Address	Subnet Mask	Interface
		none

Configure the address and subnet of the management station permitted to access the local management services, and click **Save/Apply**.

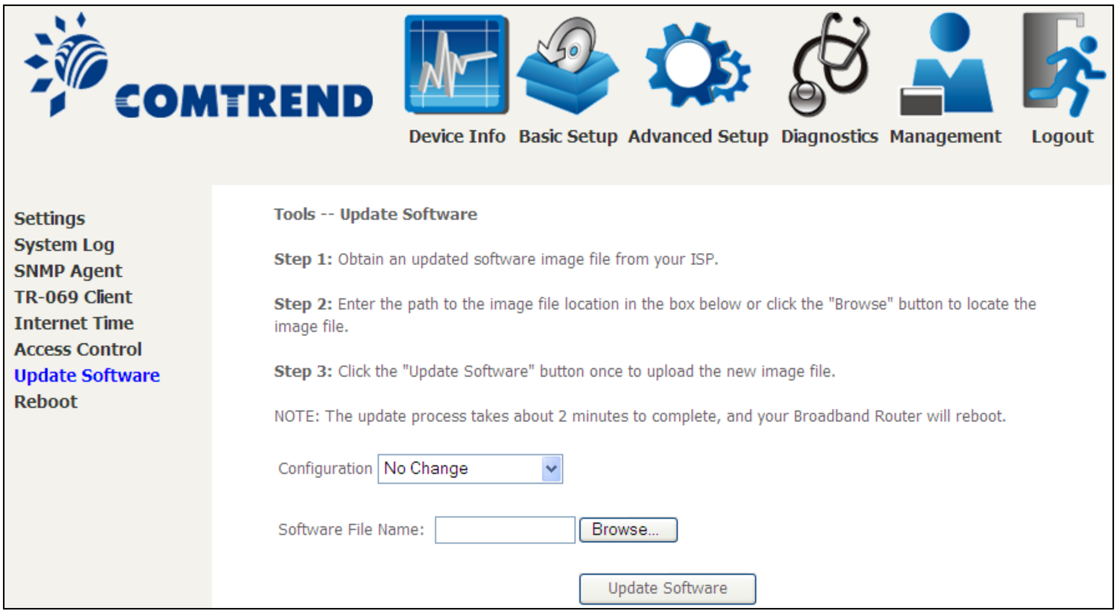
IP Address – IP address of the management station.

Subnet Mask – Subnet address for the management station.

Interface – Access permission for the specified address, allowing the address to access the local management service from none/lan/wan/lan&wan interfaces.

8.7 Update Software

This option allows for firmware upgrades from a locally stored file.



Tools -- Update Software

Step 1: Obtain an updated software image file from your ISP.

Step 2: Enter the path to the image file location in the box below or click the "Browse" button to locate the image file.

Step 3: Click the "Update Software" button once to upload the new image file.

NOTE: The update process takes about 2 minutes to complete, and your Broadband Router will reboot.

Configuration: No Change

Software File Name: [Browse...]

[Update Software]

STEP 1: Obtain an updated software image file from your ISP.

STEP 2: Select the configuration from the drop-down menu.

Configuration options:

No change – upgrade software directly.

Erase current config – If the router has save_default configuration, this option will erase the current configuration and restore to save_default configuration after software upgrade.

Erase All – Router will be restored to factory default configuration after software upgrade.

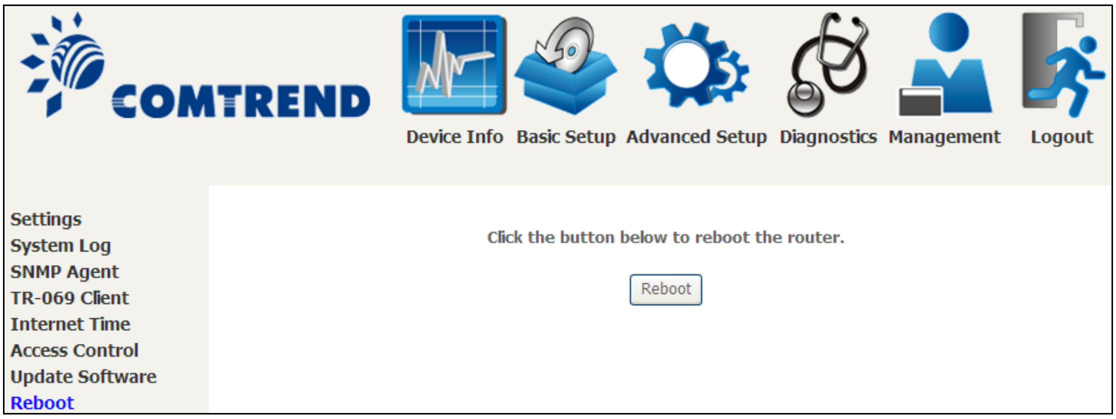
STEP 3: Enter the path and filename of the firmware image file in the **Software File Name** field or click the Browse button to locate the image file.

STEP 4: Click the **Update Software** button once to upload and install the file.

NOTE: The update process will take about 2 minutes to complete. The device will reboot and the browser window will refresh to the default screen upon successful installation. It is recommended that you compare the **Software Version** on the Device Information screen with the firmware version installed, to confirm the installation was successful.

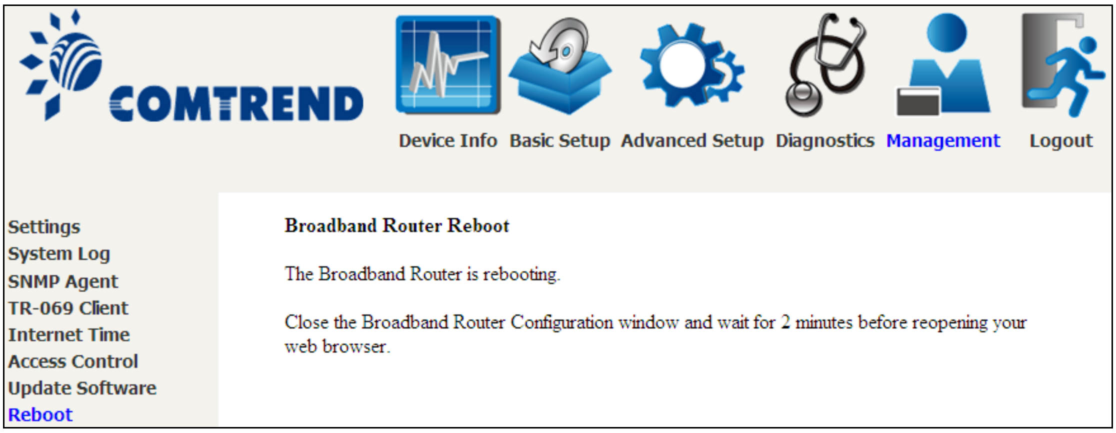
8.8 Reboot

To save the current configuration and reboot the router, click **Save/Reboot**.



Click the button below to reboot the router.

NOTE: You may need to close the browser window and wait for 2 minutes before reopening it. It may also be necessary, to reset your PC IP configuration.



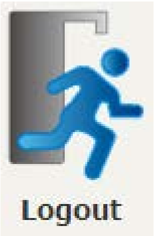
Broadband Router Reboot

The Broadband Router is rebooting.

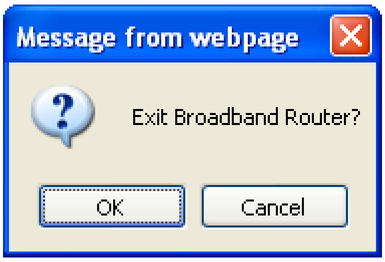
Close the Broadband Router Configuration window and wait for 2 minutes before reopening your web browser.

Chapter 9 Logout

To log out from the device simply click the following icon located at the top of your screen.

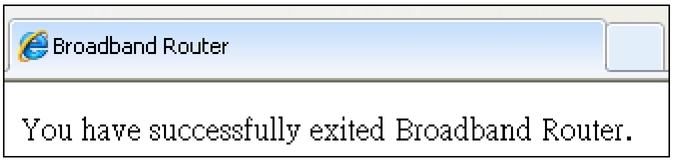


When the following window pops up, click the **OK** button to exit the router.



Exit Broadband Router?

Upon successful exit, the following message will be displayed.



You have successfully exited Broadband Router.

Appendix A - Firewall

STATEFUL PACKET INSPECTION

Refers to an architecture, where the firewall keeps track of packets on each connection traversing all its interfaces and makes sure they are valid. This is in contrast to static packet filtering which only examines a packet based on the information in the packet header.

DENIAL OF SERVICE ATTACK

Is an incident in which a user or organization is deprived of the services of a resource they would normally expect to have. Various DoS attacks the device can withstand are ARP Attack, Ping Attack, Ping of Death, Land, SYN Attack, Smurf Attack, and Tear Drop.

TCP/IP/PORT/INTERFACE FILTER

These rules help in the filtering of traffic at the Network layer (i.e. Layer 3). When a Routing interface is created, **Enable Firewall** must be checked. Navigate to Advanced Setup → Security → IP Filtering.

OUTGOING IP FILTER

Helps in setting rules to DROP packets from the LAN interface. By default, if the Firewall is Enabled, all IP traffic from the LAN is allowed. By setting up one or more filters, specific packet types coming from the LAN can be dropped.

Example 1:	Filter Name	: Out_Filter1
	Protocol	: TCP
	Source IP address	: 192.168.1.45
	Source Subnet Mask	: 255.255.255.0
	Source Port	: 80
	Dest. IP Address	: NA
	Dest. Subnet Mask	: NA
	Dest. Port	: NA

This filter will Drop all TCP packets coming from the LAN with IP Address/Subnet Mask of 192.168.1.45/24 having a source port of 80 irrespective of the destination. All other packets will be Accepted.

Example 2:	Filter Name	: Out_Filter2
	Protocol	: UDP
	Source IP Address	: 192.168.1.45
	Source Subnet Mask	: 255.255.255.0
	Source Port	: 5060:6060
	Dest. IP Address	: 172.16.13.4
	Dest. Subnet Mask	: 255.255.255.0
	Dest. Port	: 6060:7070

This filter will drop all UDP packets coming from the LAN with IP Address / Subnet Mask of 192.168.1.45/24 and a source port range of 5060 to 6060, destined to 172.16.13.4/24 and a destination port range of 6060 to 7070.

INCOMING IP FILTER

Helps in setting rules to Allow or Deny packets from the WAN interface. By default, all incoming IP traffic from the WAN is Blocked, if the Firewall is Enabled. By setting up one or more filters, specific packet types coming from the WAN can be Accepted.

Example 1:	Filter Name	: In_Filter1
	Protocol	: TCP
	Policy	: Allow
	Source IP Address	: 210.168.219.45
	Source Subnet Mask	: 255.255.0.0
	Source Port	: 80
	Dest. IP Address	: NA
	Dest. Subnet Mask	: NA
	Dest. Port	: NA
	Selected WAN interface	: br0

This filter will ACCEPT all TCP packets coming from WAN interface “br0” with IP Address/Subnet Mask 210.168.219.45/16 with a source port of 80, irrespective of the destination. All other incoming packets on this interface are DROPPED.

Example 2:	Filter Name	: In_Filter2
	Protocol	: UDP
	Policy	: Allow
	Source IP Address	: 210.168.219.45
	Source Subnet Mask	: 255.255.0.0
	Source Port	: 5060:6060
	Dest. IP Address	: 192.168.1.45
	Dest. Sub. Mask	: 255.255.255.0
	Dest. Port	: 6060:7070
	Selected WAN interface	: br0

This rule will ACCEPT all UDP packets coming from WAN interface “br0” with IP Address/Subnet Mask 210.168.219.45/16 and a source port in the range of 5060 to 6060, destined to 192.168.1.45/24 and a destination port in the range of 6060 to 7070. All other incoming packets on this interface are DROPPED.

MAC LAYER FILTER

These rules help in the filtering of Layer 2 traffic. MAC Filtering is only effective in Bridge mode. After a Bridge mode connection is created, navigate to Advanced Setup → Security → MAC Filtering in the WUI.

Example 1:	Global Policy	: Forwarded
	Protocol Type	: PPPoE
	Dest. MAC Address	: 00:12:34:56:78:90
	Source MAC Address	: NA
	Src. Interface	: eth1
	Dest. Interface	: eth2

Addition of this rule drops all PPPoE frames going from eth1 to eth2 with a Destination MAC Address of 00:12:34:56:78:90 irrespective of its Source MAC Address. All other frames on this interface are forwarded.

Example 2:	Global Policy	: Blocked
	Protocol Type	: PPPoE
	Dest. MAC Address	: 00:12:34:56:78:90
	Source MAC Address	: 00:34:12:78:90:56
	Src. Interface	: eth1
	Dest. Interface	: eth2

Addition of this rule forwards all PPPoE frames going from eth1 to eth2 with a Destination MAC Address of 00:12:34:56:78 and Source MAC Address of 00:34:12:78:90:56. All other frames on this interface are dropped.

DAYTIME PARENTAL CONTROL

This feature restricts access of a selected LAN device to an outside Network through the NexusLink 3112u , as per chosen days of the week and the chosen times.

Example:	User Name	: FilterJohn
	Browser's MAC Address	: 00:25:46:78:63:21
	Days of the Week	: Mon, Wed, Fri
	Start Blocking Time	: 14:00
	End Blocking Time	: 18:00

With this rule, a LAN device with MAC Address of 00:25:46:78:63:21 will have no access to the WAN on Mondays, Wednesdays, and Fridays, from 2pm to 6pm. On all other days and times, this device will have access to the outside Network.

Appendix B - Pin Assignments

ETHERNET Ports (RJ45)

ETHERNET LAN Ports (10/100Base-T)

Table 1

Pin	Definition	Pin	Definition
1	Transmit data+	5	NC
2	Transmit data-	6	Receive data-
3	Receive data+	7	NC
4	NC	8	NC

Signals for ETHERNET WAN port (10/1001000Base-T)

Table 2

Pin	Signal name	Signal definition
1	TRD+(0)	Transmit/Receive data 0 (positive lead)
2	TRD-(0)	Transmit/Receive data 0 (negative lead)
3	TRD+(1)	Transmit/Receive data 1 (positive lead)
4	TRD+(2)	Transmit/Receive data 2 (positive lead)
5	TRD-(2)	Transmit/Receive data 2 (negative lead)
6	TRD-(1)	Transmit/Receive data 1 (negative lead)
7	TRD+(3)	Transmit/Receive data 3 (positive lead)
8	TRD-(3)	Transmit/Receive data 3 (negative lead)

DSL Port

Table 3

Pin	Signal definition
1	LINE2 TIP
2	LINE1 TIP
3	LINE1 RING
4	LINE2 RING

Appendix C – Specifications

Hardware Interface

RJ-14 X1 for Multi DSL Bonded, RJ-45 X 3 for LAN (10/100 Base-T), RJ-45 X 1 for GB Port, (10/100/1000 BaseT auto-sense), Reset Button X 1, WPS/WiFi on/off button x1, Power Switch X 1, Wi-Fi Antennas X 2, USB Host

Dual WAN Interface

VDSL2 ....Comply with G.993.2 (supporting profile 8a, 8b, 8c, 8d, 12a, 12b, 17a)
VDSL2 bonded: up to 17a profile G.998.2 (VDSL2 Bonded)

ADSL2+ .... Comply with ITU-T G.992.5, ITU-T G.992.3, Annex A/L/M G.998.1 (ADSL2+ Bonded):

Gigabit Ethernet WAN

10/100/1000 Mbps
RJ45 connector

LAN Interface

Standard......................IEEE 802.3, IEEE 802.3u
MDI/MDX support..........Yes
Multiple Subnets on LAN

Wireless Interface

Standard IEEE802.11b/g/n
Encryption....................64/128-bit Wired Equivalent Privacy (WEP)
Channels......................11 (US, Canada)/ 13 (Europe)/ 14 (Japan)
Data Rate.....................Up to 300Mbps
Multiple BSSID.............Yes
WDS............................Yes
WEP ....Yes
WPA ....Yes
WPA2 ....Yes
IEEE 802.1x ....Yes
10,25,50,100mW@22MHz channel bandwidth output power level can be selected according to the environment

ATM Attributes

RFC 2684 (RFC 1483) Bridge/Route; RFC 2516 (PPPoE);
RFC 2364 (PPPoA); RFC 1577 (IPoA)

PVCs 16
AAL type AAL5
ATM service class ....UBR/CBR/VBR-rt//VBR-nrt
ATM UNI support...........UNI 3.1/4.0
OAM F4/F5 ....Yes

PTM Attributes

ATM Adaptation Layer: Ethernet packet format,
Support 8 flows,
Support preemption and dual latency,
Support PTM shaping

Management

Compliant with TR-069/TR-098/TR-104/TR-111 remote management protocols, Telnet, Web-based management, Configuration backup and restoration, Software upgrade via HTTP / TFTP / FTP server

Bridge Functions

Transparent bridging and learning ....Yes
VLAN support ....Yes
Spanning Tree Algorithm ....Yes
IGMP Proxy ....Yes

Routing Functions

Static route, RIP v1/v2, DMZ, DHCP Server/Relay, DNS Proxy, ARP, RARP, SNTP

Security Functions

Authentication protocols: PAP, CHAP
Packet and MAC address filtering, VPN termination, Three level login including local admin, local user and remote technical support access

QoS

Packet level QoS classification rules,
Priority queuing using ATM TX queues,
IP TOS/Precedence,
802.1p marking,
DiffServ DSCP marking
Src/dest MAC addresses classification

Application Layer Gateway

SIP, H.323, Yahoo messenger, ICQ, RealPlayer, Net2Phone, NetMeeting, MSN, X-box, Microsoft DirectX games

Power Supply ....Input: 100 - 240 Vac
Output: 12 Vdc / 1.5 A

Environment Condition

Operating temperature ....0 ~ 40 degrees Celsius
Relative humidity ....5 ~ 95% (non-condensing)

Dimensions ....243 mm (W) x 33 mm (H) x 147 mm (D)

Kit Weight

(1*NexusLink 3112u, 1*RJ14 cable, 1*RJ45 cable, 1*power adapter) = 0.6 kg

NOTE: Specifications are subject to change without notice

Appendix D - SSH Client

Unlike Microsoft Windows, Linux OS has a ssh client included. For Windows users, there is a public domain one called "putty" that can be downloaded from here:

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

To access the ssh client you must first enable SSH access for the LAN or WAN from the Management → Access Control → Services menu in the web user interface.

To access the router using the Linux ssh client

For LAN access, type: ssh -l root 192.168.1.1

For WAN access, type: ssh -l support *WAN IP address*

To access the router using the Windows "putty" ssh client

For LAN access, type: putty -ssh -l root 192.168.1.1

For WAN access, type: putty -ssh -l support *WAN IP address*

NOTE: The *WAN IP address* can be found on the Device Info → WAN screen

Appendix E - Connection Setup

Creating a WAN connection is a two-stage process.

1 - Setup a Layer 2 Interface (ATM, PTM or Ethernet).
2 - Add a WAN connection to the Layer 2 Interface.

The following sections describe each stage in turn.

E1 ~ Layer 2 Interfaces

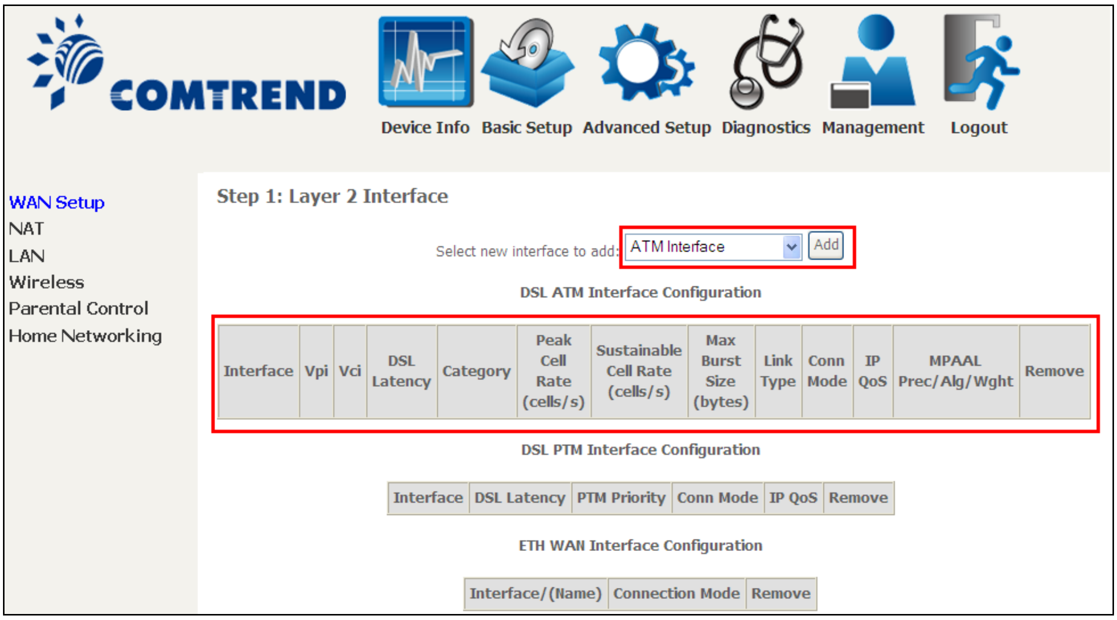
Every layer2 interface operates in Multi-Service Connection (VLAN MUX) mode, which supports multiple connections over a single interface. Note that PPPoA and IPoA connection types are not supported for Ethernet WAN interfaces. After adding WAN connections to an interface, you must also create an Interface Group to connect LAN/WAN interfaces.

E1.1 ATM Interfaces

Follow these procedures to configure an ATM interface.

NOTE: The NexusLink 3112u supports up to 16 ATM interfaces.

STEP 1: Go to Basic Setup → WAN Setup → Select ATM Interface from the drop-down menu.



Step 1: Layer 2 Interface

Select new interface to add: ATM Interface [Add]

DSL ATM Interface Configuration

Interface	Vpi	Vci	DSL Latency	Category	Peak Cell Rate (cells/s)	Sustainable Cell Rate (cells/s)	Max Burst Size (bytes)	Link Type	Conn Mode	IP QoS	MPAAL Prec/Alg/Wght	Remove

DSL PTM Interface Configuration

Interface	DSL Latency	PTM Priority	Conn Mode	IP QoS	Remove

ETH WAN Interface Configuration

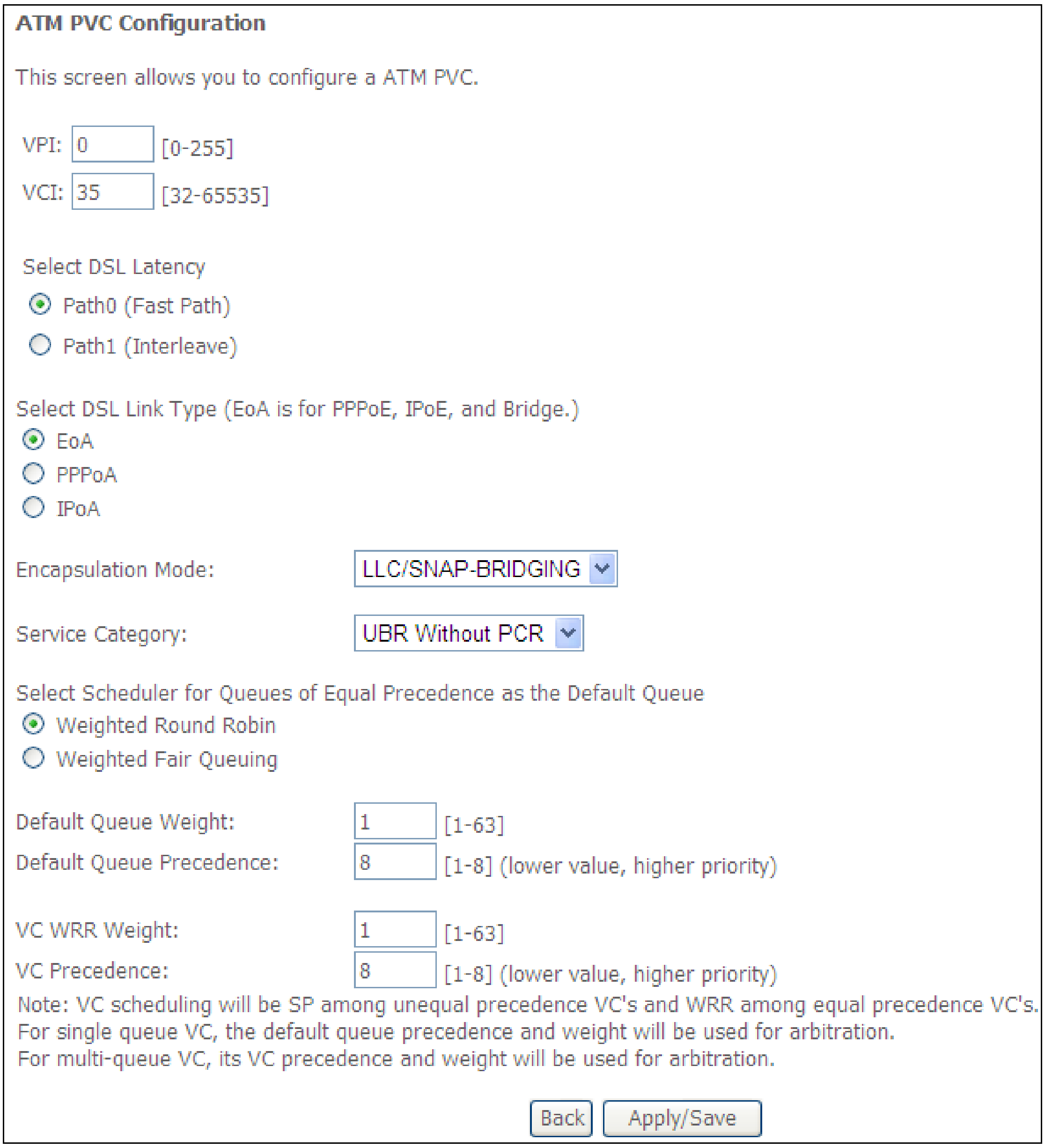
Interface/(Name)	Connection Mode	Remove

This table is provided here for ease of reference.

Heading	Description
Interface	WAN interface name.
VPI	ATM VPI (0-255)
VCI	ATM VCI (32-65535)
DSL Latency	{Path0} → portID = 0 {Path1} → port ID = 1 {Path0&1} → port ID = 4
Category	ATM service category
Peak Cell Rate	Maximum allowed traffic rate for the ATM PCR service connection
Sustainable Cell Rate	The average allowable, long-term cell transfer rate on the VBR service connection
Max Burst Size	The maximum allowable burst size of cells that can be transmitted contiguously on the VBR service connection
Link Type	Choose EoA (for PPPoE, IPoE, and Bridge), PPPoA, or IPoA.
Connection Mode	Default Mode – Single service over one connection Vlan Mux Mode – Multiple Vlan service over one connection
IP QoS	Quality of Service (QoS) status
MPAAL	QoS Scheduler algorithm and queue weight defined for the connection
Remove	Select items for removal

STEP 2: Click **Add** to proceed to the next screen.

NOTE: To add WAN connections to one interface type, you must delete existing connections from the other interface type using the **remove** button.



ATM PVC Configuration

This screen allows you to configure a ATM PVC.

VPI: 0 [0-255]

VCI: 35 [32-65535]

Select DSL Latency

● Path0 (Fast Path)

○ Path1 (Interleave)

Select DSL Link Type (EoA is for PPPoE, IPoE, and Bridge.)

● EoA

○ PPPoA

○ IPoA

Encapsulation Mode: LLC/SNAP-BRIDGING

Service Category: UBR Without PCR

Select Scheduler for Queues of Equal Precedence as the Default Queue

● Weighted Round Robin

○ Weighted Fair Queuing

Default Queue Weight: 1 [1-63]

Default Queue Precedence: 8 [1-8] (lower value, higher priority)

VC WRR Weight: 1 [1-63]

VC Precedence: 8 [1-8] (lower value, higher priority)

Note: VC scheduling will be SP among unequal precedence VC's and WRR among equal precedence VC's.
For single queue VC, the default queue precedence and weight will be used for arbitration.
For multi-queue VC, its VC precedence and weight will be used for arbitration.

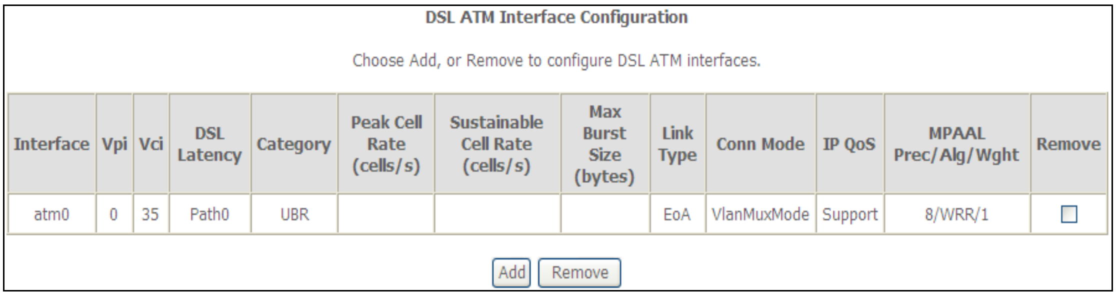
There are many settings here including: VPI/VCI, DSL Latency, DSL Link Type, Encapsulation Mode, Service Category, Connection Mode and Quality of Service.

Here are the available encapsulations for each xDSL Link Type:

- EoA- LLC/SNAP-BRIDGING, VC/MUX
- PPPoA- VC/MUX, LLC/ENCAPSULATION
- IPoA- LLC/SNAP-ROUTING, VC MUX

STEP 3: Click **Apply/Save** to confirm your choices.

On the next screen, check that the ATM interface is added to the list. For example, an ATM interface on PVC 0/35 in Default Mode with an EoA Link type is shown below.



DSL ATM Interface Configuration

Choose Add, or Remove to configure DSL ATM interfaces.

Interface	Vpi	Vci	DSL Latency	Category	Peak Cell Rate (cells/s)	Sustainable Cell Rate (cells/s)	Max Burst Size (bytes)	Link Type	Conn Mode	IP QoS	MPAAL Prec/Alg/Wght	Remove
atm0	0	35	Path0	UBR				EoA	VlanMuxMode	Support	8/WRR/1	□

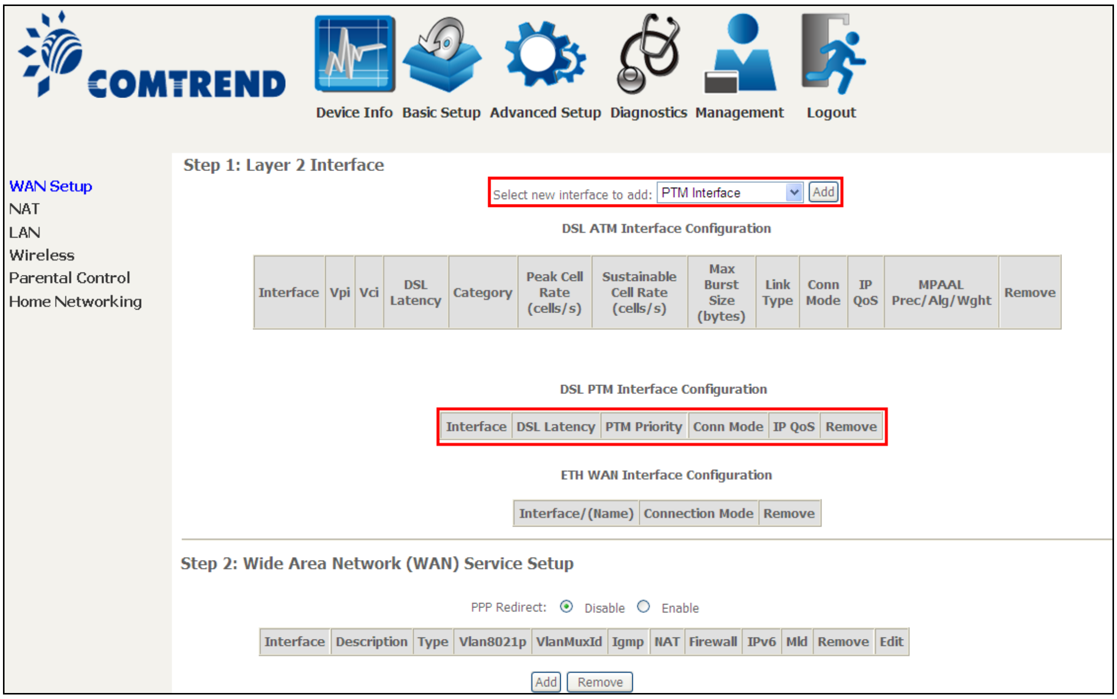
To add a WAN connection go to E2 ~ WAN Connections WAN Connections.

E1.2 PTM Interfaces

Follow these procedures to configure a PTM interface.

NOTE: The NexusLink 3112u supports up to four PTM interfaces.

STEP 4: Go to Basic Setup → WAN Setup → Select PTM Interface from the drop-down menu.



Step 1: Layer 2 Interface

Select new interface to add: PTM Interface Add

DSL ATM Interface Configuration

Interface	Vpi	Vci	DSL Latency	Category	Peak Cell Rate (cells/s)	Sustainable Cell Rate (cells/s)	Max Burst Size (bytes)	Link Type	Conn Mode	IP QoS	MPAAL Prec/Alg/Wght	Remove

DSL PTM Interface Configuration

Interface	DSL Latency	PTM Priority	Conn Mode	IP QoS	Remove

ETH WAN Interface Configuration

Interface/(Name)	Connection Mode	Remove

Step 2: Wide Area Network (WAN) Service Setup

PPP Redirect: ● Disable ○ Enable

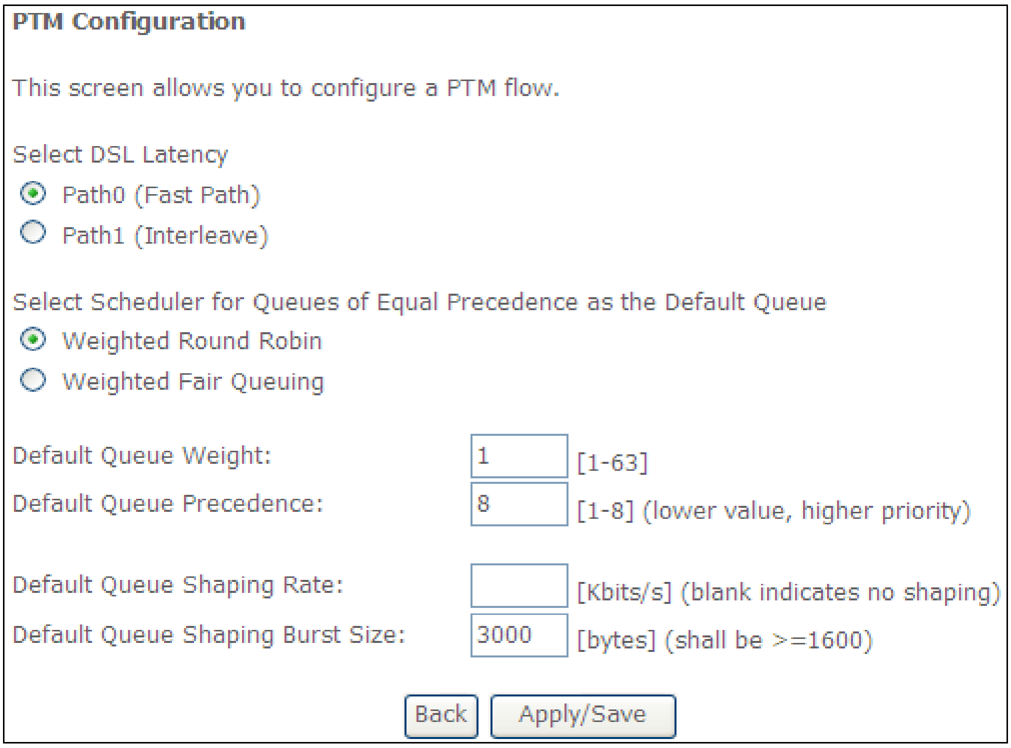
Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	IPv6	Mld	Remove	Edit

This table is provided here for ease of reference.

Heading	Description
Interface	WAN interface name.
DSL Latency	{Path0} → portID = 0 {Path1} → port ID = 1 {Path0&1} → port ID = 4
PTM Priority	Normal or High Priority (Preemption).
Connection Mode	Default Mode – Single service over one interface. Vlan Mux Mode – Multiple Vlan services over one interface.
IP QoS	Quality of Service (QoS) status.
Remove	Select interfaces to remove.

STEP 5: Click **Add** to proceed to the next screen.

NOTE: To add WAN connections to one interface type, you must delete existing connections from the other interface type using the **remove** button.



PTM Configuration

This screen allows you to configure a PTM flow.

Select DSL Latency

● Path0 (Fast Path)

○ Path1 (Interleave)

Select Scheduler for Queues of Equal Precedence as the Default Queue

● Weighted Round Robin

○ Weighted Fair Queuing

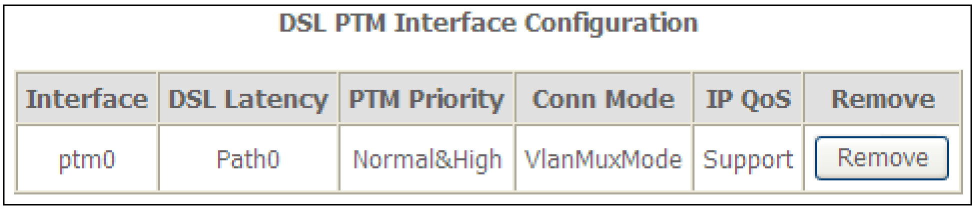
Default Queue Weight:	1	[1-63]
Default Queue Precedence:	8	[1-8] (lower value, higher priority)
Default Queue Shaping Rate:		[Kbits/s] (blank indicates no shaping)
Default Queue Shaping Burst Size:	3000	[bytes] (shall be >=1600)

There are many settings that can be configured here including:
DSL Latency, PTM Priority, Connection Mode and Quality of Service.

STEP 6: Click **Apply/Save** to confirm your choices.

On the next screen, check that the PTM interface is added to the list.

For example, an PTM interface in Default Mode is shown below.



DSL PTM Interface Configuration

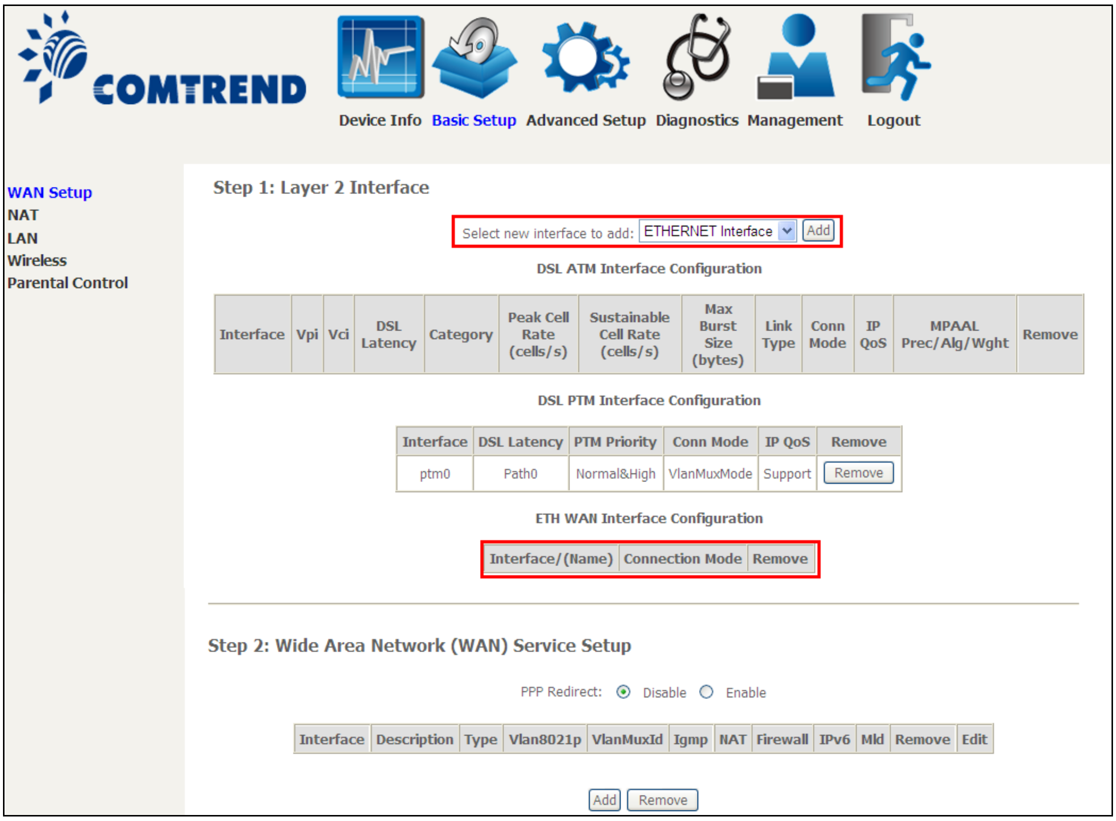
Interface	DSL Latency	PTM Priority	Conn Mode	IP QoS	Remove
ptm0	Path0	Normal&High	VlanMuxMode	Support	Remove

To add a WAN connection go to section E2 ~ WAN Connections.

E1.3 ETHERNET Interfaces

Follow these procedures to configure a PTM interface.

STEP 1: Go to Basic Setup → WAN Setup → Select ETHERNET Interface from the drop-down menu.



Step 1: Layer 2 Interface

Select new interface to add: ETHERNET Interface [Add]

DSL ATM Interface Configuration

Interface	Vpi	Vci	DSL Latency	Category	Peak Cell Rate (cells/s)	Sustainable Cell Rate (cells/s)	Max Burst Size (bytes)	Link Type	Conn Mode	IP QoS	MPAAL Prec/Alg/Wght	Remove

DSL PTM Interface Configuration

Interface	DSL Latency	PTM Priority	Conn Mode	IP QoS	Remove
ptm0	Path0	Normal&High	VlanMuxMode	Support	Remove

ETH WAN Interface Configuration

Interface/(Name)	Connection Mode	Remove

Step 2: Wide Area Network (WAN) Service Setup

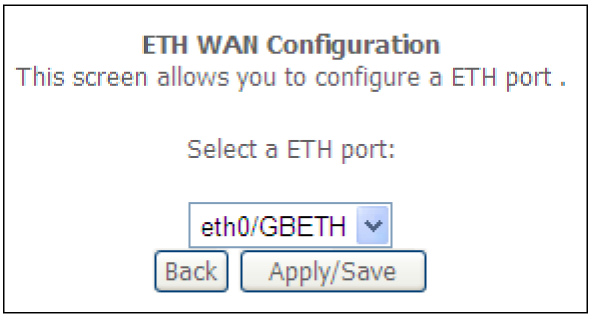
PPP Redirect: ● Disable ○ Enable

Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	IPv6	Mld	Remove	Edit

This table is provided here for ease of reference.

Heading	Description
Interface/ (Name)	WAN interface name.
Connection Mode	Default Mode – Single service over one interface. Vlan Mux Mode – Multiple Vlan services over one interface.
Remove	Select interfaces to remove.

STEP 2: Click **Add** to proceed to the next screen.



ETH WAN Configuration

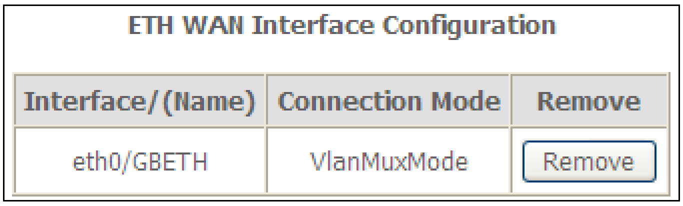
This screen allows you to configure a ETH port .

Select a ETH port:

eth0/GBETH

STEP 3: Select an Ethernet port and Click **Apply/Save** to confirm your choices.

On the next screen, check that the ETHERNET interface is added to the list.



ETH WAN Interface Configuration

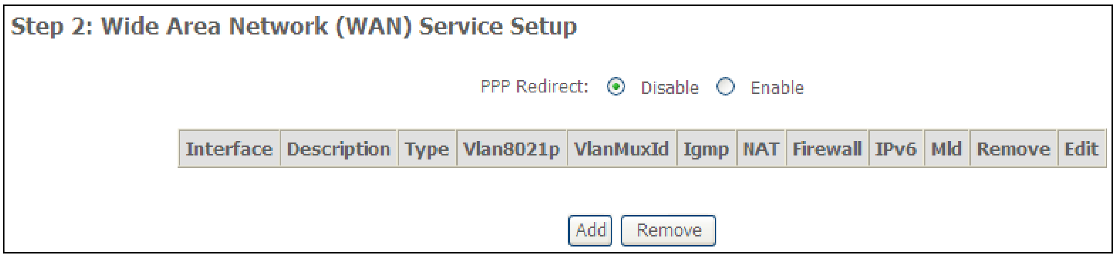
Interface/(Name)	Connection Mode	Remove
eth0/GBETH	VlanMuxMode	Remove

E2 ~ WAN Connections

The NexusLink 3112u supports one WAN connection for each interface, up to a maximum of 16 connections.

To setup a WAN connection follow these instructions.

STEP 1: Go to Basic Setup Basic Setup → WAN Setup.

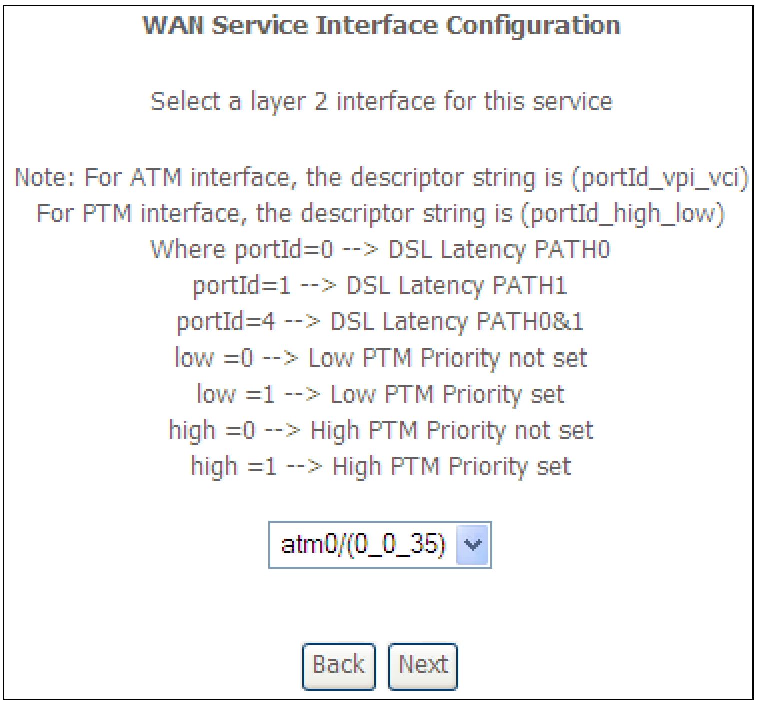


Step 2: Wide Area Network (WAN) Service Setup

PPP Redirect: ● Disable ○ Enable

Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	IPv6	Mld	Remove	Edit

STEP 2: Click **Add** to create a WAN connection. The following screen will display.



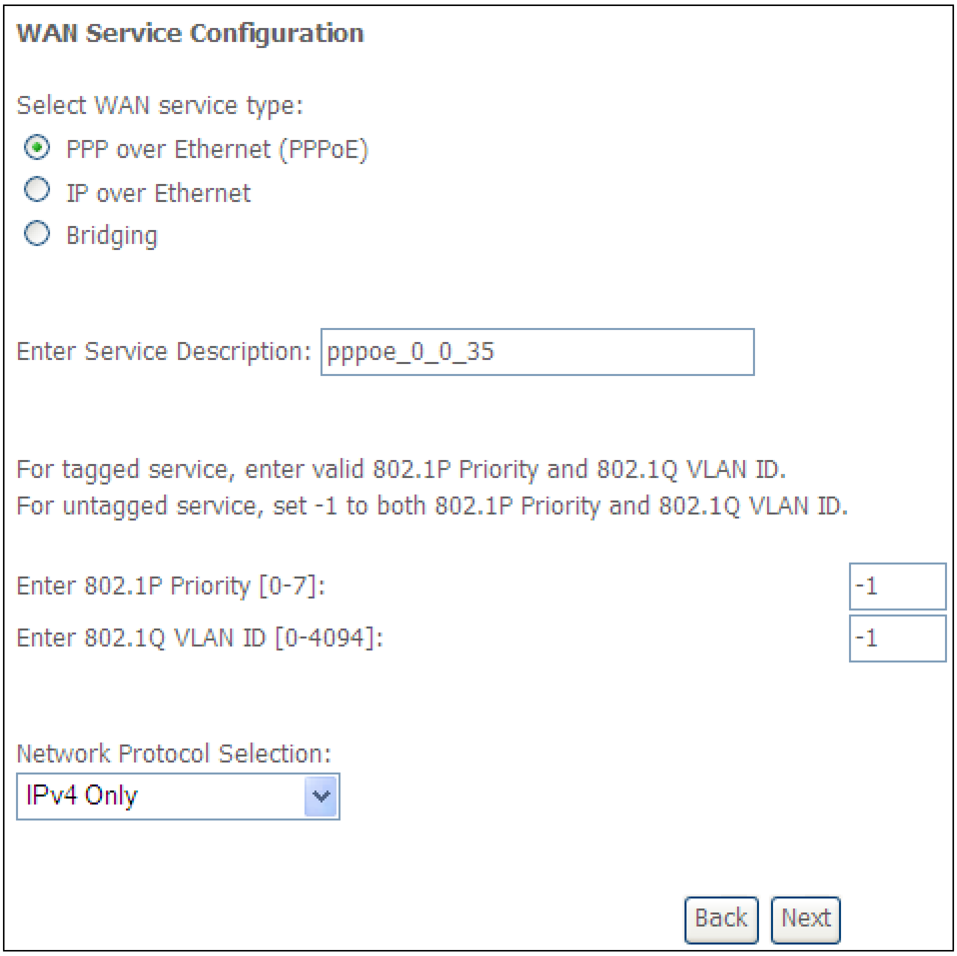
WAN Service Interface Configuration

Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

atm0/(0_0_35)

STEP 3: Choose a layer 2 interface from the drop-down box and click **Next**. The WAN Service Configuration screen will display as shown below.



WAN Service Configuration

Select WAN service type:

● PPP over Ethernet (PPPoE)
○ IP over Ethernet
○ Bridging

Enter Service Description: pppoe_0_0_35

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

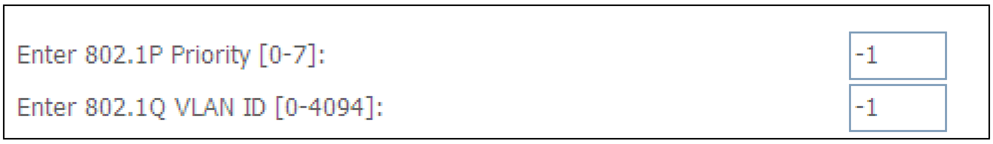
Enter 802.1P Priority [0-7]: -1

Enter 802.1Q VLAN ID [0-4094]: -1

Network Protocol Selection:
IPv4 Only

NOTE: The WAN services shown here are those supported by the layer 2 interface you selected in the previous step. If you wish to change your selection click the **Back** button and select a different layer 2 interface.

STEP 4: For VLAN Mux Connections only, you must enter Priority & VLAN ID tags.



Enter 802.1P Priority [0-7]: -1

Enter 802.1Q VLAN ID [0-4094]: -1

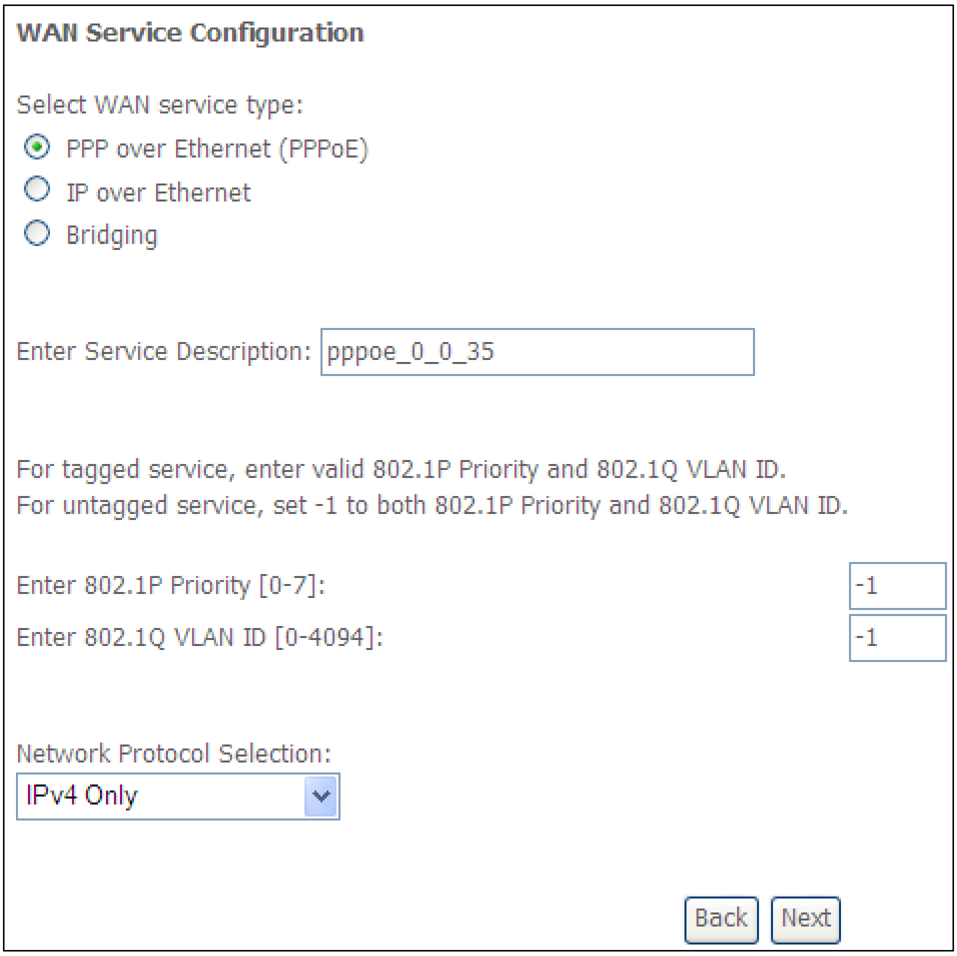
STEP 5: You will now follow the instructions specific to the WAN service type you wish to establish. This list should help you locate the correct procedure:

(1) For PPP over ETHERNET (PPPoE), go to page 157.
(2) For IP over ETHERNET (IPoE), go to page 163.
(3) For Bridging, go to page 168.
(4) For PPP over ATM (PPPoA), go to page 170.
(5) For IP over ATM (IPoA), go to page 175.

The subsections that follow continue the WAN service setup procedure.

E2.1 PPP over ETHERNET (PPPoE)

STEP 1: Select the PPP over Ethernet radio button and click **Next**. You can also enable IPv6 by ticking the checkbox ☑ at the bottom of this screen.



WAN Service Configuration

Select WAN service type:

● PPP over Ethernet (PPPoE)
○ IP over Ethernet
○ Bridging

Enter Service Description: pppoe_0_0_35

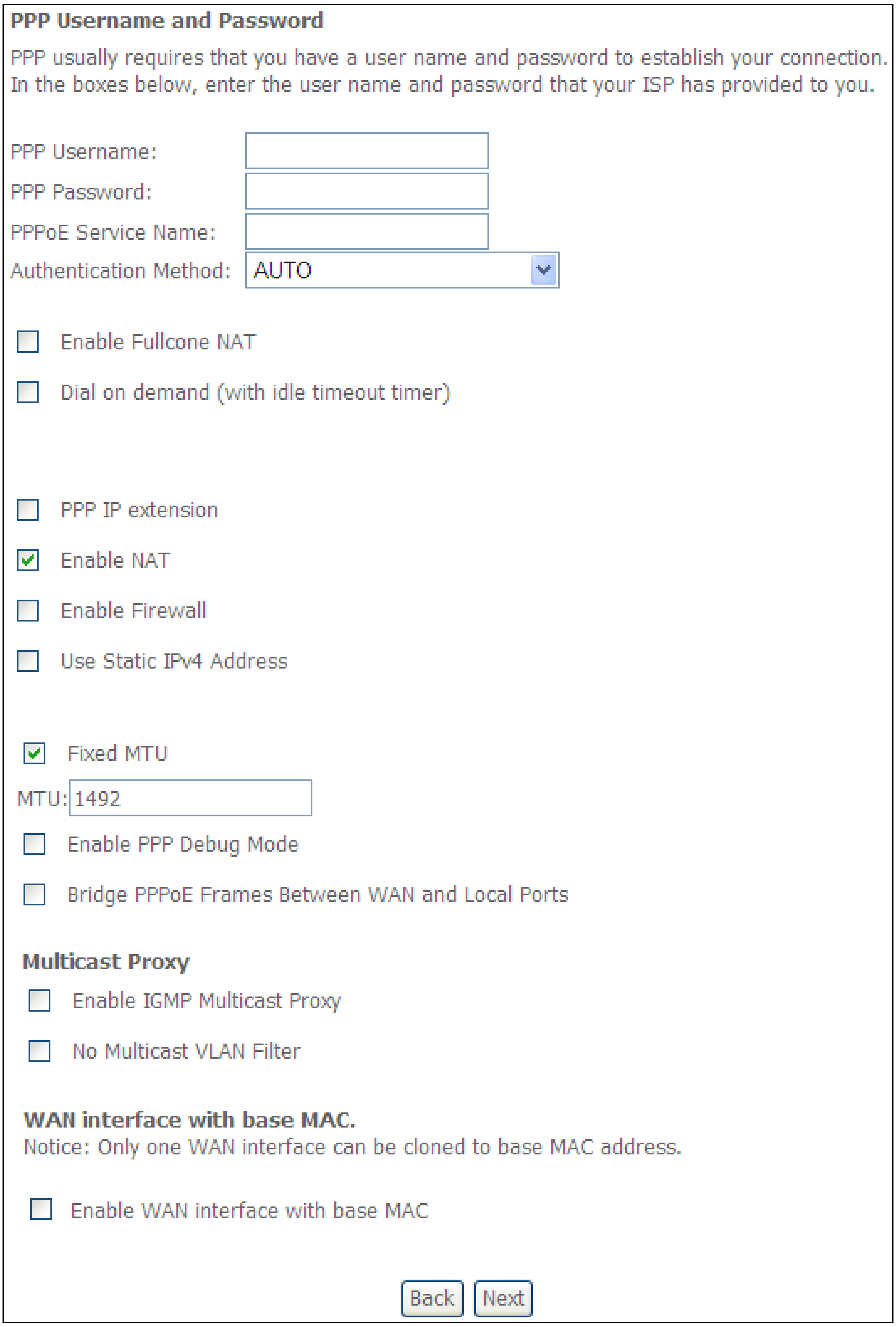
For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

Enter 802.1P Priority [0-7]: -1

Enter 802.1Q VLAN ID [0-4094]: -1

Network Protocol Selection: IPv4 Only

STEP 2: On the next screen, enter the PPP settings as provided by your ISP. Click **Next** to continue or click **Back** to return to the previous step.



PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:

PPP Password:

PPPoE Service Name:

Authentication Method: AUTO

□ Enable Fullcone NAT

□ Dial on demand (with idle timeout timer)

□ PPP IP extension

☑ Enable NAT

□ Enable Firewall

□ Use Static IPv4 Address

☑ Fixed MTU

MTU: 1492

□ Enable PPP Debug Mode

□ Bridge PPPoE Frames Between WAN and Local Ports

Multicast Proxy

□ Enable IGMP Multicast Proxy

□ No Multicast VLAN Filter

WAN interface with base MAC.

Notice: Only one WAN interface can be cloned to base MAC address.

□ Enable WAN interface with base MAC

The settings shown above are described below.

PPP SETTINGS

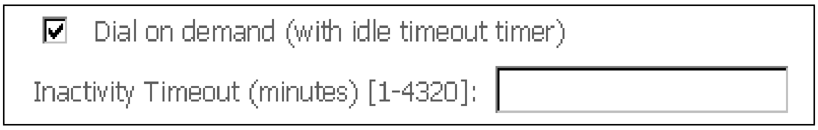
The PPP Username, PPP password and the PPPoE Service Name entries are dependent on the particular requirements of the ISP. The user name can be a maximum of 256 characters and the password a maximum of 32 characters in length. For Authentication Method, choose from AUTO, PAP, CHAP, and MSCHAP.

ENABLE FULLCONE NAT

This option becomes available when NAT is enabled. Known as one-to-one NAT, all requests from the same internal IP address and port are mapped to the same external IP address and port. An external host can send a packet to the internal host, by sending a packet to the mapped external address.

DIAL ON DEMAND

The NexusLink 3112u can be configured to disconnect if there is no activity for a period of time by selecting the **Dial on demand** checkbox ☑. You must also enter an inactivity timeout period in the range of 1 to 4320 minutes.



☑ Dial on demand (with idle timeout timer)

Inactivity Timeout (minutes) [1-4320]:

PPP IP EXTENSION

The PPP IP Extension is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it.

PPP IP Extension does the following:

- Allows only one PC on the LAN.
- Disables NAT and Firewall.
- The device becomes the default gateway and DNS server to the PC through DHCP using the LAN interface IP address.
- The device extends the IP subnet at the remote service provider to the LAN PC. i.e. the PC becomes a host belonging to the same IP subnet.
- The device bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the device's LAN IP address.
- The public IP address assigned by the remote side using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the PC LAN interface through DHCP. Only one PC on the LAN can be connected to the remote, since the DHCP server within the device has only a single IP address to assign to a LAN device.

ENABLE NAT

If the LAN is configured with a private IP address, the user should select this checkbox ☑. The NAT submenu will appear in the Advanced Setup menu after reboot. On the other hand, if a private IP address is not used on the LAN side (i.e. the LAN side is using a public IP), this checkbox ☑ should not be selected to free up system resources for better performance.

ENABLE FIREWALL

If this checkbox ☑ is selected, the Security submenu will be displayed on the Advanced Setup menu after reboot. If firewall is not necessary, this checkbox ☑ should not be selected to free up system resources for better performance.

USE STATIC IPv4 ADDRESS

Unless your service provider specially requires it, do not select this checkbox ☑. If selected, enter the static IP address in the **IPv4 Address** field.
Don't forget to adjust the IP configuration to Static IP Mode as described in section 3.2.

FIXED MTU

Maximum Transmission Unit. The size (in bytes) of largest protocol data unit which the layer can pass onwards. This value is 1500 for PPPoA.

ENABLE PPP DEBUG MODE

When this option is selected, the system will put more PPP connection information into the system log. This is for debugging errors and not for normal usage.

BRIDGE PPPOE FRAMES BETWEEN WAN AND LOCAL PORTS

(This option is hidden when PPP IP Extension is enabled)
When Enabled, this creates local PPPoE connections to the WAN side. Enable this option only if all LAN-side devices are running PPPoE clients, otherwise disable it. The NexusLink 3112u supports pass-through PPPoE sessions from the LAN side while simultaneously running a PPPoE client from non-PPPoE LAN devices.

ENABLE IGMP MULTICAST PROXY

Tick the checkbox ☑ to enable Internet Group Membership Protocol (IGMP) multicast. This protocol is used by IPv4 hosts to report their multicast group memberships to any neighboring multicast routers.

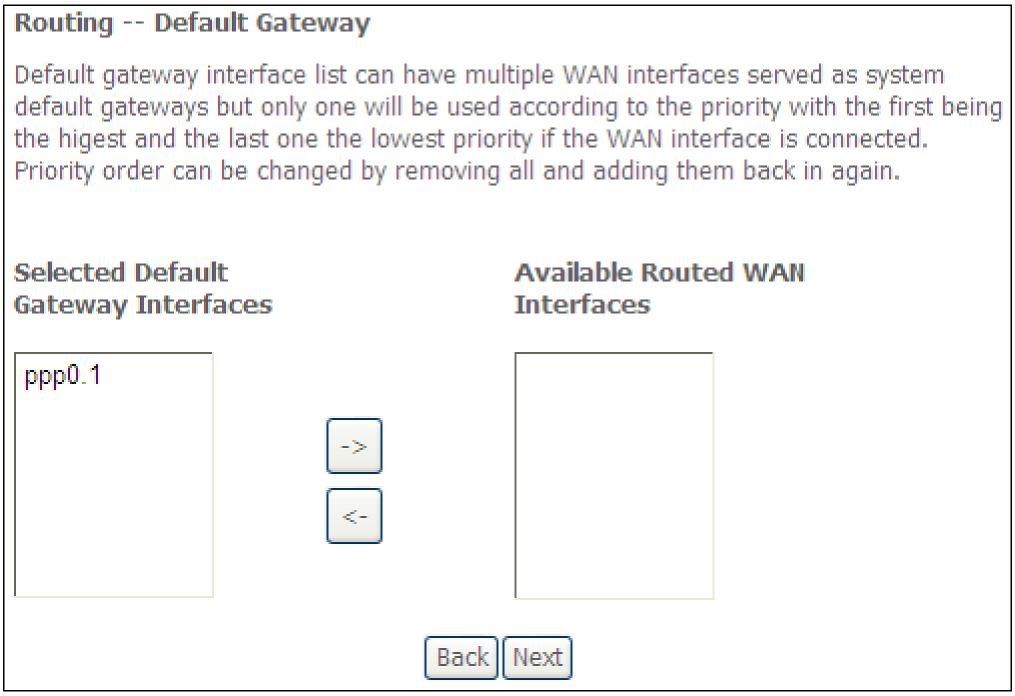
NO MULTICAST VLAN FILTER

Tick the checkbox ☑ to Enable/Disable multicast VLAN filter.

Enable WAN interface with base MAC

Enable this option to use the router's base MAC address as the MAC address for this WAN interface.

STEP 3: Choose an interface to be the default gateway.



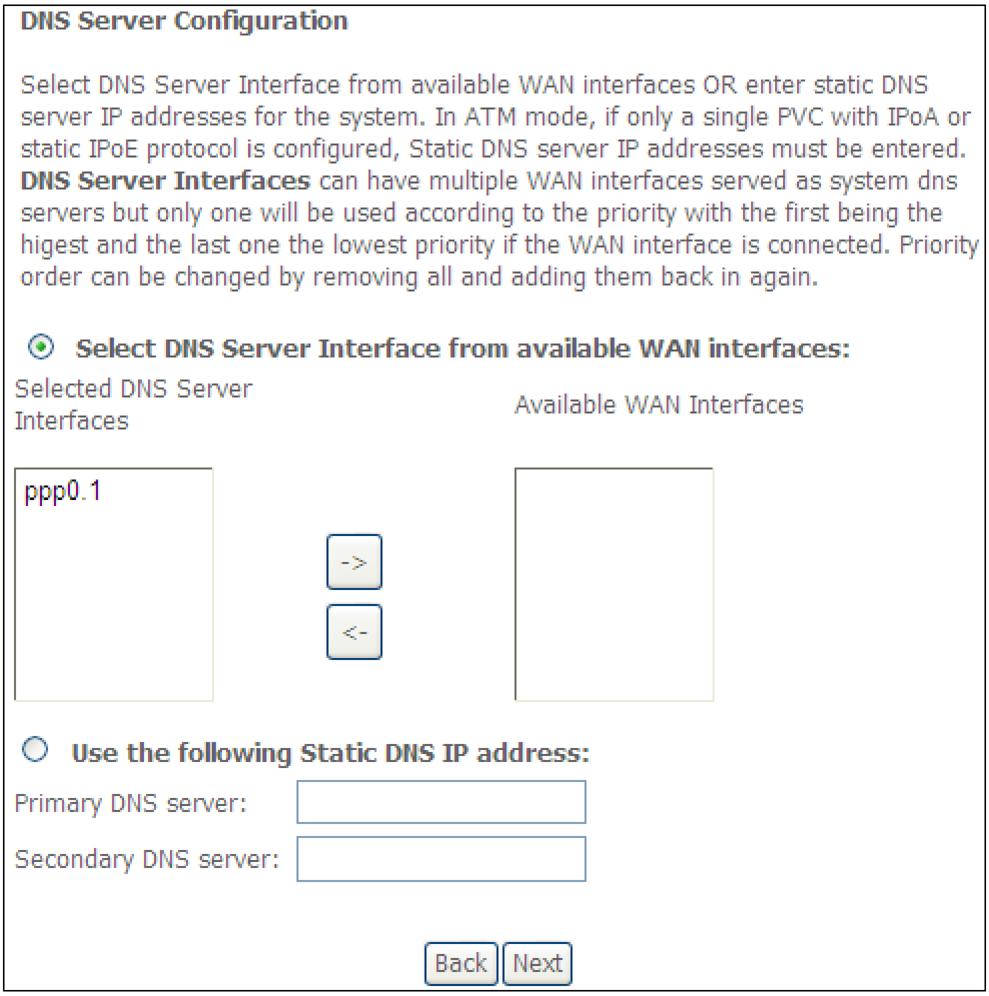
Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces	Available Routed WAN Interfaces
ppp0.1	

Click **Next** to continue or click **Back** to return to the previous step.

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered. **DNS Server Interfaces** can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ppp0.1

Available WAN Interfaces:

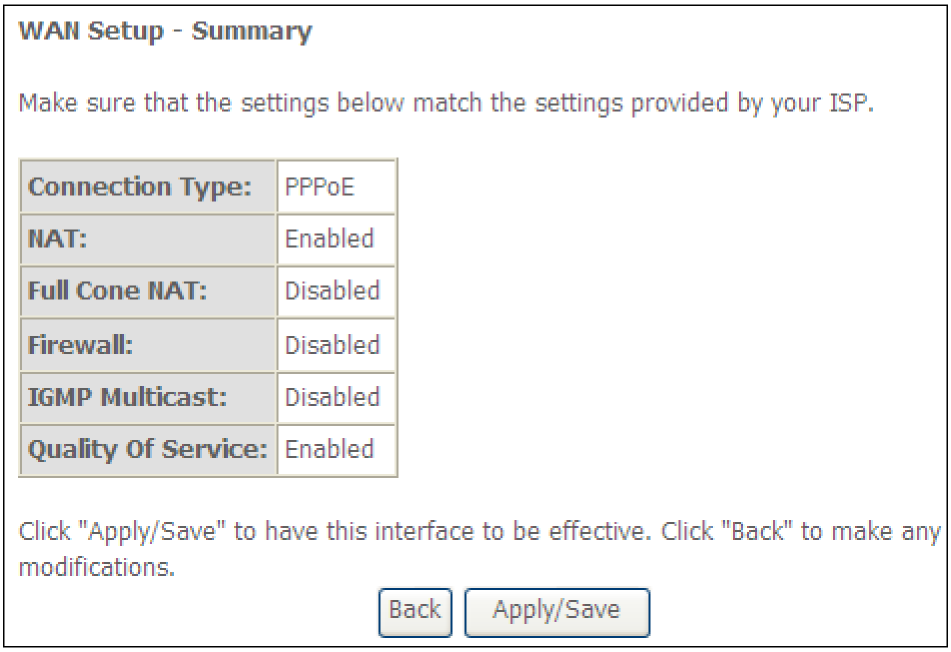
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Click **Next** to continue or click **Back** to return to the previous step.

STEP 5: The WAN Setup - Summary screen shows a preview of the WAN service you have configured. Check these settings and click **Apply/Save** if they are correct, or click **Back** to modify them.



WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP.

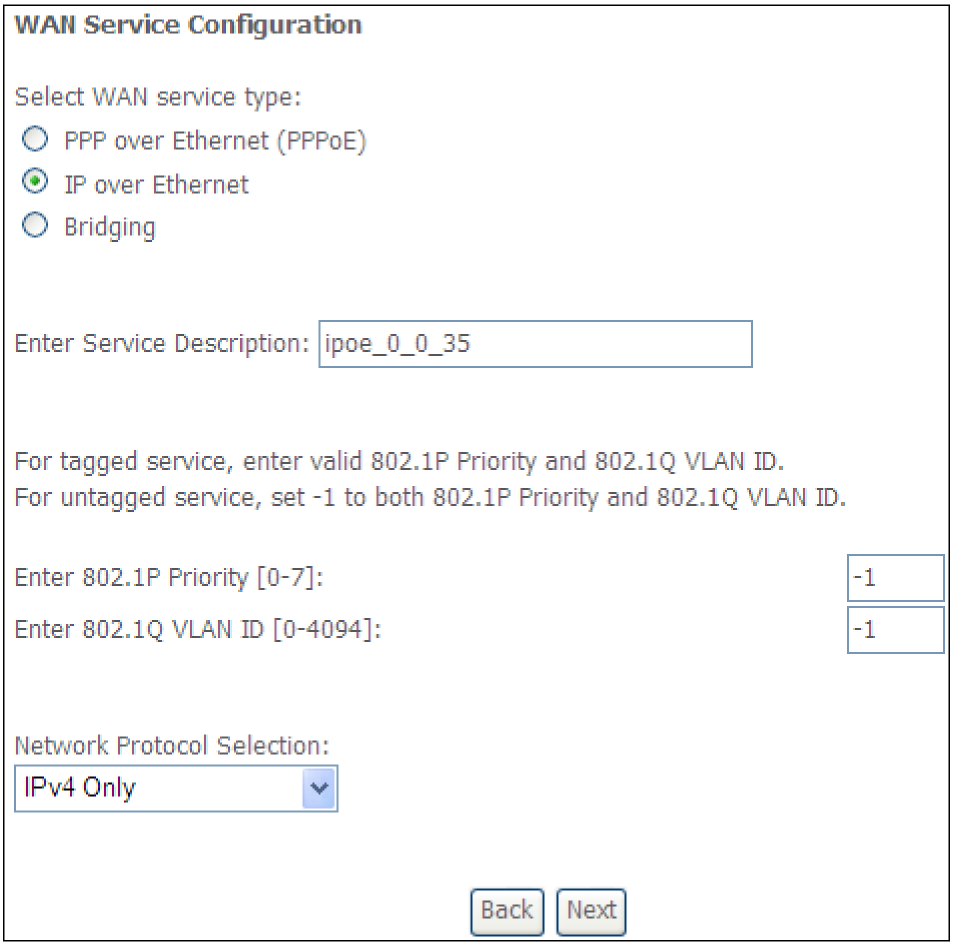
Connection Type:	PPPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

After clicking **Apply/Save**, the new service should appear on the main screen. To activate it you must reboot. Go to Management → Reboot and click **Reboot**.

E2.2 IP over ETHERNET (IPoE)

STEP 1: *Select the IP over Ethernet radio button and click **Next.**



WAN Service Configuration

Select WAN service type:

○ PPP over Ethernet (PPPoE)
● IP over Ethernet
○ Bridging

Enter Service Description: ipoe_0_0_35

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

Enter 802.1P Priority [0-7]: -1
Enter 802.1Q VLAN ID [0-4094]: -1

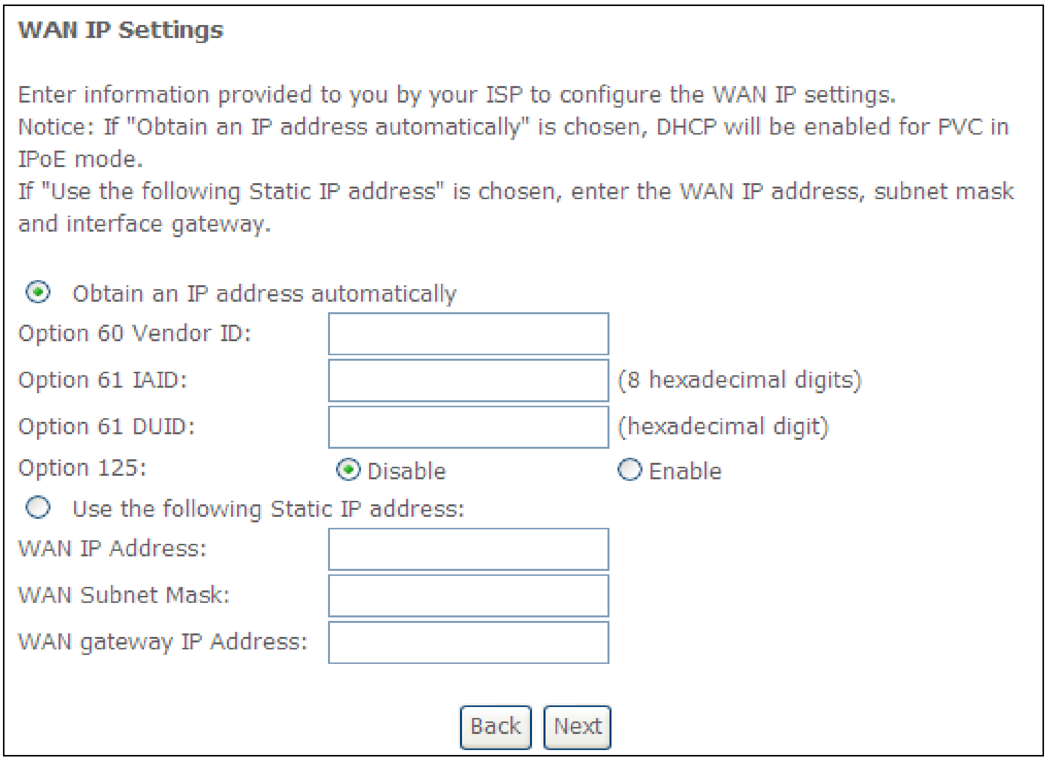
Network Protocol Selection:
IPv4 Only

*

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.

For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

STEP 2: The WAN IP settings screen provides access to the DHCP server settings. You can select the **Obtain an IP address automatically** radio button to enable DHCP (use the DHCP Options only if necessary). However, if you prefer, you can instead use the **Static IP address** method to assign WAN IP address, Subnet Mask and Default Gateway manually.



WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.
Notice: If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.
If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.

● Obtain an IP address automatically

Option 60 Vendor ID:		
Option 61 IAID:		(8 hexadecimal digits)
Option 61 DUID:		(hexadecimal digit)
Option 125:	● Disable	○ Enable

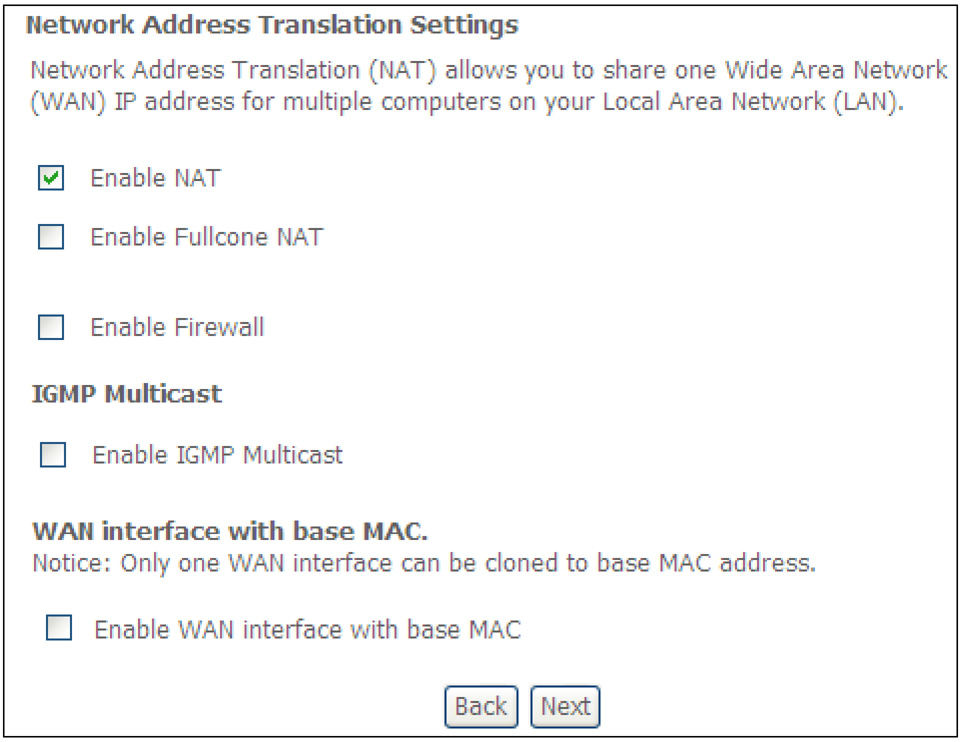
○ Use the following Static IP address:

WAN IP Address:	
WAN Subnet Mask:	
WAN gateway IP Address:	

NOTE: If IPv6 networking is enabled, an additional set of instructions, radio buttons, and text entry boxes will appear at the bottom of the screen. These configuration options are quite similar to those for IPv4 networks.

Click **Next** to continue or click **Back** to return to the previous step.

STEP 3: This screen provides access to NAT, Firewall and IGMP Multicast settings. Enable each by selecting the appropriate checkbox ☑. Click **Next** to continue or click **Back** to return to the previous step.



Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

☑ Enable NAT

□ Enable Fullcone NAT

□ Enable Firewall

IGMP Multicast

□ Enable IGMP Multicast

WAN interface with base MAC.

Notice: Only one WAN interface can be cloned to base MAC address.

□ Enable WAN interface with base MAC

ENABLE NAT
If the LAN is configured with a private IP address, the user should select this checkbox ☑. The NAT submenu will appear in the Advanced Setup menu after reboot. On the other hand, if a private IP address is not used on the LAN side (i.e. the LAN side is using a public IP), this checkbox ☑ should not be selected, so as to free up system resources for improved performance.

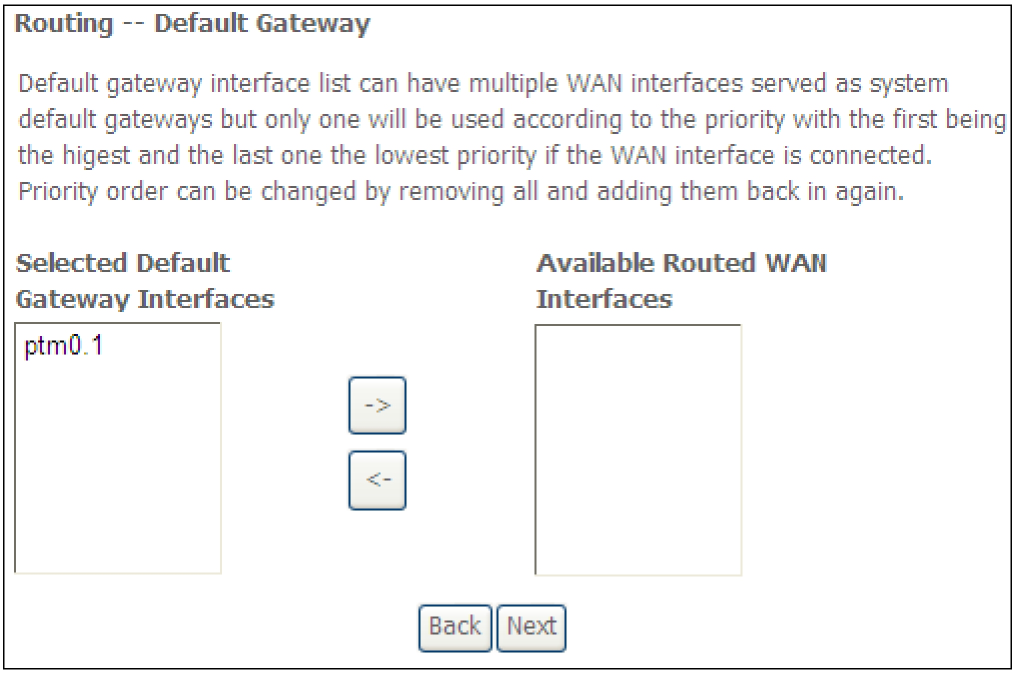
ENABLE FULLCONE NAT
This option becomes available when NAT is enabled. Known as one-to-one NAT, all requests from the same internal IP address and port are mapped to the same external IP address and port. An external host can send a packet to the internal host, by sending a packet to the mapped external address.

ENABLE FIREWALL
If this checkbox ☑ is selected, the Security submenu will be displayed on the Advanced Setup menu after reboot. If firewall is not necessary, this checkbox ☑ should not be selected so as to free up system resources for better performance.

ENABLE IGMP MULTICAST
Tick the checkbox ☑ to enable Internet Group Membership Protocol (IGMP) multicast. IGMP is a protocol used by IPv4 hosts to report their multicast group memberships to any neighboring multicast routers.

Enable WAN interface with base MAC
Enable this option to use the router's base MAC address as the MAC address for this WAN interface.

STEP 4: To choose an interface to be the default gateway.



Routing -- Default Gateway

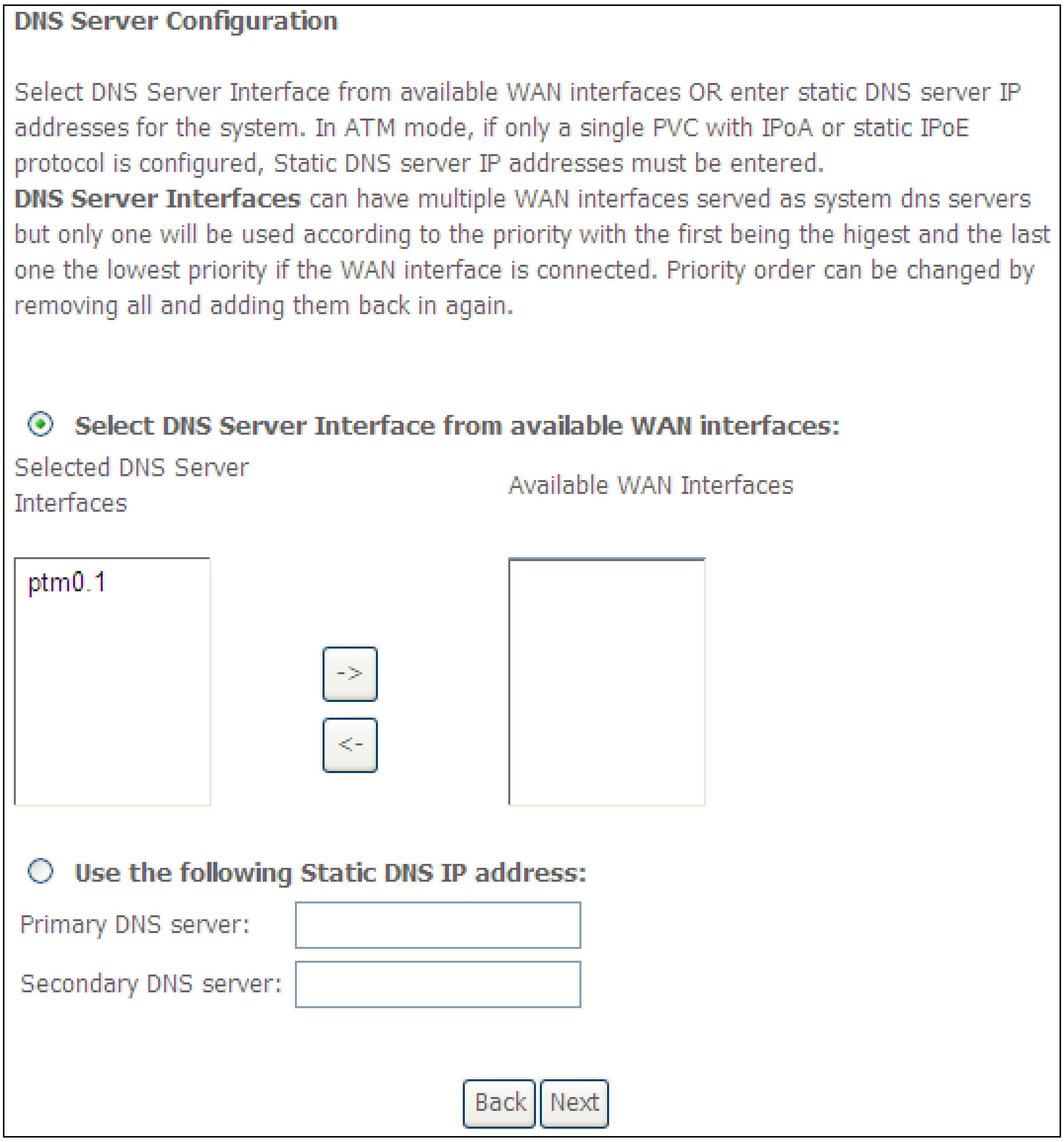
Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces: ptm0.1

Available Routed WAN Interfaces:

Click **Next** to continue or click **Back** to return to the previous step.

STEP 5: Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ptm0.1

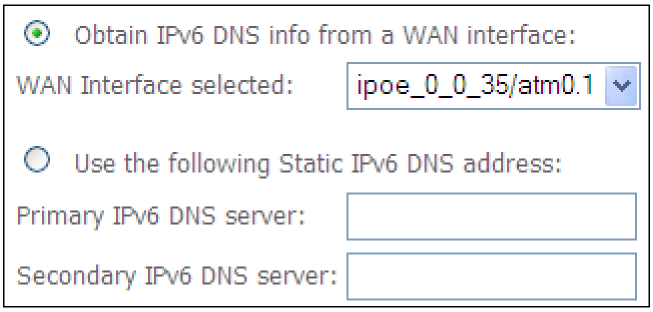
Available WAN Interfaces:

○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

If IPv6 is enabled, an additional set of options will be shown.



● Obtain IPv6 DNS info from a WAN interface:

WAN Interface selected: ipoe_0_0_35/atm0.1

○ Use the following Static IPv6 DNS address:

Primary IPv6 DNS server:

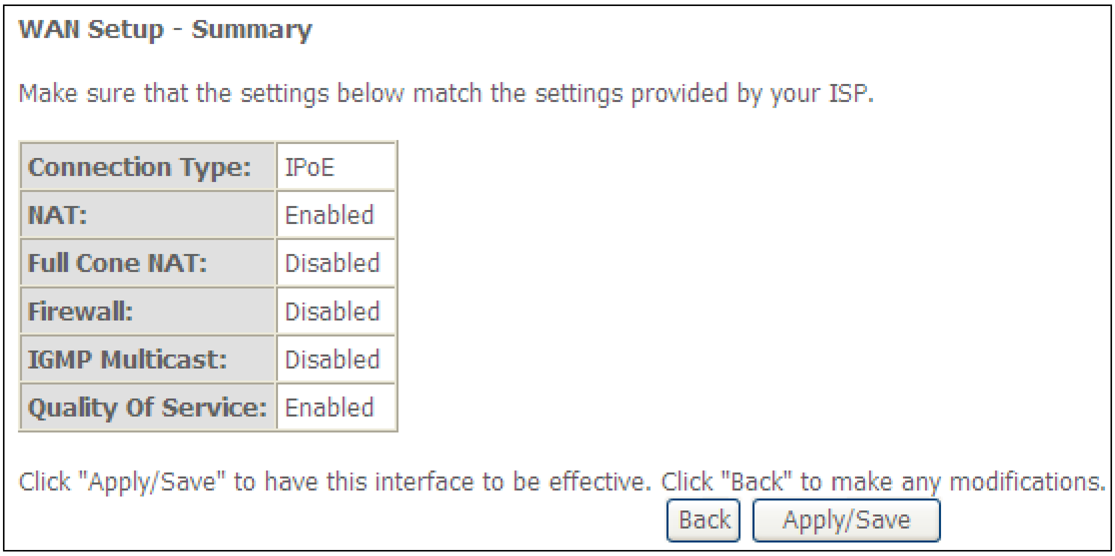
Secondary IPv6 DNS server:

IPv6: Select the configured WAN interface for IPv6 DNS server information OR enter the static IPv6 DNS server Addresses.

Note that selecting a WAN interface for IPv6 DNS server will enable DHCPv6 Client on that interface.

Click **Next** to continue or click **Back** to return to the previous step.

STEP 6: The WAN Setup - Summary screen shows a preview of the WAN service you have configured. Check these settings and click **Apply/Save** if they are correct, or click **Back** to modify them.



WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP.

Connection Type:	IPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

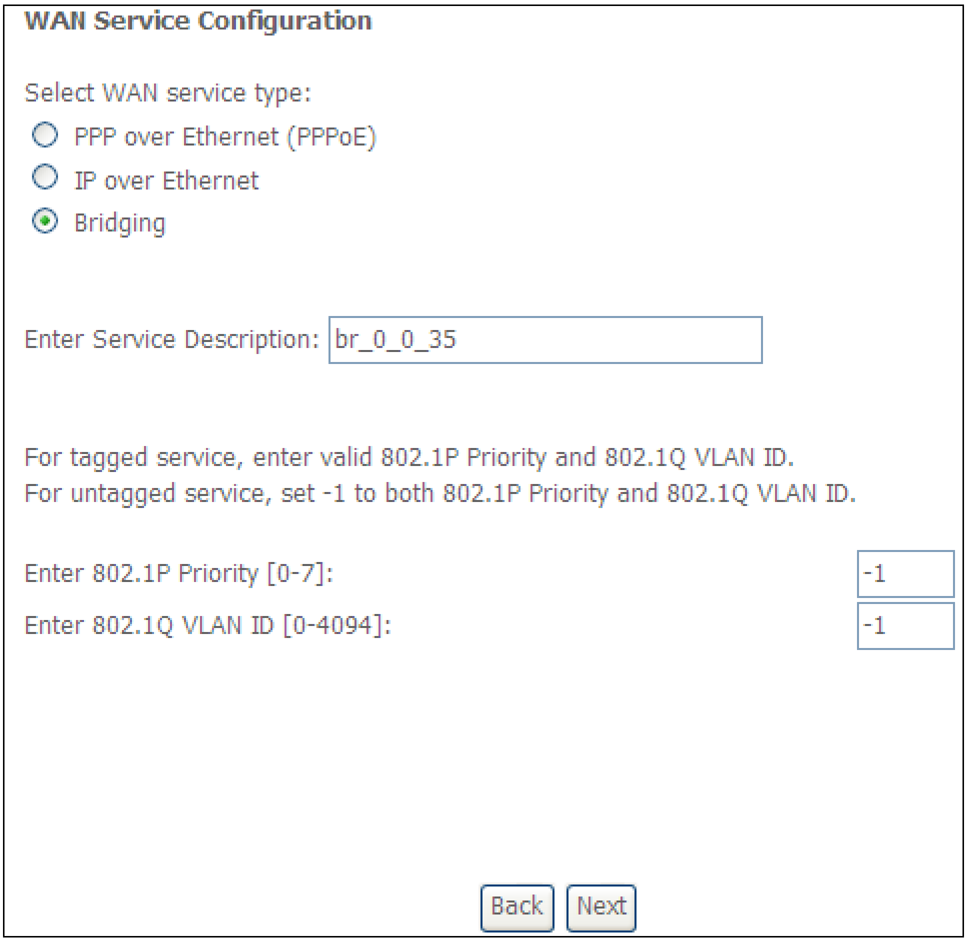
Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

After clicking **Apply/Save**, the new service should appear on the main screen. To activate it you must reboot. Go to Management → Reboot and click **Reboot**.

E2.3 Bridging

NOTE: This connection type is not available on the Ethernet WAN interface.

STEP 1: *Select the Bridging radio button and click **Next**.



WAN Service Configuration

Select WAN service type:

○ PPP over Ethernet (PPPoE)
○ IP over Ethernet
● Bridging

Enter Service Description: br_0_0_35

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

Enter 802.1P Priority [0-7]: -1

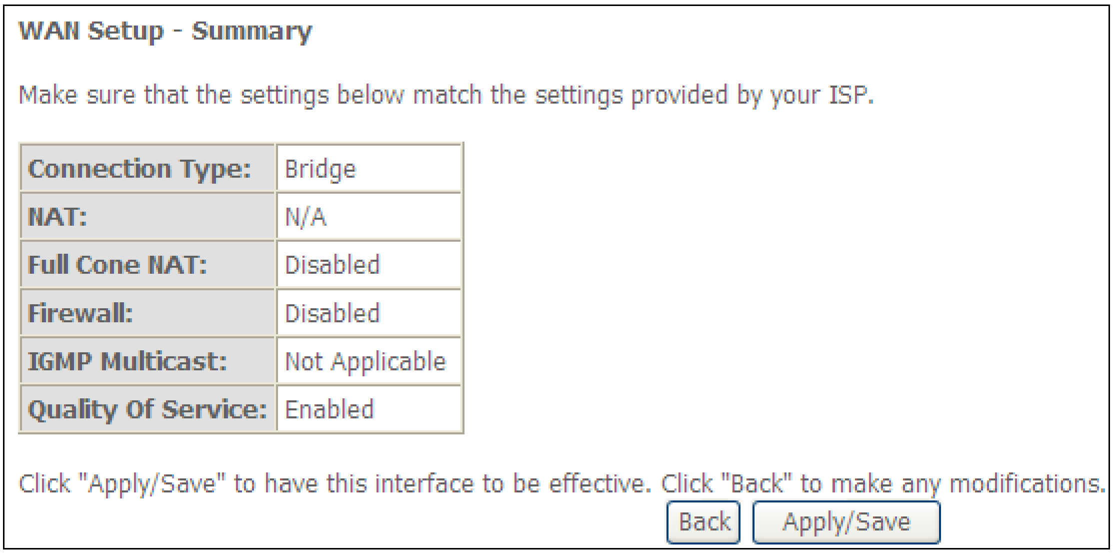
Enter 802.1Q VLAN ID [0-4094]: -1

*

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.

For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

STEP 2: The WAN Setup - Summary screen shows a preview of the WAN service you have configured. Check these settings and click **Apply/Save** if they are correct, or click **Back** to return to the previous screen.



WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP.

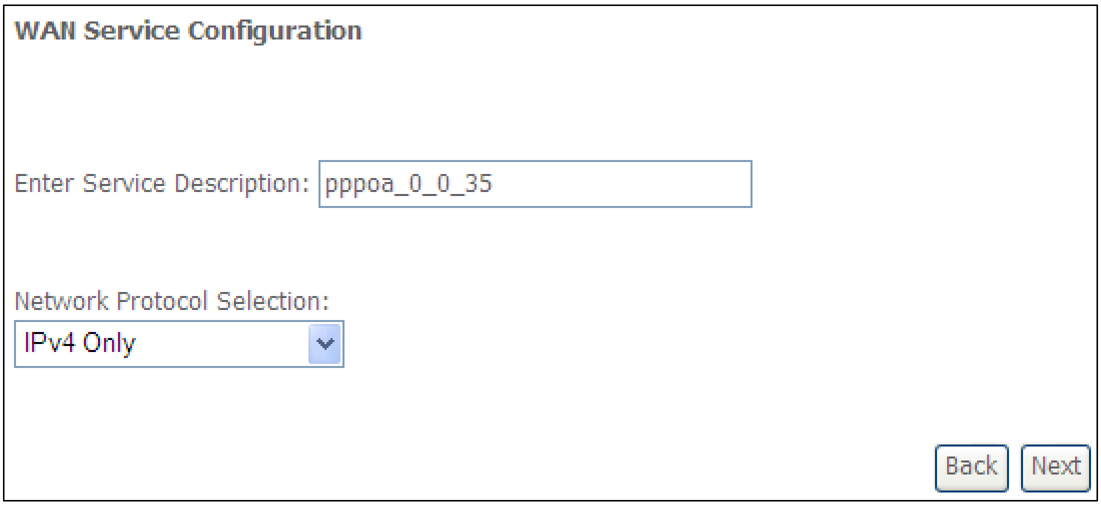
Connection Type:	Bridge
NAT:	N/A
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Not Applicable
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

After clicking **Apply/Save**, the new service should appear on the main screen. To activate it you must reboot. Go to Management → Reboot and click **Reboot**.

NOTE:	If this bridge connection is your only WAN service, the NexusLink 3112u will be inaccessible for remote management or technical support from the WAN.

E2.4 PPP over ATM (PPPoA)



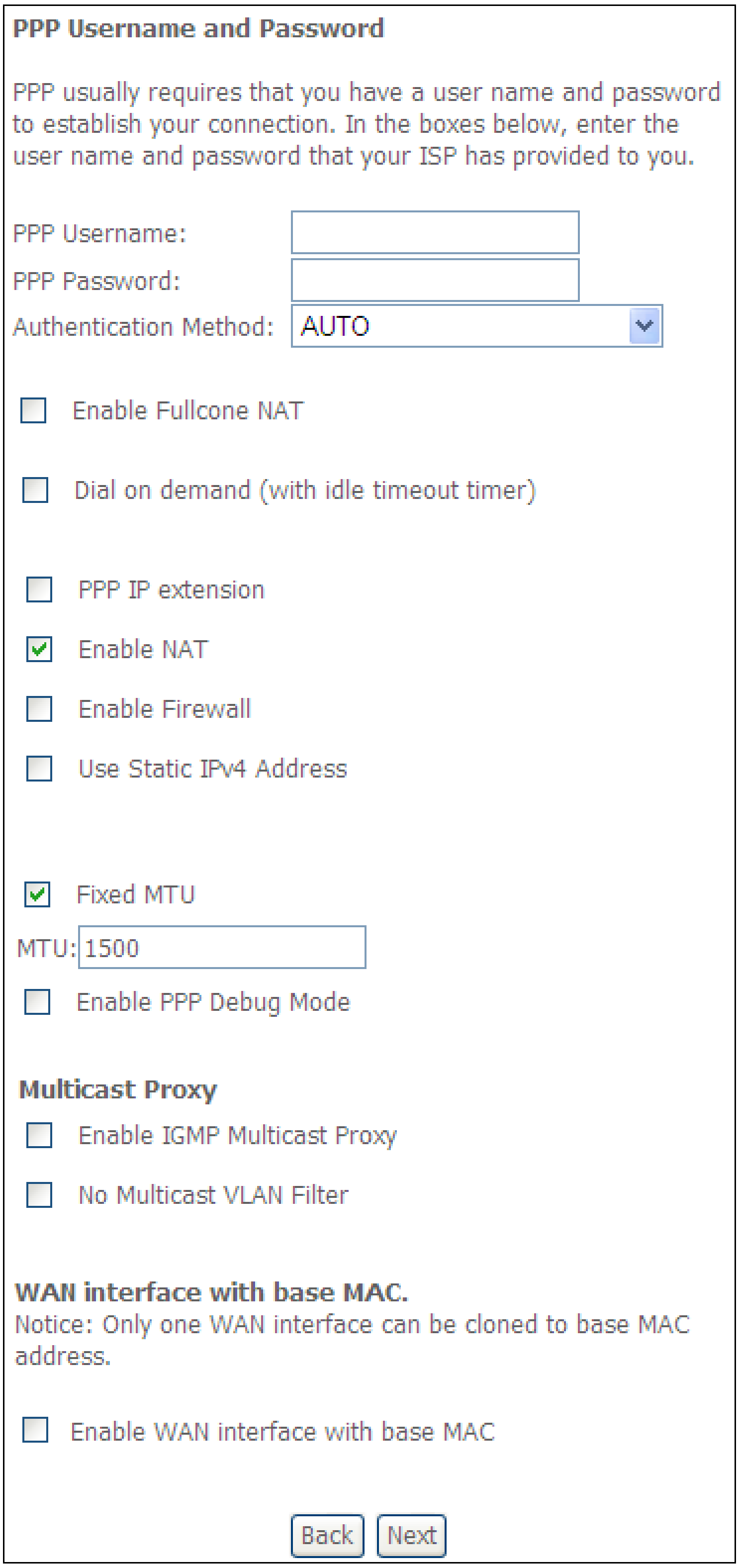
WAN Service Configuration

Enter Service Description: pppoa_0_0_35

Network Protocol Selection: IPv4 Only

STEP 1: Click **Next** to continue.

STEP 2: On the next screen, enter the PPP settings as provided by your ISP. Click **Next** to continue or click **Back** to return to the previous step.



PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:	
PPP Password:	
Authentication Method:	AUTO

□ Enable Fullcone NAT

□ Dial on demand (with idle timeout timer)

□ PPP IP extension

☑ Enable NAT

□ Enable Firewall

□ Use Static IPv4 Address

☑ Fixed MTU

MTU: 1500

□ Enable PPP Debug Mode

Multicast Proxy

□ Enable IGMP Multicast Proxy

□ No Multicast VLAN Filter

WAN interface with base MAC.

Notice: Only one WAN interface can be cloned to base MAC address.

□ Enable WAN interface with base MAC

PPP SETTINGS
The PPP username and password are dependent on the requirements of the ISP. The user name can be a maximum of 256 characters and the password a maximum of 32 characters in length. (Authentication Method: AUTO, PAP, CHAP, or MSCHAP.)

KEEP ALIVE INTERVAL

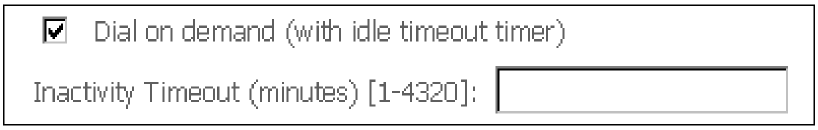
This option configures the interval between each PPP LCP request and the amount of time to wait for the PPP server to reply to the LCP request. If the time expired on all requests, the current PPP session would be dropped.

ENABLE FULLCONE NAT

This option becomes available when NAT is enabled. Known as one-to-one NAT, all requests from the same internal IP address and port are mapped to the same external IP address and port. An external host can send a packet to the internal host, by sending a packet to the mapped external address.

DIAL ON DEMAND

The NexusLink 3112u can be configured to disconnect if there is no activity for a period of time by selecting the **Dial on demand** checkbox ☑. You must also enter an inactivity timeout period in the range of 1 to 4320 minutes.



☑ Dial on demand (with idle timeout timer)

Inactivity Timeout (minutes) [1-4320]:

PPP IP EXTENSION

The PPP IP Extension is a special feature deployed by some service providers. Unless your service provider specifically requires this setup, do not select it.

PPP IP Extension does the following:

- Allows only one PC on the LAN.
- Disables NAT and Firewall.
- The device becomes the default gateway and DNS server to the PC through DHCP using the LAN interface IP address.
- The device extends the IP subnet at the remote service provider to the LAN PC. i.e. the PC becomes a host belonging to the same IP subnet.
- The device bridges the IP packets between WAN and LAN ports, unless the packet is addressed to the device's LAN IP address.
- The public IP address assigned by the remote side using the PPP/IPCP protocol is actually not used on the WAN PPP interface. Instead, it is forwarded to the PC LAN interface through DHCP. Only one PC on the LAN can be connected to the remote, since the DHCP server within the device has only a single IP address to assign to a LAN device.

ENABLE NAT

If the LAN is configured with a private IP address, the user should select this checkbox ☑. The NAT submenu will appear in the Advanced Setup menu after reboot. On the other hand, if a private IP address is not used on the LAN side (i.e. the LAN side is using a public IP), this checkbox ☑ should not be selected to free up system resources for better performance.

ENABLE FIREWALL

If this checkbox ☑ is selected, the Security submenu will be displayed on the Advanced Setup menu after reboot. If firewall is not necessary, this checkbox ☑ should not be selected to free up system resources for better performance.

USE STATIC IPv4 ADDRESS

Unless your service provider specially requires it, do not select this checkbox ☑. If selected, enter the static IP address in the **IP Address** field. Also, don't forget to adjust the IP configuration to Static IP Mode as described in section 3.2.

Fixed MTU

Fixed Maximum Transmission Unit. The size (in bytes) of largest protocol data unit which the layer can pass onwards. This value is 1500 for PPPoA.

ENABLE PPP DEBUG MODE

When this option is selected, the system will put more PPP connection information into the system log. This is for debugging errors and not for normal usage.

ENABLE IGMP MULTICAST PROXY

Tick the checkbox ☑ to enable Internet Group Membership Protocol (IGMP) multicast. This protocol is used by IPv4 hosts to report their multicast group memberships to any neighboring multicast routers.

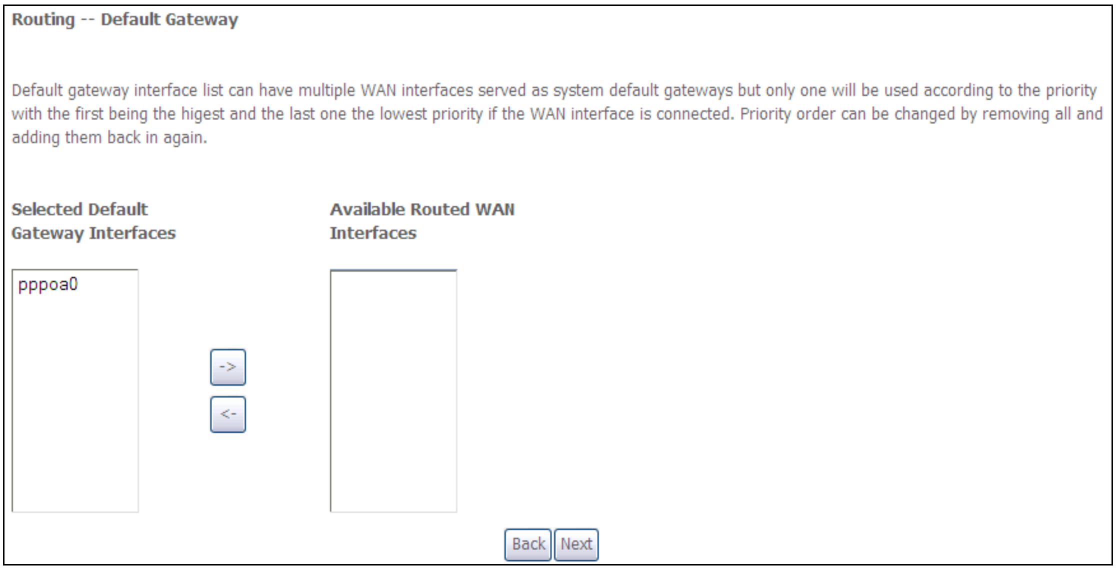
NO MULTICAST VLAN FILTER

Tick the checkbox ☑ to Enable/Disable multicast VLAN filter.

Enable WAN interface with base MAC

Enable this option to use the router's base MAC address as the MAC address for this WAN interface.

STEP 3: Choose an interface to be the default gateway.



Routing -- Default Gateway

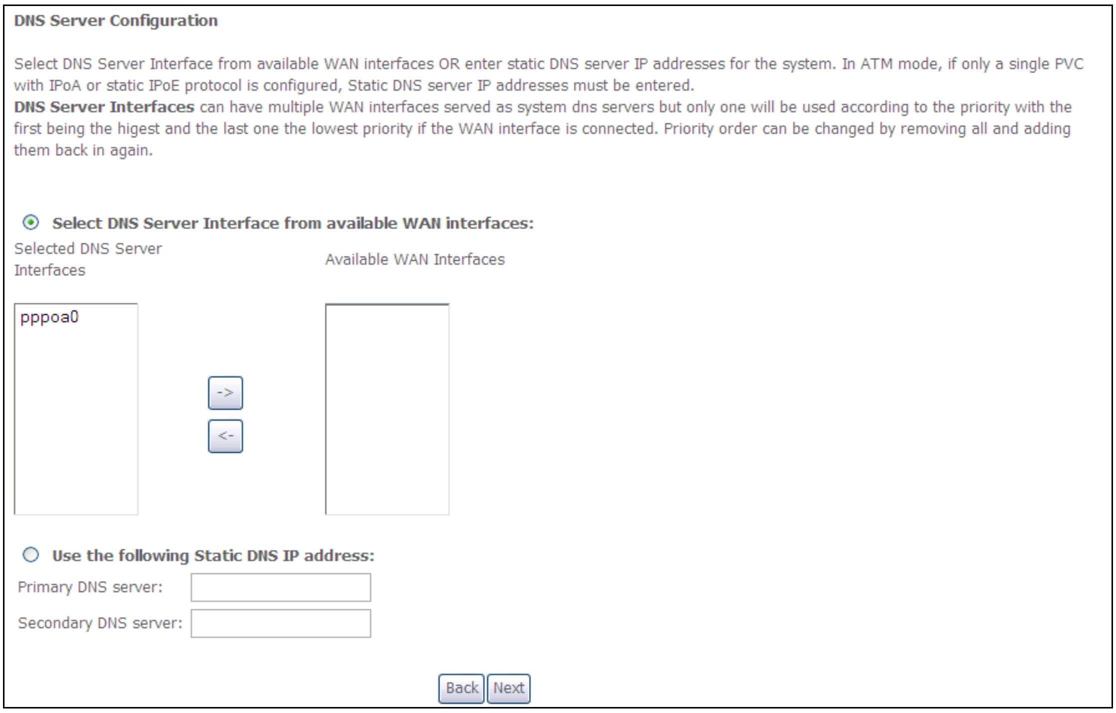
Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces: pppoa0

Available Routed WAN Interfaces:

Click **Next** to continue or click **Back** to return to the previous step.

STEP 4: Choose an interface to be the default gateway.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: pppoa0

Available WAN Interfaces:

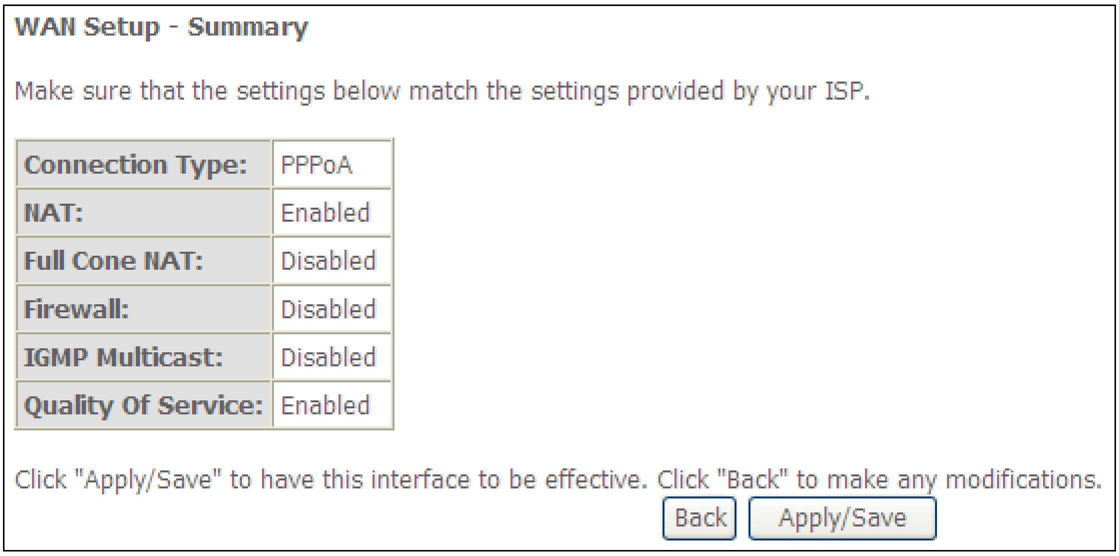
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Click **Next** to continue or click **Back** to return to the previous step.

STEP 5: The WAN Setup - Summary screen shows a preview of the WAN service you have configured. Check these settings and click **Apply/Save** if they are correct, or click **Back** to modify them.



WAN Setup - Summary

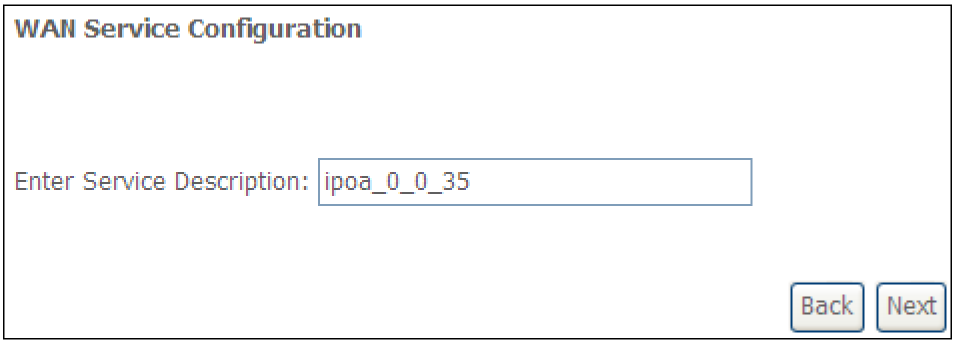
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	PPPoA
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

After clicking **Apply/Save**, the new service should appear on the main screen. To activate it you must reboot. Go to Management → Reboot and click **Reboot**.

E2.5 IP over ATM (IPoA)

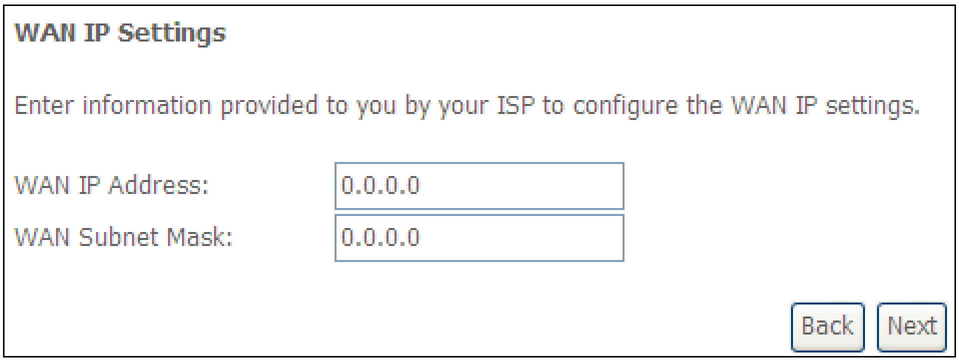


WAN Service Configuration

Enter Service Description: ipoa_0_0_35

STEP 1: Click **Next** to continue.

STEP 2: Enter the WAN IP settings provided by your ISP. Click **Next** to continue.



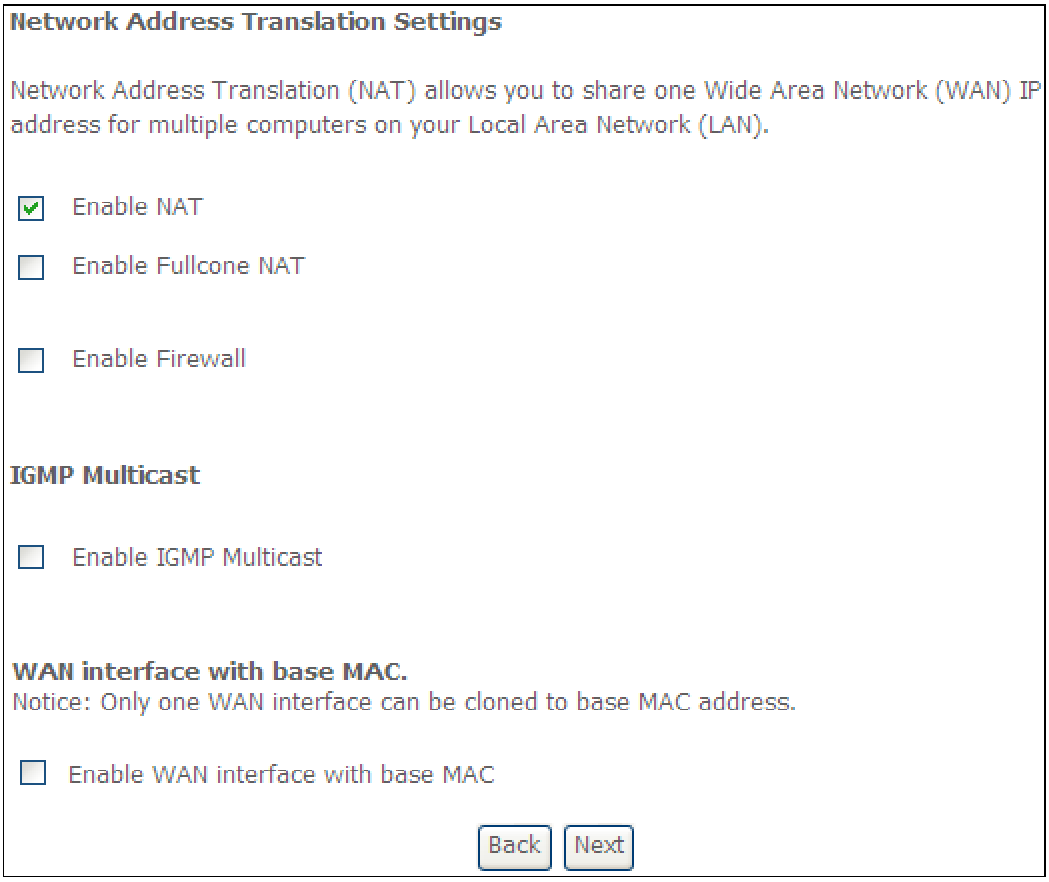
WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.

WAN IP Address: 0.0.0.0

WAN Subnet Mask: 0.0.0.0

STEP 3: This screen provides access to NAT, Firewall and IGMP Multicast settings. Enable each by selecting the appropriate checkbox ☑. Click **Next** to continue or click **Back** to return to the previous step.



Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

☑ Enable NAT

□ Enable Fullcone NAT

□ Enable Firewall

IGMP Multicast

□ Enable IGMP Multicast

WAN interface with base MAC.
Notice: Only one WAN interface can be cloned to base MAC address.

□ Enable WAN interface with base MAC

ENABLE NAT
If the LAN is configured with a private IP address, the user should select this checkbox ☑. The NAT submenu will appear in the Advanced Setup menu after reboot. On the other hand, if a private IP address is not used on the LAN side (i.e. the LAN side is using a public IP), this checkbox ☑ should not be selected, so as to free up system resources for improved performance.

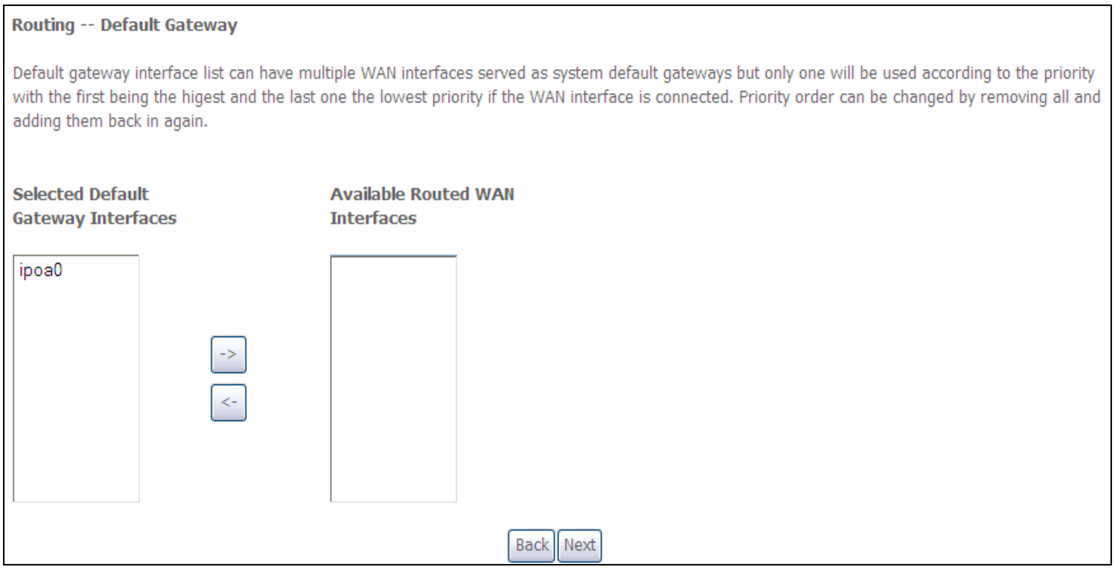
ENABLE FULLCONE NAT
This option becomes available when NAT is enabled. Known as one-to-one NAT, all requests from the same internal IP address and port are mapped to the same external IP address and port. An external host can send a packet to the internal host by sending a packet to the mapped external address.

ENABLE FIREWALL
If this checkbox ☑ is selected, the Security submenu will be displayed on the Advanced Setup menu after reboot. If firewall is not necessary, this checkbox ☑ should not be selected so as to free up system resources for better performance.

ENABLE IGMP MULTICAST
Tick the checkbox ☑ to enable Internet Group Membership Protocol (IGMP) multicast. IGMP is a protocol used by IPv4 hosts to report their multicast group memberships to any neighboring multicast routers.

Enable WAN interface with base MAC
Enable this option to use the router's base MAC address as the MAC address for this WAN interface.

STEP 4: Choose an interface to be the default gateway.



Routing -- Default Gateway

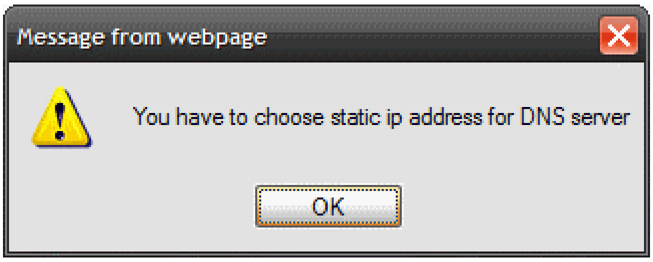
Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces: ipoa0

Available Routed WAN Interfaces:

Click **Next** to continue or click **Back** to return to the previous step.

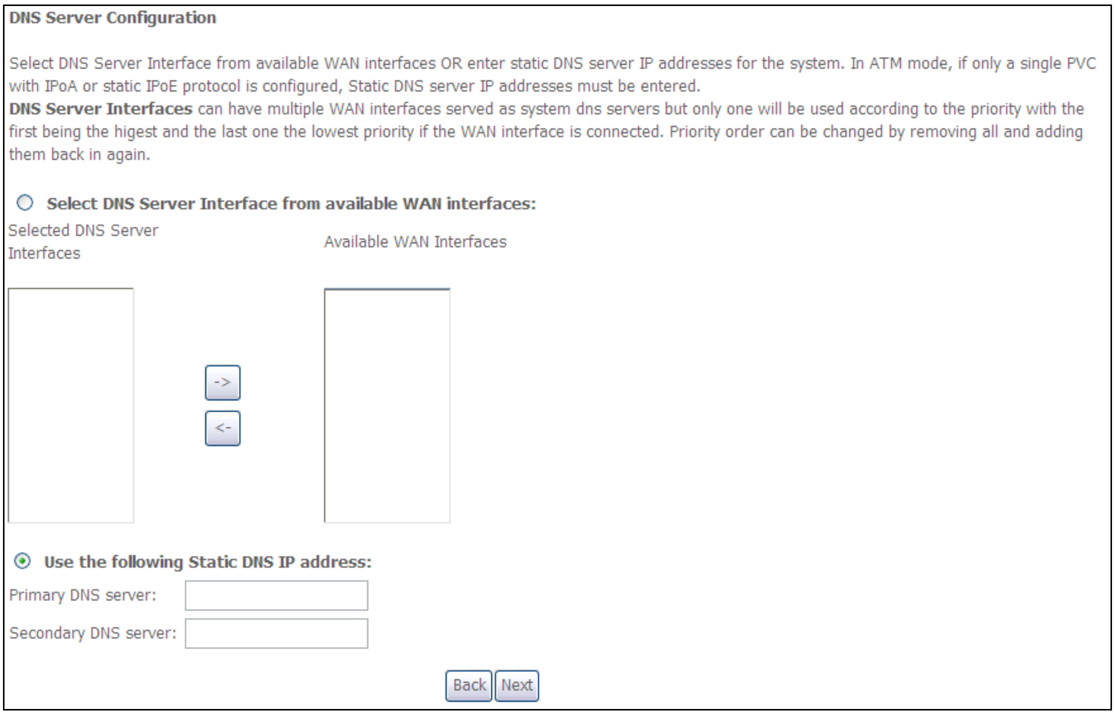
NOTE: If the DHCP server is not enabled on another WAN interface then the following notification will be shown before the next screen.



Message from webpage

You have to choose static ip address for DNS server

STEP 5: Choose an interface to be the default gateway.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

○ **Select DNS Server Interface from available WAN interfaces:**

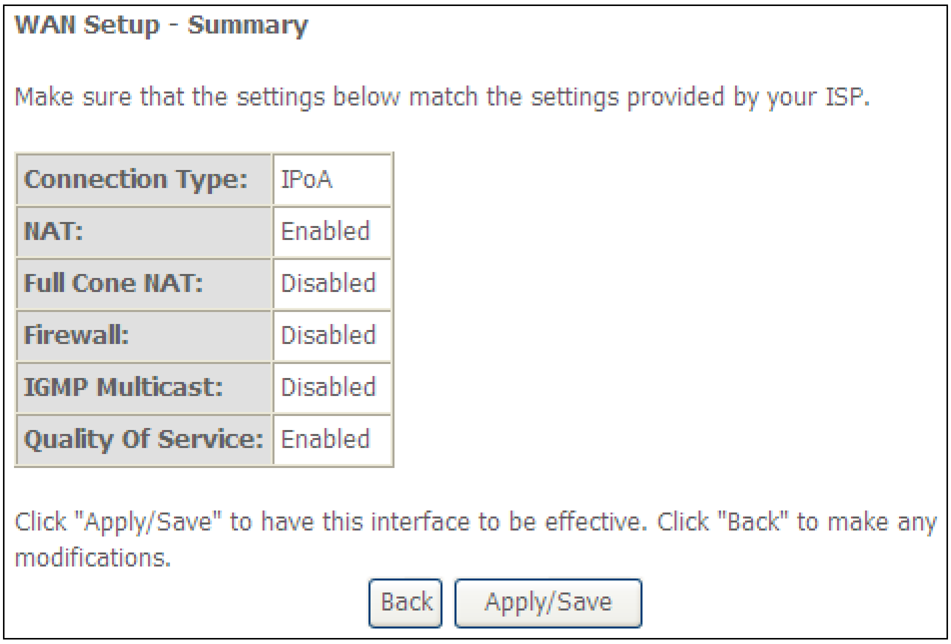
● **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Click **Next** to continue or click **Back** to return to the previous step.

STEP 6: The WAN Setup - Summary screen shows a preview of the WAN service you have configured. Check these settings and click **Apply/Save** if they are correct, or click **Back** to modify them.



WAN Setup - Summary

Make sure that the settings below match the settings provided by your ISP.

Connection Type:	IPoA
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

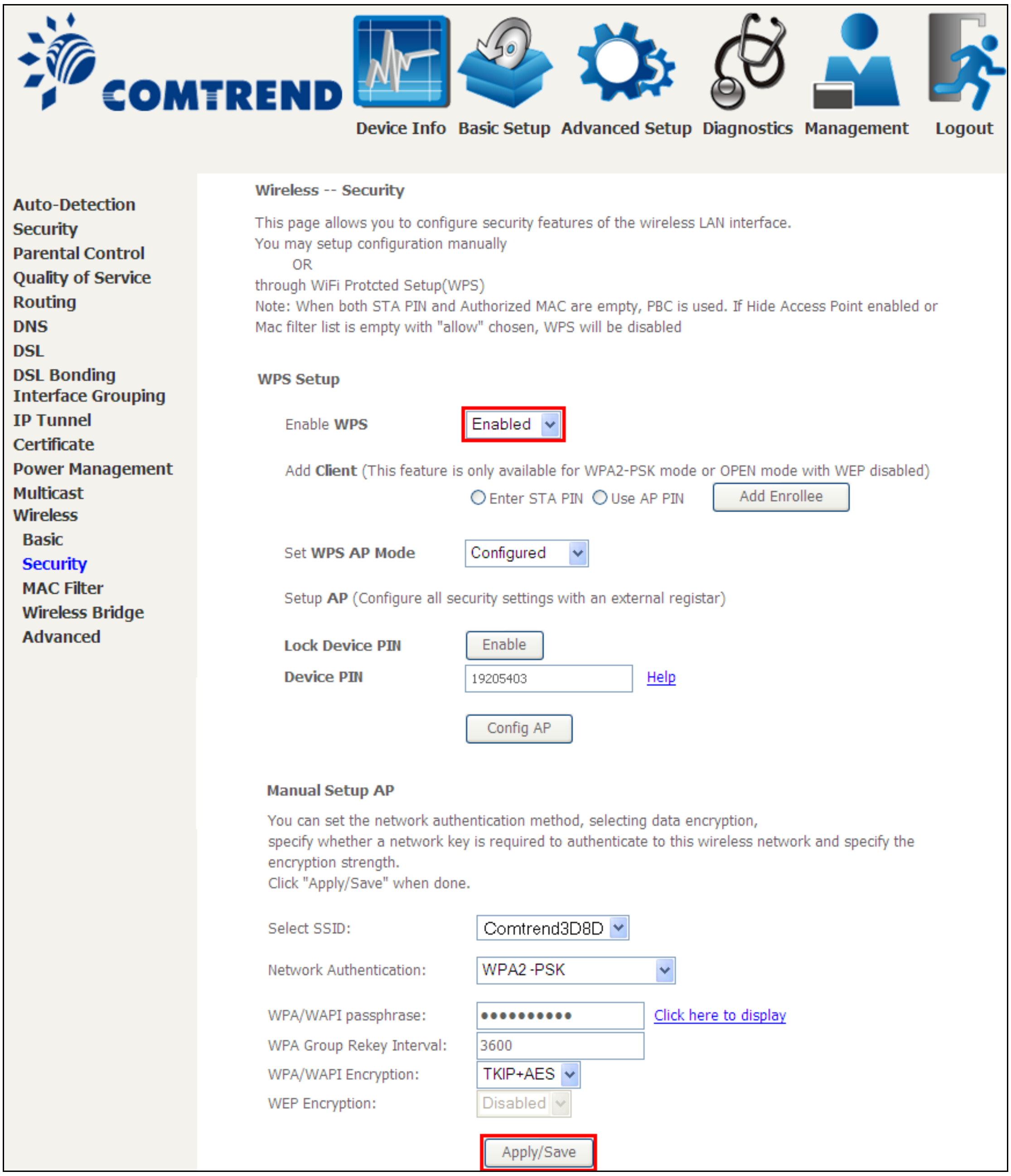
After clicking **Apply/Save**, the new service should appear on the main screen. To activate it you must reboot. Go to Management → Reboot and click **Reboot**.

Appendix F - WPS OPERATION

This Section shows the basic AP WPS Operation procedure.

F1 Add Enrollee with Pin Method

1) Select **Enabled** from the Enable WPS dropdown menu.
2) Click the **Apply/Save** button at the bottom of the screen.



Wireless -- Security

This page allows you to configure security features of the wireless LAN interface.
You may setup configuration manually
OR
through WiFi Protcted Setup(WPS)
Note: When both STA PIN and Authorized MAC are empty, PBC is used. If Hide Access Point enabled or Mac filter list is empty with "allow" chosen, WPS will be disabled

WPS Setup

Enable **WPS**: Enabled

Add **Client** (This feature is only available for WPA2-PSK mode or OPEN mode with WEP disabled)
○ Enter STA PIN ○ Use AP PIN [Add Enrollee]

Set **WPS AP Mode**: Configured

Setup **AP** (Configure all security settings with an external registar)

Lock Device PIN [Enable]
Device PIN: 19205403 Help

[Config AP]

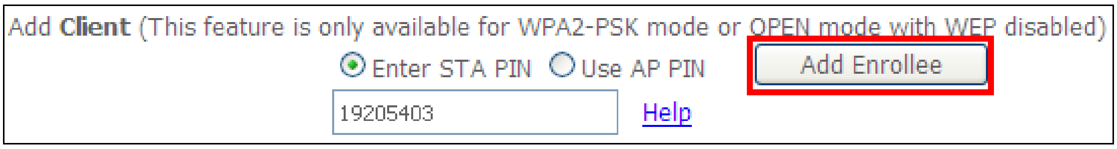
Manual Setup AP

You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click "Apply/Save" when done.

Select SSID: Comtrend3D8D
Network Authentication: WPA2 -PSK
WPA/WAPI passphrase: ●●●●●●●●●● Click here to display
WPA Group Rekey Interval: 3600
WPA/WAPI Encryption: TKIP+AES
WEP Encryption: Disabled

[Apply/Save]

3) When the screen refreshes select the Radio button “Enter STA Pin”
4) Input Pin from Enrollee Station (17084215 in this example)
5) Click “Add Enrollee”



Add **Client** (This feature is only available for WPA2-PSK mode or OPEN mode with WEP disabled)

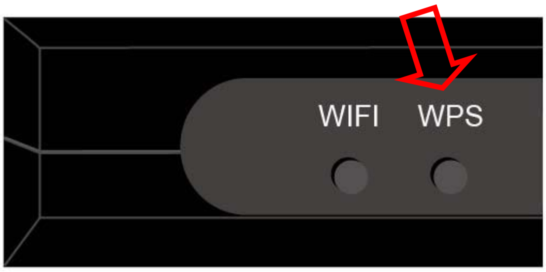
● Enter STA PIN ○ Use AP PIN

19205403

4) Operate Station to start WPS Adding Enrollee.

F2 Add Enrollee with PBC Method

1) Press the WPS button on the front of the device to activate WPS PBC operation.

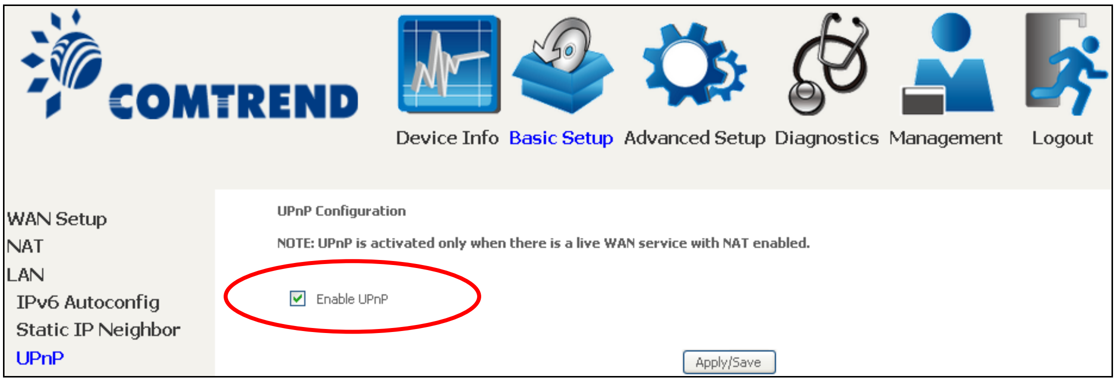


2) Operate Station (your dongle for example) to start WPS Adding Enrollee.

F3 – Configure WPS External Registrar

Follow these steps to add an external registrar using the web user interface (WUI) on a personal computer running the Windows 7 operating system:

Step 1: Enable UPnP on the Advanced Setup → LAN screen in the WUI.



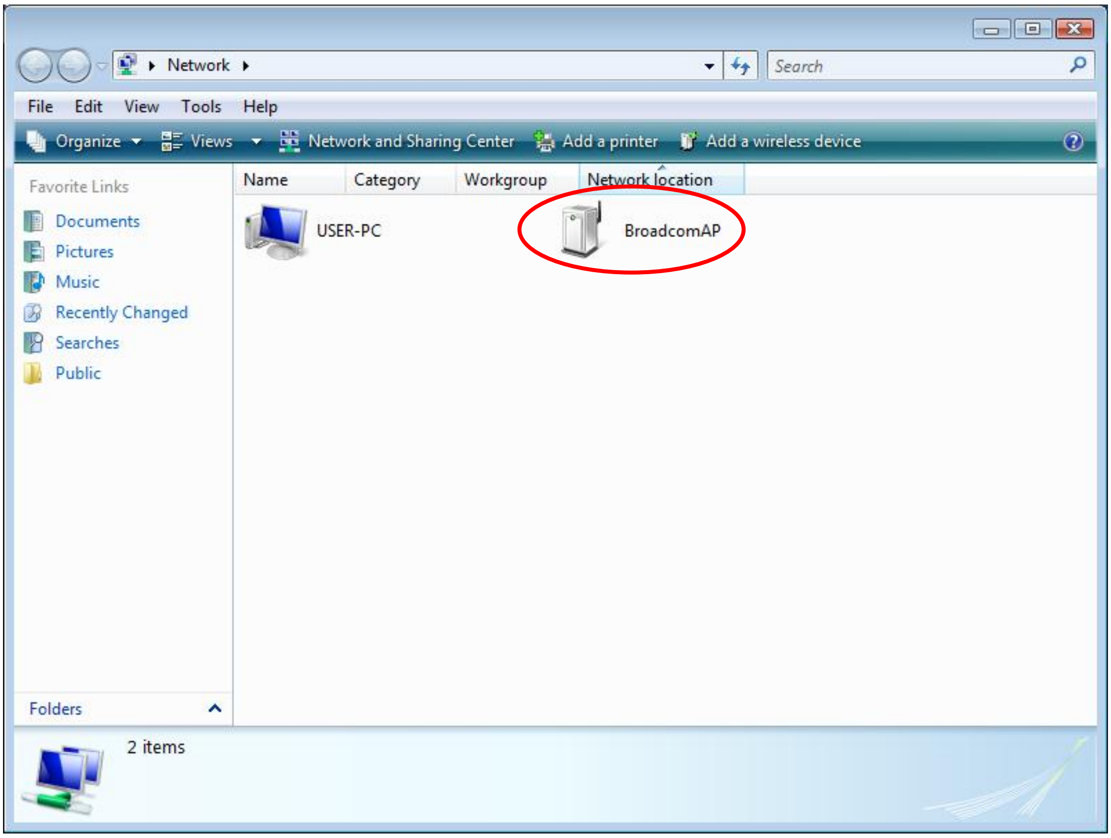
UPnP Configuration

NOTE: UPnP is activated only when there is a live WAN service with NAT enabled.

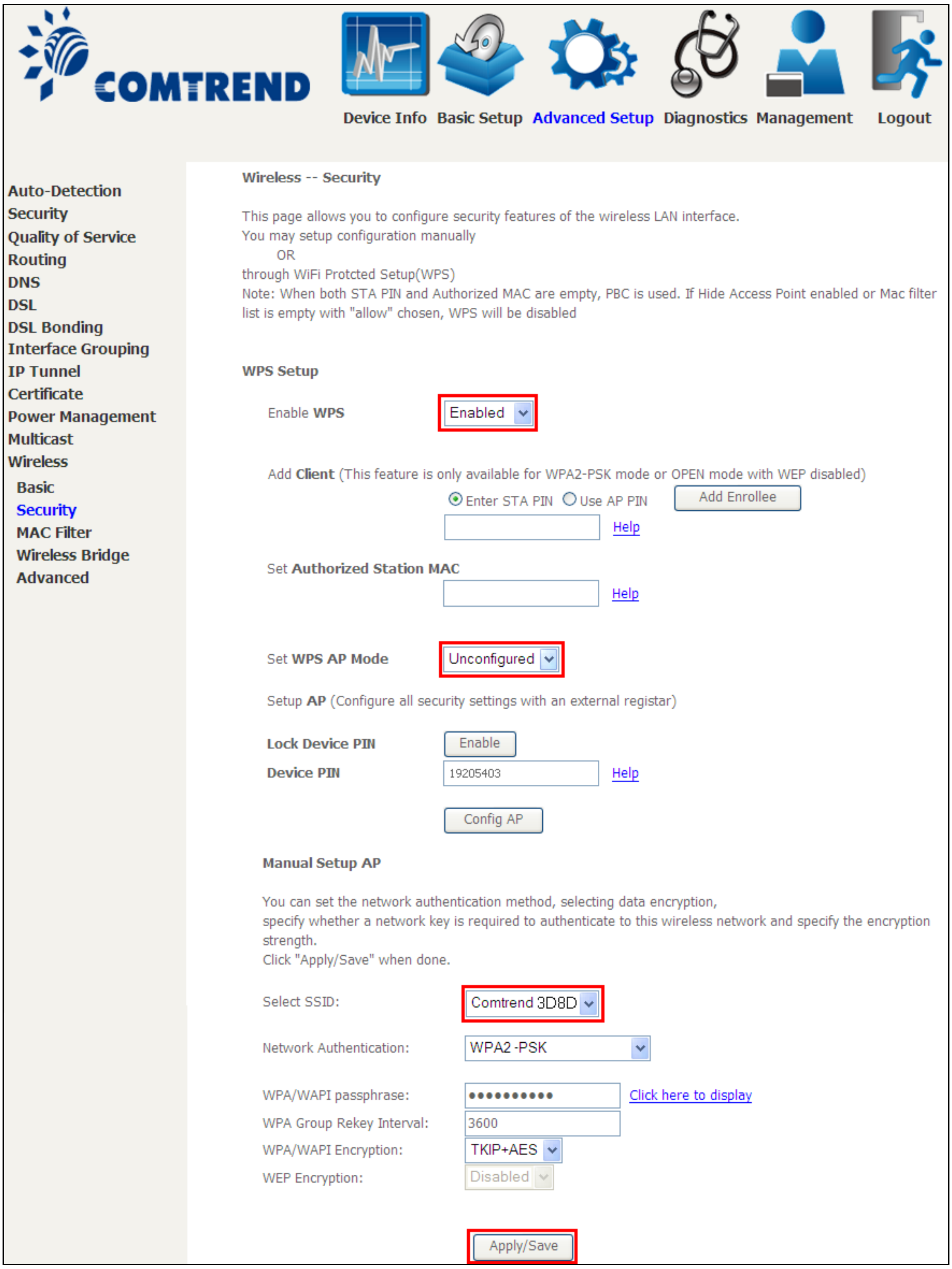
☑ Enable UPnP

NOTE: A PVC must exist to see this option.

Step 2: Open the Network folder and look for the BroadcomAP icon.



Step 3: On the Wireless → Security screen, enable WSC by selecting **Enabled** from the drop down list box and set the WPS AP Mode to Unconfigured.



Wireless -- Security

This page allows you to configure security features of the wireless LAN interface.
You may setup configuration manually
OR
through WiFi Protcted Setup(WPS)
Note: When both STA PIN and Authorized MAC are empty, PBC is used. If Hide Access Point enabled or Mac filter list is empty with "allow" chosen, WPS will be disabled

WPS Setup

Enable WPS: Enabled

Add Client (This feature is only available for WPA2-PSK mode or OPEN mode with WEP disabled)
● Enter STA PIN ○ Use AP PIN [Add Enrollee]
Help

Set Authorized Station MAC
Help

Set WPS AP Mode: Unconfigured

Setup AP (Configure all security settings with an external registar)

Lock Device PIN: [Enable]
Device PIN: 19205403 Help

[Config AP]

Manual Setup AP

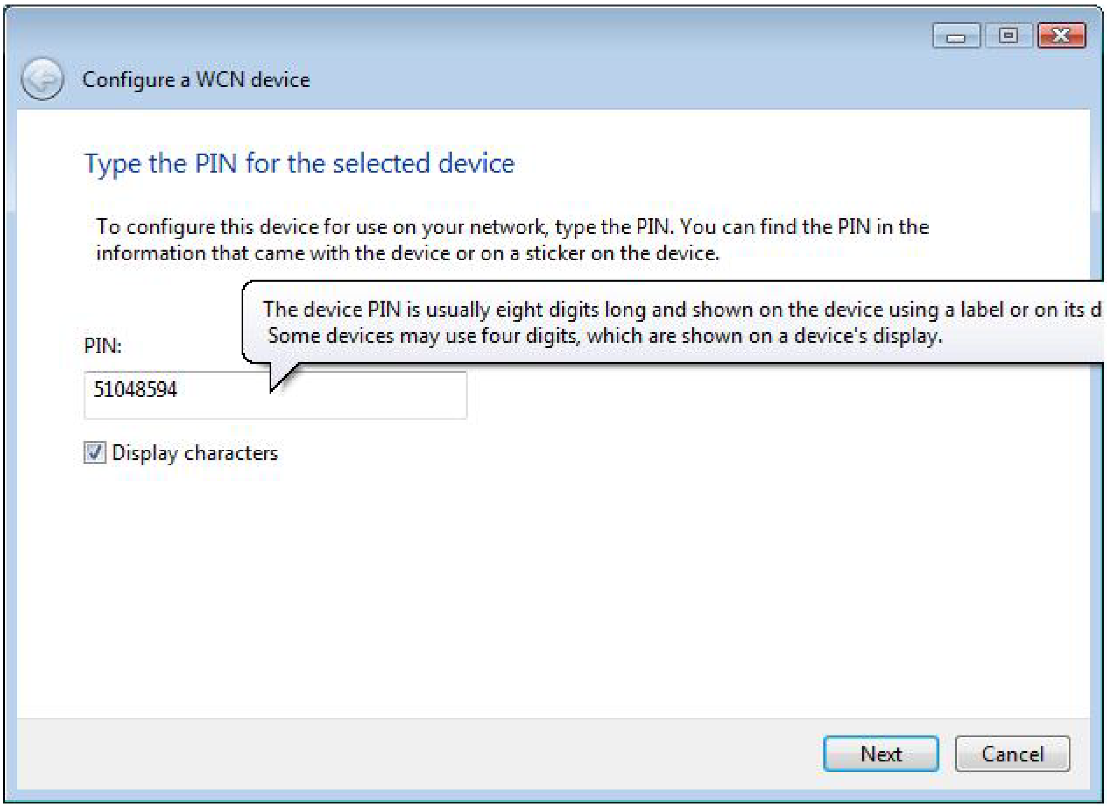
You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click "Apply/Save" when done.

Select SSID: Comtrend 3D8D
Network Authentication: WPA2 -PSK
WPA/WAPI passphrase: •••••••••• Click here to display
WPA Group Rekey Interval: 3600
WPA/WAPI Encryption: TKIP+AES
WEP Encryption: Disabled

[Apply/Save]

Step 4: Click the **Apply/Save** button at the bottom of the screen. The screen will go blank while the router applies the new Wireless settings.

Step 5: Now return to the Network folder and click the BroadcomAP icon. A dialog box will appear asking for the Device PIN number. Enter the Device PIN as shown on the Wireless → Security screen. Click **Next**.



Configure a WCN device

Type the PIN for the selected device

To configure this device for use on your network, type the PIN. You can find the PIN in the information that came with the device or on a sticker on the device.

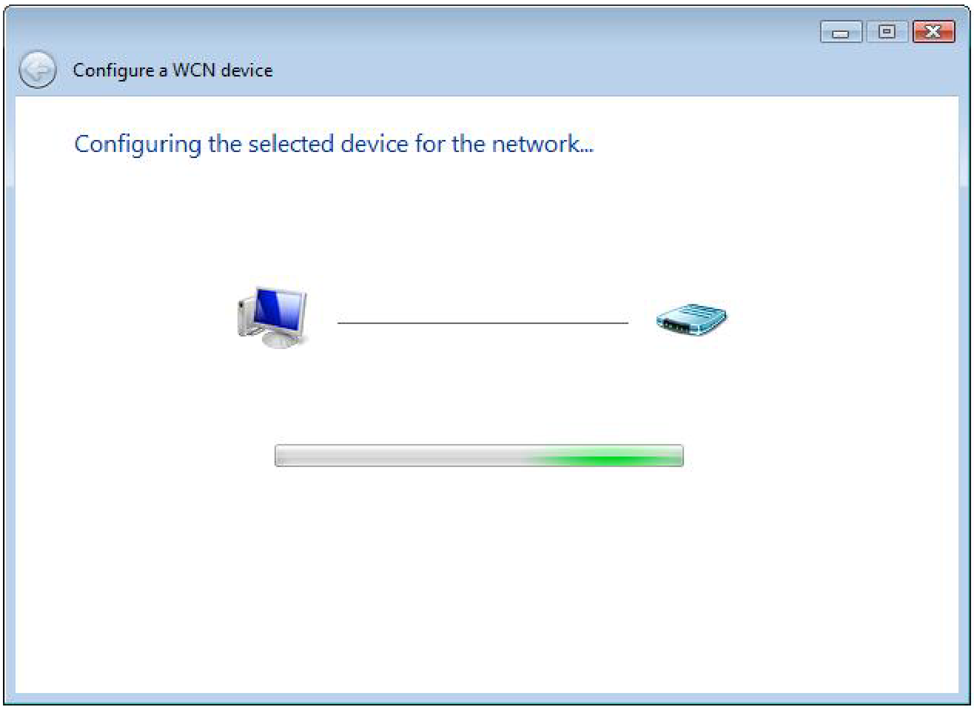
The device PIN is usually eight digits long and shown on the device using a label or on its d
Some devices may use four digits, which are shown on a device's display.

PIN:

51048594

☑ Display characters

Step 6: Windows 7 will attempt to configure the wireless security settings.



Configure a WCN device

Configuring the selected device for the network...

Step 7: If successful, the security settings will match those in Windows 7.

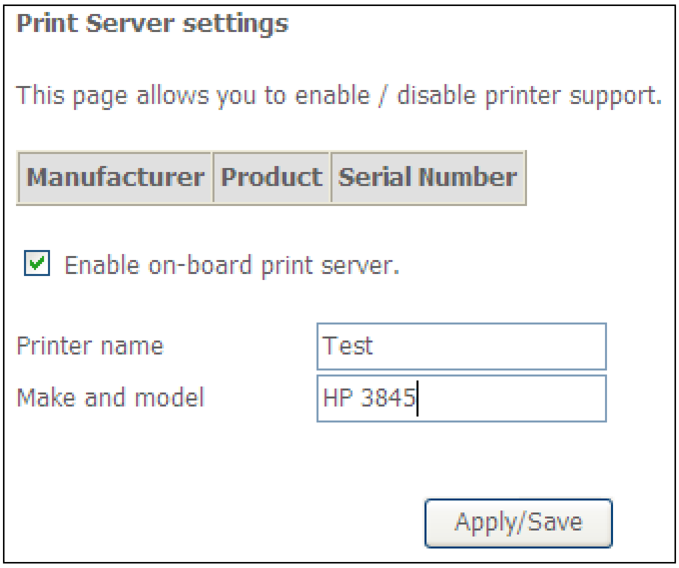
Appendix G - Printer Server

These steps explain the procedure for enabling the Printer Server.

NOTE: This function only applies to models with an USB host port.

STEP 1: Enable Print Server from Web User Interface. Select Enable on-board print server checkbox ☑ and enter Printer name and Make and model

NOTE: The **Printer name** can be any text string up to 40 characters.
The **Make and model** can be any text string up to 128 characters.



Print Server settings

This page allows you to enable / disable printer support.

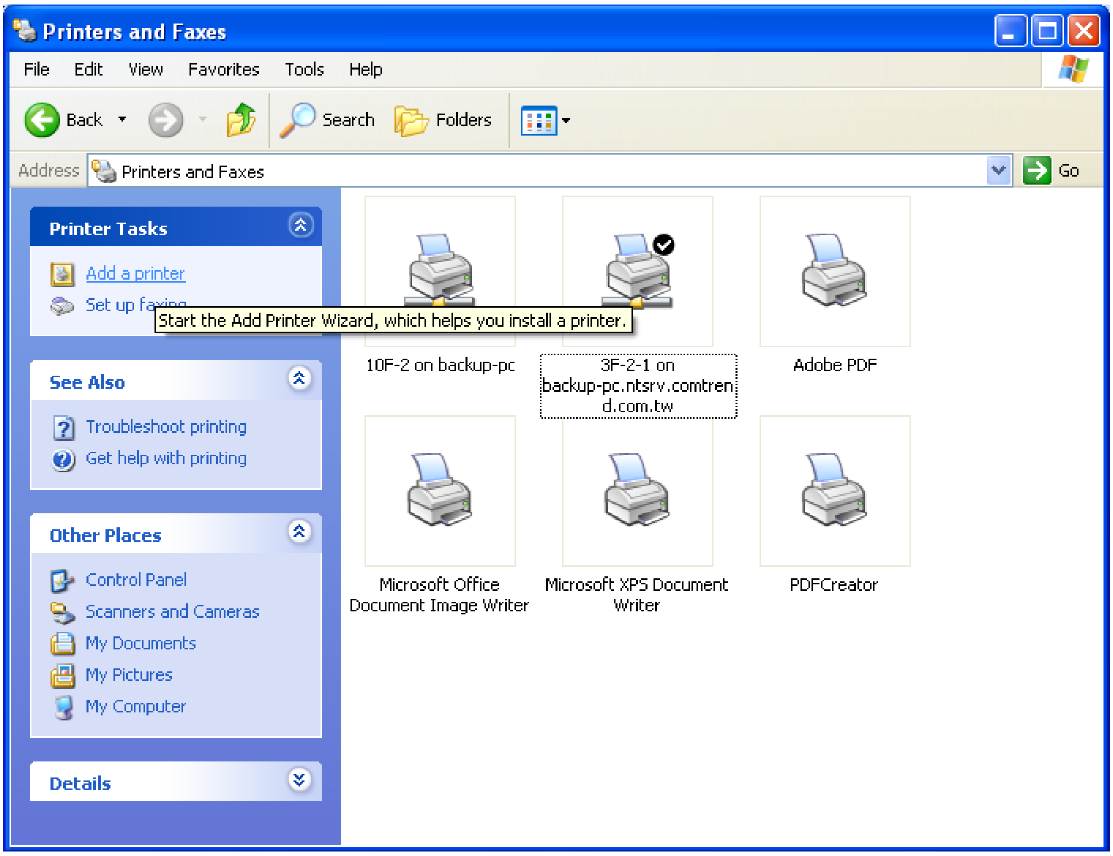
Manufacturer	Product	Serial Number

☑ Enable on-board print server.

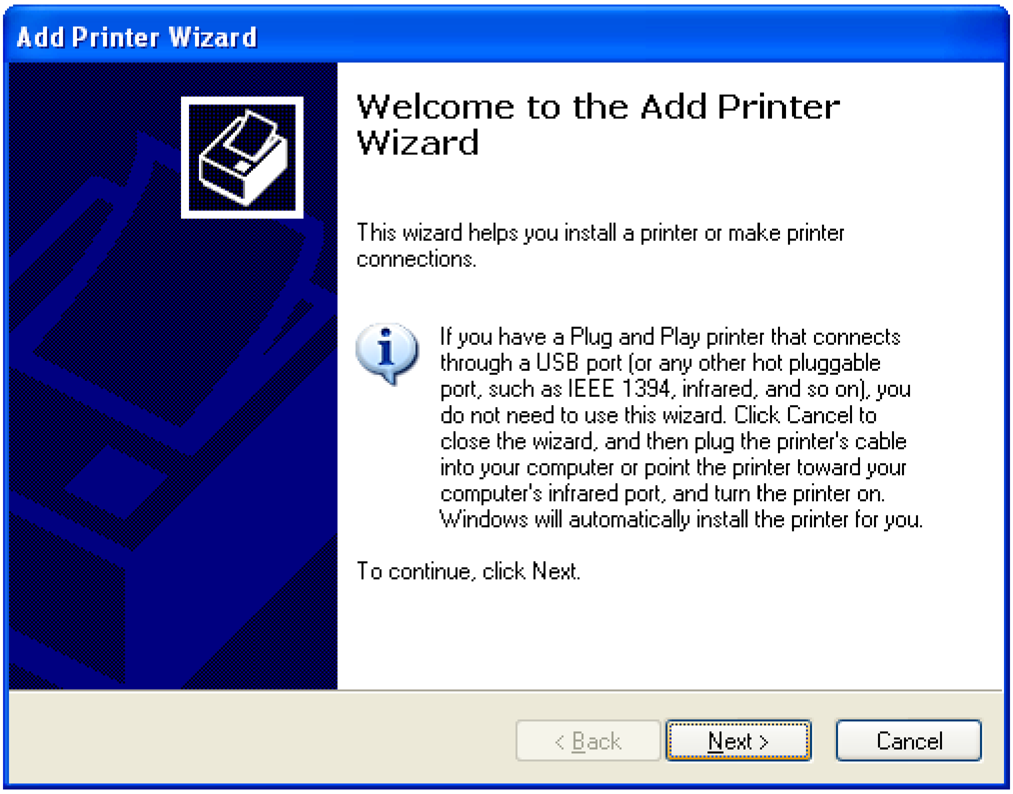
Printer name: Test

Make and model: HP 3845

STEP 2: Go to the **Printers and Faxes** application in the **Control Panel** and select the **Add a printer** function (as located on the side menu below).



STEP 3: Click **Next** to continue when you see the dialog box below.



Add Printer Wizard

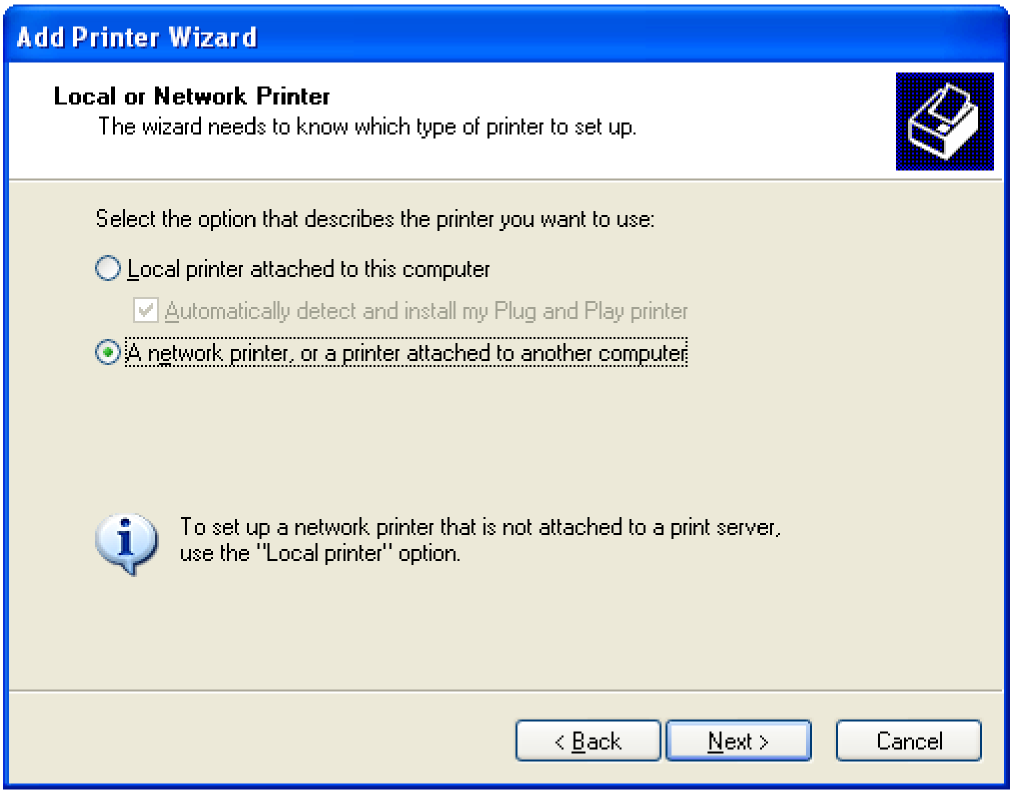
Welcome to the Add Printer Wizard

This wizard helps you install a printer or make printer connections.

If you have a Plug and Play printer that connects through a USB port (or any other hot pluggable port, such as IEEE 1394, infrared, and so on), you do not need to use this wizard. Click Cancel to close the wizard, and then plug the printer's cable into your computer or point the printer toward your computer's infrared port, and turn the printer on. Windows will automatically install the printer for you.

To continue, click Next.

STEP 4: Select **Network Printer** and click **Next**.



Add Printer Wizard

Local or Network Printer

The wizard needs to know which type of printer to set up.

Select the option that describes the printer you want to use:

○ Local printer attached to this computer

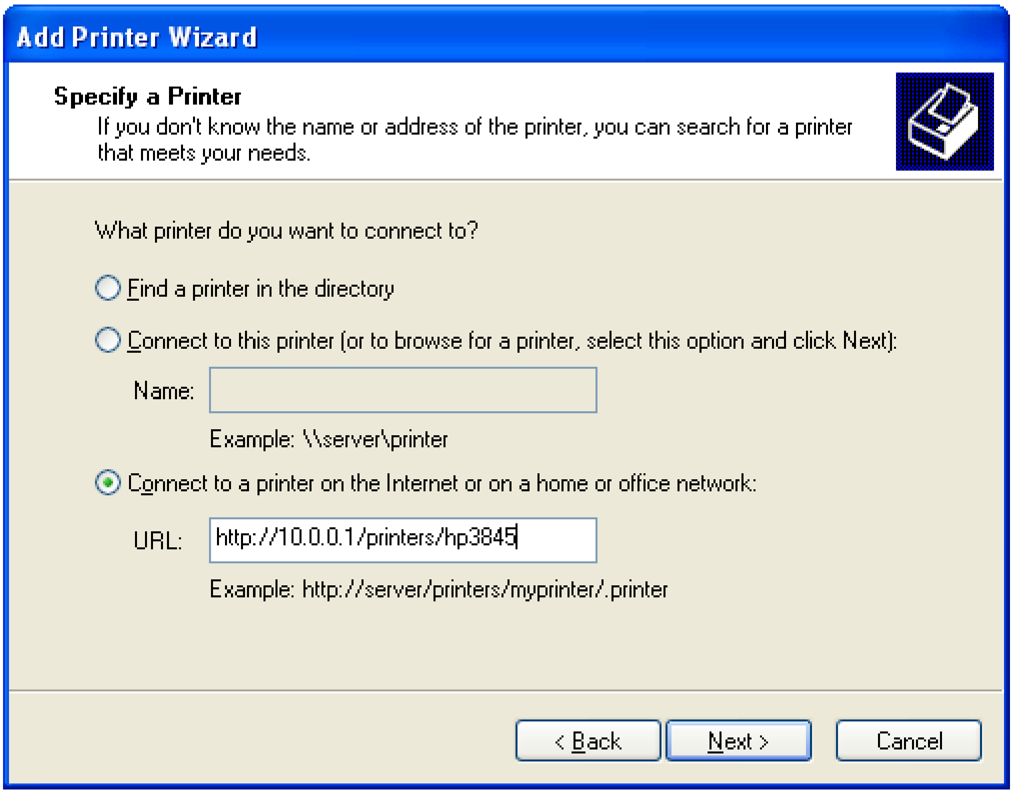
☑ Automatically detect and install my Plug and Play printer

● A network printer, or a printer attached to another computer

To set up a network printer that is not attached to a print server, use the "Local printer" option.

STEP 5: Select Connect to a printer on the Internet and enter your printer link. (e.g. http://192.168.1.1:631/printers/hp3845) and click **Next**.

NOTE: The printer name must be the same name entered in the ADSL modem WEB UI "printer server setting" as in step 1.



Add Printer Wizard

Specify a Printer

If you don't know the name or address of the printer, you can search for a printer that meets your needs.

What printer do you want to connect to?

○ Find a printer in the directory

○ Connect to this printer (or to browse for a printer, select this option and click Next):

Name:

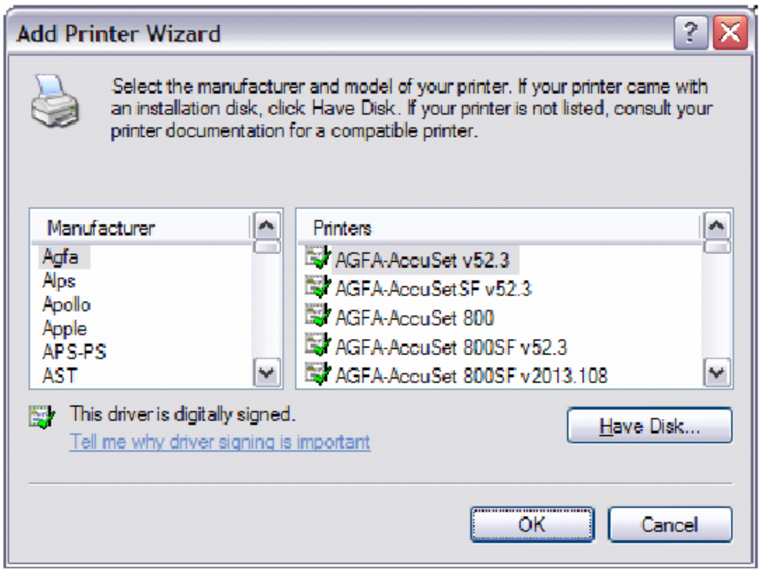
Example: \\server\printer

● Connect to a printer on the Internet or on a home or office network:

URL: http://10.0.0.1/printers/hp3845

Example: http://server/printers/myprinter/.printer

STEP 6: Click **Have Disk** and insert the printer driver CD.



Add Printer Wizard

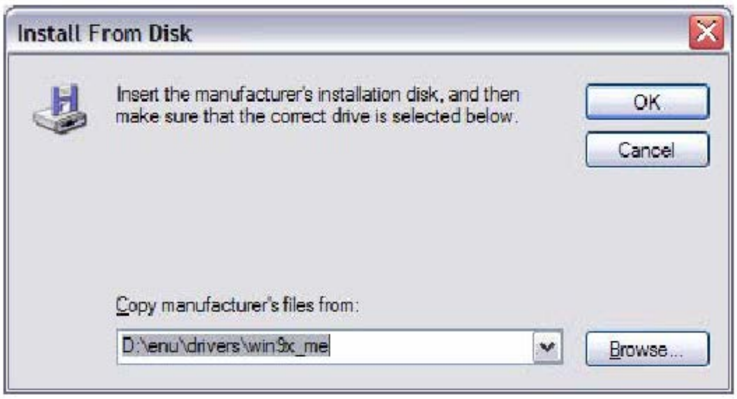
Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.

Manufacturer	Printers
Agfa	AGFA-AccuSet v52.3
Alps	AGFA-AccuSet SF v52.3
Apollo	AGFA-AccuSet 800
Apple	AGFA-AccuSet 800SF v52.3
APS-PS	AGFA-AccuSet 800SF v2013.108
AST	

This driver is digitally signed.

Tell me why driver signing is important

STEP 7: Select driver file directory on CD-ROM and click **OK**.



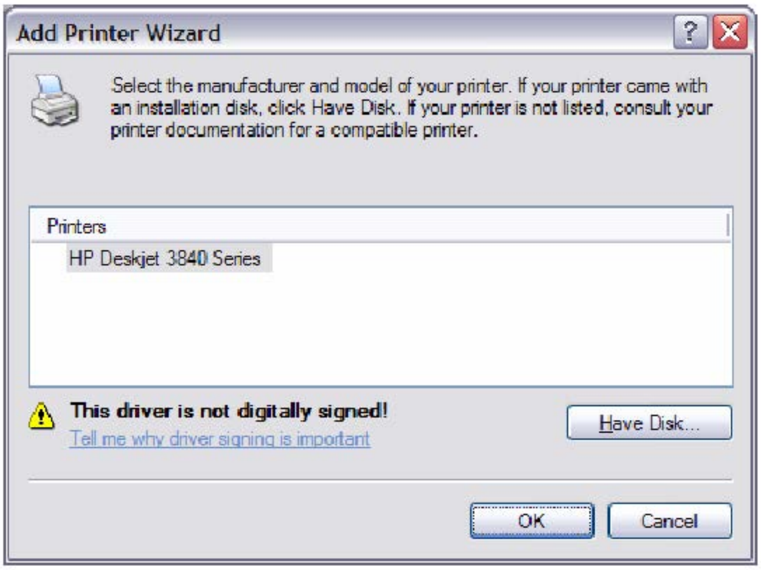
Install From Disk

Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.

Copy manufacturer's files from:

D:\enu\drivers\win9x_me

STEP 8: Once the printer name appears, click **OK**.



Add Printer Wizard

Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.

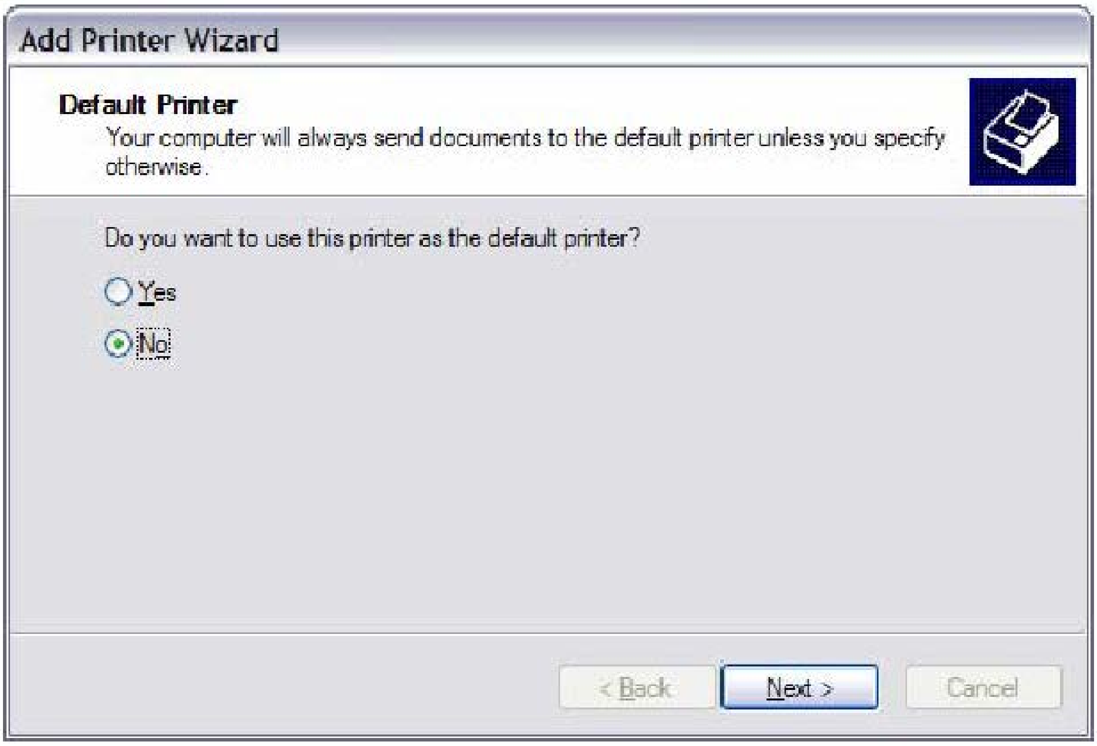
Printers

HP Deskjet 3840 Series

This driver is not digitally signed!

Tell me why driver signing is important

STEP 9: Choose **Yes** or **No** for default printer setting and click **Next.**



Add Printer Wizard

Default Printer

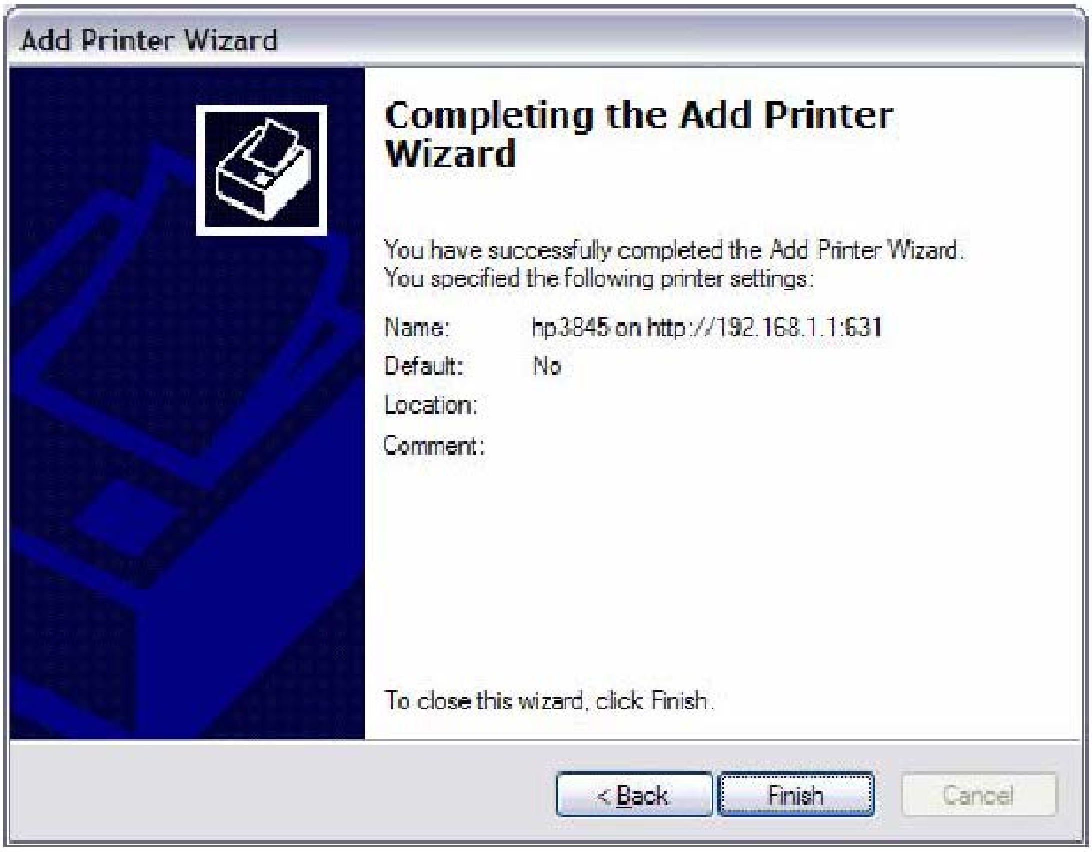
Your computer will always send documents to the default printer unless you specify otherwise.

Do you want to use this printer as the default printer?

○ Yes

● No

STEP 10: Click Finish.



Add Printer Wizard

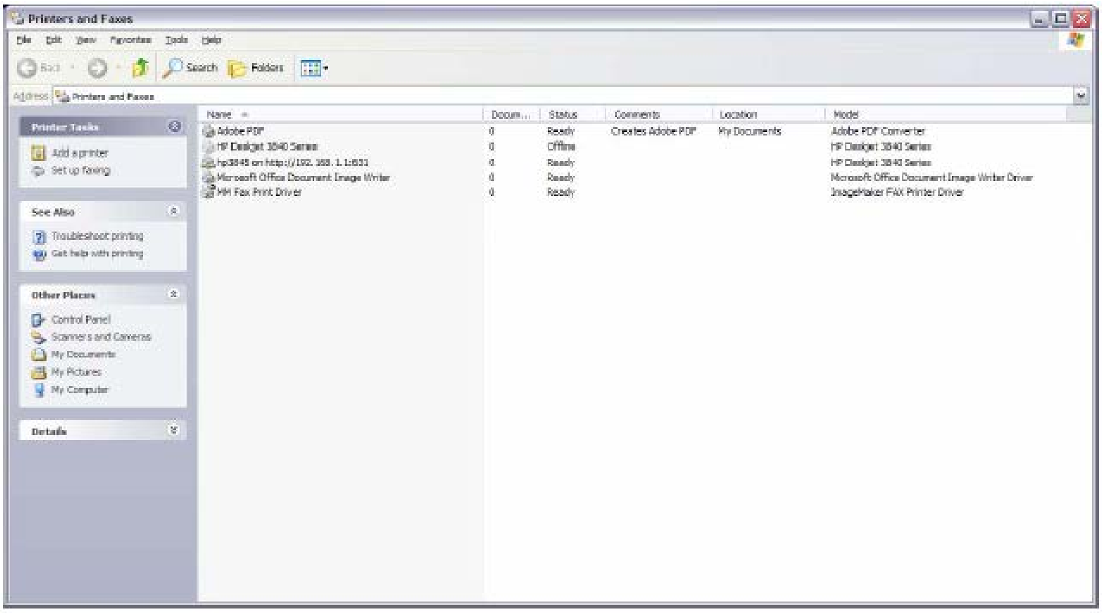
Completing the Add Printer Wizard

You have successfully completed the Add Printer Wizard. You specified the following printer settings:

Name:	hp3845 on http://192.168.1.1:631
Default:	No
Location:	
Comment:	

To close this wizard, click Finish.

STEP 11: Check the status of printer from Windows Control Panel, printer window. Status should show as **Ready**.



Name	Docum...	Status	Comments	Location	Model
Adobe PDF	0	Ready	Creates Adobe PDF	My Documents	Adobe PDF Converter
HP Deskjet 3840 Series	0	Offline			HP Deskjet 3840 Series
hp3845 on http://192.168.1.1:631	0	Ready			HP Deskjet 3840 Series
Microsoft Office Document Image Writer	0	Ready			Microsoft Office Document Image Writer Driver
MM Fax Print Driver	0	Ready			ImageMaker FAX Printer Driver

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular installation. If this equipment dose 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cmbetween the radiator & your body

FCC Caution: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.