ARESCOM

Broadband Internet & Remote Access Solutions

AresGate 2560/2561

802.11b ADSL Wireless LAN Router
Software User's Guide

Version 2.0

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OVERVIEW

1.1 Introduction

The AresGate 2500 Series (AG2560/AG2561) Wireless ADSL Router is the perfect networking solution to address the specific needs of enterprise wireless application environments, such as airports, hotels, libraries, class rooms, cafés and other semi-public areas. With the built-in ADSL WAN interface, AresGate offers shared high-speed Internet connection rates of up to 8Mbps downstream and up to 800Kbps upstream to your entire LAN network. Through an IEEE 802.11b wireless module, AresGate delivers robust enterprise-level, secure wireless network access, which utilizes IEEE 802.1x protocol to perform user-based access control. Furthermore, to simplify installation and reduce the total cost of ownership, AresGate 2500 Series support inline power over Ethernet, thus eliminating the need for all power supply cabling once and for all.

1.2 Features

- IEEE 802.1X Port-based Network Access Control.
- MAC and EAP/MD5 authentication.
- RADIUS server for accounting and user authentication purposes.
- ADSL standard compliance: T1.413, G.DMT and G.Lite.
- RIP 1, RIP2, NAT/PAT.
- ATM: AAL5, multiple protocol over AAL5, ATM Forum UNI3.1/4.0 PVC, up to 8 AAL5 PVC.
- PPP, PPP over AAL5 and PPPoE.
- DHCP server, DHCP client and DHCP relay.
- High performance 11Mbps data transfer rate.
- Interoperability with all IEEE 802.11b- compliant equipment.
- Up to 128-bit WEP (Wired Equivalent Privacy) encryption.
- Configurable web page for new user's registration.
- Inline power feature through RJ-45 Ethernet LAN port (optional).

1.3 Package Includes

- ARESCOM AresGate 2560/2561 Wireless Gateway (x 1).
- Power adapter and cord set (x 1).
- RJ-45 to RJ-45 straight-through Ethernet cable (x 1).
- RJ-11 to RJ-11 telephone cable (x 1).
- External wireless LAN antenna (x 1).
- ARESCOM Software CD (x 1).
- AresGate 2560/2561 Quick Setup (x 1).

1.4 Minimum System Requirements

- ADSL line.
- Microsoft Windows 98 or later version.
- 166 MHz Pentium or equivalent processor.
- 16 MB RAM or more.
- 170 MB available free hard disk space before installation.
- Available 10BaseT Ethernet on the main computer
- CD-ROM Drive

1.5 Management Interface Options

Access the AresGate management system through two simple management interface options:

1.5.1 HTML Interface (Web-based)

Through the built-in web-based GUI (Graphic User Interface), you can change the AresGate's settings, upgrade its firmware, and monitor other wireless clients on the network. To use this management system, please follow the steps below:

Step 1. Open your web browser.

Step 2. Enter the AresGate's IP address (default: 192.168.10.1) in the browser *Location* field (Netscape Navigator) or *Address* field (Internet Explorer).

Step 3. Press **Enter** to connect.

1.5.2 SNMP (Simple Network Management Protocol)

You can also use a SNMP management application to monitor and configure AresGate. The unit supports the following MIBs (Management Information Base) and protocols:

MIBs

- Standard MIB II (RFC 1213)
- Wireless LAN MIB (IEEE 802dot11)
- Private MIB

Protocols

- SNMP V1
- SNMP V2

NOTE: Please refer to Appendix B for more detailed SNMP information.

1.6 Network Scenario
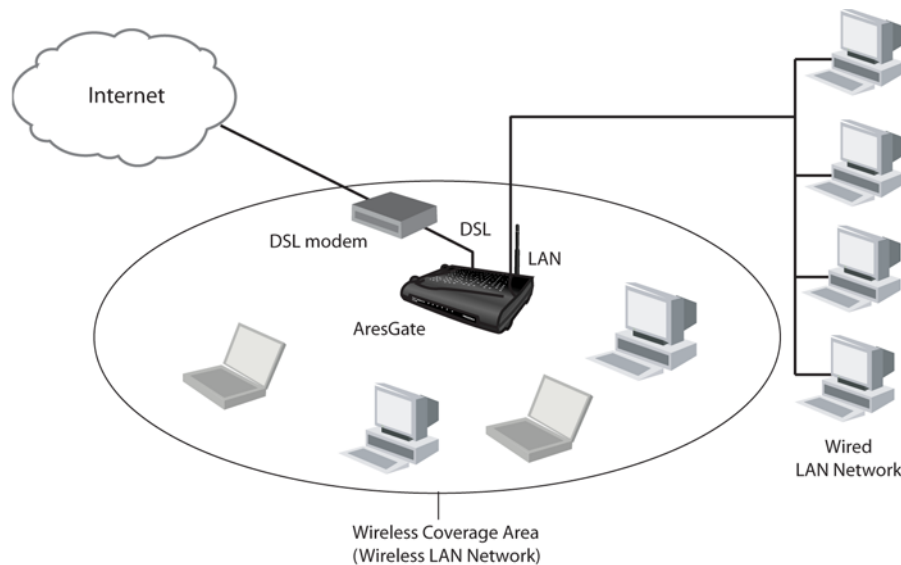
Figure 1.1   Single AresGate Device Network Scenario

AresGate provides a connection point to the wireless clients and the wired LAN (Figure 1.1). The WAN port indicates an ADSL interface connection to the DSLAM (Digital Subscriber Line Access Multiplier) in a central office over an existing phone line. The LAN port indicates an Ethernet interface connection to a Local Area Network.

Authentication Processing

AresGate authenticates all the clients who are associated with it. Wireless users who wish to pass the authentication must provide the correct username and password or a valid MAC address stored in a Remote Authentication Dial-In User Service (RADIUS) server to access the Internet. Wireless users who failed the authentication process are still permitted to access a pre-configured web page in the access point for new user registration. Wired users on the LAN network are allowed to access the Internet directly without the authentication process.

Accounting Processing

AresGate sends an accounting message to a RADIUS server periodically during the session, and terminates the user if the session_time limit is reached. The session_time is configurable at the RADIUS server, and AresGate receives the session_time value when authentication succeeds. User can configure idle_time timers, re-authentication option through RADIUS as well. When the session is terminated, AresGate sends the statistics to the RADIUS server, including session_time, packets, bytes, etc.

Figure 1.2 illustrates AresGate wireless application in a semi-public area in conjunction with ARES-COM's MTU DSL broadband platform, the ARESCOM CDS 6000 DSL Service System.
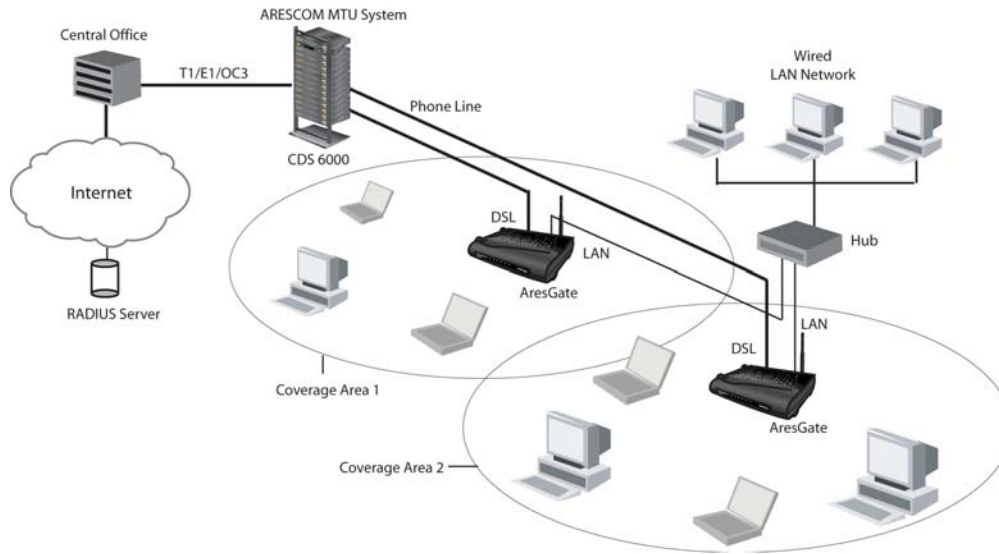
Figure 1.2   Multiple AresGate Devices Network Scenario

Roaming

When a wireless client moves from one coverage area to another, AresGate automatically performs client roaming within the same subnet and the service provided to the client is continuous and seamless.

HARDWARE INSTALLATION

This chapter describes the front/back panel layout and installation procedure for Ares-Gate.

2.1   Front Panel Information

Figure 2.1   AG2500 Front Panel

PWR (Power)

A PWR LED is ON when power is supplied to the AresGate.

DIAG (Diagnostic)

The DIAG LED indicates the AresGate is in a self-diagnostic mode during boot-up. Once the AresGate boots up successfully, the LED will turn off. If there is a software malfunction or a problem with the device, the LED will remain on.

WAN

The WAN LED displays the 10BaseT DSL LINE port connection status between the AG2000 and a DSL line. The WAN LED flashes during the initialization of the DSL line. When DSL synchronization is achieved, it remains solid on.

LAN

The LAN LED displays the 10BaseT Ethernet connection between the AG2000 and an Ethernet network. The LAN LED is solid on when a valid Ethernet link is established. The LED flashes when data is flowing from/to this Ethernet port.

WLAN

The WLAN LED flashes very slow when there is no activity on this wireless port. The LED flashes quickly when data is flowing from/to this port.

2.2 Back Panel Information
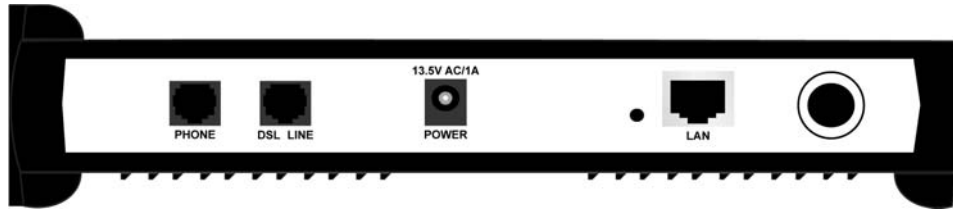
Figure 2.2   AG2500 Back Panel

PHONE

The PHONE port allows you to connect to an external telephone set.

DSL LINE

The DSL port is where you connect the AresGate to a telephone outlet.

POWER (13.5V AC/1A)

The POWER port is where you connect the 13.5V AC power adapter.

RESET

Push this reset button to power-cycle the AresGate device.

LAN

The LAN port connects the AresGate to a PC, hub or switch on your wired LAN network.

Antenna Connector

The included external antenna needs to be securely attached to the antenna connector located on the far right side of the back panel.

2.3 Location & Placement

- For maximum wireless coverage, locate an installation spot where there is a minimum number of walls, ceilings or other objects that will block the radio transmission between the AresGate and the wireless clients.
- Choose an installation location that is away from direct sunlight.
- It is important to place the AresGate device in the center of all the wireless clients.
- Place AresGate on a predetermined surface, so you can see the back panel for convenient cable connection.

2.4   Setup Instructions

Before you start the setup process, make sure you follow the instructions below:

Step 1. Disconnect the broadband service. Make sure your DSL broadband connection is shut down properly.

Step 2. Turn off the power. Make sure the DSL modem and AresGate equipment are all turned off.

Step 3. Connecting the external antenna.

Tightly attach the included external antenna to the antenna connector on the back panel (For maximum range, make sure the antenna is perpendicular to the ground).

Step 4. Connecting to the LAN port.

Connect the RJ-45 to RJ-45 Ethernet cable (included) from the wired Ethernet LAN (such as a PC, hub or switch) to the **LAN** port on the back of the AresGate.
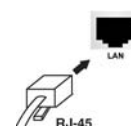
Step 5. Connecting to the DSL LINE port.

Connect the RJ-11 to RJ-11 telephone cable (included) to AresGate's **DSL LINE** port and the other end of the telephone cable to the telephone wall outlet, on which the DSL service is activated.
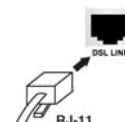
Step 6. Connecting to the POWER port.

Connect the AC power adapter to AresGate's **POWER** port. Connect the AC plug from the power adapter into a wall outlet or power strip.

CHAPTER 3: # BEFORE YOU START
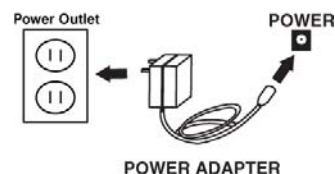
AresGate offers a platform-independent, HTML-based GUI (graphical user interface) to simplify the setup and configuration of your AresGate device by using web browser. All PCs on your LAN network need to be set up properly in order to communicate with the AresGate device. Please carefully read and follow the instructions below before you start configuring your AG2000:

1. Set up the wireless device:

If you have a wireless device installed on your computer and want to use it to connect to the AG2000, set its channel number to *6*, SSID to *AG2500*, and operating mode to *Infrastructure*.

NOTE: The SSID is case-sensitive.

2. Set up an IP address for your PC:

Since AresGate can automatically assign IP address, subnet mask, and gateway IP address to your network PCs through its DHCP server, we highly recommend that you configure your TCP/IP Properties to *Obtain an IP address automatically*. Select the proper network adapter, either an Ethernet or a Wireless Adapter, that you are using to connect to the AresGate.

NOTE: You **CANNOT** connect a PC to AresGate through an Ethernet networking card and a wireless device installed in your PC at the same time

Follow the instructions below to complete the setup:

For Windows 95/98/ME users:

Step 1. Click *Start* -> *Settings* -> *Control Panel*.

Step 2. Double-click *Network*.

Step 3. Double-click *TCP/IP -> XXXX Ethernet/Wireless Adapters* ("XXXX" is the maker of your Ethernet card).

Step 4. Select the radio button next to *Obtain an IP address automatically*.

Step 5. Click the *Gateway* tab and remove all previously installed gateways and click *OK*.

Step 6. Click *OK* again.

Step 7. Restart your computer.

For Windows 2000/XP users:

Step 1. Right-click the *My Network Places* icon in the desktop.

Step 2. Click *Properties*.

Step 3. Right-click *Local Area Connection*.

Step 4. Click *Properties*.

Step 5. Double-click *Internet Protocol (TCP/IP)*.

Step 6. Select the radio button next to *Obtain an IP address automatically* and click *OK*.

Step 7. Click *OK* again.

3. **Verify your PC's IP address:**

It **MUST** be 192.168.10.X (where **X** is in the range of 2-254). To verify your PC's IP address, please follow the instructions below:

For Windows 95/98/ME users:

Step 1. Click *Start* -> *Run*.

Step 2. Enter *winipcfg* and click *OK* to prompt the **IP Configuration** window.

Step 3. Select the correct Ethernet or Wireless networking adapter in the white dropdown box.

Step 4. If the IP address displayed in the **IP Address** box is not 192.168.10.X. (where **X** is in the range of 2-254), you need to click *Release All* -> *Renew All* buttons to have the correct IP address assigned from your AG2000 to your PC.

For Windows 2000/XP users:

Step 1. Click *Start* -> *Run*.

Step 2. Enter *command* and click *OK* to prompt the **Windows DOS** window.

Step 3. Enter *ipconfig* and click *OK*. Windows will display the **Windows IP Configuration** information.

Step 4. If the IP address displayed in the **IP Address** field is not 192.168.10.X. (where **X** is in the range of 2-254), you need to enter *ipconfig /release* and then *ipconfig /renew* commands to receive a correct IP address from the AG2000.

4. **Verify your PC's Internet Properties setting if you were previously using an analog modem.**

Please follow the steps below:

Step 1. Click *Start*, point to *Settings*, and then click *Control Panel*.

Step 2. Double-click *Internet Options*, and then click the *Connections* tab.

Step 3. Click *Never dial a connection*, click *Apply*, and then click *OK*.

SOFTWARE CONFIGURATION

4.1 Open Your Browser

Follow the steps below to open your web browser:

Step 1. Launch a web browser (i.e. Internet Explorer or Netscape Navigator) from your computer.

Enter the default URL ***http://192.168.10.1*** and press ***Enter***.
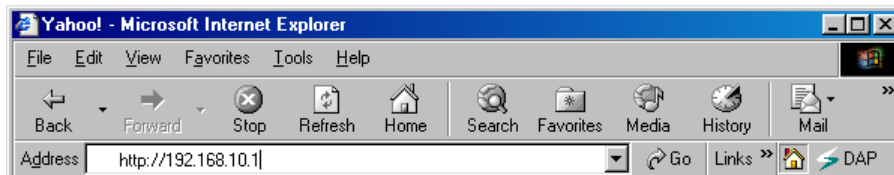
Figure 4.1   Opening an Internet Web Browser

The Web browser may take a minute or two to log on to your AresGate for first time access. (Pressing the ***Enter*** key or clicking the ***Go*** button twice may speed up the log-on process).

AresGate's web GUI is divided into two sections: Basic and Advanced.

The **Basic** section allows you to configure basic setup features and view the status of the AresGate. It contains the following GUI pages:

- SETUP
- WIRELESS
- AUTHENTICATION
- DHCP
- USER STATUS
- STATUS

The **Advanced** section allows users to have greater control over the AresGate device. It contains the following pages:

- ADMINISTRATION
- PORT MAPPING
- IP ROUTING
- SNMP
- UPGRADE

4.2   Basic - SETUP

Figure 4.1   SETUP Page

Consult your ISP and use the **SETUP** page to configure AresGate's ATMPVC WAN interface.

Encapsulation: Allows you to choose the following encapsulation types at the ATM interface:

      a.   Not in Use

      b.   SNAP/IP

      c.   PPPoA VC MUX

      d.   PPPoA LLC

      e.   PPPoE

      f.   SNAP/Bridge

      g.   Bridge Routing

VPI: A virtual path is a semi-permanent connection between endpoints in an ATM network and may support one or more virtual channels. In Private Virtual Circuit (PVC) mode, the **Virtual Path Identifier (VPI)**, which is a header subfield, is assigned manually when ADSL Bridge is used. Different VPI values allow the endpoints to discriminate between different virtual connections between ATM nodes.
The minimum and maximum values of the VPI are 0 and 255, respectively. At default, VPI is set to *0*.

VCI: Each connection in an ATM network is characterized by a **Virtual Channel Identifier (VCI)**. This is a header subfield that is assigned manually when ADSL Bridge is used. A VCI has only local significance on the link between ATM nodes. When the connection is released, the VCI value on the involved links will be released and can be reused by other connections.
The minimum and maximum values of the VCI are 32 and 4095, respectively. At default, VCI is set to *0*.

PPP User Name: The name of the Internet account provided by your ISP.

PPP Password: The password you use to access your ISP account.

OAM F5 Timer: The **Operations and Maintenance (OAM) F5 Timer** feature transmits loopback cells to the remote peer according to the specified period. Note that the local peer will always respond to a loopback cell that is transmitted by the remote peer. If the OAM F5 timer is set to 0, then no loopback cell will be sent to the remote peer.

NAT:	Network Address Translation allows the AresGate to perform IP-sharing, which means multiple PCs on your LAN with private IP addresses can share Internet access using one public IP address.
Remote IP:	The IP address of the remote server provided by your ISP.
WAN IP:	AresGate's WAN IP address provided by your ISP.
Subnet Mask:	AresGate's subnet mask provided by your ISP.

When you are ready, click **Submit** to save the configuration to your AresGate device. If you do wish to save configuration, click **Cancel**.

4.3 Basic - WIRELESS

Figure 4.2   WIRELESS Page

The **WIRELESS** page provides the configuration parameters for AresGate's wireless feature. It contains the following settings:

SSID (Service Set ID)

The **SSID** is an unique identifier that AresGate and wireless clients use to associate with each other. The SSID can be any alphanumeric entry up to 32 characters long and is case sensitive. The default SSID is **AG2500**.

Radio Transfer Speed

The radio transfer speed is the data rate that AresGate uses to connect to a wireless client. You can choose the wireless data transfer rate of the AresGate ranging from **1**, **2**, **5.5** to **11Mbps**. AresGate will always attempt the selected speed to link to wireless clients. If a link cannot be established because of interference or other obstacles, AresGate gears down the speed to the next lowest rate until a link is successfully established. The default radio transfer speed is **11Mbps**.

Wireless Channel Number

A **wireless channel number** is a specific frequency band at which AresGate communicates with a client. You can select one of the 11 channels from the drop-down menu for the AresGate to use. However, if you enable the **Auto-Channeling** feature, the channel you selected here will be ignored by the system. Instead, it will be replaced by the channel number that the system selected.

Auto-Channeling

When you turn on the **Auto-Channeling** feature, AresGate automatically scans the surrounding radio signals, selects the least interference and lowest traffic channel to use, and displays this selected channel in the above Wireless Channel Number. The default setting of this feature is *Off*.

NOTE: Turning on the Auto-Channeling feature may cut off the wireless connection between AresGate and your PC. Click *Re-Scan* in the Wireless Configuration Utility program installed in your PC to re-establish the wireless connection.

WEP (Wired Equivalent Privacy)

The **Wired Equivalent Privacy (WEP)** is used to protect wireless communication from eavesdropping. Since WEP uses a secret key shared between the communicators, if you enable the WEP feature, entering the WEP key values below is required.

Default WEP Key

AresGate supports 40-bit and 128-bit WEP keys. For 40-bit WEP encryption, you need to enter 10 hexadecimal digits in one of the key fields below. For 128-bit WEP encryption, you need to enter 26 hexadecimal digits in one of the key fields below. Although there are four key fields you can set up for AresGate, you can choose only one at a time from the Default WEP Key drop-down menu. The WEP key is not case-sensitive. The default key field is *1*.

1. **Enter either 40-bit WEP keys as 10 HEX digits or 128-bit WEP keys as 26 Hex digits here.**

2. **Enter either 40-bit WEP keys as 10 HEX digits or 128-bit WEP keys as 26 Hex digits here.**

3. **Enter either 40-bit WEP keys as 10 HEX digits or 128-bit WEP keys as 26 Hex digits here.**

4. **Enter either 40-bit WEP keys as 10 HEX digits or 128-bit WEP keys as 26 Hex digits here.**

Click *Save* to save the values to your AresGate. If you do not wish to save the configuration, simply click *Cancel*.

4.4 Basic - AUTHENTICATION

Figure 4.3   AUTHENTICATION Page

The **AUTHENTICATION** page allows you to configure AresGate to establish communication with a RADIUS server for the purpose of user authentication and accounting. If the user passes the authentication, then the user is allowed access to the network and service that AresGate provides. It performs both MAC address and EAP (Extensible Authentication Protocol) authentication automatically for all the associated wireless clients. MAC address authentication is based on user's MAC address of his/her wireless device for authenticating while EAP authentication is based on the username and password.

MAC address authentication is performed first. If the MAC address is not in the RADIUS server or local SOHO profile, then EAP authentication is performed. The user is REQUIRED to input the user-name and password for authentication purpose.

There are three options for you to choose:

If you select *No Authentication*, AresGate will not perform the authentication process.

If you select *Authentication by Radius*, AresGate will perform the authentication process through an external RADIUS (Remote Authentication Dial-In User Service) server. Please follow the steps below to set up the RADIUS server:

Step 1. Enter the maximum number of users allowed to access the AresGate in the *Max users (0-64)* field.

Step 2. Enter the IP address of the authentication server in the *IP Address* field of the **Authentication Server** section.

Step 3. Enter the port number of the authentication server in the *Port* field. The default port number is *1812*.

Step 4. Enter the shared secret key used by the authentication server in the *Secret Key* field.

Step 5. Repeat Steps 1 - 4 for the **Accounting Server** section. The default port number of the accounting server is *1813*.

If you select *Authentication by local SOHO profile*, then enter the *username*, *password*, *Max Session Time (min)*, and *Max Idle Time (sec)*. Even though no back-end server is needed, however, the maximum number of clients allowed is now reduced to 12 only.

When you are ready, click *Submit* to save the values to your AresGate. If you do not wish to save the configuration, simply click *Cancel*.

4.5   Basic - DHCP

Figure 4.4   DHCP Page

The **DHCP** page allows you configure the DHCP feature and assign or reserve IP addresses. At default, the DHCP feature is set to *On*. There are three options for you to choose:

If you select *Relay On*, then you have activated AresGate's DHCP relay feature. It is necessary for you to configure a DHCP server's IP address in the *DHCP Server* field to allow DHCP packets to forward properly.

If you select *Server Off*, then you have de-activated AresGate's DHCP server feature.

If you select *Server On*, then you have activated AresGate's DHCP server feature for automatic assign-ment of IP addresses, subnet mask, gateway IP address, and DNS to the DHCP clients. Please follow the steps below for a complete DHCP setup:

Step 1.   Enter the LAN IP address of the AresGate in the *IP Address* field under **LAN Settings**. The default LAN IP address is *192.168.10.1*.

Step 2.   Enter the subnet mask of the AresGate in the *Subnet Mask* field under **LAN Settings**. The default LAN subnet mask is *255.255.255.0*.

Step 3.   Enter the amount of time that a network device can have (lease) a private IP address before AresGate makes the IP address available for re-assignment in the *Lease Time (Hour)* field.

Step 4. If you wish to specify a pool of IP addresses that can be dynamically assigned as private IP addresses, you can enter an IP address in the *Start IP* field as the beginning and another IP address in the *End IP* field as the end of the IP range.

NOTE: The **IP Pool** feature for the DHCP server is based on the LAN IP address settings. Therefore, you must first configure a LAN IP address and subnet mask in the above **LAN Setting** section before using DHCP.

Step 5. When you are finished with the DHCP configuration, click **Save**.

4.5.1 Reserved IP Table

The **Reserved IP Table** displays all the private IP addresses that are reserved by the user for other usages. To reserve a new private IP address, simply enter the IP address in the *Reserved IP* field and click **Add**. To remove an IP address from the Reserved IP Table, enter the IP address and click **Delete**.

4.6 Basic - USER STATUS
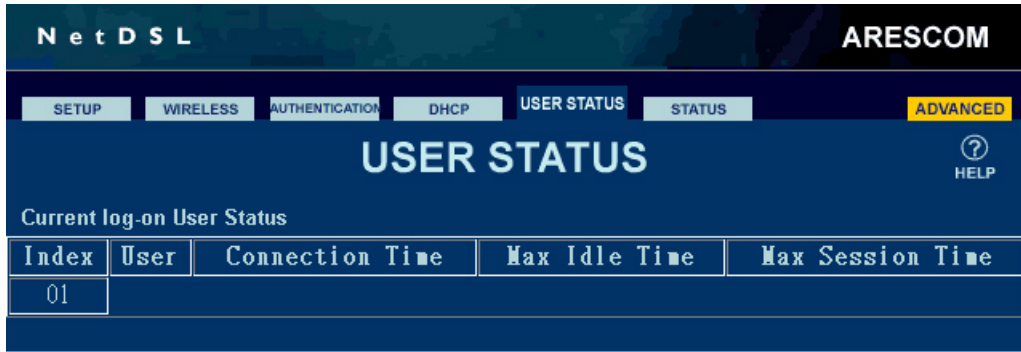
Figure 4.5   USER STATUS Page

The **USER STATUS** page displays the current logon user status and contains the following information:

4.6.1 Current Log-on User Status

Index: A serial ID number, which is assigned by the system, for logon users.

User: It displays user's identification as MAC address for MAC authenticated user or username for EAP authenticated user.

Connection Time: It indicates the connection time of the service from the beginning of the session.

Max Idle Time: When the idle data traffic time exceeds the maximum idle time configured by a central RADIUS server, AresGate stops its service and ends session.

Max Session Time: It shows the time that the user is allowed to use the service.

4.7 Basic - STATUS

Figure 4.6   STATUS Page

The **Status** page displays AresGate's network statistics and general system information.

System

System Name:	AresGate device name used for identification purpose.
Location:	The location name where AresGate is installed.
Firmware Version:	Current installed firmware version number.
Firmware Date:	The firmware release date.

Ethernet LAN

IP Address:	The IP address of AresGate's Ethernet port.
Subnet Mask:	The subnet mask of AresGate's Ethernet port.
MAC Address:	The MAC address of AresGate's Ethernet port.
Status:	The current LAN connection status.

Ethernet Port Statistics

Received Packets:	The total number of packets received on the Ethernet port.
Transmit Packets:	The total number of packets transmitted on the Ethernet port.
Overrun Packets:	The total number of receiver overruns.
Underrun Packets:	The total number of transmitter underruns.
Receive Loss Packets:	The total number of packets lost.
Receive Bad Bytes:	The total number of bad bytes received.
Packets Truncated:	The total number of truncated packets received.
Packet CRC Errors:	The total number of packets received with an incorrect CRC.

ADSL

DSP Firmware:

Vendor ID:

SNR:

Attenuation:

Lcl Tx Power:

Line Mode:

Upstream:

Downstream:

Wireless LAN

Wireless Link:	Indicates whether or not there is a valid wireless connection between AresGate and other PCs.
SSID:	Displays the SSID of the AresGate device.
Channel Number:	Displays AresGate's current wireless channel number.
Transmit Packets:	The total number of packets transmitted on the wireless interface.
Transmit Bytes:	The total number of bytes transmitted on the wireless interface.
Received Packets:	The total number of packets received on the wireless interface.
Received Bytes:	The total number of bytes received on the wireless interface.

4.8 Advanced - ADMINISTRATION

Figure 4.7 **ADMINISTRATION Page**

To ensure AresGate's maximum administrative security, the **ADMINISTRATION** page in the advanced section allows you to enter a desired username and password.

Reboot: Click this button to reboot AresGate remotely. It acts the same as the power switch on the back of the unit.

Reset: Click this button to restore AresGate to manufacturer default conditions.

4.8.1 Administration

User Name: Enter a desired username to set up administrator authorization for the management system. It can be any alphanumeric code up to 32 characters long. The default username is **admin**.

Password: By entering a desired password, it provides maximum security for your AresGate by limiting access only to users with the correct password. The password can be any alphanumeric code up to 32 characters long. The default password is **admin**.
When you type in your password, it will appear as asterisk (****).

Re-enter Password: Enter your password again to make sure that you have typed in the correct password.

System Name: Enter a desired device name for the AresGate for identification purpose.

Location: Enter the location name where the AresGate is installed.

Gateway IP Address: Enter AresGate's Gateway IP Address provided by your ISP.

Primary DNS: Allows you to assign the IP Address of the Primary DNS provided by your ISP.

Secondary DNS: Allows you to assign the IP Address of the Secondary DNS provided by your ISP.

When you are ready, click **Save** to save the values to your AresGate. If you do not wish to save the configuration, simply click **Cancel**.

4.9 Advanced - IP ROUTING

Figure 4.8   IP ROUTING Page

Use the **IP ROUTING** page to create paths or routes for AresGate to forward data packets to their destinations. You need to create an IP route when there are other routers on your LAN.

4.9.1 Current IP Routing Table

The Current IP Routing Table displays the index number (ID), Destination IP Address, Subnet Mask, Gateway IP Address, and Interface for each IP route entry.

4.9.2 Add Route

Destination IP Address: The IP address of where data packets are to be sent.

Subnet Mask: The subnet mask of the above Destination IP Address.

Gateway IP Address: The IP address of the router on the LAN where data packets are to be sent. The Gateway IP Address can only be set if the route uses the LAN interface.

Interface: Determines data packets are to be sent through the Ethernet_LAN or WAN interface.

When you are ready, click **Add** to enter a new IP route to the Current Routing Table.

4.9.3 Delete Route

Route ID: To delete a route from the routing table, enter the associated ID number and click the **Delete** button. Click **Cancel** if you do not wish to save configuration.

4.10 Advanced - SNMP

Figure 4.9   SNMP Page

Use the **SNMP** (Simple Network Management Protocol) page to add or delete SNMP entries. This page also lists all the SNMP entries in AresGate.

If you select *SNMP Off*, then you are disabling the SNMP feature.

If you select *SNMP On*, then you are enabling the SNMP feature, and you must enter a valid SNMP server IP address in the *SNMP IP* field. When you are done, click *Save*.

4.10.1 Current SNMP Table

The **Current SNMP Table** provides the current SNMP entry's information including the entry's ID number, community string and access rights. There are two default entries: **public** and **private**.

4.10.2 Add SNMP Entry

Community: Allows you to enter the SNMP string.

Read: Allows you to enable or disable the Read function on this community.

Write: Allows you to enable or disable the Write function on this community.
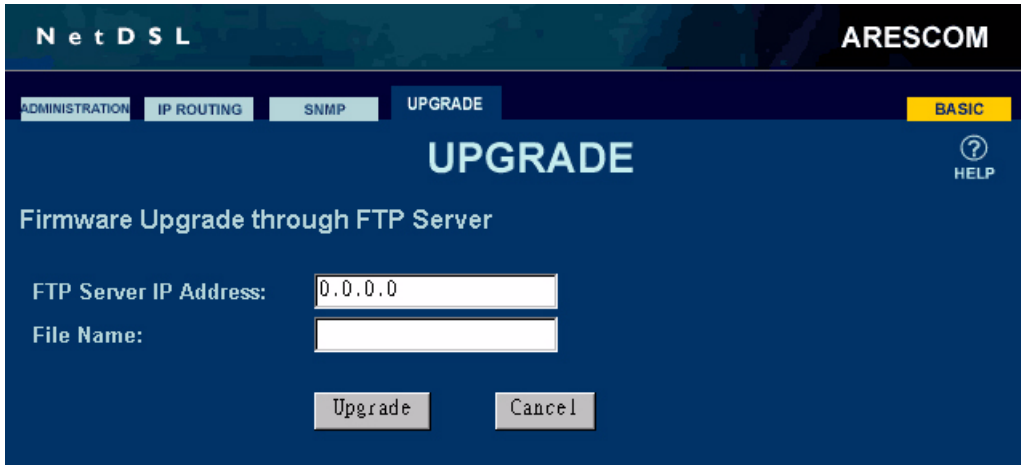
Click ***Add/Edit*** to add a new entry or edit an existing entry in the Current SNMP Table.

4.10.3 Delete SNMP Entry

SNMP Entry ID: Enter the associated ID number that you want to remove from the table. The last SNMP entry cannot be deleted.

Click ***Delete*** to remove this entry from the SNMP table. Click ***Cancel*** if you do not wish to save configuration.

4.11 Advanced - UPGRADE

Figure 4.10   **UPGRADE Page**

Use the **UPGRADE** page to update AresGate's firmware from a FTP (File Transfer Protocol) server. You can perform firmware upgrade by following the steps below:

Step 1. In the *FTP Server IP Address* field, enter the IP address of the FTP server where the new firmware file is located. The default FTP server IP address is ***63.197.240.8***. The FTP server should allow anonymous login.

Step 2. In the *File Name* field, enter the file name of the new firmware that you want to load and install. Please check ARESCOM website for the latest firmware filename.

NOTE: The firmware image file must be placed in the root directory of the FTP file server.

Step 3. Click ***Upgrade*** to begin the firmware upgrade process. When the upgrade is complete, AresGate will reboot automatically. Click ***Cancel*** if you do not wish to upgrade the unit.

TROUBLESHOOTING

5.1 FAQ

Symptom	Possible Cause	Resolution
The DSL LED blinks continuously and never stays solid on.	RJ-11 phone cable loose or not connected properly.	Make sure the RJ-11 phone cable is plugged into the back panel of the unit and the other end into the phone wall jack.
	RJ-11 phone cable defective.	Replace RJ-11 phone cable.
	The phone cable is wired incorrectly.	Make sure the pair of the phone line on which the DSL service is activated is on the inside wire pair of the RJ-11 phone jack.
Ethernet LAN LED not turned on after Ethernet cable is connected.	Ethernet/LAN cable loose or not connected properly.	Reconnect the Ethernet cable into the Ethernet/LAN port.
	Ethernet/LAN cable defective.	Replace the Ethernet/LAN cable.
	Incorrect cable. The following are indicated by no link at both ends: • A crossover cable was used when a straight-through was required or vice-versa. • The cable is wired incorrectly.	For the correct pinouts of crossover or straight-through cable, please refer to **Appendix C**.
Unreachable through Ethernet.	Your PC's Ethernet NIC IP address and the LAN IP address of the unit are not in the same subnet.	Change your PC's Ethernet IP address.
	Ethernet cable loose or not connected properly.	Reconnect the Ethernet cable into the Ethernet port.
Unable to browse the Internet because authentication failed.	Incorrect username and password (EAP authentication failed).	Contact your service provider to make sure you have correct username and password.
	Incorrect MAC address (MAC authentication failed).	Contact your service provider to make sure your WLAN device is assigned with an authenticated MAC address.
	Unregistered users.	Go to the registration web page for registration or contact your ISP.

TECHNICAL SPECIFICATIONS

A.1 Hardware Specifications

WAN Interface

ADSL Interface:

- One ADSL port (RJ-11).
- ADSL Line Code: Support ANSI T1.413 Issue 2, ITU-T G.992.1 (G.DMT), and ITU-T G.992.2 (G.Lite).

ADSL Data Rate:

- ANSI T1.413: Up to 8 Mbps downstream and up to 1024 Kbps upstream operating at full rate connection.
- G.DMT: Up to 8 Mbps downstream and up to 1024 Kbps upstream operating at DMT full rate connection.
- G.Lite: Up to 1.5 Mbps downstream and up to 1024 Kbps upstream operating at G.lite connection.

Wired LAN Interface

- One Ethernet 10BaseT (IEEE 802.3) port (RJ-45)

Wireless LAN Interface

- IEEE 802.11b High Rate compliant
- Operating in the unlicensed 2.4GHz ISM band
- Operation Frequency/Channels (Either one below)
    - North America/FCC: 2.412~2.462 GHz (11 channels)
    - Europe/ETS: 2.412~2.472 GHz (13 channels)
    - Japan/TELEC: 2.412~2.472 GHz (14 channels)
- Modulation Technique: Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK).
- Dynamic Rate Shifting: 11, 5.5, 2 and 1Mbps.
- Media Access Protocol: CSMA/CA with ACK.
- Security Management: 40-bit, 128-bit WEP (wired equivalent privacy) Encryption.
- Maximum Output Power: 17dBm (50mW).

Antenna

- Removable 3-dBi diversity high gain dipole antenna LEDs.

LEDs

- PWR
- DIAG
- WAN
- LAN
- WLAN

Mechanical

- Dimensions: 8" (w) x 5.75" (d) x 1.5" (h).
- Weight: 1.5 lbs.

Operating Environment

- Operating temperature: 0°C to 40°C (32°F to 104°F).
- Operating humidity: 0% to 95% non-condensing.

Power

External AC Power Adapter

- Input: 230V 85mA or 120V 155mA, 47-60 Hz.
- Output: 13.5V AC, 1A.
- Power consumption: 8.5 watts nominal.

Compliance / Regulatory

- EMI: FCC Part15 Class B & Part 15C, CE EN55022 Class B.
- Telecom: FCC Part 68.
- Wi-Fi Certified.
- Immunity: CE EN55024.
- Safety: CE EN60950.

A.2 Software Features

Authentication

802.1x Authentication

- EAP/ MD5 (PPP Extensible Authentication Protocol, RFC 2284) mechanism for authentication.
- RADIUS server (RFC2865, RFC 2869).
- RADIUS Accounting (RFC 2866).

MAC Authentication

- Authentication through the client's MAC address (RFC 2865).

Web Re-direction

- Unauthorized users automatically re-direct to a configured web page for registration.

Radio Control

Automatic Channel Selection

- Automatically selects the optimal channel for minimal radio interference from other nearby APs.
- ON/OFF selectable.

Date Rate Selection

- Manually selects data rates from 1Mbps, 2Mbps, 5.5Mbps and 11Mbps.

Roaming

- IEEE 802.11b High Rate compliant.
- Automatic account roll-over.

RADIUS

- Up to two RADIUS authentication servers: Authentication and Accounting Servers.
- Configured port number and accounting port number.

Routing

- TCP/IP (RFC791, RFC792, RFC793), ARP (RFC826).
- Static routing on the LAN and/or WAN.
- Dynamic routing protocol supports RIP1 (RFC1058), RIP2 (RFC1723).

DHCP

- DHCP server (RFC 2131,RFC2132): automatic to assign IP address, Subnet Mask, Gateway, and DNS to workstations.
- DHCP relay.
- DHCP pass-through.

Bridging

- IEEE 802.1d-compliant transparent bridging between wireless interface and wired LAN interface.
- Bridge Filters – Up to 32 filter entries, MAC address criteria setup.
- Supports up to 510 MAC learning addresses.
- RFC1483-bridged (LLC or VC MUX encapsulation) over ATMPVC.

Internet Access Sharing

- NAT/PAT (RFC1631) proxy supports unlimited multi-user sharing via Ethernet LAN.
- NAT (Network Address Translation) supports PAT (Port Address Translation) for Web server hosting, multimedia applications, and Internet gaming.
- NAT supports PPTP and IPSec VPN pass through.

Security

- IEEE 802.1X port-based network access control.
- PAT (RFC1334), CHAP (RFC1994), and MS-CHAP user authentication.
- Username and password control for network management access.
- WEP (Wired Equivalent Privacy): 40/128-bit encryption keys and SSID.

Network Management

Access Interfaces

- Web browser-based manager.
- Command Line Interface through RS-232 console port.
- Telnet support.
- SNMP (Simple Network management Protocol): RFC1157.

SNMP

- MIB II (RFC1213).
- Wireless MIB (IEEE 802dot11).
- Private MIB.
- SNMP traps (RFC1215).

Functions

- Device configuration.

- Firmware upgrade available via FTP or locally.

- Real time status display and event report and Syslog.

- Remote reboot (hardware) and reset.

NOTE: Product specifications are subject to change without prior notice.

SNMP SPECIFICATIONS

AresGate device follows the IETF standard RFC1213. Currently the standard MIB-II is implemented in all but the following three groups:

- Egp   OBJECT IDENTIFIER ::= {mib-2 8}
- Transmission   OBJECT IDENTIFIER ::= {mib-2 10}
- snmp   OBJECT IDENTIFIER ::= {mib-2 11}

B.1 Standard Bridge MIB

AresGate supports standard bridge MIB (root: 1.3.6.1.2.1.17) as specified in RFC1493. The following is the OID list:

1.1 Dot1DBaseBridgeAddress, String, Read Only

1.2 Dot1DBaseNumPorts, Integer, Read Only

1.3 Dot1DBaseType, Integer, Read Only

1.4.1.1 Dot1DBasePort, Integer, Read Only

1.4.1.2Dot1DBasePortIfIndex, Integer, Read Only

1.4.1.3Dot1DBasePortCircuit, ObjID, Read Only

1.4.1.4 Dot1DBasePortDelayExceededDiscards, Counter, Read Only

1.4.1.5 Dot1DBasePortMTUExceededDiscards, Counter, Read Only

4.1 Dot1DTPLearnedEntryDiscards, Counter, Read Only

4.2 Dot1DTPAgingTime, Integer, Read Only

4.3.1.1 Dot1DTPFDBAddress, String, Read Only

4.3.1.2 Dot1DTPFDBPort, Integer, Read Only

4.3.1.3 Dot1DTPFDBStatus, Integer, Read Only

4.4.1.1 Dot1DTPPort, Integer, Read Only

4.4.1.2 Dot1DTPPortMaxInfo, Integer, Read Only

4.4.1.3 Dot1DTPPortInFrames, Counter, Read Only

4.4.1.4 Dot1DTPPortOutFrames, Counter, Read Only

4.4.1.4 Dot1DTPPortInDiscards, Counter, Read Only

5.1.1.1Dot1DSTATICAddress, String, Read Only

5.1.1.2 Dot1DSTATICReceivePort, Integer, Read Only

5.1.1.3 Dot1DSTATICAllowedToGoto, String, Read Only

5.1.1.4 Dot1DSTATICStatus, Integer, Read Only

NOTE: ADSL and ATM stand MIBs will be supported in later version.

B.2 Private MIB Implememtation

AresGate also supports wireless MIB (IEEE 802dot11) and private MIB.

B.2.1 Terminalogy

This section presents the syntax and access type categories used to describe each variable. For details on syntax, refer to RFC 1155 and RCF 1442 for SNMPv2.

Syntax

Syntax describes the format of the information, or value, that is returned upon monitoring or setting information in a device with a MIB variable.

Syntax can be any one of the following categories:

TruthValue

An integer of 1 or 2, where 1 = true and 2 = false.

TruthValue is defined in "Textual Conventions for version 2 of the Simple Network Management Protocol (SNMPv2)," RFC 1443.

Counter/Counter32

A counter is a nonnegative integer that increases until it reaches some maximum value. After reaching the maximum value, it rolls back to zero.

String

A string is a printable ASCII string. It is typically a name or description. For example, the variable SysName specifies the readable name for a device.

Integer

An integer is a numeric value. It can be an actual number, for example, the number of lost IP packets on an interface. It also can be a number that represents a nonnumeric value. For example, the variable *ReservedIPNum* returns the number of reserved IP addresses of a DHCP service to SNMP manager.

Integer32

An integer from -2 31 to 2 31 -1.

TimeStamp

TimeStamp is defined in RFC 1443 as the value of the MIB-II sysUpTime object at which a specific event occurred.

IP address

The variable indicates the IP address.

Timeticks

Timeticks is a nonnegative integer that counts the hundredths of a second since an event.

Max-Access

This variable, which applies to SNMPv2, can represent one of the following four states:

- read-create
- read-write
- read-only
- not-accessible.

Read-Create

This specifies a tabular object that can be read, modified, or created as a new row in a table.

Read-Write

You can read or modify this variable.

Read-Only

This variable can only be used to monitor information.

Not-Accessible

You cannot read or write to this variable. Entry statements are typically among those variables that are not accessible.

B.2.2 MIB Description

System Group (1.3.6.1.4.1.5139.2.1)

1.1 SysName

SYNTAX: String

ACCESS: Read-write

DESCRIPTION: Specifies the readable name for this unit

1.2 SysModel

SYNTAX: String

ACCESS: Read-only

DESCRIPTION: Specifies the model name for this unit

1.3 SysVersion

SYNTAX: String

ACCESS: Read-only

DESCRIPTION: The version number of firmware and boot-code or hardware

1.4 SysDate, string, Read Only

SYNTAX: String

ACCESS: Read-only

DESCRIPTION: System firmware Built Date

2.1 DNSEnable

SYNTAX: Integer

ACCESS: Read-Write

DESCRIPTION: Enable(1) or disable(0) the Domain Name Service relayed by this unit

2.2 DNS1

SYNTAX: IP address

ACCESS: Read-Write

DESCRIPTION: Designated IP address of Domain Name Server 1

2.3 DNS2

SYNTAX: IP address

ACCESS: Read-Write

DESCRIPTION: Designated IP address of Domain Name Server 2

3.1 DHCPEnable

SYNTAX: Integer

ACCESS: Read-Write

DESCRIPTION: Enable(1) or disable(0) the DHCP server function on this unit

3.2 DHCPLeaseTime

SYNTAX: Integer

ACCESS: Read-Write

DESCRIPTION: DHCP IP address leased time

3.3 ReservedIPNum

SYNTAX: Integer

ACCESS: Read-only

DESCRIPTION: Number of reserved IP addresses

3.4.1.1ReservedIPAddr

SYNTAX: IP address

ACCESS: Read-only

DESCRIPTION: IP address reserved

3.5 IPPoolNum

SYNTAX: Integer

ACCESS: Read-only

DESCRIPTION: Number of IP pools used for DHCP IP addresses assignment

3.6.1.1PoolStartIP

SYNTAX: IP address

ACCESS: Read-only

DESCRIPTION: The first IP address of the IP pool

3.6.1.2PoolEndIP

SYNTAX: Integer

ACCESS: Read-only

DESCRIPTION: The last IP address of the IP pool

4.1   Reserved

4.2   Reserved

4.3   Reserved

4.4   SysRIPEnable

SYNTAX: Integer

ACCESS: Read-Write

DESCRIPTION: Global RIP status

0: disable

1: enable

Interface Group (1.3.6.1.4.1.5139.2.2)

1.1   IfNumber

SYNTAX: Integer

ACCESS: Read-only

DESCRIPTION: Number of System Interface

1.2.1.1IfIndex

YNTAX: Integer

ACCESS: Read-only

DESCRIPTION: Index of system interface

1.2.1.2IfName

SYNTAX: String

ACCESS: Read-only

DESCRIPTION: Interface Name of each individual system interface as shown by "show interface summary" command

1.2.1.3PrimaryIP

SYNTAX: IP address

ACCESS: Read-only

DESCRIPTION: An interface may have multiple IP addresses, this is the primary IP address of each interface.

1.2.1.4PrimaryMask

SYNTAX: IP address

ACCESS: Read-only

DESCRIPTION: Subnet mask of the primary IP address of each interface

1.2.1.5DestIP

SYNTAX: IP address

ACCESS: Read-only

DESCRIPTION: The peer's IP address if the interface is connecting to the peer by PPP protocol.

1.2.1.6Reserved

1.2.1.7NATEnable

SYNTAX: Integer

ACCESS: Read-Write

DESCRIPTION: Enable(1) or disable(1) the NAT function on the interface

1.2.1.8NATIP

SYNTAX: IP address

ACCESS: Read-Write

DESCRIPTION: The designated IP address used to execute the NAT on the interface

CABLE AND CONNECTORS
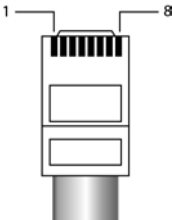
C.1 Connector Specifications

C.1.1 10/100 Ports

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers, as shown by an X in the port name. These ports have their transmit (Tx) and receive (Rx) signals internally crossed so that a straight-through Ethernet cable and an adapter can be attached to the port. The figure below shows the pinouts:

Pin	Label	1 2 3 4 5 6 7 8
1	Tx+	
2	Tx-	
3	Rx+	
4	NC	
5	NC	
6	Rx-	
7	NC	
8	NC	

C.2 Cable Specification

C.2.1 RJ-45

RJ-45 to RJ-45 Straight-through Ethernet Cable

RJ-45 to RJ-45 Crossover Ethernet Cable

802.1X	An IEEE standard for local and metropolitan area networks, called Port-based Network Access Control. It is used to securely establish an authenticated association between the client and the AP.
AP (Access Point)	A hardware device, or software used in conjunction with a computer, that serves as a communications "hub" for wireless clients and provides a connection to a wired LAN. An AP can double the range of wireless clients and provide enhanced security.
Ad-Hoc Mode	A client setting that provides independent peer-to-peer connectivity in a wireless LAN. An alternative set-up is where PCs communicate with each other through an AP (see also **Infrastructure Mode**).
Bandwidth	The amount of data that can be transmitted by the network "information highway", used as an indication for speed of data transmission. An Ethernet link is capable of moving 10 million bits of data per second.
Bit	The term used to refer to a single unit of data in digital data communications. It takes 8 bits to make 1 byte, which is a unit of measurement for computer data.
Bps (Bits per second)	Refers to the unit of measurement used for data transmission speeds over a data communication link.
Bridge	A hardware device that passes packets between multiple network segments using the same networking protocol to connect the different network segments. Bridge operates at the hardware layer and has no routing capabilities.
Broadband	Any high-bandwidth (see also **Bandwidth**) data communication technology that runs at speeds of 200 Kbps or more and allows combined transmission of voice, data, and video over a single physical connection. Broadband is in contrast to narrowband such as traditional 56K analog modem. DSL, Cable, wireless, and satellite technology are all different types of broadband technology.
Byte	A unit of data equaling to 8 bits (1 Byte = 8 bits).
DHCP (Dynamic Host Configuration Protocol)	An Internet protocol that allows the DHCP server to dynamically assign IP addresses to any client workstation (any device connected to your LAN, such as a PC) for a set period of time and then sends them back so that they can be reassigned to other workstations. This feature saves the ISP and Network Managers from having to manually configure IP addresses for each PC on the LAN.
DNS (Domain Name System)	A mechanism that translates host domain names into its numeric IP Address and vice-versa. A domain name is an easy-to-remember nickname for numerical IP addresses required by a computer, such as janedoe@arescom.com.

Encapsulation	The encapsulating or enclosing data within a particular IP header. Sometimes the entire frame from one network is placed in the header used by the data link layer protocol of another network.
Encryption	A specific algorithm used to encrypt or encode the data so that it becomes unreadable to unauthorized users that do not know the decryption key. A good example of encryption technology is WEP (Wired Equivalent Private).
Ethernet	Most popular LAN (Local Area Network) technology that uses CSMA/CD (Collision Detection) and transfers data between workstations over a variety of cable types at 10Mbps, also called 10BaseT. Most Ethernet LANs use twisted pair 10BaseT cables and support both Ethernet as well as Fast Ethernet at 100Mbps (100BaseT).
Firewall	A security device (either hardware, software, or a combination of both) that selectively blocks out or filters unwanted IP traffic from a public network. Firewall allows the private LAN network to be invisible to the public network outside, preventing intrusion from unauthorized users.
Hub	A hardware device that repeats all data traffic to all CPE (Customer Premises Equipment) ports. A hub functions as the center of a LAN and all other network devices on the LAN, including PCs, printers, DSL modem or Gateways, are connected to the hub through cabling.
Infrastructure Mode	A client setting providing connectivity to an AP. As compared to Ad-Hoc Mode, where PCs communicate directly with each other, clients set in Infrastructure Mode all pass data through a central AP. The AP not only mediates wireless network traffic in the immediate neighborhood, but it also provides communication with the wired network (see also **Ad-Hoc Mode** and **Access Point**).
Internet	A massive worldwide network of computer networks interconnecting thousands of computers and networks around the world and readily accessible from any computer with a modem or router connection and the corresponding software.
IP (Internet Protocol)	A protocol standard for the Internet. A kind of Internet software that keeps track of all the addresses on the Internet for different nodes, forwards outgoing IP traffic, and recognizes incoming IP traffic.
IP Address	Numeric address assigned to each machine on the Internet. Consists of four sets of one, two, or three octal digits separated by periods.
ISP (Internet Service Provider)	The telecommunication company that provides Internet service for the subscriber. The ISP can be a telephone company, a CLEC or ILEC, or any other company that provides Internet access to the end user such as AOL, Earthlink or MSN.
LAN (Local Area Network)	A collection of privately-owned, interconnected computers within a confined service area.
WEP (Wired Equivalent Privacy)	WEP data encryption is defined by the 802.11 standard to prevent (i) access to the network by "intruders" using similar wireless LAN equipment and (ii) capture of wireless LAN traffic through eavesdropping. WEP allows the administrator to define a set of respective "Keys" for each wireless network user based on a "Key String" passed through the WEP encryption algorithm. Access is denied by anyone who does not have an assigned key.