

# Wireless DSL Gateway

**GT784WNV**

# User Manual



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# 1

- 1.0** Introduction
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# Introduction

**The Gateway is the simplest way to connect computers to a high-speed broadband connection. This easy-to-use product is perfect for the home office or small business. If you want to take your networking to the next level, the Wireless DSL Gateway is sure to be one of the keys to your success.**

## **1.1 System Requirements**

The Gateway must be used with the following systems and software:

- Active DSL service
- Computer with an 10 Mbps or 10/100 Mbps Ethernet connection
- Microsoft Windows XP, Vista, and 7; Mac OS OS X+
- Modern web browser
- TCP/IP network protocol installed on each computer

## **1.2 Features**

The Gateway features:

- Plug-and-Play installation support for computers running Windows operating systems (XP, Vista, and 7)
- ADSL WAN port (RJ-14)
- Full-rate ANSI T1.413 Issue 2, ITU G.992.1(G.dmt) and G.992.2(G.lite) standard compliance
- Auto-handshake for different ADSL flavors
- 12 Mbps USB data rate (full speed) support
- Bridged Ethernet over ATM, PPP over ATM, PPP over Ethernet, Static IP mode
- Precise ATM traffic shaping
- IP packet routing and transparent bridge
- RIP-1, RIP-2, and static routing protocol support
- Built-in NAT, DHCP server
- DNS relay support

# 1

## Introduction

### 1.3 Important Safety Instructions

- PAP/CHAP authentication, administrative passwords through Telnet
- 64- and 128-bit, WEP/WPA/WPA2 wireless LAN security
- IEEE 802.3 Ethernet standard compliance
- 10/100 Base-T Ethernet ports (4)
- Fast Ethernet flow control support
- Web-based configuration setup
- Firmware upgradeable
- Web download support
- 802.11b/g/n support
- WPS support

### 1.3 Important Safety Instructions

When using telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and personal injury, including the following:

- Do not use this product near water – for example, near a bathtub, kitchen sink, laundry tub, or swimming pool, or in a wet basement;
- Avoid using a telephone (other than a cordless type) during an electrical storm, as there may be a remote risk of electrical shock due to lightning;
- Do not use the telephone to report a gas leak in the vicinity of the leak;
- Use only the power cord and batteries indicated in this manual;
- Do not dispose of batteries in fire, as they may explode – check with local codes for possible special disposal instructions.

## 1.3a Telephone Line Cord Caution

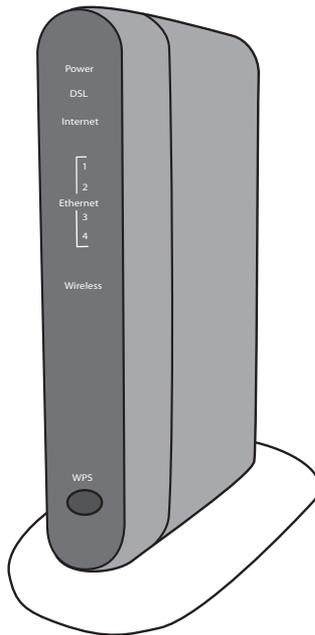
To reduce the risk of fire, use only No. 26 AWG or larger (e.g., 24 AWG) UL Listed or CSA Certified Telecommunication Line Cord.

## 1.4 Getting to Know the Gateway

This section contains a quick description of the Gateway's LEDs, ports, etc. The Gateway has several indicator LEDs and a button on its front panel, and a series of ports and switches on its rear panel.

### 1.4a Front Panel

The front panel of the Gateway features eight indicator LEDs: Power, DSL, Internet, Ethernet (4), and Wireless. It also features the WPS button.



# 1

## Introduction

### 1.4 Getting to Know the Gateway

#### Power LED

The Power LED displays the Gateway's current status. If the Power light glows steadily green, the Gateway is receiving power and fully operational. When the Power light is rapidly flashing, the Gateway is initializing. If the Power light is glows red when the Power cord is plugged in, the Gateway has suffered a critical error and technical support should be contacted.

#### DSL LED

The DSL LED illuminates when the Gateway is connected to a DSL line.

#### Internet LED

When the Internet LED glows steadily, the Gateway is connected to the DSL provider. When it flashes, Internet traffic is moving through the Gateway.

#### Ethernet LEDs

The Ethernet LEDs illuminate when the Gateway is connected to one or more of its yellow Ethernet ports.

#### Wireless Light

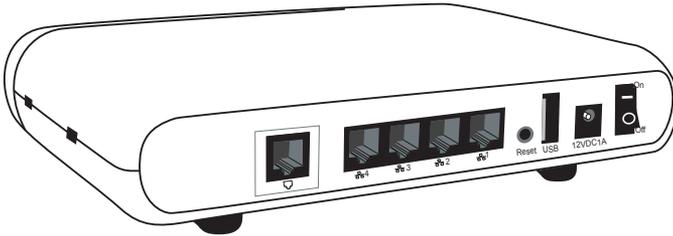
The Wireless light illuminates when the Gateway is connected wirelessly (if the Gateway's Wireless feature is turned on).

#### WPS Button

The WPS button activates WPS (WiFi Protected Setup) on the Gateway. See chapter 4, "Configuring Wireless Settings," for more information about WPS.

## 1.4b Rear Panel

The rear panel of the Gateway contains six ports (Ethernet [4], Phone, and Power [12VDC1A]), as well as Reset and Power switches.



### Phone Port

The Phone port is used to connect the Gateway to a DSL (Digital Subscriber Line) connection.

### Ethernet Ports

The Ethernet ports are used to connect computers to the Gateway via Ethernet cable. The Ethernet ports are 10/100 Mbps auto-sensing ports, and either a straight-through or crossover Ethernet cable can be used when connecting to the ports.

### Reset Switch

Depressing the Reset switch for one second will restore the Gateway's factory default settings. To reset the Gateway, depress and hold the Reset switch for approximately ten seconds. The reset process will start after releasing the switch.

# 1

## Introduction

### 1.4 Getting to Know the Gateway

#### Power Port

The Power port is used to connect the Power cord to the Gateway.

**Warning:** Do not unplug the Power cord from the Gateway during the reset process. Doing so may result in permanent damage to the Gateway.

#### Power Switch

The Power switch is used to power the Gateway on and off.

# 2

- 2.0** Introduction
- 2.1** Performing a Quick Setup
- 2.2** Home Screen

# Quick Setup

**This chapter is a guide through a quick set up of the Gateway, including how to connect the Gateway to the ISP. Also included is an overview of the Gateway's Home screen.**

## 2.1 Performing a Quick Setup

To perform a quick setup on the Gateway, have the Welcome Letter or ISP Worksheet handy. If the document is not available, contact the ISP immediately. To access Quick Setup screens:

1. Open a Web browser. In the "Address" text box, type:  
**http://192.168.1.1**  
then press **Enter** on the keyboard.



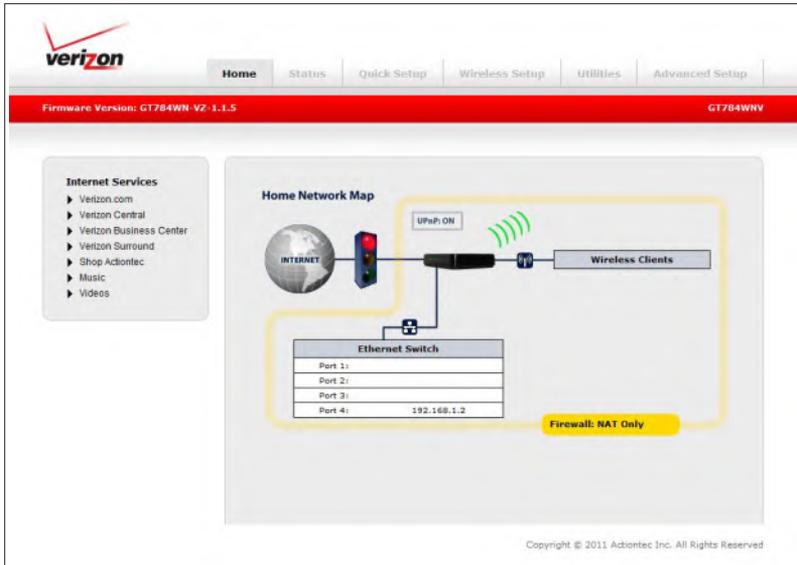
2. The "LogIn" screen appears. Enter a password in both the "New Password" and "Re-type New Password" text boxes. Make sure to write the password down on a piece of paper and keep it in a safe place for future reference, as you will need it to access the Gateway's firmware graphical user interface (GUI).

A screenshot of the Verizon Wireless DSL Gateway's "Login Setup" screen. The screen has a red header with the Verizon logo on the left and "Firmware Version: GT784WN-V2-1.1.5" and "GT784WNV" on the right. The main content area is titled "Login Setup" and contains two steps. Step 1 is "New Username and Password" setup, with fields for "New Username" (containing "admin"), "New Password", and "Re-Type New Password". A note specifies password requirements. Step 2 is "Time Zone" selection, with a dropdown menu set to "Eastern\_Time (GMT-05:00)" and an "Apply" button. The footer contains the copyright notice: "Copyright © 2011 Actiontec Inc. All Rights Reserved."

## 2 Quick Setup

### 2.1 Performing a Quick Setup

3. Select your local time zone from the "Time Zone" drop-down list.
4. Click **Apply**.
5. After the changes are applied, the Gateway's Home screen appears. Select **Quick Setup** from the row of button above the red bar.



6. The first “Quick Setup” screen appears. Read the onscreen instructions, and if you have performed all of the requirements, click **Next**.



## 2 Quick Setup

### 2.1 Performing a Quick Setup

7. The second Quick Setup screen appears. Select the network protocol used by your ISP. If you select PPPoE, you must enter the user name and password assigned to you by your ISP in the appropriate text boxes.

### Quick Setup

Please follow the steps below.

**1. Select the item below that is utilized by your ISP.**

PPPoE

RFC1483 via DHCP

Quick Setup provides a quick and easy way to insert the PPP username and password for Internet access. The PPP password is case sensitive.

**2. Enter the PPP username and PPP password.**

PPP Username:

PPP Password:

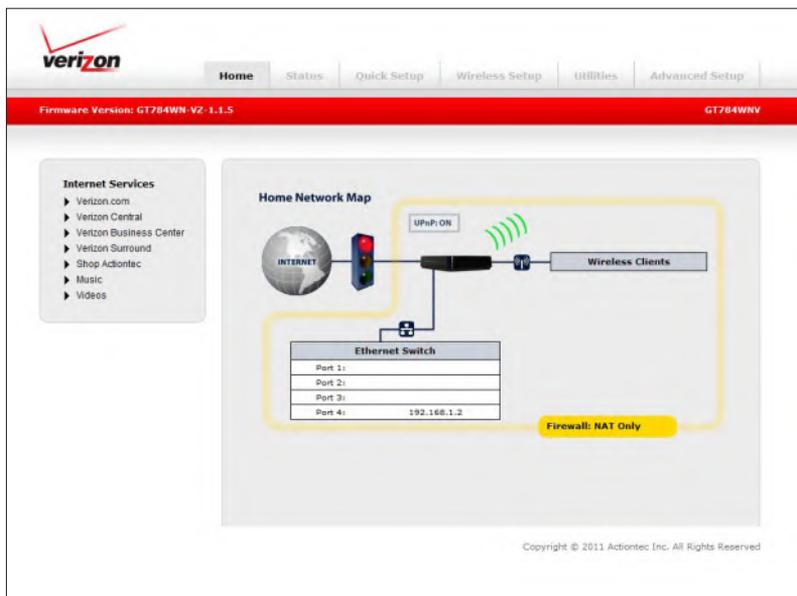
**Click "Apply" to save your settings.**

8. Click **Apply**.

The Gateway will reboot. After it does, you will be returned to the Home Screen.

## 2.2 Home Screen

The Gateway's firmware GUI Home screen is the first screen you will normally see after entering the user name and password. This section provides an overview of the Home screen's options.



### 2.2.1 Main Menu

At the top of the screen is the main menu, which contains the important configuration options accessible from the Home screen. **Status** (see chapter 3) contains information regarding the Gateway's connections and other vital statistics; **Quick Setup** (earlier in this chapter) includes a fast and simple procedure to connect to your ISP; **Wireless Setup** (chapter 4) allows you to modify the Gateway's wireless settings and perform other wireless tasks; **Utilities** (chapter 5) contains such items as Reboot, System Log, and Ping Test; and **Advanced Setup** (chapter 6) allows you to make highly technical changes to the Gateway (we recommend that you only make changes to the Advanced Setup settings only if requested to do so by your ISP, or if you are an experienced networking technician).

#### **2.2.2 Internet Services**

Internet Services is a list of links that will take you to various entertaining or helpful Verizon web sites, including our home page, Verizon Surround, and Verizon Business Center.

#### **2.2.3 Home Network Map**

The Home Network Map provides a graphical representation of the Gateway's network, both wired and wireless. Any clients connected to the Gateway will be shown, as well as the state of the Gateway's Internet connection, and the state of the Gateway's firewall.

# 3

- 3.0** Introduction
- 3.1** Accessing the Status Screens
- 3.2** Status Screens

# Status

**This chapter guides you through the Gateway's Status screens, including the state of its Internet connection, its firewall status, and a series of other parameters concerning the Gateway's operation.**

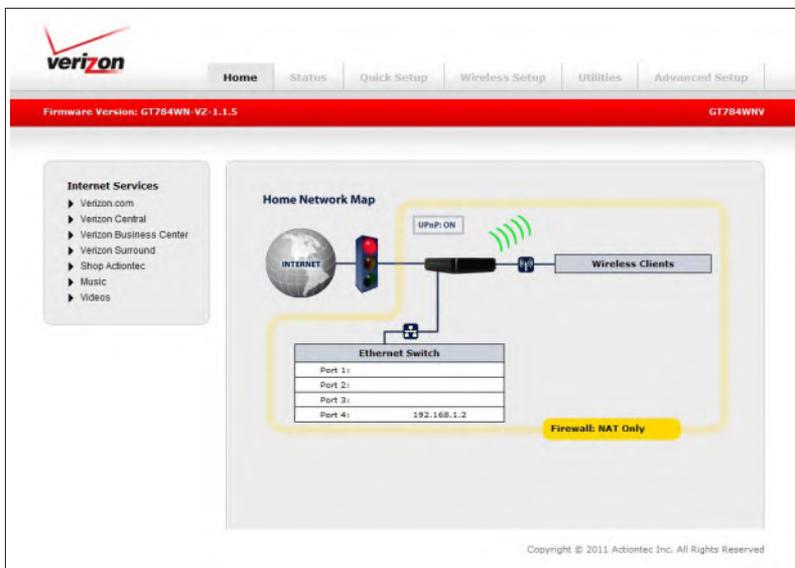
### 3.1 Accessing the Status Screens

To access the Gateway's Status screens:

1. Open a Web browser. In the "Address" text box, type:  
**http://192.168.1.1**  
 then press **Enter** on the keyboard.



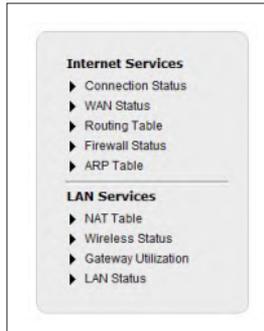
2. After entering your user name and password, the Gateway's Home screen appears. Select **Status** from the row of buttons above the red bar.



3. The first Status screen appears.

### 3.2 Status Screens

On the left hand side on the first Status screen (and every other Status screen) is the Status menu. Select any option from this menu and you will be taken to that Status screen.



### 3.2.1 Connection Status

Selecting “Connection Status” from the Status menu generates the Connection Status screen. This screen displays various general parameters of the Gateway, including the state of the Gateway’s connection, firmware version, model number, and DNS address. The only changes that can be made from the screen are connecting (by clicking **Connect**) or disconnecting (by clicking **Disconnect**) the Gateway from its Internet connection.

## Gateway Status

**Connection Status**

Connection	Status
Broadband:	DISCONNECTED
Internet Service Provider (ISP):	DISCONNECTED

Connect
Disconnect

**Gateway Status**

Gateway Parameter	Status
Firmware Version:	GT784WN-VZ-1.1.5
Model Number:	GT784WNV
Serial Number:	CRCA1081502343
WAN MAC Address:	N/A
Downstream Rate:	0
Upstream Rate:	0
PPP User Name:	Newdsl
ISP Protocol	PPPoE
Encapsulation:	LLC
Gateway IP Address:	N/A
DNS Address #1:	N/A
DNS Address #2:	N/A

### 3.2.2 WAN Status

Selecting “WAN Status” from the Status menu generates the WAN (wide area network) Status screen. This screen displays the parameters of the Gateway’s connection to the Internet via your service provider. No settings can be changed from here; it is for informational purposes only.

The screenshot shows the WAN Status screen with two main sections: Connection Status and PPP Status. The Connection Status section has a table with two columns: Connection and Status. The PPP Status section has a table with two columns: PPP Parameter and Status.

WAN Status	
<b>Connection Status</b>	
<b>Connection</b>	<b>Status</b>
Broadband:	DISCONNECTED
Internet Service Provider:	DISCONNECTED
<b>PPP Status</b>	
<b>PPP Parameter</b>	<b>Status</b>
User Name:	Newdsl
PPP Type:	PPPoE
LCP State:	DOWN
IPCP State:	DOWN
Authentication Failures:	0
Session Time:	0 Days, 00H:00M:00S

This screen provides an overview of several of the Gateway’s connections. At the top is the Gateway’s connection status.

This is a close-up of the Connection Status section from the WAN Status screen. It shows a table with two columns: Connection and Status.

Connection Status	
<b>Connection</b>	<b>Status</b>
Broadband:	DISCONNECTED
Internet Service Provider:	DISCONNECTED

Next is the PPP Status, which displays PPP type, LCP State, and Session Time.

PPP Status	
PPP Parameter	Status
User Name:	Newdsl
PPP Type:	PPPoE
LCP State:	DOWN
IPCP State:	DOWN
Authentication Failures:	0
Session Time:	0 Days, 00H:00M:00S
Packets Sent:	
Packets Received:	

In the Broadband Status section, the VPI, VCI, Upstream Speed, and Retrain Timer, among other parameters, are displayed.

Broadband Status	
Broadband Parameter	Status
VPI:	N/A
VCI:	N/A
Broadband Mode Setting:	MULTIMODE
Broadband Negotiated Mode:	MULTIMODE
Connection Status:	DISCONNECTED
Downstream Speed:	0 Kbps
Upstream Speed:	0 Kbps
Retrains:	0
Retrain Timer:	0 Days, 0H:0M:0S
ATM QoS class:	N/A
Near End CRC Errors Interleave:	0
Near End CRC Errors Fastpath :	N/A
Far End CRC Errors Interleave :	0
Far End CRC Errors Fastpath :	N/A

## 3 Status

### 3.2 Status Screens

At the bottom of the screen, click **Clear** to clear all the values from the WAN Status screen and restart their counts.

Near End RS FEC Fastpath :	N/A
Far End RS FEC Interleave :	0
Far End RS FEC Fastpath :	N/A
30 Minute Near End FEC Interleave :	0
30 Minute Near End FEC Fastpath :	N/A
30 Minute Far End FEC Interleave :	0
30 Minute Far End FEC Fastpath :	N/A
30 Minute Discarded Packets Downstream :	0
30 Minute Discarded Packets Upstream :	0
SNR Downstream :	0 dB
SNR Upstream :	0 dB
Attenuation Downstream :	0 dB
Attenuation Upstream :	0 dB
Power Downstream :	0 dBm
Power Upstream :	0 dBm

**Clear**

#### 3.2.3 Routing Table

Selecting **Routing Table** generates the “Routing Table” screen. This screen displays an overview of the Gateway’s network routes.

Routing Table			
Valid	Destination	Netmask	Gateway
YES	192.168.1.0	255.255.255.0	0.0.0.0

### 3.2.4 Firewall Status

Selecting **Firewall Status** generates the “Firewall Status” screen. This screen displays an overview of the Gateway’s firewall, including port forwarding, DMZ hosting, and NAT parameters.

Firewall Status		
The list below displays all modified firewall settings from the factory default state.		
Firewall Feature	LAN IP	Applied Rule
Applications	N/A	Default Feature Setting
Port Forwarding	N/A	Default Feature Setting
DMZ Hosting	N/A	Default Feature Setting
Firewall Settings	N/A	Default Feature Setting
NAT	N/A	NAT Enabled
UPnP	N/A	No UPnP Rules Defined

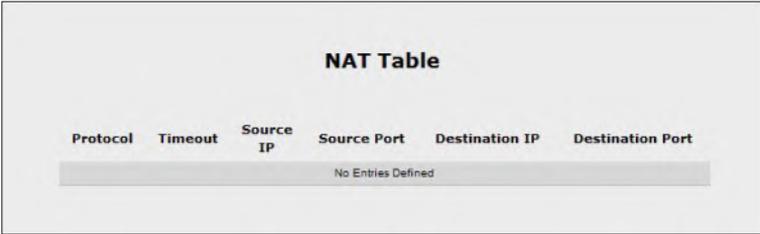
### 3.2.5 ARP Table

Selecting **ARP Table** generates the “ARP Table” screen. This screen displays the Gateway’s ARP (address resolution protocol) table.

ARP Table		
IP Address	MAC Address	Connection Type
192.168.1.2	00:11:25:a3:71:03	LAN Ethernet

### 3.2.6 NAT Table

Selecting **NAT Table** generates the “NAT Table” screen. This screen displays the Gateway’s NAT (network address translation) table.



Protocol	Timeout	Source IP	Source Port	Destination IP	Destination Port
No Entries Defined					

### 3.2.7 Wireless Status

Selecting **Wireless Status** generates the “Wireless Status” screen. This screen displays the Gateway’s wireless network and connection status, including wireless security type, WPS state, and wireless packets sent. The only setting you can change from this screen is the name of the SSID (service set identifier), which operates as the name of the Gateway’s wireless network as seen by other wireless devices.

## Wireless Status

**Wireless**

**Select SSID**

SSID:  ▼

Wireless State	Status
Radio:	ENABLED
SSID:	ENABLED
Security:	ENABLED

**Wireless Settings**

Wireless Parameter	Setting
SSID:	2LFZM
Channel:	1
Wireless Security Type:	WPA2 PSK
SSID Broadcast:	Enabled
MAC Authentication:	Disabled
Wireless Mode:	Compatible Mode (802.11b, 802.11g, and 802.11n)
WPS State:	Disabled
WPS Type:	PBC
WMM QoS:	Enabled
WMM Power Save:	Enabled
Wireless Packets Sent:	0
Wireless Packets Received:	0

### 3.2.8 Gateway Utilization

Selecting **Gateway Utilization** generates the “Gateway Utilization” screen. This screen displays the statistics regarding the Gateway’s memory, sessions, and LAN device session log.

### Gateway Utilization

**Gateway Memory**

Memory	Status
Total Memory:	59MB RAM
Memory Used:	41%
Memory Status:	OK
Recommended Action:	NONE

**Gateway Sessions**

Session	Status
Maximum Number of Sessions:	4096
LAN TCP Sessions:	8
LAN UDP Sessions:	14
Gateway Sessions:	22
Total Open Sessions:	22
Session Status:	OK
Recommended Action:	NONE

**LAN Device Session Log**

Device Name	IP Address	No. Of Open Session
No Entries Defined		

### 3.2.9 LAN Status

Selecting **LAN Status** generates the “LAN Status” screen. This screen displays the Gateway’s LAN (local area network) status, which comprises the devices connected to the Gateway via its 4 Ethernet ports.

LAN Status				
Ethernet				
Ethernet port can be identified by the Yellow port labeling and used with the Yellow cable.				
Ethernet	Port	Connection Speed	Packets Sent	Packets Received
	1	DISCONNECTED	N/A	N/A
	2	DISCONNECTED	N/A	N/A
	3	DISCONNECTED	N/A	N/A
	4	100M	2573	2580

# 4

- 4.0** Introduction
- 4.1** Overview
- 4.2** Accessing the Wireless Setup Screens
- 4.3** Connecting a Wireless Client
- 4.4** Basic Wireless Setup
- 4.5** Wireless Setup Screens

# Wireless Networking

**This chapter explains how to set up the Gateway's wireless network capabilities, including creating a wireless network, enabling wireless security, and connecting a wireless client.**

# 4 Wireless Networking

## 4.1 Overview

### 4.1 Overview

The Gateway provides the user with wireless connectivity over the 802.11b, g, and n standards (the most common wireless standards). 802.11b has a maximum data rate of 11 Mbps, 802.11g 54 Mbps, and 802.11n 144 Mbps. 802.11b, g, and n operate in the 2.4 GHz range

The Gateway's wireless feature is turned on, with wireless security activated, by default. The default security is WPA/WPA2 PSK, with a unique PSK (pre-shared key) already entered. This information is displayed on a sticker located on the bottom of the Gateway.

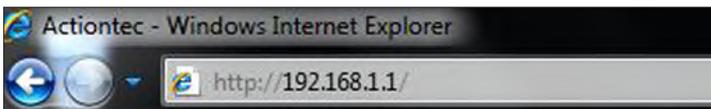
The Router integrates multiple layers of security. These include the IEEE 802.1x port-based authentication protocol, RADIUS client, EAP-MD5, EAP-TLS, EAP-TTLS, EAP-PEAP, Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA/WPA2), and firewall and VPN applications.

### 4.2 Accessing the Wireless Setup Screens

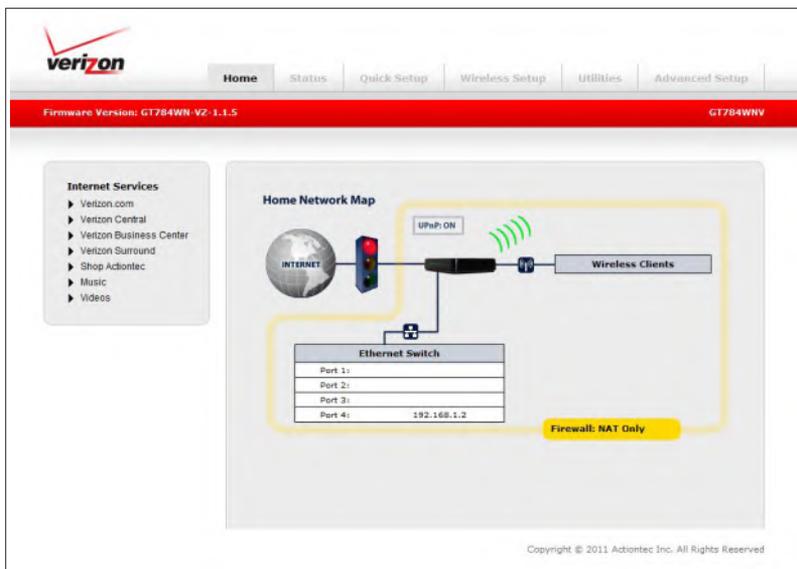
To set up a wireless network using the Gateway, or adjust the wireless network settings, you must access the Wireless Setup screens.

To access the Wireless Setup screens:

1. Open a Web browser. In the Address text box, type:  
**http://192.168.1.1**  
then press **Enter** on the keyboard.



2. After entering your user name and password, the Gateway's Home screen appears. Select **Wireless Setup** from the row of buttons above the red bar.



3. The first Wireless Setup screen appears.

### 4.3 Connecting a Wireless Client

To connect a wireless client to the Gateway:

**Note:** The following procedure assumes the Gateway's default wireless settings are intact. If they have been changed, use the new SSID and wireless security settings.

1. In the wireless client's configuration interface, enter the Gateway's SSID (found on a sticker on the bottom of the Gateway's case) in the appropriate text box or field (this varies depending on the wireless client's manufacturer).
2. Enter the Gateway's WPA key (also found on the sticker on the bottom of the Router's case) in the wireless client's configuration interface.
3. Save the changes and exit the wireless client's configuration interface. The client should now detect and join the Gateway's wireless network. If not, check the wireless client's documentation, or contact its manufacturer.

## 4.4 Basic Wireless Setup

The first Wireless Setup screen is the “Basic Settings” screen. This screen takes you through a basic configuration of the Gateway’s wireless network.

**Note:** These settings are already configured for the Gateway out of the box. Change them only if you want to change the wireless settings.

### Basic Settings

Basic Settings is used to enable or disable the wireless radio or change the network name.

**1. Set the wireless radio state.**

Wireless Radio:  Enable  Disable

**2. Change the network name (optional).**

Network Name:

**3. Change network channel**

Channel provides the ability to change the wireless channel the AP uses to connect with client devices.

Channel:

**4. Wireless WPA/WPA2 Security**

We recommend using WPA/WPA2 Security because it encrypts your wireless traffic.

WPA/WPA2  Off

**5. Select WPA/WPA2 PSK**

**Note:** To create a Pre-Shared Key, enter at least eight (8) alphanumeric characters in the text box above. Make sure that all of your wireless-enabled devices support WPA and know the Pre-Shared Key (PSK) to join the network.

Pre-Shared Key (PSK) for Home Network

**6. Write down the wireless settings. The settings below are required to configure wireless clients.**

Wireless Parameter	Setting
Wireless Radio:	ON
Network Name:	2LFZM
Security Type:	WPA2-Personal
Security Key/Passphrase:	SHLNWCSP5JHP5L7W

**7. Click "Apply" to save your changes.**

## 4 Wireless Networking

### 4.5 Wireless Setup Screens

To set up your Gateway for wireless networking:

1. Click the “Enable” radio button to activate the Gateway’s wireless radio.
2. Enter the name of the wireless network in the “Network Name” text box.
3. Select the channel at which the Gateway’s wireless radio communicates by selecting it from the “Channel” drop-down list.
4. Click the “WPA/WPA2” radio button to activate WPA (Wi-Fi Protected Access) security on the wireless network.
5. Click **Apply** to save changes.
6. Print the wireless settings displayed at the bottom of the screen by clicking **Print**. Other wireless devices wishing to join the Gateway’s wireless network must use these same settings when configuring the device’s wireless networking scheme.

### 4.5 Wireless Setup Screens

On the left hand side on the first Wireless Setup screen (and every other Wireless Setup screen) is the Wireless Settings menu. Select any option from this menu and you will be taken to that Wireless Setup screen.



### 4.5.1 Wireless Security

Selecting “Wireless Security” from the Wireless Setup menu generates the Wireless Security screen. This screen displays various wireless security settings that can be changed for the Gateway’s wireless network. Any or all of these settings can be changed independently of each other.

**Wireless Security**  
Secure your wireless traffic as it transmits through the air.

**1. Select the SSID (Network Name).**

SSID:

**2. Select security type.**

Security Type:

**3. Select encryption type.**

Security Type:

**4. Enter security key/passphrase.**

Use Default Security Key/Passphrase  
Security Key: SHLNWCSP5JHPSLTW

Use Custom Security Key/Passphrase  
Security Key/Passphrase:

**5. Click “Apply” to save your changes.**

### SSID

Select the new SSID (wireless network name) for the wireless network here.

# 4 Wireless Networking

## 4.5 Wireless Setup Screens

### Security Type

Select a security type from the drop-down list. **WPA/WPA2-Personal** is the default wireless network security for the Gateway. You can change the passphrase required for joining the wireless network by clicking the “Use Custom Security Key/Passphrase” radio button, and then entering a new passphrase in the appropriate text box.

Another option is **WEP** (wired equivalent privacy). WEP is a weaker security protocol than WPA/WPA2, but may be needed for older wireless devices that do not support WPA/WPA2. To set up WEP, select it from the “Security Type” drop-down list. You can then use the default key, or enter your own key(s) in the appropriate text boxes. You can also choose between 64-bit and 128-bit security. The final choice is **No Security**. If you select this option, any wireless client within range of the Gateway’s network will be able to join.

### 4.5.2 Radio Setup

Selecting **Radio Setup** from the Wireless Setup menu generates the “Radio Setup” screen. This screen displays various wireless radio settings that can be changed for the Gateway’s wireless network. Any or all of these settings can be changed independently of each other.

**Radio Setup**

Radio Setup provides the ability to customize the wireless radio for your specific network needs.

**1. Select wireless power level.**

Wireless Power Level: 100%

**2. Select mode.**

802.11 Mode: 802.11b or 802.11g or 802.11n Mode

**3. Set the MSDU aggregation state.**

MSDU Aggregation:  Enable  Disable

**4. Set the MPDU aggregation state.**

MPDU Aggregation:  Enable  Disable

**5. Click “Apply” to save your changes.**

Apply

### Power Level

Select a percentage power level from the drop-down list box.

### Mode

Select the mode in which the Gateway's wireless network will operate. You can select between various permutations among 802.11b (slowest), g (faster), and n (fastest). Be aware that selecting a lower speed network mode may slow the entire network down, but that older wireless devices may not support the faster speeds.

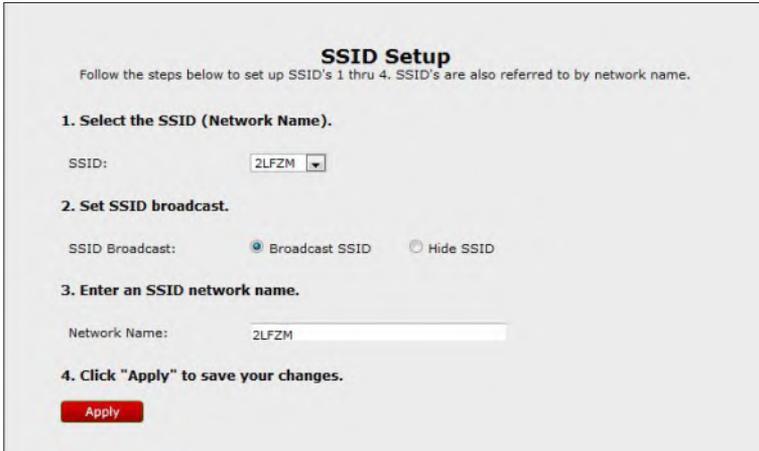
### MSDU, MPDU Aggregation States

Enable or disable these options. We recommend not changing these settings from their default states unless you are an experienced network technician.

After making changes in this screen, click **Apply** to save changes.

### 4.5.3 Multiple SSID

Selecting **Multiple SSID** from the Wireless Setup menu generates the “Multiple SSID” screen. This screen allows you to create multiple discrete wireless networks on the Gateway.



The screenshot shows a web-based configuration interface titled "SSID Setup". Below the title is a sub-header "SSID Setup" and a brief instruction: "Follow the steps below to set up SSID's 1 thru 4. SSID's are also referred to by network name." The interface is divided into four numbered steps:

- 1. Select the SSID (Network Name).** This step includes a label "SSID:" followed by a dropdown menu currently displaying "2LFZM".
- 2. Set SSID broadcast.** This step includes a label "SSID Broadcast:" followed by two radio buttons: "Broadcast SSID" (which is selected) and "Hide SSID".
- 3. Enter an SSID network name.** This step includes a label "Network Name:" followed by a text input field containing "2LFZM".
- 4. Click "Apply" to save your changes.** This step is represented by a red button labeled "Apply".

To create an additional SSID:

1. Select the SSID to change from the “SSID” drop-down list. The screen expands.
2. Enable the new SSID by clicking the “Enable SSID” radio button next to “SSID state.”

3. Select whether to broadcast or hide the new SSID by clicking in the appropriate radio button.
4. Enter the new SSID in the "Network Name" text box.

### SSID Setup

Follow the steps below to set up SSID's 1 thru 4. SSID's are also referred to by network name.

- 1. Select the SSID (Network Name).**  
SSID:
- 2. Set SSID state.**  
SSID State:  Enable SSID  Disable SSID
- 3. Set SSID broadcast.**  
SSID Broadcast:  Broadcast SSID  Hide SSID
- 4. Set the SSID network name.**  
Network Name:
- 5. Set SSID in Separate Subnet.**  
SSID Subnet:  Enable  Disable  
DHCP Start Address:   
DHCP End Address:   
SSID Subnetmask:   
Gateway Address:
- 6. Click "Apply" to save your changes.**

5. If the new SSID needs its own subnet, click in the "SSID Subnet: Enable" radio button, then enter the address parameters for the subnet in the appropriate text boxes below.
6. Repeat steps 1-4 for additional SSID names.
7. Click **Apply** to save changes.

# 4 Wireless Networking

## 4.5 Wireless Setup Screens

### 4.5.4 MAC Authentication

Selecting **MAC Authentication** generates the “MAC Authentication” screen. MAC authentication allows the user to allow or deny access to the Gateway’s wireless network by a particular device’s MAC address.

### Wireless MAC Authentication

Limit access to the Broadband Gateway by using the MAC address of specific wireless devices.

**1. Select the SSID (Network Name).**

SSID:

**2. Set MAC authentication state.**

MAC Authentication:  Enable  Disable

**3. To create a list of devices allowed by MAC Authentication, set to "Allow Device List". To create a list of devices denied by MAC Authentication, set to "Deny Device List".**

Allow Device List      Allows only the devices added in step 4

Deny Device List      Denies only the devices added in step 4

**4. Enter the MAC address of the device.**

Select Device Name:

Manually Add MAC Address:

Sample MAC Address:      00:1d:7d:77:dd:b4

**5. Click "Apply" to save your changes.**

#### MAC Authentication Device List

Device Name	IP Address	MAC Address	Access	Edit
No Entries Defined				

To set up wireless MAC authentication:

1. Select the SSID from the “SSID” drop-down list.
2. Click the “Enable” radio button.

3. Select either "Accept Device List" or "Deny Device List" by clicking the appropriate radio button. Selecting "Accept..." allows only the devices listed here by MAC address to join the Gateway's wireless network. Selecting "Deny..." prevents all listed devices here access to the network.
4. Enter the MAC address of a device in the "Manually Add MAC address" text box.
5. Click **Apply**.
6. Repeat steps 3, 4, and 5 to add more devices to the list.

To remove a MAC address, select it from the "MAC Authentication Device List," then click **Remove**.

### 4.5.5 WPS

Selecting **WPS** generates the "WPS (Wi-Fi Protected Setup)" screen. This screen allows you to activate the Gateway's WPS option, and configure its WPS settings.



To set up WPS:

1. Click the WPS button to activate WPS.
2. Select the WPS type. There are three options here: Push Button (PBC), AP PIN, or End Device Pin.

# 4

## Wireless Networking

### 4.5 Wireless Setup Screens

**Push Button:** click Connect, then press the WPS button on the wireless device within 2 minutes. The device will automatically connect to the Gateway's wireless network.

**AP PIN:** an AP PIN will be generated, which needs to be entered into the device's wireless network interface.

**End Device PIN:** enter the PIN from the end device connected to the wireless network.

#### 4.5.6 WMM

Selecting **WMM** generates the "WMM" screen. This screen displays the Gateway's WMM (Wi-Fi multimedia), a traffic priority option that can keep the Gateway's wireless network running more smoothly. Both options in the screen are enabled by default, and we recommend not changing them unless suggested to do so by your service provider.

**WMM (Wi-Fi Multimedia)**  
WMM is a Quality of Service feature that prioritizes traffic on your wireless network.

**1. Set the WMM state.**

WMM:  Enable  Disable

**2. Set WMM Power Save (optional).**

WMM Power Save:  Enable  Disable

**3. Click "Apply" to save your changes.**

Apply

### 4.5.7 802.1x

Selecting **802.1x** generates the “802.1x” screen. This screen displays the Gateway’s 802.1x options. This setting is for enterprise networks only, and should be accessed by an experienced network technician.

**802.1x**

802.1x allows you to combine wireless security methods using WEP or WPA with the benefits of a radius server.

**1. Select the SSID (Network Name).**

SSID:

**2. Set the 802.1x state.**

802.1x:  Enable  Disable

**3. Enter your Radius Settings.**

Server IP Address:

Port:

Secret:

Group Key Interval:

**4. Click "Apply" to save your changes.**

To set up 802.1x, select an SSID, then enable 802.1x by clicking the “Enable” radio button. Enter the Radius Settings in the appropriate text boxes, then click **Apply** to save changes.

# 5

- 5.0** Introduction
- 5.1** Accessing the Utilities Screens
- 5.2** Utilities Screens

# Utilities

**This chapter explains how to use the Gateway's utilities, including how to restore default settings, upgrade the Gateway's firmware, and perform a ping test.**

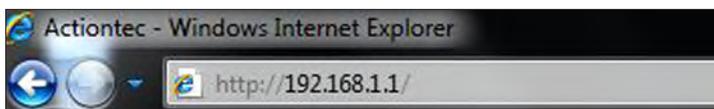
# 5 Utilities

## 5.1 Accessing the Utilities Screens

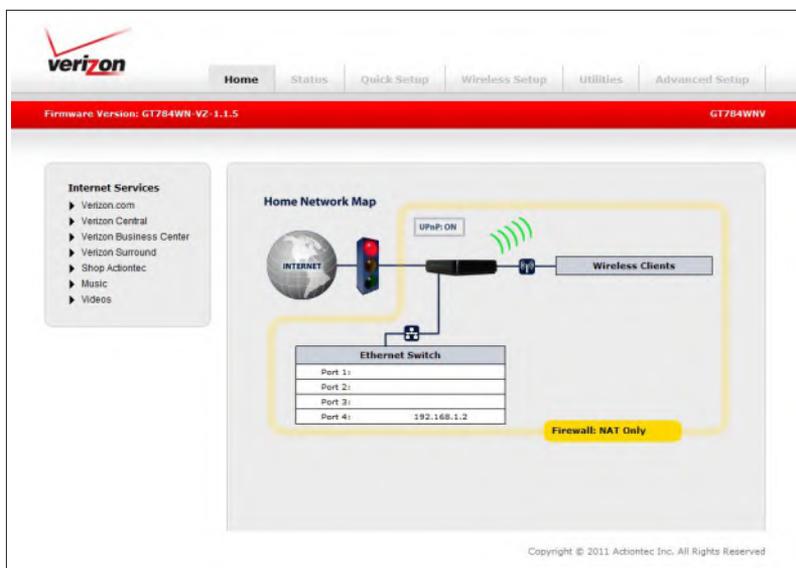
### 5.1 Accessing the Utilities Screens

To access the Utilities screens:

1. Open a Web browser. In the Address text box, type:  
**http://192.168.1.1**  
then press **Enter** on the keyboard.



2. After entering your user name and password, the Gateway's Home screen appears. Select **Utilities** from the row of buttons above the red bar.



3. The first Utilities screen appears.

## 5.2 Utilities Screens

On the left hand side on the first Utilities screen (and every other Utilities screen) is the Utilities menu. Select any option from this menu and you will be taken to that Utilities screen.



### 5.2.1 Reboot Gateway

Selecting **Reboot** from the Utilities menu generates the "Reboot Gateway" screen. Click **Reboot** to reboot the Gateway.



### 5.2.2 Restore Defaults

To restore the Gateway to its factory default settings, select **Restore Default Settings** from the Utilities menu. In this screen, the Gateway's wireless settings, firewall settings, or all settings can be returned to their factory default state. Press the appropriate button to perform the chosen task. During this process, the Gateway's Power light will flash, and the Gateway is disabled until after reboot.



### 5.2.3 Upgrade Firmware

To upgrade the Gateway's firmware, select **Upgrade Firmware** from the Utilities menu. The "Upgrade Firmware" screen appears.

**Upgrade Firmware**

To upgrade the firmware on your Gateway follow the steps below.

**Current Firmware Version:**     **GT784WN-VZ-1.1.5**

**1. Download the firmware file to your PC desktop.**  
The Upgrade file for upgrading firmware may be obtained [here](#)

**2. Select the browse button, then select the downloaded file.**

**3. Select the Upgrade firmware button below to begin the upgrade.**

To upgrade the firmware:

1. Download the firmware file to your computer's desktop by following the link (click **here** in the Upgrade Firmware screen) and then following the instructions.
2. Select the location on the computer's hard drive where the firmware file was downloaded during step 1.
3. Click **Upgrade**.

### 5.2.4 Web Activity Log

The Web Activity Log saves information about the Web sites each computer on the Gateway's network has visited. To access the Web Activity Log, select **Web Activity Log** from the Utilities menu.

**Web Activity Log**

Enable Logging  Disable Logging **Apply**

Date	Time	IP Address	Website
------	------	------------	---------

Auto Refresh Every  Manual Refresh **Refresh**

Enable Web activity logging by clicking the “Enable Logging” radio button, then clicking **Apply**. To refresh the log automatically, click in the “Auto Refresh Every” radio button, then select a time period at which to refresh. To refresh manually, click in the “Manual Refresh” radio button, then click **Refresh**.

## 5.2.5 System Log

The System Log saves information about the Gateway's operation. To access the System Log, select **System Log** from the Utilities menu.

### System Log

Enable Logging
  Disable Logging
 **Apply**

DATE	TIME	SYSTEM	ACTION
01/01/1970	12:00:08 AM	kernel	Ebtables v2.0 registered
01/01/1970	12:00:08 AM	kernel	eb_ttime registered
01/01/1970	12:00:08 AM	kernel	eb_tfos registered
01/01/1970	12:00:08 AM	kernel	eb_twmm_mark registered
01/01/1970	12:00:08 AM	kernel	802.1Q VLAN Support v1.8 Ben Greear
01/01/1970	12:00:08 AM	kernel	All bugs added by David S. Miller
01/01/1970	12:00:08 AM	kernel	VFS: Mounted root (squashfs filesystem) readonly on device 31:0.
01/01/1970	12:00:08 AM	kernel	Freeing unused kernel memory: 124k freed
01/01/1970	12:00:08 AM	kernel	pktflow: module license 'Proprietary' taints kernel.
01/01/1970	12:00:08 AM	kernel	Disabling lock debugging due to kernel taint
01/01/1970	12:00:08 AM	kernel	Initialized foache state
01/01/1970	12:00:08 AM	kernel	Broadcom Packet Flow Cache Char Driver v2.2 Sep 24 2010 18:42:19 Registered<242>
01/01/1970	12:00:08 AM	kernel	Created Proc FS /proc/foache
01/01/1970	12:00:08 AM	kernel	Broadcom Packet Flow Cache registered with netdev chain
01/01/1970	12:00:08 AM	kernel	Broadcom Packet Flow Cache learning via BLOG enabled.
01/01/1970	12:00:08 AM	kernel	Constructed Broadcom Packet Flow Cache v2.2 Sep 24 2010 18:42:19
01/01/1970	12:00:08 AM	kernel	bonxmdg: bonxmdg_init entry
01/01/1970	12:00:08 AM	kernel	adsl: adsl_init entry

Auto Refresh Every
  Manual Refresh
 **Refresh**

Auto Refresh Every
 
**Save Log As**

Enable System logging by clicking the “Enable Logging” radio button, then clicking **Apply**. To refresh the log automatically, click the “Auto Refresh Every” radio button, then select a time period at which to refresh. To refresh manually, click in the “Manual Refresh” radio button, then click **Refresh**. To save the log, click **Save Log As**, and then follow the onscreen instructions.

### 5.2.6 Firewall Log

The Firewall Log saves information about the Gateway's firewall. To access the Firewall Log, select **Firewall Log** from the Utilities menu.

DATE	TIME	SYSTEM	ACTION
<input checked="" type="radio"/> Auto Refresh Every <input type="text" value="10 Sec"/> <input type="button" value="Refresh"/>			
<input type="radio"/> Manual Refresh			
Show Firewall Logs up to <input type="text" value="24 Hours"/>			
<input type="button" value="Save Log As"/> <input type="button" value="Log Settings"/>			

To refresh the log automatically, click in the “Auto Refresh Every” radio button, then select a time period at which to refresh. To refresh manually, click in the “Manual Refresh” radio button, then click **Refresh**. To display firewall log information for certain period time only, select the time period from the “Show Firewall Logs up to” drop-down list. Click **Log Settings** to generate a new screen of Firewall logging parameters that will be displayed in the Firewall Log. Finally, click **Save Log As** to save the Firewall Log to your computer.

## 5.2.7 OAM Ping Test

Selecting **OAM Ping Test** from the Utilities menu generates the “OAM Ping Test” screen, which is used to check whether the Gateway is properly connected to the network. Follow the on-screen instructions to perform the test.

### OAM Ping Test

OAM Ping Test checks the ATM layer connection to the network. During the test an operation, administration and maintenance packet is sent to confirm connectivity of the assigned PVC. If the network is not configured to support OAM ping tests the test below will fail. Ensure the network is configured for OAM ping support before running this test.

<b>VPI</b>	<b>VCI</b>
0	35

1. Select OAM test type below:

Test Type:

2. Select test

**Test**

OAM Ping Results:

OAM Ping Results: N/A

<b>Near End F4 LoopBack Count</b>	<b>Near End F5 LoopBack Count</b>	<b>Far End F4 LoopBack Count</b>	<b>Far End F5 LoopBack Count</b>
0	0	0	0

### 5.2.8 Ping Test

Selecting **Ping Test** from the Utilities menu generates the “Ping Test” screen, which is used by network technicians to check whether the Gateway is properly connected to the Internet. Follow the on-screen instructions to perform the test.

### Ping Test

Test your network connectivity to a specific host using the ping test below.

**1. Insert a URL or IP address below.**

URL or IP:

**2. Select the packet size.**

Packet Size (Bytes):

**3. Select test.**

**Test Status**  
No Test in Progress

**Ping Test Results:**

REPY FROM	BYTES	TIME	TTL
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

**Ping Statistics:**

PACKETS SENT	PACKETS RECIEVED	PACKETS LOSS	ROUND TRIP MIN	ROUND TRIP MAX	ROUND TRIP AVG
N/A	N/A	N/A	N/A	N/A	N/A

## 5.2.9 Traceroute

Selecting **Traceroute** from the Utilities menu generates the “Traceroute” screen, which is used by network technicians to check which routes packets take across the Gateway’s network. Follow the on-screen instructions to perform the test.

### Traceroute

Traceroute is used to determine the route taken by packets across a network.

**1. Insert a URL or IP Address below.**

URL or IP:

**2. Select test.**

Test

**Test Status**  
No Test in Progress

**Traceroute Results:**

Hop	Time 1	Time 2	Time 3	Host / IP Address
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

### 5.2.9 Time Zone

Selecting **Time Zone** from the Utilities menu generates the “Time Zone” screen. Set the proper time zone on the Gateway by clicking the appropriate radio button, then activating or deactivating “Day Light Saving.” Click **Apply** to save changes.

### Time Zone

**1. Please select your Time Zone.**

(GMT - 10:00)	Hawaii	<input type="radio"/>
(GMT - 9:00)	Alaska	<input type="radio"/>
(GMT - 8:00)	Pacific Time	<input checked="" type="radio"/>
(GMT - 7:00)	Mountain Time	<input type="radio"/>
(GMT - 6:00)	Central Time	<input type="radio"/>
(GMT - 5:00)	Eastern Time	<input type="radio"/>

Day Light Saving

**2. Click "Apply" to save your changes.**

### 5.2.10 Configuration File

A configuration file is like a snapshot of the Gateway's settings. Creating a configuration file saves the Gateway's settings, and allows you to reload those settings at a future time, which can be useful if the current configuration file gets corrupted, or some other mishap occurs with the Gateway.

Selecting **Configuration File** from the Utilities menu generates the "Configuration File" screen. Save the current settings of the Gateway by clicking **Save Configuration File**. Load a previously created configuration file by locating the file on your computer's hard drive (click **Browse** to search), and then clicking **Load Configuration File**.

### Configuration File

Use the DSL Gateway's Configuration File feature to view, save, and load configuration files, which are used to backup and restore the DSL Gateway's current configuration

1. To Save the DSL Gateway's current configuration in your hard drive, click the "Save Configuration File" button.

2. To Load a previously saved configuration file, Browse to locate the file, then click "Load Configuration File" to begin the configuration file uploading process.

NOTE: Loading a previously saved configuration file, will overwrite the current configuration of the DSL Gateway.

# 6

- 6.0** Introduction
- 6.1** Accessing the Advanced Settings Screens
- 6.2** Advanced Screens
- 6.3** Blocking and Filtering
- 6.4** DSL Settings
- 6.5** IP Addressing
- 6.6** QoS Settings
- 6.7** Remote
- 6.8** Routing
- 6.9** Security

# Advanced Settings

**This chapter explains how to configure the Gateway's advanced settings, including remote management, DHCP settings, and Quality of Service (QoS).**

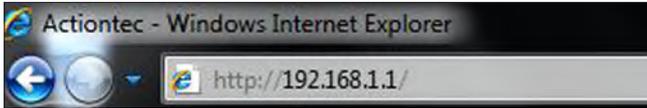
## 6 Advanced Settings

### 6.1 Accessing the Advanced Settings Screens

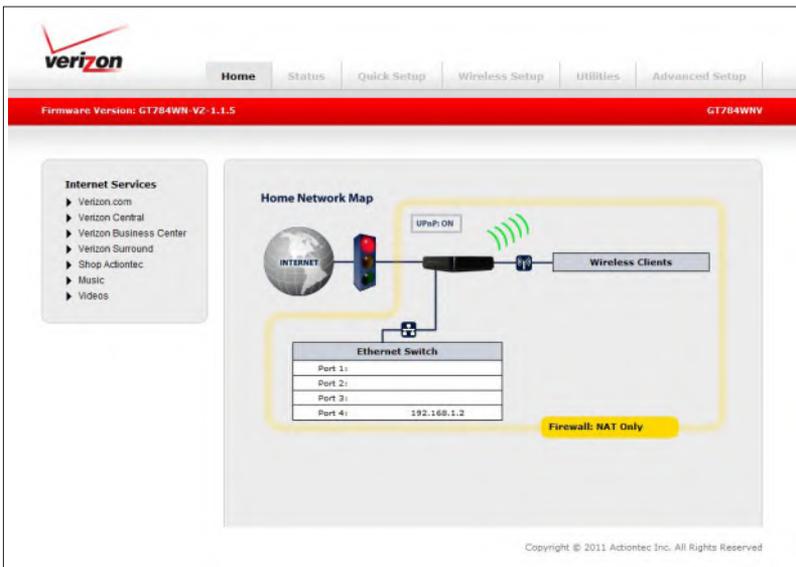
#### 6.1 Accessing the Advanced Settings Screens

To access the Gateway's Advanced Settings screen:

1. Open a Web browser. In the "Address" text box, type:  
**http://192.168.1.1**  
then press **Enter** on the keyboard.



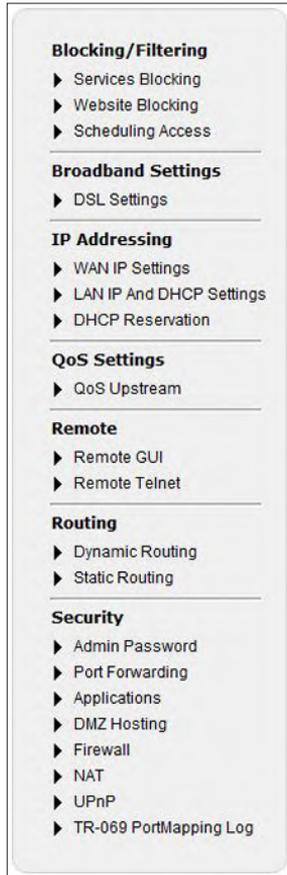
2. The "Home" screen appears. Click **Advanced Setup**.



3. The first "Advanced Setup" screen appears.

## 6.2 Advanced Screens

On the left hand side of the first Advanced screen (and every other Advanced screen) is the Advanced menu. Select any option from this menu and you will be taken to that Advanced screen.



### 6.3 Blocking and Filtering

These three Advanced Settings (Services Blocking, Scheduling, Website Access, and Scheduling Access) allow and deny access to Internet services and websites, to devices on the Gateway's network.

#### 6.3.1 Services Blocking

Services blocking is used to prevent a device on the Gateway's network from accessing particular services available on the Internet, such as receiving email or downloading files from FTP sites. To set up services blocking on a networked device:

1. Click **Services Blocking** from the Advanced Setup menu. The "Services Blocking" screen appears.

**Services Blocking**

Service blocking provides the ability to block specific Internet services per device.

**1. Select Device.**

Select Device:  Enter IP Address:

**2. Select service to block.**

Web  FTP  Newsgroups  E-mail

**3. Click "Apply" to save your changes.**

**Service Blocking List**

DEVICE NAME	IP ADDRESS	Service Blocked	EDIT
No Entries Defined			

2. Select the device on which you wish to block services from the "Select Device" drop-down list, or enter the device's IP address in the "Enter IP Address" text box.

3. Select a service, or multiple services, to block by clicking in the appropriate check box below "Select service to block."
4. Click **Apply** to save changes.
5. Repeat steps 2-4 to block services on another device on the Gateway's network.

The devices that are blocked from accessing services are listed at the bottom of the screen.

### 6.3.2 Website Blocking

Web site blocking is used to prevent all devices on the Gateway's network from accessing particular web sites on the Internet. To set up web site blocking on the Gateway's network:

1. Click **Website Blocking** from the Advanced Setup menu. The "Website Blocking" screen appears.

**Website Blocking**

**Website Blocking**

1. To block a specific website, enter the website address (such as www.abcd.com) in the space below.

Website Address:

2. Click "Apply" when finished to save your changes.

**Apply**

**Blocked Websites**

Website Blocked	EDIT
No Entries Defined	

2. Enter the web site address of the web site to be blocked in the Website Address text box.

# 6 Advanced Settings

## 6.3 Blocking and Filtering

3. Click **Apply** to save changes.
4. Repeat steps 2-3 to block other web sites from being accessed on the Gateway's network.

### 6.3.3 Scheduling Access

Scheduling access is used to allow a device on the Gateway's network to access the Internet at certain times of the day, or certain days of the week, only. During times not configured in the Scheduling Access screen, the device will not be able to access the Internet. To set up scheduling access on a networked device:

1. Click **Scheduling Access** from the Advanced Setup menu. The "Scheduling Access" screen appears.

### Scheduling Access

Scheduling Access provides the ability to set a specific Time and Day to allow a computer on your network to access the Internet.

- 1. Select Device.**  
Select Device:  Enter MAC Address:
- 2. Select the days of the week to allow Internet access.**  
A checked box signifies access allowed.  
 SUN  MON  TUE  WED  THU  FRI  SAT
- 3. Select the time of day range from the pull down menus.**  
From:  To:
- 4. Click "Add" to create device schedule.**

#### Device Access Restriction List

Device Name	MAC Address	Allowed Days	Allowed Time	Remove
No Entries Defined				

2. Select the device on which you want to schedule Internet access from the “Select Device” drop-down list, or enter the device’s MAC address in the “Enter MAC Address” text box.
3. Select the days of the week during which you want to allow Internet access by clicking in the appropriate check box below “Select the days of the week...”.
4. If applicable, set the time range during which you want to allow Internet access. This time range will apply only to the days activated in step 3.
5. Click **Add** to create a schedule access.
6. Repeat steps 2-5 to create multiple access schedules for other devices on the Gateway’s network.

The devices that are configured with an access schedule are listed at the bottom of the screen.

## 6.4 DSL Settings

Selecting **DSL Settings** from the Advanced menu generates the “DSL Settings” screen. This screen is used to configure settings related to the connection between the service provider and the Gateway. Do not change these settings unless you are an experienced network technician.

### DSL Settings

DSL settings change the Gateway connection parameters to work with your selected service provider.

**1. Set the DSL information below.**

Line Mode:

VPI:  (0-255)

VCI:  (32-65535)

QoS:

PCR:  SCR:  MBS:  CDVT:

Encapsulation  LLC(default)  VCMUX

**2. Click "Apply" to save your changes.**

# 6 Advanced Settings

## 6.5 IP Addressing

### 6.5 IP Addressing

These three Advanced Settings (WAN IP settings, LAN IP and DHCP settings, and DHCP Reservation) relate to the network connections of the Gateway.

#### 6.5.1 WAN IP Settings

Selecting **WAN IP Settings** from the Advanced menu generates the “WAN IP Settings” screen.

### WAN IP Settings

WAN IP Addressing sets the protocol used by your ISP for Internet access.

**1. Select the ISP protocol below.**

PPPoE

RFC 1483 Transparent Bridging

RFC 1483 via DHCP

RFC 1483 via Static IP

**2. Enter your PPP username and password.**

PPP Username:

PPP Password:

My ISP does not require a username and password.

**3. Select the IP Type.**

Dynamic IP-DHCP(Default)

Single Static IP Address

Single Static IP

Multiple Static IP Addresses

Gateway Address

Subnet Mask

Enable Public/Private IP Addressing

**4. Select the DNS type.**

Dynamic DNS Addresses(Default)

Static DNS Addresses

Primary DNS:

Secondary DNS:

**5. Configure IGMP Proxy.**

Enable

Disable

**6. Click "Apply" to save your changes.**

WAN IP Address allows manual set up of the WAN IP address of the Gateway, which is the Gateway's connection to the service provider and the Internet. Do not make changes to this screen unless instructed to do so by your service provider. Making changes to the settings in this screen could cause problems with the Gateway's connection to the service provider.

**Note:** Some DSL providers use PPPoE to establish communication with an end user. Other types of broadband Internet connections (such as fixed point wireless) may use either DHCP or static IP address. If unsure which connection is present, check with Verizon before continuing.

To make changes to WAN IP Settings:

1. Select the ISP protocol, depending on the type of connection the ISP uses. Consult the service provider for more information.
2. If using PPPoE was selected in step 1, enter the user name and password in the appropriate text boxes. If one of the RFC connections was selected, enter the information requested under Step 2.
3. Select the IP type. If "Single Static IP Address" was selected, enter the IP address in the "Single Static IP" text box. If "Multiple Static IP Addresses" was selected, enter the designated gateway IP address and subnet mask address in the "Gateway Address" and "Subnet Mask" text boxes, respectively.
4. Enable Public/Private IP Addressing. This feature is used in conjunction with Multiple Static IP Addresses. When selected, the Gateway uses NAT for private IP addressing for the LAN, allowing both public and private IP addressing to be configured to the LAN simultaneously, while the DHCP server is reserved for private IP addressing. All computers using public IP addresses must have the public IP addresses statically assigned.
5. Select the DNS type. If static DNS address was selected, enter the primary DNS address and, optionally, the secondary DNS address in the appropriate text boxes.
6. Enable or disable the IGMP proxy by clicking the appropriate radio button below step 5.

When finished, click **Apply** to save changes.

# 6 Advanced Settings

## 6.5 IP Addressing

### 6.5.2 LAN IP and DHCP Settings

Selecting **LAN IP and DHCP Settings** from the Advanced menu generates the “LAN IP and DHCP Settings” screen.

### LAN IP And DHCP Settings

We recommend that you keep the current default LAN IP Address of the Broadband Gateway. Any changes made to the LAN IP Address will reset some of the other settings on the Gateway. Do not proceed without understanding the technical impact of changing these settings.

**1. To make changes, enter the new IP Address or Subnet Mask of your Broadband Gateway below.**

Gateway IP Address:

Gateway Subnet Mask:

**2. Click "Apply and Reboot" to save your changes.**

Your Gateway will automatically assign an IP Address to each device in your network.

**1. Set the DHCP server state.**

DHCP Server:  Enable  Disable

**2. Set the IP addressing values.**

Beginning IP Address:

Ending IP Address:

Subnet Mask:

**3. Set the DHCP server lease time.**

DHCP Server Lease Time:  Day(s)  Hours  Minutes

**4. Set the DNS values.**

DNS:  Dynamic  Static

DNS Server 1:

DNS Server 2:

**5. Click "Apply" to save your changes.**

LAN IP and DHCP Settings allows manual set up of the LAN IP address of the Gateway, which handles the Gateway's local wired and wireless networks. Do not make changes to this screen unless you are an experienced network technician. Making changes to the settings in this screen could cause problems with the Gateway's network.

### LAN Settings

To configure LAN settings, enter the new IP address and subnet mask of the Gateway in the appropriate text boxes. These settings will establish the Gateway's new LAN network. Click **Apply and Reboot** to save changes.

### DHCP Server

We strongly recommend leaving the DHCP Server option enabled. To set up the DHCP server:

1. Ensure the DHCP server is enabled by clicking the appropriate radio button.
2. Enter the beginning and ending IP addresses. These IP addresses define the IP address range of the Gateway. If the default values are left intact, the Gateway supplies a unique IP address between 192.168.1.2 and 192.168.1.254 to each computer on the network. Note that the first three groups of numbers of the addresses are identical; this means they are on the same subnet. The IP address of the Gateway must be on the same subnet as the IP address range it generates. For instance, if the Gateway's IP address is changed to 10.33.222.1, set the beginning IP address to 10.33.222.2, and the ending IP address to 10.33.222.254
3. Enter the IP address of the DHCP server's subnet mask.
4. Configure the DHCP server lease time. This time period represents the amount of time (in seconds) the DHCP server holds onto a specific IP address.
5. Set the DNS values. Select the type of DNS (dynamic or static), then enter the DNS server addresses provided by the service provider. If no DNS server information is provided, leave the text box empty.
6. Click **Apply** to save changes.

## 6 Advanced Settings

### 6.5 IP Addressing

#### 6.5.3 DHCP Reservation

Selecting **DHCP Reservation** from the Advanced menu generates the “DHCP Reservation” screen. Here, you can reserve a DHCP address for a particular device on your network. To do this:

1. Select a MAC address from the “Select MAC address” drop-down list. If “Manually enter MAC” is selected, enter the MAC address in the appropriate text box.

### DHCP Reservation

DHCP reservation leases a permanent DHCP allocated address to a client.

**1. Select MAC Address, or manually enter a MAC address.**

Select MAC Address:

Manually Add MAC Address:

**2. Select an IP address to associate with a MAC address.**

IP Address:

**3. Click “Apply” to save your settings.**

#### DHCP Reservation List

Device Name	MAC Address	IP Address	EDIT
-------------	-------------	------------	------

2. Select an IP address from the “IP Address” drop-down list.

3. Click **Apply** to save changes.

The “DHCP Reservation List” displays all reserved DHCP addresses.

## 6.6 QoS Settings

QoS (Quality of Service) allows you to prioritize certain data traffic (such as VoIP) over others. Selecting **QoS Upstream** from the Advanced menu generates the “IP QoS Upstream Settings” screen.

### IP QoS Upstream Settings

Enabling the IP QoS feature, allows for the prioritization of certain types of traffic (such as VoIP) before standard data traffic. Traffic shaping your network with QoS can also increase application performance and prevent your network from becoming overloaded. Follow steps below to setup IP QoS.

- 1. Check the boxes below to enable QoS and to enable QoS in Trusted Mode. Then, name the Rule.**  
Upstream QoS:  Enable  Disable
- 2. Select Default QoS or Custom QoS Below.**  
QoS Type:  Default QoS  Custom QoS
- 3. Click “Apply” to save your settings.**

To enable QoS, click the “Enable” radio button. Click the “Default QoS” radio button to have the Gateway operate with default QoS settings, then click **Apply**.

# 6 Advanced Settings

## 6.6 QoS Settings

To configure custom QoS settings:

1. Click the "Custom QoS" radio button. The Custom QoS settings appear.

### IP QoS Upstream Settings

Enabling the IP QoS feature, allows for the prioritization of certain types of traffic (such as VoIP) before standard data traffic. Traffic shaping your network with QoS can also increase application performance and prevent your network from becoming overloaded. Follow steps below to setup IP QoS.

**1. Check the boxes below to enable QoS and to enable QoS in Trusted Mode. Then, name the Rule.**

Upstream QoS:  Enable  Disable

**2. Select Default QoS or Custom QoS Below.**

QoS Type:  Default QoS  Custom QoS

**3. Name the custom rule below. Then, set the desired priority and reserved bandwidth for the applications.**

Name:

Queue Priority:

Reserved Bandwidth:

Total available bandwidth: 0 kbps

**4. Select the Protocol and TOS BIT value.**

Protocol:

TOS BIT Value:

**5. Select Source IP information.**

Source:

Source IP:

Netmask:

Port Range:  to

**6. Select Destination IP information.**

IP:

Netmask:

Port Range:  to

**7. Click "Apply" to save your settings.**

**QoS Rule List:**

NAME	Priority	Protocol	Source IP/MAC Range	Source Port Range	Dest IP Range	Dest Port Range	Edit
No Entries Defined							

2. Enter the name of the rule in the "Name" text box.
3. Select a queue priority from the "Queue Priority" drop-down list box (High, Medium, Low).
4. Enter the amount of bandwidth to reserve in the "Reserve Bandwidth" text box. The amount of bandwidth available is shown below the text box.
5. Select the type of protocol from the "Protocol" drop-down list.
6. Select the TOS bit value from the "TOS Bit Value" drop-down list.
7. Enter the source IP information in the appropriate text boxes below "5. Select Source IP Information."
8. Enter the destination IP information in the appropriate text boxes below "6. Select Destination IP Information."
9. Click **Apply** to save changes.

# 6 Advanced Settings

## 6.7 Remote

### 6.7 Remote

These two settings allow you to set up remote access to the Gateway. Remote GUI configures the Gateway to be accessed via a web browser, while Remote Telnet allows the Gateway to be accessed via telnet.

#### 6.7.1 Remote GUI

Selecting **Remote GUI** from the Advanced menu generates the “Remote GUI” screen. Remote GUI allows access to the Gateway through the Internet via the web browser another computer. To set up:

1. Activate Remote GUI by clicking the “Enable” radio button.

### Remote GUI

If you want to access the GUI of your Broadband Gateway remotely, please turn Remote GUI On. In order to enable remote GUI an Admin Password must be set below.

You can change the default remote GUI port below to allow for remote access. To access your Gateway remotely you will need to use http:// followed by the Gateway IP and access port.

NOTE: The password must be at least 6 characters long and include at least one alpha numeric character. The password cannot begin with characters such as '!@#%&^\*’.

- 1. Set the remote GUI state below.**  
Remote GUI:  Enable  Disable
- 2. Enter the admin password below.**  
Username:   
Admin Password:   
Re-Type Admin Password:
- 3. Set the remote management port.**  
Remote Management Port:
- 4. Set the remote management timeout.**  
Disable Remote Management After:  ▼
- 5. Click "Apply" to save changes.**

2. Enter the admin password in the appropriate text boxes.
3. If applicable, enter the remote management port in the “Remote Management Port” text box.

4. Set how long before remote management access times out from the “Disable Remote Management After” drop-down list.

5. Click **Apply** to save changes.

To access the Gateway from a computer outside of the network, open a Web browser and enter the Gateway’s WAN IP address in the address text box. The Gateway’s Home screen (or a password prompt, if a password has been set) appears in the browser window.

## 6.7.2 Remote Telnet

1. Activate Remote Telnet by clicking the “Enable” radio button.

### Remote Telnet

Remote Telnet provides access to the Gateway remotely via telnet.

NOTE: The password must be at least 6 characters long and include at least one alpha numeric character. The password cannot begin with characters such as "?!@#\$\$%^&\*".

1. Set the remote telnet state below.  
Remote Telnet:  Enable  Disable
2. Enter the telnet password below.  
Telnet Username: admin  
Telnet Password:   
Re-Type Telnet Password:
3. Set the idle disconnect time below.  
Idle Disconnect After:
4. Click “Apply” to save changes.

2. Enter the admin password in the appropriate text boxes.
3. Set how long before remote telnet access times out from the “Idle Disconnect After” drop-down list.
4. Click **Apply** to save change.

To access the Gateway from a computer using telnet (need more info).

# 6 Advanced Settings

## 6.8 Routing

### 6.8 Routing

These two settings involve the Gateway's routing abilities.

#### 6.8.1 Dynamic Routing

Selecting **Dynamic Routing** in the Advanced menu generates the "Dynamic Routing" screen.

### Dynamic Routing (RIP)

If a Gateway is set up behind the Gateway in the network, consult the documentation that came with the Gateway to see what kind of Dynamic Routing is required.

**1. Select the dynamic routing type.**

Version 1

Version 2

Off

**2. Click "Apply" to save your changes.**

If another device is set up behind the Gateway in the network configuration, consult the documentation that came with the other device to see what kind of Dynamic Routing is required, then select the required option.

When finished in this screen, click **Apply** to activate any changes made.

## 6.8.2 Static Routing

Selecting **Static Routing** in the Advanced menu generates the “Static Routing” screen. To configure:

1. Enter the Static Route destination and subnet mask addresses in their respective text boxes.

### Static Routing

Enter the Static Routes in the spaces below.

- 1. Set the destination address of the route.**  
Destination IP:
- 2. Set the subnetmask.**  
Subnetmask:
- 3. Set the gateway address. If the Gateway address is local to the Gateway, this field can be empty.**  
Gateway IP:
- 4. Set the Wan Interface.**  
Wan Interface:  ▼
- 5. Click "Apply" to save your settings.**

Destination IP	Subnet Mask	Gateway IP	Interface	EDIT
No Entries Defined				

2. If applicable, enter the gateway address.
3. Select a WAN interface from the “WAN Interface” drop-down list.

# 6 Advanced Settings

## 6.9 Security

4. Click **Apply** to save change.

The created static route will appear in the “Static Routing Table.” To remove an address, highlight it by clicking on it in the Static Routing Table, then click **Remove**.

## 6.9 Security

These options allow you to configure the security settings on the Gateway.

### 6.9.1 Admin Password

Selecting **Admin Password** generates the “Admin Password” screen. Change the password to access the Gateway’s GUI here. Click **Apply** to save changes.

### Admin Password

An admin password prevents outsiders from accessing the Gateway’s firmware settings. After creating a password, you will need to enter them every time you access the Gateway’s firmware GUI.

NOTE: The password must be at least 6 characters long and include at least one alpha numeric character. The password cannot begin with characters such as '!@#%&^\*’.

**1. Enter the admin password.**

Admin Username:      admin

Admin Password:     

Re-Type Admin Password:     

**2. Click “Apply” to save your changes.**

## 6.9.2 Port Forwarding

Selecting **Port Forwarding** generates the “Port Forwarding” screen. Activating Port Forwarding allows the network to be exposed to the Internet in certain limited and controlled ways, enabling some applications to work from the local network (game, voice, and chat applications, for example), as well as allowing Internet access to servers in the local network.

### Port Forwarding

Enter ports or port ranges required to forward Internet applications to a LAN device below.

**1. Set the LAN port and IP information.**

Starting Port:

Ending Port:

Protocol:

LAN IP Address:

**2. Set the remote port and IP information. (Optional)**

Starting Port:

Ending Port:

Set Remote IP Address:  (0.0.0.0 will use any IP Address)

**3. Click "Apply" to save your settings.**

#### Applied Port Forwarding Rules

START/ END PORT	PROTOCOL	LAN IP ADDRESS	START/ END PORT REMOTE	REMOTE IP ADDRESS	EDIT
No Entries Defined					

To set up port forwarding:

1. Enter the LAN starting port in the “Starting Port” text box.
2. Enter the LAN ending port in the “Ending Port” text box.
3. Select a protocol from the “Protocol” drop-down list box.

## 6 Advanced Settings

### 6.9 Security

4. Enter the LAN IP address in the “LAN IP Address” text box.
5. If applicable, enter the remote port and IP information.
6. Click **Apply** to save changes.

The list of forwarded ports will be displayed in the “Applied Port Forwarding Rules” table at the bottom of the screen.

#### 6.9.3 Applications

Selecting **Applications** generates the “Applications” screen. This screen is an extension of the port forwarding screen, allowing you to quickly and easily set up commonly-used applications that require port forwarding.

### Applications

Applications forwards ports to the selected LAN device by application name.

- 1. Select Device.**  
Select Device:  Enter IP Address:
- 2. Select the application category, then the application to forward.**  
Application Category:   
Applications:
- 3. Click "Apply" to save changes.**

**Forwarded Applications List:**

DEVICE NAME	IP ADDRESS	APPLICATION FORWARDED	EDIT
No Entries Defined			

To set up a forwarded application:

1. Select a networked device by selecting it from “Select Device” drop-down list, or enter its IP address in the “Enter IP Address” text box.
2. Select the application’s category from the “Application Category” drop-down list, or select **All** to see all the applications provided.
3. Select the application from the “Applications” drop-down list.
4. If desired, view the rule by clicking the **View Rule** button. A new screen appears, listing the application’s port forwarding details. Click **Back** to return to the Applications screen.
5. Click **Apply** to save changes.
6. Repeat steps 1-5 to configure additional applications.

The list of forwarded applications will be displayed in the “Forwarded Applications List” at the bottom of the screen.

# 6 Advanced Settings

## 6.9 Security

### 6.9.4 DMZ Hosting

Selecting **DMZ Hosting** generates the “DMZ Hosting” screen. The DMZ (De-Militarized Zone) Hosting feature allows a device on the network to operate outside the firewall to use an Internet service that otherwise would be blocked, or to expose a networked device to all services without restriction or security.

**DMZ Hosting**

DMZ hosting enables a LAN device to use the gateway WAN IP address as its own. DMZ places the LAN device outside the firewall.

**WARNING!** Using a device in DMZ mode creates a security risk by opening the computer to outside intrusion.

**1. Set the DMZ state.**

DMZ:  Enable  Disable

**2. Select a Device.**

Select Device:  Enter IP Address:

**3. Click "Apply" to save your changes.**

**Apply**

**DMZ Hosted Device**

DEVICE NAME	IP ADDRESS	EDIT
No Entries Defined		

**Caution!** A DMZ host is not protected by the firewall and may be vulnerable to attack. Designating a DMZ host may also put other computers in the local network at risk. When designating a DMZ host, consider the security implications and protect it if necessary.

To designate a local computer as a DMZ host:

1. Click the “Enable” radio button to activate DMZ hosting.
2. Select a networked device by selecting it from “Select Device” drop-down list, or enter its IP address in the “Enter IP Address” text box.

3. Click **Apply** to save changes.

The DMZ host will be displayed in the DMZ Hosted Device table at the bottom of the screen. Only one device at a time on the Gateway's network can be designated as a DMZ host.

When finished in this screen, click **Apply** to activate any changes made.

### 6.9.5 Firewall

Selecting **Firewall** generates the "Firewall" screen. Set the firewall security level from this screen. Set the level (options: NAT Only, Low, Medium, or High) from the onscreen options, then click Apply to save changes. If Low, Medium, or High is selected a table of enabled/disabled services appears.

### Firewall

The default firewall security level is set to "Off". Activating the firewall is optional. When the firewall is activated, security is enhanced, but some network functionality will be lost.

**1. Select IP addressing type.**

Apply rule to:

**2. Set your Firewall Security Level.**

NAT Only  
 Low  
 Medium  
 High

**3. Click "Apply" to save your changes.**

# 6 Advanced Settings

## 6.9 Security

### 6.9.6 NAT

Selecting **NAT** generates the “NAT” screen. NAT (network address translation) translates the IP addresses of data as it travels across the Gateway. We recommend leaving NAT enabled (its default state).

### NAT

Warning: Please do not disable NAT unless instructed to do so by your ISP. Turning off NAT will open your Broadband Gateway to outside intrusion, creating a security risk.

NOTE: If using unnumbered mode NAT does not need to be disabled, if you would like to Allocate your Static IP's via the DHCP server while VIP is in use.

**1. Set the NAT state.**

NAT:  Enable  Disable

**2. Click "Apply" to save your changes.**

### 6.9.7 UPnP

Selecting **UPnP** generates the “UPnP” screen. UPnP (Universal Plug and Play) allows devices on the Gateway’s network to locate and communicate with each other without additional configurations. We recommend leaving UPnP enabled (its default state).

### UPnP

Follow the steps below to enable or disable UPnP (Universal Plug and Play).

**1. Set the UPnP state.**

UPnP:  Enable  Disable

**2. Click "Apply" to save your changes.**

### 6.9.8 TR-069 Port Mapping Log

Selecting **TR-069 Port Mapping Log** generates the “TR-069 Port Mapping Log” screen.

**TR-069 PortMapping Log**

This screen displays a log that lists port mapping changes made remotely by the service provider via the TR-069 protocol. This log is for information only, and should be consulted only if requested by the service provider or support technicians. No changes to the Gateway can be made from this screen.

ID Description Enabled RemoteHost ExternalPort InternalPort Protocol InternalClient

# A

- A.0** Introduction
- A.1** General
- A.2** Wireless Operatio
- A.3** LED Indicators
- A.4** Environmental

# Specifications

**This appendix lists the Gateway's specifications, including standards, cabling types, and environmental parameters.**

**Note that the specifications listed in this appendix are subject to change without notice.**

## A.1 General

### Model Number

GT784WNV (Wireless DSL Gateway)

### Standards

IEEE 802.3x, 802.3u

IEEE 802.11b, g, n (wireless)

G.dmt

G.lite

t1.413

RFC 1483, 2364, 2516

### Protocol

**LAN:** CSMA/CD

**WAN:** PPP, DHCP, Static IP

### WAN

Full-rate ADSL2+ interface

### LAN

10/100 Rj-45 switched port

USB host port

### Speed

#### Wired:

LAN Ethernet (10/100/1000 Mbps auto-sensing)

#### Wireless:

802.11b - up to 11 Mbps

802.11g - up to 54 Mbps

802.11n - up to 144 Mbps

### Cabling Type

**Ethernet 10BaseT:** UTP/STP Category 3 or 5

**Ethernet100BaseTX:** UTP/STP Category 5

**USB**

**Certifications**

FCC Class B, FCC Class C (part 15, 68)  
CE Mark Commercial  
UL

**A.2 Wireless Operation**

**Indoors/Outdoors**

Up to 144 Mbps

**Topology**

Star (Ethernet)

**A.3 LED Indicators**

Power, DSL, Internet, Ethernet (4), Wireless

**A.4 Environmental**

**Power**

External, 12V DC, 600mA

**Operating Temperature**

0° C to 40° C (32° F to 104° F)

**Storage Temperature**

-20° C to 70° C (-4° F to 158° F)

**Operating Humidity**

8% to 93% (non-condensing)

**Storage Humidity**

5% to 100% (non-condensing)

# B

- B.0** Introduction
- B.1** Overview
- B.2** Comparing DSL Service with a Dial-Up Modem
- B.3** Gateway Security
- B.4** Computer Security
- B.5** Electronic Security

# Computer Security

**This appendix covers the basics of  
computer, gateway, and electronic security.**

## **B.1 Overview**

The Internet is a giant network of computers located all over the world. When a computer is connected to the Internet, it can exchange information with any other computer on the Internet. This allows a computer user to send e-mail, surf the World Wide Web, download files, and buy products and services online, but it also makes the computer vulnerable to attack from persons intent on doing malicious mischief, or worse. Unless access to the computer is controlled, someone on the Internet can access the information on the computer and damage or destroy that information.

We recommend securing your computer from unwanted intrusion. Security is ultimately the end user's responsibility. Please secure your computer, and don't be a victim.

## **B.2 Comparing DSL Service with a Dial-Up Modem**

With a dial-up modem, a computer user makes an Internet connection by dialing a telephone number, surfs the Internet for a period of time, and then disconnects the dial-up modem. No one on the Internet can access a computer that is not connected to the Internet.

Unlike a dial-up modem, DSL service is "always connected." The connection is always available – there is no need to dial a phone number to access the Internet. The computer can be connected to the Internet all the time.

With both types of Internet connections, access to the computer must be controlled to make sure someone on the Internet doesn't access the information on the computer. The longer the computer is connected to the Internet, the easier it is for someone on the Internet to find the computer and attempt to access it without permission. DSL service also provides fast Internet connections. This not only improves Internet performance, it also improves Internet performance for anyone attempting to access the computer.

## **B.3 Gateway Security**

If connecting to the ISP through Point-to-Point Protocol (PPP), be sure to provide the Gateway an administrative password. If a password is not set, someone on the Internet can access the Gateway and change its configuration or steal your PPP login name and password. For instructions on setting the password, see the "Advanced Setup chapter.

If connecting to the ISP through bridging mode, the Gateway should be safe from unwarranted and illegal intrusion.

## **B.4 Computer Security**

To protect the valuable information on the computer, review the following topics. These topics cover software programs and operating system features affecting the security of the computer's data.

### **B.4.1 Anti-Virus Programs**

The computer should have an anti-virus program, and the virus definitions should be updated on a regular basis – at least once a month.

### **B.4.2 E-Mail Attachments**

Never run a program received as an attachment to an e-mail message unless the program is known to be safe. A program from an unknown source can delete all the files on the computer's hard disk or install a "backdoor" software application that lets people on the Internet gain access to the computer without permission.

### **B.4.3 Internet Browsers**

Always exit the Internet browser (Internet Explorer or Netscape Navigator, for example). Never "minimize" the browser or leave it open in the background. Breaking into a computer is easier when an Internet browser is running.

### **B.4.4 Network Applications**

Network applications (such as software programs) that allow remote access to the computer also make the computer vulnerable to access from other people on the Internet. If using a network application that allows remote access, consider installing a firewall.

## **B.5 Electronic Security**

The following are two methods to secure your computer electronically.

### **B.5.1 Network Address Translation**

If a local area network and a PPP connection to the ISP using dynamic IP addresses through a DHCP server are being used, Network Address Translation (NAT) is being used. NAT provides a very basic level of security.

### **B.5.2 Firewalls**

The safest way to prevent attacks on the computer is through a firewall – a hardware device or software program that protects the computer from unauthorized access by controlling who can access your computer and by monitoring the transmissions between the computer and the Internet

Windows XP has a built-in firewall. For more information, select **Help and Support Center** from the Help menu. Search for “Internet Connection Firewall.”

If Windows 98 SE, Me, NT 4.0, or 2000 is running on the computer, consider installing a firewall. Hardware and software firewall products are changing rapidly as more homes and businesses establish high-speed digital connections between their



- C.0** Introduction
- C.1** Glossary

# Glossary

**This appendix contains a list of terms and definitions concerning the gateway and its technologies.**

## **C.1 Glossary**

### **Access Point**

A device that allows wireless clients to connect to one another. An access point can also act as a bridge between wireless clients and a “wired” network, such as an Ethernet network. Wireless clients can be moved anywhere within the coverage area of the access point and remain connected to the network. If connected to an Ethernet network, the access point monitors Ethernet traffic and forwards appropriate Ethernet messages to the wireless network, while also monitoring wireless traffic and forwarding wireless client messages to the Ethernet network.

### **ATM (Asynchronous Transfer Mode)**

A networking technology based on transferring data in fixed-size packets

### **Client**

A desktop or mobile computer connected to a network.

### **DHCP (Dynamic Host Configuration Protocol)**

A protocol designed to automatically assign an IP address to every computer on your network.

### **DNS (Domain Name System) Server Address**

Allows Internet host computers to have a domain name and one or more IP addresses. A DNS server keeps a database of host computers and their respective domain names and IP addresses so that when a user enters a domain name into a Web browser, the user is sent to the proper IP address. The DNS server address used by computers on the home network corresponds to the location of the DNS server the ISP has assigned.

### **DSL (Digital Subscriber Line) Modem**

A modem that uses existing phone lines to transmit data at high speeds.

### Encryption

A method to allow wireless data transmissions a level of security.

### ESSID (Extended Service Set Identifier)

A unique identifier for a wireless network. Also known as “SSID.”

### Ethernet Network

A standard wired networking configuration using cables and hubs.

### Firewall

A method preventing users outside the network from accessing and/or damaging files or computers on the network.

### Gateway

A central device that manages the data traffic of your network, as well as data traffic to and from the Internet.

### IP (Internet Protocol) Address

A series of four numbers separated by periods identifying a unique Internet computer host.

### ISP Gateway Address

An IP address for the Internet router. This address is only required when using a cable or DSL modem.

### ISP (Internet Service Provider)

A business that allows individuals or businesses to connect to the Internet.

### LAN (Local Area Network)

A group of computers and devices connected together in a relatively small area (such as a house or an office). A home network is considered a LAN.

### MAC (Media Access Control) Address

The hardware address of a device connected to a network.

### NAT (Network Address Translation)

A method allowing all of the computers on a home network to use one IP address, enabling access to the Internet from any computer on the home network without having to purchase more IP addresses from the ISP.

### PC Card

An adapter that inserts in the PCMCIA slot of a computer, enabling the communication with a device.

### PPPoE (Point-To-Point Protocol over Ethernet)/

### PPPoA (Point-To-Point Protocol over ATM)

Methods of secure data transmission.

### Router

A central device that manages the data traffic of your network.

### Subnet Mask

A set of four numbers configured like an IP address used to create IP address numbers used only within a particular network.

### SSID

See "ESSID."

### TCP/IP (Transmission Control Protocol/Internet Protocol)

The standard protocol for data transmission over the Internet.

**WAN (Wide Area Network)**

A network that connects computers located in separate areas, (i.e., different buildings, cities, countries). The Internet is a WAN.

**WECA (Wireless Ethernet Compatibility Alliance)**

An industry group that certifies cross-vender interoperability and compatibility of IEEE 802.11b wireless networking products and promotes the standard for enterprise, small business, and home environments.

**WLAN (Wireless Local Area Network)**

A group of computers and other devices connected wirelessly in a small area.

# Federal Communications Commission (FCC) Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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

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

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

## RF exposure warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.