MultiModem® rCell

Intelligent Wireless Router

User Guide

MultiModem® rCell User Guide

Intelligent Wireless Router

MTCBA-Xx-EN3

S000508D, Revision D

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Revision History

Revision	Date	Description
A	09/14/11	Initial Release
B	12/17/12	RoHS update.
C	05/01/13	Updated specifications
D	12/19/13	Added UL translation

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The Knowledge Base provides immediate access to support information and resolutions for all Multi-Tech products. Visit **http://www.multitech.com/kb.go.**

Installation Resources

To download manuals, firmware, and software, visit **http://www.multitech.com/setup/product.go**.

Support Portal

To create an account and submit a support case directly to our technical support team, visit: **https://support.multitech.com**

Technical Support

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Warranty

To read the warranty statement for your product, please visit: http://www.multitech.com/warranty.go

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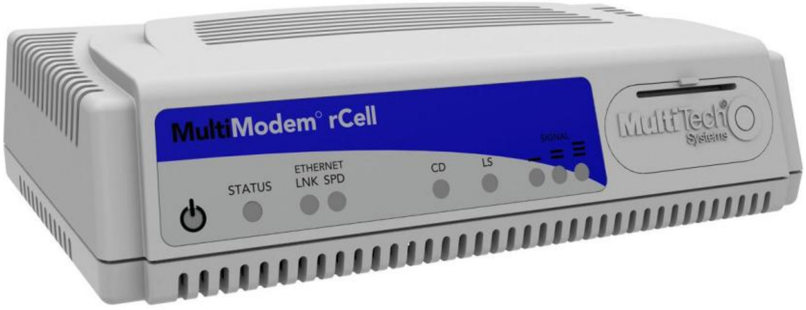
Chapter 1 – Introduction and Description

Introduction

This guide describes the MultiModem® rCell intelligent wireless routers with an Ethernet II interface. The MultiModem rCell Router is configured for one of three connectivity modes: always-on, wake-up on ring, or dial-on demand. The always-on network connection automatically establishes a wireless data connection and allows for around the clock surveillance, monitoring or real time data acquisition of any remote Ethernet device such as a Web camera. If the data link is dropped in the event of poor reception or a complete loss of service, it automatically re-establishes the data link. The wake-up on ring configuration allows the router to "wake up" and initiate a connection when it detects an incoming ring. For security reasons, you can setup the router to wake up based on a particular caller ID number. This configuration is ideal for reducing the costs associated with the modem being online and available 24/7. When configured for dial-on demand, the router only accesses the Internet when data is present. This configuration is ideal for sharing Internet access among networked PCs.



Model	Description
MTCBA-H3-EN3-P1	Quad-band HSPA 7.2

Package Contents

Unbundled package without accessories	Bundled package with accessories
1 router 1 Quick Start Guide **Note:** You must supply mounting screws, AC or DC power supply, and an antenna.	1 router 1 antenna 1 Ethernet cable 1 power supply 1 Quick Start Guide **Note**: You must supply mounting screws.

Note: If required, your wireless provider supplies the SIM card.

Related Documentation

AT Commands: The MultiModem MTCBA-H3-EN3 wireless router is configured using the HSPA-H3 AT Commands. These commands are documented in the Reference Guide number S000505x.

Safety Warnings

Ethernet Ports

CAUTION: The Ethernet ports and command ports are not designed to be connected to a public telecommunication network.

ATTENTION: Ports Ethernet et des ports de commande ne sont pas conçus pour être connecté à un réseau de télécommunication public.

RF Safety

Due to the possibility of radio frequency (RF) interference, it is important that you follow any special regulations regarding the use of radio equipment. Follow the safety advice given below.

CAUTION: Maintain a separation distance of at least 20 cm (8 inches) between the transmitter's antenna and the body of the user or nearby persons. The modem is not designed for or intended to be used in portable applications within 20 cm of the user's body.

Check your local standards regarding safe distances, etc.

- Operating your device close to other electronic equipment may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers' recommendations.
- Different industries and businesses restrict the use of cellular devices. Respect restrictions on the use of radio equipment in fuel depots, chemical plants, or where blasting operations are in process. Follow restrictions for any environment where you operate the device.
- Do not place the antenna outdoors.
- Switch OFF your wireless device when in an aircraft. Using portable electronic devices in an aircraft may endanger aircraft operation, disrupt the cellular network, and is illegal. Failing to observe this restriction may lead to suspension or denial of cellular services to the offender, legal action, or both.
- Switch OFF your wireless device when around gasoline or diesel-fuel pumps and before filling your vehicle with fuel.
- Switch OFF your wireless device in hospitals and any other place where medical equipment may be in use.

Sécurité RF

En raison de la possibilité d'interférences de radiofréquence (RF), il est important que vous suiviez une quelconque réglementation concernant l'utilisation du matériel radio. Suivez les conseils de sécurité ci-dessous.

ATTENTION: Maintenir une distance d'au moins 20 cm (8 po) entre l'antenne du récepteur et le corps de l'utilisateur ou à proximité de personnes. Le modem n'est pas conçu pour, ou destinés à être utilisés dans les applications portables, moins de 20 cm du corps de l'utilisateur.

Vérifiez vos normes locales touchant les distances de sécurité, etc..

- Fonctionnement de votre appareil à proximité d'autres appareils électroniques peuvent causer des interférences si l'équipement est insuffisamment protégé. Respectez les panneaux d'avertissement et les recommandations du fabricant.
- Différentes industries et les entreprises limitent l'utilisation des appareils cellulaires. Respectez les règlements sur l'utilisation des équipements radio dans les dépôts de carburant, les usines chimiques, ou lorsque des opérations de dynamitage sont en cours. Suivez restrictions pour n'importe quel environnement où vous utilisez l'appareil.
- Ne pas placer l'antenne à l'extérieur.

- Éteignez votre appareil sans fil dans un avion. Utilisant des dispositifs électroniques portables dans un avion peut mettre en danger le fonctionnement de l'avion, peut perturber le réseau cellulaire, et est illégal. Le non-respect de cette restriction peut entraîner la suspension ou le refus des services cellulaires au contrevenant, une action en justice, ou les deux.
- Éteignez votre appareil sans fil lorsque autour de l'essence ou pompes diesel-carburant et avant de remplir votre véhicule avec du carburant.
- Éteignez votre appareil sans fil dans les hôpitaux et tout autre endroit où l'équipement médical peut être utilisé.

Lithium Battery

- A lithium battery located within the product provides backup power for the timekeeping. This battery has an estimated life expectancy of ten years.
- When this battery starts to weaken, the date and time may be incorrect. If the battery fails, the board must be sent back to Multi-Tech Systems for battery replacement.
- Lithium cells and batteries are subject to the Provisions for International Transportation. Multi-Tech Systems, Inc. confirms that the Lithium batteries used in the Multi-Tech product(s) referenced in this manual comply with Special Provision 188 of the UN Model Regulations, Special Provision A45 of the ICAO-TI/IATA-DGR (Air), Special Provision 310 of the IMDG Code, and Special Provision 188 of the ADR and RID (Road and Rail Europe).

CAUTION: Risk of explosion if this battery is replaced by an incorrect type. Dispose of batteries according to instructions.

ATTENTION: Risque d'explosion si cette batterie est remplacée par un type incorrect. Jetez les batteries conformément aux instructions.

Interference with Pacemakers and Other Medical Devices

Potential interference

Radiofrequency energy (RF) from cellular devices can interact with some electronic devices. This is electromagnetic interference (EMI). The FDA helped develop a detailed test method to measure EMI of implanted cardiac pacemakers and defibrillators from cellular devices. This test method is part of the Association for the Advancement of Medical Instrumentation (AAMI) standard. This standard allows manufacturers to ensure that cardiac pacemakers and defibrillators are safe from cellular device EMI.

The FDA continues to monitor cellular devices for interactions with other medical devices. If harmful interference occurs, the FDA will assess the interference and work to resolve the problem.

Precautions for pacemaker wearers

If EMI occurs, it could affect a pacemaker in one of three ways:

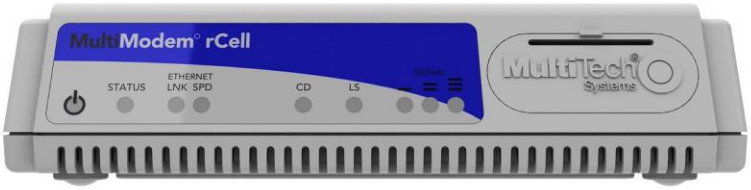
- Stop the pacemaker from delivering the stimulating pulses that regulate the heart's rhythm.
- Cause the pacemaker to deliver the pulses irregularly.
- Cause the pacemaker to ignore the heart's own rhythm and deliver pulses at a fixed rate.

Based on current research, cellular devices do not pose a significant health problem for most pacemaker wearers. However, people with pacemakers may want to take simple precautions to be sure that their device doesn't cause a problem.

- Keep the device on the opposite the side of the body from the pacemaker to add extra distance between the pacemaker and the device.
- Avoid placing a turned-on device next to the pacemaker (for example, don't carry the device in a shirt or jacket pocket directly over the pacemaker).

Front Panel

The front panel contains nine LEDs and the SIM card holder. For details on inserting a SIM card, refer to Insert the SIM Card into Holder.



LED Indicator	Description
Power	Lit when there is power.
Status	Solid light when the rCell boots up, saves the configuration, restarts, or updates the firmware. Blinks when the router is ready.
LNK	Link. Blinks when there is transmit and receive activity on the Ethernet link. Shows a steady light when there is a valid Ethernet connection.
SPD	Speed. Lit when the Ethernet link is at 100 Mbps. If it is not lit, the Ethernet link is at 10 Mbps.
CD	Carrier Detect. Lit when data connection has been established.
LS	Link Status. **Permanently On:** Powered on and connected, but not transmitting or receiving. **Slow flashing state** (5 Seconds) Powered on searching for a connection. **Fast flashing state** (0.3 seconds) Transmitting and receiving.
Signal	**ALL OFF:** Unit is off, not registered on network, or extremely weak signal (0 < = RSSI < 6). **1 Bar ON:** Very weak signal (7 < = RSSI <14) **1 Bar and 2 Bar:** Weak signal (15 < = RSSI <23) **1 Bar, 2 Bar, and 3 Bar ON:** Good signal (24 <= RSSI > = 31)

Specifications

General	
Standards	HSPA
Frequency Bands	Quad-band: 850/900/1900/2100 MHz
Speed	
Packet Data*	HSDPA data service of up to 7.2 Mbps HSUPA data service of up to 5.76 Mbps
Circuit Swithed Data	Up to 14.4K bps, non-transparent
Physical Description	
Dimensions	3.34 in x 6.05 in x 1.51 in 8.48 cm x 16.51 cm x 3.84 cm
Weight (Device Only)	0.72 lbs 0.326 Kg
Connectors	
Antenna Connector	RF Antenna: 50 ohm SMA (female connector)
SIM Holder	Standard 1.8 and 3V SIM receptacle
LAN Connector	RJ-45 10/100 BaseT
RS232 Connector	DE9
Power Connector	2.5 mm miniature (screw-on)
Environment	
Operating Temperature[1]	-40°to 167° F -40° to 75° C
Storage Temperature	-40° to 185° F -40° to 85° C
Humidity	Relative humidity 20% to 90% noncondensing
Power Requirements	
Operating Voltage	5 VDC
SMS	
SMS	Text and PDU Point-to-Point Cell broadcast

Certifications and Compliance	
EMC Compliance	FCC Part 15 Class B EN55022 Class B EN55024
Radio Compliance	FCC Part 22, 24 RSS102,132, 133 EN301 489-1 EN489-3 (GPS models only) EN301 489-7 EN301 489-24 EN301 511
Safety Certifications	UL/cUL 60950-1 2nd Ed IEC60950-1 2nd Ed am.1
Network Certifications	PTCRB AT&T

[1] UL Listed at 40° C, limited by power supply. UL Certification does not apply or extend to an ambient above 40° C and has not been evaluated by UL for ambient greater than 40° C. “UL has evaluated this device for use in ordinary locations only. Installation in a vehicle or other outdoor locations has not been evaluated by UL. UL Certification does not apply or extend to use in vehicles or outdoor applications or in ambient above 40° C.”

Répertorié UL à 40° C, limitée par la puissance d'alimentation. Certification UL ne s'appliquent ni s'étendre à l'une température ambiante supérieure à 40° C et n'a pas été évalué par UL pour ambiante supérieure à 40° C. «UL a évalué cet appareil pour une utilisation dans des endroits ordinaires seulement. Installation dans un véhicule ou d'autres emplacements en plein air n'a pas été évaluée par UL. La certification UL ne s'applique pas ou s'étendre à utiliser dans des véhicules ou les applications en extérieur ou dans ambiante dépasse 40 ° C.»

Note: Radio performance may be affected by temperature extremes. This is normal. The radio is designed to automatically fallback in class and reduces transmitter power to avoid damage to the radio. When this occurs depends on the interaction of several factors, such as ambient temperature, operating mode, and transmit power.

Power Draw

Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into your power source when determining product load.

Input Voltage= 5.0Volts	Idle Mode	Typical	Maximum	Peak Tx	Peak Rst (Inrush Current)
GSM850					
Current(AMPS)	0.345	0.450	1.20	3.60	
Watts	1.76	2.29	5.94		
HSDPA					
Current(AMPS)	0.345	0.760	1.01	1.40	
Watts	1.76	3.84	5.03		
Inrush Current (AMPS) (approx. 3ms duration)					2.66

RF Specifications

	GSM 850	EGSM 900	GSM 1800	GSM 1900
Frequency RX	869 to 894 MHz	925 to 960 MHz	1805 to 1800 MHz	1930 to 1990 MHz
Frequency TX	824 to 849 MHz	880 to 915 MHz	1710 to 1785 MHz	1850 to 1910 MHz
RF Power Stand at 12.5% duty cycle	2W	2W	1W	1W

Antenna System for Cellular Devices

The cellular/wireless performance is completely dependent on the implementation and antenna design. The integration of the antenna system into the product is a critical part of the design process; therefore, it is essential to consider it early so the performance is not compromised. If changes are made to the certified antenna system of the MultiModem, then recertification will be required by specific network carriers such as Sprint. The Antenna System is defined as the UFL connection point from the MultiModem to the specified cable specifications and specified antenna specifications.

PTCRB Requirements for the Antenna

There cannot be any alteration to the authorized antenna system. The antenna system must maintain the same specifications. The antenna must be the same type, with similar in-band and out-of-band radiation patterns.

FCC Requirements for the Antenna

The antenna gain, including cable loss, for the radio you are incorporating into your product design must not exceed the requirements at 850 MHz and 1900 MHz as specified by the FCC grant for mobile operations and fixed mounted operations as defined in 2.1091 and 1.1307 of the FCC rules for satisfying RF exposure compliance. The antenna used for transmitting must be installed to provide a separation distance of at least 20cm from all persons and must not transmit simultaneously with any other antenna transmitters. User and installers must be provided with antenna installation instructions and transmitter operating conditions to satisfying RF exposure compliance.

GSM Antenna Requirements/Specifications

Frequency Range	824 – 960 MHz / 1710 – 1990 MHz
Impedance	50 Ohms
VSWR	VSWR shall not exceed 2.0:1 at any point across the bands of operation
Typical Radiated Gain	3 dBi on azimuth plane
Radiation	Omni-directional
Polarization	Vertical
TRP/TIS	Including cable loss the total radiated power (TRP) at the antenna shall be no less than +22/24.5 dBm for 850/1900 MHz respectively, and the total isotropic sensitivity (TIS) at the antenna shall be no less than -99/101.5 dBm for 850/1900 MHz respectively.

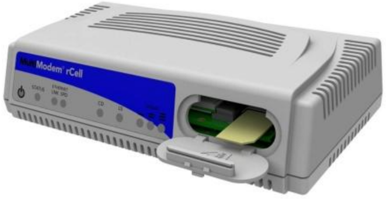
Chapter 2 - Installation

Inserting the SIM

The router requires the power supply connection to begin operation. It also requires a SIM card (Subscriber Identity Module) to operate on a GSM network. To install the SIM, do the following:

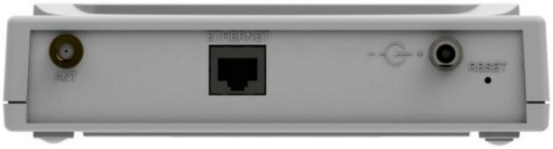
1. Open the SIM door by pressing down on the tab on the top of the door and prying it open.

Note: When changing a SIM, disconnect power.

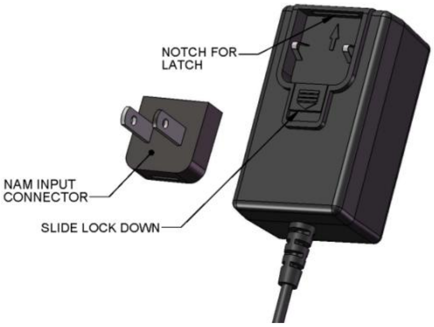


2. Insert the SIM card into the card holder. The image above shows the correct SIM card orientation.
3. Verify that the SIM card fits into the holder properly and then close the cover.

Making the Connection



1. Connect an suitable antenna to the SMA connector. For antenna information, see Antenna System for Cellular Devices.
2. Connect an Ethernet cable to the ETHERNET connector on the back of the router and to your computer either directly or via a switch or hub.
3. Attach the appropriate interchangeable blade piece to the power supply module.



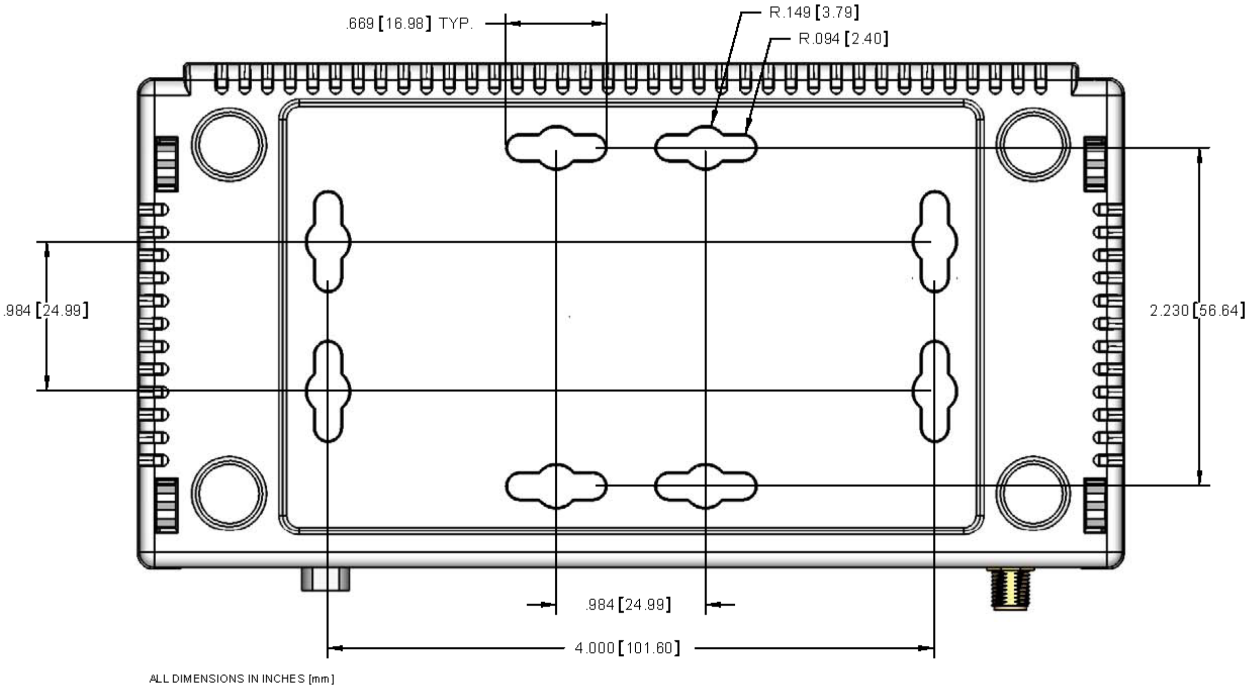
4. Screw-on the power lead from the power supply module into the power connection on the router.
5. Plug the power supply into your power source.

Mounting the Router

Before you mount your router to a permanent surface, verify signal strength, refer to Verify Signal Strength in this Chapter.

The router can be panel mounted with screws spaced according to the measurement shown.

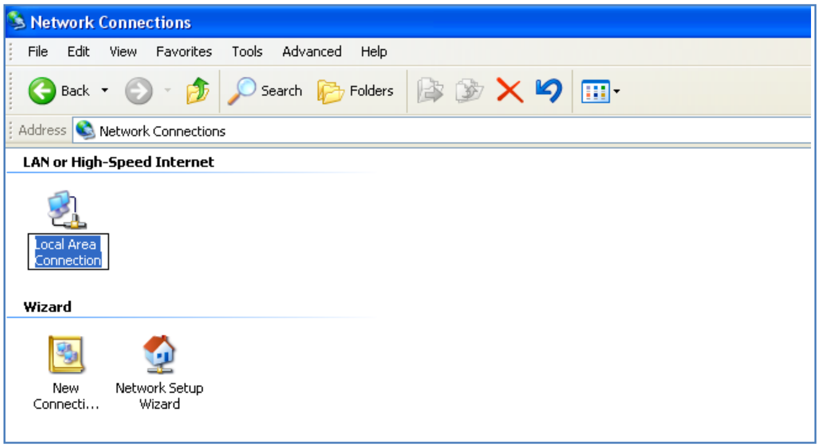
Note: Use either #6 or #8 pan head screws for all four mounts.



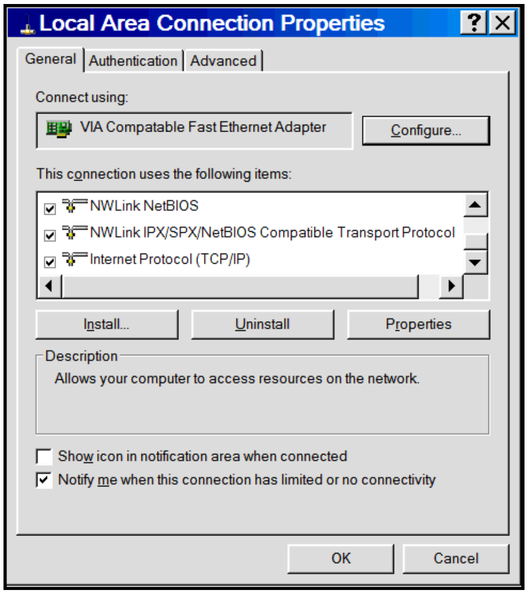
Setting the TCP/IP Address

Establish a TCP/IP connection at the pc so the PC can communicate with the router. Note that these steps are based on Windows XP.

1. Click **Start > Control Panel**. Double-click Network Connections. The Network Connections screen displays.



2. Right-click Local Area Connection and select Properties.



Connect using:

VIA Compatable Fast Ethernet Adapter

This connection uses the following items:

☑ NWLink NetBIOS
☑ NWLink IPX/SPX/NetBIOS Compatible Transport Protocol
☑ Internet Protocol (TCP/IP)

Description

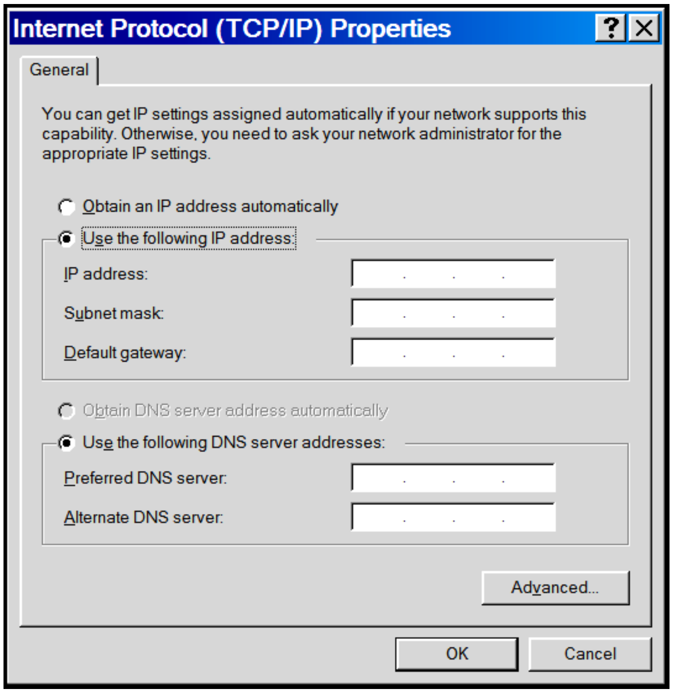
Allows your computer to access resources on the network.

☐ Show icon in notification area when connected
☑ Notify me when this connection has limited or no connectivity

The Local Area Connection Properties dialog box displays.

3. Select **Internet Protocol [TCP/IP]** and click **Properties**. The Internet Protocol (TCP/IP) Properties screen displays.

Note: If the Internet Protocol (TCP/IP) Properties shows your current IP configuration, record this information. You may want to restore the computer's settings after configuring the router.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
● Use the following IP address:

IP address: . . .
Subnet mask: . . .
Default gateway: . . .

○ Obtain DNS server address automatically
● Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

4. Enter **TCP/IP Properties** for a Fixed IP Address. Repeat these steps for each computer on your network

   a. Select **Use the following IP address**.

   b. Enter the computer's **IP Address**. Example: 192.168.2.x.

      Note: The **x** in the address stands for numbers 101 and up.

   c. Enter the **Subnet Mask**. Example: 255.255.255.0

   d. Enter the **Default Gateway**. Example: 192.168.2.1

Note: The computer's settings must be in the same subnet range as the router.

The factory default settings for the router are:

IP Address: 192.168.2.1

Subnet Mask: 255.255.255.0

e. Select **Use the following DNS server addresses.**

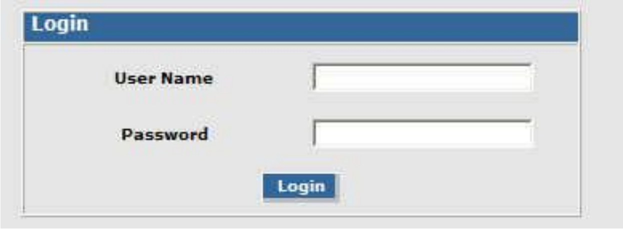
f. Enter the IP Address for the **Preferred DNS Server** and click **OK.** Example: 205.171.3.65

g. Close the **Local Area Properties** screen by clicking **OK**.

Logging into Web Management Software

The router's Web Management software allows you to configure the Ethernet interface. To login:

1. Verify that the Status LED is blinking to indicate that router is ready.
2. Open a web browser.
3. Enter the default **Gateway Address**, **http://192.168.2.1.** The Login window displays.



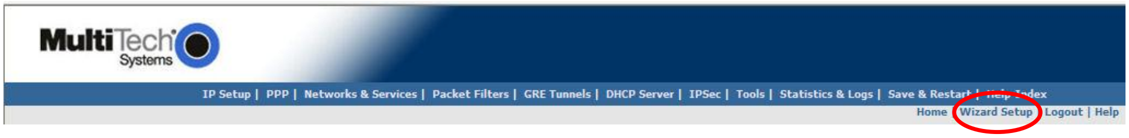
4. Enter the default **User Name** and **Password** and click **Login**. The default for both is **admin**. The Web Management displays.

Note: User name and password are case-sensitive. Change the default password to improve router security. See Authentication for more information.

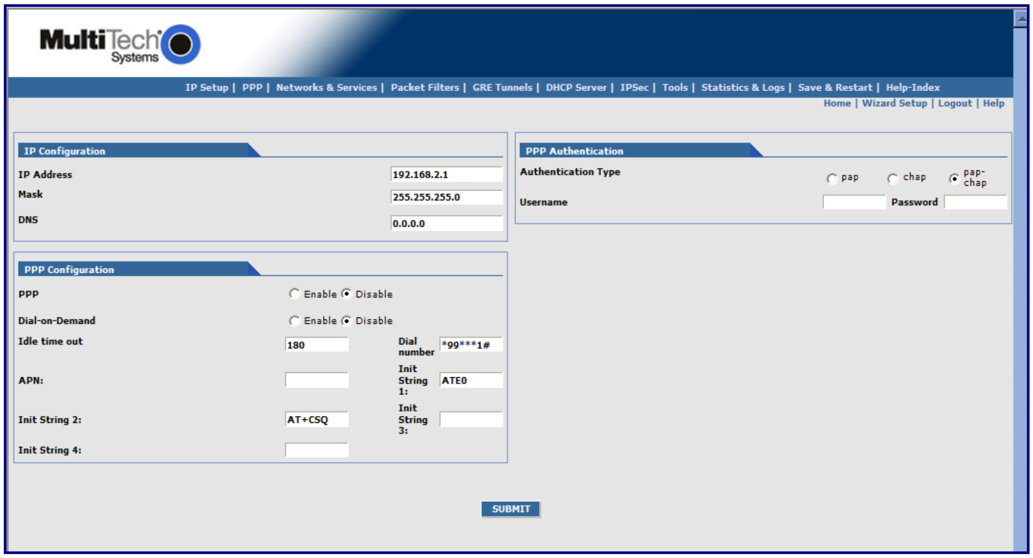
Configuring the Router

Use Wizard Setup for basic router configuration. To setup additional features and functions, refer to Chapter 3, Web Management Software. In the Web Management Software:

1. Click **Wizard Setup**.


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | IPSec | Tools | Statistics & Logs | Save & Restart | Help Index
Home | Wizard Setup | Logout | Help

The Wizard Setup screen displays.


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | IPSec | Tools | Statistics & Logs | Save & Restart | Help-Index
Home | Wizard Setup | Logout | Help
SUBMIT

IP Configuration

IP Address	192.168.2.1
Mask	255.255.255.0
DNS	0.0.0.0

PPP Configuration

PPP	○ Enable ● Disable		
Dial-on-Demand	○ Enable ● Disable		
Idle time out	180	Dial number	*99***1#
APN:		Init String 1:	ATE0
Init String 2:	AT+CSQ	Init String 3:	
Init String 4:			

PPP Authentication

Authentication Type ○ pap ○ chap ● pap-chap

Username Password

Wizard Setup

A minimum router configuration is provided using the Wizard Setup. This provides a quick way to enter and save information needed to create a connection to the Internet. The table below provides the information for the minimum configuration.

IP Configuration	
IP Address	The default is 192.168.2.1. To change it, simply enter your own IP address.
Mask	The default is 255.255.255.0
DNS	Enter the primary DNS IP address for the system. The default is 0.0.0.0

PPP Configuration	
PPP	The default is ***disable***. To connect to the Internet, you need to enable PPP. Depending on the model, commands may need to be issued to the integrated cellular modem before connecting to the wireless service. To issue commands to the integrated cellular modem, PPP must be disabled and telnet port 5000 used.
Dial-on-Demand	The default is disable.
Idle Time Out	Sets the amount of time the PPP link stays active before disconnecting. Setting the value to zero causes the link to stay active continuously.
Dial Number	Enter the dial number. This number connects you to the Internet. For HSPA, the number is *99***1#.
APN	For HSPA models, enter the APN (Access Point Name). The APN is assigned by your wireless service provider.
Init String	You can set up to 4 router initialization strings.

PPP Authentication	
Authenticatio	Click the button corresponding to the authentication protocol you want to use to negotiate with the remote peer. PAP, CHAP, or PAP-CHAP. Default = PAP-CHAP
Username	Enter the PPP Username. This name authenticates the remote peer.
Password	Enter the PPP Password. This password authenticates the remote peer.

1. Enter settings.
2. Click **Submit.**
3. Click **Save & Restart** to reboot.

Notes:

To save changes, click **Submit** on the bottom of most screens.

After saving changes, you need to restart the device for the changes to take effect. To restart, click **Save & Restart** on the Menu bar. You can wait to restart until you finish changing settings on multiple pages.

Chapter 3 describes additional features and functions.

Access Point Names

Your wireless service provider assigns an APN (Access Point Name), but you may have to ask for it. An access point is an IP network to which a MultiModem rCell Router connects. The Web Management software asks for the APN on the Wizard Setup screen and the PPP screen.

Provider Fees

Your provider charges you for data usage. Check with your provider for rates and limitations. If you plan to use the router for large amounts of data transfers, Multi-Tech recommends an unlimited data plan with your account. Multi-Tech is not responsible for any charges relating to your cellular bill.

Verifying Signal Strength

To communicate directly with the cellular modem to verify signal strength, telnet to the modem.

Note: Ensure that the Status LED is blinking, indicating that the router is ready. Ensure that PPP is disabled before verifying signal strength.

1. To Telnet to the modem. You can access the modem thru the Run icon or from the Command Prompt:

Click Start I Run icon. In the Open window, enter cmd and then press ENTER.

or

Click Start I All Programs I Accessories I Command Prompt

- In the command window, type **telnet 192.168.2.1 5000**
- At the Login prompt, type the default user name: **admin** (all lower-case). Press **ENTER**
- At the Password prompt, type the default password: **admin** (all lower-case). Press **ENTER**

2. In the command window, type AT+CSQ . The router responds with the received signal strength (rssi).

Signal Strength – RSSI	
10 – 31	Sufficient
0 – 9	Weak or Insufficient
99	Insufficient

Once you have a good signal for where you are going to place the router, either refer back to Optional Mounting in this Chapter if you are permanently mounting your router or continue with Account Activation for Wireless Devices.

Account Activation for Wireless Devices

Please refer to Multi-Tech's Cellular Activation Web site at http://www.multitech.com/activation.go for information on activating your cellular modem.

Note: If you need remote access to your MultiModem over the Internet for remote configuration, you need to ensure that your wireless network provider has provisioned mobile terminated data and fixed or dynamic public IP address in which they can configure the network to redirect any incoming connection to that predefined IP.

Resetting the Router

To reset the router:

- Hold the Reset button in until the Status Light goes out. Then, release it.

This also sets the username and password back to admin and admin and the IP address to the default, 192.168.2.1.

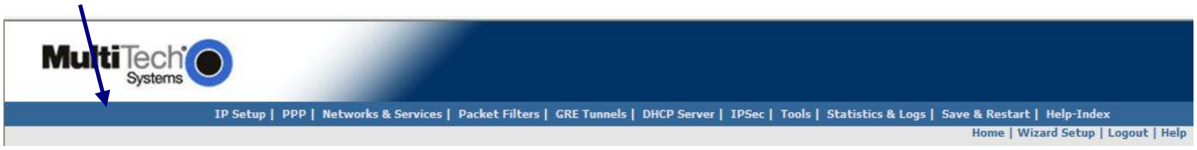
Chapter 3 - Web Management Software

Use the Web Management software to configures your router's Ethernet functions.

Navigating the Web Management Software

This section explains the menu structure and the navigation buttons of the router's Web Management software.

Menu Bar


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | IPSec | Tools | Statistics & Logs | Save & Restart | Help-Index
Home | Wizard Setup | Logout | Help

IP Setup: Sets up a General Configuration, HTTP, DDNS, SNTP, Static Routes, and Remote Configuration.

PPP: Sets up the PPP authentication, dial-on-demand, router authentication, and Wakeup on Call.

Networks & Services: Defines networks and services to make them available to other functions such as allowed packet filters, static routes, remote configuration, DNAT, and GRE tunnels and routes.

Packet Filters: Defines filter rules, DNAT configuration, and ICMP rules.

GRE Tunnels: Generic Routing Encapsulation (GRE). Defines the remote network and the tunnel through which traffic is to be routed.

DHCP Server: Configures the DHCP server settings.

IPSec: Allows device to support LAN-to-LAN VPN tunneling with 3DES and AES 128-192-256 encryption support

Tools: Sets DDNS Force Update, displays DDNS Status, resets the modem, and provides screens for Firmware Upgrade, Load Configuration, and Save Configuration.

Statistics & Logs: Shows statistics and logs maintained by the router.

Save & Restart: Saves your settings and reboots.

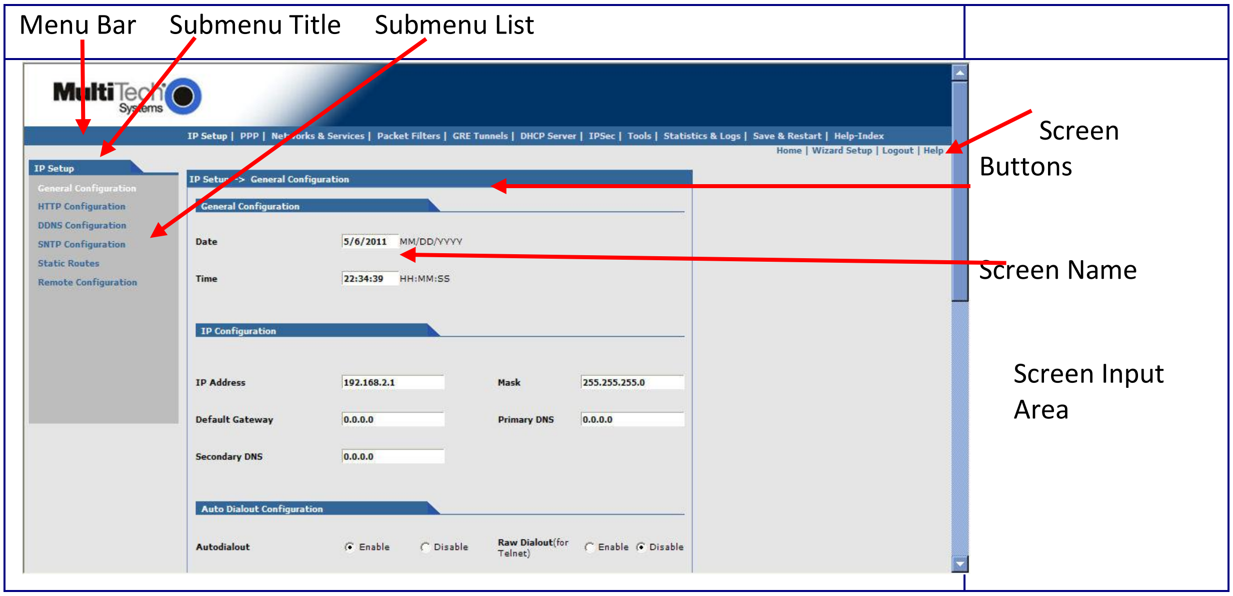
Help Index: Accesses the online Help text.

Submit and Save & Restart

To save changes, click **Submit** on the bottom of most screens.

After saving changes, you need to restart for the changes to take effect. To restart, click **Save & Restart** on the Menu bar. You can wait to restart until you finish changing settings on multiple pages.

Screen Parts



IP Setup -> General Configuration

General Configuration

Date 5/6/2011 MM/DD/YYYY

Time 22:34:39 HH:MM:SS

IP Configuration

IP Address 192.168.2.1 Mask 255.255.255.0

Default Gateway 0.0.0.0 Primary DNS 0.0.0.0

Secondary DNS 0.0.0.0

Auto Dialout Configuration

Autodialout ● Enable ○ Disable Raw Dialout(for Telnet) ○ Enable ● Disable

Screen Buttons

Home: Click this button to return to the Home screen.

Wizard Setup: Click this button to display the Wizard Setup screen on which you can quickly set up your MultiModem rCell Router with basic configuration settings.

Logout: Click this button to Logout and return to the login screen.

Help: Click this button to display the Help text.

Submenus

The submenus display on the left side of the screen.

The following table shows the sub-menu selections under each main menu category.

IP Setup	PPP	Networks & Services	Packet Filters	GRE Tunnels
General Configuration HTTP Configuration DDNS Configuration SNTP Configuration Static Routes Remote Configuration	PPP Configuration Wakeup on Call Power On Config Modem Commands	Network Configuration Service Configuration	Packet Filters DNAT Configuration Advanced	GRE Tunnels GRE Routes
DHCP Server	**IPSec**	**Tools**	**Statistics & Logs**	
Subnet Settings Fixed Addresses	IP Sec	Tools Firmware Upgrade Load Configuration Save Configuration	SysInfo Ethernet PPP PPP Trace DHCP Statistics GRE Statistics Modem Info Service Status TCP/UDP Client Live Log TCP/UDP Server Live Log IPSec Live Log IPSec Log Traces	

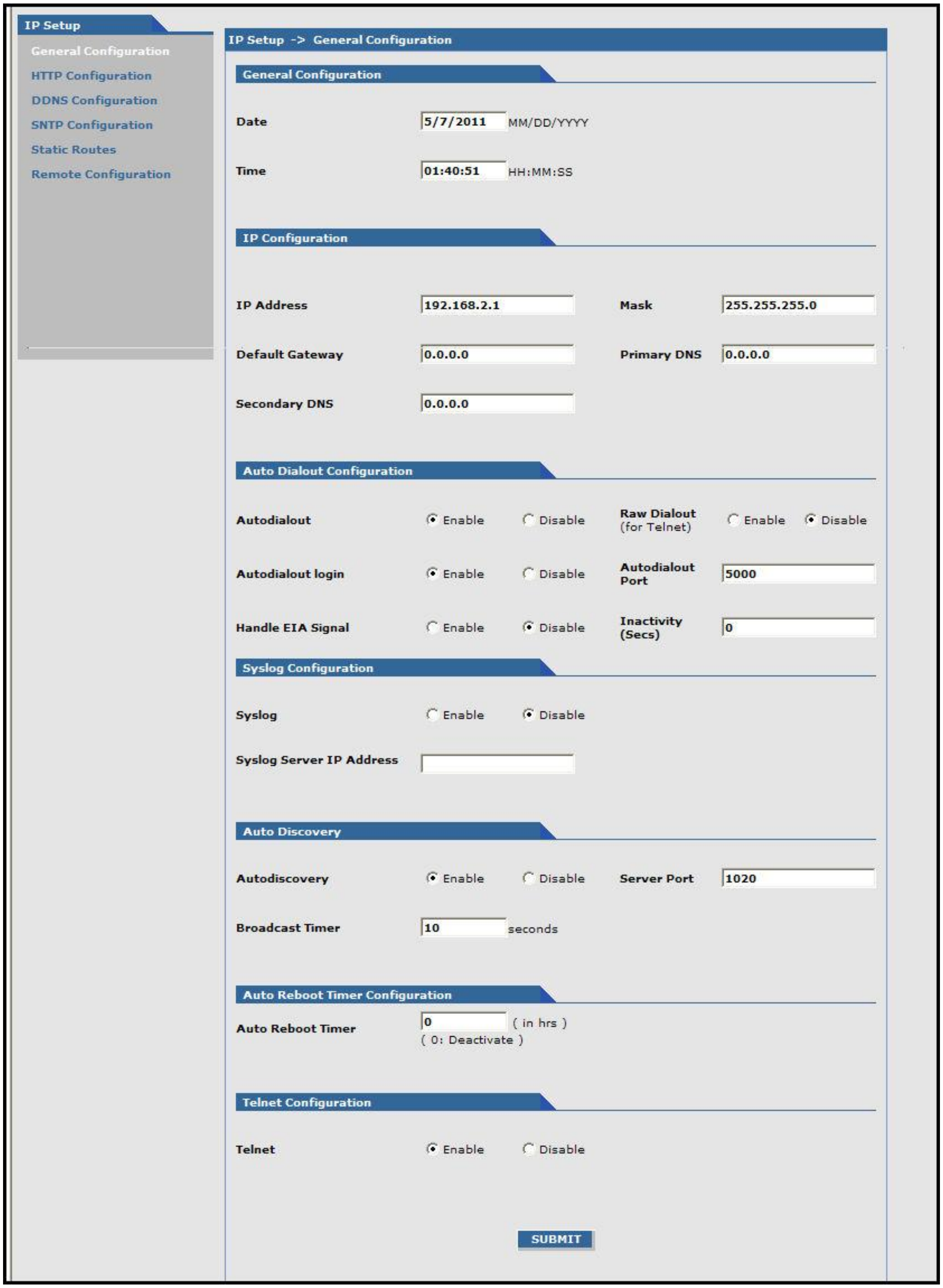
Web Management Software Screens

The rest of this chapter describes each of the Web Management software screens.

IP Setup

Setup > General Configuration

In the General Configuration, you will set the general system-based parameters.



IP Setup -> General Configuration

General Configuration

Date	5/7/2011	MM/DD/YYYY
Time	01:40:51	HH:MM:SS

IP Configuration

IP Address	192.168.2.1	Mask	255.255.255.0
Default Gateway	0.0.0.0	Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0		

Auto Dialout Configuration

Autodialout	● Enable	○ Disable	Raw Dialout (for Telnet)	○ Enable	● Disable
Autodialout login	● Enable	○ Disable	Autodialout Port	5000	
Handle EIA Signal	○ Enable	● Disable	Inactivity (Secs)	0	

Syslog Configuration

Syslog	○ Enable	● Disable
Syslog Server IP Address		

Auto Discovery

Autodiscovery	● Enable	○ Disable	Server Port	1020
Broadcast Timer	10 seconds			

Auto Reboot Timer Configuration

Auto Reboot Timer 0 (in hrs)
(0: Deactivate)

Telnet Configuration

Telnet ● Enable ○ Disable

SUBMIT

General Configuration

Date and Time: The system date and time display in these formats: **MM/DD/YYYY** / **HH:MM:SS**. A real time clock is part of SNTP to display proper time.

IP Configuration

Enter the following addresses for the Ethernet interface.

IP Address: Default = 192.168.2.1

Mask: Default 255.255.255.0

Default Gateway: Default 0.0.0.0

Primary DNS: Default 0.0.0.0

Secondary DNS: Default 0.0.0.0

For more information, see Appendix A – Commonly Supported Subnets Reference Table.

Auto Dial out Configuration

Auto Dialout: Check the box to enable/disable Auto Dialout. Default = Enable. The Auto Dialout settings allow you to use the integrated cellular modem directly with no router functionality. This is accomplished using redirector software on your pc. This software creates a virtual serial port allowing your pc to communicate with the integrated cellular modem over IP using telnet.

Raw Dialout: Check the box to enable/disable raw mode for an Auto Dialout session. Default = Disable.

Auto Dialout Login: Check the box to enable or disable Auto Dialout Login feature. Default = Enable. The Auto Dialout port is the telnet port used by the redirector software on your pc to communicate to the integrated cellular modem.

Auto Dialout Port: Enter the serial Auto Dialout Port number. Default = 5000.

Handle EIA Signal: Check the box to enable/disable the EIA standard signal characteristics (time and duration) used between different electronic devices.

Inactivity: Enter the time in seconds that the auto dialout session will stay active before going inactive.

Syslog Configuration

Syslog: Check the box to enable or disable Syslog. Default = Disable.

Syslog Server IP Address: If a Remote Syslog Server IP Address is specified, the syslog feature acts as a remote Syslog.

Auto Discovery

Auto Discovery: heck the box to enable or disable Auto Discovery to broadcast (MAC level), the MAC Address, IP Address, and DHCP information to the configured server port. Default = Enable. The router will send a broadcast packet on the specified server port every 10 seconds or whatever interval the broadcast timer is set to.

Server Port: Enter the Server Port Number. Default port is 1020.

Broadcast Timer: Enter the amount of time in seconds for the auto-discovery packet granularity of periodic broadcasting. Default is 10 seconds.

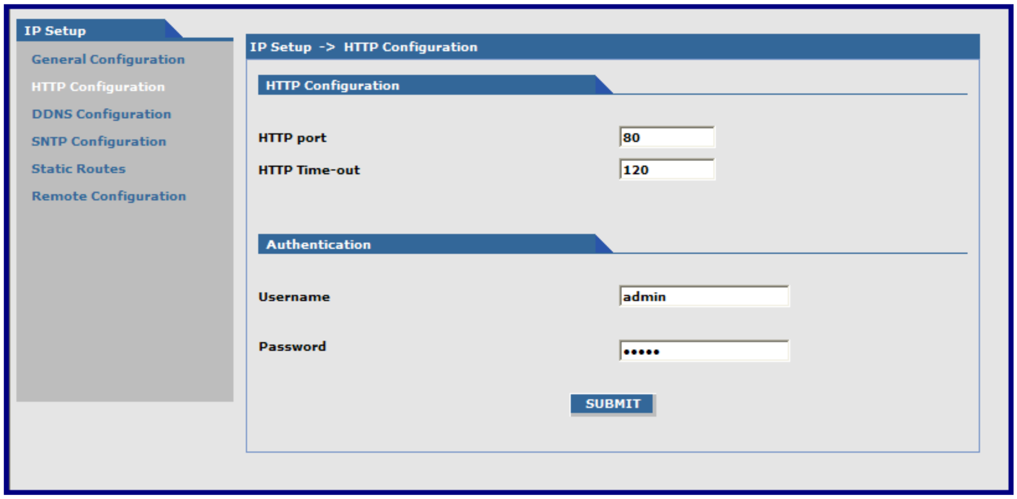
Auto Reboot Timer Configuration

Auto Reboot Timer: Enter the number of hours to lapse between each automatic reboot. The default of zero deactivates the timer. Range is 0 to 999.

Telnet Configuration

Enables/Disables the Telnet port. The default is **Enable**. This is specifically for telnet port 23 for technical support debug. You can still access the integrated cellular modem using port 5000 when this is disabled. Ensure that PPP is also disabled before telnetting to the port.

IP Setup > HTTP Configuration



HTTP port: 80

HTTP Time-out: 120

Username: admin

Password: •••••

HTTP Configuration

HTTP Port: Enter the port number on which the HTTP server will listen for requests. Default is 80.

HTTP Time-out: Set the HTTP session in seconds. The default is 120 seconds.

Authentication

Username: Enter the Username that can access to the Web Management software. Default is **admin**. This username and password are also used for telnet access to the router and integrated cellular modem.

Password: Enter the Password for access to the Web Management software. Default is **admin**.

Notes: User name and password are case-sensitive.

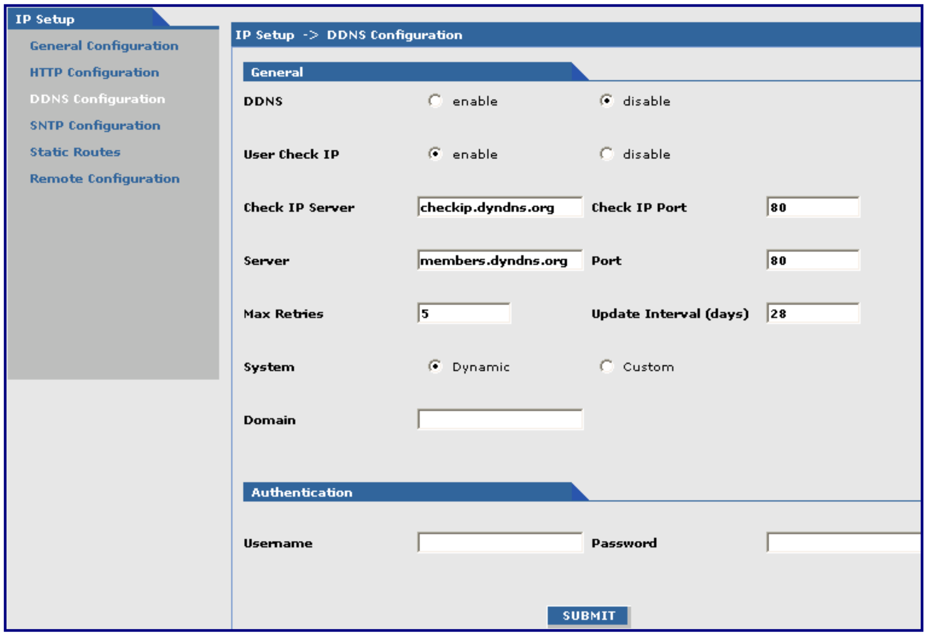
Change the password to one that is more secure.

Passwords can be up to 100 characters.

IP Setup > DDNS Configuration

DDNS (Dynamic Domain Naming System) is dependent upon cellular network/account configuration. DDNS allows you to have a static domain name with a dynamic IP address. Whenever your dynamic IP address changes, it is submitted to the DDNS server where your domain name is updated to point to the new IP address.

Note: You have to register with a DDNS server to use this feature.



DDNS ○ enable ● disable

User Check IP ● enable ○ disable

Check IP Server: checkip.dyndns.org Check IP Port: 80

Server: members.dyndns.org Port: 80

Max Retries: 5 Update Interval (days): 28

System ● Dynamic ○ Custom

Domain:

Username: Password:

General

DDNS: Check the Enable or Disable box. This enables/disables DDNS.

Default = Disable.

Use Check IP: Check the Enable or Disable box. If enabled, the program will query the server to determine the IP address before it performs the DDNS update (the IP address is still assigned by the wireless provider and the DDNS will be updated based on the address returned by Check IP Server). If disabled, the program will perform the DDNS update using the IP address that it obtains from the PPP link. Default = Enable.

Check IP Server: Enter the Server name from which the currently assigned IP address is obtained. This check IP server is a server the router accesses to check it's current IP address.

Check IP Port: Enter the port number of the Check IP Server. Default is 80.

Server: Enter the Server name to which the IP Address change is registered. Example: members.dyndns.org

Port: Enter the Server port number. Default is 80.

Max Retries: Enter the maximum number of tries that will be allowed if the update fails.

Default = 5. Range is 0 – 100.

Update Interval: Enter the intervals in days that will be allowed to pass when there is no IP Address change. At the end of this interval, the existing IP Address will be updated in the server so that it will not expire. Default = 28 days. Range is 1 – 99 days.

System: Sets the system registration type as either Dynamic or Custom. Default = Dynamic.

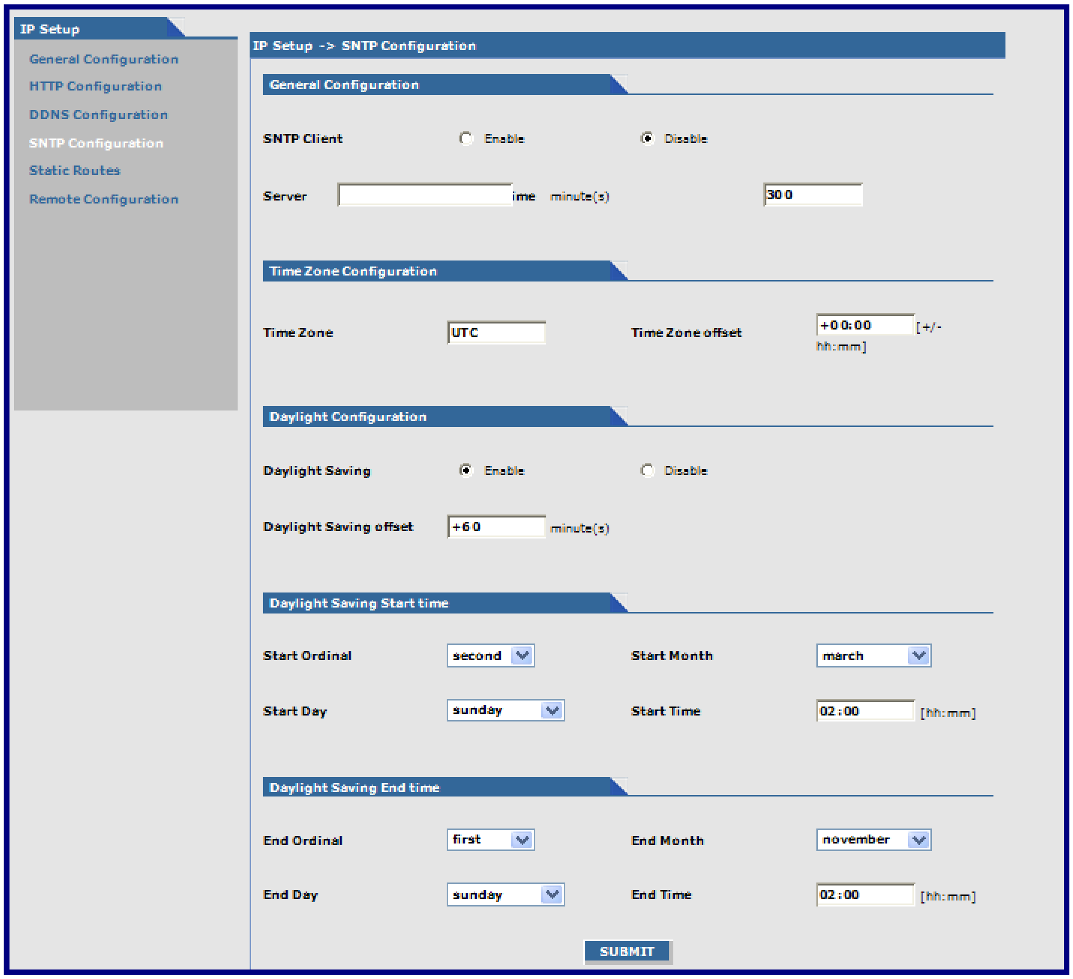
Domain: Enter the registered Domain name.

Authentication

Username: Enter the Username that can access the DDNS Server. Default = NULL. You should have received your username when you registered with the DDNS service.

Password: Enter the Password that can access the DDNS Server. Default = NULL. You should have received your password when you registered with the DDNS service.

IP Setup > SNTP Configuration



IP Setup -> SNTP Configuration

General Configuration

SNTP Client ○ Enable ● Disable

Server ime minute(s) 300

Time Zone Configuration

Time Zone UTC Time Zone offset +00:00 [+/- hh:mm]

Daylight Configuration

Daylight Saving ● Enable ○ Disable

Daylight Saving offset +60 minute(s)

Daylight Saving Start time

Start Ordinal second Start Month march

Start Day sunday Start Time 02:00 [hh:mm]

Daylight Saving End time

End Ordinal first End Month november

End Day sunday End Time 02:00 [hh:mm]

General Configuration

SNTP Client: Enable or disable the SNTP Client to contact the configured server on the UDP port 123 and set the local time. The default is Disable.

Server: Enter the SNTP server name or IP address to which the SNTP Client must contact in order to update the time. No default.

Polling Time: Enter the polling time at which the SNTP client requests the server to update the time. Default is 300 minutes. Time must be entered in minutes.

Time Zone Configuration

Time Zone: Enter your time zone. Default = UTC (Universal Coordinated Time, Universal Time). See the following Web site for Time Zone information:

http://wwp.greenwichmeantime.com/info/current-time.htm

Time Zone Offset: Enter +/- hh:mm. Default = +00:00. Offset is the amount of time varying from the standard time of a Time Zone.

Daylight Configuration

Daylight Saving: Enables/disables Daylight Saving mode. The default is Enable.

Daylight Saving Offset: Set the offset to use during Daylight Saving mode. Default is +60 minutes. Enter the time in + / - minutes.

Daylight Saving Start Time

Start Ordinal: Set the start ordinal to use during Daylight Saving mode. Options are first/second/third/fourth/last. Default is second. Daylight Saving time usually starts at the same time on the same day of the week in the same month every year. Each day of the week occurs four or five times a month. Therefore, you will be selecting the week in which daylight saving time starts: the first, second, third, fourth or the last of the month.

Start Month: Set the start month to use during Daylight Saving mode. Default is March.

Start Day: Set the start weekday to use during Daylight Saving mode. Default is Sunday.

Start Time: Set the start time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

Daylight Saving End Time

End Ordinal: Set the end ordinal to use during Daylight Saving mode. Select the week in which daylight saving time ends. Options are first/second/third/fourth/last. Default is first.

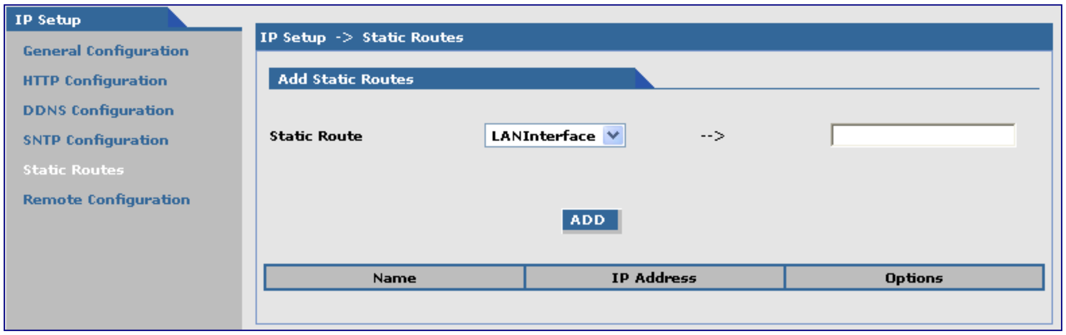
End Month: Set the end month to use during Daylight Saving mode. Default is November.

End Day: Set the end weekday to use during Daylight Saving mode. Default is Sunday.

End Time: Set the end time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

IP Setup > Static Routes

Routing information is used by every computer connected to a network to identify whether it is sending a data packet directly to the firewall or passing it on to another network. The options to Delete or Edit a route after it has been defined and added are available by using the table at the bottom of the screen.



Static Route: LANInterface -->

Name	IP Address	Options

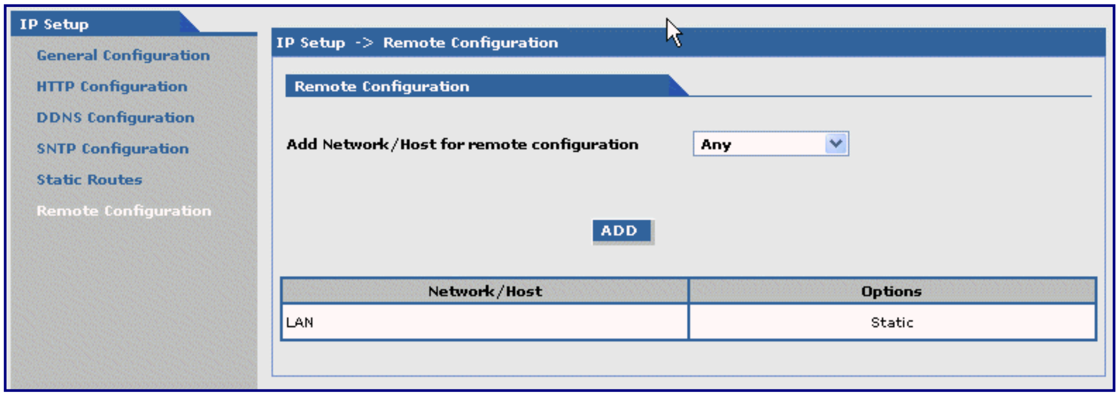
Add Static Routes

IP packets destined for the network indicated in the drop down box are routed to the IP address in the box pointed to by the arrow. The networks in the drop down box can be defined under the 'Networks & Services' tab.

Static Route: Select a static route from the drop down list box, and then click **Add**. The new route displays at the bottom of the screen.

Note: The Static Route screen will not display until the network is defined under Networks & Services.

IP Setup > Remote Configuration



Add Network/Host for remote configuration: Any

Network/Host	Options
LAN	Static

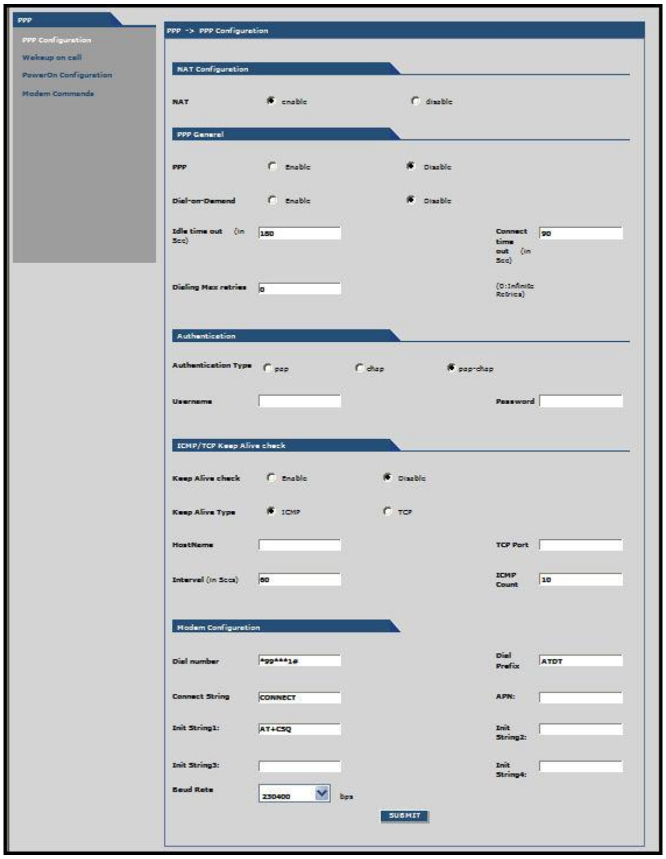
Remote Configuration

Add Network/Host for Remote Configuration: Select a network or host from the drop down box. You can define more networks or hosts under the **Network & Services** tab. The choices are Any, LAN, and WAN Interface. Choose all that apply. Click **Add** after each selection. The network or host displays at the bottom of the screen.

Delete: You will have the option to delete **Any** and **WAN Interface** in the **Options** window once it is added. Click on Delete in the Options window.

PPP

PPP > PPP Configuration



PPP -> PPP Configuration

NAT Configuration

NAT ● enable ○ disable

PPP General

PPP ○ Enable ● Disable

Dial-on-Demand ○ Enable ● Disable

Idle time out (in Sec) 180 Connect time out (in Sec) 90

Dialing Max retries 0 (0:Infinite Retries)

Authentication

Authentication Type ○ pap ○ chap ● pap-chap

Username Password

ICMP/TCP Keep Alive check

Keep Alive check ○ Enable ● Disable

Keep Alive Type ● ICMP ○ TCP

HostName TCP Port

Interval (in Secs) 60 ICMP Count 10

Modem Configuration

Dial number *99***1# Dial Prefix ATDT

Connect String CONNECT APN:

Init String1: AT+CSQ Init String2:

Init String3: Init String4:

Baud Rate 230400 bps

NAT Configuration

NAT

Enable/disable NAT (Network Address Translation). The default is Enable.

If NAT is enabled:

- Your LAN can use one set of IP addresses for internal traffic and a second set of addresses for external traffic. In other words, the router with NAT does the simple IP routing between the LAN interface and the WAN interface. NAT hides the LAN address behind a single IP address on the wireless side.
- Your internal addresses are shielded from the public Internet.

If NAT is disabled:

- The router functions without performing any address translation on the packets passing through it.
- Masquerading of packets originating from the LAN is disabled.
- Address translation of packets arriving from the WAN is also disabled.
- Any DNAT Configuration previously setup in the DNAT Configuration screen is disabled. This prevents the user from adding any DNAT rules, which if allowed would defeat the purpose of enabling Routing.

Note: For routing to take effect, save the configuration after enabling it. It won’t be effective on the fly at runtime.

PPP General

PPP Enable/disable PPP. The default is Disable. When enabled, the unit functions as a router. PPP must be disabled to access the integrated cellular modem directly using telnet port 5000. If PPP is enabled, you cannot access the integrated cellular modem.

Dial-on-Demand: Enable/disable Dial-on-Demand. The default is Disable. If you disable it, the router will always stay connected unless the Idle Time Out expires. When Dial-on-Demand is enabled, use the ‘Wakeup on Call’ settings under the PPP menu to configure the settings for re-establishment of the connection.

Idle Time Out: Set the amount of idle time that will pass before the router will timeout. The default is 180 seconds. If the time expires, the PPP connection to the Internet will disconnect. Any IP packets from the LAN side or IP traffic from the wireless side will reset this timer and prevent the connection from dropping.

Connect Time Out: Set the number of seconds to wait for a connection while in receive mode before timing out.

Dialing Max Retries: Enter the number of dialing retries allowed. The default is zero, which means an infinite number is allowed. Range 0 to 100.

Authentication

Authentication Type: Set the authentication protocol type that will negotiate with the remote peer: pap/chap/pap-chap. Default is pap-chap.

Username: Enter the Username with which the remote peer will authenticate. You can leave this field blank, if desired. Username is limited to 60 characters.

Password: Enter the Password with which the remote peer will authenticate. You can leave this field blank, if desired. Password is limited to 60 characters.

ICMP Keep Alive Check

Keep Alive Check: Enable/disable Keep Alive Check. The default is Disable. This is used to periodically check that the Internet connection is up. If it is not, the router will try to reconnect.

Keep Alive Type: Select ICMP or TCP (the protocol type for Keep Alive).

Host Name: Enter the Host Name or IP Address for Keep Alive Check. No default.

TCP Port: Enter the TCP Port number to connect with the TCP server.

Interval: Set the number of seconds for Keep Alive Check. Default is 60 seconds.

ICMP Count: Set the number of ICMP Keep Alive Checks to be sent to the specified host. Default is 10.

Modem Configuration

Refer to the Customer Activation Notices included with the product for proper information to enter.

Dial Number: Set the dial number to be dialed. Default is NULL.

- For HSPA models, the Dial Number is ***99***1#**

- For EVDO models, the Dial Number is **#777**

Dial Prefix: Set the modem dial prefix. The default is ATDT.

Connect String: Set the modem Connect String. The default is CONNECT.

APN: Enter the APN (Access Point Name). For more information on APN, refer to Access Point Names.

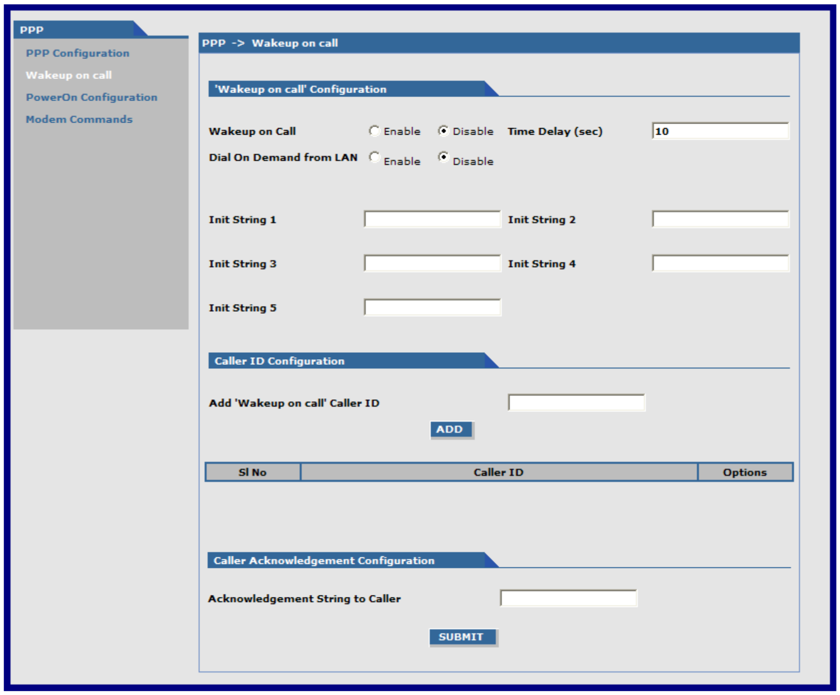
Init String 1-4: Configure the modem init strings. You can set up to 4 modem initialization strings.

Baud Rate: Baud Rate only displays on certain models and is set at 230.4K, by default. The default setting is set for maximum performance.

PPP > Wakeup-on-Call

The Wakeup-on-Call feature allows the router to wake up and initiate a connection when there is an incoming call or LAN activity. If you desired some security with this feature, you can set up the router to wake up based on Caller ID or SMS instead of allowing all incoming calls to wakeup the router. Dial-on-Demand in the IP Setup menu must be enabled for these settings to have any affect. The Wakeup-on-Call feature will reduce the cost incurred when a router is online and available 24/7.

Note: When provisioning this feature, you must allow incoming calls, SMS capability, and/or caller-id.



'Wakeup on call' Configuration

Wakeup on Call ○ Enable ● Disable Time Delay (sec) 10

Dial On Demand from LAN ○ Enable ● Disable

Init String 1 Init String 2

Init String 3 Init String 4

Init String 5

Caller ID Configuration

Add 'Wakeup on call' Caller ID

Sl No	Caller ID	Options

Caller Acknowledgement Configuration

Acknowledgement String to Caller

Wakeup-on-Call Configuration

Wakeup on Call: Enable/disable the Wakeup-on-Call feature. The default is Disable. Wakeup-on-Call occurs when a ring or caller ID is detected. This will trigger the router to reconnect after the 'Time Delay' expires.

Time Delay: Enter the amount of time that you want to pass between the reception of a call and the initiation of the Wakeup-on-Call connection. A time delay is needed to make sure that the incoming call has ended before the connection is initiated. The default is 10 seconds.

Dial-on-Demand

from LAN: The default is disable. When enabled, the router will reconnect when it sees IP traffic on the LAN that is needed to be routed. If this feature is disabled, Dial-on-Demand initiates a PPP connection to the Internet only from the WAN, not from the LAN.

Init Strings: Configure the router initialization string. This initialization string is specific to the installed integrated cellular modem. Some initialization may be required for the integrated cellular modem to accept the Wakeup-on-Call feature. Init-num can range from 1-5. The default is NULL. Refer to the following table for examples of the Init String depending on model.

Model	Init 1	Init 2	Init 3	Init 4	Ack	Comment
MTCBA-H3-EN3	AT+CNMI= 1,1,0,1,0		AT+CLIP= 1		AT+CNM A	Ring, for any number/call to trigger Wakeup-on-Call.

Caller ID Configuration

Add "Wakeup on Call" Caller ID: To add Caller ID to the Wakeup-on-Call function, enter the Caller ID to be allowed to wakeup the router. Enter 'RING' (all Caps) to wake up on any call. Enter a CID phone number or an SMS message. The SMS message string must not contain any spaces between words.

After entering the Caller ID, click **Add**. The Caller ID displays at the bottom of the screen. You can enter any number of IDs you desire.

A Caller ID can be edited or deleted using Options, which will be available once a Caller ID is displayed.

Caller Acknowledgement Configuration

Acknowledgement String to Caller: The configured string of (0 to 40 characters) will be sent to the integrated cellular modem upon receiving a valid caller ID from the WAN. The default is NULL string.

Note: If the string is not configured, acknowledgement to the caller will not be sent upon successful caller ID reception.

PPP > Wakeup-On-Call Examples

Example 1 – Determine if Router Support Incoming Calls and Caller ID

1. On the PPP > PPP Configuration screen, make sure that PPP is Disabled.
2. On the PPP > Wakeup-on-Call screen, make sure that Wakeup-on-Call is Disabled.
3. Open a command prompt by clicking the Start button and selecting Run.
4. Type CMD to open the command window. Click OK.
5. When the command window opens, telnet to the router.

   Note: 5000 is the router port number.

   a. Enter your username and password to login.

   b. Enter an AT command to make sure you receive a response, for example, OK.

   c. On HSPA models, enter the Command **AT+CNUM** to determine the dial number of your router.
6. From another phone, call your router using the number identified in Step 5.3. This will let you know if the RING message shows.
7. To enable Caller ID, enter the AT+CLIP=1 command on the command screen and make the call again to see if it shows Caller ID information.

   Notes:

   - Step 5c must show the RING or CALLER ID information in order for the Wakeup-on-Call function to work.
   - Some wireless providers might not provide caller ID information if you have only a data plan.

Example 2 – Set Up the Ethernet Router to Activate on ALL Incoming Calls

1. On the PPP >PPP Configuration screen, set up the following parameters and click **Submit.**

   PPP General

   - Make sure that PPP is enabled.
   - Make sure Dial-on-Demand is enabled.
   - Set the Idle Time Out to the number of seconds you desire.

   Authentication

   - Your wireless service provider may require you to have a separate PPP Use name and Password. If so, enter them here.

Note: If a username and password are required, your wireless provider would have given them to you when you activated your account.

   Modem Configuration

   - Make sure your Dial Number is entered correctly, for HSPA models, the Dial Number is ***99***1#**
2. On the PPP > Wakeup-on-Call screen, set up the following parameters and click **Submit**.

   Wakeup-on-Call Configuration

   - Select **Enable** for **Wakeup-on-Call**.
   - Set the **Time Delay** to **3** seconds. You can use the 10 second default.

- All **Init Strings** should be empty.

Caller ID Configuration

- Enter the string **RING** to the Caller ID list.
- Click **Add** to save the string to the Caller ID list.

3. Click **Save & Restart** to save all the settings and reboot.

Example 3 – Set Up the Ethernet Router to Activate on Matching Caller IDs Only:

1. On the PPP > PPP Configuration screen, set up the following parameters and click **Submit**.

PPP General

- Make sure that **PPP** is enabled.
- Make sure **Dial-on-Demand** is enabled.
- Set the **Idle Time Out** to the number of seconds you desire.

Authentication

- Your wireless service provider may require you to have a separate PPP username and password. If so, enter them here.

Note: If a username and password are required, your wireless provider would have given them to you when you activated your account.

Modem Configuration

- Make sure your Dial Number is entered correctly, for HSPA models, the Dial Number is ***99***1#**

2. On the PPP > Wakeup-on-Call screen, set up the following parameters and click **Submit**.

Wakeup-on-Call Configuration

- Select Enable for Wakeup-on-Call.
- Set the Time Delay. You can use the 10 second default.
- Enter the Init Strings, Set Wakeup **Init String 1** by entering **AT+CLIP=1** for HSPA models only.

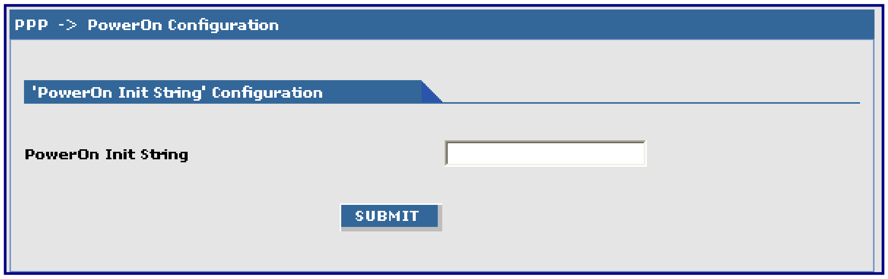
Caller ID Configuration

- Enter a caller's ID that you want added to the Caller ID list.
- Click **Add** to save each Caller ID as it is entered to the Caller ID list.

3. Click **Save & Restart** to save all the settings and reboot.

PPP > Power-On Configuration

The Power-On Configuration feature allows you to set an initialization string that will be sent to the router upon boot up.


PPP -> PowerOn Configuration
'PowerOn Init String' Configuration
PowerOn Init String
SUBMIT

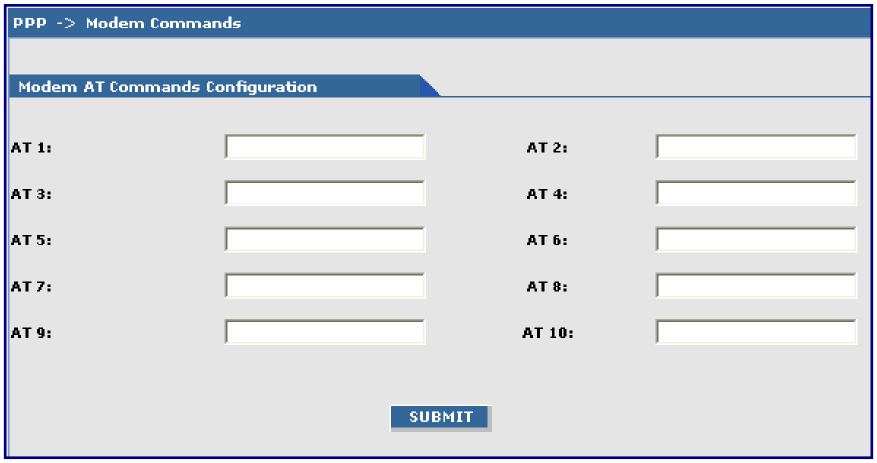
Power-On Init String Configuration

Power-On Init String: You can enter a string of 0 to 40 characters that will be sent to the router upon boot up. All commands will initialize before you proceed with regular PPP related activity.

Note: When no initialization string is configured, regular functionality of the router is retained.

PPP > Modem Commands

Setting up certain modem commands will allow an external application to query modem information (based on the commands entered). The application can use the URL HTTP://xxx.xxx.xxx.xxx/modeminfor.html to get the IP address that is currently assigned to the integrated cellular modem after the PPP connection is established. It also will show the results of up to ten AT commands entered here.



Modem AT Commands Configuration

These commands will be sent every time a PPP connection to the network is initiated.

HSDPA AT Commands Examples:

AT+CGSN	Product Serial Number
AT+CGMR	Software Version
AT+CSQ	Signal Quality
AT+CNUM	Wireless Subscriber Number
AT+COPS?	Network Information (Operator)

AT+CREG? Network Registration

Notes: You can also retrieve the integrated cellular modem information without using a browser:

- Make a TCP connection to port 80 (same as the Web Admin port) and send data as:

  GET /atinfor.html HTTP/1.1

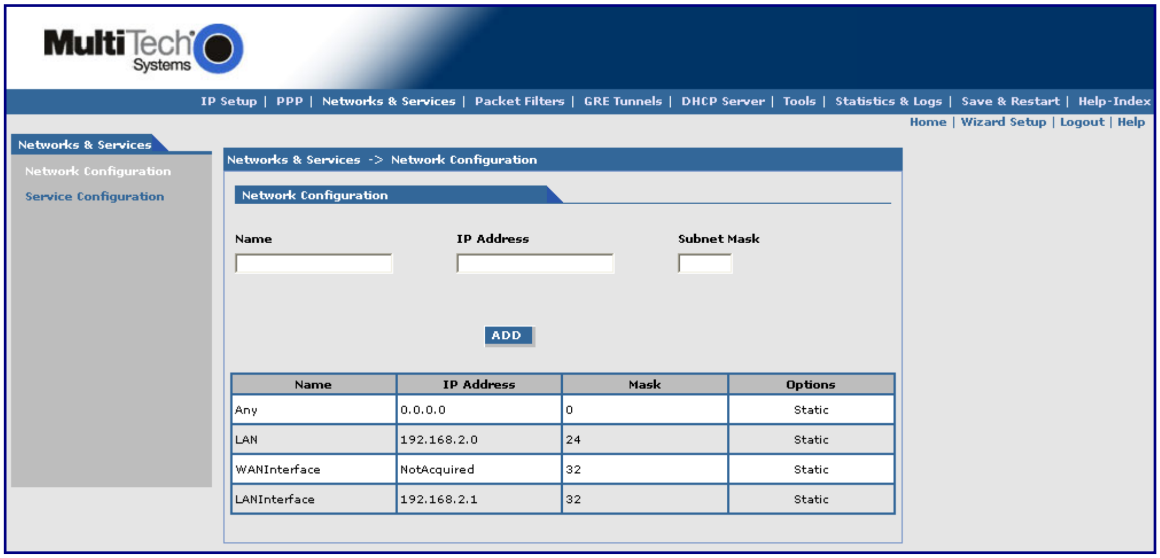
- Then press **Enter** twice.

Refer to the AT Command Reference Guide for other commands.

Networks & Services

Networks & Services > Network Configuration

Networks or Hosts can be added here. The options to Delete or Edit a network after it has been defined and added are available by using the table at the bottom of the screen.


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | Tools | Statistics & Logs | Save & Restart | Help-Index
Home | Wizard Setup | Logout | Help
Networks & Services
Network Configuration
Service Configuration
Networks & Services -> Network Configuration
Network Configuration
Name
IP Address
Subnet Mask
ADD

Name	IP Address	Mask	Options
Any	0.0.0.0	0	Static
LAN	192.168.2.0	24	Static
WANInterface	NotAcquired	32	Static
LANInterface	192.168.2.1	32	Static

Network Configuration

Enter the Name, IP Address, and Mask for a new Network or Host.

Notes:

A Network/Host Name:

- Cannot be edited.
- Cannot be deleted if it is used in another configuration.
- Changes are reflected in all the configurations in the Web Management software where they are used.
- If added here will display in the following sections: Static Routes, DNAT, and Packet Filters.

Name: Enter the name of the Network/Host. The same address-mask pair should not already be present in the displayed list. The Name is limited to 15 characters maximum.

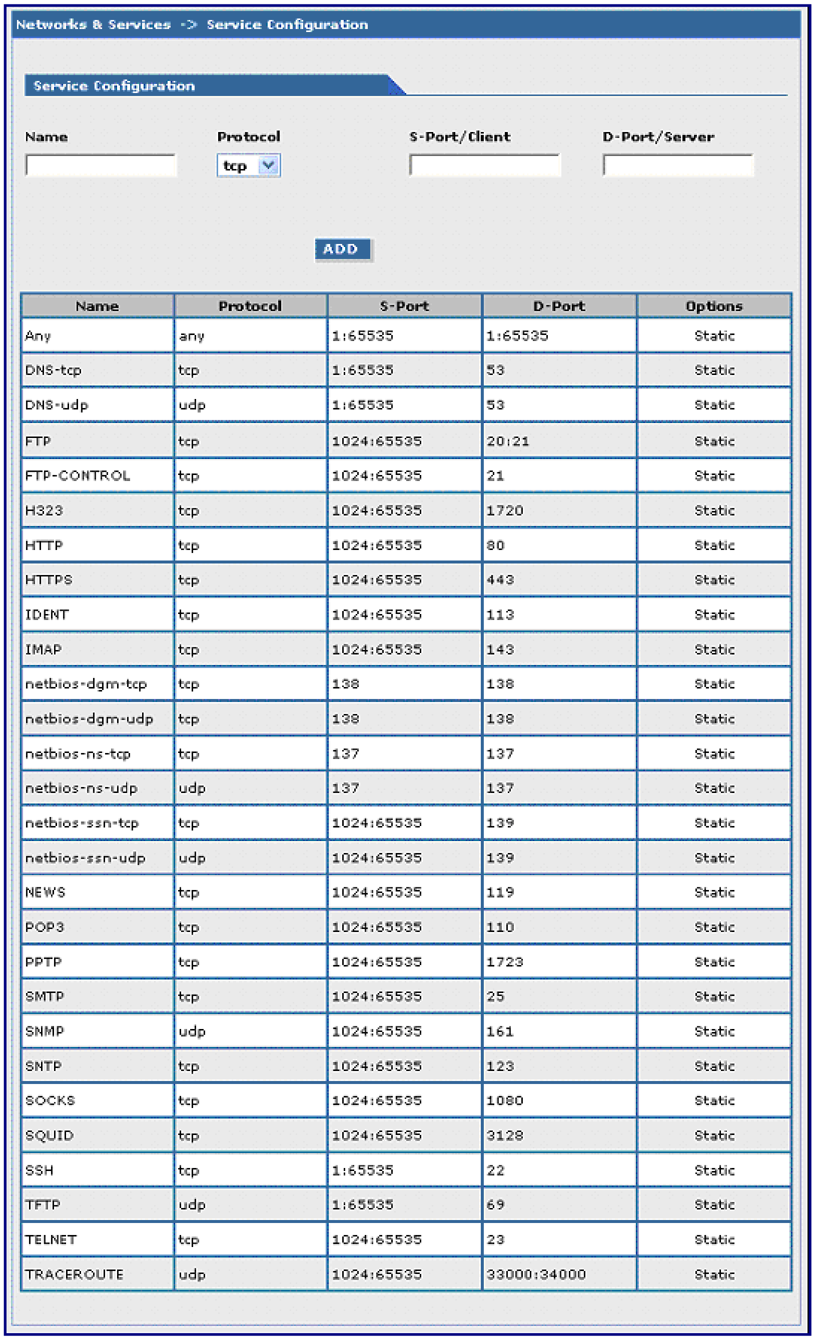
IP Address: Enter the IP Address of the Network/Host. The same address-mask pair should not already be present in the displayed list.

Subnet Mask: Enter the Network Mask of the Network/Host. For Host addresses, the mask is entered as 32. For more information, see *Appendix A -- Table of Commonly Supported Subnets*.

When you click **Add**, the defined network displays at the bottom of the screen.

Networks & Services > Service Configuration

On this screen you can specify the standard set of well known services available on the system. These services enable the configuration of the user-defined services. The options to Delete or Edit a service after it has been defined and added are available by using the table at the bottom of the screen.



Name
Protocol tcp
S-Port/Client
D-Port/Server

Name	Protocol	S-Port	D-Port	Options
Any	any	1:65535	1:65535	Static
DNS-tcp	tcp	1:65535	53	Static
DNS-udp	udp	1:65535	53	Static
FTP	tcp	1024:65535	20:21	Static
FTP-CONTROL	tcp	1024:65535	21	Static
H323	tcp	1024:65535	1720	Static
HTTP	tcp	1024:65535	80	Static
HTTPS	tcp	1024:65535	443	Static
IDENT	tcp	1024:65535	113	Static
IMAP	tcp	1024:65535	143	Static
netbios-dgm-tcp	tcp	138	138	Static
netbios-dgm-udp	tcp	138	138	Static
netbios-ns-tcp	tcp	137	137	Static
netbios-ns-udp	udp	137	137	Static
netbios-ssn-tcp	tcp	1024:65535	139	Static
netbios-ssn-udp	udp	1024:65535	139	Static
NEWS	tcp	1024:65535	119	Static
POP3	tcp	1024:65535	110	Static
PPTP	tcp	1024:65535	1723	Static
SMTP	tcp	1024:65535	25	Static
SNMP	udp	1024:65535	161	Static
SNTP	tcp	1024:65535	123	Static
SOCKS	tcp	1024:65535	1080	Static
SQUID	tcp	1024:65535	3128	Static
SSH	tcp	1:65535	22	Static
TFTP	udp	1:65535	69	Static
TELNET	tcp	1024:65535	23	Static
TRACEROUTE	udp	1024:65535	33000:34000	Static

Service Configuration

Enter the Name, Protocol, Source Port/Client, and Destination Port/Server for the new Service and click **Add**. The new service displays at the bottom of the screen.

Notes:

A Service Name:

- Cannot be edited.
- If used in another configuration, cannot be deleted.
- Changes are reflected in all the configurations in the Web Management software where they are used.
- If added here will display in the following sections: DNAT, Packet Filters.

Name: Enter the name of the Service which is limited to 16 characters. It has to be unique.

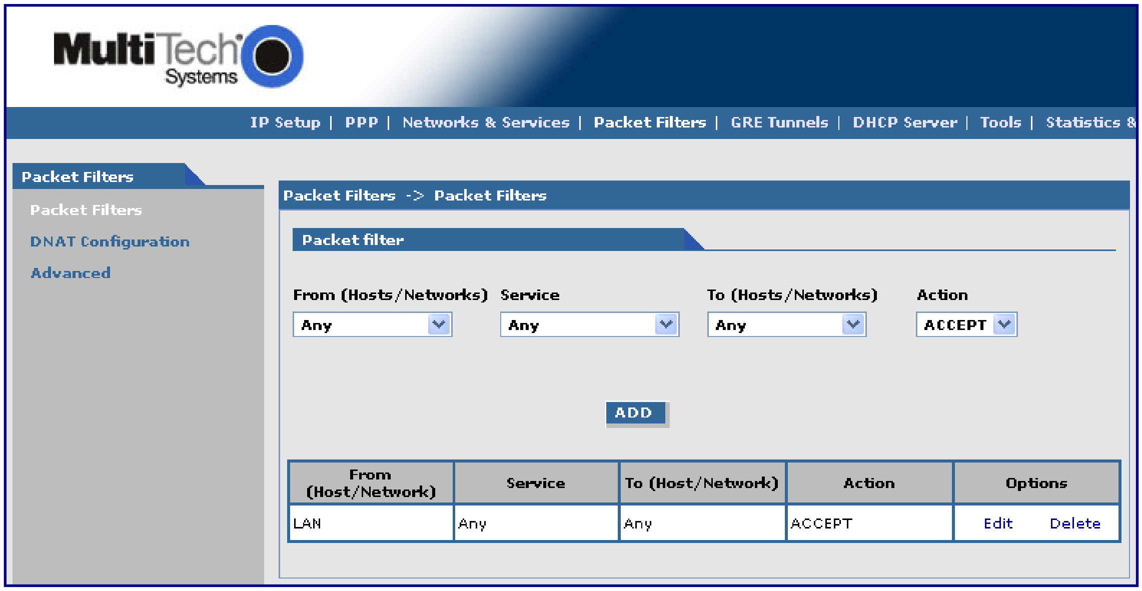
Protocol: Enter the type of protocol (TCP, UDP).

Source Port: Enter the Destination Port for this service. The source and destination ports can be entered either as a single port or a range using a colon as the separator.

Destination Port: Enter the name of the Destination Port for the service.

Packet Filters > Packet Filters

Use the table at the bottom of the page to delete or edit an existing packet filter rule.


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | Tools | Statistics &
Packet Filters
Packet Filters
DNAT Configuration
Advanced
Packet Filters -> Packet Filters
Packet filter
ADD

From (Hosts/Networks)	Service	To (Hosts/Networks)	Action
Any	Any	Any	ACCEPT

From (Host/Network)	Service	To (Host/Network)	Action	Options
LAN	Any	Any	ACCEPT	Edit Delete

Packet Filter

From (Host/Networks): Enter the network/host from which the packet must originate for the filter rule to match. The Any option, which matches all IP addresses regardless of whether they are officially assigned addresses or private addresses, may also be entered. The network/host must be pre-defined in the Networks section.

Service: Enter the service that is to be matched with the filter rule. These services must be pre-defined in the Services section. These services precisely define the traffic to be filtered.

To (Host/Networks): Enter the network/host to which the packet must send for the filter rule to match. The Any option, which matches all IP addresses regardless of whether they are officially assigned addresses or private addresses, may also be entered. The network/host must be pre-defined in the Networks section.

Action: Enter the action that the packet filter executes if the rule matches any traffic traversing the firewall. Types of actions defined are:

Accept: Allows/accepts all packets that match this rule.

Reject: Blocks all packets matching this rule. Notifies the host that the packet was rejected.

Drop: Blocks all packets matching this rule, but dose not notify the host. This is a silent drop.

Log: Logs packets matching the rule; for example, the corresponding source address, destination address, and service.

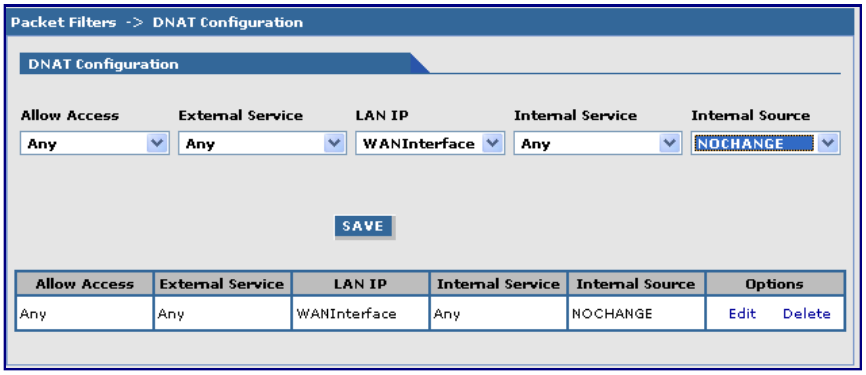
When you click **Add**, the packet filter rule displays at the bottom of the screen.

Packet Filters > DNAT Configuration

Destination Network Address Translation (DNAT) is a process that allows the placing of servers within the protected network and making them available for a certain service to the outside world. The DNAT process running on the router translates the destination address of incoming packets to the address of the real network server on the LAN. The packets are then forwarded.

You can Delete or Edit a DNAT rule after it has been defined and added by using the table at the bottom of the screen.

Note: When adding rules, at least one host must be defined in the Network Configuration section.



Allow Access	External Service	LAN IP	Internal Service	Internal Source
Any	Any	WANInterface	Any	NOCHANGE

Allow Access	External Service	LAN IP	Internal Service	Internal Source	Options
Any	Any	WANInterface	Any	NOCHANGE	Edit Delete

DNAT Configuration

Allow Access: Select a network or host to which IP packets will be allowed and re-routed. The network/host must be pre-defined in the Network Configuration section.

External Service: Select the External Service that you want allowed. The service must be defined in the Service Configuration section.

LAN IP: Select the LAN IP to which the packets are to be diverted. Only one host can be defined as the destination.

Internal Service: Select the Internal Service to be the destination.

Internal Source: Select the source address for packets that are going to be sent. If you do not want to change the address, select **NOCHANGE**.

Click **Save** after making changes. The defined DNAT configuration displays at the bottom of the screen.

Delete or edit settings by clicking the **Edit** or the **Delete** buttons.

Packet Filters > DNAT Example

Set Up DNAT and Port Forwarding to an Internal Device

Note: The internal device can be camera, meter, security device, etc.

For this example, assume the device is on a LAN with an IP address of 192.168.2.100 and the port to access the device is port 7700.

1. On the Network & Services > Network Configuration screen, set up the following parameters and click **Add.**

   Name: Enter a name for the LAN device.

   IP Address and Subnet Address: Enter the IP address and subnet address of the device.

   Example:

   Name = MeterIP

   IP Address = 192.168.2.100

   Subnet Address = 255.255.255.255. The subnet mask in the network configuration is not defined using x.x.x.x notation. It uses ‘bit’ notation. So 255.255.255.255 = 32.

2. On the **Network & Services > Service Configuration** screen, define a service name and click **Add.** For this example, the service will be a meter.

   Name: Enter a name for the service (use a name that will identify the service for you). Example: MeterPort

   Protocol: Select a protocol. Example: tcp or udp

   S-Port / Client: Enter the source port for this service. Example: 1:65535

   D-Port / Server: Enter the destination port for this service. Example: 7700

3. On the Packet Filters > DNAT Configuration screen, define the DNAT rule.

   Allow Access: Select the original target network/host of the IP packets that you now want rerouted. The original target network/host is the one previously defined in the Network Configuration section. Example: Any

   External Service: Select the External Service that you want allowed. The service must be defined in the Service Configuration section.

   LAN IP: Select the LAN IP to which the packets are to be diverted. Only one host can be defined as the destination.

   Internal Service: Select the Internal Service to be the destination.

   Pre DNAT Service: Select the service for the Pre-DNAT destination. This service was just defined in the Service Configuration section. Example: MeterPort

   Post DNAT IP: Select the destination to which the IP packets are to be diverted. Only one host can be defined as the Post DNAT destination. Example: MeterIP

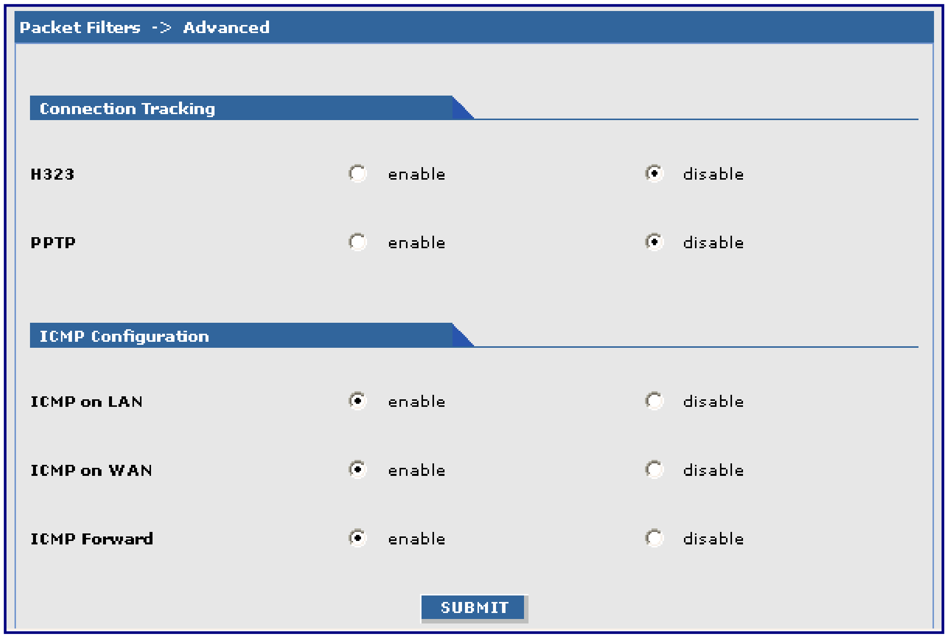
   Post DNAT Service: Select the service for the Post DNAT configuration. Example: MeterPort

   Internal Source – Select the source address for packets that are going to be sent. If you do not want to change the address, select **NOCHANGE**. Example: NOCHANGE

4. Click **Save** to save the configuration.

5. Click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

Packet Filters > Advanced



Packet Filters -> Advanced

Connection Tracking

H323 ○ enable ● disable

PPTP ○ enable ● disable

ICMP Configuration

ICMP on LAN ● enable ○ disable

ICMP on WAN ● enable ○ disable

ICMP Forward ● enable ○ disable

Connection Tracking

H323: Enable/disable the forwarding of H323 packets across the firewall. Default is disabled.

PPTP: Enable/disable PPTP Packet Pass-through (PPTP NAT support). Default is disabled.

CMP Configuration

The Internet Control Message Protocol (ICMP) is used to test the network connections and the functionality of the firewall and is also used for diagnostic purposes. ICMP on Firewall and ICMP Forwarding always apply to all IP addresses; i.e., Any. When these are enabled, all IP hosts can Ping the firewall (ICMP on Firewall) or the network behind it (ICMP Forwarding).

ICMP on LAN: Enable/disable the transfer of ICMP packets on the LAN interface. Default is enabled.

ICMP on WAN: Enable/disable the transfer of ICMP packets on the WAN interface. Default is enabled.

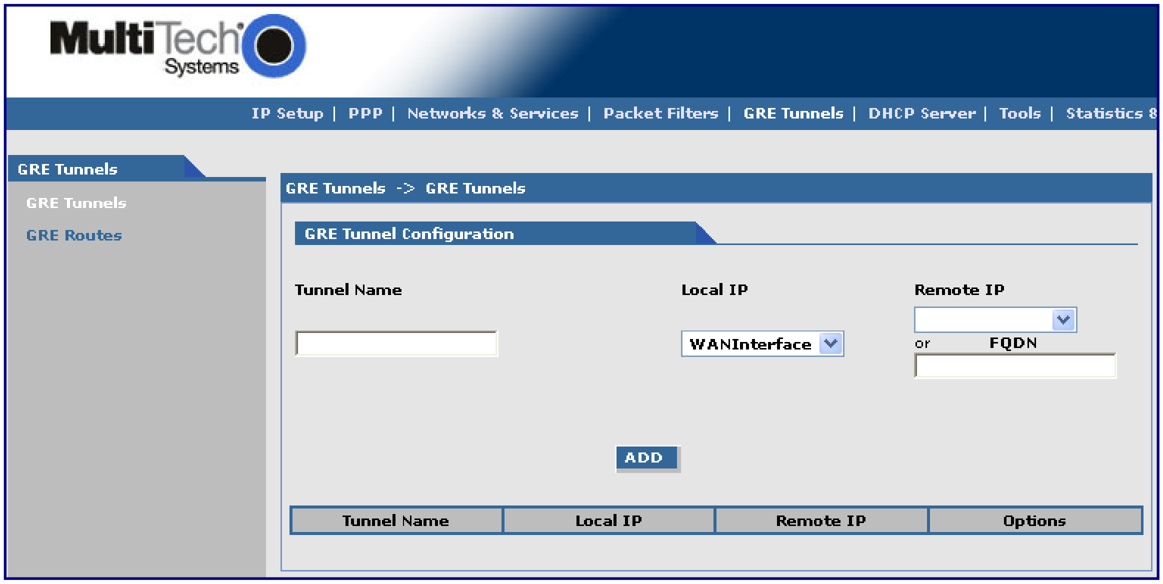
ICMP Forward: Enable/disable the forwarding of ICMP packets through the firewall into the local network. Default is enabled.

GRE Tunnels

GRE tunneling and GRE routing together are referred to Generic Routing Encapsulation (GRE). GRE Routing is an integral part of GRE tunneling. First, the GRE Tunnels are created using the GRE Tunnel Configuration. Then the routes for the remote networks that are to be routed through a tunnel need to be specified in the GRE Routes Configuration. Thus, all the traffic destined to remote networks associated to a tunnel will get routed through that tunnel.

GRE Tunnels > GRE Tunnels

Tunneling allows the use of a public network to convey data on behalf of two remote private networks. It is also a way to transform data frames to allow them to pass networks with incompatible address spaces or even incompatible protocols. If you want to read more about how this works, see the online Help.



GRE Tunnel Configuration

Tunnel Name: Enter a name for the new tunnel.

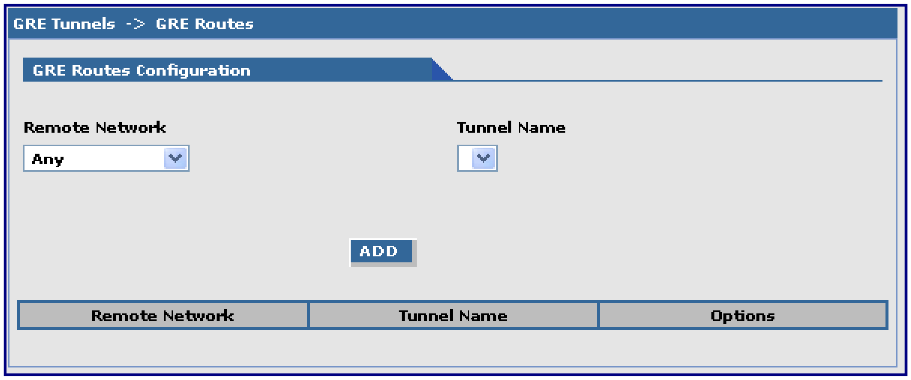
Local IP: Select the local interface on which the tunnel is being created. Eventually, the packets destined for this tunnel will be routed through it.

Remote IP: Set either Remote IP or FQDN. Select the Remote IP address that marks the other end point of the tunnel (this is the one to which the routed packets will be received).

or FQDN: Set either Remote IP or FQDN. Enter the FQDN (Fully Qualified Domain Name) for the Remote IP, which can be either the IP Address or an FQDN.

Click **Add** when done. GRE Tunnels display at the bottom of the screen.

GRE Tunnels > GRE Routes Configuration



Remote Network: Any

Tunnel Name:

Remote Network	Tunnel Name	Options

GRE Routes Configuration

Remote Network: Select the remote network for which the traffic destined to it must be routed through the given tunnel.

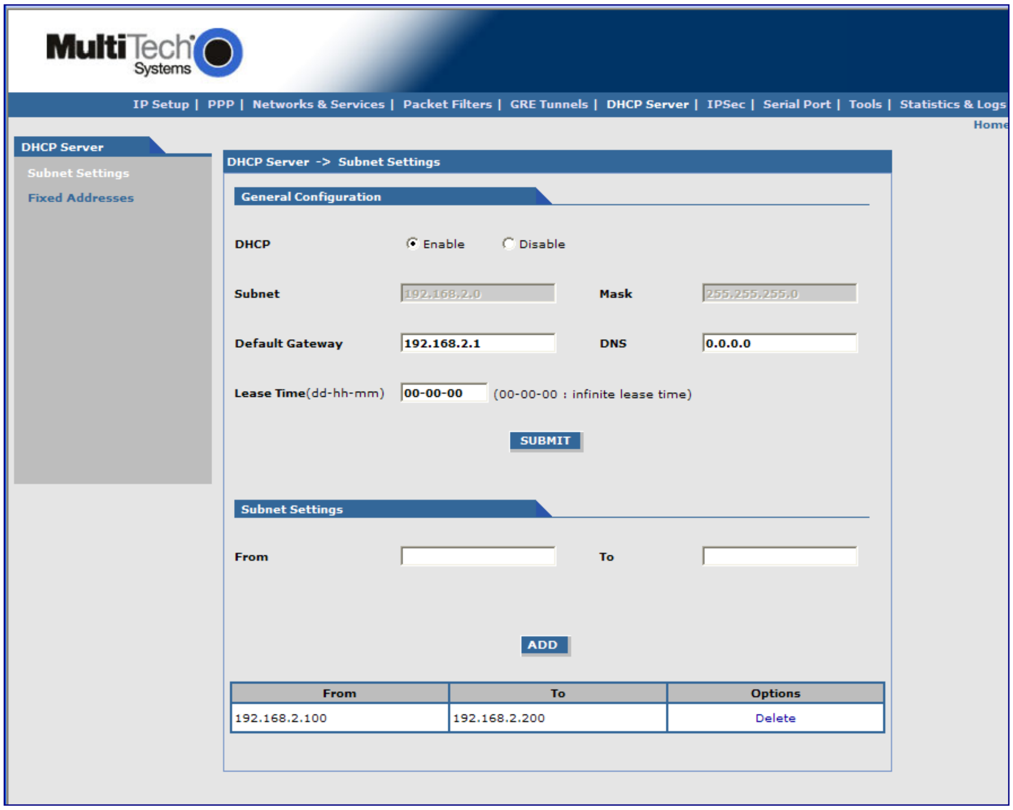
Tunnel Name: Select the name of the tunnel through which the traffic will be routed.

Note: To add a tunneled route, the remote network and the tunnel must have been defined in Network Configuration. The tunnel configuration must be completed before setting the GRE route configuration.

To add the network and tunnel, click **Add**. The GRE route configuration displays at the bottom of the screen.

DHCP Server

DHCP Server > Subnet Settings


MultiTech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | IPSec | Serial Port | Tools | Statistics & Logs
Home
DHCP Server
Subnet Settings
Fixed Addresses
SUBMIT
ADD

DHCP Server -> Subnet Settings

General Configuration

DHCP ● Enable ○ Disable

Subnet 192.168.2.0 Mask 255.255.255.0

Default Gateway 192.168.2.1 DNS 0.0.0.0

Lease Time(dd-hh-mm) 00-00-00 (00-00-00 : infinite lease time)

Subnet Settings

From To

From	To	Options
192.168.2.100	192.168.2.200	Delete

General Configuration

DHCP (Dynamic Host Configuration Protocol) is a protocol that allows individual devices on an IP network to get their own network configuration information (IP address, subnet mask, broadcast address, etc.) from a DHCP server. The overall purpose of DHCP is to make it easier to administer a large network.

DHCP: Enable/disable the DHCP server.

Subnet: Enter the subnet address. If you want to change the DHCP subnet address, you first have to delete all the subnet settings below.

Mask: Enter the subnet mask.

Gateway: Enter the gateway address.

DNS: Enter the DNS address.

Lease Time: Select the DHCP Lease Time from the selection box. Lease time is set in days, hours, and minutes. A Lease Time of 00-00-00 is an Infinite Lease Time.

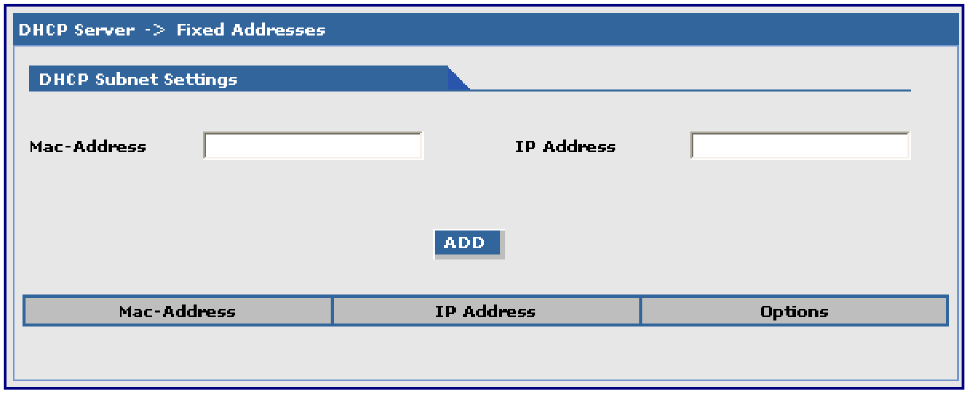
Subnet Settings

From-To Range: Enter the range of IP addresses to be assigned by Appendix A – Commonly Supported Subnets Reference Table Subnets.

Click **Add**. The address range displays in the table at the bottom of the screen.

You can delete or edit the address range if necessary.

DHCP Server > Fixed Addresses



Mac-Address	IP Address	Options

DHCP Fixed Configuration

The DHCP server can be made to assign a fixed IP address for a particular user by identifying the MAC address. This binding can be made permanent by configuring it here. The same IP address will not be used for any DHCP client with a different MAC address, even if there is no active DHCP connection with that IP address.

MAC Address: Enter the MAC address to which the specified IP address binds.

IP Address: Enter the fixed IP address to be assigned.

Click Add. The addresses display in the table at the bottom of the screen.

You can delete or edit the address range if necessary.

IPSec

The IPSec (IP Security) protocol suite, based on modern cryptographic technologies, provides security services like encryption and authentication at the IP network layer. It secures the whole network traffic providing guaranteed security for any application using the network. It can be used to create private secured tunnels between two hosts, two security gateways, or a host and a security gateway. Up to three tunnels can be active at any given time. Beyond three active tunnels can be saved, but they will not be active.

IPSec provides encryption and authentication services at the IP level of the protocol stack. IPSec can protect any traffic carried over IP.

IPSec provides the following services:

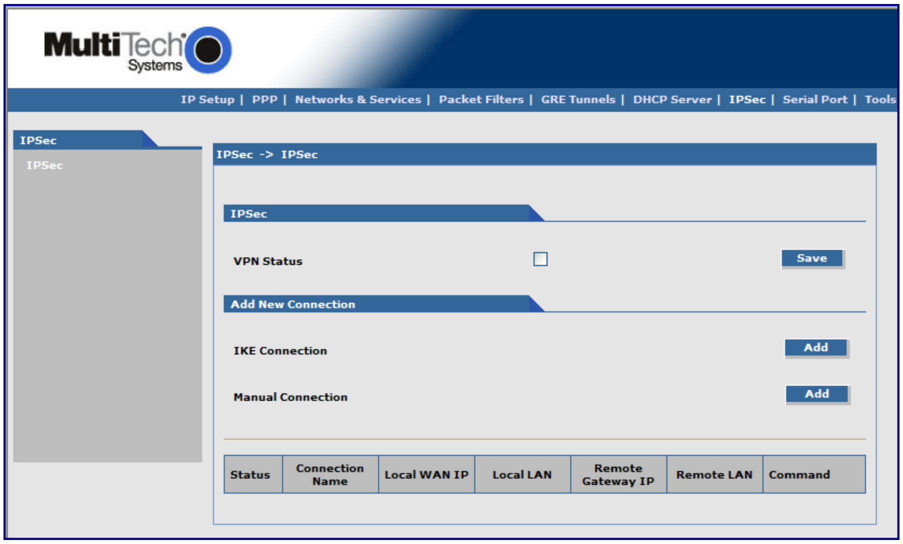
- Authentication only
- Encryption only
- Authentication and encryption

Transmitting and receiving data securely over an unprotected network involves deciding on the type of IPSec service, as mentioned above, required for the connection, establishing a secure connection by a key exchange process and transferring data using that connection.

The key exchange process is done in one of two ways:

- Manual Keying where the authentication and encryption keys are provided manually on both sides of the connection.
- Auto Keying using IKEv2 Protocol where the authentication and encryption keys are generated on either side of the connection and exchanged by different methods.

IPSec > IPSec


Multi Tech Systems
IP Setup | PPP | Networks & Services | Packet Filters | GRE Tunnels | DHCP Server | IPSec | Serial Port | Tools
IPSec
IPSec
IPSec -> IPSec
IPSec
Add New Connection
Save
Add
Add

VPN Status ☐

IKE Connection

Manual Connection

Status	Connection Name	Local WAN IP	Local LAN	Remote Gateway IP	Remote LAN	Command

IPSec

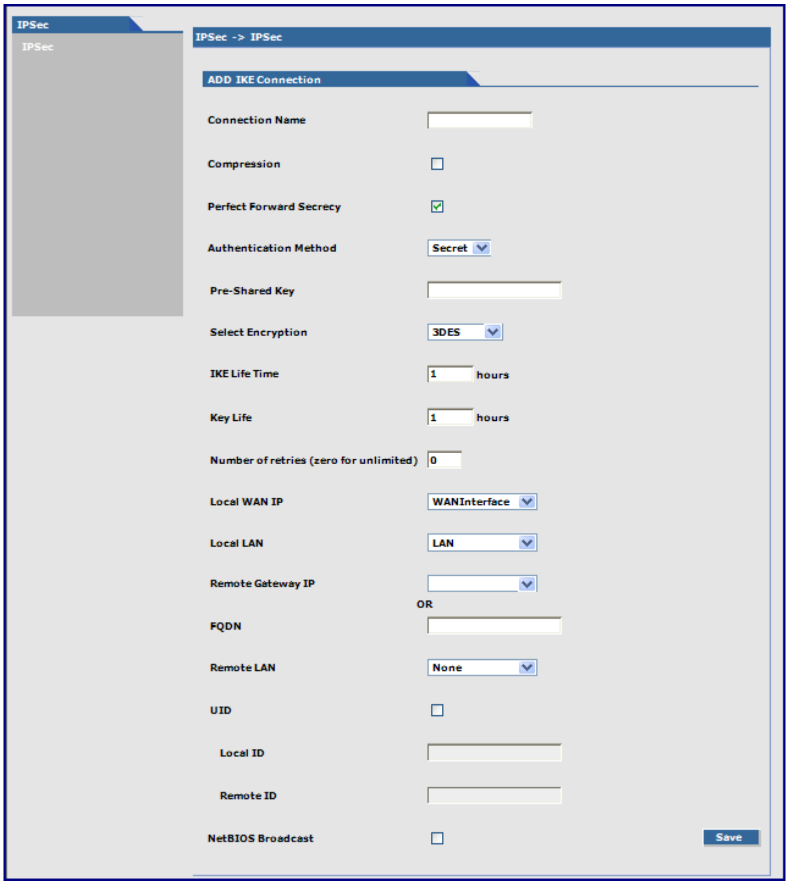
VPN Status Check the VPN Status checkbox to enable IPSec. Click the **Save** button.

Add a New Connection

IKE Connection Click Add for IKE Connection to access the IKE Connection setup.

Manual Connection Click Add for Manual Connection to access the Manual Connection setup.

Add IKE Connection



Connection Name

Compression □

Perfect Forward Secrecy ☑

Authentication Method Secret

Pre-Shared Key

Select Encryption 3DES

IKE Life Time 1 hours

Key Life 1 hours

Number of retries (zero for unlimited) 0

Local WAN IP WANInterface

Local LAN LAN

Remote Gateway IP

OR

FQDN

Remote LAN None

UID □

Local ID

Remote ID

NetBIOS Broadcast □

Add an IKE Connection

Connection Name Enter a text name that will identify the connection for you.

Compression Check the compression checkbox to enable IPCOMP, the compression algorithm.

Perfect Forward Secrecy (PFS) Check the PFS checkbox to enable PFS, in which the newly generated keys are unrelated to the older keys. Default is enabled.

Authentication Method Authentication can be done using Pre-Shared Secrets.

Pre-Shared Key The Pre-Shared Key must be agreed upon and shared by the VPN endpoints; it must be configured at both endpoints of the tunnel.

Select Encryption Select the encryption method. Options include: 3DES, AES-128, AES-192, AES-256; 3DES is recommended.

IKE Life Time The duration for which the ISAKMP SA should last is from successful negotiation to expiration. The default value is one hour and the maximum is 8 hours.

Key Life The duration for which the IPSec SA should last is from successful negotiation to expiration. The default value is one hour and the maximum is 24 hours.

Number of Retries Specify the number of retries for the IPSec tunnel. Enter zero for unlimited retries.

Local WAN IP This is the interface initiating the IPSec tunnel.

Local LAN Internal subnet of the local security gateway for which the security services should be provided. If the router acts as a host, this should be configured as None.

Remote Gateway IP Interface where the IPSec tunnel ends. In the case of a Road Warrior with a Dynamic IP address, this should be configured to **ANY**.

FQDN FQDN is a Fully Qualified Domain Name that resolves to the Local Wan IP of the router or in the case of GRE/IPSEC, it is used to identify the Wan IP of the remote location. This is provided by your ISP or created by you if you are using a Dynamic DNS service. When FQDN is selected, the Remote Gateway IP should be left blank.

Remote LAN Internal subnet of the remote security gateway for which the security services should be provided. If the remote end is the host, this should be configured as None.

UID (Unique Identifier String) Check the UID box to enable the Local ID and Remote ID. Local ID and Remote ID are active only when UID is enabled.

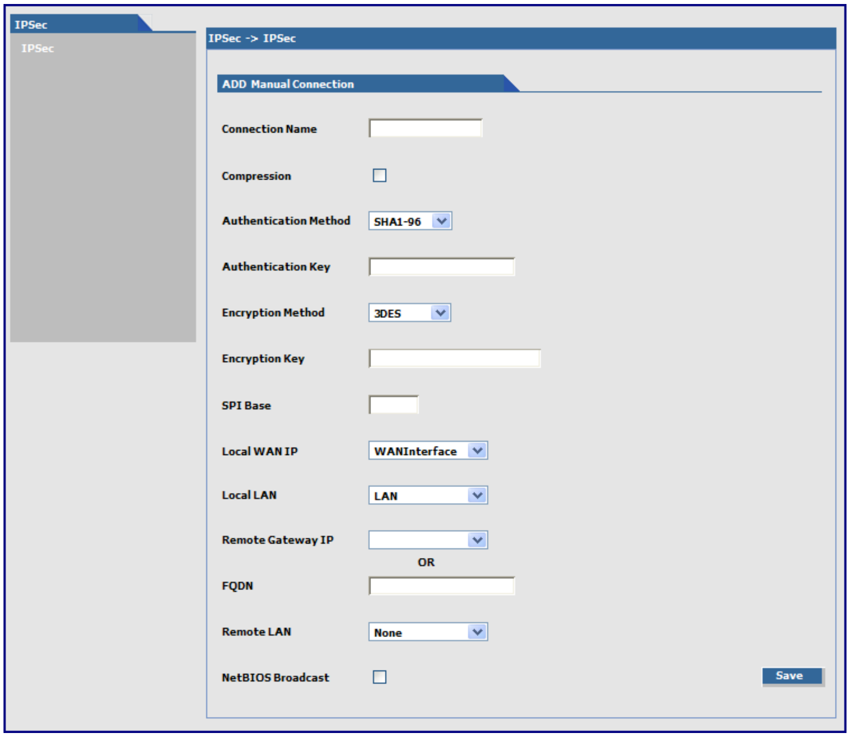
Local ID Enter a string identifier for the local security gateway.

Remote ID Enter a string identifier for the remote security gateway.

NetBIOS Broadcast Check this option to enable broadcasts over the connection. It will allow computers on the network to share Microsoft file and printer sharing information.

Click **Save** to save these settings.

Add Manual Connection



Connection Name	
Compression	□
Authentication Method	SHA1-96
Authentication Key	
Encryption Method	3DES
Encryption Key	
SPI Base	
Local WAN IP	WANInterface
Local LAN	LAN
Remote Gateway IP	
	OR
FQDN	
Remote LAN	None
NetBIOS Broadcast	□

Add a Manual Connection

Connection Name Enter a text name that will identify the connection for you.

Compression Check the compression checkbox to enable IPCOMP, the compression algorithm.

Authentication Method Select the authentication algorithms to be used for the respective security services. Options are: MD5-96 and SHA1-96.

Authentication Key The VPN firewall could use either MD5-96 or SHA1-96 for authentication. For example, MD5-96 could have a key of abcdefgh12345678.

Authentication Protocol	Key Length	Accepted Characters
SHA1-96	Must be 20 characters	Alphanumeric
MD5-96	Must be 16 characters	Alphanumeric

Encryption Method Select the encryption method. Options include: 3DES, AES-128, AES-192, AES-256, and NULL (no encryption).

Encryption Key The router can use any one of the methods specified in its encryption algorithm. For example 3DES uses 24 alphanumeric characters (192 bits) as its encryption key. Example: 1234567890abcdefabcdabcd

Encryption Protocol	Key Length	Accepted Characters
Null	Must be 24 characters	Alphanumeric
3DES	Must be 24 characters	Alphanumeric
AES-128	Must be 16 characters	Alphanumeric
AES-192	Must be 24 characters	Alphanumeric
AES-256	Must be 32 characters	Alphanumeric

SPI Base The Security Parameter Index identifies a manual connection. The SPI is a unique identifier in the SA (Secure Association – a type of secure connection) that allows the receiving computer to select the SA under which a packet processes. SPI Base is a number needed by the manual keying code. Enter any 3-digit hexadecimal number, which is unique for a security association. It should be in the form 0xhex (0x100 through 0xfff is recommended). If you have more than one manual connection, then the SPI Base must be different for each one.

Left Next Hop Next Hop is the address of the next device in a routing table's path that moves a packet to its destination. Configure this setting or leave it as a static value: 0.0.0.0. When not configured, the value is set to the Gateway of the Box/Gateway configured on the Interface/Right IP. The selection is based on the Left and Right IP.

Local WAN IP Select the Interface to initiate the IPSec tunnel (Left Security Gateway).

Local LAN Select the internal subnet of the local security gateway for which the security services are to be provided. If the router acts as a host, this should be configured as **None**. Other options are: Any, LAN, LAN Interface, WAN 1, WAN 1 Interface.

Remote Gateway IP Select the interface in which the IPSec tunnel ends. In the case of Road Warriors with a Dynamic IP addresses, this should be configured as **ANY**. Other options include: LAN, LAN Interface, WAN 1, WAN 1 Interface, and None.

FQDN FQDN is a Fully Qualified Domain Name that resolves to the Local Wan IP of the router or in the case of GRE/IPSEC, it is used to identify the Wan IP of the remote location. This is provided by your ISP or created by you if you are using a Dynamic DNS service. When FQDN is selected, the Remote Gateway IP should be left blank.

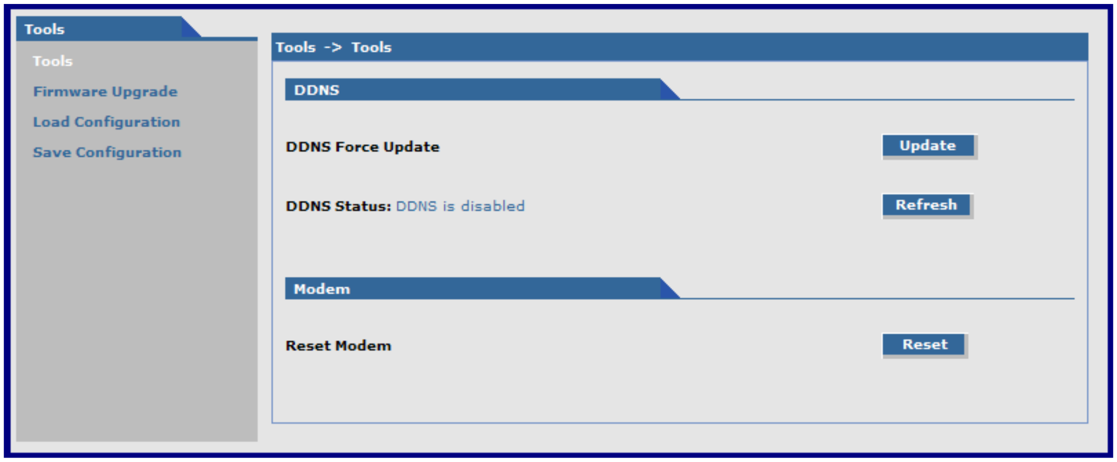
Remote LAN This is the internal subnet of the remote security gateway for which the security services are to be provided. If the remote end is a host, this should be configured as **None**.

NetBIOS Broadcast Check this option to enable broadcasts over the connection. It will allow computers on the network to share Microsoft file and printer sharing information.

Click **Save** to save these settings.

Tools

Tools > Tools



DDNS Force Update

DDNS Status: DDNS is disabled

Reset Modem

DDNS

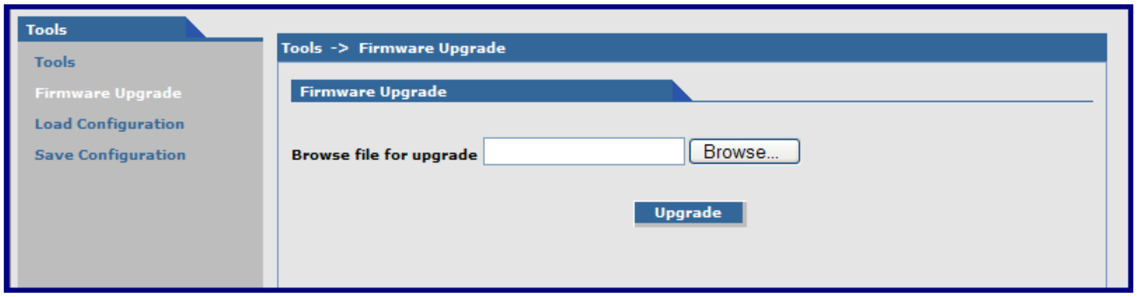
DDNS Force Update: Click Update to update the DDNS server with your current dynamically assigned IP address.

DDNS Status: Click Refresh to display the DDNS Status after a forced update.

Modem

Reset Modem: Click Reset to reset the integrated cellular modem.

Tools > Firmware Upgrade



Browse file for upgrade

Firmware Upgrade

Use this page to update router firmware. Go to multitech.com/support.go to check for firmware updates.

Note: Before you upgrade your firmware, save your present configuration. After upgrading firmware, verify your configuration to ensure that it is as expected. Verify that the DHCP scope settings are correct.

Up to four IPSEC tunnels can be active at any given time. Additional tunnels can saved, but will not be active.

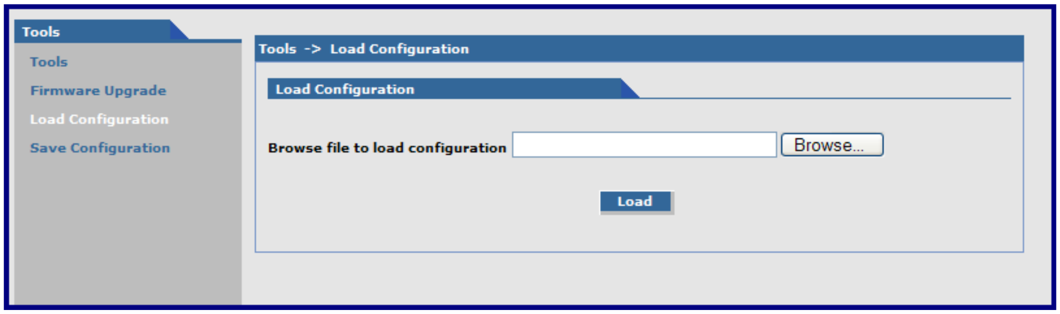
Browse File for Upgrade: Click **Browse** and locate the latest firmware version to be downloaded. Select the **mtcba-EN3-u-xxx.bin** file. Highlight the file name and press **Enter** so that the file name displays in the text box. Make sure you select the correct BIN file; otherwise, your router can become inoperable. Then click **Upgrade**.

When upgrade is completed, the program returns to the main login screen.

Notes:

- The new firmware is written into the flash memory.
- Firmware upgrades take at least 4 minutes while the firmware is downloaded. Do not cycle power during this time.
- **DO NOT** perform firmware upgrade remotely via the cellular wireless connection.

Tools > Load Configuration



Load Configuration

Browse File for **Load Configuration:** Click **Browse** to open the file that allows you to locate the configuration file. When found, highlight the file name and press **Enter** so that the file name displays in the text box. Then click **Load**. You will be prompted Find, Save, or Cancel.

Notes:

- The new configuration is written into the flash memory.
- Configuration upgrades take at least 3 seconds to download and 60 seconds to install the settings and reboot. Reboot happens automatically.

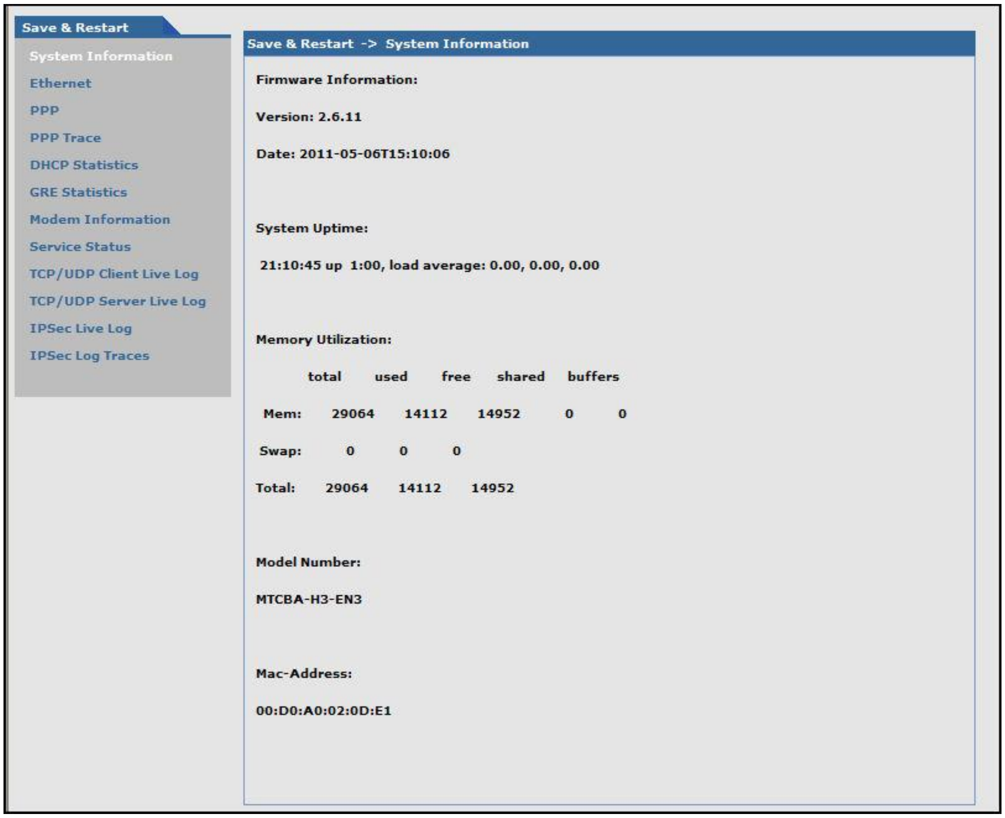
Tools > Save Configuration

Click **Save Configuration** to save the configuration.

Statistics & Logs

Statistics & Logs > System Information

This image shows an example of Statistics & Logs System information



Save & Restart -> System Information

Firmware Information:

Version: 2.6.11

Date: 2011-05-06T15:10:06

System Uptime:

```
 21:10:45 up  1:00, load average: 0.00, 0.00, 0.00
```

Memory Utilization:

```
         total     used     free    shared   buffers
 Mem:    29064    14112    14952       0        0
 Swap:       0        0        0
Total:   29064    14112    14952
```

Model Number:

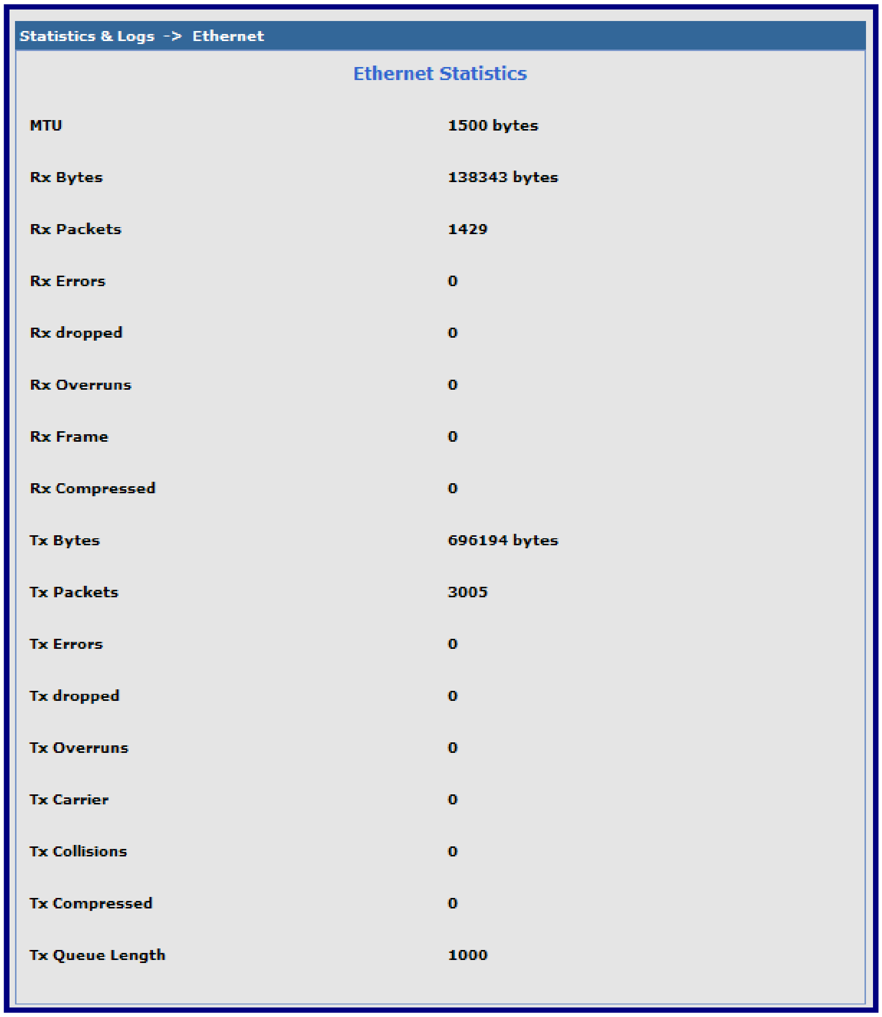
MTCBA-H3-EN3

Mac-Address:

00:D0:A0:02:0D:E1

Statistics & Logs > Ethernet

This image shows an example of Ethernet statistics.



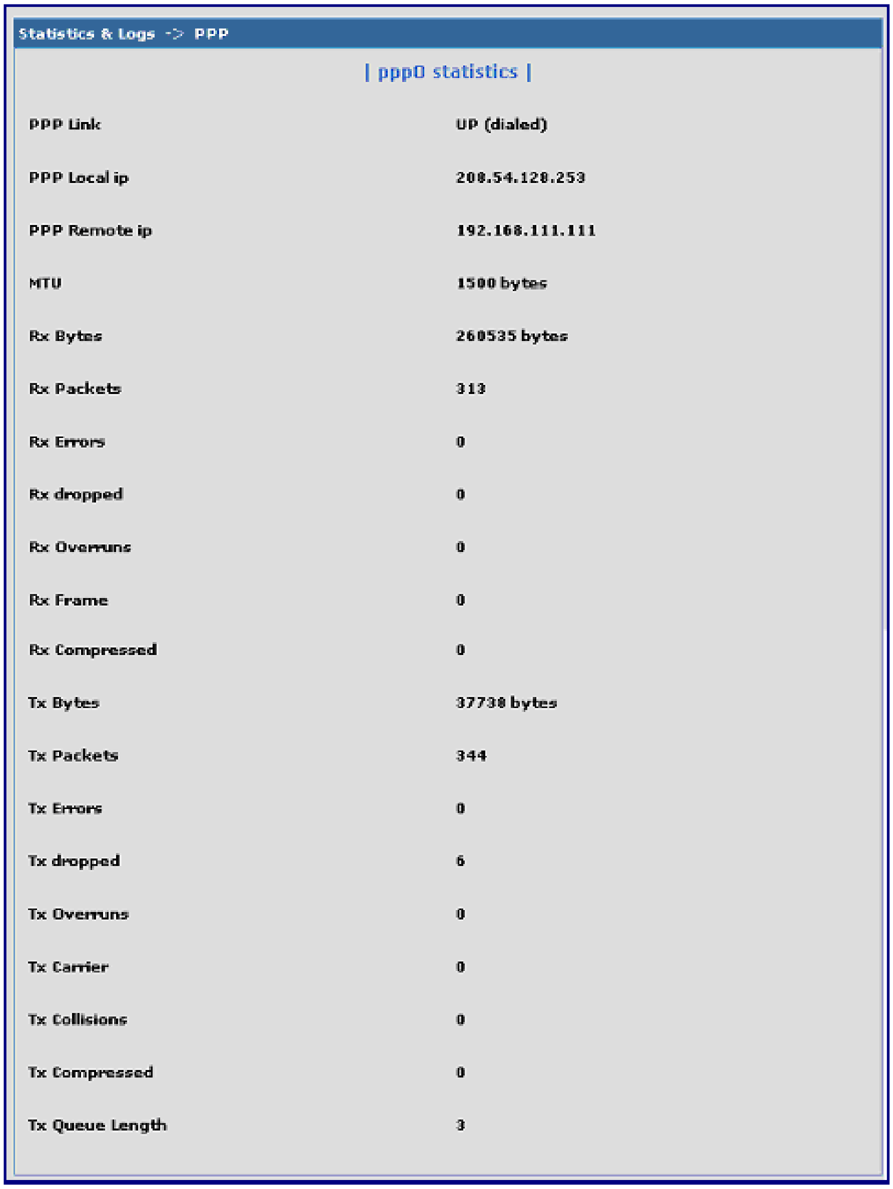
Statistics & Logs -> Ethernet

Ethernet Statistics

MTU	1500 bytes
Rx Bytes	138343 bytes
Rx Packets	1429
Rx Errors	0
Rx dropped	0
Rx Overruns	0
Rx Frame	0
Rx Compressed	0
Tx Bytes	696194 bytes
Tx Packets	3005
Tx Errors	0
Tx dropped	0
Tx Overruns	0
Tx Carrier	0
Tx Collisions	0
Tx Compressed	0
Tx Queue Length	1000

Statistics & Logs > PPP

This image shows an example of PPP statistics when PPP is enabled.

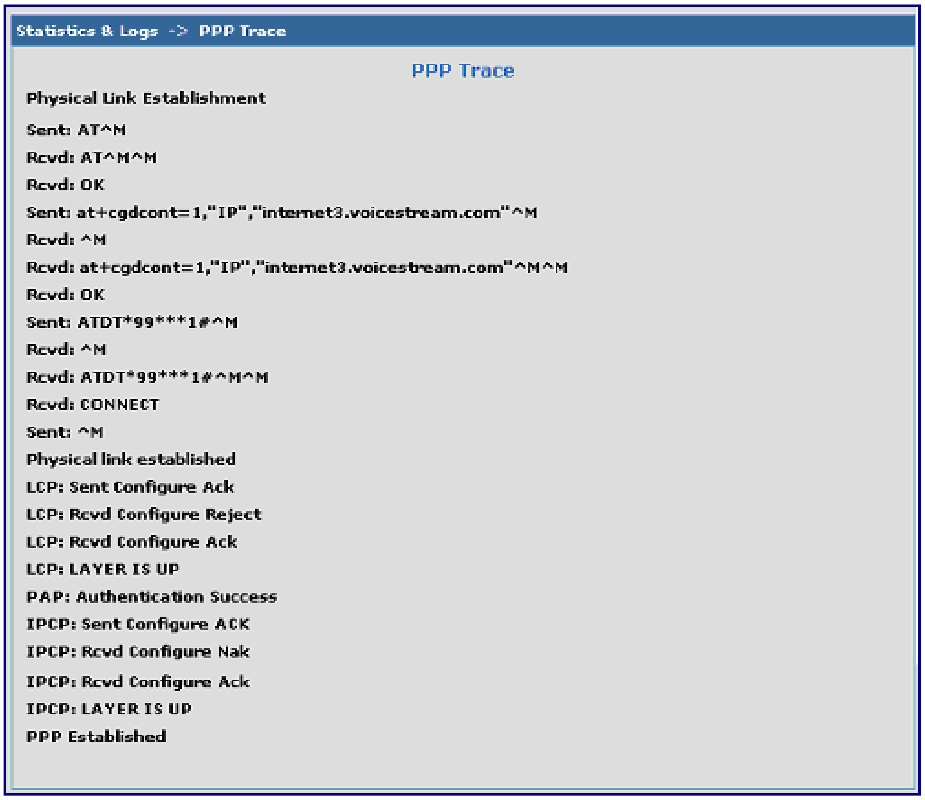


| ppp0 statistics |

PPP Link	UP (dialed)
PPP Local ip	208.54.128.253
PPP Remote ip	192.168.111.111
MTU	1500 bytes
Rx Bytes	260535 bytes
Rx Packets	313
Rx Errors	0
Rx dropped	0
Rx Overruns	0
Rx Frame	0
Rx Compressed	0
Tx Bytes	37738 bytes
Tx Packets	344
Tx Errors	0
Tx dropped	6
Tx Overruns	0
Tx Carrier	0
Tx Collisions	0
Tx Compressed	0
Tx Queue Length	3

Statistics & Logs > PPP Trace

This image shows an example of PPP trace messages.



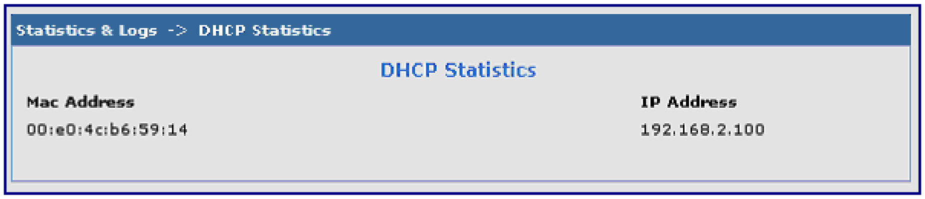
Statistics & Logs -> PPP Trace

PPP Trace

```
Physical Link Establishment
Sent: AT^M
Rcvd: AT^M^M
Rcvd: OK
Sent: at+cgdcont=1,"IP","internet3.voicestream.com"^M
Rcvd: ^M
Rcvd: at+cgdcont=1,"IP","internet3.voicestream.com"^M^M
Rcvd: OK
Sent: ATDT*99***1#^M
Rcvd: ^M
Rcvd: ATDT*99***1#^M^M
Rcvd: CONNECT
Sent: ^M
Physical link established
LCP: Sent Configure Ack
LCP: Rcvd Configure Reject
LCP: Rcvd Configure Ack
LCP: LAYER IS UP
PAP: Authentication Success
IPCP: Sent Configure ACK
IPCP: Rcvd Configure Nak
IPCP: Rcvd Configure Ack
IPCP: LAYER IS UP
PPP Established
```

Statistics & Logs > DHCP Statistics

This image shows an example of DHCP statistics.



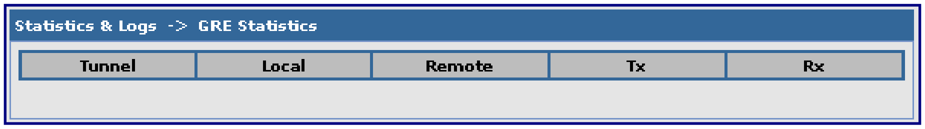
Statistics & Logs -> DHCP Statistics

DHCP Statistics

Mac Address	IP Address
00:e0:4c:b6:59:14	192.168.2.100

Statistics & Logs > GRE Statistics

This page displays active tunnel statistics.

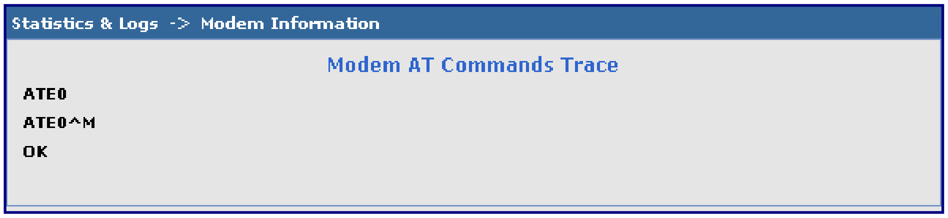


Statistics & Logs -> GRE Statistics

Tunnel	Local	Remote	Tx	Rx

Statistics & Logs > Modem Information

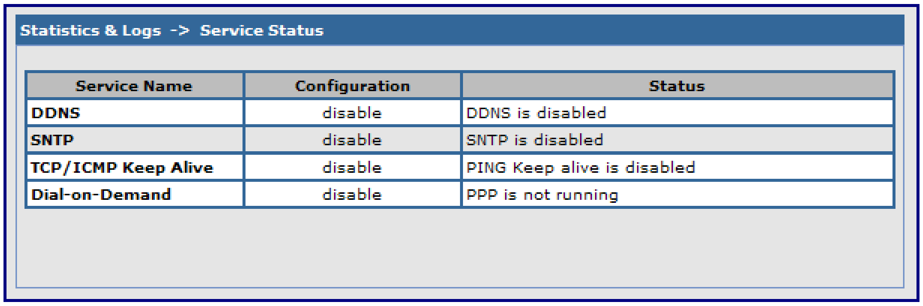
This image shows the modem commands currently set on the **PPP > Modem Commands** page along with commands results.



```
ATE0
ATE0^M
OK
```

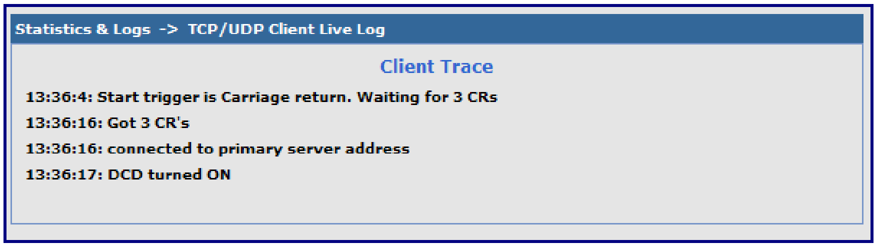
Statistics & Logs > Service Status

This page displays the service status summary.



Service Name	Configuration	Status
DDNS	disable	DDNS is disabled
SNTP	disable	SNTP is disabled
TCP/ICMP Keep Alive	disable	PING Keep alive is disabled
Dial-on-Demand	disable	PPP is not running

Statistics & Logs > TCP/UDP Client Live Log

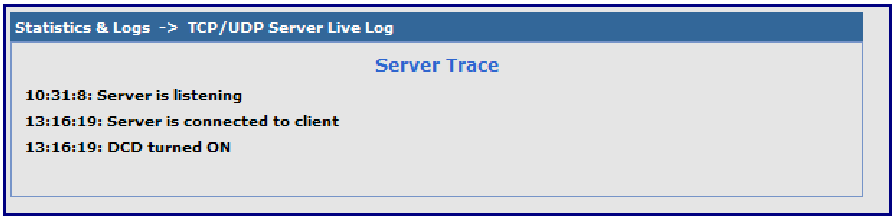


```
13:36:4: Start trigger is Carriage return. Waiting for 3 CRs
13:36:16: Got 3 CR's
13:36:16: connected to primary server address
13:36:17: DCD turned ON
```

This page displays the TCP/UDP Client Live Log.

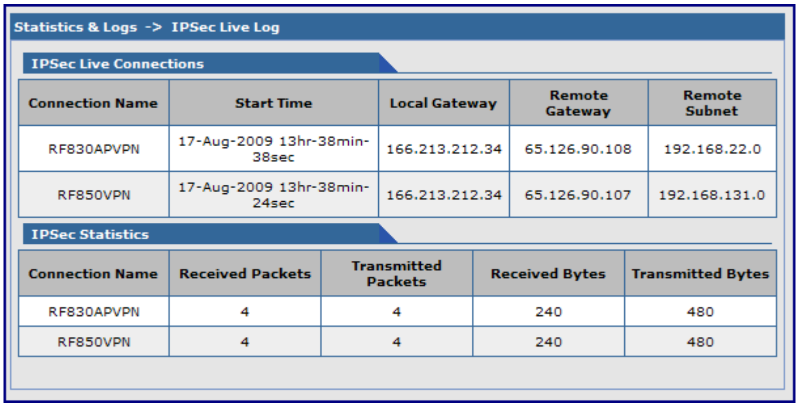
Statistics & Logs > TCP/UDP Server Live Log

This screen displays the TCP/UDP Server Live Log.



```
10:31:8: Server is listening
13:16:19: Server is connected to client
13:16:19: DCD turned ON
```

Statistics & Logs > IPSec Live Log



Statistics & Logs -> IPSec Live Log

IPSec Live Connections

Connection Name	Start Time	Local Gateway	Remote Gateway	Remote Subnet
RF830APVPN	17-Aug-2009 13hr-38min-38sec	166.213.212.34	65.126.90.108	192.168.22.0
RF850VPN	17-Aug-2009 13hr-38min-24sec	166.213.212.34	65.126.90.107	192.168.131.0

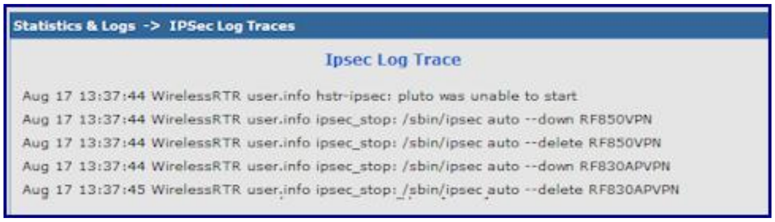
IPSec Statistics

Connection Name	Received Packets	Transmitted Packets	Received Bytes	Transmitted Bytes
RF830APVPN	4	4	240	480
RF850VPN	4	4	240	480

This screen displays the IPSec Live Log.

Statistics & Logs > IPSec Log Traces

This screen displays the IPSec Log Traces.



Statistics & Logs -> IPSec Log Traces

Ipsec Log Trace

```
Aug 17 13:37:44 WirelessRTR user.info hstr-ipsec: pluto was unable to start
Aug 17 13:37:44 WirelessRTR user.info ipsec_stop: /sbin/ipsec auto --down RF850VPN
Aug 17 13:37:44 WirelessRTR user.info ipsec_stop: /sbin/ipsec auto --delete RF850VPN
Aug 17 13:37:44 WirelessRTR user.info ipsec_stop: /sbin/ipsec auto --down RF830APVPN
Aug 17 13:37:45 WirelessRTR user.info ipsec_stop: /sbin/ipsec auto --delete RF830APVPN
```

Appendix A – Commonly Supported Subnets Reference Table

This table lists commonly supported Subnets organized by Address.

	Network Number	Hosts Available	Broadcast Address
255.255.255.128	N.N.N.0	N.N.N.1-126	N.N.N.127
/25	N.N.N.128	N.N.N.129-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.192	N.N.N.0	N.N.N.1-62	N.N.N.63
/26	N.N.N.64	N.N.N.65-126	N.N.N.127
	N.N.N.128	N.N.N.129-190	N.N.N.191
	N.N.N.192	N.N.N.193-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.224	N.N.N.0	N.N.N.1-30	N.N.N.31
/27	N.N.N.32	N.N.N.33-62	N.N.N.63
	N.N.N.64	N.N.N.65-94	N.N.N.95
	N.N.N.96	N.N.N.97-126	N.N.N.127
	N.N.N.128	N.N.N.129-158	N.N.N.159
	N.N.N.160	N.N.N.161-190	N.N.N.191
	N.N.N.192	N.N.N.193-222	N.N.N.223
	N.N.N.224	N.N.N.225-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.240	N.N.N.0	N.N.N.1-14	N.N.N.15
/28	N.N.N.16	N.N.N.17-30	N.N.N.31
	N.N.N.32	N.N.N.33-46	N.N.N.47
	N.N.N.48	N.N.N.49-62	N.N.N.63
	N.N.N.64	N.N.N.65-78	N.N.N.79
	N.N.N.80	N.N.N.81-94	N.N.N.95
	N.N.N.96	N.N.N.97-110	N.N.N.111
	N.N.N.112	N.N.N.113-126	N.N.N.127
	N.N.N.128	N.N.N.129-142	N.N.N.143
	N.N.N.144	N.N.N.145-158	N.N.N.159
	N.N.N.160	N.N.N.161-174	N.N.N.175
	N.N.N.176	N.N.N.177-190	N.N.N.191
	N.N.N.192	N.N.N.193-206	N.N.N.207
	N.N.N.208	N.N.N.209-222	N.N.N.223
	N.N.N.224	N.N.N.225-238	N.N.N.239
	N.N.N.240	N.N.N.241-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.248	N.N.N.0	N.N.N.1-6	N.N.N.7
/29	N.N.N.8	N.N.N.9-14	N.N.N.15
	N.N.N.16	N.N.N.17-22	N.N.N.23
	N.N.N.24	N.N.N.25-30	N.N.N.31
	N.N.N.32	N.N.N.33-38	N.N.N.39
	N.N.N.40	N.N.N.41-46	N.N.N.47
	N.N.N.48	N.N.N.49-54	N.N.N.55
	N.N.N.56	N.N.N.57-62	N.N.N.63
	N.N.N.64	N.N.N.65-70	N.N.N.71

	N.N.N.72	N.N.N.73-78	N.N.N.79
	N.N.N.80	N.N.N.81-86	N.N.N.87
	N.N.N.88	N.N.N.89-94	N.N.N.95
	N.N.N.96	N.N.N.97-102	N.N.N.103
	N.N.N.104	N.N.N.105-110	N.N.N.111
	N.N.N.112	N.N.N.113-118	N.N.N.119
	N.N.N.120	N.N.N.121-126	N.N.N.127
	N.N.N.128	N.N.N.129-134	N.N.N.135
	N.N.N.136	N.N.N.137-142	N.N.N.143
	N.N.N.144	N.N.N.145-150	N.N.N.151
	N.N.N.152	N.N.N.153-158	N.N.N.159
	N.N.N.160	N.N.N.161-166	N.N.N.167
	N.N.N.168	N.N.N.169-174	N.N.N.175
	N.N.N.176	N.N.N.177-182	N.N.N.183
	N.N.N.184	N.N.N.185-190	N.N.N.191
	N.N.N.192	N.N.N.193-198	N.N.N.199
	N.N.N.200	N.N.N.201-206	N.N.N.207
	N.N.N.208	N.N.N.209-214	N.N.N.215
	N.N.N.216	N.N.N.217-222	N.N.N.223
	N.N.N.224	N.N.N.225-230	N.N.N.231
	N.N.N.232	N.N.N.233-238	N.N.N.239
	N.N.N.240	N.N.N.241-246	N.N.N.247
	N.N.N.248	N.N.N.249-254	N.N.N.255
255.255.255.252	N.N.N.0	N.N.N.1-2	N.N.N.3
/30	N.N.N.4	N.N.N.5-6	N.N.N.7
	N.N.N.8	N.N.N.9-10	N.N.N.11
	N.N.N.12	N.N.N.13-14	N.N.N.15
	N.N.N.16	N.N.N.17-18	N.N.N.19
	N.N.N.20	N.N.N.21-22	N.N.N.23
	N.N.N.24	N.N.N.25-26	N.N.N.27
	N.N.N.28	N.N.N.29-30	N.N.N.31
	N.N.N.32	N.N.N.33-34	N.N.N.35
	N.N.N.36	N.N.N.37-38	N.N.N.39
	N.N.N.40	N.N.N.41-42	N.N.N.43
	N.N.N.44	N.N.N.45-46	N.N.N.47
	N.N.N.48	N.N.N.49-50	N.N.N.51
	N.N.N.52	N.N.N.53-54	N.N.N.55
	N.N.N.56	N.N.N.57-58	N.N.N.59
	N.N.N.60	N.N.N.61-62	N.N.N.63
	N.N.N.64	N.N.N.65-66	N.N.N.67
	N.N.N.68	N.N.N.69-70	N.N.N.71
	N.N.N.72	N.N.N.73-74	N.N.N.75
	N.N.N.76	N.N.N.77-78	N.N.N.79
	N.N.N.80	N.N.N.81-82	N.N.N.83
	N.N.N.84	N.N.N.85-86	N.N.N.87
	N.N.N.88	N.N.N.89-90	N.N.N.91
	N.N.N.92	N.N.N.93-94	N.N.N.95
	N.N.N.96	N.N.N.97-98	N.N.N.99
	N.N.N.100	N.N.N.101-102	N.N.N.103
	N.N.N.104	N.N.N.105-106	N.N.N.107
	N.N.N.108	N.N.N.109-110	N.N.N.111
	N.N.N.112	N.N.N.113-114	N.N.N.115
	N.N.N.116	N.N.N.117-118	N.N.N.119

N.N.N.120	N.N.N.121-122	N.N.N.123
Network Number	**Hosts Available**	**Broadcast Address**
N.N.N.124	N.N.N.125-126	N.N.N.127
N.N.N.128	N.N.N.129-130	N.N.N.131
N.N.N.132	N.N.N.133-134	N.N.N.135
N.N.N.136	N.N.N.137-138	N.N.N.139
N.N.N.140	N.N.N.141-142	N.N.N.143
N.N.N.144	N.N.N.145-146	N.N.N.147
N.N.N.148	N.N.N.149-150	N.N.N.151
N.N.N.152	N.N.N.153-154	N.N.N.155
N.N.N.156	N.N.N.157-158	N.N.N.159
N.N.N.160	N.N.N.161-162	N.N.N.163
N.N.N.164	N.N.N.165-166	N.N.N.167
N.N.N.168	N.N.N.169-170	N.N.N.171
N.N.N.172	N.N.N.173-174	N.N.N.175
N.N.N.176	N.N.N.177-178	N.N.N.179
N.N.N.180	N.N.N.181-182	N.N.N.183
N.N.N.184	N.N.N.185-186	N.N.N.187
N.N.N.188	N.N.N.189-190	N.N.N.191
N.N.N.192	N.N.N.193-194	N.N.N.195
N.N.N.196	N.N.N.197-198	N.N.N.199
N.N.N.200	N.N.N.201-202	N.N.N.203
N.N.N.204	N.N.N.205-206	N.N.N.207
N.N.N.208	N.N.N.209-210	N.N.N.211
N.N.N.212	N.N.N.213-214	N.N.N.215
N.N.N.216	N.N.N.217-218	N.N.N.219
N.N.N.220	N.N.N.221-222	N.N.N.223
N.N.N.224	N.N.N.225-226	N.N.N.227
N.N.N.228	N.N.N.229-230	N.N.N.231
N.N.N.232	N.N.N.233-234	N.N.N.235
N.N.N.236	N.N.N.237-238	N.N.N.239
N.N.N.240	N.N.N.241-242	N.N.N.243
N.N.N.244	N.N.N.245-246	N.N.N.247
N.N.N.248	N.N.N.249-250	N.N.N.251
N.N.N.252	N.N.N.253-254	N.N.N.255

Appendix B – Regulatory Information

EMC, Safety, and R&TTE Directive Compliance

CE

The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

Council Directive 2004/108/EC of 15 December 2004 on the approximation of the laws of Member States relating to electromagnetic compatibility;

and

Council Directive 2006/95/EC of 12 December 2006 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits;

and

Council Directive 1999/5/EC of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

47 CFR Part 15 Regulation Class B Devices

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

EMC Requirements for Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Reglement Canadien sur le matériel brouilleur.

This device complies with Industry Canada RSS Appliance radio exempt from licensing. The operation is permitted for the following two conditions:

1. the device may not cause harmful interference, and
2. the user of the device must accept any interference suffered, even if the interference is likely to jeopardize the operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Waste Electrical and Electronic Equipment Statement

WEEE Directive

The WEEE Directive places an obligation on EU-based manufacturers, distributors, retailers, and importers to take-back electronics products at the end of their useful life. A sister directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all Multi-Tech products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

July, 2005

REACH Statement

Registration of Substances

After careful review of the legislation and specifically the definition of an “article” as defined in EC Regulation 1907/2006, Title II, Chapter 1, Article 7.1(a)(b), it is our current view Multi-Tech Systems, Inc. products would be considered as “articles”. In light of the definition in § 7.1(b) which requires registration of an article only if it contains a regulated substance that “is intended to be released under normal or reasonable foreseeable conditions of use,” our analysis is that Multi-Tech Systems, Inc. products constitute nonregisterable articles for their intended and anticipated use.

Substances of Very High Concern (SVHC)

Per the candidate list of Substances of Very high Concern (SVHC) published October 28, 2008 we have reviewed these substances and certify the Multi-Tech Systems, Inc. products are compliant per the EU “REACH” requirements of less than 0.1% (w/w) for each substance.

If new SVHC candidates are published by the European Chemicals Agency, and relevant substances have been confirmed, that exceeds greater than 0.1% (w/w), Multi-Tech Systems, Inc. will provide updated compliance status.

Multi-Tech Systems, Inc. also declares it has been duly diligent in ensuring that the products supplied are compliant through a formalized process which includes collection and validation of materials declarations and selective materials analysis where appropriate. This data is controlled as a part of a formal quality system and will be made available upon request.

Restriction of the Use of Hazardous Substances (RoHS)

RoHS
2011/65/EU
COMPLIANT

Multi-Tech Systems, Inc.
Certificate of Compliance
2011/65/EU

Multi-Tech Systems confirms that its embedded products comply with the chemical concentration limitations set forth in the directive 2011/65/EU of the European Parliament (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment - RoHS)

These Multi-Tech products do not contain the following banned chemicals[1]:

- Lead, [Pb] < 1000 PPM
- Mercury, [Hg] < 1000 PPM
- Hexavalent Chromium, [Cr+6] < 1000 PPM
- Cadmium, [Cd] < 100 PPM
- Polybrominated Biphenyl, [PBB] < 1000 PPM
- Polybrominated Diphenyl Ether, [PBDE] < 1000 PPM

Environmental considerations:

- Moisture Sensitivity Level (MSL) =1
- Maximum Soldering temperature = 260C (in SMT reflow oven)

[1]Lead usage in some components is exempted by the following RoHS annex, therefore higher lead concentration would be found in some modules (>1000 PPM);

–Resistors containing lead in a glass or ceramic matrix compound.

Information on HS/TS Substances According to Chinese Standards

In accordance with China's Administrative Measures on the Control of Pollution Caused by Electronic Information Products (EIP) # 39, also known as China RoHS, the following information is provided regarding the names and concentration levels of Toxic Substances (TS) or Hazardous Substances (HS) which may be contained in Multi-Tech Systems Inc. products relative to the EIP standards set by China's Ministry of Information Industry (MII).

Name of the Component	Hazardous/Toxic Substance/Elements					
	Lead (PB)	Mercury (Hg)	Cadmium (CD)	Hexavalent Chromium (CR6+)	Polybrominated Biphenyl (PBB)	Polybrominated Diphenyl Ether (PBDE)
Printed Circuit Boards	O	O	O	O	O	O
Resistors	X	O	O	O	O	O
Capacitors	X	O	O	O	O	O
Ferrite Beads	O	O	O	O	O	O
Relays/Opticals	O	O	O	O	O	O
ICs	O	O	O	O	O	O
Diodes/ Transistors	O	O	O	O	O	O
Oscillators and Crystals	X	O	O	O	O	O
Regulator	O	O	O	O	O	O
Voltage Sensor	O	O	O	O	O	O
Transformer	O	O	O	O	O	O
Speaker	O	O	O	O	O	O
Connectors	O	O	O	O	O	O
LEDs	O	O	O	O	O	O
Screws, Nuts, and other Hardware	X	O	O	O	O	O
AC-DC Power Supplies	O	O	O	O	O	O
Software / Documentation CDs	O	O	O	O	O	O
Booklets and Paperwork	O	O	O	O	O	O
Chassis	O	O	O	O	O	O

X Represents that the concentration of such hazardous/toxic substance in all the units of homogeneous material of such component is higher than the SJ/Txxx-2006 Requirements for Concentration Limits.

O Represents that no such substances are used or that the concentration is within the aforementioned limits.

Information on HS/TS Substances According to Chinese Standards (in Chinese)

依照中国标准的有毒有害物质信息

根据中华人民共和国信息产业部 (MII) 制定的电子信息产品 (EIP)
标准—中华人民共和国《电子信息产品污染控制管理办法》（第 39 号），也称作中国 RoHS，下表列出了 Multi-Tech Systems, Inc. 产品中可能含有的有毒物质 (TS) 或有害物质 (HS) 的名称及含量水平方面的信息。

成分名称	有害/有毒物质/元素					
	铅 (PB)	汞 (Hg)	镉 (CD)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板	O	O	O	O	O	O
电阻器	X	O	O	O	O	O
电容器	X	O	O	O	O	O
铁氧体磁环	O	O	O	O	O	O
继电器/光学部件	O	O	O	O	O	O
IC	O	O	O	O	O	O
二极管/晶体管	O	O	O	O	O	O
振荡器和晶振	X	O	O	O	O	O
调节器	O	O	O	O	O	O
电压传感器	O	O	O	O	O	O
变压器	O	O	O	O	O	O
扬声器	O	O	O	O	O	O
连接器	O	O	O	O	O	O
LED	O	O	O	O	O	O
螺丝、螺母以及其它五金件	X	O	O	O	O	O
交流-直流电源	O	O	O	O	O	O
软件/文档 CD	O	O	O	O	O	O
手册和纸页	O	O	O	O	O	O
底盘	O	O	O	O	O	O

X 表示所有使用类似材料的设备中有害/有毒物质的含量水平高于 SJ/Txxx-2006 限量要求。

O 表示不含该物质或者该物质的含量水平在上述限量要求之内。

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