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This device is Wi-Fi Alliance Certified:
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1 Introduction

Welcome to the Ubee family of data networking products. This guide is specific to the Ubee Interactive DVW326 Advanced Wireless Voice Gateway for Subscribers of Cox Communications cable services. This document serves the following purposes:

- Provides instructions on how to install, connect and operate the DVW326.
- Provides directions for accessing the Web user interface (UI) for configuration and management of the device.
- Defines all relevant device compliance standards and physical specifications.
- Provides a glossary to define technical terms and acronyms. Refer to the Glossary on page 109.

See the following topics:
- Understanding Safety and Regulatory Information on page 1
- Understanding Connections and Applications on page 3
- Requesting Support on page 3
- Checking Device Package Components on page 4
- Understanding the Device Panels, Connections and LEDs on page 5
- Understanding Specifications, Standards, and Firmware on page 7
- Understanding Default Values and Logins on page 9
- Understanding the Device Label on page 10

1.1 Understanding Safety and Regulatory Information

Use the following information to better understand safety and regulatory standards to install, maintain, and use the DVW326 Advanced Wireless Voice Gateway.

1.1.1 Understanding Safety

**WARNING:** The following information provides safety guidelines for anyone installing and maintaining the DVW326. Read all safety instructions in this guide before attempting to unpack, install, operate, or connect power to this product. Follow all instruction labels on the device itself. Comply with the following safety guidelines for proper operation of the device.
Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury. To prevent fire or shock hazard, do not expose the unit to rain and moisture or install this product near water. Never spill any form of liquid on or into this product. Do not use liquid cleaners or aerosol cleaners on or close to this product. Clean with a soft dry cloth.

Do not insert sharp objects into the product’s module openings or empty slots. Doing so can accidentally damage its parts and/or cause electric shock.

Electrostatic discharge (ESD) can permanently damage semiconductor devices. Always follow ESD-prevention guidelines for equipment handling and storage.

Use only the power cable supplied with the device. Do not attach the power supply cable to building surfaces or floorings.

- Rest the power cable freely without any obstacles. Do not place heavy items on top of the power cable. Do not abuse, step, or walk on the cable.

- Do not place heavy objects on top of the device. Do not place the device on an unstable stand or table; the device can fall and become damaged.

- Do not block the slots and openings in the module housing that provide ventilation to prevent overheating the device. Do not expose this device to direct sunlight. Do not place hot devices close to this device; it may degrade it or cause damage.

1.1.2 Understanding Eco-Environmental Statements

The following eco-environmental statements apply to the DVW326.

Packaging Collection and Recovery Requirements:

Countries, states, localities, or other jurisdictions may require that systems be established for the return and/or collection of packaging waste from the consumer, or other end user, or from the waste stream. Additionally, reuse, recovery, and/or recycling targets for the return and/or collection of the packaging waste can be established. For more information regarding collection and recovery of packaging and packaging waste within specific jurisdictions, contact Ubee Interactive at www.ubeeinteractive.com.

1.1.3 Understanding Regulatory Statements

The following regulatory statements apply to the DVW326.

Industry North America Statement:

This device complies with RSS-210 of the Industry North America Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.
Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This device has been designed to operate with an antenna having a maximum gain of 2 dBi. This device must not be co-located with or operating in conjunction with any other antenna or transmitter.

1.2 Understanding Connections and Applications
The following diagram illustrates the general connection topology and applications of the DVW326.

![Diagram showing connections](image)

1.3 Requesting Support
Subscribers must contact their service provider (Cox Communications) for direct support. Device documentation support may be available at:

http://www.ubeainteractive.com
## 1.4 Checking Device Package Components

The package for the DVW326 contains the following items:

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - RJ45 Cable (Ethernet)</td>
<td>Length ~ 6.0 ft RoHS &amp; UL compliant</td>
</tr>
<tr>
<td>1 - Power Cable</td>
<td>Input: 90-120VAC ~, 50-60Hz CE and UL Certified</td>
</tr>
<tr>
<td>1 - RJ11 Cable (Telephone)</td>
<td></td>
</tr>
<tr>
<td>1 - Lithium-ion Battery</td>
<td>Model: SMPCM10 Rating: 7.4V @ 2.55 Ah 18.87 Wh</td>
</tr>
</tbody>
</table>

Battery supports continuous voice service during power outages, and provides up to 8 hours standby time, and 5 hours talk time with 1 line off-hook.
1.5 Understanding the Device Panels, Connections and LEDs

1.5.1 Understanding the Device Front and Rear Panels

The following images represent the device front and rear panels. Connection descriptions are provided in section 1.5.2., and LED descriptions are provided in section 1.5.3.

1.5.2 Understanding the Device Connections

The following table describes the connections on the device.
1.5.3 Understanding LED Behavior

The following tables summarize the behavior of the LEDs on both the front and rear panels of the DVW326.

### FRONT PANEL

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>White</td>
<td><strong>On</strong> – Internal power-on completed successfully.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Flashes</strong> – Power-on failed. Note that the LED blinks briefly immediately after powering on the device.</td>
</tr>
<tr>
<td>DS/US (downstream/upstream)</td>
<td>White</td>
<td><strong>Flashes</strong> – Once every second while scanning DS. Once locked on DS, flashes twice every second while registering the US.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>On</strong> – Locked to US and DS channels and registered OK.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Flashes</strong> – When a firmware upgrade is in progress, and POWER LED and ONLINE LED are ON solid.</td>
</tr>
<tr>
<td>ONLINE</td>
<td>White</td>
<td><strong>Flashes</strong> – Obtaining an IP address and configuration file.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>On</strong> – Configuration completed successfully.</td>
</tr>
<tr>
<td>WiFi</td>
<td>White</td>
<td><strong>On</strong> – WiFi is enabled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Off</strong> – WiFi is disabled.</td>
</tr>
</tbody>
</table>
1.6 Understanding Specifications, Standards, and Firmware

The following list provides the features and specifications of the DVW326.

**Interfaces and Standards**

- Cable: F-Connector, female
- LAN: 4 10/100/1000 Mbps RJ45 ports
- 2 RJ-11 ports (telephony), PacketCable 1.5/2.0 compatible
- USB: 1 USB 2.0 host port
- DOCSIS 3.0 certified
- DOCSIS 1.0/1.1/2.0 certified
- CE/FCC Class B, ENERGY STAR® certified, WiFi Alliance certified

**Downstream***
- Frequency Range: 88MHz ~ 1002MHz
- Modulation: 64 / 256 QAM
- Channel Bandwidth: 6 MHz
- Maximum Data Rate per Channel (up to 8 channels): DOCSIS = 30 Mbps (64 QAM), 42 Mbps (256 QAM)
- Total Max Bandwidth (8 Channels): DOCSIS = 343 (304) Mbps
- Symbol Rate: 6952 Ksps
- RF (cable) Input Power: -15 to +15dBmV (64 QAM), -15 to +15dBmV (256 QAM)
- Input Impedance: 75 Ω

**Upstream***
- Frequency Range: 5MHz ~ 42MHz
- Modulation A-TDMA: QPSK, 8, 16, 32, 64QAM, S-CMDA: QPSK, 8, 16, 32, 64, 128QAM
- Max Bandwidth of 4 Channels = 122.88 (108) Mbps, bandwidth per channel (up to 4 channels) = [QPSK 0.32 ~ 10.24 Mbps, 8 QAM 0.48 ~ 15.36 Mbps, 16 QAM 0.64 ~ 20.48 Mbps, 32 QAM 0.80 ~ 25.60 Mbps, 64 QAM 0.96 ~ 30.72 Mbps, 128 QAM/TCM 30.72 Mbps]
- Symbol Rate: 160, 320, 640, 1280, 2560, 5120 Ksps
- RF (cable) Output Power: TDMA/ATDMA: +8dBmV to +54dBmV (32/64 QAM). ATDMA Only: +8dBmV to +55dBmV (8/16 QAM), +8dBmV to +58dBmV (QPSK). S-CDMA: +8dBmV to +53dBmV (all modulations)

*Actual speeds vary based on factors including network configuration and speed.

**Security and Network**
- Supports 8 SSIDs, 802.11b/g/n compliant with link speeds up to 450 Mbps, 3 Tx and 3 Rx antennas with single band radio
- DHCP Client/Server, Static IP network assignment, RIPv1/ v2, Ethernet 10/100/1000 BaseT, full-duplex auto-negotiate functionality, IPv4 and IPv6 support
- NAT Firewall, MAC/IP/port filtering, parental control, stateful packet inspection (SPI), DoS attack protection, WPS/ WPA/ WPA2/ WPA-PSK & 64/128-bit WEP encryption
- VPN pass-through and end-point support (IPSec/L2TP/PPTP), TACACS or RADIUS authentication

**Voice**
- PacketCable 1.5 (NCS) and 2.0 (IMS/SIP)
- Ring Voltage: 270 VAC, pk-pk (tip ring), Line Voltage Onhook: -48 Volts, Loop Current: 20mA / 41mA, Ring Capability: 2K ft., 5REN, Hook State: Signaling Loop Start
DTMF Tone Detection, T.38 FAX Relay (G.711), Echo Cancellation (G.168) / Silence Suppression, Voice Active Detection and Comfort Noise Generation
G.722 codec, WB SLIC

Device Management
- Supports IEEE 802.11e Wi-Fi Multimedia (WMM) and UAPSD (power savings)
- DOCSIS, Web-Based, and XML Configuration
- Telnet/SSH remote management
- Firmware upgrade via TFTP
- Configuration backup and restore
- SNMP support
- TR-069 capable

Physical and Environmental
- Dimensions: 63.4mm, 2.4” (W) x 233mm, 9.125” (H) x 225mm, 8.8” (D)
- Weight: 923g (2 lbs.) (Contains internal PSU)
- Input: 100-120VAC, 50-60Hz
- Output: 12V 2.17A
- Operating Temperature: 0°C ~ 40°C (32°F ~ 104°F)
- Humidity: 5~90% (non-condensing)

1.7 Understanding Default Values and Logins

The DVW326 is pre-configured with the default parameters for Cox Communications. Some regions may change default values using the cable modem or XML configuration file. Check with your provisioning team to determine the default values for your region.

Local Port Address: 192.168.100.1
Web Interface: http://192.168.100.1
Operation Mode: NAT Mode
Subnet Mask: 255.255.255.0

Wireless Defaults:
- Primary SSID (subscriber-managed) = “DVW326” plus a period, plus the last 6 characters of the Wi-Fi MAC address plus “-2.4G”.
  - Example for modem with WLAN MAC address F4:B7:E2:E5:C6:1A
    SSSID: DVW326.E5C61A-2.4G
  - If the subscriber changes the SSID, the device does not revert to this default SSID when the device is power reset. It will default to this SSID when a factory reset is performed through the Web UI or the device Reset button is pressed and held for more than 12 seconds.
  - The Wi-Fi MAC address can be found at the top of the Wireless Primary Network screen. Refer to Using the Primary Network Option on page 71.
- Encryption Method = WPA2-PSK with TKIP+AES encryption
WPA Pre-shared Key = Unique key for each device. Also called the network key. The pre-shared key for the DVW326 is the 13 characters of the modem’s serial number and can be found on the Wireless Primary Network screen. Refer to Using the Primary Network Option on page 71. The serial number can also be found on the device label. Refer to Understanding the Device Label on page 10. Example: C4A3V11000043

WPS PIN = The WPS PIN is a randomly-generated number found on the Wireless Primary Network screen. Refer to Using the Primary Network Option on page 71. The WPS PIN can also be found on the device label. Refer to Understanding the Device Label on page 10.

Device Name: UbeeAP

Login Default Values

Standard User Web Interface Login

Username: user
Password: user

Note: After initially logging in to the DVW326, you will be asked to change your password for security reasons. Refer to Changing the User Password on page 19 for more information.

1.8 Understanding the Device Label

The following is an example of the housing label for the DVW326. Descriptions are provided in the table below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABLE RF MAC</td>
<td>Defines the MAC address of the cable RF interface of the DVW326.</td>
</tr>
<tr>
<td>e-MTA MAC</td>
<td>Defines the e-MTA (embedded multimedia terminal adapter) MAC address of the DVW326.</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>WAN-MAN MAC</td>
<td>Defines the unique address for the cable home interface of the DVW326.</td>
</tr>
<tr>
<td>S/N</td>
<td>Defines the serial number of the device.</td>
</tr>
<tr>
<td>Default WiFi Network</td>
<td></td>
</tr>
<tr>
<td>Name (2.4GHZ SSID)</td>
<td>Defines the SSID (service set identifier) for the 2.4GHz band. &quot;DVW326&quot; plus a period, plus the last 6 characters of the Wi-Fi MAC address plus &quot;-2.4G&quot;.</td>
</tr>
<tr>
<td>Password (Key)</td>
<td>Defines the unique WPA pre-shared key for the device. It is also called the network key. The WPA pre-shared key for the DVW326 is the 13 characters of the modem’s serial number.</td>
</tr>
<tr>
<td>WPS PIN</td>
<td>A randomly generated 8-digit number in accordance with the WPS specification.</td>
</tr>
<tr>
<td>Hardware Version</td>
<td>Defines the internal version number that identifies the hardware design.</td>
</tr>
<tr>
<td>DC</td>
<td>DC (Date Code) indicates the date of manufacture in MMDDYY format.</td>
</tr>
<tr>
<td>Assembled In</td>
<td>Defines the country the where the device was manufactured.</td>
</tr>
</tbody>
</table>
2 Installing the DVW326

Use the information in this chapter to set up and connect the DVW326, connect additional devices, and troubleshoot the installation.

Topics

See the following topics:

♦ Setting Up and Connecting the DVW326 on page 12
♦ Connecting Devices to the Network on page 14
♦ Troubleshooting the Installation on page 16

2.1 Setting Up and Connecting the DVW326

Use the following instructions to set up and connect the DVW326. When the device is set up and connected, refer to Accessing the Web User Interface Locally on page 18 to configure the device.

Important: Subscribers must contact their service provider (Cox Communications) to enable Internet access, wireless networking, and telephony (voice). In particular, voice service requires additional steps for the service provider including canceling the previous telephone provider service, porting the telephone number, and other tasks to minimize downtime during the transition.

Typically, the service provider initially configures and connects the device. The installation steps are provided below if you wish to confirm the setup, or add devices to your network. Refer to Connecting Devices to the Network on page 14.

Steps

To set up the device:

1. Remove the contents from the device packaging.

2. Place the DVW326 in a central location, convenient for connecting to other devices, such as PCs or gaming consoles. Do not situate the wireless voice gateway on the floor.

♦ Place the wireless cable modem and wireless clients in open areas far away from metal objects, transformers, heavy-duty motors, microwave ovens, refrigerators, fluorescent lights, and other manufacturing equipment. These items can impact wireless signals. A wireless signal can become weaker after it has passed through metal, concrete, brick, walls, or floors.

♦ Place the device in a location that has an operating temperature of 0˚ C to 40˚ C (32˚ F to 104˚ F). Refer to Understanding Safety and Regulatory Information on page 1 for more safety information.
3. Power on your PC. The PC must have an Ethernet network adapter or Ethernet port and an Internet browser installed, such as Firefox or Internet Explorer. The following browsers are supported:
   ♦ For Windows 2000, XP, Vista, Windows 8, Windows 7, Google Chrome, Firefox 1.07 and higher, Internet Explorer v7 and above, Netscape.
   ♦ For MAC OS X, 10.2, and higher: Firefox 1.07 and higher, Safari 1.x and higher.
4. Connect the power cable included in the product package to the back of the DVW326 and plug the other end into the power outlet.
5. Insert the SMPCM10 battery into the battery housing on the bottom of the DVW326. Make sure the battery is inserted past the two clips on each side that hold the battery in place. The battery “clicks” into place when inserted properly. Use only the model SMPCM10 battery.
6. Connect the Ethernet cable included in the product package to your computer’s Ethernet port. Connect the other end to the ETH1, ETH2, ETH3, or ETH4 port on the DVW326.
7. Connect a coaxial cable from the CABLE port on the back of the device to the cable wall outlet, or to a cable splitter connected to the wall outlet.
8. Connect an analog telephone (if you will be using the device for telephone service) to the TEL 1 or TEL 2 port on the back panel of the device. Use the supplied RJ-11 telephone cable.
9. Validate the network connection using the device LEDs to confirm operations.
   ♦ The WiFi LED must be flashing or solidly lit.
   ♦ The PWR, DS/US, and ONLINE LEDs are solidly lit.
   Refer to Understanding LED Behavior on page 6 for more information.

2.1.1 Wall Mount Installation

You can mount the DVW326 on a wall using the 2 mounting brackets on the side of the device. Two round or pan head screws are recommended. See the figure below.

<table>
<thead>
<tr>
<th>Label</th>
<th>Size in Millimeters (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6.65 +/- 0.35</td>
</tr>
<tr>
<td>B</td>
<td>1.9 +/- 0.15</td>
</tr>
<tr>
<td>C</td>
<td>19.0 +/- 1.2</td>
</tr>
</tbody>
</table>
**Steps**

To mount the DVW326 on a wall:

1. Install the two screws horizontally on a wall 5.5 inches (140mm) apart. See the figure below.

![Image of DVW326 mounted on a wall with screws shown in position.](image)

The screws should protrude from the wall so that you can fit the device between the head of the screw and the wall. If you install the screws in drywall, use hollow wall anchors to ensure the unit does not pull away from the wall due to prolonged strain from the cable and power connectors.

2. Mount the device on the wall.

---

**2.2 Connecting Devices to the Network**

Use the instructions below to connect network devices and validate device functionality.

**Topics**

See the following topics:

- Connecting an Ethernet Device on page 14
- Connecting a Wireless Device on page 15

---

**2.2.1 Connecting an Ethernet Device**

You can connect up to three additional Ethernet devices to the DVW326.

**Steps**

To connect another Ethernet device to the network:

1. Connect an Ethernet cable from the Ethernet device (for example, a PC or gaming console) to an open Ethernet port on the back of the DVW326.

2. Use the device LEDs to confirm operations. Refer to Understanding LED Behavior on page 6 for more information.

3. Open a Web browser and go to any Web site to validate network/Internet connectivity (for example, [http://www.wikipedia.org](http://www.wikipedia.org)).

4. If the connected device is a gaming console, perform any online task supported by the console (for example, log into the gaming server, play an online game, download...
Note

Refer to Troubleshooting the Installation on page 16 for troubleshooting information.

2.2.2 Connecting a Wireless Device

Use the following steps to connect a wireless device to the cable modem (for example, a laptop computer).

Default values are shown in the steps below.

Steps

To connect a wireless device to the DVW326:

1. Access the wireless networking feature on your wireless device.
   - Windows Users: Double-click the Wireless Network Connection icon in the system tray (lower-right side of the Windows desktop). Click View Wireless Networks.
   - Mac Users: Click on the wireless icon (Airport) on the right side of the top menu bar. All available wireless networks will appear in the drop-down menu.

2. The DVW326 is shipped with a default SSID. The SSID is the name of the wireless network broadcast from the device so that wireless clients can connect to it.
   - Double-click your SSID in the wireless networks window. The default SSID is “DVW326” plus a period, plus the last 6 characters of the Wi-Fi MAC address plus “-2.4G.”
   - Example for modem with WiFi MAC address F4:B7:E2:E5:C6:1A
     SSID: DVW326.E5C61A-2.4G
   - Notes: If the subscriber changes the SSID, the device does not revert to this default SSID when the device is power reset. It will default to this SSID when a factory reset is performed through the Web UI or the device Reset button is pressed and held for more than 12 seconds. The Wi-Fi MAC address can be found at the top of the Wireless Primary Network screen. Refer to Using the Primary Network Option on page 70.
   - When prompted, enter the network key, also called the WPA pre-shared key. This is a unique key for each device. The pre-shared key for the DVW326 is the 13 characters of the modem’s serial number and can be found on the Wireless
Primary Network screen. Refer to Using the Primary Network Option on page 76. The serial number can also be found on the device label. Refer to Understanding the Device Label on page 10.

Example pre-shared key: C4A3V11000043

♦ If using WPS, enter the WPS personal identification number (PIN). The WPS PIN is a randomly-generated number found on the Wireless Primary Network screen. Refer to Using the Primary Network Option on page 76. The WPS PIN can also be found on the device label. Refer to Understanding the Device Label on page 10.

♦ WPA-WPA2 TKIP+AES is the default encryption method.

3. Confirm connectivity by opening a Web browser and going to any Web site (for example, http://www.wikipedia.org) or access the Web interface for the DVW326.

Note

The Web interface allows you to customize the configurations and capabilities for the device. For a full explanation of all Web interface functions, refer to Using the Web User Interface on page 18.

If you have wireless issues or questions, refer to Deploying and Troubleshooting the Wireless Network on page 83.

2.2.3 Connecting a Telephone Line

You can connect up to two telephone lines to the DVW326 to use the telephone (voice) features.

Voice service must be enabled by the service provider (Cox Communications). Voice service requires additional steps for the service provider including canceling the previous telephone provider service, porting the telephone number, and other tasks to minimize downtime during the transition.

Steps

To connect a telephone line:

1. Connect an analog telephone to the TEL 1 or TEL 2 jack on the back panel of the DVW326 using the supplied RJ-11 telephone cable.

2. Pick up the telephone line and listen for a dial tone.

3. Make a phone call and/or have someone call you to verify a successful connection.

2.3 Troubleshooting the Installation

Use the following tips to troubleshoot the installation.

♦ None of the LEDs are on when I power on the DVW326.

♦ Check the connection between the power outlet and the power cord. Verify the power outlet is energized and the power cord is connected to the power outlet.
♢ Check the connection between the power cord and the DVW326. Power off the device and wait for 5 seconds and power it on again. If the problem still exists, there may be a hardware problem.

☐ The ETH1, ETH2, ETH3, or ETH4 LEDs on the back of the modem are not lit where Ethernet cables are connected.

♢ Restart the computer so that it can re-establish a connection with the DVW326.

♢ Check for a resource conflict (Windows users only):

1. Right-click My Computer on your desktop and choose Properties.

2. Choose the Device Manager tab and look for a yellow exclamation point or red X over the network interface card (NIC) in the Network Adapters field. If you see either one, you may have an interrupt request (IRQ) conflict. Refer to the manufacturer’s documentation or ask your service provider for further assistance.

♢ Verify that TCP/IP is the default protocol for your network interface card.

♢ Power cycle the DVW326 by removing the power cord from the electrical outlet and plugging it back in. Wait for the gateway to re-establish communications with your cable service provider.

☐ Check General Connectivity Issues:

♢ If your PC is connected to another hub or gateway, connect the PC directly into an Ethernet port on the DVW326.

♢ If you are using a cable splitter, remove the splitter and connect the gateway directly to the cable wall outlet. Wait for it to re-establish communications with the cable service provider.

♢ Try a different cable. The Ethernet cable may be damaged.

☐ The BATTERY LED is not lit.

♢ Verify you have the correct battery, model SMPCM10.

♢ Verify the battery is inserted correctly in the battery housing on the bottom of the DVW326. Make sure the battery is inserted past the two clips on each side that hold the battery in place. The battery “clicks” into place when inserted properly.

☐ If none of these suggestions work, contact your service provider’s (Cox Communications) tier II support for further assistance.
3 Using the Web User Interface

The Web user interface (UI) for the DVW326 is easy to use and allows you to view and configure several settings for your wireless gateway device. You can validate the installation by accessing the Web user interface on the device.

Topics

See the following topics:
♦ Accessing the Web User Interface Locally on page 18

3.1 Accessing the Web User Interface Locally

Access the Web user interface for the DVW326 from a Web browser, such as Internet Explorer on a Windows computer, or Safari on a Mac.

Default values are shown in the steps below.

Steps

To access the Web user interface:
1. Launch an Internet browser, such as Internet Explorer, from your computer.
2. Enter the following IP address in the address bar of the browser window and press the Enter key.

   http://192.168.100.1

3. Enter the username and password in the authentication dialog box.
   ♦ Standard User Web Interface Login:
     Username: user
     Password: user

   ![Authentication Required]

4. Click OK. The Status>Software screen (shown below) displays software information about the DVW326. After initially logging in to the device, you will be prompted to change your password for security reasons. Refer to Changing the User Password on page 19 for detailed instructions on changing your password.
Note: Refer to Using the Software Option on page 21 for detailed field descriptions of the Status>Software screen.

3.1.1 Changing the User Password

After successfully logging in to the DVW326 for the first time, the following pop-up window will appear, prompting you to change your password for security purposes. Click OK.

The Status>Account screen will appear and allow you to enter a new password and then confirm the new password. Click Apply.
You will be returned to the login screen again. Enter the username (user) and the new password. Click **OK**.

The Status>Account screen will appear again and will indicate that the password change has been accepted.
4 Understanding the Status Menu

The **Status** menu of the Web user interface allows you to access information about the DVW326, such as software version, and connection (downstream and upstream) status. It also allows you to change the username and password, perform diagnostic tests, and reset user defaults.

**Topics**

See the following topics:

- Using the Software Option on page 21
- Using the Connection Option on page 22
- Using the Account Option on page 25
- Note: After changing the user password, you may be instructed to log in to the device again using the new password. on page 25
- Using the User Default Option on page 29

**Steps**

To access status options:

1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click **Status** from the main menu.

4.1 Using the Software Option

The **Software** option displays the device’s internal software and hardware configuration.

**Steps**

To view software information:

1. Click **Status** from the main menu.
2. The **Software** screen is displayed. Field descriptions are listed below the screen example.
4.2 Using the Connection Option

The **Connection** screen displays information about the device’s connection status and downstream and upstream channel bonding statistics.

- **Downstream** displays detailed information on the network traffic from the service provider to the local computer (downstream channels).

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Specification Compliant</strong></td>
<td>Defines the current DOCSIS standard of the device.</td>
</tr>
<tr>
<td><strong>Hardware Version</strong></td>
<td>Defines the internal version number that identifies the hardware design.</td>
</tr>
<tr>
<td><strong>Software Version</strong></td>
<td>Defines the general software version of the device.</td>
</tr>
<tr>
<td><strong>Cable Modem MAC Address</strong></td>
<td>Defines the unique media access control (MAC) hardware address of the cable modem.</td>
</tr>
<tr>
<td><strong>Cable Modem Serial Number</strong></td>
<td>Defines the unique manufacturer serial number of the device.</td>
</tr>
<tr>
<td><strong>CM certificate</strong></td>
<td>Indicates if the cable modem certificate is installed.</td>
</tr>
<tr>
<td><strong>System Up Time</strong></td>
<td>Displays how long the device has been connected.</td>
</tr>
<tr>
<td><strong>Network Access</strong></td>
<td>Defines if network access is enabled. When enabled, the user is allowed to access the network.</td>
</tr>
<tr>
<td><strong>Board Temperature</strong></td>
<td>Displays the board temperature in Celsius.</td>
</tr>
</tbody>
</table>
- **Upstream** displays detailed information on the network traffic from the local computer to the remote destination (upstream channels).

**Steps**

**To view connection information:**

1. Click **Status** from the main menu.
2. Click **Connection** from the left side menu. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Startup Procedure (Procedure, Status, Comment)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Acquire Downstream Channel</strong></td>
<td>Displays the Downstream channel status and if the device has locked to a channel.</td>
</tr>
<tr>
<td><strong>Connectivity State</strong></td>
<td>Displays connection status and if the DVW326 is operational.</td>
</tr>
<tr>
<td><strong>Boot State</strong></td>
<td>Displays the status on boot up and if the device is operational.</td>
</tr>
<tr>
<td><strong>Configuration File</strong></td>
<td>Provides the status and file name of the configuration file currently used by the DVW326.</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Displays the status of the security settings: enabled/disabled.</td>
</tr>
<tr>
<td><strong>Downstream Bonded Channels</strong></td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>Numbers the downstream channels.</td>
</tr>
<tr>
<td>Lock Status</td>
<td>Displays if the device is locked successfully to a downstream channel.</td>
</tr>
<tr>
<td>Modulation</td>
<td>Displays the modulation method required for the downstream channel to lock on to by the device. This method is determined by the service provider.</td>
</tr>
<tr>
<td>Channel ID</td>
<td>Displays the downstream channel ID.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Displays the downstream channel frequency on which the device is locked.</td>
</tr>
<tr>
<td>Power Level</td>
<td>Displays the receiver power level in decibel millivolts (dBmV) after ranging process.</td>
</tr>
<tr>
<td>SNR</td>
<td>Displays the signal-to-noise ratio (SNR) in decibels (dB), the desired signal level to the background noise level.</td>
</tr>
<tr>
<td>Correctables</td>
<td>Displays the quantity of codewords which are correctable.</td>
</tr>
<tr>
<td>Uncorrectables</td>
<td>Displays the quantity of codewords which are not correctable.</td>
</tr>
<tr>
<td><strong>Upstream Bonded Channels</strong></td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>Numbers the upstream channels.</td>
</tr>
<tr>
<td>Lock Status</td>
<td>Displays if the DVW326 succeeded in locking to an upstream channel.</td>
</tr>
<tr>
<td>US Channel Type</td>
<td>Displays the channel type.</td>
</tr>
<tr>
<td>Channel ID</td>
<td>Displays the current upstream channel ID.</td>
</tr>
<tr>
<td>Symbol Rate</td>
<td>Displays the symbol rate in 1000 symbols per second.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Displays the current upstream frequency in hertz.</td>
</tr>
<tr>
<td>Power</td>
<td>Displays the current upstream transmit power in decibel millivolts (dBmV).</td>
</tr>
</tbody>
</table>
4.3 Using the Account Option

Use the Account option to change the User username and password.

Steps

To reset the modem’s username and password:

1. Click Status from the main menu.
2. Click Account from the left side menu. Field descriptions are listed below the screen example.

![Status Screen]

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User name</td>
<td>Enter the new User username.</td>
</tr>
<tr>
<td>New Password</td>
<td>Enter the new User password.</td>
</tr>
<tr>
<td>Confirm Password</td>
<td>Confirm the new User password.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves the changes.</td>
</tr>
</tbody>
</table>

Note: After changing the user password, you may be instructed to log in to the device again using the new password.

4.4 Using the Diagnostics Option

Use the Diagnostics option to test network connectivity. Two utilities are available: Ping and Traceroute.

Topics

See the following topics:

♦ Using the Ping Option on page 26
♦ Using the Traceroute Option on page 27
4.4.1 Using the Ping Option

Use the Ping utility to test network connectivity between devices by sending a test message to a specific device. You can also confirm the size of data sent is the same as the size of data received.

Steps

To test connectivity between devices:

1. Click Status from main menu.
2. Click Diagnostics from the left side menu.
3. Choose Ping from the Utility drop-down menu.
4. Enter new parameter values or accept the default values.
5. Click Start Test. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility</td>
<td>Provides a drop-down menu to choose Ping or Traceroute.</td>
</tr>
<tr>
<td>Ping Test Parameters</td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>Defines the IP address to which you want to send a ping.</td>
</tr>
<tr>
<td>Ping Size</td>
<td>Defines the packet size (bytes of data) to send for the ping operation. Default is 64.</td>
</tr>
<tr>
<td>No. of Pings</td>
<td>Defines the number of ping commands to send to the ping target. Default is 3 pings.</td>
</tr>
</tbody>
</table>
4.4.2 Using the Traceroute Option

The Traceroute utility determines the IP addresses of hosts in the network path. By checking the Resolve Host names box, Traceroute tries to find which name matches the address. Some hosts have no names, and might still be shown as IP addresses, even if this option is active.

Steps

To trace host IP addresses along a route:

1. Click Status from main menu.
2. Click Diagnostics from the left side menu.
3. Choose Traceroute from the Utility drop-down menu.
4. Enter new parameter values or accept the default values.
5. Click Start Test. Field descriptions are listed below the screen example.
### Utility

Provides a drop-down menu to choose Ping or Traceroute.

<table>
<thead>
<tr>
<th>Traceroute Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target</strong></td>
<td>Defines the specific IP address or domain (for example, ubeeinteractive.com) to which you want to trace a route.</td>
</tr>
<tr>
<td><strong>Max Hops</strong></td>
<td>Defines the maximum number of hops. Hops are the number of routers the traceroute traverses. Default is 30.</td>
</tr>
<tr>
<td><strong>Data Size</strong></td>
<td>Defines the data size to send for the traceroute operation. Default is 64.</td>
</tr>
<tr>
<td><strong>Base Port</strong></td>
<td>Defines the destination port number. Default is 33434.</td>
</tr>
<tr>
<td><strong>Resolve Host</strong></td>
<td>Enables (on) or disables (off) this option. When checked, traceroute tries to find the name that matches the IP address. Default is Off.</td>
</tr>
</tbody>
</table>
| **Start Test/Clear Results** | Defines what action to take.  
  - Start Test begins the traceroute.  
  - Clear Results deletes previous test results in the Results table. |
| **Results**            | Displays the results of the trace. |
4.5 Using the User Default Option

The User Default option allows you to restore factory defaults to the Firewall and Access Control settings. All other networking settings are not cleared and reset (for example, wireless settings).

Steps

To restore user defaults:

1. Click Status from the main menu.
2. Click User Default from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restore User Defaults</td>
<td>Restores settings to factory defaults. Select Yes then Apply to reset the device to the default Firewall and Access Control Content filter settings. This operation does not require a reset (power cycle) of the system.</td>
</tr>
<tr>
<td>Reset The System</td>
<td>Resets the system. Select Yes to power cycle the device. When you select Apply, you will be notified that the DVW326 has been reset. Click RELOAD. The Login screen will then appear.</td>
</tr>
<tr>
<td>Apply</td>
<td>Applies the options selected on this screen.</td>
</tr>
</tbody>
</table>
5 Understanding the Basic Menu

Basic gateway options provide the majority of configuration for the device including WAN IP addresses, LAN IP addresses, and DHCP. Advanced gateway options provide settings like MAC filtering and port forwarding.

Topics

See the following topics:

♦ Using the Setup Option on page 30
♦ Using the DHCP Option on page 32
♦ Using the DDNS Option on page 34
♦ Using the Backup Option on page 35

Steps

To access the basic menu:

1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click Basic from the main menu.

5.1 Using the Setup Option

Use the Setup option to configure common gateway parameters.

Steps

To configure setup options:

1. Click Basic from the main menu.
2. The Setup screen is displayed. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LAN</strong></td>
<td></td>
</tr>
<tr>
<td>IP Address</td>
<td>Defines the local IP address, which is the default gateway address for all wired LAN hosts that connect to the DVW326.</td>
</tr>
<tr>
<td>MAC Address</td>
<td>Displays the LAN interface’s hardware address.</td>
</tr>
<tr>
<td>Interface/Prefix</td>
<td></td>
</tr>
<tr>
<td>None Specified</td>
<td>Indicates no interface or prefix has been specified.</td>
</tr>
<tr>
<td><strong>WAN</strong></td>
<td></td>
</tr>
<tr>
<td>IP Address</td>
<td>Displays the current WAN public IP address obtained from the service provider.</td>
</tr>
<tr>
<td>MAC Address</td>
<td>Displays the WAN interface’s hardware address.</td>
</tr>
<tr>
<td>Duration</td>
<td>Displays the accumulated time since successfully acquiring a WAN public IP address.</td>
</tr>
<tr>
<td>Expires</td>
<td>Displays the remaining time before the WAN IP address expires, if applicable.</td>
</tr>
<tr>
<td>IPv4 DNS Servers</td>
<td>Lists the DNS servers available on the network.</td>
</tr>
<tr>
<td>Release WAN Lease</td>
<td>Releases the WAN public IP address when clicked.</td>
</tr>
<tr>
<td>Renew WAN Lease</td>
<td>Renews the WAN IP address when clicked.</td>
</tr>
</tbody>
</table>
5.2 Using the DHCP Option

Use the DHCP option to configure dynamic host configuration protocol-specific behavior on the device.

Steps

To configure DHCP settings:

1. Click Basic from the main menu.
2. Click DHCP from the left side menu. Field descriptions are listed below the screen example.

---

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAN Connection Type</td>
<td>Selects the WAN connection type. For each type, different data entry is required, as explained below:</td>
</tr>
<tr>
<td></td>
<td>• DHCP: The WAN interface is set to a DHCP client, and the IP address is assigned by the service provider’s DHCP server.</td>
</tr>
<tr>
<td></td>
<td>• Static IP: For Static IP, you must manually enter the IP address for the WAN interface.</td>
</tr>
<tr>
<td></td>
<td>• PPTP (dhcp): For Point to Point Tunneling Protocol (PPTP), you must enter a username, password, and the PPTP server’s IP address.</td>
</tr>
<tr>
<td></td>
<td>• PPTP (static):</td>
</tr>
<tr>
<td></td>
<td>• L2TP (dhcp):</td>
</tr>
<tr>
<td></td>
<td>• L2TP (static):</td>
</tr>
<tr>
<td>IPv4 MTU Size</td>
<td>Defines the maximum transmission unit (MTU) size. MTU defines the largest size of the packet or frame that the device can transfer (256-1500). If this is not given by your service provider, use 0 for the default.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DHCP Server</td>
<td>Enables (Yes) or disables (No) DHCP on the device. If No is selected, all the static DHCP rules in this screen are ignored.</td>
</tr>
<tr>
<td>Starting Local Address</td>
<td>Defines the starting local IP address for the pool of IP addresses that can be used by connecting clients. Private addresses are translated to public IPs to be used on the network.</td>
</tr>
<tr>
<td>Number of CPEs</td>
<td>Defines the maximum number of customer premises equipment devices (CPE) that can connect to the network through the DVW326.</td>
</tr>
<tr>
<td>Lease Time</td>
<td>Defines the DHCP lease time duration in minutes between 1 and 71582788. A DHCP user's PC gets an IP address with a lease time. When the lease time expires, the PC must connect to the DHCP server and be issued a new unused IP address. <strong>Note:</strong> The default DHCP lease time is 3600 seconds and should be changed to 86400 seconds (24 hours). This helps resolve connectivity issues with some iMAC and Windows 7 devices that turn off the network interface when they go into standby mode. This results in slow Web browsing until the device gets a new IP address via DHCP.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
</tbody>
</table>
5.3 Using the DDNS Option

Use the dynamic domain name system (DDNS) to assign a changing IP address to a constant pre-defined host name. The host can then be contacted by other hosts on the Internet, even if its IP address changes.

The DDNS service for the DVW326 is provided through a third-party and can be purchased from Dynamic Network Services Inc. at www.dynDNS.com.

Steps

To use the DDNS option:

1. Click Basic from the main menu.

2. Click DDNS from the left side menu. Field descriptions are listed below the screen example.
5.4 Using the Backup Option

The Backup option lets you backup your device configuration or restore the DVW326 to a previously saved configuration.

**Steps**

To use the backup option:

1. Click **Basic** from the main menu.
2. Click **Backup** from the left side menu.

### 5.4.1 Backing Up the Current Modem Configuration

To backup and save the current modem configuration, click the **Backup** button.

A pop-up window appears instructing you to select ‘Save’ when prompted. Click ‘OK’.
The following window appears, giving you the option to save the file. Click the ‘Save File’ option and click ‘OK’.

![Save File Dialog]

The file will be saved to your Downloads folder as a binary file (.bin) titled ‘GatewaySettings.bin.’

### 5.4.2 Restoring the DVW326 to a Previously Saved Configuration

To restore the modem to a previously saved configuration, click the **Browse** button.

![Browse Dialog]

The File Upload dialog box appears and allows you to select the previously saved backup file. Highlight the file and click ‘Open’.
The location for the backed up file appears to the right of the Browse button. Click the Restore button.

You are advised that you will be required to reboot the modem. Click ‘OK’.

You are then notified that the device has been reset. Click ‘RELOAD’.
You are then presented with the login screen for the modem. Enter the Username and Password to return to the modem User Interface.
6 Understanding the Advanced Menu

Advanced options provide settings to configure your gateway, such as MAC filtering and port forwarding.

Topics

See the following topics:

- Using the Options Option on page 39
- Using the IP Filtering Option on page 42
- Using the MAC Filtering Option on page 43
- Using the Port Filtering Option on page 44
- Using the Forwarding Option on page 46
- Using the Port Triggers Option on page 51
- Using the Pass Through Option on page 54
- Using the DMZ Host Option on page 55

Steps

To access the advanced menu:

1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click Advanced from the main menu.

6.1 Using the Options Option

Use the Options option to define which networking protocols are enabled or disabled on the device. The network address translation application-level gateway (NAT ALG) settings provide additional security beyond the firewall.

Steps

To enable or disable network protocols:

1. Click Advanced from the main menu.
2. The Options screen is displayed. Field descriptions are listed below the screen example.
### WAN Blocking
When enabled, WAN Blocking blocks PING access to the WAN Public Gateway IP address that is exposed to the Internet. When disabled, PING access is allowed to occur, which is necessary for the remote configuration of some VoIP phones (e.g., Cisco, Polycom).

### Ipsec PassThrough
When enabled, allows encrypted IPsec VPN traffic to pass through the router between the IPsec VPN Client application on the PC/Mac and the IPsec VPN Concentrator (e.g., Barracuda, Cisco, Juniper, etc.) for access to the “company VPN.”

### PPTP PassThrough
When enabled, allows encrypted PPTP VPN traffic to pass through the router between the PPTP VPN Client application on the PC/Mac and the PPTP VPN Server (e.g., Windows Server, 2013) for access to the “company VPN.”
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Config Management</td>
<td>Enables or disables access to the device from a remote system in order to configure settings. Remote management can be achieved by using SNMP, web/HTTP or telnet.</td>
</tr>
<tr>
<td>Multicast Enable</td>
<td>Optimizes the bandwidth utilization compared with unicast (especially video streaming applications).</td>
</tr>
<tr>
<td>UPnP Enable</td>
<td>Activates Universal Plug and Play (UPnP) when enabled. A UPnP device can dynamically join a network, obtain an IP address, convey its capabilities, and learn about other devices on the network. In turn, a device can leave a network smoothly and automatically when it is no longer in use. Gaming consoles and Web cameras are examples of devices that can use UPnP.</td>
</tr>
<tr>
<td>Primary Network Bridged</td>
<td>When enabled, all wireless traffic sourced from the primary SSID will be bridged.</td>
</tr>
<tr>
<td>NAT ALG Status</td>
<td>Filters to allow (enable) or disallow (disable) protocols to pass through the DVW326 to connected devices (computers, game consoles, and so on).</td>
</tr>
<tr>
<td>RSVP</td>
<td>Enables or disables resource reservation protocol (RSVP). RSVP defines how applications reserve resources and how they free the reserved resources once they are no longer needed.</td>
</tr>
<tr>
<td>FTP</td>
<td>Enables or disables the file transfer protocol (FTP) used to transfer files from one host to another.</td>
</tr>
<tr>
<td>TFTP</td>
<td>Enables or disables the trivial file transfer protocol (TFTP) – a simpler protocol generally used for automated file transfers.</td>
</tr>
<tr>
<td>Kerb88</td>
<td>Enables or disables the Kerberos network authentication protocol which allow nodes to communicate over a non-secure network using “tickets” on port 88 to prove their identity to one another.</td>
</tr>
<tr>
<td>NetBios</td>
<td>Enables or disables the network basic input/output system (NetBIOS) services related to the OSI session layer. NetBIOS allows applications on separate computers to communicate over a LAN.</td>
</tr>
<tr>
<td>IKE</td>
<td>Enables or disables the network key exchange (IKE) protocol used to set up a security association (SA) in the IPsec protocol suite.</td>
</tr>
<tr>
<td>RTSP</td>
<td>Enables or disables the real time streaming protocol (RTSP) network control protocol used to establish and control media sessions between end points.</td>
</tr>
<tr>
<td>Kerb1293</td>
<td>Enables or disables the Kerberos network authentication protocol which allows nodes to communicate over a non-secure network using “tickets” on port 1293.</td>
</tr>
<tr>
<td>H225</td>
<td>Enables or disables the H.225 protocol used to define messages and procedures for call signaling, media packetization, and registration, admission, and status (RAS) functions.</td>
</tr>
</tbody>
</table>
### 6.2 Using the IP Filtering Option

Use the **IP Filtering** option to filter IP addresses to block Internet traffic to specific network devices on the LAN. Any host on this list is not accessible to Internet traffic.

**Note**

You may also filter by the MAC address which does not require setting a static lease. Refer to **Using the MAC Filtering Option on page 43**.

**Steps**

**To filter IP addresses:**

1. Make sure a PC is connected to the DVW326 and both devices are powered on and functioning.

2. Log in to the DVW326’s Web user interface. Refer to **Accessing the Web User Interface Locally on page 18**.

3. Click **Advanced** from the main menu.
4. Click **IP Filtering** from the left side menu. Field descriptions are listed below the screen example.

![IP Filtering Screen](image)

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Address</td>
<td>Defines the starting IP address to block.</td>
</tr>
<tr>
<td>End Address</td>
<td>Defines the ending IP address to block.</td>
</tr>
<tr>
<td>Enabled</td>
<td>Activates the rule when Enabled is checked.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
</tbody>
</table>

### 6.3 Using the MAC Filtering Option

The **MAC Filtering** option allows you to filter MAC addresses to block Internet traffic from specific network devices on the LAN. MAC filtering establishes a list and any host on this list is not able to access the network through the DVW326.

![MAC Filtering Table](image)

**Steps**

**To filter MAC addresses:**

1. Note the MAC address of the devices that you want to deny Internet access.
   
   Be sure all devices to which you potentially deny Internet access are connected to the DVW326 network.

2. Click **Advanced** from the main menu.
3. Click **MAC Filtering** from the left side menu.

4. Enter the MAC address to block in the text box to the left of the **Add MAC Address** button.

5. Click the **Add MAC Address** button. The MAC address is displayed in the filtered MAC address list. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Addresses</td>
<td>Defines the MAC address to block. Enter the MAC address in the field.</td>
</tr>
<tr>
<td>Add MAC Address</td>
<td>Adds the entered MAC address to the list of addresses to block.</td>
</tr>
<tr>
<td>Addresses entered: n/20</td>
<td>Displays the MAC addresses to be blocked. The number of MAC addresses entered is shown as 1/20 where 1 is the number of addresses in the list. You can filter up to twenty MAC addresses at one time.</td>
</tr>
<tr>
<td>Remove MAC Address</td>
<td>Deletes the selected MAC address from the list of addresses to be blocked.</td>
</tr>
<tr>
<td>Clear All</td>
<td>Removes all MAC addresses from the list.</td>
</tr>
</tbody>
</table>

### 6.4 Using the Port Filtering Option

Use the **Port Filtering** option to configure port filters to block to all devices on the LAN Internet services that use the ports specified.

**Steps**

To configure port filters:

1. Click **Advanced** from the main menu.
2. Click **Port Filtering** from the left side menu. Field descriptions are listed below the screen example.

For example:

**To prevent all Telnet access into and across your LAN:**

1. Enter the **Start** and **End** ports to be 23.
2. Select **Both** for Protocol to include TCP and UDP.
3. Check **Enabled**.
4. Click **Apply**. Field descriptions are listed below the screen example.

**Caution**

Use caution when assigning port filtering by port range. You may accidentally prevent traffic that should pass through your network, such as http or email. Pre-assigned application ports are displayed on the Forwarding screen. Refer to **Using the Forwarding Option** on page 46.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Port</td>
<td>Defines the starting port number</td>
</tr>
<tr>
<td>End Port</td>
<td>Defines the ending port number.</td>
</tr>
</tbody>
</table>
6.5 Using the Forwarding Option

Forwarding tells the DVW326 to which computer on the local area network to send data. If your host systems or applications have communications issues with the Internet, you can use forwarding to resolve the following issues:

- Data is sent from a local host to the Internet, but the return path of expected data is not received by your local host.

- An application or service running on your local network (on local host) cannot be accessed from the Internet directly (for example, a request to a local audio server). Examples are:
  - Xbox/PlayStation – Games/applications
  - Home Security Systems – Security systems that use the Internet
  - Audio Servers/VoIP – Audio and VoIP applications and services

Topics

See the following topics:
- Before Setting Up Forwarding on page 46
- Setting Up Forwarding on page 47
- Setting Up Forwarding for an Xbox Example on page 50

6.5.1 Before Setting Up Forwarding

Try the following options before you assign forwarding rules:

1. Enable Universal Plug and Play (UPnP). This may resolve the issue you have without setting up forwarding rules.
   a. Access the Web interface of the DVW326, see Accessing the Web User Interface Locally on page 18.
   b. Click Advanced from the main menu.
   c. The Options screen is displayed. Check the Enable UPnP box.
d. Click **Apply**.

e. Test your local host or application such as your Xbox to see if it is functioning properly. Continue with port forwarding if the host or application is not communicating correctly.

2. Assign a Static IP lease to the client/host to which you are setting up forwarding. This way, the IP does not change and disrupt your forwarding rules. For example, if you are hosting a Web server in your internal network, and you wish to setup a forwarding rule for it, assign a static IP lease to that system to keep the IP from renewing and disrupting the forwarding rule.

### 6.5.2 Setting Up Forwarding

If the suggestions in *Before Setting Up Forwarding* on page 46 did not correct your communication problem, use port forwarding.

You need the following information to set up port forwarding:

- **IP address** of each local host system (for example, Xbox) for which you need to setup a port forwarding rule.

- **Port numbers** the local host’s application listens to for incoming requests/data (for example, a game or other service). These port numbers should be available in the documentation associated with the application.

**Note**

For detailed information on port forwarding, including how to set it up for specific applications using specific network devices (for example, cable modems), refer to: [http://portforward.com](http://portforward.com) or consult your host device or application user manual.

**Steps**

**To set up forwarding:**

1. Access the Web interface of the DVW326, see *Accessing the Web User Interface Locally* on page 18.

2. Click **Advanced** from the main menu.

3. Click **Forwarding** from the left menu.

4. Click **Create IPv4**.
5. Enter information in the forwarding fields as shown in the screenshot below. Field descriptions follow.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local IP</td>
<td>Defines the IP address of the local LAN device to which the forwarding rule applies. For example, an Xbox or PC.</td>
</tr>
<tr>
<td>Local Start Port</td>
<td>Defines the starting port number listened to by the server host located in your LAN.</td>
</tr>
<tr>
<td>Local End Port</td>
<td>Defines the ending port number listened to by the server host located in your LAN.</td>
</tr>
<tr>
<td>External IP</td>
<td>Designates the IP address of another router on the network through which to forward data.</td>
</tr>
</tbody>
</table>
6. Click **Apply**. The forwarding rule is created and displayed in the table as shown below. Additional field descriptions follow.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit</td>
<td>Displays fields for the rule selected in order to change values.</td>
</tr>
<tr>
<td>Remove</td>
<td>Deletes the rule selected.</td>
</tr>
</tbody>
</table>
6.5.3 **Setting Up Forwarding for an Xbox Example**

Following is an example of how you would set up a single Xbox running Modern Warfare 2. Since multiple ports are used for the Xbox and the Modern Warfare 2 game, a separate forwarding rule is set for each port. Multiple ports and forwarding rules may not be required for other applications.

**Steps**

To set up port forwarding for an Xbox:

1. Click **Advanced** from the main menu.
2. Click **Forwarding** from the left side menu.
3. Enter the Xbox IP address in the **Local IP** field.
4. Define ports used by the Xbox in the **Local Start Port** and **Local End Port** fields. Define the same ports used by the Xbox in the **External Start Port** and **External End Port** fields.
5. Create Port Forwarding rules per port. A rule set up for port 53 works for port 53. A port can be used only by one program at a time.

**Note**

You can set up applications/services to listen on one internal port. External Internet users who want to access that application, address it using an external port, such as an Audio server. Internal Ports are the ports to which local servers listen. External Ports are the ports that the DVW326 listens to from the WAN.

The following screen shot shows Forwarding set up for an Xbox.
6.6 Using the Port Triggers Option

Port Triggers define dynamic triggers to specific devices on the LAN. This allows special applications that require specific port numbers with bi-directional traffic to function properly. Applications such as video conferencing, voice, gaming, and some messaging program features may require these special settings.

Some services use a dedicated range of ports on the client side and a dedicated range of ports on the server side. The difference between port forwarding and triggering is:

♦ Port forwarding sets a rule to send a service to a single LAN IP address.
♦ Port triggering defines two kinds of ports: trigger port and target port. The trigger port sends a service request from a LAN host to a specific destination port number. The port the LAN host is required to listen to by the application is called the target port. The server returns responses to these ports.

For example:

1. John requests a file from the Real Audio server (port 7070). Port 7070 is a “trigger” port and causes the device to record John’s computer IP address. The DVW326 associates John’s computer IP address with the “target” port range of 6970-7170.
2. The Real Audio server responds to a port number ranging between 6970-7170.
3. The DVW326 forwards the traffic to John’s computer IP address.
4. Only John can connect to the Real Audio server until the connection is closed or expires.

Steps

To set up port triggering:

1. Click Advanced from the main menu.
2. Click Port Triggers from the left side menu.
3. Click Create.
4. Enter information in the Port Trigger fields as shown below. Field descriptions follow the screen shot.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trigger Start Port</td>
<td>Defines a port number or the starting port number in a range of trigger port numbers.</td>
</tr>
<tr>
<td>Trigger End Port</td>
<td>Defines a port number or the ending port number in a range of trigger port numbers.</td>
</tr>
<tr>
<td>Target Start Port</td>
<td>Defines a port number or the starting port number in a range of target port numbers.</td>
</tr>
<tr>
<td>Target End Port</td>
<td>Defines a port number or the ending port number in a range of target port numbers.</td>
</tr>
<tr>
<td>Protocol</td>
<td>Defines the protocol type for this rule, UDP, TCP, or Both.</td>
</tr>
</tbody>
</table>
5. Click **Apply**. The port trigger rule is created and displayed in the table. Additional field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Names the triggering rule.</td>
</tr>
<tr>
<td>Enabled</td>
<td>Enables (on) or disables (off) the triggering rule.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
<tr>
<td>Remove All</td>
<td>Removes all of the input host’s MAC addresses.</td>
</tr>
</tbody>
</table>

The following example shows the Port Triggering option set up for a dual Xbox configuration.
6.7 Using the Pass Through Option

Use the Pass Through option to configure a pass through table. Devices in the pass through table are treated as bridge devices, storing and forwarding data between LAN interconnections.

Steps

To configure a pass through table:

1. Click Advanced from the main menu.

2. Click Pass Through from the left side menu. The pass through fields are explained following this screen example.
6.8 Using the DMZ Host Option

Use the **DMZ** (Demilitarized Zone) Host option to expose a host IP address to the WAN (public Internet). You can use this option when applications do not work with port triggers or other networking strategies.

**Steps**

To set up a DMZ host:

1. Connect a PC to an Ethernet port on the DVW326. Make sure both devices are powered on and functioning.
2. Connect a Home Gateway (or other device you wish to be in the DMZ) to an Ethernet port on the DVW326.
3. Log in to the DVW326 Web user interface.
4. Click **Advanced** from the main menu.
5. Click **DMZ Host** from the left side menu.
6. Enter the IP address of the Home Gateway (host device) to be exposed to the WAN.
7. Test the device to ensure Internet access is available and the device is functional. For example, connect to the Internet from a PC connected to the Home Gateway, or make calls from a VoIP phone.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass Through MAC Addresses</td>
<td>Allows you to enter the input host’s MAC address.</td>
</tr>
<tr>
<td>Add MAC Address</td>
<td>Adds the entered MAC address.</td>
</tr>
<tr>
<td>Addresses entered: n/32</td>
<td>Displays the MAC addresses to be blocked. The number of MAC addresses is shown as 0/32 where 0 is the number of addresses in the list. You can add up to 32 MAC addresses at one time.</td>
</tr>
<tr>
<td>Remove MAC Address</td>
<td>Removes the selected input host’s MAC address.</td>
</tr>
<tr>
<td>Clear All</td>
<td>Removes all of the input host’s MAC addresses.</td>
</tr>
</tbody>
</table>
Using the DMZ Host Option

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMZ Address</td>
<td>Defines the IP address of the host to be exposed.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
</tbody>
</table>
7  Understanding the Firewall Menu

Use these instructions to configure the DVW326 firewall settings to control what types of traffic are allowed on your network. The firewall can block certain Web-oriented cookies, Java scripts, and pop-up windows. It is highly recommended the Firewall is left enabled at all times to protect against denial of service (DoS) attacks. Refer to Using the Basic Option on page 57 to block Internet access to specific sites.

Note: Firewall menu options are not available when the device is in Bridge mode. Refer to Using the Bridging Option on page 82 for more information.

Topics

See the following topics:
- Using the Basic Option on page 57
- Using the Local Log Option on page 58
- Using the Remote Log Option on page 59

Steps

To access the firewall menu:
1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click Firewall from the main menu.

7.1 Using the Basic Option

Use the Basic option to filter Web content to block certain Web-oriented cookies, Java scripts, and pop-up windows.

Steps

To filter Web content:
1. Click Firewall from the main menu.
2. The Basic screen is displayed. Field descriptions are listed below the screen example.
7.2 Using the Local Log Option

Use the Local Log to define firewall event log reporting through email alerts and report on possible attacks on the system.

Steps

To define local log reporting:

1. Click Firewall from the main menu.
2. Click Local Log from the left side menu. Field descriptions are listed below the screen example.
7.3 **Using the Remote Log Option**

Use the **Remote Log** option to define events and send the log to a local SysLog server.

**Steps**

To configure the firewall remote log:

1. Click **Firewall** the main menu.
2. Click **Remote Log** from the left side menu. The **Remote Log** fields are explained following this screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Email Address</td>
<td>Defines the email address where you want to send the log.</td>
</tr>
<tr>
<td>SMTP Server Name</td>
<td>Defines the name of the SMTP server, such as smtp.example.com.</td>
</tr>
<tr>
<td>SMTP Username</td>
<td>Defines the username for the email address, such as <a href="mailto:contact@company.com">contact@company.com</a>.</td>
</tr>
<tr>
<td>SMTP Password</td>
<td>Defines the password for the email address.</td>
</tr>
<tr>
<td>E-mail Alerts</td>
<td>Enables or disables log reporting.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves the settings and completes the setup.</td>
</tr>
<tr>
<td>E-mail Log</td>
<td>Sends the log to the specified email address.</td>
</tr>
<tr>
<td>Clear Log</td>
<td>Deletes the log.</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Permitted Connections</td>
<td>When checked, logs all access attempts that are allowed by the firewall.</td>
</tr>
<tr>
<td>Blocked Connections</td>
<td>When checked, logs all access attempts that are blocked by the firewall.</td>
</tr>
<tr>
<td>Known Internet Attacks</td>
<td>When checked, logs all known attacks from the Internet.</td>
</tr>
<tr>
<td>Product Configuration Events</td>
<td>When checked, logs when the DVW326 is configured/modified by a user or administrator.</td>
</tr>
<tr>
<td>to SysLog server at 192.168.0.</td>
<td>Defines the IP address of the Syslog server.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes.</td>
</tr>
</tbody>
</table>
Understanding the Access Control Menu

The Access Control menu allows you to control Internet access for users on the DVW326 network. It provides the following features:

- Define user/password access.
- Block specific Web sites and Web sites based on keywords.
- Define the times users are allowed to access the Internet.
- View a local log to view Internet activity.

Topics

See the following topics:

- Using the Access Control User Setup Option on page 61
- Using the Basic Option on page 63
- Using the ToD Filter Option on page 65
- Using the Local Log Option on page 67

Steps

To access the access control menu:

1. Access the Web interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click the Access Control link from the top of the screen.

8.1 Using the Access Control User Setup Option

The User Setup option allows you to configure which user accounts can or cannot connect to your wireless or wired network, and the parameters of each connection.

Steps

To configure user accounts:

1. Click the Access Control link from the top of the screen.
2. The User Setup screen is displayed. Field descriptions follow the screen shot below.

Note: To enable Access Control, refer to Using the Basic Option on page 63.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add User</td>
<td>Defines user accounts.</td>
</tr>
<tr>
<td>Remove User</td>
<td></td>
</tr>
<tr>
<td>Enable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To add a new user, add the user name and click Add User. The user then becomes selectable in the User Settings drop down menu.</td>
</tr>
<tr>
<td></td>
<td>• To select an existing user, choose the user from the User Settings drop down menu.</td>
</tr>
<tr>
<td></td>
<td>• To activate the user, check Enable.</td>
</tr>
<tr>
<td></td>
<td>• To remove a user, select the user from the User Settings drop down menu and click Remove User.</td>
</tr>
<tr>
<td>Password</td>
<td>Defines the password for this user. It is required when this user tries to access the Internet via the device.</td>
</tr>
<tr>
<td>Re-Enter Password</td>
<td>Confirms the password with the re-entered password.</td>
</tr>
<tr>
<td>Trusted User</td>
<td>Defines the selected user as a trusted user when enabled is checked. The user is limited to timing and content when visiting the Internet, as defined in the following fields.</td>
</tr>
<tr>
<td>Content Rule</td>
<td>Selects from the drop down menu an existing content rule that defines what kind of Websites the user can or cannot visit.</td>
</tr>
<tr>
<td>White List Access Only</td>
<td>Selects the White List Access option. If you have created a content rule that defines a black list and white list, select the White List Access Only checkbox to force the DVW326 to execute the policy for the selected user.</td>
</tr>
</tbody>
</table>
8.2 Using the Basic Option

The Basic option allows you to select rules to block certain Internet content and Web sites. After you change your Access Control settings, click the appropriate Apply, Add, or Remove button for your new settings to take effect. Refresh your browser’s display to see the currently active settings.

Steps

To filter Internet content and Web sites:

1. Click the Access Control link from the top of the screen.
2. Click Basic from the left side of the screen. The Basic fields are explained following this screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Access Control</td>
<td>Activates the Access Control feature when checked.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves all changes in the screen and activates Access Control, if enabled.</td>
</tr>
<tr>
<td><strong>Content Policy Configuration</strong></td>
<td></td>
</tr>
<tr>
<td>Add New Policy</td>
<td>Adds a policy to the Policy List. Enter the policy name and click Add New Policy. The policy then becomes selectable in the Content Policy List drop down menu.</td>
</tr>
<tr>
<td>Content Policy List</td>
<td>Lists existing policies you can choose to use.</td>
</tr>
<tr>
<td>Remove Policy</td>
<td>Deletes a policy from the list. Select the policy from the Content Policy List drop down menu and click Remove Policy.</td>
</tr>
<tr>
<td>Keyword List</td>
<td>Displays keywords you can use to block Web site addresses (URLs) containing those words.</td>
</tr>
<tr>
<td>Add Keyword</td>
<td>Adds a keyword to the keyword list. Enter the word in the field next to the Add Keyword button and click Add Keyword. The keyword is added to the Keyword list.</td>
</tr>
</tbody>
</table>
8.3 Using the ToD Filter Option

The ToD (Time of Day) Filter option allows the configuration of time-based access policies to block all Internet traffic at specified times.

**Steps**

To configure ToD filters:

1. Click the Access Control link from the top of the screen.

2. Click ToD Filter from the left side of the screen. The ToD Filter fields are explained following this screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove Keyword</td>
<td>Removes a keyword from the keyword list. Select the keyword from the Keyword List, and click Remove Keyword.</td>
</tr>
<tr>
<td>Blocked Domain List</td>
<td>Displays Web domains (for example, unwanted.com) you can use to block access to those domains.</td>
</tr>
<tr>
<td>Add Domain</td>
<td>Adds a domain to the Blocked Domain List. Enter a domain in the field next to the Add Domain button, and click Add Domain.</td>
</tr>
<tr>
<td>Remove Allowed Domain</td>
<td>Removes a domain from the Blocked Domain List. Select the domain from the Blocked Domain List, and click Remove Domain.</td>
</tr>
<tr>
<td>Allowed Domain List</td>
<td>Displays domains you want to allow access to.</td>
</tr>
<tr>
<td>Add Allowed Domain</td>
<td>Adds allowed domains to the list. Enter the name and click Add Allowed Domain.</td>
</tr>
<tr>
<td>Remove Allowed Domain</td>
<td>Removes domain names from the Allowed Domain List. Highlight the domain from the list and click Remove Allowed Domain.</td>
</tr>
<tr>
<td>Override Password</td>
<td>If you encounter a blocked website, you can override the block by entering a password.</td>
</tr>
<tr>
<td>Password</td>
<td>Enter a password for overriding blocked websites.</td>
</tr>
<tr>
<td>Re-Enter Password</td>
<td>Re-enter the password.</td>
</tr>
<tr>
<td>Access Duration</td>
<td>Set a time duration (in minutes) for access to the blocked site when the block has been overridden by entering the password.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves the password and access duration time.</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Add New Policy</td>
<td>Adds a new policy. Enter a policy name in the field next to the Add New policy button, and click the Add New Policy button. The policy then becomes selectable in the Time Access Policy List drop down menu.</td>
</tr>
<tr>
<td>Time Access Policy List</td>
<td>Lists the existing policies in a drop-down menu.</td>
</tr>
<tr>
<td>Enabled</td>
<td>Activates a policy. Select the policy from the Time Access Policy List drop-down menu and check Enabled.</td>
</tr>
<tr>
<td>Remove</td>
<td>Deletes a policy. Select the policy from the Time Access Policy List drop-down menu and click Remove.</td>
</tr>
<tr>
<td>Days to Block</td>
<td>Selects the days to block Internet access.</td>
</tr>
<tr>
<td>Time to Block:</td>
<td>Allows you to define the times of day to block.</td>
</tr>
<tr>
<td>All Day or a specific time frame</td>
<td>❖ To block all day, check All Day to eliminate all access during the days selected.</td>
</tr>
<tr>
<td></td>
<td>❖ To block a specific time frame to block Internet access for the days selected, enter the Start time and the End time. Select AM or PM for each.</td>
</tr>
<tr>
<td>Ports to Block</td>
<td>Defines a port range to block if the Enabled box is checked.</td>
</tr>
<tr>
<td></td>
<td>❖ Port Start: Enter the starting port number to be blocked.</td>
</tr>
<tr>
<td></td>
<td>❖ Port End: Enter ending port number to be blocked.</td>
</tr>
<tr>
<td></td>
<td>❖ Protocol: Select the protocol type. Options are UDP, TCP, or Both.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves all changes when clicked.</td>
</tr>
</tbody>
</table>
8.4 Using the Local Log Option

The Local Log option displays Access Control event log reporting.

Steps

To view the access control local log:

1. Click the Access Control link from the top of the screen.
2. Click Local Log from the left side of the screen. The Local Log fields are explained following this screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Occurrence</td>
<td>Displays the time when the last event occurred.</td>
</tr>
<tr>
<td>Action</td>
<td>Displays what is done by access control, including dropping or permitting access requests.</td>
</tr>
<tr>
<td>Target</td>
<td>Displays the destination IP address of a certain access request.</td>
</tr>
<tr>
<td>User</td>
<td>Displays the user who triggered this event log.</td>
</tr>
<tr>
<td>Source</td>
<td>Displays the source IP address of this event.</td>
</tr>
<tr>
<td>Clear Log</td>
<td>To empty the displayed log entries, click Clear Log.</td>
</tr>
</tbody>
</table>
9 Understanding the Wireless Menu

Use the Wireless menu to configure a wireless network.

Topics

See the following topics:

- Using the Wireless Radio Option on page 68
- Using the Primary Network Option on page 71
- Using the Advanced Option on page 76
- Using the Access Control Option on page 78
- Using the Wi-Fi Multimedia Option on page 80
- Using the Bridging Option on page 82
- Deploying and Troubleshooting the Wireless Network on page 83

Steps

To access the wireless menu:

1. Access the Web interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click Wireless from the main menu.

9.1 Using the Wireless Radio Option

The Radio option is used to configure the wireless radio, including channel number, and bandwidth control.

Steps

To configure wireless operations:

1. Click Wireless from the main menu.
2. The Radio screen is displayed. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Interfaces</td>
<td>Displays the wireless name (SSID) for the DVW326 or uses the default. Refer to Understanding Default Values and Logins on page 9 for more information on the SSID.</td>
</tr>
<tr>
<td>Wireless</td>
<td>Displays the wireless radio's status, Enabled or Disabled.</td>
</tr>
<tr>
<td>Country</td>
<td>Defines the country where this device is located. Set by default to Q1.</td>
</tr>
<tr>
<td>Output Power</td>
<td>Output power setup can be one of the following 4 options: 25%, 50%, 75%, or 100%.</td>
</tr>
<tr>
<td>802.11 Band</td>
<td>Displays the 802.11 band (2.4GHz).</td>
</tr>
<tr>
<td>802.11 n-mode</td>
<td>Sets the wireless networking standard.</td>
</tr>
<tr>
<td></td>
<td>By default it is set to Auto for 802.11n mode. This is the preferred mode, as it has a significant increase in the maximum raw OSI physical layer data rate from 54 Mbit/s to a maximum of 600 Mbit/s with the use of four spatial streams when at a channel width of 40 MHz.</td>
</tr>
<tr>
<td></td>
<td>One spacial stream at 20 MHz wide channel enables 72.2Mbps maximum data rate in 802.11n mode.</td>
</tr>
<tr>
<td>802.11 N Support Required</td>
<td>Defines whether 802.11n support is required (on) or not (off). On forces the DVW326 to 802.11n mode and clients must support 802.11n.</td>
</tr>
</tbody>
</table>
9.1.1 Scanning for Wireless Access Points (APs)

You can search for wireless access points and display the results in a new window.

**Steps**

**To search for wireless access points:**

1. Click **Scan Wireless APs** at the bottom of the Wireless Radio screen. Results are displayed in a new window.

2. Click **Refresh** to update the results. Field descriptions are provided below.
9.2 Using the Primary Network Option

Use the **Primary Network** option to configure a variety of wireless security settings.

**Steps**

To configure wireless security options:

1. Click **Wireless** from the main menu.
2. Click **Primary Network** from the left side menu. Field descriptions are listed below the screen example.

   Wireless default values are discussed in Understanding Default Values and Logins on page 9.
Using the Primary Network Option

Ubee Interactive Using the Primary Network Option
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Network</td>
<td>Enables or disables the primary network. This field is enabled by default.</td>
</tr>
<tr>
<td>Network Name (SSID)</td>
<td>Defines the wireless primary network name (SSID) to which client devices connect. (Example: DVW326.E5C61A-2.4G). The WLAN MAC address appears in parenthesis next to the SSID at the top of the screen. Refer to Understanding Default Values and Logins on page 9 on page 1 for more information on the SSID.</td>
</tr>
<tr>
<td>Closed Network</td>
<td>Hides the selected SSID when enabled so it is not visible to wireless clients unless manually set up on the client. When disabled, the SSID is visible. Closed Network is disabled by default to allow broadcasting the primary network name (SSID). Refer to Enabling a Closed Network on the Primary Network on page 75 to set up a closed network.</td>
</tr>
<tr>
<td>AP Isolate</td>
<td>Disabled by default. When enabled, it prevents wireless client stations from communicating with each other.</td>
</tr>
<tr>
<td>WPA</td>
<td>Enables or disables the Wi-Fi Protected Access (WPA) security protocol. WPA is a subset of the IEEE 802.11i standard. Key differences between WPA and WEP are user authentication and improved data encryption. Setting WPA alone with a pre-shared key requires a RADIUS or TACACS server for authentication. This method is mostly used in large enterprise implementations.</td>
</tr>
<tr>
<td>WPA-PSK</td>
<td>Enables or disables WPA Pre-Shared Key (WPA-PSK). If you do not have an external RADIUS server, use WPA-PSK, which requires a single (identical) password entered into wireless gateway and wireless client. As long as the passwords match, a client is granted access to the wireless LAN. This is the default residential subscriber setting and uses TKIP encryption.</td>
</tr>
<tr>
<td>WPA2</td>
<td>Enables or disables WPA2. This advanced protocol is certified through Wi-Fi Alliance's WPA2 program and implements the mandatory elements of 802.11i. In particular, it has an AES-based algorithm (CCMP) that is considered fully secure. Setting WPA2 alone with a pre-shared key requires a RADIUS or TACACS server for authentication. This method is mostly used in large enterprise implementations.</td>
</tr>
<tr>
<td>WPA2-PSK</td>
<td>Enables or disables WPA2-PSK. If you do not have an external RADIUS server, use WPA2-PSK, which requires a single (identical) password entered into wireless gateway and wireless client. As long as the passwords match, a client is granted access to the wireless LAN. This is the recommended residential subscriber option. It is more secure than WPA-PSK and uses AES encryption.</td>
</tr>
<tr>
<td>WPA/WPA2 Encryption</td>
<td>Sets WPA/WPA2 encryption to AES or TKIP+AES. The default is AES.</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>WPA Pre-Shared Key</td>
<td>Displays (checked) or hides (unchecked) the WPA key. The encryption mechanisms for WPA and WPA-PSK are the same, except that WPA-PSK uses a simple common password instead of user-specific credentials.</td>
</tr>
<tr>
<td>Show Key</td>
<td>Displays the pre-shared key when checked. The pre-shared key for the DVW326 is the last 13 characters of the device’s serial number.</td>
</tr>
<tr>
<td>RADIUS Server</td>
<td>Defines the IP address of the RADIUS server, if used.</td>
</tr>
<tr>
<td>RADIUS Port</td>
<td>Defines a RADIUS port number when WPA or 802.1x network authentication is selected.</td>
</tr>
<tr>
<td>RADIUS Key</td>
<td>Defines the RADIUS Key when WPA or 802.1x network authentication is selected.</td>
</tr>
<tr>
<td>Group Key Rotation Interval</td>
<td>Allows the device to generate the best possible random group key and update all the key-management capable stations periodically. This field is set to 0 by default.</td>
</tr>
<tr>
<td>WPA/WPA2 Re-auth Interval</td>
<td>Sends a new group key to all clients at the specified interval for a wireless router (if using WPA-PSK key management) or RADIUS server (if using WPA key management). The re-keying process is the WPA equivalent of automatically changing the WEP key for a wireless access point and all stations in the WLAN on a periodic basis. Setting the WPA Group Key Update Timer is also supported in WPA-PSK mode.</td>
</tr>
<tr>
<td>WEP Encryption</td>
<td>Enables or disables WEP encryption. If you do not have wireless clients that can use WPA or WPA2, you can use WEP key encrypting. A higher bit key offers better security. WEP encryption scrambles the data transmitted between the wireless stations and the DVW326 to keep network communications private. It encrypts unicast and multicast communications in a network. Both the wireless stations and the DVW326 must use the same WEP key. Data Encryption can be set to WEP 128-bit, 64-bit, or Disable.</td>
</tr>
<tr>
<td>Shared Key Authentication</td>
<td>Defines Shared Key Authentication as optional or required. Shared Key is an authentication method used by wireless LANs, which follow the IEEE 802.11 standard. Wireless devices authenticate each other by using a secret key that is kept by both devices.</td>
</tr>
<tr>
<td>802.1x Authentication</td>
<td>Enables or disables 802.1x to authenticate wireless clients.</td>
</tr>
<tr>
<td>Network Key 1-4</td>
<td>Pre-defines up to 4 keys for 64-bit or 128-bit (64-bit keys require 10 hexadecimal digits) (128-bit key require 26 hexadecimal digits).</td>
</tr>
<tr>
<td>Current Network Key</td>
<td>Selects one of the four pre-defined keys as the current network key.</td>
</tr>
<tr>
<td>Passphrase</td>
<td>Sets the WEP encryption key by entering a word or group of printable characters in the Passphrase box and clicking Generate WEP keys. These characters are case sensitive.</td>
</tr>
</tbody>
</table>
9.2.1 Enabling a Closed Network on the Primary Network

You can enable the Closed Network option so the SSID cannot be broadcast or seen by others.

Steps

To enable a closed network:

1. Access the pull down menu for the **Closed Network**.
2. Choose **Enabled** to enable a closed network. Automatic Security Configuration is disabled.
9.3 Using the Advanced Option

Use the Advanced option to configure data rates and Wi-Fi thresholds.

1. Click Wireless from the main menu.

2. Click Advanced from the left side menu. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
</table>
| **54g™ Mode**        | Selects the network mode in which to run the DVW326. The options are:  
  ♦ 54g auto – self adaptive connection  
  ♦ 54g performance – highest speed  
  ♦ 54g LRS – limited speed  
  ♦ 802.11b – connections to 11b clients only.  
  This field can be set only if 802.11-n Mode is set to Off in the Radio screen as discussed on Using the Wireless Radio Option on page 68. |
| **XPress™ Technology** | Enables or disables the XPress feature. XPress™ is a standards-based frame-bursting approach to improve 802.11g wireless LAN performance developed by Broadcom. When Xpress enabled, aggregate throughput can improve up to 27% in 802.11g-only networks, and up to 75% in mixed networks comprised of 802.11g and 802.11b standard equipment. |
| **802.11n Protection** | Defines the 802.11n Protection setting.  
  ♦ Auto - the DVW326 uses Request to Send/Clear to Send (RTS/CTS) to improve the performance in 802.11 mixed environments.  
  ♦ Off - the 802.11 performance is maximized under most conditions, while the other 802.11 modes (802.11b, etc.) are secondary. |
| **Short Guard Interval** | Defines a transmission interval so data transmissions do not interfere with each other. |
| **Basic Rate Set**   | Selects the rate that all wireless clients must support to connect to the DVW326. The options are All and Default. |
| **Multicast Rate**   | Specifies the rate at which multicast packets are transmitted and received on your wireless network. |
| **NPHY Rate**        | Sets the Physical Layer (NPHY) rate. Choose Legacy Rate to use 802.11a or 802.11g modes, and then choose the rate in the Legacy Rate field. |
| **Legacy Rate**      | Sets the wireless rate to the chosen 802.11a or 802.11g legacy rate. |
| **Beacon Interval**  | Specifies the Beacon Interval from 100 to 65535 ms. This value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the DVW326 to keep the network synchronized. A beacon includes information regarding the wireless networks service area, the access point address, the broadcast destination addresses, a time stamp, delivery traffic indicator maps, and the Traffic Indicator Message (TIM). |
| **DTIM Interval**    | Specifies the DTIM interval from 3 to 255ms. This value indicates how often the DVW326 sends out a Delivery Traffic Indication Message (DTIM). Lower settings result in more efficient networking, while preventing your wireless clients from dropping into power-saving sleep mode. Higher settings allow your wireless clients to enter sleep mode, thus saving power, but interferes with wireless transmissions. |
9.4 Using the Access Control Option

Use the **Access Control** option to configure which clients can access your wireless network.

### Steps

**To configure client access:**

1. Click **Wireless** from the main menu.
2. Click **Access Control** from the left side menu. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Interface</td>
<td>Defines the network name (SSID) and MAC address for which you are setting access control parameters.</td>
</tr>
</tbody>
</table>
| MAC Restrict Mode     | Controls wireless access to your network by MAC address.  
  - **Disabled** turns off MAC restrictions and allows any wireless client to connect to this device. However, if you use other security mechanisms for access to the wireless network, clients must still adhere to those restrictions.  
  - **Allow** creates a list of wireless clients that can connect to the wireless network. Enter the MAC addresses of these clients in the MAC Addresses fields. MAC addresses not on the list, are not allowed access to your wireless network.  
  - **Deny** creates a list of wireless clients that you do not want to have access to your wireless network. Enter the MAC addresses of these clients in the MAC Addresses fields.  |
| MAC Addresses         | Defines the MAC addresses. Note: You may cut and paste MAC addresses from the connected clients list at the bottom of the screen.                                                                                                                                                                                                 |
| Apply                 | Saves changes when clicked.                                                                                                                                                                                                                                                                                                               |
| Connected Clients     | Lists wireless clients currently connected listed by MAC address.  
  - **MAC Address** – Displays the MAC addresses entered in the MAC Addresses field (see above).  
  - **Age(s)** – Displays the duration since the wireless client’s polled values were sent to the device. The values include all information shown on this screen. The lower the number, the more current its data.  
  - **RSSI(dBm)** – Displays the received signal strength from the device to the wireless cable modem. This value is commonly used to assist in troubleshooting wireless performance issues. A signal strength between 0dBm and -65dBm is considered optimal. Levels of -66dBm and lower (for example, -70, -80, etc.) have a downward impact on wireless data throughput. Refer to Understanding Received Signal Strength on page 83 for more information.  
  - **IP Address** – Displays the IP address assigned to this wireless client.  
  - **Host Name** – Displays the host name of the wireless client.  
  - **Mode** – Indicates the applicable 802.11a/b/g/n standard used by the connected client device.  
  - **Speed (kbps)** – Displays the maximum theoretical link speed negotiated between the wireless gateway and the client, not including the overhead associated with encryption, and so on. For example, actual speeds with WEP encryption enabled are typically less than half of the negotiated link speed. TKIP encryption can also affect performance. AES is the most efficient and secure with the highest throughput possible. You can disable WMM if throughput on some client adapters is adversely affected.  |
9.5 Using the Wi-Fi Multimedia Option

Use the Wi-Fi Multimedia option to configure the quality of service (QoS) to ensure the best service in your wireless networks.

- Controls WLAN transmission priority on packets transmitted over the wireless network.

- Wi-Fi Multi-Media Quality of Service (WMM QoS) is a part of the IEEE 802.11e QoS enhancement to certified Wi-Fi wireless networks.

- WMM QoS prioritizes wireless traffic according to the delivery requirements of the individual user and applications. On wireless access points without WMM QoS, all traffic streams are given the same access priority to the wireless network. If a new traffic stream creates a data transmission demand that exceeds the current network capacity, the new traffic stream reduces the throughput of the other traffic streams.

- WMM QoS capability allows you to assign access categories (ACs) to various packet streams. The assigned AC of a packet stream depends on the packet’s priority, such as a priority assigned by an application (also referred to as a user priority (UP)). An AC may include a common set of enhanced distributed channel access (EDCA) parameters used by QoS to contend for a channel to transmit packets with certain priorities.

  Different ACs can be associated with different power saving parameters. For example, one power saving parameter might be the delivery mechanism used by an access point (AP) to deliver packets to a station (STA) that is operating in a reduced power mode.

- WMM transmit opportunity (TXOP) is assigned to each access point. The bounded time interval during which a station can send as many frames as possible as long as the transmission time does not extend past the maximum duration of the TXOP. If a frame is too large to be transmitted in a single TXOP, it should be fragmented into smaller frames. Using TXOP reduces the problem of low rate stations gaining too much channel time in the legacy 802.11 DCF MAC. A TXOP time interval of 0 means it is limited to a single MAC service data unit (MSDU) or MAC management protocol data unit (MMPDU).

**Note**

WMM may need to be disabled to avoid throughput impacts to other wireless devices.

**Steps**

*To configure the multimedia wireless option:*

1. Click **Wireless** from the main menu.

2. Click **WMM** (Wi-Fi Multimedia) from the left side menu. Field descriptions are listed below the screen example.
### Label Description

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMM Support</td>
<td>Enables (On) or disables (Off) WMM support.</td>
</tr>
<tr>
<td>No-Acknowledgement</td>
<td>Enables (On) or disables (Off) acknowledging data frames. In QoS mode, frames to send can have two values: QosAck and QosNoAck. Frames with QosNoAck are not acknowledged, avoiding the retransmission of highly time-critical data.</td>
</tr>
<tr>
<td>Power Save Support</td>
<td>Enables (On) or disables (Off) power savings. WMM Power Save increases the efficiency and flexibility of data transmission. The wireless client device can “doze” between packets to save power, while the wireless access point buffers downlink frames. The application chooses the time to wake up and receive data packets to maximize power conservation without sacrificing quality of service.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves changes to the WMM settings above.</td>
</tr>
<tr>
<td>EDCA AP Parameters</td>
<td>Allows you to prioritize wireless network traffic. Enhanced Distributed Channel Access – Access Point (EDCA-AP) provides four access categories (ACs):</td>
</tr>
<tr>
<td>AC_BE – Best Effort, medium throughput and delay. Most traditional IP data is sent to this queue.</td>
<td></td>
</tr>
<tr>
<td>AC_BK – Background, high throughput. Bulk data that requires maximum throughput and is not time-sensitive is sent to this queue (for example, FTP data).</td>
<td></td>
</tr>
<tr>
<td>AC_VI – Video</td>
<td></td>
</tr>
<tr>
<td>AC_VO – Voice</td>
<td></td>
</tr>
</tbody>
</table>
9.6 Using the Bridging Option

Use the Bridging option to configure the DVW326 to act as a wireless network bridge and establish wireless links with other wireless access points. To establish a bridge, you need to know the MAC address of the peer device. The peer device must be in wireless bridging mode as well. The DVW326 can establish up to four wireless links with other wireless access points. When wireless devices are in wireless bridging mode, they form a wireless distribution system that allows computers in one LAN to connect to the computers in the other LAN.

**Caution**

Avoid bridge loops when you enable bridging devices. Bridge loops cause broadcast traffic to circle the network endlessly. This can degrade throughput and disrupt communications.
Steps

To configure the modem as a bridge:

1. Click **Wireless** from the main menu.

2. Click **Bridging** from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Bridging</td>
<td>Enables or disables bridging.</td>
</tr>
<tr>
<td>Remote Bridges</td>
<td>Defines the MAC addresses of other wireless access points that you want to establish a bridge to and from. These access points must also have bridging enabled.</td>
</tr>
<tr>
<td>Apply</td>
<td>Saves all changes.</td>
</tr>
</tbody>
</table>

9.7 Deploying and Troubleshooting the Wireless Network

Use the information in this section to help you understand, deploy, and troubleshoot your wireless environments:

- Understanding Received Signal Strength on page 83
- Estimating Wireless Cable Modem to Wireless Client Distances on page 84
- Selecting a Wireless Channel on page 87

Understanding Received Signal Strength

Received signal strength (RSSI) is measured from connected wireless client devices to the wireless cable modem. This value can significantly impact wireless speeds/performance. It is determined by:

- Materials (for example, open air, concrete, trees)
- Distance between wireless clients and the wireless cable modem
- Wireless capabilities of the client devices
To determine the received signal strength, refer to Using the Access Control Option on page 78 and review the RSSI value. A receive signal strength indicator between 0 to -64 dBm is considered optimal. Levels of -67dBm and lower (for example, -70, -80, etc.) have a downward impact on wireless data throughput.

**Estimating Wireless Cable Modem to Wireless Client Distances**

The information in this section helps you to determine how far a wireless access point (the DVW326) can be placed from wireless client devices. Environmental variances include the capabilities of wireless clients and the types of material through which the wireless signal must pass. When the DVW326 and wireless clients reach the distance threshold between each other, network performance degrades.

**Steps**

To determine wireless cable modem placement:

1. Connect a wireless client to the wireless cable modem. Refer to Connecting Devices to the Network on page 14 if needed.

2. Place the wireless client at around one meter (three feet) away from the DVW326.

3. Obtain the RSSI value for the connected client. Refer to Using the Access Control Option on page 78. This value is used in the formula further below.

4. Use the following table to determine what materials the wireless signal must travel through to reach the desired wireless coverage distance.

**Attenuation Considerations at 2.4GHz**

<table>
<thead>
<tr>
<th>Material</th>
<th>Attenuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector/Cable</td>
<td>3.5dB</td>
</tr>
<tr>
<td>Free Space</td>
<td>0.24dB / foot</td>
</tr>
<tr>
<td>Interior Drywall</td>
<td>3dB to 4dB</td>
</tr>
<tr>
<td>Cubicle Wall</td>
<td>2dB to 5dB</td>
</tr>
<tr>
<td>Wood Door (Hollow/Solid)</td>
<td>3dB to 4dB</td>
</tr>
<tr>
<td>Brick, Concrete Wall (Note 1)</td>
<td>6dB to 18dB</td>
</tr>
<tr>
<td>Glass Window (not tinted)</td>
<td>2dB to 3dB</td>
</tr>
<tr>
<td>Double Pane Coated Glass</td>
<td>13dB</td>
</tr>
<tr>
<td>Bullet Proof Glass</td>
<td>10dB</td>
</tr>
<tr>
<td>Steel / Fire Exit Door</td>
<td>13dB to 19dB</td>
</tr>
</tbody>
</table>
5. Use the attenuation value from the materials table above in the following formula:

**Formula:**

\[
\text{(Transmit Power, use } -30\text{dBm}) - \text{(Receiver Sensitivity, use RSSI value) = Allowable Free Space Loss}
\]

\[
\text{Allowable Free Space Loss + Materials Attenuation Value = Optimal Distance in Feet Between the Cable Modem and a Wireless Client}
\]

**Example:**

\[
(-30\text{dBm}) - (-67\text{dBm}) = 37\text{dBm} \text{ (allowable free space loss for a 54Mbps connection)}
\]

\[
37\text{dBm} \div .24\text{db/foot (for open space)} = 154.16 \text{ feet}
\]

6. Once you know the optimal feet distance between individual wireless clients and the wireless cable modem, you may resolve and prevent some performance issues.

7. Check the wireless signal strength and speed of the computer connected wirelessly to the DVW326. Instructions for checking speeds are provided for both a Windows and a Mac computer in the table below. If the wireless computer is not connected, refer to **Connecting a Wireless Device on page 12.**
1.8.1 Understanding the 2.4GHz Band

The DVW326 operates in the 2.4GHZ frequency band. The table below provides a
information about the 2.4GHz band.

<table>
<thead>
<tr>
<th>Band</th>
<th>2.4GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>In the USA, channels 1-11 are used. There are 3 non-overlapping channels</td>
</tr>
<tr>
<td></td>
<td>(1, 6, and 11). Auto channel should be selected to ensure that the channel</td>
</tr>
<tr>
<td></td>
<td>with the least interference is used.</td>
</tr>
<tr>
<td>Standards</td>
<td>802.11b,g,n</td>
</tr>
</tbody>
</table>
Selecting a Wireless Channel

You may need to change the wireless channel on which the DVW326 operates when you are in computing, test, and other environments where several wireless access points may be operating in the 2.4GHz range.

In some cases, you may want to segment your wireless traffic where a group of devices operates on one channel and another group operates on another channel, and so on. This is done by configuring the channel on each wireless access point individually (if you have multiples). If you have control over only one wireless device in an environment where there may be several, you can change the wireless channel on your device to one that is not heavily used.

Note

To change the wireless broadcast channel, refer to Using the Wireless Radio Option on page 68.

The following diagram displays the channels available in the Americas. Each available channel is 22MHz wide. Since channels overlap, it is best to choose channels that have the least overlap (typically 1, 6, and 11 in the Americas, and 1, 5, 9, and 13 in Europe). Overlapping channels can cause wireless network performance issues.

<table>
<thead>
<tr>
<th>Band</th>
<th>2.4GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Range</td>
<td>Wider range than the 5GHz band</td>
</tr>
<tr>
<td>Interference</td>
<td>Higher interference levels compared to the 5GHz band, as many wireless devices such as cordless phones, microwave ovens, and computers use the 2.4GHz frequency.</td>
</tr>
<tr>
<td>Application</td>
<td>Recommended for simple Internet browsing and email, as these applications don’t take too much bandwidth and work fine at a greater distance.</td>
</tr>
</tbody>
</table>
10 Understanding the Telephony Menu

Telephony options provide settings for the voice functions of the DVW326.

Topics

See the following topics:

- Using the Status Option on page 88
- Using the DHCP Option on page 89
- Using the QoS Option on page 91
- Using the Provisioning Option on page 92
- Using the Event Log Option on page 93

Steps

To access the telephony menu:

1. Access the Web interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click Telephony from the main menu.

10.1 Using the Status Option

Use the Status option to view task progress and MTA line states.

Steps

To view status information:

1. Click Telephony from the main menu.
2. Click Status. Field descriptions are listed below the screen example.
10.2 Using the DHCP Option

Use the DHCP option to monitor the DVW326 lease parameters, timers, and PacketCable DHCP Option 22.

Steps

To view DHCP settings:
1. Click Telephony from the main menu.
2. Click DHCP from the left side menu. Field descriptions are listed below the screen.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Startup Procedure</td>
<td>Displays the DHCP IP address of the MTA portion of the device.</td>
</tr>
<tr>
<td>Telephony DHCP</td>
<td>Displays the security mode of the MTA (Basic, Hybrid, or Security).</td>
</tr>
<tr>
<td>Telephony Security</td>
<td>Displays if the MTAs TFTP server is available.</td>
</tr>
<tr>
<td>Telephony TFTP</td>
<td>Displays if the MTAs TFTP server is available.</td>
</tr>
<tr>
<td>Telephony Call Server Registration</td>
<td>Displays the status of the MTA’s registration to the service provider’s call server per line (Disconnected, Operational).</td>
</tr>
<tr>
<td>Telephony Registration Complete</td>
<td>Displays the completion status of the MTA registration (N/A, Operational).</td>
</tr>
<tr>
<td>MTA Line State</td>
<td>Displays the completion status of the MTA registration (N/A, Operational).</td>
</tr>
<tr>
<td>Lines</td>
<td>Displays the telephone line connections: Line 1, Line 2.</td>
</tr>
<tr>
<td>Hook State</td>
<td>Displays if telephone is on-hook or off-hook.</td>
</tr>
</tbody>
</table>
example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lease Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>FQDN</td>
<td>Displays the fully qualified domain name (FQDN), which specifies all the domain levels of the domain name system.</td>
</tr>
<tr>
<td>IP Address/Submask</td>
<td>Displays the IP address and submask of the telephone connection.</td>
</tr>
<tr>
<td>Gateway</td>
<td>Displays the gateway address.</td>
</tr>
<tr>
<td>Bootfile</td>
<td>Displays the location and file name of the file used to configure the telephony system.</td>
</tr>
<tr>
<td>Primary DNS</td>
<td>Displays the main domain name server.</td>
</tr>
<tr>
<td>Secondary DNS</td>
<td>Displays the secondary domain name server.</td>
</tr>
<tr>
<td><strong>Lease Timers</strong></td>
<td></td>
</tr>
<tr>
<td>Lease Time Remaining</td>
<td>Displays the time left on the DHCP lease.</td>
</tr>
<tr>
<td>Rebind Time Remaining</td>
<td>Displays the time left on the rebinding lease. Rebinding is when the client tries to renew the DHCP lease on the same server before trying to connect to a new DHCP server.</td>
</tr>
<tr>
<td>Renew Time Remaining</td>
<td>Displays the time left before the DHCP lease renews.</td>
</tr>
<tr>
<td>PacketCable DHCP Option 122</td>
<td></td>
</tr>
</tbody>
</table>
10.3 Using the QoS Option

Use the Quality of Service (QoS) option to monitor the DVW326 error codewords, payload header suppression, and service flows.

Steps

To view QoS settings:

1. Click **Telephony** from the main menu.
2. Click **QoS** from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNMP Entity (Sub-option 3)</td>
<td>Displays the SNMP entity</td>
</tr>
<tr>
<td>Kerberos Realm (Sub-option 6)</td>
<td>Displays the Kerberos domain name.</td>
</tr>
<tr>
<td>Provisioning Timer (Sub-option 8)</td>
<td>Displays the time interval for the provisioning flow to complete, if set.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error Codewords</td>
<td></td>
</tr>
<tr>
<td>Unerred Codewords</td>
<td>Displays the number of codewords passed without error.</td>
</tr>
<tr>
<td>Correctable Codewords</td>
<td>Displays the number of codewords corrected.</td>
</tr>
<tr>
<td>Uncorrectable Codewords</td>
<td>Display the number of codewords that could not be corrected.</td>
</tr>
<tr>
<td>Payload Header Suppression</td>
<td></td>
</tr>
<tr>
<td>PHS Status</td>
<td>Displays whether the payload header is suppressed (on) or not (off). When on, redundant information is not transmitted.</td>
</tr>
<tr>
<td>Service Flows</td>
<td></td>
</tr>
</tbody>
</table>
10.4 Using the Provisioning Option

Use the **Provisioning** option to view the MTA configuration file and enterprise MIB settings.

**Steps**

To view the MTA config file and MIB settings:

1. Click **Telephony** from the main menu.
2. Click **Provisioning** from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFID</td>
<td>Displays the service flow ID number.</td>
</tr>
<tr>
<td>Service Class Name</td>
<td>Displays the service class name string that the CMTS associates with a QoS parameter set.</td>
</tr>
<tr>
<td>Direction</td>
<td>Displays the direction of the data flow.</td>
</tr>
<tr>
<td>Primary Flow</td>
<td>Indicates if the SFID is a primary flow or not.</td>
</tr>
<tr>
<td>Packets</td>
<td>Displays the quantity of packets transported on a single SFID.</td>
</tr>
</tbody>
</table>
10.5 Using the Event Log Option

Use the Event Log to view events associated with the MTA.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Config File</td>
<td></td>
</tr>
<tr>
<td>Filename</td>
<td>Displays the config file being used.</td>
</tr>
<tr>
<td>Contents</td>
<td>Displays the current settings.</td>
</tr>
<tr>
<td>Enterprise MIBs</td>
<td></td>
</tr>
<tr>
<td>OID</td>
<td>Displays the eMTA MIBs.</td>
</tr>
<tr>
<td>Value</td>
<td>Displays the current value of the MIBs.</td>
</tr>
</tbody>
</table>
Steps

To view the MTA event log:

1. Click **Telephony** from the main menu.
2. Click **Event Log** from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Displays the time of the event.</td>
</tr>
<tr>
<td>Priority</td>
<td>Displays the priority level of the displayed event.</td>
</tr>
<tr>
<td>ID</td>
<td>Displays an identification number for the event.</td>
</tr>
<tr>
<td>Text</td>
<td>Defines the event with a detailed textual description.</td>
</tr>
<tr>
<td>Endpoint</td>
<td>Displays the endpoint name to which the event is related.</td>
</tr>
</tbody>
</table>
11 Understanding the Battery Menu

The Battery menu of the Web user interface allows you to access information about the battery, including estimated time remaining and current levels. In the event of a power loss, the battery provides:

- Up to 8 hours of standby time
- Five (5) hours of talk time with one line off-hook
- One upstream and one downstream channel

Topics

See the following topics:

- Using the Controller Option on page 95
- Using the UPS Option on page 96
- Using the Interface Delay Option on page 97

Steps

To access battery options:

1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.

2. Click Battery from the main menu.

11.1 Using the Controller Option

The Controller option displays current battery information.

Steps

To view controller information:

1. Click Controller from the left side menu. Field descriptions are listed below the screen example.
11.2 Using the UPS Option

The UPS option displays information about the uninterrupted power supply.

Steps

To view UPS information:

1. Click UPS from the left side menu. Field descriptions are listed below the screen example.
11.3 Using the Interface Delay Option

The Interface Delay option displays the length of time each interface will be active before being turned off when the device is operating on battery power.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>Displays the current status of the battery.</td>
</tr>
<tr>
<td>Capacity</td>
<td>Displays the capacity of the battery.</td>
</tr>
<tr>
<td>Measured Voltage</td>
<td>Displays the current voltage of the battery.</td>
</tr>
<tr>
<td>Estimated Time Remaining</td>
<td>Displays the time in minutes remaining on the battery.</td>
</tr>
<tr>
<td>Pack Temperature</td>
<td>Displays the battery temperature in Celsius.</td>
</tr>
</tbody>
</table>

Steps

To view Interface Delay information:

1. Click Interface Delay from the left side menu. Field descriptions are listed below the screen example.
<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td></td>
</tr>
<tr>
<td>DOCSIS CM</td>
<td>Defines the length of time in seconds the DOCSIS CM interface will be active before being turned off when the device is operating on battery power.</td>
</tr>
<tr>
<td>WiFi</td>
<td>Defines the length of time in seconds the WiFi interface will be active before being turned off when the device is operating on battery power.</td>
</tr>
</tbody>
</table>
12 Understanding the USB Menu

The USB menu of the Web user interface allows you to configure USB storage devices and media file scanning.

Topics

See the following topics:

- Using the USB Basic Option on page 99
- Using the Approved Devices Option on page 100
- Using the Storage Basic Option on page 102
- Using the Storage Advanced Option on page 103
- Using the Media Server Option on page 106

Steps

To access USB options:

1. Access the Web user interface. Refer to Accessing the Web User Interface Locally on page 18.
2. Click USB from the main menu.

12.1 Using the USB Basic Option

The USB Basic option allows you to configure Linux based servers. The buttons on the right side of the page are short cuts to the options on the left side of the page.

Steps

To view USB basic information:

1. Click USB Basic from the left side menu. Field descriptions are listed below the screen example.
12.2 Using the Approved Devices Option

The Approved Devices option allows you to choose if any storage device plugged into the modem can be used or only approved devices. If “Approved” is selected, each device must be manually approved on this page.

Steps

To view approved devices information:

1. Click Approved Devices from the left side menu. Field descriptions are listed below the screen example.
### Label Description

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable USB devices connected to the USB port</td>
<td>Allows you to enable USB devices that are connected to the USB port. Options are All, Approved, or None.</td>
</tr>
<tr>
<td>Apply Changes</td>
<td>Saves changes.</td>
</tr>
<tr>
<td>Approved USB Devices</td>
<td>Displays information about currently approved USB devices.</td>
</tr>
<tr>
<td>Select</td>
<td>Allows you to select the device by checking the box.</td>
</tr>
<tr>
<td>Volume Name</td>
<td>Displays the name of the USB device.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Displays the manufacturer of the USB device.</td>
</tr>
<tr>
<td>Product</td>
<td>Indicates the type of the USB device.</td>
</tr>
<tr>
<td>Free Space</td>
<td>Displays the free space available on the USB storage device.</td>
</tr>
<tr>
<td>Used Space</td>
<td>Displays the space that has been used on the USB storage device.</td>
</tr>
<tr>
<td>Total Space</td>
<td>Displays the total space on the USB storage device.</td>
</tr>
<tr>
<td>SMART Status</td>
<td>Displays the SMART (Self-Monitoring, Analysis, and Reporting Technology) status of the USB drive.</td>
</tr>
<tr>
<td>Remove</td>
<td>To remove a device from the list of approved USB devices, select the device and click Remove.</td>
</tr>
<tr>
<td>Available USB Devices</td>
<td>Displays USB devices that are available to be added to the approved USB devices list. The individual field listings are the same as those under the Approved Devices heading.</td>
</tr>
</tbody>
</table>
### 12.3 Using the Storage Basic Option

The **Storage Basic** page allows you to configure the device name and designate what folders should be shared.

#### Steps

To view basic storage information:

1. Click **Storage Basic** from the left side menu. Field descriptions are listed below the screen example.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>To add an available USB device to the Approved USB Devices list, select the device and click <strong>Add</strong>.</td>
</tr>
<tr>
<td>Refresh List</td>
<td>Allows you to refresh the lists of approved and available USB devices.</td>
</tr>
<tr>
<td>Safely Remove Device</td>
<td>Allows you to safely remove a USB device. Click <strong>Safely Remove Device</strong>. The following window pops up. Select the device you want to remove from the drop down menu, and click “<strong>Remove Selected Device</strong>.”</td>
</tr>
</tbody>
</table>
12.4 Using the Storage Advanced Option

The Storage Advanced page allows you to configure the device name and the workgroup name, as well as enable or disable Windows Network and FTP (File Transfer Protocol) support.

Steps
To view advanced storage information:

1. Click Storage Advanced from the left side menu. Field descriptions are listed below the screen example.
Label | Description
--- | ---
Network/Device Name | Allows you to define the network and device name.
Workgroup Name | If you are using a Windows workgroup rather than a domain, the workgroup name is displayed here.
Set Admin Name/Password | Enter the NAS (network attached storage) administrator name and password, then you will be allowed to change the user name and password.
Protocols | Allows you to enable or disable access methods. The Windows Network Connection access method is enabled by default. The FTP access method is disabled by default. If you enable this setting, remote users can access the USB drive through FTP over the Internet. The IP address displayed in the link field is the Linux IP stack address that should be used for the FTP server address in the FTP clients.
### Label | Description
--- | ---
**Apply** | Saves changes.
**Available Network Folders** | Displays information about available network folders.
**Actions** | Displays Edit and Remove buttons for the folder.
**Share Name** | Displays the shared name the folder was given during “Create New Folder.”
**Device** | Displays the device type and name.
**Folder** | Displays the full path of the folder.
**Read Access** | Shows the permissions and read/write access controls assigned to the folder.
**Write Access** | • “All - no password” is displayed if all users are allows to access the folder.
• “Admin only” is displayed if a password is required to access the folder.

**Free Space** | Displays the free space available on the USB storage device.
**Used Space** | Displays the space that has been used on the USB storage device.
**Total Space** | Displays the total space on the USB storage device.

**Create Network Folder** | Allows you to create a network folder. Enter the appropriate information in the following pop up window.

After clicking **Apply**, the information entered here will be displayed in the Available Network Folders table.

**Refresh List** | Allows you to refresh the list of shared network folders.
12.5 Using the Media Server Option

The Media Server page allows you to configure the DLNA media server. The media server must be DLNA-certified. The DLNA (Digital Living Network Alliance) defines standards that enable devices to share information such as photos, videos, and music. The media server name and the file names that will be scanned on the USB storage devices are configured using this option.

Steps

To view media server information:

1. Click Media Server from the left side menu. Field descriptions are listed below the screen example.
### Basic Settings

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Server</td>
<td>Displays whether the media server is enabled or disabled.</td>
</tr>
<tr>
<td>Media Server Name</td>
<td>The media server name, the name that will show up on media players.</td>
</tr>
<tr>
<td>Test Mode</td>
<td>Allows you to select the test mode. Options are:</td>
</tr>
<tr>
<td></td>
<td>1. Normal Operation</td>
</tr>
<tr>
<td></td>
<td>2. UPnP Certification</td>
</tr>
<tr>
<td></td>
<td>3. DLNA Certification</td>
</tr>
<tr>
<td>Apply Basic Settings</td>
<td>Applies the basic settings that have been selected.</td>
</tr>
</tbody>
</table>

### Scan Settings

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning Method</td>
<td>Allows you to select the preferred scanning method, either Scan All Files or Scan Files By Type.</td>
</tr>
<tr>
<td>Available File Types</td>
<td>Lists all of the available file types on the media server.</td>
</tr>
<tr>
<td></td>
<td>Available file categories include Video, Audio, Image, and Other.</td>
</tr>
<tr>
<td></td>
<td>Beneath each file category, you can select specific file types to scan for, or scan all the file types in that category. Once selected, these files types will appear in the Selected File Types section.</td>
</tr>
<tr>
<td>Selected File Types</td>
<td>Displays the file types that were selected in the Available File Types section.</td>
</tr>
<tr>
<td>Enable scheduled scanning every X minutes</td>
<td>Click the box to enable regularly-scheduled scans. Enter the scan interval in minutes.</td>
</tr>
<tr>
<td>Apply Scan Settings</td>
<td>Applies the scan settings that have been set.</td>
</tr>
<tr>
<td>Scan Now</td>
<td>Click this button to begin a scan of the media server.</td>
</tr>
</tbody>
</table>
2 Glossary
This chapter defines terms used in this guide and in the industry.

54G™
The internal wireless adapter from Broadcom.

ALG (Application-Level Gateway)
A type of security device that acts on behalf of the application servers on a network, hiding the servers themselves from traffic that might be malicious.

AP (Access Point)
A device that allows wireless devices to connect to a wired network using WiFi, or related standards.

Broadcast
A packet sent to all devices on a network.

BSS (Basic Service Sets)
A basic service set is the fundamental building block of an 802.11 wireless local area network. The overlapping BSS problem refers to a situation where two or more systems, unrelated to each other are in close enough proximity to hear each other physically. Overlapping BSS may degrade the network performance severely.

BSSID (Basic Service Set Identifier)
The BSSID uniquely identifies a specific access point and is in the same format as a MAC address.

Channel Bonding
A computer networking configuration where two or more network interfaces are combined on a host computer for redundancy or increased throughput. Data is transmitted over these channels as if they are one channel.

CMTS (Cable Modem Termination System)
Typically located in the cable company’s headend, the CMTS is equipment that provides high-speed data services to subscribers, such as cable Internet and Voice over IP (VoIP).

CPE (Customer Premises Equipment)
Equipment such as telephones, routers, and modems located at a user’s location to enable access to communication services.

Default Gateway
The routing device used to forward all traffic that is not addressed to a computer on the local subnet.
DHCP (Dynamic Host Configuration Protocol)
A protocol that centrally automates the assignment of IP addresses in a network. Using the Internet’s set of protocols (TCP/IP), each machine that can connect to the Internet needs a unique IP address. For example, when the service provider sets up computer users with a connection to the Internet, an IP address is assigned to each machine. DHCP lets the service provider distribute IP addresses and automatically sends a new IP address when a computer is plugged in to the high-speed Internet network. DHCP uses the concept of a “lease” or amount of time an IP address is valid for a computer. Lease times can vary.

DMZ (Demilitarized Zone)
Allows one IP address (or computer) to be placed in between the firewall and the Internet (usually for gaming and video conferencing). This allows risky, open access to the Internet.

DOCSIS (Data Over Cable Service Interface Specification)
An International telecommunications standard that permits the addition of high-speed data transfer over an existing cable TV system.

Domain
A subnetwork comprised of a group of clients and servers under the control of one security database.

Domain Name
A descriptive name for an address or group of addresses on the Internet. Domain names are in the form of a registered entity name plus one of a number of predefined top-level suffixes, such as .com, .edu, .org.

DoS (Denial of Service) Attack
An attempt to make a machine or network resources unavailable to its intended users.

DNS (Domain Name System)
An Internet service that locates and translates domain names into IP addresses. Because domain names are alphabetic, they are easier to remember. However, the Internet is based on IP addresses. Every time you use a domain name, a DNS service translates the name into the corresponding IP address. The DNS system is actually its own network. If one DNS server does not know how to translate a particular domain name, it asks another one, and so on, until the correct IP address is returned.

Downstream
A term to describe the direction of data from the network service provider to the customer.

DTIM (Delivery Traffic Indication Message)
Informs clients about the presence of buffered broadcast data on the access point.

Ethernet
A standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. It forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP, HTTP, and FTP.
Firewall
A highly effective method to block unsolicited traffic from outside the connected computers in your gateway and local network.

FTP (File Transfer Protocol)
A network protocol used to transfer files from one host to another over a TCP-based network.

Gateway
A local device, usually a router, that connects hosts on a local network to other networks – sometimes with different incompatible communication protocols. The DVW326 is an example of a gateway.

Headend
A main facility to process and distribute Internet communication signals. Headend may also refer to cable television signals and power line communication facilities.

ICQ
A free instant-messaging utility introduced by Mirabilis in 1996.

IKE (Internet Key Exchange)
A protocol used to ensure security for VPN negotiation and remote host or network access.

IP (Internet Protocol)
The method or protocol by which data is sent from one computer to another on the Internet. It is a standard set of rules, procedures, or conventions relating to the format and timing of data transmission between two computers that they must accept and use to understand each other. Used in conjunction with the Transfer Control Protocol (TCP) to form TCP/IP.

IP Address
In the most widely installed level of the IP today, an IP address is a 32-bit binary digit number that identifies each sender or receiver of information that is sent in packet form across the Internet. When you request a Web page or send an e-mail, the IP part of TCP/IP includes your IP address. IP sends your IP address to the IP address obtained by looking up the domain name in the URL you requested or in the e-mail address to which you are sending a note. A dynamic IP address is an IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server.

IPsec (Internet Protocol Security)
A protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session.

IRC (Internet Relay Chat)
A system that facilitates the transfer of messages in the form of text.

ISP (Internet Service Provider)
A company that provides individuals and companies access to the Internet and other related services.
IUC (Interval Usage Code)
Interval usage codes define different profiles for upstream burst profiles to use for the data. IUCs are sent to the cable modem from the CMTS to tell the device important characteristics to use for the burst, such as modulation type, preamble length, and so on.

Kerberos
A network authentication protocol which works on the basis of “tickets” to allow nodes communicating over a non-secure network to prove their identity to one another in a secure manner.

LAN (Local Area Network)
A group of computers and associated devices such as printers and servers that share a common communication line and other resources within a small geographic area.

MAC (Media Access Control Address)
A unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level. Usually written in the form 01:23:45:67:89:ab.

Mbps (Megabits per Second)
A unit of measurement for data transmission that represents one million bits per second.

MTU (Maximum Transmission Unit)
The size in bytes of the largest packet that can be sent or received.

NAT (Network Address Translation)
A technique by which several hosts or computers share a single IP address for access to the Internet. NAT enables a LAN to use one set of IP addresses for internal traffic and a second set of addresses for external traffic, and provides a type of firewall by hiding internal IP addresses.

NetBios (Network Basic Input/Output System)
A program that allows applications on different computers to communicate within a local area network.

Net2Phone
A software/services company whose principal line of business is SIP-based and PacketCable-based voice over IP.

Packet
A block of information sent over a network. A packet typically contains a source and destination network address, some protocol and length information, a block of data, and a checksum.

PPTP (Point-to-Point Tunneling Protocol)
A method for ensuring secure communication between virtual private networks.
Ranging
A process in which a cable modem sends a range request at a power of 8 dBmV (very low power). If it does not receive a range response from the CMTS, the cable modem re-transmits the range request at a 3 dB higher power level and continues the process until a range response is received.

Router
A device that forwards data between networks. An IP router forwards data based on IP source and destination addresses.

RIP (Routing Information Protocol)
A protocol in which routers periodically exchange information with one another to determine minimum-distance paths between sources and destinations.

RSSI (Received Signal Strength Indicator)
A measurement of the power present in a received radio signal. Lower negative numbers (for example, -1 to -65) indicate the access point is closer. Greater negative numbers (for example, -66 to -95) indicate the access point is farther away. RSSI is optimal between 0dBm and -64dBm.

RSVP (Resource Reservation Protocol)
A set of communication rules that allows channels or paths on the Internet to be reserved for the multicast transmission of video and other high-bandwidth messages.

RTSP (Real Time Streaming Protocol)
A protocol used in the transfer of real-time streaming media such as audio and video.

Service Set Identifier (SSID)
A sequence of characters that uniquely names a wireless local area network (WLAN). The SSID allows stations to connect to the desired network when multiple independent networks are operating in the same physical area.

SIP (Session Initiation Protocol)
A signaling communications protocol that is widely used for controlling multimedia communications sessions such as voice and video over Internet Protocol networks.

SNR (Signal-to-Noise Ratio)
A measure that compares the level of a desired signal to the level of background noise.

SNTP (Simple Network Time Protocol)
A protocol for synthesizing the clocks of computing devices over networks.

STBC (Space-Time Block Code))
A technique used in wireless communications to transmit multiple copies of a data stream across a number of antennas.
Subnet
A portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 10.1.10 would be part of the same subnet. IP networks are divided using a subnet mask.

Subnet Mask
Combined with the IP address, the IP subnet mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or router. A number that explains which part of an IP address comprises the network address and which part is the host address on that network.

Telnet
A network protocol used on the Internet or a local area network. Provides bi-directional interactive text-oriented communications using a virtual terminal connection.

TACACS (Terminal Access Controller Access-Control System)
A remote authentication protocol used to communicate with an authentication server to determine if the user is allowed to access the network.

TCP (Transmission Control Protocol)
A method (protocol) used with the IP to send data in the form of message units (datagrams) between network devices over a LAN or WAN. While IP handles the actual delivery of the data (routing), TCP keeps track of the individual units of data (packets) that a message is divided into for efficient delivery over the network. TCP requires the receiver of a packet to return an acknowledgment of receipt to the sender of the packet.

TCP/IP (Transmission Control Protocol/Internet Protocol)
The basic communication language or set of protocols to communicate over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols.

TDMA (Time Division Multiple Access)
A method in which cable modems must time-share the upstream channel because there are many cable modems and only one upstream channel frequency.

TFTP (Trivial File Transfer Protocol)
A file transfer protocol used to transfer automatically configuration or boot files.

TPC (Transmit Power Control)
Sometimes called Dynamic Power Control (DPC), TPC is a mechanism used in radio communications to reduce the power of a radio transmitter to the minimum necessary to maintain the link with a certain quality. It is used to avoid interference with other devices and/or to extend battery life.

UDP (User Datagram Protocol)
A communications protocol that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol.
UPnP (Universal Plug and Play)
A set of networking protocols that permits networked devices to seamlessly discover each other's presence on the network to enable data sharing, communications, and entertainment.

Upstream
A term to describe the direction of data from the customer to the network service provider.

URI (Uniform Resource Identifier)
A string of characters used to identify a name or a resource on the Internet.

URL (Uniform Resource Locator)
A uniform resource identifier (URI) that specifies where a known resource is available and how to retrieve it.

WAN (Wide Area Network)
A long-distance link or computer network that spans a relatively large geographical area that connects remotely located LANs. Typically, a WAN consists of two or more LANs. The Internet is a large WAN.

WEP (Wired Equivalent Privacy)
An encryption method used to protect your wireless data communications. WEP uses 64-bit or 128-bit keys to provide access control to your network and security for everyday transmissions. To decode data transmissions, all devices on the network must use an identical key.

WLAN (Wireless Local Area Network)
A communications network that uses high frequency radio signals to allow wireless devices to communicate with each other within a limited geographic area.

WPA (Wi-Fi Protected Access)
A security protocol for wireless networks offering improvements over the WEP protocol in the way it handles security keys and the way users are authorized.

WPS (Wi-Fi Protected Setup)
A security protocol for wireless home networks. Created by the Wi-Fi Alliance, this protocol allows home users to easily set up wireless security and add new devices without needing to enter long passwords.

XML (Extensible Markup Language)
A markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine readable.

XPress™
XPress™ is a standards-based frame-bursting approach to improve 802.11g wireless LAN performance developed by Broadcom.