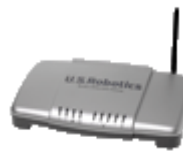


Wireless MAXg ADSL Gateway User Guide


U.S. Robotics®

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Wireless communication settings

These are the options available in the **Wireless** menu:

- [Setup](#)
- [Client List](#)
- [AP Mode](#)
- [Advanced Settings](#)

Setup

The following page allows you to enable the wireless capability, hide the access point by not broadcasting the network name, and set the wireless network name (SSID).

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Setup

This page allows you to configure basic features of the wireless LAN interface. This page also allows you to hide the network from active scans as well as change the network name (also known as SSID).

Press **Apply** to configure the basic wireless options.

Allow wireless connections

Broadcast network name

Network name (SSID):

MAC address: 00:10:18:90:1A:97

Option	Description
Allow wireless connections	A checkbox that enables or disables the wireless LAN interface. The default is to enable wireless communications.
Broadcast network name	If you do not want the access point to be automatically detected by a wireless client, clear this checkbox. If you do this, the client cannot discover the access point. You can still set up the connection by specifying the network name (below), then entering this name in the wireless client utility.
	Enter a name for your wireless network here. SSID stands

Network name (SSID)	for Service Set Identifier. This name must be between 1 and 32 characters long. The default name is USR9108 . All wireless clients must either detect the gateway or be configured with the correct SSID to access the Internet.
MAC address	Displays the gateway's wireless MAC address. (You may need this address if you're using WDS or multiple gateways.) Click Apply to save changes.

Client List

This page displays all of the wireless clients associated with or connected to your wireless gateway. A wireless client is a machine with a wireless adapter.

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Client List

This page shows authenticated wireless stations and their status.

MAC Address	Associated	Authorized	Disable
00:C0:49:58:8A:AA	Yes	Yes	<input type="checkbox"/>

Refresh
Apply

If you check or uncheck any of the **Disable** checkboxes, click **Apply** to save your changes. If you discover an unauthorized wireless user connecting to your gateway, you can use the **Disable** checkbox to remove it. This also adds the unauthorized system to the [MAC filter disallow list](#). Click **Refresh** to update the list to the most current status.

AP Mode

In this page, you can set up your gateway as either an access point (which connects wireless machines to the Internet) or a bridge (which only exchanges data with another wireless bridge). With an access point, wireless clients use infrastructure mode to communicate with the gateway. In bridge mode, the gateway uses the Wireless Distribution System (WDS) protocol to wirelessly communicate with the other wireless bridges.

Wireless -- Bridge
U.S.Robotics

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This page allows you to configure wireless bridge features of the wireless LAN interface. You can select **Wireless Bridge** (also known as Wireless Distribution System) to disable access point functionality. Selecting **access point** enables access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate with the AP. Select **Disabled** in Bridge Restrict, which disables wireless bridge restriction. Any wireless bridge will be granted access. Selecting **Enabled** or **Enabled (Scan)** enables wireless bridge restriction. Only those bridges selected in **Remote Bridges** will be granted access.

Press **Refresh** to update the remote bridges. Wait for a few seconds to update.

Press **Apply** to configure the wireless bridge options.

AP Mode:

Bridge Restrict:

Remote Bridges MAC Address:

If you want to set up a bridge, one or both of the devices must know the other's WLAN MAC address. **Bridge Restrict** can have one of these values:

- **Enabled** — restricts the gateway to communicating with bridges, and you enter the WLAN MAC addresses of the other bridge(s) listed under **Remote Bridges MAC Address**.
- **Disabled** — does not restrict the gateway to communicating with bridges. It can also communicate with wireless clients.

Advanced Settings

This page is where you specify a number of advanced settings for wireless communications.

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Advanced Settings

This page allows you to configure advanced features of the wireless LAN interface. You can select a particular channel on which to operate, force the transmission rate to a particular speed, set the fragmentation threshold, set the RTS threshold, set the wakeup interval for clients in power-save mode, set the beacon interval for the access point, set 54g+ (XPress) mode and set whether short or long preambles are used.

Press **Apply** to configure the advanced wireless options.

AP isolation:

Band:

Channel:

Rate:

Multicast rate:

Basic rate:

Fragmentation threshold:

RTS threshold:

DTIM interval:

Beacon interval:

Acceleration:	54g+ (XPress™)
54g™ mode:	54g Auto
54g protection:	Auto
WMM (Wi-Fi multimedia):	Enabled
WMM no-acknowledgement:	Disabled

Apply

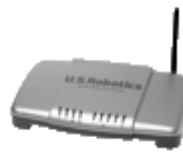
Note: After making any changes, click **Apply** to save.

Warning: The settings shown above are default settings. Changes made to these items can cause wireless communication problems.

Field	Description
AP isolation	Enable this item if you do not want your wireless machines to be able to communicate with each other.
Band	This is the range of frequencies the gateway will use to communicate with your wireless devices.
Channel	Drop-down menu that allows selection of specific channel.
Rate	This drop-down list lets you specify the wireless communication rate, which can be Auto (uses the highest rate when possible, or else a lower rate) or a fixed rate between 1 and 54 Mbps.
Multicast rate	This drop-down list lets you specify the wireless communication rate for multicast packets, which are sent to more than one destination at a time. The value can be Auto (uses the highest rate when possible, or else a lower rate) or a fixed rate between 1 and 54 Mbps.
Basic rate	You have the option of supporting all rates listed in Rate above or using the 1-, 2-Mbps rates, which support only older 802.11b implementations.
Fragmentation threshold	A threshold, specified in bytes, that determines whether packets will be fragmented and at what size. On an 802.11 connection, packets that are larger the fragmentation threshold are split into smaller units suitable for the circuit size. Packets smaller than the specified fragmentation threshold value are not fragmented. Enter a value between 256 and 2346 . If you experience a high packet error rate, try to increase this value slightly. Setting the fragmentation threshold too low may result in poor performance.
RTS threshold	This is number of bytes in the packet size beyond which the gateway invokes its RTS/CTS (request to send, clear to send) mechanism. Packets larger than this threshold trigger the RTS/CTS mechanism, while the gateway transmits smaller packets without using RTS/CTS. The default setting of 2347 , which is the maximum, disables the RTS threshold mechanism.
	A delivery traffic indication message (DTIM), also known as a beacon, is a countdown informing wireless clients of the next window for listening to broadcast and multicast messages. When the

DTIM interval	gateway has broadcast or multicast messages for its clients, it sends its next DTIM message with this DTIM interval value. The clients hear the beacons and awaken as needed to receive the broadcast and multicast messages.
Beacon interval	The amount of time (in milliseconds) between beacon transmissions, each of which identifies the presence of an access point. By default, wireless clients passively scan all radio channels, listening for beacons coming from access points. Before a client enters power-save mode, it needs the beacon interval to determine when to wake up for the next beacon (and learn whether the access point has any messages for it). You can enter any value between 1 and 65535 , but the recommended range is 1 - 1000 .
Acceleration	<p>MAXg is a feature in which two U.S. Robotics MAXg devices can communicate with each other at twice the normal rate.</p> <p>54g+ is a technology that achieves higher throughput with frame-bursting. With 54g+ enabled, aggregate throughput (the sum of the individual throughput of each network client) improves by up to 25% in 802.11g-only networks, and up to 75% in mixed networks containing both 802.11g and 802.11b equipment.</p> <p>In this item, you can select either None, 54g+ (Xpress?), or MAXg (125 Mbps). If you are in Bridge mode, MAXg (125 Mbps) is not supported.</p>
MAC address	This is the gateway's WLAN MAC address.
54g mode	Set this 54g+ mode to 54g Auto for the widest compatibility, or to 54g Performance for the fastest performance with 54g-certified equipment.
54g protection	The 802.11g standards provide a protection method so 802.11g and 802.11b devices can co-exist in the same network without "speaking" at the same time. Do not disable 54g protection if there is a possibility that a 802.11b device will use your wireless network. In Auto mode, the wireless devices use RTS/CTS to improve 802.11g performance in mixed 802.11g/802.11b networks. Turn protection off to maximize 802.11g throughput under most conditions.
WMM (Wi-Fi multimedia)	This item enables or disables Quality of Service (QoS) processing of multimedia packets. In QoS, some types of packets are given a higher priority than others.
WMM no-acknowledgement	No-acknowledgement refers to the acknowledge policy used at the MAC level. Enabling no-acknowledge can result in more efficient throughput but high error rates.
Preamble	A preamble is a signal that synchronizes the timing between two or more wireless devices, allowing all wireless systems to recognise the start of transmission.

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Security settings

These are the options available in the **Security** menu:

- [Wireless Security](#)
- [MAC Filter](#)
- [Device Login](#)
- [Internet Access Control](#)
- [IP Filtering - Outbound Filters](#)
- [IP Filtering - Inbound Filters](#)
- [Virtual Servers](#)
- [Port Triggering](#)
- [DMZ Host](#)

Wireless security

The wireless security page allows you to configure the security features of your wireless network.

Security **U.S. Robotics®**

Status Internet LAN Wireless Security Device

Wireless

This page allows you to configure security features for wireless clients. You can set the authentication method, data encryption, network key, and encryption strength.

Press **Apply** to configure the wireless security options.

Network authentication:

WPA pre-shared key:

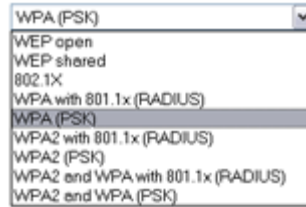
WPA rotation interval:

WPA encryption: AES

WEP encryption: Enabled

Encryption strength: 128-bit

There are several security methods to choose from, depending on your needs and the capabilities of your wireless machines.



- **WEP open** and **WEP shared** — WEP is an encryption scheme that is used to protect your wireless data communications. WEP uses a combination of 64-bit keys or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each wireless client on the network must use an identical 64-bit or 128-bit key. WEP is an older wireless encryption method that is not as hard to break as the more-recent WPA.
- **802.1x** — In 802.1x (also known as RADIUS), a separate machine called an authentication server receives a user ID and password. It grants or denies access based on whether the ID and password match any entries in its account list. You can optionally enable WEP encryption with this option. Because it requires a separate machine acting as the authentication server, 802.1x is most often used in business environments.
- **WPA with 802.1x (RADIUS)** — WPA is a more recent encryption method that addresses many of the weaknesses in WEP. Any client capable of WPA encryption should use it instead of WEP. This option uses WPA and an authentication server.
- **WPA (PSK)** — This is WPA encryption combined with a *pre-shared key (PSK)*, which is a text string known only to the gateway and authorized wireless clients. The gateway rejects the login if the client's PSK does not match.
- **WPA2 with 802.1x (RADIUS)** — WPA2 is a more advanced encryption method than WPA. Because it is a more recent standard, some of your wireless devices might not be able to use it. This option specifies WPA2 encryption and an authentication server.
- **WPA2 (PSK)** — This option uses WPA2 with a pre-shared key.
- **WPA2 and WPA with 802.1x (RADIUS)** — This option supports an authentication server and WPA2/WPA encryption for devices capable of one or the other standard. The gateway automatically detects whether a particular device can use WPA2 or WPA.
- **WPA2 AND WPA (PSK)** — This has WPA2 or WPA encryption based on client abilities, as well as a pre-shared key.

After making changes, click **Apply** to save.

MAC Filter

All network interface cards are built with a unique 48-bit MAC address. When MAC address

filtering is enabled, you can restrict the wireless devices that are allowed to connect to your gateway by their respective MAC addresses. You could also grant access to any wireless device whose MAC address is on its "allow" list.

These are the values for the **MAC restrict mode**:

- **Allow all** — Allow any wireless device to access your local network, which amounts to turning off MAC filtering.
- **Allow these** — Let only the devices with the MAC addresses in the MAC filter list have access to your wireless network.
- **Deny these** — Exclude only the devices with the MAC addresses in the MAC filter list from accessing your wireless network. Allow access to any other MAC addresses.

Below the **MAC restrict mode** is a table showing all MAC addresses that the restrict mode applies to. You can add up to 60 addresses to the list. For an example of adding MAC addresses to the list and otherwise configuring MAC filtering, please see the [Tutorials](#) section of this User Guide.

If you wish to delete an entry from the list, select the appropriate **MAC restrict mode**, select the **Remove** checkbox for the entry you want to delete, and click the **Remove** button.

Device Login

You can use this page to change the password for the **admin**, **support** and **user** accounts. (Their default passwords are **admin**, **support**, and **user** respectively.) Simply select an account in the **User name** drop-down list, then enter the current and new passwords for the account. Enter the new password a second time to confirm it. Then click **Apply** to save the new password.

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Device Login

Access to your ADSL Gateway is controlled through three user accounts: admin, support, and user.

The user name "admin" has unrestricted access to change and view configuration of your ADSL Gateway.

The user name "support" is used to allow an ISP technician to access your DSL Gateway for maintenance and to run diagnostics.

The user name "user" can access the ADSL Gateway, view configuration settings and statistics, as well as update the gateway's software.

Use the fields below to enter up to 16 characters and press **Apply** to change or create passwords.

User name:

Old password:

New password:

Confirm password:

Internet Access Control

You can use the Internet Access Control page to create a parental control rule that keeps certain network devices off the Internet for specific time periods. The rules can block access for a defined time period on certain days of the week.

Note: If you want to use this feature, you must configure the gateway to synchronize its time with at least one Internet time-of-day server. See [Time synchronization](#) for more information.

This is the **Internet Access Control** page when there are no filters defined:

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U.S.Robotics®

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Internet Access Control

You can configure a maximum of 16 entries.

User Name	MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Stop	Remove

Click **Add** to define an Internet access filter, and enter its settings in the following page. In addition to the rule name, each rule you define has the MAC address of the machine to block, the time period to block it for, and a list of days that the time-period block is enforced.

Internet Access Control
U.S.Robotics®

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Use this page to specify when you do not want certain network devices to be able to access the Internet. You can select the days of the week and the times during those days during which the gateway will **prevent** certain network devices from accessing the Internet.

Rule name:

Network Device

Specify which network device this rule will apply to.

"This client device" is the network device being used to access the gateway. To restrict a different network device, select "Other network device" and enter the MAC address of the other network device. To find out the MAC address on Windows XP or 2000, open a command prompt and type **ipconfig /all** (on Windows Me or 9x, type **winipcfg /all**) and press Enter.

This client device (00:B0:D0:B5:F8:9F)
 Other network device: (xx:xx:xx:xx:xx:xx)

Weekdays

These are the weekdays when the time range below is effective.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Daily Time Range

This is the time range during which the network device will not be able to access the Internet. Please note that the times are in 24-hour format and must be between 0:00 and 23:59, inclusive.

Start time: (hh:mm)
 End time: (hh:mm)

Caution: If you want to set up access control for a machine *other than the one you're currently using*, select **Other network device** and enter that device's MAC address.

After configuring the Internet access filter, click **Save** to save it. Here's what it might look like if you wanted to keep children off the Internet during after-school study hours:

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Internet Access Control

You can configure a maximum of 16 entries.

User Name	MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Stop	Remove
Homework_time	00:b0:d0:b5:f8:9f	x	x	x	x	x			16:00	19:00	<input type="checkbox"/>

IP Filtering - Outbound Filters

The gateway's firewall can block internal users or applications from accessing the Internet. There are two ways to accomplish this:

- Using the TCP/UDP port numbers to block internal users or applications (a technique called *port filtering*).

- Using a combination of the source or destination port, protocol or source/destination IP address to block a specific machine from accessing the Internet. This is also known as *address filtering*. The outbound filter page allows you to block outgoing packet types using either TCP, UDP, or a combination of both from specific ports.

For a tutorial on how to use the outbound filter page to keep a computer from accessing the Internet, please [click here](#).

This is the outbound filtering page before adding a filter:

To remove an existing filter definition from the outbound filter table (the first screen shown above), check the **Remove** checkbox for the filter and click the **Remove** button.

The following page appears after you click **Add**.

When you are done entering values for your filter, click **Apply** to save the filter.

These are the fields on the second page above (the page labeled **Add IP Filter** and **Outgoing**), where you define a filter that specifies a set of conditions for which to block access for one or more local machines.

Item	Description
Filter name	Enter a name for the filter here.
Protocol	Select TCP, UDP, a combination of TPC & UDP, or ICMP.

Source IP address	Enter the IP address that you do not want to let access the Internet or the destination address.
Source subnet mask	Enter the subnet mask for the source IP address.
Source port	Enter the source port number, or range of ports, for which you want to block access.
Destination IP address	Enter the IP address you do not want the source IP address to have access to.
Destination subnet mask	Enter the subnet mask for the destination IP address.
Destination port	Enter the destination port number, or range of port numbers, you want to block access.

IP Filtering - Inbound Filters

This page allows incoming packets to reach their intended destinations by specifying rules for unblocking certain incoming packets. You could use it any time you want to allow restricted access to a machine, or you could configure unlimited access to a particular system (for example if one of your local machines is a Web server).

The screenshot shows the 'Security' configuration page for a U.S. Robotics device. The 'Security' tab is selected. The 'IP Filtering - Inbound Filters' section is active. It contains a table with columns: Filter Name, VPI/VCI, Protocol, Source Address / Mask, Source Port, Dest. Address / Mask, Dest. Port, and Remove. Below the table are 'Add' and 'Remove' buttons. A note states: 'By default, all incoming IP traffic from WAN is blocked when firewall is enabled, but some IP traffic can be ACCEPTED by setting up filters. Press Add or Remove to configure incoming IP filters.'

Click on **Add** to create a new inbound filter.

The screenshot shows the 'Add IP Filter' page. The 'Incoming' tab is selected. The page instructs the user to 'Create a filter to identify the incoming IP traffic by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Press Apply to save and activate the filter.' The form includes fields for: Filter name, Protocol (set to TCP/UDP), Source IP address, Source subnet mask, Source port (with a note '(port or port:port)'), Destination IP address, Destination subnet mask, and Destination port (with a note '(port or port:port)').

WAN Interfaces: (Configured in Routing mode and Firewall enabled only)

Select all

pppoa_0_36_1/ppp_0_36_1

This table describes the fields in this **Add IP Filter** page:

Field	Description
Filter name	Enter a name for your inbound filter here.
Protocol	Selects TCP, UDP, or a combination of TCP/UDP.
Source IP address	Enter the external IP address you want to allow access to your internal address that appears in the Destination IP address field.
Source subnet mask	Enter a subnet mask for the source IP address.
Source port	Enter a source port number, or a range of port numbers.
Destination IP address	Enter the internal IP address you want to provide access to.
Destination subnet mask	Enter a subnet mask for the destination IP address.
Destination port	Enter the destination port number, or range of port numbers, you want to allow access (for the destination IP).

After setting up your filter, click **Apply** to save it.

Virtual Servers

A virtual server allows you to direct incoming traffic from the Internet (identified by protocol and external port) to an internal server with a private IP address on the LAN. If you need to convert an external port you need to enter an internal port.

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Virtual Servers

Virtual servers allow you to direct incoming traffic from the WAN side (identified by Protocol and External port) to an Internal server with a private IP address on the LAN side. If you need to convert an external port you need to enter an internal port. A maximum of 32 entries can be configured.

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	Remove
IRC	1024	5000	TCP	1024	5000	192.168.1.2	<input type="checkbox"/>
IRC	6660	6669	TCP	6660	6669	192.168.1.2	<input type="checkbox"/>
IRC	113	113	UDP	113	113	192.168.1.2	<input type="checkbox"/>

[Click here](#) to go to a tutorial showing you how to set up a virtual server. If you want to delete a virtual server, check the **Remove** checkbox for the appropriate line in the table and click **Remove**.

Note: If you set up a **DMZ host**, all packets for addresses other than those specified in this page go to a designated DMZ machine.

Port Triggering

Port triggering is similar to a **virtual server**, except that it creates a dynamic or temporary hole in the firewall. Port triggering is more secure than a virtual server, but it does not support simultaneous use of the same ports by multiple systems. It allows remote systems access through the gateway's firewall.

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Port Triggering

Some applications require that specific ports in the gateway's firewall are opened so the remote parties have access. Port Triggering dynamically opens the Incoming Ports in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Outgoing Ports'. The ADSL Gateway allows the remote parties from the WAN side to establish new connections back to the application on the LAN side using the 'Open Incoming Ports'.

Application Name	Triggering "Outgoing Ports"		Open "Incoming Ports"		Remove		
	Protocol	Port Range		Protocol		Port Range	
		From	To			From	To
ICQ	UDP	4000	4000	TCP	20000	20059	<input type="checkbox"/>

Click **Add** to set up port triggering for an Internet application. In the next page (shown below), select the application name, which fills in the settings in the table below. If the application you want is not in the list, select **Custom application** and fill in the table parameters below. (See the application's documentation to find out what the settings should be.) Click **Apply** to save the port trigger.

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Port Triggering

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the gateway's firewall have been opened for access by the applications. You can configure the port settings from this screen by selecting an existing application or creating your own (**Custom application**) and press **Apply** to add it.

Remaining number of entries which can be added: 32

Application Name:

Select an application: (select an application)

Custom application:

Trigger Port	Start	Trigger Port	End	Trigger Protocol	Open Port	Start	Open Port	End	Open Protocol
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP
				TCP					TCP

Note: A port trigger is available to a single active session. It cannot simultaneously support same-port triggers to multiple clients.

DMZ Host

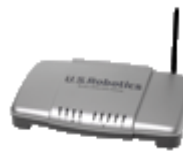
The de-militarized zone (DMZ) option is for forwarding IP packets from the Internet that are not meant for any of the applications configured in the **virtual server** table. These packets are forwarded to a designated DMZ host computer. While a virtual server can only forward (redirect) a limited number of services (ports), DMZ hosting allows all the services (ports) running on the DMZ host to be accessible externally.

This is the **DMZ Host** page.

The screenshot shows the U.S. Robotics Security configuration interface. At the top, there is a red header with "Security" on the left and "U.S. Robotics" on the right. Below the header is a navigation bar with tabs for "Status", "Internet", "LAN", "Wireless", "Security", and "Device". The "Security" tab is selected. Below the navigation bar is a sub-header "DMZ Host" in a light blue box. The main content area contains the following text: "The ADSL Gateway will forward from the WAN to the DMZ host computer any IP packets that do not belong to the applications configured in the **Virtual Servers** table." followed by "To activate the DMZ host, enter the computer's IP address and press **Apply**." and "To deactivate the DMZ host, clear the IP address field and press **Apply**." Below this text is a label "DMZ host IP address:" followed by an empty text input field. At the bottom left of the form is an "Apply" button.

To configure the DMZ, simply enter the IP address of the computer that will function as the DMZ host. Click **Apply** to save the DMZ address. To deactivate the DMZ feature, clear **DMZ host IP address** and click **Apply**.

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Device settings

These are the options available in the **Device** menu:

- [Time](#)
- [Print Server](#)
- [Back Up Settings](#)
- [Restore Settings](#)
- [Restart](#)
- [Upgrade](#)
- [Restore Defaults](#)
- [Diagnostics](#)
- [SNMP](#)

Time

The gateway can synchronize its internal clock with time servers on the Internet. In this page, you can configure how it does this.

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Time

This page allows you to configure the gateway's time servers.

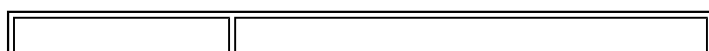
Automatically synchronize with Internet time servers

Time server 1:

Time server 2:

Time zone offset:

To synchronize with the Internet time server(s), specify one or two servers by either selecting them from a list or entering their IP addresses. Then select your time zone in the **Time zone offset** and click **Save**.



Item	Description
Automatically synchronize...	Enable this field if you want the gateway to automatically synchronise its internal time.
Time server 1	Select a primary time server for the gateway to query. To use a server that is not in the list, enter its IP address in the box to the right.
Time server 2	You can optionally specify a second time server to query.
Time zone offset	Select your time zone here — the number of hours you are offset from Greenwich mean time.

Print Server

A USB printer can be connected to the gateway and used as a network printer if you are using an operating system that supports printing to an Internet Printing Protocol (IPP)-based printer. Windows XP and 2000 have built-in support for this function, but other Windows users will need to download either a Microsoft patch for their version of Windows or a third-party application. Refer to the documentation for your version of Windows for more information. Other operating systems will need to either already support IPP-based printing or download a third party application for their operating system.

Start by enabling the print server and entering the printer name, make and model. Then click **Save**.

Now perform the following steps to install and set up the printer:

1. Connect the printer to the gateway. Plug the square end of a USB cable into the USB port on your printer. Plug the thin rectangular end of the USB cable into the USB port on the gateway. Connect the power supply to your printer and turn your printer on.
2. Set up your printer. Launch a Web browser. Go to the Web user interface by opening the **http://192.168.1.1** address (if you have changed this address, use the new address).
3. Perform the following steps to set up your printer. You will need to do this on every computer that is connected to your network that you want to be able to access the

printer. *For non-Windows operating systems:* Adapt this to follow the printer installation process for your operating system.

1. *Windows XP users:* Click Windows **Start** and then **Printers and Faxes**. *Windows 2000, Me, and 98 users:* Click Windows **Start**, **Settings**, and then **Printers**.
2. Click **Add Printer** and the Add Printer Wizard launches. Click **Next**.
3. Select **Network printer** and click **Next**.
4. Select **Connect to a printer on the Internet...** Under **Printer location**, enter the following.

http://192.168.1.1:1631/printers/printer_name

If you have changed the gateway's IP address, replace **192.168.1.1** with the changed address. For the **printer_name** part, use the name you entered in **Printer name** on the **Print Server** page shown above. This name is case-sensitive, and it must exactly match the **Printer name** on the **Print Server** page.

5. You will be prompted to choose the brand and model of your printer. You can either select them from the list or click **Have Disk**, then insert the CD-ROM that came with your printer, and navigate to your CD-ROM drive to locate the drivers. When you are finished, click **Next**.
 6. When prompted, select **Yes** or **No** to set this printer as your default printer. If prompted, you can print a test page.
 7. You will be shown the information regarding your printer. Click **Finish** to complete the setup process.
4. To verify the printer connection, print a page from this computer. If this prints correctly, your printer setup is complete. If not, make sure the printer is turned on and that the USB cable is firmly connected to both the printer and to the gateway. If the page still does not print correctly, repeat the setup procedure and make sure you enter all the correct information.

Back Up Settings

To save your gateway configuration settings, click **Back Up** and specify a file location on your hard drive.

Note: If you are using Internet Explorer 5.5 or earlier, the WUI will display the settings on the screen rather than save them to a file. We suggest that you upgrade your browser or install a different browser.

The screenshot shows the 'Device' tab selected in the navigation menu. The 'Back Up Settings' section contains the following text and button:

Back Up Settings

You can save your ADSL Gateway configuration settings to a file on your computer.

Restore Settings

This option lets you restore device settings previously saved in a **backup operation**. To update your ADSL Gateway configuration settings, follow the steps provided on the screen.

The screenshot shows the 'Device' tab selected in the navigation menu. The 'Restore Settings' section contains the following text and buttons:

Restore Settings

1. Obtain a configuration file from your ISP.
2. Enter the path to the configuration file location in the box below or press the **Browse** button to locate the file.
3. Press the **Update** button once to upload the new configuration settings.

Note: The update process takes about one minute to complete, and your DSL Gateway will reboot.

Configuration file:

Restart

In this page, you can restart the gateway. This takes about two minutes.

The screenshot shows the 'Device' tab selected in the navigation menu. The 'Restart Router' section contains the following text and button:

Restart Router

Press the button below to restart the gateway. Your custom settings will not be lost.

Upgrade

The upgrade page allows you to update the firmware in the gateway.

Device
U.S.Robotics®

Status | Internet | LAN | Wireless | Security | Device

Upgrade

Check for Update Press the **Check For Update** button to automatically check for an update to the gateway's firmware.

1. Obtain an updated firmware file from your ISP.
2. Enter the path to the firmware file location in the box below or press the **Browse** button to locate the firmware file.
3. Press the **Update** button once to upload the new firmware file.

Note: The update process takes about two minutes to complete, and your DSL Gateway will reboot.

Firmware file: Browse...

Update

You can either check the U.S. Robotics Web site for newer firmware (by clicking **Check for Update**), or you might receive new firmware from your Internet Service Provider. With the new firmware file on your computer's hard drive, click **Browse** to locate the file and **Update** to perform the upgrade. The process takes about two minutes to complete. You will see a status bar like the following. **Do not turn off the gateway or unplug any cables while it performs the upgrade.**

ADSL Gateway Upgrade
U.S.Robotics®

The ADSL Gateway is being updated and will restart when finished. This will take about two minutes.

Please do not turn off the power or disconnect any cables during this process.

Restore Defaults

You can return the gateway to its original factory-installed settings in one of two ways:

- By using a thin tool, such as a paper clip, to press the **Reset** button on the back of the gateway for at least five seconds (see the red box below)



- Or you can click the **Restore Defaults** option in the **Device** menu.

You should only need this option if the gateway is not functioning or you wish to reprogram completely. The [troubleshooting procedure](#) may ask you to do this. For many settings, the gateway is already configured to the default values.

WARNING: *You will lose all your custom configuration settings if you use this*

option. You may want to [back up the settings](#) first.

The screenshot shows the 'Device' tab selected in the navigation menu. Below the menu is a 'Restore Defaults' section with a button labeled 'Restore Default Configuration'. A note below the button states: 'Note: You will lose any custom settings you've made to the Gateway.'

The process takes about two minutes to complete. You will see a status bar like the following. **Do not turn off the gateway or unplug any cables until it finishes.**

The screenshot shows the 'ADSL Gateway Restore Defaults' status page. It includes a progress bar that is partially filled with blue. The text on the page reads: 'The ADSL gateway configuration has been restored to default and the gateway is restarting. This will take about one minute. If the gateway's IP address has been modified, you may need to renew your connection to the Gateway. (One way to do this is to restart your computer.) Please do not turn off the power or disconnect any cables until this process is complete.'

After resetting to the default settings, the [Quick Setup](#) procedure automatically starts, and you will need to repeat the configuration process, as you did when you first installed the gateway. You can also run EasyConfigurator, as described in the gateway's installation guide.

Diagnostics

When you open this page, the gateway automatically performs a series of self-diagnostic test and displays the results once completed:

The screenshot shows the 'Diagnostics' page with a navigation menu. The main content area is titled 'pppoa_0_36_1'. It contains instructions: 'Your modem is capable of testing your DSL connection. The individual tests are listed below. If a test displays a fail status, click **Rerun Diagnostic Tests** at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click **Help** and follow the troubleshooting procedures.'

Test the connection to your local network

Test your Ethernet Connection:	PASS	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your DSL service provider

Test ADSL synchronization:	PASS	Help
Test ATM OAM F5 segment ping:	FAIL	Help
Test ATM OAM F5 end-to-end ping:	PASS	Help

Test the connection to your Internet service provider

Test PPP server connection:	PASS	Help
Test authentication with ISP:	PASS	Help
Test the assigned IP address:	PASS	Help
Ping default gateway:	PASS	Help
Ping primary Domain Name Server:	PASS	Help

Be sure to read the help text closely. If the gateway fails some of the tests, you may not be experiencing a real problem.

If you want more information on a particular test or find out what to do if a test fails, click on the **Help** link next to its PASS/FAIL indicator.

ATM OAM Segment Ping Test
U.S.Robotics®

Status | Internet | LAN | Wireless | Security | Device

Pass:	Indicates that the DSL modem can communicate with the DSL provider network.
Fail:	Indicates that the DSL modem may not be able to communicate with the DSL provider network. This test may have an effect on your Internet connectivity. Occasionally the DSL provider network may intentionally block this traffic. Therefore if this test fails but you are still able to access the Internet, there is no need to troubleshoot this issue.

If the test fails, follow the troubleshooting procedures listed below and rerun the diagnostics tests by clicking on the **Rerun Diagnostic Tests** button at the bottom of this page. If all the tests pass, close and restart your Web browser to access the Internet.

Troubleshooting:

Note: This test will fail if *Test ADSL Synchronization* also fails. Troubleshoot the *Test ADSL Synchronization* test first.

1. Turn off the DSL modem, wait 10 seconds and turn it back on.
2. With the modem on, press the external reset button on the DSL modem for at least five seconds and release it. This resets the DSL modem to its default settings. Wait for the DSL modem to completely restart, then close and restart your Web browser. To reconfigure the modem, type your DSL Account username and password.
3. If this is the first time you are setting up your DSL modem, you may need to reconfigure your VPI/VC1 settings. Please contact your ISP's customer service for assistance.

Contact your ISP's customer service if you have tried all of the above and still are experiencing a fail condition.

The help text tells you what it means when the gateway passes or fails the test, and gives troubleshooting tips to use if the test failed.

SNMP

SNMP (Simple Network Management Protocol) is a protocol that helps you monitor and manage the local network of systems connected to your gateway. In SNMP, a device called an SNMP agent collects statistics about network performance, then sends the statistical data to another machine for storage and analysis. In this page, you can configure the gateway as an SNMP agent.

Device
U.S. Robotics

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SNMP

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

Select the desired values and press **Apply** to configure the SNMP options.

Disable SNMP agent
 Enable SNMP agent

Read community:

Set community:

System name:

System location:

System contact:

Trap manager IP:

Item	Description
Read community	This is the SNMP community name/password to read SNMP values.
Set community	The SNMP community name/password to set SNMP values.
System name	Optional SNMP system name.
System location	Optional SNMP location.
System contact	Optional SNMP system contact.
Trap manager IP	IP address of SNMP hosting trap manager, where SNMP messages will be sent.

Note: To use this feature, you need to enable SNMP on the LAN or WAN. [Click here](#) to see the page where you can do this.

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- Login
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Network Address and Port Translation (NAPT)

Network Address and Port Translation (NAPT) allows a single device, such as a gateway, to be an agent between the Internet (or "public network") and a local (or "private") network. This means that only a single unique IP address represents an entire group of devices to the outside world.

Implementing dynamic NAPT automatically creates a firewall between your internal network and the Internet. NAPT only allows connections that originate inside the internal network. Essentially, this means that a computer on an external network cannot connect to your computer unless your computer has initiated the contact. Nobody from the outside can latch onto your IP address and use it to connect to a port on your computer.

Under NAPT, all internal network computers are inaccessible from the outside. However, if you need to use public services such as Web, FTP, or e-mail servers from your private network, you can set up a virtual server to permit secured access. In this method, a connection with the outside is redirected to a host (the virtual server) running the services on the private network. (IP forwarding is another term for this.)

The [Virtual Servers setup page](#) allows you to add, remove, and save virtual server settings.

Security
U.S.Robotics

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Internet
LAN
Wireless
Security
Device

Virtual Servers

Virtual servers allow you to direct incoming traffic from the WAN side (identified by Protocol and External port) to an Internal server with a private IP address on the LAN side. If you need to convert an external port you need to enter an internal port. A maximum of 32 entries can be configured.

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	Remove
IRC	1024	5000	TCP	1024	5000	192.168.1.2	<input type="checkbox"/>
IRC	6660	6669	TCP	6660	6669	192.168.1.2	<input type="checkbox"/>
IRC	113	113	UDP	113	113	192.168.1.2	<input type="checkbox"/>

Passing Applications Through NAPT

Port Forwarding When Hosting Services Behind NAPT

Protocol	Type	Port

FTP (File Transfer Protocol)	TCP	21
HTTP (Web Server)	TCP	80
DNS (Domain Name Server)	TCP UDP	53
Telnet- Remote connection	TCP	23
SMTP (Outgoing mail)	TCP	25
POP3 (Incoming mail)	TCP	110
NNTP (Network News Transfer Protocol)	TCP	119
PCAnyWhere	UDP TCP	5631-5632
TALK	UDP	517-518
Net2Phone **	TCP UDP	2000
HTTPS (secure Web server)	TCP	443
VNS (remote display system)	TCP	5900-5909 5800-5809
TFTP	UDP TCP	69
SSH (secure remote login) **	TCP	22
** Net2Phone and SSH have not been tested yet		

Port Forwarding When Hosting Games Behind NAPT

Game	Type	Port
Age of Empires II	TCP UDP	2300:2400 2300:2400
Star Craft	TCP	4000
Half Life Team Fortress	TCP UDP	27015 27015
Diablo II	TCP	6112 4000
Quake II	UDP	27950 27960 27910 27952 27000 26000 27951
Quake III	UDP	27950 27960 27910 27952 27000 26000 27951
Return to Castle Wolfenstein	UDP	27950 27952 27953 27960 27961 27962 27963 27965
Unreal Tournament	UDP	7777

Port Triggering for Playing Games Behind NAPT

Game	Outgoing Port Range	Protocol	Incoming Port Range	Protocol
Return to Castle Wolfenstein	27950-27965	UDP	27950-27965	UDP
Star Craft	4000-4000	TCP/UDP	4000-4000	TCP/UDP

Applications that Do Not Require Configuration Behind NAPT

The following applications, when run behind NAPT, do require any gateway user configuration.

Protocol (see note 1)	Type	Port

FTP (File Transfer Protocol)	TCP	21
TFTP	UDP TCP	69
TALK	UDP	517-518
H.323	TCP	1720
IRC	TCP	6667
SNMP	UDP	161-162
PPTP	TCP	1723
Windows Media Player (see note 2)	UDP	7000-7007
DirectX Game (see note 3)	UDP	2300-2400
AOL Instant Messenger (see note 4)	TCP	5190
MSN Messenger (see note 4)	TCP	1863

Notes:

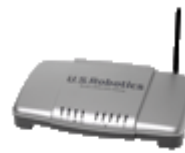
1. All protocols mentioned above are for clients running behind the NAPT. If a hosting server is needed, use port forwarding instead.
2. Windows Media Player uses TCP port 1755 from the player to connect to the server, and uses UDP ports 7000-7007 to perform the actual data streaming.
3. DirectX uses TCP port 47624 from the client behind NAPT to connect to the peer, and it expects the peer to use the UDP ports 2300-2400 thereafter.
4. The AOL and MSN Messenger Proxy Server are required for user-user direct connection during file and image transfer.

Applications Behind NAPT Requiring Application Configuration Change ICQ

The following steps provide a workaround to problems you might have when using ICQ's file transfer, Send/Start ICQ chat and PC2PC phone. The problem is that some of these applications set the Web browser to use a proxy server to listen to incoming connection requests.

1. In your Web browser, go to the user connection preferences and enable **Using proxy**. Set the type to **SOCKS 4**.
2. Disconnect and reconnect.
3. Set the type back to **Not using proxy** and change settings to use the ports you specify. You should now be able to make a functioning connection. Be sure to disconnect/reconnect after you make every change.
4. From the gateway, use [virtual servers](#) (port forwarding) to forward the TCP port range chosen in the previous step to your local machine.

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Tutorials

Below you will find some examples of common situations you might encounter and how you could use the gateway to accomplish your goals.

[I want to secure my wireless network and prevent unauthorized wireless devices from accessing it.](#)

[I want to prevent a machine from accessing the Internet.](#)

[I want to use an application over the Internet \(a game, instant messaging, etc.\).](#)

[I want to give higher priority to some types of traffic.](#)

[I want to configure dynamic DNS.](#)

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Tutorial: I want to secure my wireless network and prevent unauthorized wireless devices from accessing it.

To do this, you need to enable MAC address filtering. When this is enabled, the only systems allowed to associate and pass data wirelessly will be computers or access points whose MAC addresses are in a list of addresses that you program into the gateway.

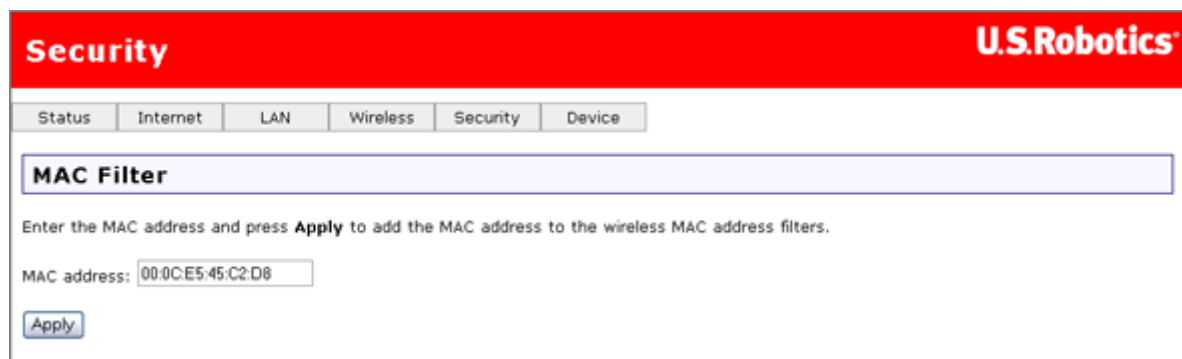
In this example we have gathered the computer's MAC address, which typically appears on the wireless card (example: **00:0C:E5:45:C2:D8**). In this example, that is the only system that should be allowed to access the network:

1. Launch the gateway's Web interface if it is not already open. ([Click here](#) to find out how.)
2. Go to the **MAC Filter** option in the **Security** menu.



The screenshot shows the 'Wireless -- MAC Filter' configuration page. At the top, there is a red header with 'Wireless -- MAC Filter' and the 'U.S. Robotics' logo. Below the header is a navigation menu with tabs for 'Status', 'Internet', 'LAN', 'Wireless', 'Security', and 'Device'. The 'Wireless' tab is selected. Underneath, there are radio buttons for 'MAC restrict mode': 'Allow all' (unselected), 'Allow these' (selected), and 'Deny these' (unselected). Below the radio buttons is a text input field labeled 'MAC Address' and a 'Remove' button. At the bottom, there are 'Add' and 'Remove' buttons.

3. Select **Allow these** and click **Add**.
4. Enter the computer's MAC address.



The screenshot shows the 'Security -- MAC Filter' configuration page. At the top, there is a red header with 'Security' and the 'U.S. Robotics' logo. Below the header is a navigation menu with tabs for 'Status', 'Internet', 'LAN', 'Wireless', 'Security', and 'Device'. The 'Security' tab is selected. Underneath, there is a section titled 'MAC Filter'. Below this section is a text input field for 'MAC address' containing the value '00:0C:E5:45:C2:D8'. Below the input field is an 'Apply' button.

5. Click **Apply**.

Wireless -- MAC Filter **U.S. Robotics**

Status	Internet	LAN	Wireless	Security	Device
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MAC restrict mode: Allow all Allow these Deny these

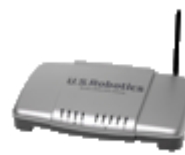
MAC Address	Remove
00:0C:E5:45:C2:D8	<input type="checkbox"/>

Congratulations. You are finished. You may close the gateway's Web page.

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Wireless MAXg ADSL Gateway User Guide

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Tutorial: I want to prevent a machine from accessing the Internet.

You need to use the gateway's outbound filtering feature. To demonstrate outbound filtering, we will show steps to configure for the following scenario:

A company has two computers connected to the U.S. Robotics Wireless MAXg ADSL Gateway. An office worker uses one of the computers while the business owner uses the other. The owner wants to keep the office worker from using the Internet. The owner has a computer that has an assigned IP address of 192.168.1.2 by the gateway. The office worker's machine has been assigned an IP address of 192.168.1.3.

1. Launch the gateway's Web User Interface if it is not already open ([click here](#) to find out how).
2. Go to the **Security** menu and select **IP Filtering - Outbound Filters**.
3. Click **Add**.
4. In the following page, pick a name for your new filter and enter the IP address in **Source IP Address**.

Add IP Filter U.S. Robotics®

Status Internet LAN Wireless Security Device

Outgoing

Create a filter to identify the outgoing IP traffic by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Press **Apply** to save and activate the filter.

Filter name:

Protocol:

Source IP address:

Source subnet mask:

Source port: (port or port:port)

Destination IP address:

Destination subnet mask:

Destination port: (port or port:port)

5. When you click **Apply**, the new filter appears in this page.

IP Filtering - Outbound Filters**U.S.Robotics**

Status | Internet | LAN | Wireless | Security | Device

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

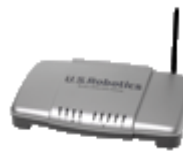
Press **Add** or **Remove** to configure outgoing IP filters.

Filter Name	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove
No_Net_Access	TCP/UDP	192.168.1.2				<input type="checkbox"/>

Congratulations! The outgoing address filter is complete. The computer with the IP address entered in **Address Filter** will not be able to access the gateway's Internet port.

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Tutorial: I want to use an application over the Internet (a game, instant messaging, etc.).

There are a number of applications now in which your computer needs to go onto the Internet, but your gateway's firewall might block access. This procedure shows you how to configure the gateway to work with these applications.

Note: For additional information on opening the firewall for other applications, refer to the [Appendix](#) section of this User Guide.

1. Select **Virtual Servers** from the **Security** menu. This page appears.

Security
U.S. Robotics®

Status Internet LAN Wireless Security Device

Virtual Servers

Select the service name and enter the server IP address and press **Apply** to forward IP packets for this service to the specified server.

Remaining number of entries which can be added: 32

Server name:

Select a service: (select a service) ▼
 Custom server:

Server IP address:

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		

These are the fields on this page:

Field	Description
Select a service	In this item, choose the Internet application you want to enable. The Web user interface automatically fills in values in the table below.

Custom server	If the service you want to enable is not in the service list, enter its name here. You will need to enter the remaining parameters as described in the service's documentation.
Server IP address	The IP address of your computer, which will function as a server.
External port (start/end)	Allows the entry of an individual external port or range of ports.
Protocol	Allows the selection of a transport protocol (UDP, TCP, or both).
Internal port (start/end)	Allows the entry of an individual internal port or range of ports.

2. In **Server IP address**, enter the IP address of the machine that will run the Internet application.
3. In the **Select a service** list, look for and select the name of the service or application you want to use. If it is in the list, the settings fill in automatically:

Security
U.S.Robotics

Status
Internet
LAN
Wireless
Security
Device

Virtual Servers

Select the service name and enter the server IP address and press **Apply** to forward IP packets for this service to the specified server.

Remaining number of entries which can be added: **32**

Server name:

Select a service: IRC ▼

Custom server:

Server IP address:

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
1024	5000	TCP ▼	1024	5000
6660	6669	TCP ▼	6660	6669
113	113	UDP ▼	113	113
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		
		TCP ▼		

Note: If your service does not appear in the list, look in its documentation to find out what settings to enter.

4. When you click **Apply**, the settings move to the previous page.

Virtual Servers **U.S. Robotics**

Status | Internet | LAN | Wireless | Security | Device

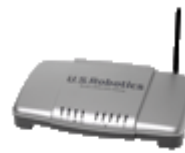
Virtual Server allows you to direct incoming traffic from the WAN side (identified by Protocol and External port) to an Internal server with a private IP address on the LAN side. If you need to convert an external port you need to enter an internal port. Maximum 32 entries can be configured.

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	Remove
IRC	1024	5000	TCP	1024	5000	192.168.1.2	<input type="checkbox"/>
IRC	6660	6669	TCP	6660	6669	192.168.1.2	<input type="checkbox"/>
IRC	113	113	UDP	113	113	192.168.1.2	<input type="checkbox"/>

Congratulations. You are now ready to run your Internet application.

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Wireless MAXg ADSL Gateway User Guide

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Tutorial: I want to give higher priority to some types of traffic.

The gateway's *quality of service* (QoS) feature is executed in its IP software. It classifies traffic according to the classification rules. Each rule may contain a combination of the following conditions: protocol (TCP/UDP/ICMP), source IP address/subnet mask, destination IP address/subnet mask, source port (one or range), destination port (one or range). The result of matching a classification rule is to produce a priority (high, medium, low) and a type of service (normal service, minimum cost, maximum reliability, maximum throughput, minimum delay).

Example: Suppose your company hosts an Internet radio station. Lately, the quality of the radio stream has not been very good since many people at the company are browsing the Internet and using up the company's bandwidth. A good solution would be to set high priority for the radio broadcast, and low priority on Web traffic. Here is how you could do it.

1. Access the gateway's Web user interface (WUI) by opening an Internet browser and entering **http://192.168.1.1**

NOTE: If the browser does not open successfully, please go to the [Troubleshooting](#) section.

2. Enter your user name and password. The default user name is **admin**, as is the default password. Click **OK** or press ENTER. The WUI then opens.

Status U.S. Robotics®

Status	Internet	LAN	Wireless	Security	Device
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[Register the product](#)

General

Line rate - upstream: **832 Kbps**
Line rate - downstream: **8000 Kbps**
LAN IP address: **192.168.1.1**
WAN IP address: [View](#)
Default gateway: **192.168.0.254**
Primary DNS server: **192.168.0.1**
Secondary DNS server: **192.168.7.1**

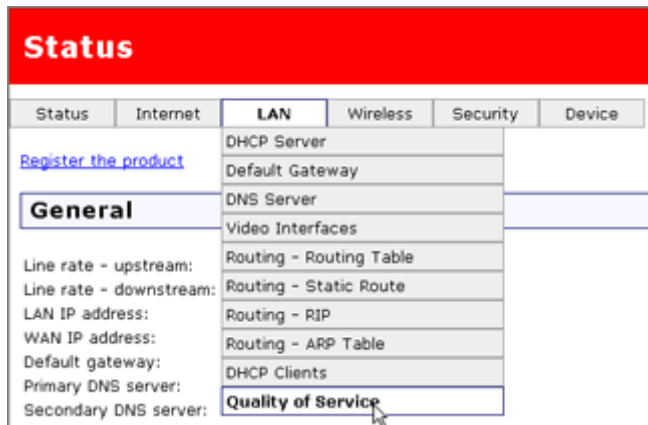
Wireless Security

Network name: **MyNetwork**
Broadcast name: **Enabled**
Method: **WPA**
Wireless MAC filter: **Allow all**

Firmware

Version: **3.00L.03.01 (Friday, May 27, 2005 12:19:00 PM)**
1219_052705-3.00L.03.A2p8018b2.d15h

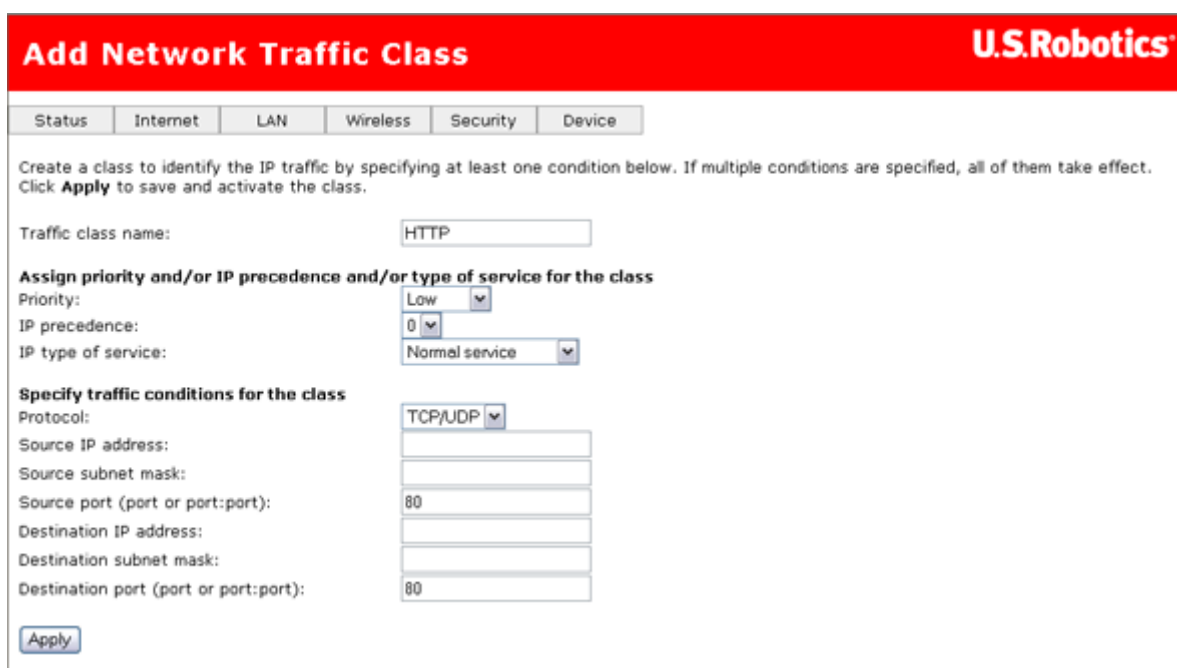
3. In the **LAN** menu, select **Quality of Service**.



4. The **Quality of Service** page appears:



5. Click **Add**.
6. The first QoS entry will be for the HTTP Web traffic. In the page shown below, type the name of the service in the field labeled **Traffic class name**. Next, set the **Priority**, **IP precedence**, and **IP type of service**. In this example we are setting the priority to **Low** because we are trying to improve the quality of the radio stream by limiting Web traffic. Lastly, type in the **Source port** and **Destination port**. It should look like this when you're done:



Click **Apply** to continue.

7. Click **Add** to select another network traffic class for Internet radio. Type the name of the service in the **Traffic class name** field. Next, set the **Priority**, **IP precedence**, and **IP type of service**. In this example, we are setting the priority to **High** and the IP type of service to **Maximize Reliability**, since we are trying to improve the quality of the radio stream. Lastly, type in the **Source port** and **Destination port** numbers and click **Apply**.

Add Network Traffic Class
U.S.Robotics

Status
Internet
LAN
Wireless
Security
Device

Create a class to identify the IP traffic by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Click **Apply** to save and activate the class.

Traffic class name:

Assign priority and/or IP precedence and/or type of service for the class

Priority:

IP precedence:

IP type of service:

Specify traffic conditions for the class

Protocol:

Source IP address:

Source subnet mask:

Source port (port or port:port):

Destination IP address:

Destination subnet mask:

Destination port (port or port:port):

8. This shows how we have configured QoS for maximum radio stream quality.

Quality of Service
U.S.Robotics

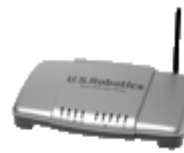
Status
Internet
LAN
Wireless
Security
Device

Press **Add** or **Remove** to configure network traffic classes.

Class Name	Priority	IP Precedence	IP Type of Service	802.1P	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove
HTTP	Low	0	Normal Service	0	TCP/UDP		80		80	<input type="checkbox"/>
Internet_radio	High	0	Maximize Reliability	0	TCP/UDP		8001		8001	<input type="checkbox"/>

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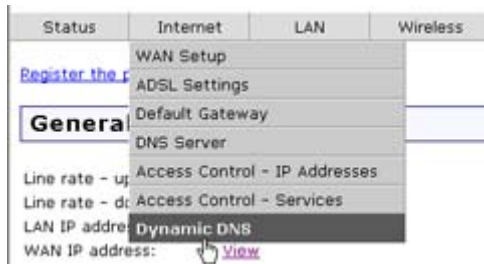
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Tutorial: I want to configure dynamic DNS.

Follow this procedure.

1. In the Web user interface, go to the **Internet** menu and select **Dynamic DNS**.



2. The **Dynamic DNS** page opens:



Click **Add**.

3. In the **Dynamic DNS** page, select a DNS provider. You can register at www.dyndns.org for no charge.

Dynamic DNS **U.S. Robotics**

Status | Internet | LAN | Wireless | Security | Device

Add Dynamic DDNS

This page allows you to add a Dynamic DNS address from DynDNS.org or TZO.

Dynamic DNS provider: DynDNS.org
DynDNS.org
TZO

Host name:

Interface: pppoe_0_36_1/ppp_0_36_1

Dynamic DNS Settings

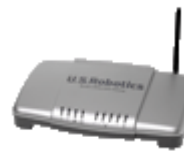
User name:

Password:

4. In the rest of the **Dynamic DNS** page, enter the settings given to you by the provider. Click **Add** when you're done.




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Troubleshooting

To help diagnose a problem, first use the following troubleshooting checklist.

1. Confirm that you are using the AC power adapter that came with your gateway and that it is connected to the gateway and to an active wall outlet. Make sure the **Power** switch is switched to the on position. The  LED should be lighted.
2. Confirm that you have securely connected the telephone cable to the telephone wall jack and to the gateway. The  LED should be lighted if you have ordered and correctly configured DSL.
3. If you are using a wired connection from the computer to the gateway, confirm that you have secured the Ethernet cable(s) to the computer's network interface card and to the Ethernet port(s) on the gateway (labelled **1**, **2**, **3**, or **4**). The corresponding  LED should be lighted on the front of the gateway.

For more information on the LEDs, see the [Status LEDs](#) section earlier in this document.

Opening the Web user interface

The Web user interface will be your main tool for configuring, troubleshooting and monitoring the gateway. Follow this procedure to access it.

1. Start a Web browser.
2. Open the page **http://192.168.1.1** (If you've modified the gateway's LAN IP address, you must use the new one.)
3. A login window should appear:



The default user name and password are already filled in. Click **OK**.

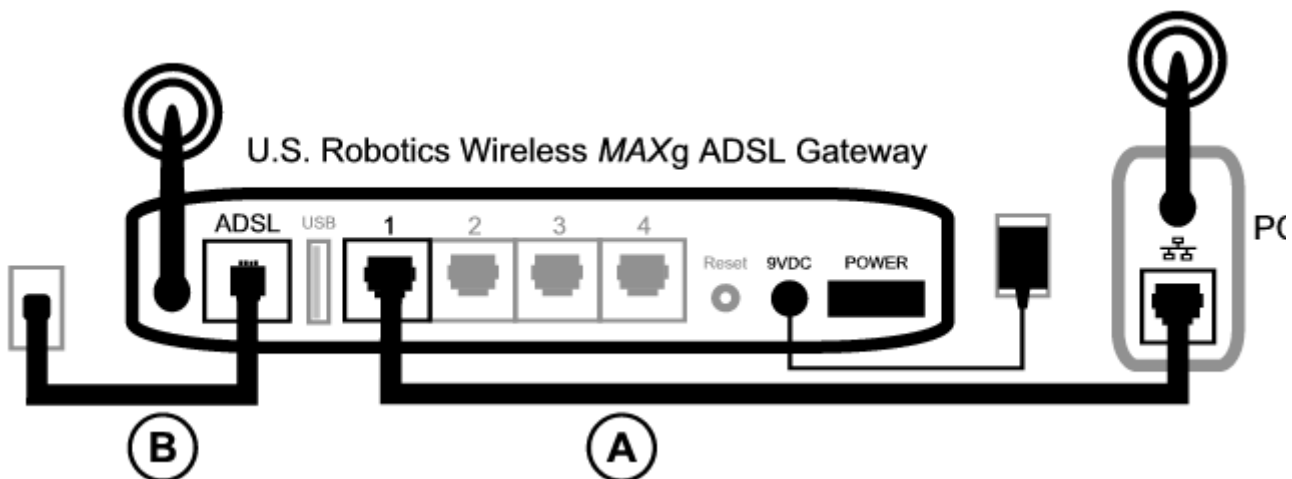
4. The Web user interface opens with a status page.



If you cannot access the Internet...

A number of devices have to work together for your computer to access the Internet.

NOTE: For completeness, the following drawing shows both wired and wireless connections between your computer and your U.S. Robotics Wireless MAXg ADSL Gateway. You'll normally use only one type of connection on each computer.



A. Your computer connects to your Wireless MAXg ADSL Gateway via a wireless or wired connection.

B. The gateway connects to your Internet Service Provider (ISP) via ADSL over the phone network.

The first step in solving the problem is to diagnose the cause. There are a number of places where the connection from your computer to the Internet might fail.

Windows users: You can check your connections automatically with the included utility program.

1. Use Windows Explorer to navigate to the **Troubleshooting** folder on your U.S. Robotics installation CD-ROM (for example, **D:\Troubleshooting**, if your CD drive is labeled D:).
2. Double-click on **Troubleshoot_Connection**.

This utility program tests your connections and, if there is a problem, tells you where it is.

Step 1: Can your computer connect to your Wireless MAXg ADSL Gateway?

Open a Web browser to the gateway's address: **http://192.168.1.1** (Please note that if you've modified the gateway's LAN IP address, you must use the new one.)

If the gateway's Web user interface appears, go to [Step 3](#). Otherwise, the gateway may need to be restarted:

1. With a thin tool such as a paper clip, briefly press the **Reset** button on the back of the gateway.
2. Wait one or two minutes as the gateway restarts.

If you use a wired connection:

If you use a cable connection between your computer and the gateway, ensure that one end of the Ethernet cable is connected to your computer's LAN port and the other end is connected to one of the Ethernet ports on the gateway. Also check that the corresponding LED is lighted.

In the unlikely event that your computer is using a static IP address, either re-configure your computer to use a dynamic IP address or ensure that its static IP address is in the same network as the ADSL gateway. (That means that the IP address has the format **192.168.1.x** where **x** can be any number between 2 and 254, inclusive.)

Now, please restart your computer. It will attempt to connect to the gateway. Proceed to [Step 2](#).

If you use a wireless connection:

1. Ensure that your computer is close enough to your gateway to receive a wireless signal and that there is nothing interfering with the signal, such as a microwave oven or a concrete wall.

If your gateway broadcasts its network name, you can use your computer's wireless utility to scan for it. (This is typically called a "site survey.") If the utility cannot detect the gateway, it may be a signal problem.

2. Ensure that the computer's wireless utility is using the correct network name and security settings for your gateway.

Settings such as network name, security method (WPA, WEP, etc.), and security keys must all match. So if your gateway is using WPA encryption, each wireless card or adapter must support WPA encryption. If you are using a wireless PC card, PCI adapter, or USB adapter that does not support WPA encryption, you will not be able to connect to the gateway unless you use WEP encryption instead. Please [click here](#) for information on changing the security settings.

3. If you have enabled MAC filtering on the gateway, is this computer permitted to connect to your gateway?

Please note that MAC filtering refers to specific wireless adapters. If you use MAC filtering and have added a new wireless adapter to the network, you must add the MAC address of the new wireless adapter to the gateway.

NOTE: If you need to modify the ADSL gateway's settings, you'll need a computer with a wired connection to the gateway in order to access it.

If these steps fail to establish a wireless connection, please try a wired connection between your computer and your gateway. Connect the yellow Ethernet cable to your computer's LAN port and to a LAN port on the gateway. Then ensure that the corresponding LAN port LED is lighted. Then please restart your computer.

Step 2: Is your Wireless MAXg ADSL Gateway responding?

Open your Web browser to the gateway's address: **http://192.168.1.1**

NOTE: If you can open the gateway's Web user interface with a wired connection but not with a wireless connection, the problem is with the wireless connection. Please see the documentation for your wireless adapter.

If the gateway's Web user interface appears, please go to [Step 3](#).

If the gateway's Web user interface doesn't appear, the gateway may need to be restored to the default factory settings. (Please note that you will lose all of your gateway's custom settings and will need to set it up again as if you were installing it for the first time. If you've made a backup of the settings, you will be able to restore them. Please [click here](#) for more information.)

1. With a thin tool, such as a paper clip, press the **Reset** button on the back of the gateway for at least five seconds.
2. Wait about one or two minutes as the gateway restarts.
3. Please restart your computer so that it will connect to the gateway.
4. Try to access the gateway's Web address at **http://192.168.1.1**

If the gateway's Web user interface still does not appear, the firmware and/or default factory settings may have been corrupted. To find out, follow these steps:

1. Press and hold down the **Reset** button on the back of the gateway for more than 30 seconds.
2. Assign a static IP address to your computer, in the same subnet as your gateway's management IP address. (For example, the default management IP address for your gateway is 192.168.1.1. The computer IP address can be 192.168.1.5, subnet mask 255.255.255.0, and gateway IP address 192.168.1.1.)
3. Open a browser and try to open the **http://192.168.1.1** address again. If anything opens, follow the on-screen instructions to re-load the firmware. You will need to get a new firmware file from your Internet Service Provider or from the **www.usr.com** Web site.
4. Close the Web browser and return your computer to a dynamic IP address.

If the gateway's Web user interface still does not appear, the gateway may have failed. Please contact U.S. Robotics Customer Support. See the [contact information](#) in the Help section of this guide.

If the gateway's Web user interface appears, please continue to [Step 3](#).

Step 3: Can your Wireless MAXg ADSL Gateway connect to the Internet?

If you have a connection between your computer and your gateway, it's likely that the gateway is not connected to the Internet.

1. Close your Web browser and run EasyConfigurator.

Windows users:

Press **Start**, then select **Programs** and **U.S. Robotics EasyConfigurator**.

Macintosh and Linux users:

Double-click the **EasyConfigurator** icon on the desktop.

2. Click **Status** at the top of the page, and check the value of the Status field.

Sample image of a gateway connected to the Internet:

Status: CONNECTED TO THE INTERNET

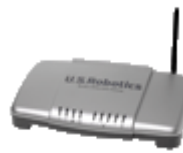
Sample image of a gateway not connected to the Internet:

Status: OPERATIONAL BUT NOT CONNECTED

If the status is **CONNECTED** or **CONNECTED TO THE INTERNET** but you still cannot access the Internet, please contact your ISP for assistance.

Otherwise, you need to configure your ADSL connection. Please click **Configuration** at the top of the EasyConfigurator window and [go here](#) for information on how to configure your ADSL connection.

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Technical Support

- For current product support and contact information, go to the U.S. Robotics Web site at: <http://www.usr.com/support> Many of the most common difficulties users experience have been addressed in the site's FAQ and troubleshooting pages for your specific product.
- If you can't connect to the Internet, contact your ISP for assistance.
- If your ISP is unable to help you and you still cannot connect to the Internet, contact the U.S. Robotics Technical Support department. You can submit your technical question using an online form at <http://www.usr.com/emailsupport> or you can call the Technical Support department.

Country	Voice	Online	Support Hours
United States	(888) 216-2850	http://www.usr.com/emailsupport	9:00 A.M. - 5:00 P.M., Monday - Friday Central
Canada	(888) 216-2850	http://www.usr.com/emailsupport	9:00 A.M. - 5:00 P.M., Monday - Friday Central

Country	Telephone	Online	Hours
Austria	07110 900 116	http://www.usr.com/emailsupport/de	9:00 - 17:00 Monday - Friday
Belgium (Flemish) (French)	+32 (0) 7 023 3545 (Flemish) +32 (0) 7 023 3546 (French)	http://www.usr.com/emailsupport/ea	9:00 - 17:00 Monday - Friday
Denmark	+45 70 10 4030	http://www.usr.com/emailsupport/uk	9:00 - 17:00 Monday - Friday
Finland	+358 981710015	http://www.usr.com/emailsupport/ea	10:00 - 18:00 Monday - Friday
France	+33 082 507 0693	http://www.usr.com/emailsupport/fr	9:00 - 17:00 Monday - Friday
Germany	0180 567 1548	http://www.usr.com/emailsupport/de	9:00 - 17:00 Monday - Friday

Hungary	0180 567 1548	http://www.usr.com/emailsupport/hu	9:00 - 17:00 Monday - Friday
Ireland	1890-252- 130	http://www.usr.com/emailsupport/uk	9:00 - 18:00 Monday - Friday
Italy	+848 80 9903	http://www.usr.com/emailsupport/it	9:00 - 17:00 Monday - Friday
Luxembourg	+352 342 080 8318	http://www.usr.com/emailsupport/bn	9:00 - 17:00 Monday - Friday
Middle East/Africa	+44 870 844 4546	http://www.usr.com/emailsupport/me	9:00 - 17:00 Monday - Friday
Netherlands	0900 202 5857	http://www.usr.com/emailsupport/ea	9:00 - 17:00 Monday - Friday
Norway	+47 23 50 0097	http://www.usr.com/emailsupport/ea	9:00 - 17:00 Monday - Friday
Poland	---	http://www.usr.com/emailsupport/pl	
Portugal	+351 (0) 21 415 4034	http://www.usr.com/emailsupport/pt	9:00 - 17:00 Monday - Friday
Russia	8-800- 200- 200-1	http://www.usr.com/emailsupport/ru	10:00 - 18:00 Monday - Friday
Spain	902 117 964	http://www.usr.com/emailsupport/es	9:00 - 17:00 Monday - Friday
Switzerland	0848 840 200	http://www.usr.com/emailsupport/de	9:00 - 17:00 Monday - Friday
Sweden	+46 (0) 77 128 1020	http://www.usr.com/emailsupport/ea	9:00 - 17:00 Monday - Friday
United Kingdom	0870 844 4546	http://www.usr.com/emailsupport/uk	9:00 - 17:00 Monday - Friday

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Glossary

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A

ADSL (Asymmetric Digital Subscriber Line) - Transports information to and from customers and networks. ADSL employs different upstream and downstream data rates. The "asymmetric" name refers to these differing rates.

AH (Authentication Header) - RFC2402 defines AH. AH provides integrity and authentication through the shared key hashing algorithms (HMAC-MD5, HMAC-SHA1). AH provides authentication for as much of the IP header as possible. AH also authenticates upper level protocol data.

AM (Amplitude Modulation) Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the amplitude or intensity of the carrier. In regular AM, the carrier is a sinewave. The amplitude of the modulated carrier changes in proportion to signal amplitude. AM creates two identical sidebands on either side of the carrier. These sidebands contain the signal data. Either sideband can be attenuated or suppressed without harming the signal data. With an equivalent signal, AM tends to require less bandwidth than FM does. AM's disadvantage is that it's more subject to impulse noise and static than FM is.

Application Level Gateway (ALG) - Some applications embed IP addresses within the IP payload. The U.S. Robotics Wireless MAXg ADSL Gateway supports several ALGs, each addressing a special application. The ALG replaces the private IP Address embedded within a particular application payload.

ATM(Asynchronous Transfer Mode) - Protocol that packs digital information into 53-byte cells. The cells switch throughout a network over virtual circuits.

Average Cell Rate - Maximum sustainable or average rate (cells/second) for sending cells to the network. Average Cell Rate specifies bandwidth utilization. This value must always be less than or equal to Peak Cell Rate.

B

Bandwidth - Amount of data that can be transmitted over a given time period.

BPDU (Bridge Protocol Data Unit) - Data messages exchanged across switches in an extended LAN with a spanning tree protocol topology. BPDU packets assure that data arrives at the intended destination. These packets contain information on addresses, costs, ports, and priorities. Network loop detection involves exchanging BPDU messages across bridges. Loop deletion entails placing redundant switch ports in a backup (blocked) state and shutting down selected bridge interfaces.

Bridge – A device that connects two LAN segments together. These LAN segments may be of similar or dissimilar types, such as Ethernet and Token Ring. Inserting a bridge into a network segments the network. The bridge improves performance by keeping traffic contained within bridge segments.

Bridge Loop - Path that links one network segment to another. The spanning tree protocol avoids bridge loops.

Bridge Priority - Determines which bridge becomes the root bridge.

Burst Size (Cells) - Maximum number of cells that the user can send at peak rate in a burst. We measure burst size from within a sustainable rate.

C

CAP (Carrierless Amplitude and Phase Modulation) Modulation method used by modems and DSL equipment. Based on QAM. Signals modulate two wideband signals using passband modulation. CAP permits two to nine bits per frequency cycle.

Carrier wave - Periodic waveform. A carrier may be modulated or unmodulated. It may also be continuous or switched. Typically, modems modulate the carrier wave with a data signal. Modulation represents the data signal by impressing a variation on some characteristic of the carrier wave. For instance, a circuit may represent the signal as a proportional shift in carrier amplitude, frequency, or phase. Demodulation (detection) eliminates the carrier wave and reproduces the signal. The carrier frequency must be significantly greater than the signal frequency. A modem may simultaneously apply more than one signal and more than one modulation method to the same carrier. The modulation method may suppress the carrier before transmission. In that case, the receiver must reinsert the carrier before demodulation can occur.

CBR (Constant Bit Rate) - Service type that supports real-time applications with a fixed bandwidth. These applications, such as a video stream, produce data at regular intervals. The user can specify how much bandwidth that he wishes to reserve.

CDVT (Cells) - Parameter that constrains the number of cells that the user can send to the network at the maximum line rate.

Cycle - One half of a periodic wave. For instance, a sinewave includes one positive and one negative cycle.

D

DHCP (Dynamic Host Configuration Protocol) - Protocol for automatic TCP/IP configurations. DHCP provides static and dynamic address allocation and management.

DHCP Relay - Suppose that a Dynamic Host Configuration Protocol (DHCP) server resides on a different LAN than the node broadcasting for DHCP service. Then the DHCP broadcast request must be forwarded across the gateway/WAN to a subnet where a DHCP server resides. To assure receipt of an IP address that corresponds to this subnet, the gateway must use a DHCP relay. The gateway needs to know the IP address of the DHCP server. With this address, the gateway can direct the request to the appropriate DHCP server.

DMT (Discrete Multitone) - Most common DSL modulation method. DMT creates 256 channels across the usable frequency spectrum. Each channel measures 4.3125KHz wide.

Dividing the spectrum into channels allows DMT to function well in spite of nearby AM radio transmitters. The DMT modulator and demodulator is the FFT (Fast Fourier Transform) algorithm. Inside each channel, the modulation technique is QAM. Within each channel, the number of bits per symbol may be independently selected. Independent selection allows a DMT modem to be rate adaptive. Both G.DMT and G.Lite use DMT.

DNS (Domain Naming System) - Mechanism used in the Internet for translating names of host computers into IP addresses.

DNS Relay - DNS requests that the gateway forwards from a LAN node to a known DNS server. The gateway uses a DNS relay when the gateway functions as a NAT (Network Address Port Translation) device. The requests arrive at a DNS server over the WAN link. To function as a NAT, the gateway requires DNS relay settings.

DSLAM (Digital Subscriber Line Access Multiplexer) - Network device that receives signals from multiple customer Digital Subscriber Line connections. DSLAM places signals on high speed lines with multiplexing techniques for the fastest phone line technology available.

E

ESP (Encapsulating Security Payload) - ESP provides confidentiality. Optionally, ESP also provides integrity, authentication, anti-replay service, and limited traffic flow confidentiality. Options selected at the time of Security Association establishment determine provided services. For confidentiality, shared ESP supports shared key encryption algorithms, such as DES and Triple DES.

F

Filter - Operating parameter used in LAN bridges and gateways. When set, the filter causes bridges and gateways to block transfer of packets between LANs. The term "filter" also applies to a hardware device, such as a microfilter. When installed, this device reduces interference between DSL signals and telephone signals.

Forward Delay Time - Timeout value employed by all bridges in the bridged LAN. The root sets the forward delay value.

FM (Frequency Modulation) Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the frequency or pitch of the carrier. In regular FM, the carrier is a sine wave. The frequency of the modulated carrier changes in proportion to signal amplitude. FM creates an infinite number of sidebands. These sidebands contain the signal data. With an equivalent signal, FM tends to require more bandwidth than AM does. FM's advantage is that it's less subject to impulse noise and static than AM is.

Frame - Variable length information unit that contains packets. Also refers to a transmission frame, a fixed-length unit that carries bits across a physical link. A transmission frame is a framed transport component. DSL technologies use frames. Also refers to a frame of video, one image in a video sequence

G

Gateway - Entrance to and exit from a communications network.

G.DMT - The ADSL standard approved by the International Telecommunications Union (ITU). G.DMT indicates full-rate ADSL, which provides standards for higher speed ADSL than G.Lite. G.DMT provides maximum data rates of 8 Mbps downstream from the subscriber and 1.5

Mbps upstream from the subscriber.

G.lite - Standard way to install Asymmetric Digital Subscriber Line service. Over regular phone lines, G.Lite makes possible Internet connections to home and business computers at up to 1.5 Mbps. Officially known as G.992.2.

H

Hello Time - Time interval between generations of configuration BPDUs. The root bridge generates configuration BPDUs.

I-J-K

ICMP - (Internet Control Message Protocol) - A TCP/IP protocol for sending error and control messages. For example, a gateway uses ICMP to notify the sender that the gateway's destination node is unavailable. A ping utility sends ICMP echo requests to verify the existence of an IP address.

Internet Assigned Numbers Authority (IANA) - Internet Assigned Numbers Authority (IANA) uses three blocks of IP address space, namely 10.0.0.0/8 (class-A) 172.16.0.0/ 12 (class-B), and 192.168.0.0/16 (class-C) for private internets.

Interface Name - Gateway interface that will be configured.

IP (Internet Protocol) - Protocol that allows a packet of information to travel through many networks and LANs.

IP Address - IP addresses deliver packets of data across a network. These addresses differentiate the source and destination IP address and keep them constant. When a gateway port detects a packet, the gateway checks the routing table. The port attempts to match the network number of the destination IP address with its routing table entry. If the port finds a match, it forwards the packet to the destination network. With no match, the port forwards the packet to a gateway defined as the default gateway.

L

LAN (Local Area Network) - Network base covering a local geographic area. A LAN connects computers in the same building or area.

Link Cost - Cost associated with the interface. Based on this cost, the bridge decides which link to forward data over.

M

MAC Address (Local Area Network) - Unique serial number burned into Ethernet adapters. Distinguishes the network card from others.

Max Age Time Timeout value that all bridged LAN bridges use. The root bridge sets the Max Age value.

MAC Filter (Local Area Network) - Method of allowing or rejecting WAN access for specific machines.

Microfilter - Device that separates the ADSL data signal from the telephone signal so that the ADSL data signal does not interfere with the telephone device.

Modulation - Varying elements of electrical carrier waves in a manner that represents signal data. Demodulation restores the signal data. A modulated signal requires more bandwidth and an unmodulated signal does. The bandwidth increase results from the creation of sidebands during modulation. The sidebands contain the signal. AM creates two, identical sidebands on either side of the carrier. FM creates an infinite number of sidebands.

MTU (Maximum Transmission Unit) - Parameter that limits the size of packets that transmit on an interface. Not all interfaces support the MTU parameter. Some interfaces, like Ethernet, have range restrictions (80 - 1500).

N-O

NAP (Network Access Point) - Public network exchange facility where ISPs connect while peering. NAP connections determine how the Internet routes traffic.

Network Address Port Translation (NAPT) - Network Address Port Translation (NAPT) translates multiple private IP addresses and their LAN side TCP/UDP ports, into a single public IP address on the WAN side and its TCP/UDP ports. This is necessary as private IP addresses are not valid nor routable in the public network.

Many homes and small offices have multiple PCs or network devices. Using private IP addresses and NAPT in the U.S. Robotics Wireless MAXg ADSL Gateway, multiple LAN devices can access remote networks or the internet with just one public IP address assigned by their ADSL service provider.

When configuring the gateway for PPPoE or PPPoA operating mode, NAPT is always automatically enabled. For MER or IPoA operating mode, there is an option available to enable or disable the NAPT.

For any IP packet sent to the WAN, the NAPT function replaces the source private IP address in the IP header with the public IP address of the WAN interface, and replaces the TCP/UDP source port number with a unique port number. Vice versa, it translates the destination public IP address and the destination port number within the IP packet received from the WAN interface back to the originating PC's private IP address and it's original TCP/UDP port number.

Next Hop IP - IP address or Gateway used to arrive at the destination address.

NRT-VBR (Non Real Time-Variable Bit Rate) - Service type that supports applications that have no constraints on delay and delay variation, but still have variable-rate and burst traffic characteristics.

P

PAM (Pulse Amplitude Modulation) Modulation method used by modems and DSL equipment. The signal modulates or alters the amplitude or intensity of the carrier. In regular AM, the carrier is a sinewave. In PAM, the carrier is a periodic series of DC pulses.

PCM (Pulse Code Modulation) - Digital modulation method for transmitting analog data. PCM signals are binary. These signals can represent any analog data with only two states, logic 0 and logic 1.

PDM (Pulse Duration Modulation) Modulation method. Signal modulates or alters the duty cycle of the pulse. In PDM, the carrier is a pulse stream. Also called PWM (Pulse Width Modulation).

Peak Cell Rate - Maximum rate (Cells/second) for sending cells to the network.

Phase - Position of a periodic waveform.

PM (Phase Modulation) Modulation method used by modems, radio, and DSL equipment. The signal modulates or alters the phase or position of carrier waves. In regular PM, the carrier is a sinewave. The phase of the modulated carrier changes in proportion to signal amplitude.

Port Priority - Parameter that determines which port becomes the root bridge port.

POTS (Plain Old Telephone Service) - Basic voice service available in residences throughout the United States.

PP (Point-to-Point Protocol) - Communication protocol for dialing up the Internet over a serial link. Such serial links include a POTS and an ISDN line. PPP establishes the session between the user's computer and the ISP. PPP uses the Link Control Protocol (LCP), which also handles authentication (PAP, CHAP, etc.), compression, and encryption.

PPM (Pulse Position Modulation) Modulation method used by modems and DSL equipment. The signal modulates or alters the location of a pulse in the carrier. The carrier is a stream of pulses.

PPPoA (Point-to-Point Over ATM) - Dial-up Internet connections typically use PPP protocol. PPPoA is a method for running PPP protocol over ATM. PPPoA... ·

- offers service providers similar billing and access control with a presence in dial-up services.
- provides session authentication using Password Authentication Protocol (PAP).
- provides session authentication using Challenge Handshake Authentication Protocol (CHAP).
- achieves session accounting and conservation of bandwidth by closing down unused sessions.
- allows the IAD/Gateway and ISP link to easily negotiate network parameters.

PPPoE (Point-to-Point Over Ethernet) - Dial-up Internet connections typically use PPP protocol. PPPoE is a method for running PPP protocol over Ethernet. PPPoE... ·

- offers service providers similar billing and access control with a presence in dial-up services.
- provides a low-cost solution to multiple host maintenance at the customer premises.
- provides session authentication using Password Authentication Protocol (PAP).
- provides session authentication using Challenge Handshake Authentication Protocol (CHAP).

- achieves session accounting and conservation of bandwidth by closing down unused sessions.
- allows the IAD/gateway and ISP link to easily negotiate network parameters.

PVC (Permanent Virtual Circuit) - Virtual connection between two fixed endpoints on the network. Frame relay and ATM networking term.

PWM (Pulse Width Modulation) Modulation method. Signal modulates or alters the duty cycle of the pulse. In PWM, the carrier is a pulse stream. Also called PDM (Pulse Duration Modulation).

Q

QAM (Quadrature Amplitude Modulation) Modulation method used by modems and DSL equipment. Combines two amplitude-modulated (AM) signals into a single channel. The modem inserts the signals 90 degrees (one-quarter cycle) out of phase with each other. Engineers call this 90-degree phase shift "quadrature." QAM modulates both carrier phase and amplitude. Doubles effective bandwidth.

R

RAM (Random Access Memory) - Primary memory in a computer. The computer can overwrite this type of memory with new data. The "random access" part of RAM derives from the way RAM stores data: The computer can locate any bit of information in RAM in an equal amount of time. This fact applies regardless of where the bit resides.

RIP (Routing Information Protocol) - Routing protocol and part of the TCP/IP suite. RIP determines a route based on the smallest hop count between source and destination. RIP determines the smallest hop count by communicating with other gateways within the network. Only use RIP if the target gateway also utilizes RIP.

RJ-11 - Six-conductor modular telephone jack wired for up to four wires. The most common telephone jack in the world is the RJ-11. This connects telephone instruments, modems, and fax machines to a female RJ-11 jack. The female jack often mounts to the wall or floor.

RJ-45 - Eight-conductor modular telephone jack. Used for 10BaseT, ISDN and other data connections.

Router - Device that forwards data packets between local area networks (LANs) or wide area networks (WANs). Referring to routing tables and routing protocols, routers read the network address in each transmitted packet. Routers then decide where to send the packet. A router bases this decision on the best route. When a router port detects a packet, the router checks the routing table. The port attempts to match the network number of the destination IP address with its routing table entry. If the port finds a match, it forwards the packet to the destination network. With no match, the port forwards the packet to a router defined as the default gateway.

RT-VBR (Real Time-Variable Bit Rate) - Service type that supports time-sensitive applications such as voice. Varies the rate at which cells arrive.

S

Sideband - Band of frequencies adjacent to the carrier. Modulation of the carrier creates sidebands. The sidebands contain the signal data, but consume bandwidth beyond what the carrier needs. In some cases, circuitry may suppress duplicate sidebands without harming the signal data. For instance, AM becomes single sideband when circuits delete one of two identical AM sidebands. Some single sideband equipment also suppresses the carrier frequency. The carrier must then be restored at the receiver before the signal can be demodulated, that is, recovered.

Spanning Tree-Bridging - Particular algorithm or formula. Transparent bridges use the spanning tree algorithm to dynamically determine the best source-to-destination path. This algorithm avoids bridge loops (multiple paths that link one segment to another) within a network. The algorithm determines all redundant paths and makes only one of them active. The spanning tree protocol (STP) is part of IEEE standard 802.1.

Splitter - DSL device that accommodates analog telephones, plus digital data access over the Internet. With a splitter, analog voice signals transmit at baseband frequencies. These combine with passband data transmission through a low-pass filter.

Static routes - Permanent routes that the gateway stores. The gateway uses these routes when determining where to forward IP packets that it receives.

Subnet Mask - Portion of a network. Distinguished from other portions by the use of a mask or subnet number. Subnet masks split one network into a set of mini networks or subnets. Subnetting helps to reduce traffic on each subnet. Subnetting also makes the network more manageable. Each subnet functions as if it were an independent network.

SVC (Switched Virtual Circuit) - Virtual connection between two variable endpoints on the network. The switch makes at the beginning of the call, and breaks at the end of the call. A frame relay and ATM networking term.

T

TCP/IP (Transmission Control Protocol/Internet Protocol) - Set of protocols designed to link dissimilar computers that use various networks and LANs.

Topology - Geometric physical or electrical configuration that describes a local communication network. The most common distribution system topologies are the bus, ring, and star.

U

UDP (User Datagram Protocol) - A protocol within the TCP/IP protocol suite. When reliable delivery is unnecessary, communications may use UDP instead of TCP.

UBR (Unspecified Bit Rate) - Best effort service that does not require tightly constrained delay and delay variation. UBR provides no specific quality of service or guaranteed throughput.

UPnP (Universal Plug and Play) - With UPnP enabled in the U.S. Robotics Wireless MAXg ADSL Gateway, all UPnP aware applications running in the LAN-devices with UPnP (such as Windows XP) can pass through the NAPT. The ADSL gateway will perform DNS relay function

only if NAPT is enabled.

USB (Universal Serial Bus) - External bus standard that supports data transfer rates of 12 Mbps.

V

VCI (Virtual Channel Identifier) - Address of a virtual circuit. An integer that ranges from 0 to 65,535. The integer identifies a virtual channel that cells may traverse.

VPI (Virtual Path Identifier) - Address of a virtual path to a connection on an ATM network. An integer that ranges from 0 to 4,095.

W

WAN (Wide Area Network) - Network base that covers a large geographic area.

WINS (Windows Internet Name Service) - Service that transposes Windows networking names into addresses usable for routing purposes.