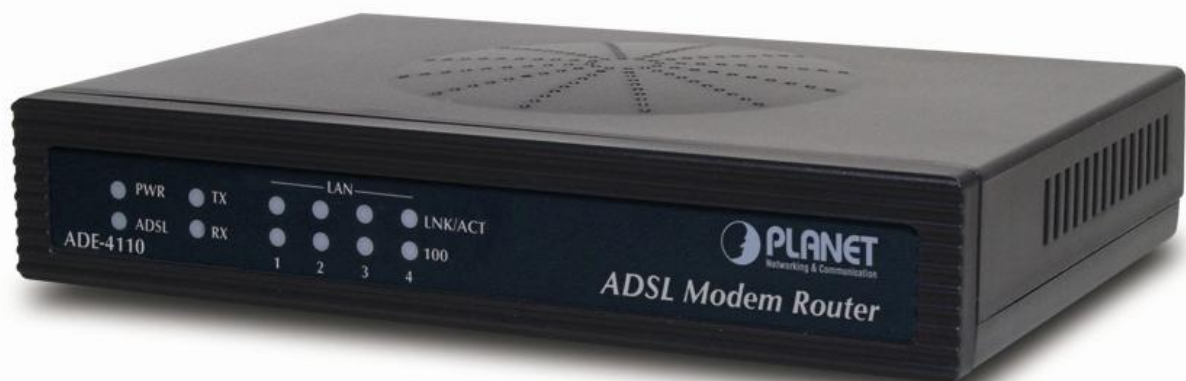


ADSL Modem Router With 4-port Switch

ADE-4110

User's Manual



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equipment is causing interference, turn your Ethernet Switch on and off while your radio or TV is showing interference, if the interference disappears when you turn your Ethernet Switch off and reappears when you turn it back on, there is interference being caused by the Ethernet Switch.

You can try to correct the interference by one or more of the following measures:

- ♦ Reorient the receiving radio or TV antenna where this may be done safely.
- ♦ To the extent possible, relocate the radio, TV or other receiver away from the Switch.
- ♦ Plug the Ethernet Switch into a different power outlet so that the Switch and the receiver are on different branch circuits.

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Revision

User's Manual for PLANET ADSL Modem Router:

Model: ADE-4110A/ADE-4110B

Rev: 2.0 (July 2004)

Part No.: EM-ADE4110v2

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1. Introduction

This Router is a highly integrated, cost-effective solution. All setup and provisioning is accomplished via a simple intuitive Web interface which further enhances the user experience.

1.1 Features

- ADSL Compliance
 - Compliant with ADSL standards
 - ◆ Full-rate ANSI T1.413 Issue 2 and ITU G.dmt (G.992.1) standards
 - ◆ Splitterless ITU G.lite (G.992.2) specification
 - ◆ ADSL over POTS (Annex A) and ADSL over ISDN (Annex B)
 - DMT modulation and demodulation
 - Full-rate adaptive modem
 - ◆ Maximum downstream rate of 8 Mbps
 - ◆ Maximum upstream rate of 1 Mbps
- ATM Protocols
 - WAN mode support: PPP over ATM (RFC 2364) and PPP over Ethernet (RFC 2516)
 - LAN mode support: bridged/routed Ethernet over ATM (RFC 1483) and Classical IP over ATM (RFC 1577)
 - ATM Forum UNI 3.1/4.0 PVC
 - Up to 8 VCs (Virtual Circuits)
- Bridge Mode
 - Ethernet to ADSL self-learning Transparent Bridging (IEEE 802.1D)
 - Supports up to 128 MAC learning addresses
- Router Mode
 - IP routing—RIPv2
 - Static routing
 - DHCP (Dynamic Host Configuration Protocol) Server and Client
 - NAPT (Network Address and Port Translation)
 - NAT (Network Address Translation)
 - ICMP (Internet Control Message Protocol)
- Security
 - User authentication for PPP
 - PAP (Password Authentication Protocol)
 - CHAP (Challenge Authentication Protocol)
 - Password protected system management

1.2 System Requirements

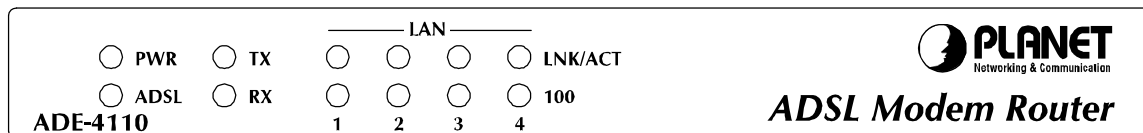
- Pentium III 266 MHz processor minimum
- 128 MB RAM minimum
- 20 MB of free disk space minimum
- Ethernet Network Interface Controller (NIC) RJ45 Port
- Internet Browser
- Ethernet (CAT5) Cable

2. Knowing Your Router

When selecting the location for the Router, allow room to access the connections on the rear panel. You will want to place the Router so that you will be able to see the LED indicators on the front panel. It may be convenient for you locate the Router near the PC you intend to use for initial configuration of the Router.

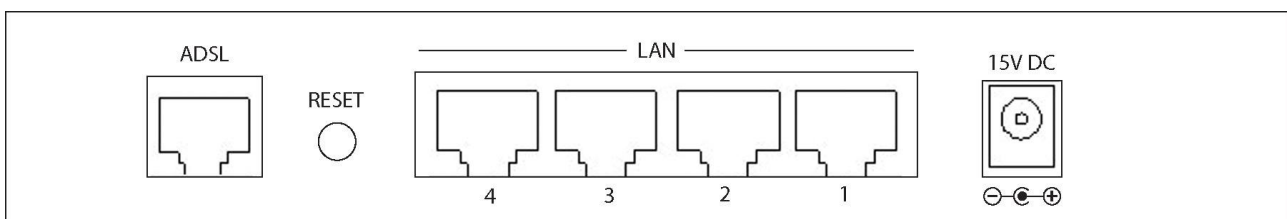
2.1 Front Panels

Place the Router in a location that permits an easy view of the LED indicators shown in the front panel diagram below.



2.2 Rear Panels

The rear panel of the Router provides access to the power adapter cord connection as well as the port connections.



RESET button: The Router comes with a reset button built into the rear panel. Use this button to restore the factory default settings. If you need to reset the Router, press the reset button for 2-3 seconds and then release it. The ADSL LED will stop blinking temporarily and then blink again in about 15 seconds. It means the Router finish rebooting.

2.3 LED Indicators

The LED Indicators read as follows:

PWR	Illuminated when the unit is powered on.
ADSL	Illuminated when the physical layer link is activated.
TX	Illuminated when transmitting data to the ADSL line.
RX	Illuminated when receiving data from the ADSL line.
LNK/ACT	Illuminated when the device is connected to LAN port(s).
100	Illuminated when the connecting speed at 100 Mbps and non-illuminated indicates the connecting speed at 10 Mbps.

3. Login

There are two levels of access rights/privileges for the Router:

- **Administrator:** User name admin, the administrator account has complete read/write access on all pages (Status, Configuration, Admin Privilege, and Firewall Configuration). Admin account also has FTP server access.
- **User:** User name user, the User account has read/write access to pages under the Status and Configuration sections.

The following steps will enable you to log into the Router:

1. Launch the Web browser (Internet Explorer, Netscape, etc.).
2. Enter the LAN port default IP address (default gateway) `http://10.0.0.2` in the address bar.



3. Entry of the username and password will be prompted. Enter the default login User Name and Password:

The default login User Name of the administrator is **admin**, and the default login Password is **epicrouter**. The default login User Name for the non-administrator is **user**, and the default login Password is **password**.



4. **Remember my password checkbox:** By default, this box is not checked. Users can check this box so that Internet Explorer will remember the User name and Password for future logins. It is recommended to leave this box unchecked for security purposes.

Admin and User passwords can be changed after login. Refer to Section 5.9 for User Password configuration and Section 6.9 for Admin Password configuration for further instruction.

4. Status Pages

The links under the **Status** column are associated with the pages that represent the status of system (computer and Router) and interfaces (connections). This includes LAN, WAN, DHCP, PPP, and ADSL status. These pages can be viewed and modified by both **user** and **admin** accounts.

4.1 Home Page

The Home page shows the firmware versions; LAN, WAN, and DHCP interface status; and Ethernet connection status.

The screenshot displays the Planet Home Page. On the left is a sidebar with a menu. The main content area shows the 'Home Page' title, followed by firmware and software versions. Below this are two sections: 'WAN' and 'LAN', each containing a table with IP Address, Subnet Mask, and MAC Address. At the bottom, it shows the total number of LAN interfaces and the number of ethernet devices connected to the DHCP server.

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[Misc Configuration](#)
[TCP Status](#)
[Admin Password Configuration](#)
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[Diagnostic Test](#)
[System Log](#)
[Local Code Image Update](#)

Home Page

Firmware Version: CX82xxx_4.1.0.9
Customer Software Version: 4.1.0.9_Planet_01

WAN

IP Address	Subnet Mask	MAC Address
0.0.0.0	255.255.255.0	00:E0:95:50:6A:F9

LAN

IP Address	Subnet Mask	MAC Address
10.0.0.2	255.0.0.0	00:E0:95:50:6A:F8

Total Number of Lan Interfaces: 1
Number of ethernet devices connected to the DHCP server: 1

Firmware Version: It is the default version number, which is not changeable.

Customer Software Version: It is the version of the firmware that is controllable by the ADSL Modem/Router manufacturer.

WAN and LAN: It displays the IP address, Subnet Mask and MAC address for the WAN (ADSL) and LAN interface.

Total Number of LAN Interfaces: It displays the total number of available interfaces for

the LAN interface. The total number of available interfaces is the amount of computers that are able to hook up to the DHCP Server.

Number of Ethernet Devices Connected to the DHCP Server: It displays the DHCP client table with the assigned IP addresses and MAC addresses.



If there are no devices connected to the DHCP server, then a table will not appear, otherwise a table listing all devices connected to DHCP server will appear on the bottom of the page.

Ethernet Link Status: It displays the link up or down for the Ethernet connection (up if connected, down if not connected).

USB Link Status (reserved function): It displays the link up or down for the USB connection (up if connected, down if not connected).

4.2 PPP Page

The **PPP Status** page shows the status of each PPP session for each PPP interface. This page contains information that is dynamic and will refresh every 8 seconds.



PPP interfaces can be created, modified, and deleted in the PPP Configuration page. Refer to Section 5.4 for further information.

PPP

#	Connection Name	Interface	Mode	Status	Pkts Sent	Pkts Rcvd	Bytes Sent	Bytes Rcvd
<p>If a * appears under Mode column, you need to check the WAN configuration to make sure the VC has the correct encapsulation.</p> <p>Connection # <input type="text" value="1"/></p> <p><input type="button" value="Connect"/> <input type="button" value="Execute"/></p>								

PPP (Point-to-Point Protocol): The table displays the following fields:

- **Connection Name:** This is user defined. User defined connections for PPP can be created in **PPP Configuration** page.
- **Interface:** States the interface that is being used (PVC0 ... PVC7).
- **Mode:** There are two available modes for the connection:
 - PPP over Ethernet (PPPoE)
 - PPP over ATM (PPPoA)
- **Status:** States whether PPP connection is Connected or Not Connected.
- **Packets Sent:** Number of packets sent by a particular PPP Connection.
- **Packets Received:** Number of packets received by a particular PPP Connection.
- **Bytes Sent:** Number of bytes sent by a particular PPP Connection.
- **Bytes Received:** Number bytes received by a particular PPP Connection.

Connect and Disconnect: It allows you to manually connect/disconnect the PPP connection for each PPP interface. In other words, each PPP session can be connected and disconnected individually.

- **Connection #:** Specifies the PPP session to be connected/disconnected.
- **Connect/Disconnect Execute:** Press this button to either connect or disconnect.

Connection status dialog will be displayed below the **Execute** button after it is pressed. Sample dialog with explanation:

- **PPP X: Connecting...** This is displayed while the PPP session is attempting to connect to the ISP.
- **PPP X: Connect ERROR** This is displayed when a connection cannot be made due to an error.
- **PPP X: is currently not connected** This is displayed when a disconnect attempt is made on a session that is not currently connected.
- **PPP X: does not exist!** This is displayed when a connect or disconnect attempt is made on a session number that does not exist.

4.3 ADSL Page

The **ADSL Status** page shows the ADSL physical layer or link status. The information displayed on this page is either inherent to the Router or set by the ADSL Central Office (CO) DSLAM, neither of which cannot be changed by the user. This page contains information that is dynamic and will refresh every 2 seconds.

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ADSL STATUS

Restart Execute

Showtime Firmware Version: 3.30

Line State: **ACTIVATION**

Modulation: N/A

Annex Mode: **ANNEX_A**

Startup Attempts: 0

Max Tx Power: -38 dBm/Hz

CO Vendor: **UNUSED_VENDOR_0**

Elapsed Time: 0 days 0 hours 36 minutes 22 seconds

	Downstream	Upstream	
SNR Margin	NA	NA	dB
Line Attenuation	NA	NA	dB
Errored Seconds	0	0	
Loss of Signal	0	0	
Loss of Frame	0	0	
CRC Errors	0	0	

Restart/Stop Execute: It allows you to stop or restart the ADSL connection by selecting the appropriate action and clicking **Execute**.

Showtime Firmware Version: It displays the ADSL data pump firmware version.

ADSL Line Status: It displays the ADSL connection process and status. The different states for this field are as follows:

- **Activation:** The Router is in this state when it is attempting to start the activation process.
- **Initialization:** The Router is initializing handshake with the CO.
- **Training:** It is a part of the handshake process with the CO.
- **Channel Analysis:** It is a part of the handshake process with the CO.
- **Exchange:** It is a part of the handshake process with the CO.
- **Down:** It indicates that the ADSL connection is down.
- **Showtime:** It indicates that a connection has been established between the Router and the CO.

ADSL Modulation: It displays the ADSL modulation status, which can either be G.dmt or T1.413.

ADSL Annex Mode: It displays the ADSL annex mode, which can either be Annex A or Annex B.

ADSL Startup Attempts: It displays the number of ADSL connection attempts after loss of showtime. A connection attempt is recorded only if showtime is attained.

ADSL Max TX Power: It displays the transmit output power level of the CPE (Customer Premise Equipment), which is the transmit output power level of the Router.

ADSL CO Vendor: It displays the Central Office (CO) DSLAM vendor name, if available. If the Router is not connected to an ADSL vendor, then 'UNUSED_VENDOR_0' will appear in this field.

Elapsed Time: It displays the time of the Router has been in operation. This is the amount of time the Router is on, not the amount of time it is connected to the PC or in showtime status.

A table contained the information of **SNR Margin**, **Line Attenuation**, **Errored Seconds**, **Loss of Signal**, **Loss of Frame**, **CRC Errors**, **Data Rate**, and **Latency** is also available.

5. Configuration Pages

The links under **Configuration** column are associated to the pages that represent the configurations of system and interfaces. These pages can be viewed and modified by both user and admin accounts.



When any settings are changed, please go to the Save Settings page to save the new setting(s) and reboot the Router. Changes will not take effect until the settings are saved and the Router is rebooted. If power is lost before saving, all new configurations since the last save will be lost, even if they were submitted.

5.1 Modes

Table 5-1 lists the mode configurations.

Table 5-1 Mode Configuration

WAN Configuration	Bridge Mode	Router Mode (PPPoA/PPPoE)	Router Mode (Dynamic IP)	Router Mode (Static IP)	Half Bridge
IP Address	N/A	Automatically assigned by ISP	Automatically assigned by ISP	Provided by ISP	Automatically assigned by ISP
Subnet Mask	N/A	Automatically assigned by ISP	Automatically assigned by ISP	Provided by ISP	Automatically assigned by ISP
Gateway	N/A	Automatically assigned by ISP	Automatically assigned by ISP	Provided by ISP	Automatically assigned by ISP
Encapsulation	1483 Bridged IP LLC, 1483 Bridged IP VC-Mux	PPPoA LLC/VC-Mux, PPPoE LLC/VC-Mux	1483 Bridged/Routed IP LLC, 1483 Bridged/Routed IP VC-Mux, Classical IP over ATM	1483 Bridged/Routed IP LLC, 1483 Bridged/Routed IP VC-Mux, Classical IP over ATM	PPPoA LLC/VC-Mux, PPPoE LLC/VC-Mux
Bridge	Enabled	Disabled	Disabled	Disabled	Disabled
PPP Service	N/A	Provided by ISP	N/A	N/A	Provided by ISP
PPP User Name	N/A	Provided by ISP	N/A	N/A	Provided by ISP
PPP Password	N/A	Provided by ISP	N/A	N/A	Provided by ISP
DHCP Client	Unchecked	Unchecked	Checked	Unchecked	Unchecked

Enable					
PPP Half Bridge	Disabled	Disabled	Disabled	Disabled	
DHCP Server	Disabled	Enabled	Enabled	Enabled	
NAT	Disabled	Enabled (Dynamic NAPT)	Enabled (Dynamic NAPT)	Enabled (Dynamic NAPT)	Disabled
DNS Proxy	Disabled	Enabled	Enabled	Enabled	Disabled

Bridge Mode: Bridge Mode is used when there is one PC connected to the LAN-side Ethernet port. IEEE 802.1D method of transport bridging is used to bridge between the WAN (ADSL) side and the LAN (Ethernet) side, i.e., to store and forward.

Router Mode: Router Mode is used when there is more than one PC connected to the LAN-side Ethernet port. This enables the ADSL WAN access to be shared with multiple nodes on the LAN. Network Address Translation (NAT) is supported so that one WAN-side IP address can be shared among multiple LAN-side devices. DHCP is used to serve each LAN-side device and IP address.

PPP Half Bridge: Although the Router mode is capable of terminating the PPP in the modem and hence does not require PPPoE client software on the host PC, there are some disadvantages to Router mode when only single-user support is required. For instance, Router mode uses NAT which requires ALG support. PPP Half Bridge also terminates the PPP in the modem and does not require a PPPoE client on the PC. However, PPP Half Bridge does not use NAT and is not limited by ALGs. PPP Half Bridge will work with Ethernet interface to the PC.

Single-User Mode: Only one computer is connected at the LAN side through Ethernet.

Multi-User Mode: Multiple computers are connected at the LAN side through Ethernet.

5.2 WAN Configuration

The **WAN configuration** page allows you to set the configuration for the WAN/ADSL ports. Before you enter the **WAN Configuration** page, you will be asked to select an adapter (PVC0 through PVC7) first. Once you select the adaptor, then following page will appear.

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[Diagnostic Test](#)
[System Log](#)
[Local Code Image Update](#)

WAN Configuration (Pvc 0)
[Change Adapter](#)

Virtual Circuit:
Bridge:
IGMP:
Encapsulation:

Static IP Settings
IP Address:
Subnet Mask:
Gateway:

ATM
VPI:
VCI:
Service Category:
Peak Cell Rate: kbps
Sustainable Cell Rate: kbps
Max Burst Size:

PPP [Advanced PPP configuration](#)
Service Name:
Username:
Password:
Disconnect Timeout: minutes (Max:32767)
[PPP Disconnect Timer Config](#)
MRU:
MTU:
MSS:
Lcp Echo Interval: seconds
Lcp Echo Maximum Consecutive Failure:
Authentication:
Automatic Reconnect: ☐

DHCP Client
Host Name:

MAC Spoofing
Mac Address:

[Submit](#) [Reset](#)

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

[Save Configuration](#)

Virtual Circuit: Select Enable to activate the current PVC configuration. The current PVC is displayed at the top of the page in parenthesis. Default is Enabled for PVC0 and Disabled for PVC1-PVC7.

Bridge: Enable to connect the LAN to the WAN (bridge the two connections). This is available in Bridge Mode only (see Table 5-2). Default is Disabled.

IGMP: IGMP (Internet Group Management Protocol) relay/proxy specification and environment, default is Disabled. IGMP is available in all modes and all encapsulations. Support IGMP proxy/relay function for Router, based on the following requirement and cases:

- On CO side, there must be at least one IGMP querier (router) present. IGMP querier will send IGMP query packet. The Router is responsible to relay these IGMP queries to Ethernet.
- End-user multicast application device sends IGMP report while receiving IGMP query or being activated by the user. The Router should be responsible to proxy (that is, change source IP to Router's WAN IP) the IGMP report to ADSL WAN side, including all PVCs. The same case is for IGMP leave packet.
- Not necessary to relay multicast routing between two ADSL PVCs or two interfaces in LAN side.
- Special purpose multicast packet (such as RIP 2 packet) should run without Interference.

Table 5-2. Packet Process

Rx Entity	Packet Class	TTL	Action
ADSL	IGMP query	1	Relay to Ethernet
	IGMP report	1	Ignore
	IGMP leave	1	Ignore
	General Multicast IP	-	Relay it to Ethernet
Ethernet	IGMP query	1	Ignore
	IGMP report	1	Relay to all ADSL PVCs
	IGMP leave	1	Relay to all ADSL PVCs
	General Multicast IP	-	Ignore



Note!

Before the IGMP mode is enabled; please go to the Miscellaneous Configuration page to enable the IGMP proxy. Otherwise, the IGMP selection will not be valid.



Where can I download the free software to test IGMP?

Answer: Please go to this link <http://pf.itd.nrl.navy.mil/projects.php?name=mgen>.

Encapsulation: The different types of encapsulation include PPPoA VC-Mux, PPPoA LLC, 1483 Bridged IP LLC, 1483 Routed IP LLC, 1483 Bridged IP VC-Mux, 1483 Routed IP VC-Mux, Classical IP over ATM, PPPoE VC-Mux, PPPoE LLC, and PPPoENone.

5.2.1 ATM

VPI: Virtual Path Identifier is a virtual path used for cell routing that is identified by an eight bit field in the ATM cell header. The VPI field specifies this eight bit identifier for routing.

Range: 0-255

Default: 0

VCI: A Virtual Channel Identifier is a virtual channel that is identified by a unique numerical tag that is defined by a 16-bit field in the ATM cell header. The purpose of the virtual channel is to identify where the cell should travel. The VCI field specifies this 16 bit numerical tag that determines the destination.

Range: 0-65535

Default: 35

Service Category: This field allows you to select from the following service categories.

- **UBR (default):** When configured as UBR (Unspecified Bit Rate), traffic is delivered with best efforts but with no guarantee. This allows for fluctuation in times of temporary increase of available bandwidth. For example, if a PVC with CBR is temporarily inactive, the PVC(s) with UBR will utilize that bandwidth while it is available. UBR is intended for applications that do not require any maximum bound on the transfer delay.
- **CBR:** When a PVC is specified as a CBR (Constant Bit Rate), that PVC is guaranteed a certain bandwidth, characterized by the Peak Cell Rate (PCR). The CBR does not have to transmit with a peak cell rate, and when it does, it is only when the bandwidth specified by the PCR is guaranteed.
- **VBR-nrt:** An PVC enabled with VBR-nrt (Variable Bit Rate - non real time) can transmit a cell only if the PVC has a token available. The PVC accumulates tokens at the rate of the Sustainable Cell Rate, and the PVC can only accumulate a maximum of the value specified by Maximum Burst Size tokens.

When a PVC has a token available, it can transmit cells at the rate of PCR. After a cell is transmitted, the PVC loses the token it has accumulated.



In the case of multiple PVCs, CBR specified PVCs will have higher priority than PVCs with UBR. For example, the CBR PVCs will take their bandwidth and the remaining bandwidth will be split among the UBR PVCs. In the case of total PVC CBR bandwidth exceeding ADSL upstream, the total upstream bandwidth will be shared proportionally to the bandwidth allocated for each CBR PVC.

Peak Cell Rate: This value specifies the maximum, and in some cases guaranteed, cell rate for CBR and VBR-nrt. Peak Cell Rates are typically measured in Cells/Second, however, the user entered value is in kbps and is then converted by the firmware.

Range: 0-32767 Default: 0

Sustainable Cell Rate: It is the sustained rate at which a PVC enabled with VBR-nrt can transmit ATM cells. Sustainable Cell Rate (SCR) can be considered as the true reserved bandwidth for a PVC.

Range: 0-32767 Default: 0

Max Burst Size: It is the number of cells a PVC enabled with VBR-nrt can transmit continuously at peak cell rate (PCR).

Range: 0-32767 Default: 0

5.2.2 DHCP Client

DHCP Client: It is to enable or disable (default) the Router WAN as a DHCP client, where the ISP would be the DHCP server. DHCP Client is generally used in the following encapsulations: 1483 Bridged IP LLC, 1483 Routed IP LLC, 1483 Bridged IP VC-MUX, 1483 Routed IP VC-Mux, and Classical IP over ATM. This option is for non-static (dynamic) IP addresses.

Host Name: When DHCP Client is Enabled, copy the ISP recognized Host Name here. The Host Name can be up to 19 characters.

5.2.3 MAC Spoofing

MAC Spoofing: Enable MAC Spoofing to make a different MAC Address appear on the WAN side. This is also used to solve the scenario where the ISP only recognizes one MAC Address. System default is Disable.

MAC Address: When MAC Spoofing is enabled, copy the ISP-recognized MAC address here. Format for MAC address is six pairs of hexadecimal numbers (0-9, A-F) separated by colons. System default is: 00:00:00:00:00:00.

5.2.4 Static IP Settings

Static IP Settings are for users who have a Static IP Address (WAN side) from their ISP.

IP Address: It is the static IP Address given by the ISP.

Range: x.x.x.y, where $0 \leq x \leq 255$ and $1 \leq y \leq 254$ Default: 192.168.241.101

Subnet Mask: It is the subnet mask given by the ISP.

Range: x.x.x.x, where $0 \leq x \leq 255$ Default: 255.255.255.0

Gateway: It is the Gateway given by the ISP.

Range: x.x.x.y, where $0 \leq x \leq 255$ and $1 \leq y \leq 254$ Default: 0.0.0.0

5.3 LAN Configuration

The **LAN** configuration page allows you to set the configuration for the LAN port.

The screenshot shows the PLANET LAN Configuration web interface. On the left is a navigation menu with links for Status, Configuration (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot), and Admin Privilege (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area is titled 'LAN Configuration' and contains the following settings:

- IP Address: 10.0.0.2
- Subnet Mask: 255.0.0.0
- DHCP Server: Enabled (dropdown)
- DHCP address pool selection: System Allocated (dropdown)
- User Defined Start Address: 10.0.0.4
- User Defined End Address: 10.0.0.15
- DHCP Gateway Selection: Automatic (dropdown)
- User Defined Gateway Address: (empty text box)
- Lease Time: 1 days 0 hours 0 minutes 0 seconds
- User Mode: Multi-User (dropdown)

Below these settings is a link for 'Ethernet Mode Setting' and two buttons: 'Submit' and 'Reset'. At the bottom, a message states: 'Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.'

LAN IP Address & Subnet Mask: The LAN IP Address is what the computer uses to identify and communicate with the Router (this is the address you enter in the address bar of Internet Explorer to access these pages). You can change this to another private IP address and subnet mask, such as 192.168.1.2 and 255.255.255.0.

Range: x.x.x.x, where $0 \leq x \leq 255$

Default is 10.0.0.2 and 255.0.0.0 (respectively)

5.3.1 DHCP Server

Dynamic Host Configuration Protocol (DHCP) is a communications protocol that allows network administrators to manage and assign IP addresses to computers within the network. DHCP provides a unique address to a computer in the network which enables it to connect to the Internet through Internet Protocol (IP). DHCP is controlled by the DHCP Server. The following settings allow you to configure the DHCP server.

DHCP Server: Select Enabled (default) to activate DHCP Server.

DHCP Address Pool Selection: Two types of Address Pool selections are available,

with System Allocated as the default.

- **System Allocated:** The DHCP address pool is based on LAN port IP address plus 12 IP addresses. For example, when the LAN IP address is 10.0.0.2; the DHCP address pool the range from 10.0.0.3 to 10.0.0.14.
- **User Defined:** When User Defined is selected, the DHCP address pool starts at the User Defined Start Address and ends at the User Defined End Address. The maximum pool size can be 253 IP addresses: 255 total IP addresses - 1 broadcast address - 1 LAN port IP address.

User Defined Start Address: It is the starting IP address of the DHCP pool for User Defined DHCP Address Pool Selection.

Range: x.x.x.x, where $0 \leq x \leq 255$ Default: 10.0.0.4

User Defined End Address: It is the last IP address in the DHCP pool for User Defined DHCP Address Pool Selection.

Range: x.x.x.x, where $0 \leq x \leq 255$ Default: 10.0.0.15

DHCP Gateway Selection: The default setting for the DHCP Gateway Selection is **Automatic**. You can select **User Defined** and specify **User Defined Gateway Address**. The DHCP server will issue the **User Defined Gateway Address** to the LAN DHCP clients.

User Defined Gateway Address: The purpose for the User Defined Gateway Address is to have two gateway addresses, as the LAN IP Address at the top of the **LAN Configuration** page is also a gateway address.

Lease time: The Lease time is the amount of time a network user will be allowed to connect with DHCP server. If all fields are 0, the allocated IP addresses will be effective forever.

Ranges for Lease Time fields: Days 0-36500, Hours 0-23, Minutes 0-59, Seconds 0-59, default value is 1 days 0 hours 0 minutes 0 seconds.

User mode: Under the **Single User** mode, the DHCP server only allocates one IP address to a local PC. Under the **Multiple User** mode (default), the DHCP server allocates the IP addresses specified by the DHCP address pool.

Save Configuration: Clicking this will link you to the **Save Settings / Reboot** page.

5.3.2 Ethernet Mode Setting

The Ethernet Mode configuration page allows you to set the LAN port into the following modes:

- **AutoSense (default):** The Router will automatically sense which mode to use, selecting between 100 Mbps Full Duplex, 100 Mbps Half Duplex, 10 Mbps Full Duplex, and 10 Mbps Half Duplex.
- **100 Mbps Full Duplex:** Data can be transferred and received simultaneously at the transfer rate of 100 Mega-bits per second.
- **100 Mbps Half Duplex:** Data cannot be transferred and received at the same time. For example, data can be sent, and once the transmission is complete, data can be received. This is done at a transfer rate of 100 Mega-bits per second.
- **10 Mbps Full Duplex:** Data can be transferred and received simultaneously at the transfer rate of 10 Mega-bits per second.
- **10 Mbps Half Duplex:** Data cannot be transferred and received at the same time. For example, data can be sent, and once the transmission is complete, data can be received. This is done at a transfer rate of 10 Mega-bits per second.

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Ethernet Mode

Ethernet Mode:

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

5.4 PPP Configuration

The **PPP Configuration** page allows you to configure multiple PPP sessions for each PVC. Multiple PPP sessions enables you to set up different connection settings and be able to toggle/choose those settings for each PVC. The Router can support up to total of 16 PPP sessions, and each PVC can support up to 8 PPP sessions. The multiple PPP sessions may be configured with any combination over 8 PVCs.

5.4.1 PPP Account Configuration

To begin PPP Session configuration, you must first go to the **PPP Account Configuration** page (below) to set up an account. The link to this page can be found on the **PPP Configuration** page. On the **PPP Account Configuration** page, you must configure the Account ID, User Name and Password.

Account ID: It allows you to create an account ID to help distinguish different accounts, up to 16 maximum. The Account ID can be up to 31 characters.

User Name: Enter the PPP user name (provided by the ISP). The User Name can be up to 127 characters.



You cannot have two different user accounts with the same account name. If a different User Name with an already existing Account ID is submitted, it will replace the previous account with that Account ID. You can have the same User Name and Password for two different accounts (Account ID).

Password: Enter the PPP password (provided by the ISP). The Password is not needed to delete or modify the account. The Password can be up to 127 characters.



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PPP Account Configuration

Acct Id

User Name

Password

#	Account Name	User Name
The number of PPP accounts is 0		

[Go back to PPP Configuration](#)

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

PPP Account Configuration Status table will be displayed at the bottom of this page to show all the accounts. The status table does not display the password.

The Number of PPP Accounts: It displays the total number of PPP Accounts entered.

5.4.2 PPP Session Configuration

Once you set up a PPP Account, you can begin PPP Session configuration either by clicking the **Go back to PPP Configuration** link on the **PPP Account Configuration** page or clicking on **PPP** under the **Configuration** menu on the left hand side of the browser.

Session Name: It allows you to enter a Session Name. This is user defined to help distinguish different session for different PPP accounts and different PVCs.

PVC: It allows you to choose the specific PVC for the PPP session.

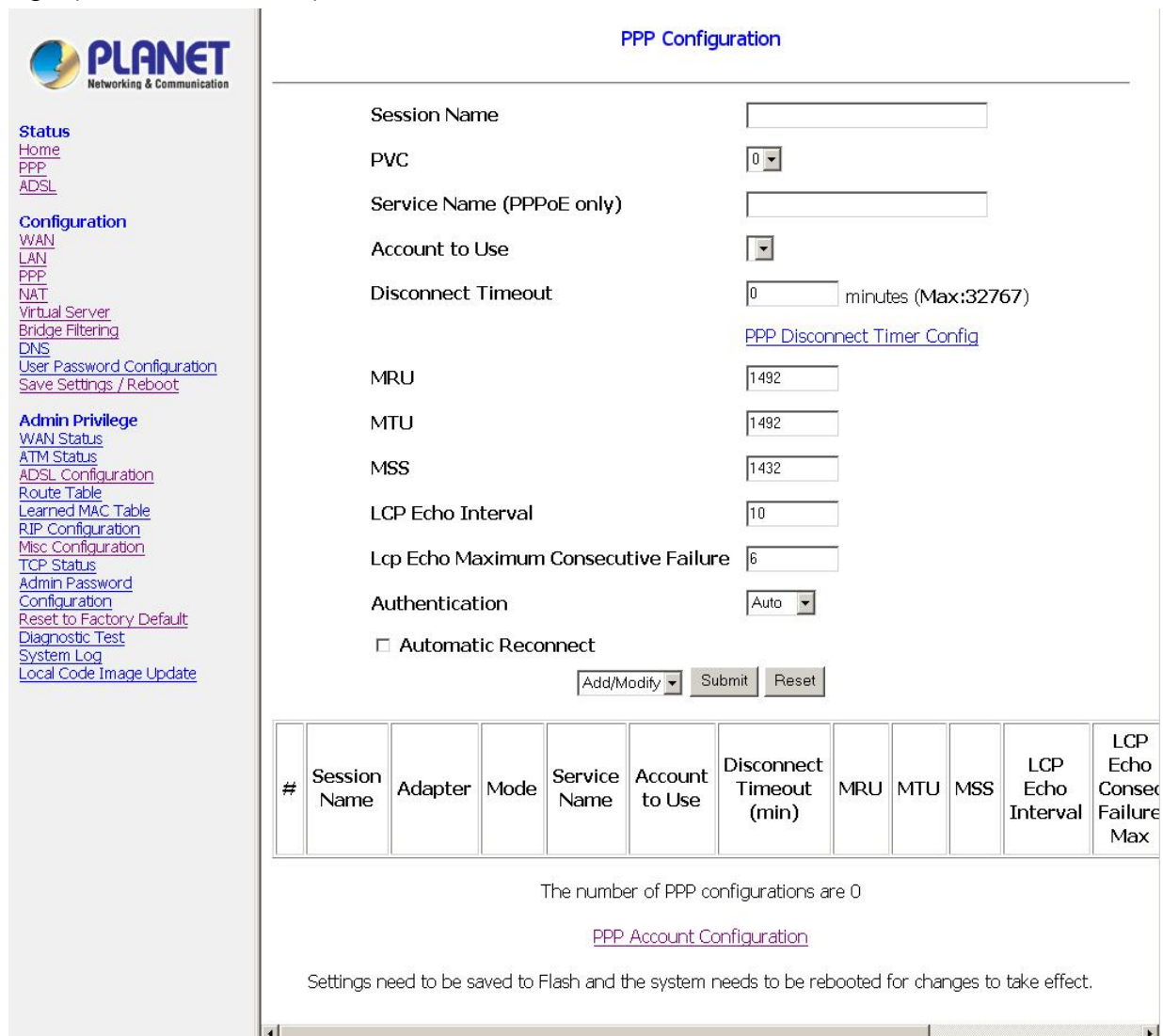
Service Name: The Service Name of the PPP session is required by some ISPs. If the ISP does not provide the Service Name, please leave it blank.

Account to Use: You must select an account created in PPP Account Configuration page here.

Disconnect Timeout: The Disconnect Timeout allows you to set the specific period of time, in minutes, to disconnect from the ISP. The default is 0, which means never disconnect from the ISP.

Range: 0-32767 Default: 0

PPP Idle Timer Config: It will link you to the **PPP Disconnect Timer Configuration** page (see Section 5.4.3).



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PPP Configuration

Session Name:

PVC:

Service Name (PPPoE only):

Account to Use:

Disconnect Timeout: minutes (Max:32767)

[PPP Disconnect Timer Config](#)

MRU:

MTU:

MSS:

LCP Echo Interval:

Lcp Echo Maximum Consecutive Failure:

Authentication:

☐ Automatic Reconnect

#	Session Name	Adapter	Mode	Service Name	Account to Use	Disconnect Timeout (min)	MRU	MTU	MSS	LCP Echo Interval	LCP Echo Consecutive Failure Max
The number of PPP configurations are 0											

[PPP Account Configuration](#)

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

MRU: The MRU (Maximum Receive Unit) field indicates the maximum size IP packet that the peer of PPP connection (this device) can receive. During the PPP negotiation, the peer of the PPP connection will indicate its MRU and will accept any value up to that size.

Range: 0-32767 Default: 1492

MTU: Maximum Transmission Unit (MTU) is the largest size packet that can be sent by the modem. If the network stack of any packet is larger than the MTU value, then the

packet will be fragmented before the transmission. During the PPP negotiation, the peer of the PPP connection will indicate its MRU and will accept any value up to that size.

Range: 0-32767 Default: 1492

MSS: Maximum Segment Size is the largest size of data that TCP will send in a single, unfragmented IP packet. The LAN client and the WAN host will indicate their MSS during the TCP connection handshake.

Range: 0-32767 Default: 1432

Lcp Echo Interval: It is the time interval, in seconds, between PPP session connection attempts.

Range: 0-32767 Default: 10

Lcp Echo Maximum Consecutive Failure: It is the number of times a PPP session can fail while trying to connect before stopping. If a PPP session fails this number of times, you must manually reconnect the PPP session.

Range: 0-32767 Default: 6

Authentication: The different types of available authentications are:

- **Auto (default):** When auto is selected, PAP mode will run by default. However, if PAP fails, then CHAP will run as the secondary protocol. This is the default setting.
- **PAP:** Password Authentication Procedure. Authentication is done through username and password.
- **CHAP:** Challenge-Handshake Authentication Protocol. Typically more secure than PAP, CHAP uses username and password in combination with a randomly generated challenge string which has to be authenticated using a one-way hashing function.

Automatic Reconnect: When it is checked, the Router will reconnect a PPP session when it is terminated by the ISP. If a PPP session is terminated under any other conditions (i.e. by Disconnect Timeout or manual disconnect), the Automatic Reconnect will not reconnect the session. This box is unchecked by default.

PPP Configuration Status: A table will be displayed at the bottom of this page to show all related information of PPP configuration.

5.4.3 PPP Disconnect Timer Configuration

The screenshot shows the PLANET Networking & Communication web interface. The left sidebar contains a navigation menu with sections: Status (Home, PPP, ADSL), Configuration (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot), and Admin Privilege (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area is titled "PPP Disconnect Timer Configuration". It includes an introductory text: "The settings on this page are used to determine the traffic that will:" followed by two numbered instructions: "1) Reset the PPP disconnect timer counter" and "2) Re-establish a PPP connection (only if 'PPP Reconnect on WAN Access' is enabled)". Below this is a section "Enable/Disable Idle Timer Filter" with two radio button options: "All Traffic will reset Idle Timer (ignore filter below)" and "Only filtered traffic will reset Idle Timer (use filter below)". An "execute" button is present. The next section is "Apply Filter To:" with three radio button options: "Inbound Traffic Only", "Outbound Traffic Only" (which is selected), and "Inbound and Outbound Traffic". Another "execute" button is located below. The final section is "Filter Details:" which contains a table with columns "Protocol #", "Port #", and "Action". The table currently has one row with "0" in the "Protocol #" and "Port #" fields, and an "Add" button in the "Action" field.

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PPP Disconnect Timer Configuration

The settings on this page are used to determine the traffic that will:

- 1) Reset the PPP disconnect timer counter
- 2) Re-establish a PPP connection (only if "PPP Reconnect on WAN Access" is enabled)

Enable/Disable Idle Timer Filter

☐ All Traffic will reset Idle Timer (ignore filter below)

☒ Only filtered traffic will reset Idle Timer (use filter below)

execute

Apply Filter To:

☐ Inbound Traffic Only

☒ Outbound Traffic Only

☐ Inbound and Outbound Traffic

execute

Filter Details:

Protocol #	Port #	Action
0	0	Add

The **PPP Disconnect Timer Configuration** page enables you to configure what action will bring a PPP Session out of the Idle state (disconnected state) and reset the Idle Timer. This is done by specifying criteria contained in packets, namely IP Protocol and Port. The Idle Timer refers to the Disconnect Timeout, specified on the **PPP Configuration** page.

The PPP Idle Timer is recommended to be disabled (**Disconnect Timeout** = 0 on PPP Configuration page) if you want an always-on connection. **PPP Disconnect Timer Configuration** is intended for users who do not desire an always-on connection and/or their ISP charge by connection time.

5.4.3.1 Enable/Disable Idle Timer Filter

All Traffic will reset Idle Timer (ignore filter below): Selecting this option will disable the PPP Idle Timeout filter and allow any traffic through any protocol or port to reset the idle timer. The only dependency is that the traffic must correspond with the Filter Application (Inbound and/or Outbound). For example, if **Outbound Traffic Only** is selected, only traffic in the outbound direction will reset the idle timer. When this option is selected, all user configured criteria (displayed in the filter table) is bypassed.

Only filtered traffic will reset the Idle Timer (use filter below): Selecting this option will enable the PPP Idle Timeout filter and only allow traffic specified in the filter table to reset the idle timer. The traffic specified in the filter table must also correspond with the Filter Application selection. For example, outbound traffic with criteria matching that of the filter table will only be allowed to pass if either **Outbound Traffic Only** or **Inbound and Outbound Traffic** is selected.



PPP reconnect on WAN access must be enabled for the Idle Timer to reconnect a PPP Session when a request is made from the LAN to the WAN.

5.4.3.2 Filter Application

The Filter Application consists of three options that determine which sources (LAN and/or WAN) will be able to reset the Idle Timer and reconnect the PPP session.

Inbound Traffic Only: Selecting this option will allow PPP requests from the WAN side to reset the Disconnect Timeout timer. Note that requests from the WAN side cannot bring a PPP Session out of Idle state. This is because when a PPP Session is in Idle state, the connection is down (if they match the filter table criteria).

Outbound Traffic Only (default): When this option is selected, PPP sessions can only be activated (Idle Timeout) when a request is made on the LAN side to the WAN side. The disconnect timer will reset when outbound traffic is detected (if they match the filter table criteria).

Inbound and Outbound Traffic: Selecting this will allow both WAN and LAN source packets to reset the idle timer.

5.4.3.3 Filter Details

The table displayed in the Filter Details section of the page shows all the current Idle Filters. Traffic must match the criteria of one of these filters in order to cause an Idle Timeout, unless **All Traffic will reset Idle Timer** is selected. As a default and starting point for configuration, WWW browsing (HTTP), FTP, and Telnet related packets are part of the filter table.

IP Protocol: It is the IP Protocol name corresponding to the Protocol Number.

Protocol #: It is the IP protocol (number) through which the PPP session can be activated. The Protocol Numbers for filters are:

- TCP Protocol Number: 6
- UDP Protocol Number: 17
- ICMP Protocol Number: 1
- IGMP Protocol Number: 2

Port #: It is the Port through which the PPP session can be activated. The default filters are:

- HTTP TCP Port: 80
- FTP TCP Port: 20 and 21
- Telnet TCP Port: 23
- DNS UDP: 53

Action: You can add a rule by entering the appropriate information, selecting **Add** on the **Action** dropdown menu, and clicking **Submit**. To delete an entry, you can enter the information of an entry that already exists on the table, select **Delete** on the **Action** dropdown menu, and click **Submit**.

5.4.4 PPP Miscellaneous Configuration

These options can be found on the **Miscellaneous Configuration** page under **Admin Privilege**.

PPP Half Bridge: When PPP Half Bridge is enabled, only one PC is able to access the Internet, and the DHCP server will duplicate the WAN IP address from the ISP to the local client PC. Only the PC with the WAN IP address can access the Internet. System default is Disabled.

PPP reconnect on WAN access: If enabled, the PPP session will automatically establish a connection when a packet tries to access the WAN. System default is Disabled.

Connect PPP when ADSL link is up: If this option is enabled, the Router will connect the PPP session whenever an ADSL connection is established. If this option is disabled, the PPP session will not connect whenever the ADSL Showtime is reached. System default is Enabled.



If the PPP session is disconnected after the Disconnect Timeout, how can I reconnect it?

Answer: You have to go to the PPP Status page, enter the correct connection number, select the Connect option in the dropdown menu, and then click Execute. This will restart the PPP session.



What can I do to ensure an always-on connection with my PPP session?

Answer: There are two things you should do: 1) Make sure you have '0' in the **Disconnect Timeout** field. This will make sure that the PPP session is not disconnected from the user side. 2) Make sure the **Automatic Reconnect** box is checked. This will cause the Router to automatically reconnect if the connection is severed from either the ISP side or the user side.

Action	Manual PPP (Fee Based)	PPP Timeout (Fee Based)	PPP Always-on
Connect PPP when ADSL link is up	Disabled	Enabled	Enabled
Disconnect Timeout	0	Set Timeout	0
PPP Reconnect on WAN access	Disabled	Enabled	Disabled
Automatic Reconnect	Disabled	Disabled	Enabled



What is the difference between PPP Connect on WAN Access and the Automatic Reconnect?

Answer: For the PPP connect on WAN access, the PPP will be automatically reconnected when an URL is entered in the browser (packet interested in going out the WAN). For the Automatic Reconnect, it will reconnect the PPP session whenever it is terminated by ISP.

5.5 NAT Configuration Pages

The **NAT Configuration** page allows you to set the configuration for the Network Address Translation. The NAT module provides Dynamic Network Address and Port Translation (**Dynamic NAPT**) capability between LAN and multiple WAN connections, and the LAN traffic is routed to appropriate WAN connections based on the destination IP addresses and the Route Table. This eliminates the need for the static NAT session con-

figuration between multiple LAN clients and multiple WAN connections.

When **Dynamic NAPT** is chosen (default), there is no need to configure the NAT Session and NAT Session Name Configuration.

Session Name: It allows you to enter a Session Name to help distinguish different NAT Sessions for different interfaces among different PPP sessions and PVCs.

The Session Name can be up to 31 characters, and there can be up to 16 different NAT session names.

Interface: It allows you to choose specific WAN Interfaces (PVC or PPP Session) for NAT Session. The options for this field are PVC0 ... PVC7 and any PPP session that was created by the user.

NAT Session Name Status: This table is displayed at the bottom of this page to show all the NAT Session Names with their corresponding WAN Interfaces.

The screenshot shows the PLANET Networking & Communication web interface. On the left is a sidebar menu with categories: Status (Home, PPP, ADSL), Configuration (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot), and Admin Privilege (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area is titled 'NAT Session Name Configuration'. It features a form with three fields: 'Session Name' (a text input), 'Interface' (a dropdown menu currently showing 'Ip Pvc 0'), and 'Action' (a dropdown menu currently showing 'Add'). Below these fields are 'Submit' and 'Reset' buttons. Underneath the buttons is a table with three columns: '#', 'Session Name', and 'Interface'. Below the table is a link that says 'Go back to NAT Configuration'. At the bottom of the main area, there is a message: 'Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.' and a status line: 'Number of NAT Sessions 0'.

Number of NAT Configurations: It displays the total number of NAT Sessions entered.



Note!

NAT allows only one entry (User IP) per session, while NAPT allows many entries (User IPs) per session.

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NAT Configuration

NAT:

Mode:

Session Name	User's IP	Action
<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>

#	Session Name	User's IP
Number of NAT Configurations 0		

[Session Name Configuration](#)

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

Available Sessions

#	Session Name	Interface
Number of Sessions 0		

NAT: Use this field to Enable/Disable NAT. Default is Enable.

Mode: Options for the NAT dropdown menu are:

- **NAT:** Static peer-to-peer mode (1x1).
- **NAPT:** Static multiple mapping mode (1xN).
- **Dynamic NAPT (default):** Dynamic multiple mapping mode (NxN).

Session Name: It allows you to select the session from the configured NAT Session Name Configuration.

User's IP: It allows you to assign the IP address to map the corresponding NAT/NAPT sessions.

Session Name Status: This table will be displayed at the middle of the page to show the Session Name with its corresponding IP Address.

Number of NAT Configurations: It displays the total number of NAT Sessions entered.

Available Sessions: This table will be displayed at the bottom of the page to show all the available Session Names with their corresponding WAN Interface.

Number of Sessions: It displays the total number of NAT Sessions entered.

5.6 Virtual Server Configuration

The **Virtual Server Configuration** page allows you to set the configuration of the Virtual Server. Virtual Servers are used for port forwarding from the WAN to LAN networks. All UDP/TCP ports are protected from intrusion. If any specific local PCs need to be mapped to the UDP/TCP port on WAN side, please input the mappings here. There can be up to 20 different Virtual Server Configurations.

The screenshot shows the 'Virtual Server Configuration' page. On the left is a sidebar with the 'PLANET' logo and a menu of links including Status, Configuration (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot), and Admin Privilege (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area is titled 'Virtual Server Configuration' and contains a table with the following headers: ID, Public Port - Start, Public Port - End, Private Port, Port Type, and Host IP Address. The first row of the table has input fields for these values, with the ID field containing the number '1'. To the right of the Port Type column are radio buttons for 'TCP' (selected) and 'UDP'. An 'Add This Setting' button is located to the right of the Host IP Address field. Below the table, a note states: 'Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect. The maximum number of entries above is 20. The maximum number of mapped ports is 20'.

ID	Public Port - Start	Public Port - End	Private Port	Port Type	Host IP Address
1				<input checked="" type="radio"/> TCP <input type="radio"/> UDP	

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.
The maximum number of entries above is 20. The maximum number of mapped ports is 20

ID: It is the ID number corresponding to the Virtual Server configuration.

Public Port - Start: It allows you to enter the port number of the Public Network (WAN or external network). If you are entering a range of ports, this is the first port.

Public Port - End: It represents the last port number in a port range. If you only want one port number (no port range), simply enter the same number here as in the **Public Port - Start** field. The maximum number of the mapped Port is 20.

Private Port: It allows you to enter the port number of the Private Network (LAN or internal network). In most cases, the private port number is same as public port number. This port number cannot be seen from the WAN side.

Host IP Address: It allows you to enter the private network IP address for the particular server.

5.7 Bridge Filtering

Bridge Filtering allows packets to be forwarded or blocked, depending on the MAC address. The **Bridge Filtering** configuration page allows you to set the configuration of MAC filtering. There can be up to 4 different Bridge Filtering configurations.

The screenshot shows the Planet Network web interface for Bridge Filtering. On the left is a sidebar with navigation links under 'Status' (Home, PPP, ADSL) and 'Configuration' (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot). Below these are 'Admin Privilege' links (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area is titled 'Bridge Filtering' and includes an 'Enable Bridge Filtering' section with radio buttons for 'Yes' and 'No' (selected). Below is a table with columns 'ID', 'Src MAC*', 'Dest MAC*', and 'Type**'. The first row has '1' in the ID column, empty fields for MACs, and 'Block' selected for Type, with an 'Add' button. Explanatory text states: '* MAC address. Should look like 000002fa6fab.' and '** Ethernet type. Should look like a5ff.' At the bottom, it says 'Number of Bridge Filters 0'.

ID	Src MAC*	Dest MAC*	Type**
1			<input checked="" type="radio"/> Block <input type="radio"/> Forward <input type="button" value="Add"/>

* MAC address. Should look like 000002fa6fab.
** Ethernet type. Should look like a5ff.

Number of Bridge Filters 0

Source MAC: This is the Source MAC to block or from which to forward. See the next page for instructions on how to configure this. The Source MAC must consist of 12 hexadecimal characters.

Destination MAC: This is the Destination MAC to block or to forward to. See the next page for instructions on how to configure this. The Destination MAC must consist of 12 hexadecimal characters.

Type: Enter the hexadecimal number for the Ethernet type field in Ethernet_II packets. For example, 0800 is for IP protocol. The Type must consist of 4 hexadecimal characters.

Block: When block is selected, everything from the **Source MAC** with destination **Destination MAC** will be blocked.

Forward: When forward is selected, everything from the **Source MAC** will be forwarded to the **Destination MAC**.



How do I block packets from MAC address 000002fa6fab through IP protocol?

Answer: First go to the **Bridge Filtering** page under Configuration. Then type 000002fa6fab in the **ID Source MAC** field and 0800 in the **Type** field. If bridge filtering is not already enabled, select **Yes** under the **Enable Bridge Filtering** field. Then select **Block** and click **Submit**.



How do I block incoming packets with destination MAC address 000003dc8faa through IP protocol?

Answer: First go to the **Bridge Filtering** page under Configuration. Then type 000003dc8faa in the **Destination MAC** field, and 0800 in the **Type** field. If bridge filtering is not already enabled, select **Yes** under the **Enable Bridge Filtering** field. Then select **Block** and click **Submit**.



How do I forward packets with MAC address 000002fa6fab to destination MAC 000003dc8faa through IP protocol?

Answer: First go to the **Bridge Filtering** page under **Configuration**. Then type 000002fa6fab in the **ID Source MAC** field, 000003dc8faa in the **Destination MAC** field, and 0800 in the **Type** field. If bridge filtering is not already enabled, select **Yes** under the **Enable Bridge Filtering** field. Then select **Forward** and click **Submit**.

5.8 DNS Configuration

The **DNS Configuration** page allows you to set the configuration of the DNS proxy.

For the DHCP requests from local PCs, the DHCP server will set the LAN port IP as the default DNS server. Thus, all DNS query messages will come into LAN port first. The DNS proxy on the Router records the available DNS servers and forwards DNS query messages to one of DNS servers.

DNS Proxy Enable/Disable: When the DNS Proxy is Disabled, the LAN port does not process the DNS query message. For the DHCP requests from local PCs, the DHCP server will set the user-configured DNS server as the DNS server. Then all DNS query messages will be directly sent to the DNS servers. DNS Proxy is enabled by default.

Auto Discovered: When enabled (default), the DNS proxy will store the DNS server IP addresses obtained from DHCP client or PPP into the table. All DNS query messages will be sent to the dynamically obtained DNS server. Select this option when the DNS Server address is unknown but provided (automatically) by the ISP.

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DNS Configuration

DNS Proxy

Auto Discovery ☒

User Configuration ☐

DNS Server

DNS Server

Url Name

Host Ip

DNS Proxy Setting		DNS Server Setting	
#	DNS Server IP	#	Url Name (Host.Domain) Host IP

Settings take effect immediately, no system reboot is required

[Save Configuration](#)

User Configured: When enabled, the DNS proxy will use the user-configured DNS server. All DNS query messages will be sent to the DNS server. Enter the DNS IP in the DNS Server field. Select this option when the DNS Server address assigned by the ISP is known. User Configured is disabled by default.

Auto Discovery + User Configured: Selecting both options will cause the DNS proxy's table to have all the IP addresses of dynamically obtained and user configured DNS servers.



When **User Configured** is ticked, you have to enter the IP of DNS server(s) to make the feature take effect.

DNS Server: It is the user defined DNS server URL name and IP. Default is Disabled.

- **URL Name (Add/Delete):** It is the URL name for the DNS server. This can be up to 255 characters.

- **Host IP (Add Only):** It is the IP address of the DNS Server.

DNS Proxy Setting: It is a table of all DNS server IP addresses.

DNS Server Setting: It is a table of all DNS sever URL names.

Save Configuration: Clicking this will link the user to the **Save Settings / Reboot** page.

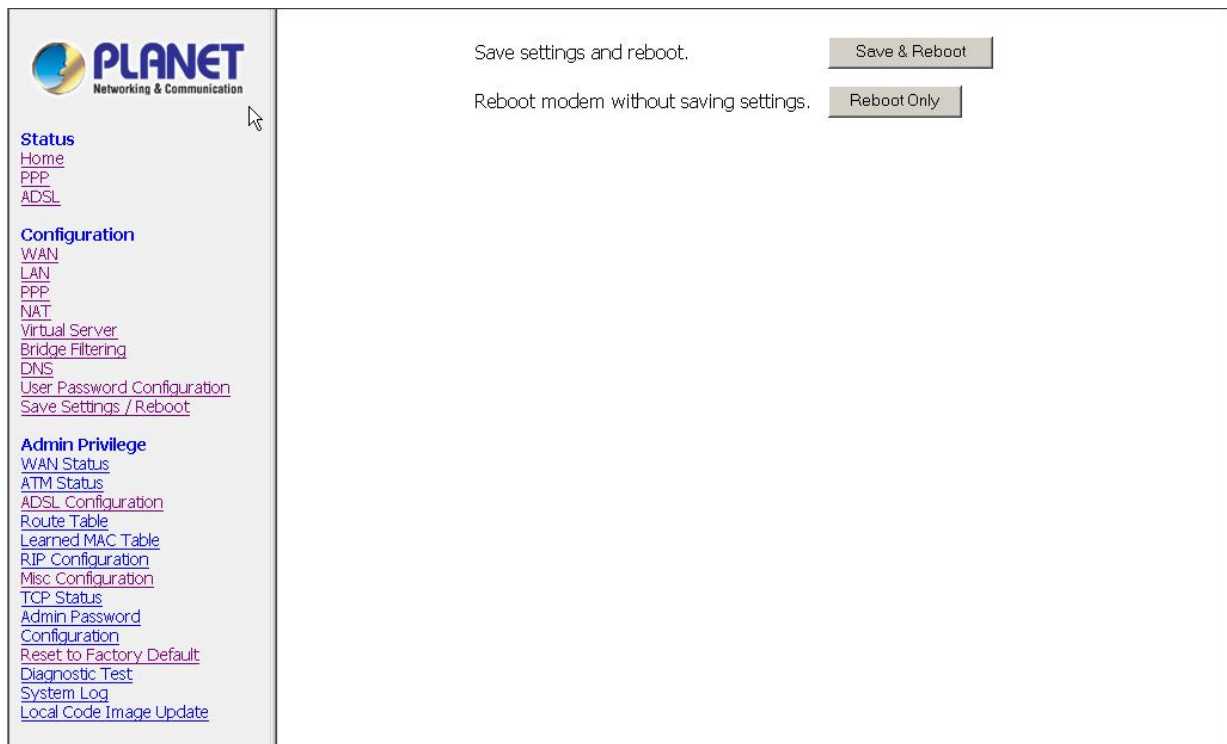
5.9 User Password Configuration

The User Password Configuration page allows the user or admin to set the password for the user account. The User Password can be up to 65 characters (excluding '&').

The screenshot shows the 'User Password Configuration' page of a Planet router's web interface. On the left is a sidebar menu with sections: 'Status' (Home, PPP, ADSL), 'Configuration' (WAN, LAN, PPP, NAT, Virtual Server, Bridge Filtering, DNS, User Password Configuration, Save Settings / Reboot), and 'Admin Privilege' (WAN Status, ATM Status, ADSL Configuration, Route Table, Learned MAC Table, RIP Configuration, Misc Configuration, TCP Status, Admin Password Configuration, Reset to Factory Default, Diagnostic Test, System Log, Local Code Image Update). The main content area has the title 'User Password Configuration' and a warning: 'Do not use '&' in the password.' Below this are two text input fields labeled 'User Password' and 'Retype Password'. Under the fields are 'Submit' and 'Reset' buttons. At the bottom of the main area, a message states: 'Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.'

5.10 Save Settings / Reboot

The **Save Settings / Reboot** page allows you to either save the new configuration to the flash and reboot the Router or simply reboot the Router without saving changes.



Save & Reboot: Click this to apply all changes.

Reboot Only: Do this to discard all changes since last save.

After either one of these buttons are clicked, the Router will do the following:

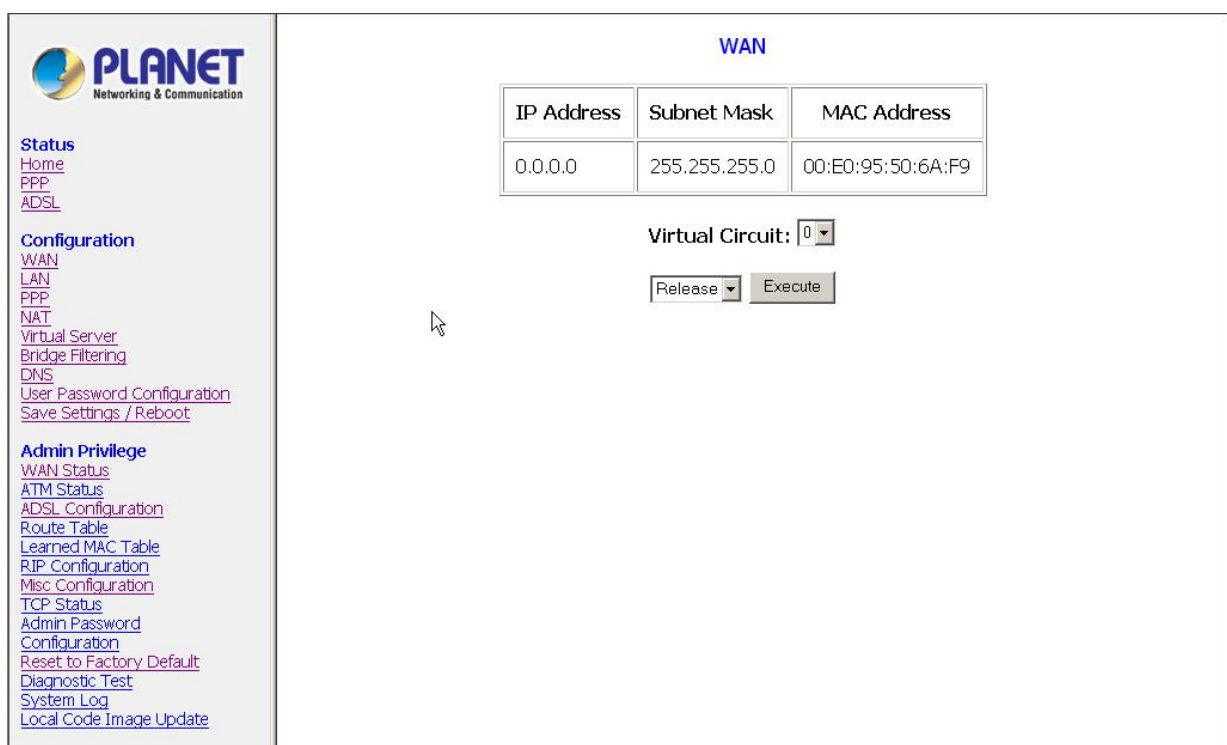
- **Save & Reboot:** Two pages will appear after pressing this button. The first one states: **“Your settings are being saved and the modem being rebooted. Save-reboot in progress, please wait....”** Followed by **“Your settings have been saved and the modem has rebooted. Done.”**
- **Reboot Only:** Two pages will appear after pressing this button. The first one states: **“The modem is being rebooted. Reboot in progress, please wait....”** Followed by **“The modem is being rebooted. Done.”**

6. Admin Privilege

The links under **Admin Privilege** are only accessible when user is logged in as **Admin**. Regular user account does not have authorization to view or alter the content on the pages in the **Admin Privilege** section.

6.1 WAN Status

The **WAN Status** page shows the information and status of WAN PVCs.



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WAN

IP Address	Subnet Mask	MAC Address
0.0.0.0	255.255.255.0	00:E0:95:50:6A:F9

Virtual Circuit:

WAN: It displays the IP address, Subnet Mask and MAC address for the WAN (ADSL) interface. Use the Virtual Circuit selection to select different PVCs for status display.

Virtual Circuit: Select the Virtual Circuit that you want to release/renew, select the appropriate option on the menu dropdown and click **Execute**.

6.2 ATM Status

The **ATM Status** page shows all the statistics information of ATM cells. This page contains information that is dynamic and will refresh every 2 seconds.

Reset Counters: This button allows user to reset the ATM Status counter.

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ATM STATUS

Reset Counters

Tx Bytes	0
Rx Bytes	0
Tx Cells	0
Rx Cells	0
Rx HEC Errors	0
Tx Mgmt Cells	0
Rx Mgmt Cells	0
Tx CLP0 Cells	0
Rx CLP0 Cells	0
Tx CLP1 Cells	0
Rx CLP1 Cells	0
Rx Errors	0

6.3 ADSL Configuration

The **ADSL Configuration** page allows you to set the configuration for ADSL protocols.

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ADSL Configuration

Auto Detected
Annex A
Enabled
Autosense - G.dmt first
Tip/Ring
Disabled

Annex Mode Config
User Selected Annex Mode
Trellis
Handshake Protocol
Wiring Selection
Bit Swapping (No system reboot needed)

Submit Reset

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

Annex Mode Config: It allows you to manually configure the Router for Annex A or Annex B mode by selecting User Configured and choosing the Annex Mode in the next field.

User Selected Annex Mode: It allows you to select from Annex A and Annex B.



Please DO NOT change the default setting of Annex Mode unless you are instructed to do this by your ISP.

Trellis: Trellis Code is an advanced method of FEC (Forward Error Correction). It allows you to enable or disable the Trellis Code. By default, it is always enabled.

Handshake Protocol: It allows you to select from the following ADSL handshake protocols: Autosense - G.dmt first (default), Autosense - T1.413 first, G.dmt/G.lite, T1.413, G.dmt, and G.lite.


Wiring Selection: It allows you to enter the wiring selection for the RJ-11.

Tip/Ring is the default for the Router without the inner/outer pair relay. Available types are Auto, Tip/Ring (default), and A/A1, where Tip/Ring is the inner-most pair of wires on the RJ11 and A/A1 is the second inner-most pair.

Bit Swapping: It allows you to enable or disable the upstream bit swapping. Bit Swapping is disabled by default.

6.4 Route Table

The **Route Table** page displays the routing table and allows you to manually enter a routing entry. The routing table will display the routing status of Destination, Netmask, Gateway, and Interface. The interface br0 indicates the USB interface (reserved function); lo0 indicates the loopback interface; ppp1 indicates the PPP interface. The Gateway is the learned Gateway.



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Route Table

Destination	Netmask	Gateway	Interface
0.0.0.0	255.255.255.0	0.0.0.0	ss0
10.0.0.0	255.0.0.0	10.0.0.2	br0
127.0.0.1	255.0.0.0	127.0.0.1	lo0

System Default Gateway Configuration

☐ None
☒ Auto
☐ Select Interface
☐ Specify IP

Route Configuration

Destination	Netmask	Gateway
<input type="text"/>	<input type="text"/>	<input checked="" type="radio"/> Specify IP <input type="text"/> <input type="radio"/> Select Interface <input type="text" value="Ip Ethernet 0"/>

Note: Save changes to flash to restore on power up.

Manually Configured Routes

#	Destination	Netmask	Gateway
---	-------------	---------	---------

- The Gateway field of the static route entry allows users to either enter a Gateway IP address or select a Network Interface.
- All user-defined routes retained in the CPE memory, regardless if they are already in the Routing Table, are displayed on the same Route Table page.
- All user defined route entries kept in the CPE memory during run time are saved to flash when the user chooses to save and reboot the CPE. When the CPE restarts, it reloads all saved user-defined routes to the CPE memory and tries to apply to the system.
- A user-defined route entry is added to the Routing Table whenever the system provides an environment that makes the route entry applicable. It is removed from the Routing Table whenever the route entry becomes not applicable. e.g. If the route entry's Gateway is associated with a dynamic Network Interface but the connection is not established, then the route entry does not appear in the Routing Table. When that interface comes up later, the route entry is then added.
- If the selected Network Interface is static or dynamic and the connection is already up, then the route entry appears in the Routing Table immediately. If there is a

Gateway associated with the selected Network Interface, then that Gateway's IP address appears in the Gateway field of the route entry.

If the selected Network Interface is dynamic but the connection is not established, then the route entry does not appear in the Routing Table. When the interface comes up later, the route entry is then added.

6.4.1 System Default Gateway Configuration

The system-wide Default Gateway provides three options: Auto (default), User-selected Network Interface, and None.

- **None:** It allows you to choose to have no Default Gateway in the CPE.
- **Auto (default):** It allows you to enable the Router to automatically decide the Default Gateway.
- **User-selected Network Interface:** It allows you to select a Network Interface from a list (PVCs, PPP Sessions and LAN). This option allows you to associate the system-wide Default Gateway to a Network Interface, static or dynamic, and provides a way to fix the Default Gateway to a dynamic Network Interface before the interface is established.



The options for this field are IP PVC0 ... IP PVC7, IP Ethernet 0, IP BridgeMux0, and any PPP session that was created by the user.

- **Specify IP:** It allows you to specify the IP address of the default gateway.

6.4.2 Route Configuration

Destination: It allows you to enter the remote network or host IP address for the static routing.

Netmask: It allows you to enter the Subnet Mask for the static routing.

Gateway: It allows you to enter the IP address of the gateway device that allows the router to contact the remote network or the host for Specified IP or select an Interface for the Gateway.

Manually Configured Routes: It displays the static route entries entered by the user.

6.5 Learned MAC Table

Network bridges operate at the physical network layer. The purpose of a bridge is to connect two or more networks and enable packet sharing between them. Bridges are different from routers because they forward packets based on physical addresses, whereas routers use IP address to forward packets. Bridges must learn all the physical (MAC) addresses of the devices so it can forward the packets reliably. The purpose of the Learned MAC Table is to store and display these bridge-recognized MAC addresses.

The **Learned MAC Table** page shows the current learned Bridge MAC table. This page contains information that is dynamic and will refresh every 8 seconds.



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Bridge MAC Table

MAC Address	Expiration
00:0C:76:20:2F:C8	100

Aging Timeout: Seconds

Aging Timeout: It allows you to enter the update period for the MAC table. Have this number lower if you want a more frequent refresh rate.

Range: 0 - 32767 Default: 100

6.6 RIP Configuration

RIP (Routing Information Protocol) is a management protocol that ensures that all hosts in a particular network share the same information about routing paths.

The **RIP Configuration** page allows you to set the configuration for the system wide

configuration of RIP. The actual RIP configuration is in the RIP Per Interface Configuration.

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RIP System Wide Configuration

RIP

Border Gateway

Supply Interval Seconds

Expire Timeout Seconds

Garbage Timeout Seconds

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Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

RIP: It allows you to Enable or Disable the RIP session. The resulting RIP session will monitor all network interfaces that are currently available for messages from other RIP routers. RIP is disabled by default.

Border Gateway: RIP implements Border Gateway as specified in RFC 1058 and RFC 1723. This limits all subnet routes and host routes to routers within that same network. Updates sent outside that network will only include a single entry representing the entire network, including all subnets and host-specific routes. The Border Gateway is enabled by default.

Supplier Interval: It allows you to enter the Supplier Interval timer in seconds. This timer specifies how often the RIP sends announcements as a RIP Supplier.

Range: 0 - 2147483647 Default: 30

Expire Timeout: It allows you to enter the Expire Timeout in seconds. This timer specifies the expiration time of a route. When a route has not been updated for more than the “expire” period of time, it is removed from the Route Table. This route is then invalidated and remains in the internal RIP Route Table. It will be included in the RIP announcements to let other routers know the changes.

Range: 0 - 2147483647

Default: 180

Garbage Timeout: It allows you to enter the Garbage timer in seconds. This timer specifies how long the expired and invalidated routes are kept in the Internal RIP Route Table before they are removed from it.

Range: 0 - 2147483647

Default: 120

6.6.1 RIP Per Interface Configuration

The RIP Per Interface Configuration page allows you to set the configuration for each Interface (PVCs, PPP Sessions and LAN).

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RIP Per Interface Configuration

Interface: Enabled?: Supplier: Listener:

[Back to System Wide Configuration](#)

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

Current RIP Settings

#	Interface	Enabled?	Supplier Mode	Listener Mode
1	Ip Ethernet 0	No	V2 BC	V1+V2
2	Ip Usb 0	No	V2 BC	V1+V2
3	Ip Pvc 0	No	Disabled	V1+V2
4	Ip Pvc 1	No	Disabled	V1+V2
5	Ip Pvc 2	No	Disabled	V1+V2
6	Ip Pvc 3	No	Disabled	V1+V2
7	Ip Pvc 4	No	Disabled	V1+V2

Interface: It allows you to choose the Interface (PVCs, PPP Sessions and LAN), for the RIP to be configured. The available selections are: IP Ethernet 0, IP USB 0, IP PVC0...IP PVC7, IP BridgeMux 0, and any PPP user defined sessions (maximum of 16):

Enable: It allows you to Enable (Yes) or Disable (No) the specified interface for RIP.

Supplier: It allows you to select the Supplier Mode (RIP Transmit).

- **Disabled:** The supplier transmit is disabled.
- **V1 BC:** The supplier transmits in RIPv1 Broadcast.

- **V2 BC:** The supplier transmits in RIPv2 Broadcast.
- **V2 MC:** The supplier transmits in RIPv2 Multicast.

Listener: It allows you to select the Listener Mode (RIP Receive).

- **V1:** The listener receives the RIPv1 only.
- **V2:** The listener receives the RIPv2 only.
- **V1+V2:** This listener receives the both RIPv1 and RIPv2.

Current RIP Settings: It displays the each interface's RIP status.

6.7 Miscellaneous Configuration

The **Miscellaneous Configuration** page allows you to set miscellaneous configurations for the following: HTTP, FTP, TFTP, DMZ, Command Line Interface, DHCP, PPP, IGMP, and SNMP.

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Miscellaneous Configuration

HTTP server access

☐ All

☒ Restricted

☒ LAN

☐ WAN Specify IP

10.0.0.10

Subnet Mask

255.0.0.0

HTTP server port

80

HTTP Password Protection

Enabled

FTP server

Enabled

☒ Disable WAN side FTP access

TFTP server

Disabled

Command Line Interface

Enabled

☐ by Console

☒ by Telnet

☒ Disable WAN side access

DMZ

Disabled

DMZ HOST IP

0.0.0.0

DHCP

☐ NONE

☒ DHCP Server

☐ DHCP Relay

DHCP Relay Target IP

0.0.0.0

IGMP Proxy

Disabled

PPP Half Bridge

Disabled

PPP Reconnect on WAN Access

Disabled

Connect PPP when ADSL link is up

Enabled

SNTP

Time Zone

(-8) Pacific (US)

Daylight Saving Time

No

User defined Time server

0.0.0.0

Submit

Reset

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

HTTP Server Access: It allows you to configure where these Web pages could be accessed from.

- **All (default):** When this field is checked, it allows both WAN and LAN access to the Web pages.
- **Restricted LAN:** It allows the Web pages access from LAN side.
- **Restricted WAN Specified IP & Subnet Mask:** It allows the Web access from WAN side with a specify IP and subnet mask.

HTTP Server Port: It allows you to specify the port of the Web access. For example, when it is changed to 8080, the HTTP server address for the LAN side is <http://10.0.0.2:8080>.

Range: 0 - 32767 Default: 80

FTP server: It allows you to enable or disable the FTP server connection. System default is Enabled.

- **Disable WAN side FTP access:** This will disable WAN side access to the FTP server, default is Disabled.

TFTP server: It allows you to enable or disable the TFTP connection. System default is Disabled.

DMZ: A DMZ (De-Militarized Zone) is added between a protected network and an external network, in order to provide an additional layer of security. When there is a suspected packet coming from WAN, the firewall will forward this packet to the DMZ host.

DMZ Host IP: The IP address of the DMZ host viewable at the WAN (external) side.

DHCP Dynamic Host Configuration Protocol is a communications protocol that allows network administrators to manage and assign IP addresses to computers within the network. DHCP provides a unique address to a computer in the network which enables it to connect to the Internet through Internet Protocol (IP).

- **NONE:** It will disable the DHCP server. Note that this setting will override the DHCP Server Enable/Disable on the LAN configuration page.
- **DHCP Server (default):** Select this to activate the DHCP server.
- **DHCP Relay:** If it is enabled, the DHCP requests from local PCs will forward to the DHCP server runs on WAN side. To have this function working properly, please

disable the NAT to run on router mode only, disable the DHCP server on the LAN port, and make sure the routing table has the correct routing entry.

DHCP Relay Target IP: If DHCP Relay is enabled, DHCP requests are relayed to DHCP Target IP on the WAN side.

IGMP Proxy: It is the global setting for IGMP Proxy. If it is enabled, then the enabled IGMP Proxy on WAN PVCs will be working. Otherwise, no WAN PVC can have IGMP Proxy working on it. System default is Disabled.

PPP Half Bridge: When PPP Half Bridge is enabled, only one PC is able to access the Internet, and the DHCP server will duplicate the WAN IP address from the ISP to the local client PC. Only the PC with the WAN IP address can access the Internet. System default is Disabled.

PPP reconnect on WAN access: If enabled, the PPP session will automatically establish a connection when a packet tries to access the WAN. System default is Disabled.

Connect PPP when ADSL link is up: If this option is enabled, the Router will connect the PPP session whenever an ADSL connection is established. If this option is disabled, the PPP session will not connect whenever the ADSL Showtime is reached. System default is Enabled.



For more information, please refer to Section 5.4: PPP Configuration.

SNTP: Simple Network Time Protocol is an efficient method of obtaining the time from a Time Server.

Time Zone: It specifies the time zone (geographical location).


Daylight Saving Time: You can select yes to activate Daylight Savings Time.

User defined Time server: This is the time server from which the Router retrieves the time.

6.8 TCP Status

The **TCP Status** page shows the statistics for all TCP connections. This page contains

information that is dynamic and will refresh every 2 seconds.

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General

	Transmit	Receive
Total Packets	1679	1296
Data Packets	1063	183
Data Bytes	716366	72108
Out of Order Packets	N/A	180
Out of Order Bytes	N/A	0

Discarded Packets

Bad Checksum	0
Bad Header Offset	0
Too Short	0

Connections

Initiated	0
Accepted	182
Established	182
Closed	179

6.9 Admin Password Configuration

The Admin Password Configuration page allows you to set the password for administrator. The Admin password can be up to 65 characters (excluding '&').

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[ADSL Configuration](#)
[Route Table](#)
[Learned MAC Table](#)
[RIP Configuration](#)
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Admin Password Configuration

For FTP to work, the password for Admin should be at least 8 characters. Do not use '&' in the password.

Admin Password

Retype Password

Settings need to be saved to Flash and the system needs to be rebooted for changes to take effect.

6.10 Reset to Factory Default

The **Reset to Factory Default** page allows you to reset the Router to original factory default configuration.



Status

[Home](#)
[PPP](#)
[ADSL](#)

Configuration

[WAN](#)
[LAN](#)
[PPP](#)
[NAT](#)
[Virtual Server](#)
[Bridge Filtering](#)
[DNS](#)
[User Password Configuration](#)
[Save Settings / Reboot](#)

Admin Privilege


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Reset settings to factory default and reboot.

Submit

6.11 Diagnostic Test

The **Diagnostic Test** page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides. This page will continually refresh every 2 seconds until all tests are complete.



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Admin Privilege
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Diagnostic Test: Test Complete

Checking LAN Connection
Testing Ethernet LAN connection **PASS** [HELP](#)

Checking ADSL Connection
Testing ADSL Synchronization **FAIL** [HELP](#)

Checking Circuit 0 for Network Connection
Test ATM OAM Segment Loop Back SKIPPED [HELP](#)
Test ATM OAM End-to-End Loop Back SKIPPED [HELP](#)
Test Ethernet connect to ATM SKIPPED [HELP](#)
Test IP connect to Ethernet SKIPPED [HELP](#)

Testing Internet Connection
Ping primary DNS SKIPPED [HELP](#)
Query DNS for www.conexant.com SKIPPED [HELP](#)
Ping www.conexant.com SKIPPED [HELP](#)

6.12 System Log

The **System Log** page shows the events triggered by the system. This page contains information that is dynamic and will refresh every 5 seconds.

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System Log

```

01/01/1970 00:00:00> CfgMgr: 'Prism.dlz' module loaded.
01/01/1970 00:00:00> CfgMgr: 'Apimage.dlz' module loaded.
01/01/1970 00:00:00> CfgMgr: 'Washer.dlz' module loaded.
01/01/1970 00:00:00> CfgMgr: 'Shtm.dlz' module loaded.
01/01/1970 00:00:00> CfgMgr: 'Console.dlz' module loaded.
01/01/1970 00:00:00> Initialized Dynamic NAPT.
01/01/1970 00:00:00> ATM: Setting up vcc0, VPI=8, VCI=35
01/01/1970 00:00:00> ATM: Detected
01/01/1970 00:00:00> Ethernet Device 0 Detected

```

Clear Log

If you would like to save the log to a text file, right click [here](#) and select "Save Target As ..."

6.13 Local Code Image Update

The **Local Code Image Update** page allows you to upgrade the image code locally. Firstly, you need to download the new code to your local drive. And then follow the description below to update your firmware.

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[PPP](#)
[ADSL](#)

Configuration
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[LAN](#)
[PPP](#)
[NAT](#)
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Admin Privilege
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Warning : Updating the Router's firmware may erase the Router's configuration settings. Make sure you want to do so and then click Update button to proceed with the procedure. Otherwise, select other page to terminate this process.

[Code Image Update](#)

Status
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[PPP](#)
[ADSL](#)

Configuration
[WAN](#)
[LAN](#)
[PPP](#)
[NAT](#)
[Virtual Server](#)
[Bridge Filtering](#)
[DNS](#)
[User Password Configuration](#)
[Save Settings / Reboot](#)

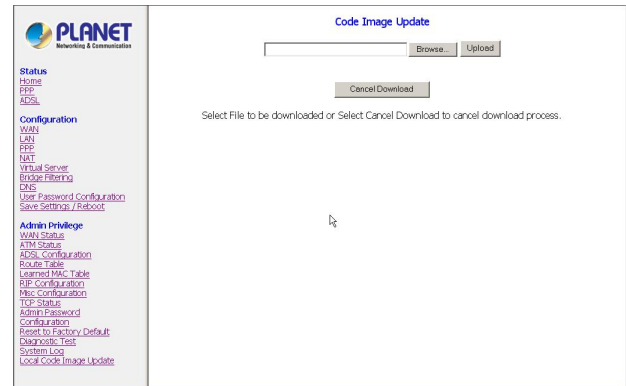
Admin Privilege
[WAN Status](#)
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Code Image Update

Image Download

Select Image Download to start a Code Image Update. After Image Download is selected it will take a few seconds before you can select the file to be downloaded.

1. Click **Code Image Update** to proceed with the procedure or select other page to terminate this process.
2. Click **Image Download** to load the file.



3. Please wait while system is preparing for download. It will take several seconds. Once you enter this page, the ADSL LED will extinguish till you complete or cancel this update procedure correctly.
4. **Browse** the location of file, firmware.dlf file, and click the **Upload** to start the update. The Router will reboot as part of the process of updating code. Otherwise, please do click **Cancel Download** to terminate this procedure correctly. The ADSL LED will then illuminate again to indicate you update the Router successfully.

Appendix A. Compliance Statement

FCC Warning

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 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 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.

CE Mark Warning

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

Appendix B. Encapsulation Mode

Bridged mode (RFC-1483)

RFC-1483 provides the simplest method of connecting end station over an ATM network. User data in the form of Ethernet frames is encapsulated into AAL5-PDU for transport over ATM. RFC-1483 provides no authentication and configuration such as would be provided by PPP. RFC-1483 implementation supports VC multiplexing and LLC/SNAP encapsulation in both routed and bridged configurations.

Classical IP over ATM-IPOA (RFC1577)

User data in the form of IP packets is encapsulated into AAL-5 PDUs for transport over ATM. The fact that the user data is routed at an IP layer instead of bridged MAC layer allows the source and destination to be on different subnets. A notable drawback of IPoA is the lack of authentication and configuration such as would be provided by PPP.

PPP over ATM-PPPoA (RFC-2364)

The use of PPPoA is similar to IPoA. However, a PPP session is established to the remote access server (RAS). The PPP packets are encapsulated according to RFC-2364 for transmission over an ATM link. On the receive side, the de-encapsulation is performed. The PPP session is terminated and the IP packets can be delivered to the end user over Ethernet or other medium.

PPP over Ethernet-PPPoE (RFC-2516)

The PPP over Ethernet (PPPoE) encapsulation is used to transport PPP traffic from a PC to a DSL device over Ethernet and then over the DSL link using RFC-1483 encapsulation. There may be multiple PPP sessions, each terminated in a PC or in the CPE device and in a PPP aggregator on the CO side.

- The PPPoE Client terminates PPPoE session within the CPE device, this configuration enables PPPoE session without a need for additional software.
- The PPP traffic for a Relay Agent is not terminated in the DSL device, rather it is relayed over the DSL link to a PPP aggregator in the CO. PPPoE relay agent determines on which session locally originated PPPoE traffic belongs. The relay agent forwards that traffic, without any unnecessary processing to the correct destination only. Similarly, received data is immediately relayed only to the appropriate client PC. Not only does this approach enhance performance by eliminating additional process, it also provides a critical security feature, so it prevents for example corporate bound data from being exposed to the Internet.

Appendix C. Troubleshooting

This Appendix covers the most likely problems and their solutions.

Overview

This chapter covers some common problems that may be encountered while using ADE-4110 and some possible solutions to them. If you follow the suggested steps and ADE-4110 still does not function properly, contact your dealer for further advice.

General Problems

Question 1	Can't connect to ADE-4110 to configure it.
Answer 1	<p>Check the following:</p> <ul style="list-style-type: none">• ADE-4110 is properly installed, LAN connections are OK, and it is powered ON.• Ensure that your PC and ADE-4110 are on the same network segment. (If you don't have a router, this must be the case.)• If your PC is set to "Obtain an IP Address automatically" (DHCP client), restart it.• If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 10.0.0.3 to 10.255.255.254 and thus compatible with ADE-4110's default IP Address of 10.0.0.2. <p>Also, the Network Mask should be set to 255.0.0.0 to match ADE-4110. In Windows, you can check these settings by using <i>Control Panel-Network</i> to check the <i>Properties</i> for the TCP/IP protocol.</p>

Configuration and Internet Access

Question 1	When I enter a URL or IP address I get a time out error.
Answer 1	<p>A number of things could be causing this. Try the following troubleshooting steps.</p> <ul style="list-style-type: none">• Check if other PCs work. If they do, ensure that your PCs IP settings are correct. If using a Fixed IP Address, check the Network Mask, Default gateway and DNS configured on PC.• If the PCs are configured correctly, but still not working, check ADE-4110. Ensure that it is connected and ON. Connect to it and check its settings. (If you can't connect to it, check the LAN and power connections.)

	<ul style="list-style-type: none"> If ADE-4110 is configured correctly, contact your ISP to see if Internet connection is working correctly.
Question 2	If the PPP is disconnected after the Disconnect Timeout and how can I reconnect it?
Answer 2	You have to go to the PPP link under Status column, choose the correct PVC and Connect option, and then click Execute to restart a new PPP secession.
Question 3	Since only one PVC is mapped to one local PC IP address, why can I input more than one IP address for one NAT session?
Answer 3	Even it is applicable to insert multiple IPs for NAT mapping, only the first IP address of each session takes effect.

Appendix D. Specifications

ADE-4110A/ADE-4110B

Product	ADSL Modem Router	
Model	ADE-4110A	ADE-4110B
ADSL Standards	Annex A	Annex B
	Full-rate ANSI T1.413 issue 2 and ITU-T G992.1 (G.DMT), Splitter-less ITU-T G.992.2 (G.lite)	
Protocol Support	RFC2364 - PPP over ATM (LLC/VCMUX) RFC2516 - PPP over Ethernet (LLCSNAP/VCMUX) RFC1577 - Classic IP over ATM RFC1483 - Bridged IP over ATM(LLCSNAP/VCMUX) RFC1483 - Routed IP over ATM (LLCSNAP/VCMUX)	
AAL & ATM Support	Integrated ATM AAL 5 support	
Data Rate	UP / DOWN Stream: 1 / 8 Mbps	
Power Supply	15V DC, 800mA maximum	
Environment	Operating temperature: 0°C to 40°C Operating humidity: 10% to 90% Storage temperature: -20°C to 70°C(non-condensing) Storage humidity: 10% to 90%(non-condensing)	
Dimension	166mm x 118mm x 33mm (L x W x H)	
ADSL Interface	RJ-11 Modular Jack	