

MTA V 102 USER GUIDE



Make Telephone Calls Over the Internet

Using a Normal Telephone

Quick and Easy Installation

Supports up to Two Telephone Lines

Router and Firewall

Table of Contents

Chapter 1:

Introduction.....	4
Before You Start	5
Package Contents	5
Connection Requirements.....	5
User Name and Password Requirements	6
Network Card Hardware Address Requirements	6
Connectors and Switches.....	7

Chapter 2:

Installation	8
Connecting Analog Telephone(s)	8
Connecting Your PC or Home PC Network	9
Connecting Directly to a Single PC	10
Connecting to a Hub/Switch	10
Checking the PC to MTA Connection	11
Four Troubleshooting "Tests"	12
Connecting the MTA to the Broadband Modem and Powering on for the First Time	12
First Telephone Tests	13
PC/Internet Connectivity Tests	13

Chapter 3:

Troubleshooting. T1: I Press the ON/OFF Switch and the Power LED on the MTA Does Not Light	15
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Table of Contents

Chapter 3:

T2: How do I Find Out my PC Network Information?	15
T3: My PC Does Not See the MTA.....	17
T4: How Do I Log Into the MTA to Change a Setting	19
T5: My ISP Expects a Login and I Haven't Set Up the UserName/Password in the MTA	19
20	
T6: How Do I Reboot the MTA?	20
T7: My ISP Checks MAC Addresses and I Haven't Set Up the Custom MAC for the MTA 20	
T8: I Have a Static IP Address But Haven't Set Up the Static IP Address in the MTA.....	22
T9: I Have No Dial Tone	23
T10: I Have Dial Tone But Cannot Reach my Party.....	23
T11: I Can Place Calls, Hear Ringing, but Cannot Talk or Hear, or Cannot Receive Calls	24
T12: How Can I Improve My Line Quality	24
T13: I have a DHCP server and/or wish to disable this MTA feature	25
T14: How do I Set the Basic Parameters of the MTA Using My Telephone Instead of the PC?	26
T15: How Do I Configure the Router/Firewall/Advanced Capabilities of the MTA?.....	26



Chapter 1: Introduction

Thank you for choosing the VOIP Solutions Multimedia Terminal Adapter. You can route your telephone calls through your broadband Internet connection and save on your local and long distance phone calls. The MTA lets you connect your existing telephone(s) and provides features that you may not already have on your current telephone service.

The MTA is easy to set up, and this Users Guide provides some important tips in the "Before You Start" section (such as having the user name and password that your Internet Service Providers' gave you handy). We strongly encourage you to read that short section before starting.

Tip: Not every section of this manual will apply to your installation. We have placed visual "hints" before important sections: "Essential!" for tasks or questions that every user should answer for themselves before continuing, and legends to signify that the following section is primarily of interest to Cable, DSL or Network users.

The organization of this manual was designed so that if you read the "Before You Start" and the "Installation" sections, the only other text you'll need to read are specific Troubleshooting topics which you'll be "pointed" to as any problems "pop up" as you follow the step by step directions.

The "Troubleshooting" section contains all the possible problems that we think you could possibly encounter in a normal installation process. If something doesn't work - check the "Troubleshooting" section. The "Troubleshooting" section also provides valuable documentation for the expert user or network technician. We've tried to make these instructions as clear and straightforward as possible. If you have a suggestion that might make this document better, we encourage you to email your suggestion to your service provider so that we can continually improve our services.

Before You Start

Package Contents

Please check to see that your Multimedia Terminal Adapter kit contains the following items:

- ☞ MTA V102 Multimedia Terminal Adapter with two analog phone (FXS) ports (jacks)
- ☞ Stand for Terminal Adapter (allows you to stand up the MTA on its side, taking up less shelf or desktop space).
- ☞ AC Power Supply (12 volt DC Adapter)
- ☞ 2 Standard Telephone cables (RJ-11 plugs). When looking at the cables in the package, the cables with the smaller plugs are the RJ-11 plugs.
- ☞ 1 LAN (Ethernet Local Area Network) cable (RJ-45 plug) When looking at the cables in the package, the cable with the wider plug is the RJ-45.
- ☞ Express Start Installation Card
- ☞ This manual.

Connection Requirements

Using the MTA requires:

- ☞ Broadband connection direct to the Internet, such as through a cable or DSL modem. Note: in most cases it is counter-productive to place the MTA behind a firewall or shared Internet Connection, else the Quality of Service features, which determine the quality of your Voice Over IP communications, may not be enabled. See Troubleshooting section T15, entitled "How Do I Configure the Router/Firewall Capabilities of the MTA?" for further information regarding firewalls.
- ☞ Up to two analog phones. Analog refers to a normal telephone, cordless or not, that connects via an RJ-11 plug. By default the MTA supports only one telephone line (the jack on the back of the MTA labeled Tel1); adding a second phone (or fax) is an option which must be switched on by your service provider.
- ☞ An Ethernet cable to connect to one or more PC's, directly from the PC's network card if a single PC, or from a switch or hub through which multiple PC's connect to the MTA (and from the MTA to the Internet). Note that once the MTA is set up properly, you may use it even though the PC is turned off.

User Name and Password Requirements

Most if not all Internet Service Providers require a username and password the very first time you log on to the service. This is usually entered using software provided by the ISP which is run on a PC. It is most likely, therefore, that you will have to have previously logged onto the service at least once before connecting the MTA.



Tip: Write down the UserName and Password that your Internet Service Provider expects at login... especially if you have a DSL connection.

After the very first time you log in, some providers store that info in the modem (this is often true for cable modem subscribers). Others require that the PC supplies a username and password every time a connection is re-established (such as when you reboot the computer, or if the connection is lost). Most DSL connections adhere to this protocol (called PPPOE), so you will need to have your username and password to install the MTA.

Network Card Hardware Address Requirements

Some Internet Service Providers require that once a network card connects to the service, only that network card can connect to it in the future. If in your experience you've found that if you've ever tried to connect a computer other than the one that you normally use to your Internet connection, and it wouldn't connect at all even though you entered the correct user name and password, then it's likely that this is the case. If you simply went ahead and connected your MTA to your connection now, the Internet Service Provider would not let the MTA "on" to the network.



Tip: Some broadband providers who reportedly check the MAC address of your network card include Adelphia, RoadRunner, BellSouth cable, Rogers, HiSpeed, Comcast, Telus, CoxHSI, InsightBB, RCN and Cogeco. This, however, does not mean that these providers do this in your area. If your provider is on this list, please read this entire section carefully.

The way your Internet Service provider can keep track of which network card connects is through its unique hardware address, which is called a M.A.C. Fortunately, the MTA allows you to change its M.A.C. address so that it appears to be the same as your network card. If you've previously experienced a situation in which you plugged a different computer into your cable modem and it couldn't access your connection, please proceed to the Troubleshooting section T2 entitled

"How do I Find Out my PC Network Information" before plugging in your MTA, and then, section T7, "My ISP Checks MAC Addresses and I Haven't Set Up the Custom MAC for the MTA." If you skip these very short exercises, a problem may later require you to spend many minutes on the phone with your Internet Service Provider to straighten things out. If you haven't previously experienced that situation, we recommend the following tip:

Tip: Cable Modem users should turn the power off the cable modem (unplugging the cable modem's power adapter if necessary) for a minute before connecting and turning on the MTA for the first time. This may resolve problems for cable service providers who track MAC addresses on a per session basis.

Connectors and Switches

All the connectors are of different shapes or sizes and are clearly labeled to make it difficult to place the wrong cable in the wrong jack.

Tip: WAN stands for Wide Area Network. The cable between your broadband modem and the MTA goes into this plug.

In the following chapter you'll find an illustration of the back of the MTA; the following describes each plug or switch:

Connectors	Type	Descriptions
WAN	RJ-45	10/100 Base-T Ethernet Connection to WAN-side networking device (ie; cable modem, xDSL, etc.) The port is auto-sensing, and does not require a crossover cable.
PC	RJ-45	10/100 Base-T Ethernet Connection to PC or LAN via Hub/Switch. The port is auto-sensing, and does not require a crossover cable.
DEBUG	Audio Jack	MTA Monitoring and Configuration (factory use only)
DC/12V	Jack	Connection to DC (12V, 600ma) Power Adapter (110V/220V) (tip+ , ring-)
ON/OFF	Switch	Power On/Off Switch
TEL2	RJ-11	Telephone Port (FXS). Enabled only if arranged with your service provider. When using only one phone, please plug the phone cable into Tel1.
TEL1	RJ-11	Telephone Port (FXS)



Chapter 2: Installation

This chapter provides instructions for the tasks necessary to install and set up your MTA. Please follow the simple directions for

- ☞ Connecting the analog telephone(s) to the MTA
- ☞ Connecting your PC or PC home network (single PC or multiple PC's with a switch or hub) to the MTA.
- ☞ Connecting the MTA to the broadband modem and powering on for the first time. Please refer to the Troubleshooting section should you experience any problem. We have strived to make the Troubleshooting section as complete yet simple as possible.

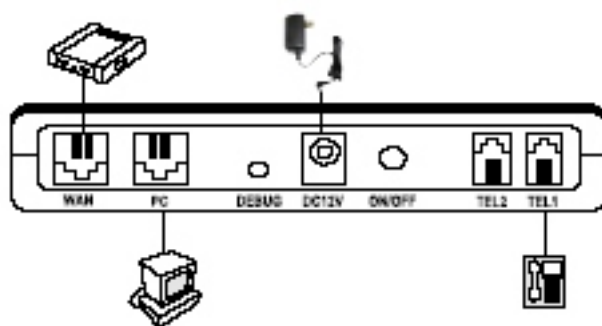
As a preliminary step, plug the MTA AC Power Adapter into the electric supply (we recommend surge protection, and if possible, an uninterruptible power supply), and plug the other end into the jack labeled "DC12V" on the back of the MTA. Turn the ON/OFF button of the MTA to OFF position. The power LED (the top light on the front panel) should NOT be lit.

Connecting the Analog Telephone(s)

- ☞ Locate the telephone cables in the MTA kit. (Note: you can use your existing telephone cable, of course. Using the new cables in the box reduces the possibility of a bad cable).
- ☞ Plug one end of the telephone cable into the plug on your telephone (if a cordless phone, the base of the phone).
- ☞ Plug the other end into the jack labeled "Tel1" on the back of the MTA.
- ☞ If you've enabled a second phone line through your service provider for a second phone or fax, plug that into the "TEL2" plug. Note: you can use a splitter on the "TEL1" cable to connect two phones on the same line.

Connecting Your PC or Home PC Network

QOS (Quality of Service) is a form of traffic control for the Internet, and a feature of the MTA that allows it to request that its voice communications receive a higher priority than data communications from other PC's on your network. Depending on the routing outside your network, it may also prioritize the voice communications upstream as well. These chapters guide you through connecting the MTA to your broadband modem so that the MTA's QOS features are enabled.



Tip: The instructions in these chapters assume that you'll want the full benefits of QOS so that your voice communications will be the highest quality possible. If, however, you're confident that your network provides a good throughput, that it has a DHCP server, and that your firewall will let traffic through on port 5060, you can simply plug an Ethernet cable into the WAN port of the MTA, plug the other end into your network, turn it on, wait up to ten minutes in case the MTA needs to update its firmware, and then start making calls. But please, if you notice the slightest quality problems, consider connecting the MTA's WAN port directly to your broadband modem, and your network to the MTA's LAN port.

- ☞ Locate the Ethernet cable in the MTA kit. (Note: you can use your existing Ethernet cable, of course. Using the new cable in the box reduces the possibility of a bad cable).
- ☞ Plug one end of the Ethernet cable into the jack labeled "PC" on the back of the MTA.

Tip: The WAN and the PC jacks on the back of the MTA are the same size. Plug the cable that leads to your PC (or your switch) in the right one. It is the second plug from the end, labeled "PC."

Continue with one of the following sections, depending on whether you're connecting directly to your PC, or connecting to a hub or switch.

Connecting Directly to a Single PC

- ✚ Power down your PC in the approved way (from the Start menu choose Shutdown).
- ✚ Locate the Ethernet cable which was previously connected between your broadband modem and the PC. This leads to the network card (or jack) on the back of the PC. Unplug the cable from the network card (the PC side).
- ✚ Plug the Ethernet cable whose other end you previously connected to the "PC" plug of the MTA into the network card on the back of the PC.

Tip: if you plan on using the your existing Ethernet cable - perhaps it's longer than the cable that came in the kit - then ignore step 3 and leave the plug in the back of your PC alone. Instead, unplug the other end of the cable, from the back of the broadband modem. Then connect that end to the jack labeled "PC" on the back of the MTA. The only reason we recommend using the cables in the box is that they are new, and less likely to cause problems; if you use your own cables, and require tech support, please be sure to mention that you're using your own cables.

Skip to "Checking the PC to MTA Connection" section, below.

Connecting to a Hub/Switch

- ✚ Locate the Ethernet cable which was previously connected between your broadband modem and the hub or switch. Unplug the side that was connected to the hub/switch.
- ✚ Plug the Ethernet cable whose other end you previously connected to the "PC" plug of the MTA into the port (plug) that you pulled the other cable out of in the previous step.

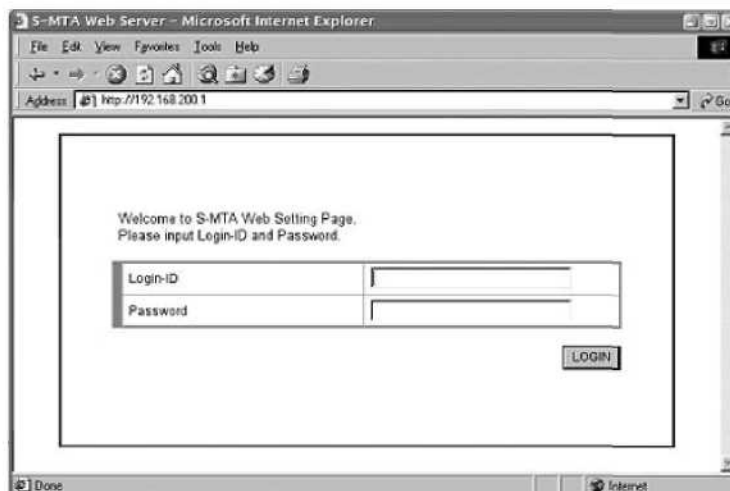
Tip: Be sure to use the same port (plug) that you pulled the other cable from. This minimizes the chance that you may plug the cable into an "uplink" port, which may lead to not being able to communicate between devices.

Tip #2: if you plan on using your existing Ethernet cable - perhaps it's longer than the cable that came in the kit - then ignore step 2 and leave the plug that attaches to the hub/switch from the broadband modem alone. Instead, unplug the other end of the cable, from the back of the broadband modem. Then connect that end to the jack labeled "PC" on the back of the MTA. The only reason we recommend using the cables in the box is that they are new, and less likely to cause problems; if you use your own cables, and require tech support, please be sure to mention that you're using your own cables.

Checking the PC to MTA Connection

At this point, the MTA should be connected only to the analog phone and to the PC (or your switch). Do not connect the broadband modem to the MTA yet; this enables us to check the MTA/PC communications more easily.

- ☐ Turn the power on for the MTA using the ON/OFF button on the back of the MTA. The LED Power indicator (top light on the MTA front panel) should light. If it does not, check Troubleshooting section topic T1, "I Press the ON/OFF Switch and the Power LED on the MTA Does Not Light."
- ☐ Turn the power on (and boot up) the PC, logging into the PC if necessary. Check to see if the PC can "see" the MTA. The following instructions are for Windows, but can be imitated from any operating system:



- ☞ Press the Start button.
- ☞ Choose the "Run" command. A small dialog box entitled "Run" appears.
- ☞ Type `http://192.168.200.1` and double check your typing.
Be sure that you've entered the "slash" character, which goes from lower left to upper right, not the "backslash" character. Press the Enter key. Your web browser should appear.
If you see a login screen like the one above you're OK.

Essential!

Now you can proceed according to the following instructions and appropriate "tests;" be sure to read each point below in order to see if it applies to you, returning to the subsequent points should you "fix" an earlier point.

Four Troubleshooting "Tests"

- ☞ You saw no login screen at all but instead received an error: proceed to "Troubleshooting" section T3, for the topic "My PC does not see the MTA."
- ☞ You saw the login screen as in the illustration above, but you know that your broadband connection uses PPPOE and/or always expects the PC to log in with the user name and password when establishing a connection: proceed to the "Troubleshooting" section, and locate topic T5, "My ISP expects a login and I haven't set up the UserName/Password in the MTA." Note: see page 4 of this manual for a fuller explanation.
- ☞ You saw the login screen as in the illustration above, but you know that your broadband connection checks the MAC (network hardware address) when establishing a connection: proceed to the "Troubleshooting" section, and locate topic T7, "My ISP checks MAC addresses and I haven't set up the Custom MAC Address in the MTA." Note: see page 4 of this manual for a fuller explanation.
- ☞ You may or may not (probably not) have seen the login screen as in the illustration above, but you know that your broadband connection provides for a static IP address: proceed to the "Troubleshooting" section, and locate topic T8, "I have a static IP address but haven't set up the Static IPAddress in the MTA."

If you have satisfied all the above "tests" you may double check by repeating the three most recent steps described above to verify that you see the login window. Then and only then can you close your browser window. It's time to put the MTA on line.

Connecting the MTA to the Broadband Modem and Powering on for the First Time

- ☞ Power off the MTA by pressing the ON/OFF switch on the back of the MTA.
- ☞ Locate the Ethernet cable which was previously connected between your broadband modem and the PC, hub, or switch. You had previously unplugged that cable from the PC, hub, or switch, but it should still be connected to the broadband modem.
- ☞ Plug the free end of that cable into the plug labeled "WAN" in back of the MTA.
- ☞ Power on the MTA by pressing the ON/OFF switch on the back of the MTA.
- ☞ Look at the indicator LEDs on the front of the MTA. Do not touch anything yet. You should see activity (blinking) on the WAN and/or PC lights.
- ☞ Wait till the activity on the WAN light "stabilizes." Very possibly, since this is the first time you're connecting the MTA to the Internet, there may be a firmware update to download; **this could take up to ten minutes, so be patient.** You may see activity on several lights for several minutes, then all the lights may go out for a moment as the MTA reboots, and then finally, it's ready when the "TEL1" light is constant. Please wait till the MTA is ready before using the PC for any important Internet related tasks, because if the MTA finds a firmware upgrade and reboots, it will interrupt the PC's connection.

First Telephone Tests

- ☞ Pick up the analog telephone. Do you hear a dial tone? Then you may proceed. If not, and you "passed" the four "tests" above, locate "Troubleshooting" topic T9, "I have no dial tone."
- ☞ Make a local call on the analog telephone (depending on your service, you should probably dial 1 and your local area code). Do you hear a the other line ringing? Then you may proceed. If not, and you "passed" the four "tests" above, locate "Troubleshooting" section topic T10, "I have dial tone but cannot reach my party."
- ☞ Call a line which you know will be answered by a live person. Can you hear them and can they hear you - in other words, is the line quality acceptable? Then you may proceed. If not, and you "passed" the four "tests" above, locate "Troubleshooting" topic T12, "How can I improve my line quality."
- ☞ 4. If your service provider provides you with a telephone number, have another person call you. Does the phone ring? Then you may proceed. If not, and you "passed" the four "tests" above, locate "Troubleshooting" topic T11, "I can make calls but can't receive calls."

PC/Internet Connectivity Tests:

- ☞ On the PC, locate your web browser shortcut (on most PC's, this is a desktop icon labeled "Internet Explorer.")
- ☞ Open a web page or two. Can you see it? Then you're done with installation, and you can go on and learn about some of the MTA features. If not, and you "passed" the four "tests" above, locate "Troubleshooting" topic T3, "My PC does not see the MTA."

Now that your MTA is connected and tested, and your PC's are connecting normally to the Internet, you may review the calling features in the next chapter.



Chapter 3: Troubleshooting

Locate the help you need by finding the description that most closely applies to your situation. We continually seek to improve this manual; should you have a "question" which this section does not answer, we hope you will contact your service provider and tell them you have a suggested troubleshooting topic for this manual. Each topic is numbered starting with "T1."

T1: Press the ON/OFF Switch and the Power LED on the MTA Does Not Light

- ☞ Verify the electric socket the AC Adapter was plugged into works by plugging another appliance into it.
- ☞ Verify the AC Adapter plug is securely plugged into the "DC12V" jack on the back of your MTA.
- ☞ If the LED Power light is still dark, you must contact your service provider.

T2: How do I Find Out my PC Network Information?

- ☞ Verify that you have followed the instructions in the section entitled "Checking the PC to MTA Connection."
- ☞ On your PC, press the Start button and choose Run from the menu. For users of Windows 2000 or Windows XP

A screenshot of a Windows Command Prompt window. The title bar reads "Command Prompt". The command prompt shows the command "C:\WINDOWS>ipconfig /all" and its output. The output is divided into two sections: "Windows IP Configuration" and "Ethernet adapter Local Area Connection 6:". The first section shows host name, primary DNS suffix, node type, IP routing, and WINS proxy status. The second section shows connection-specific DNS suffix, description, physical address, DHCP status, autoconfiguration, IP address, subnet mask, default gateway, DHCP server, and DNS servers.

```
Command Prompt
C:\WINDOWS>ipconfig /all

Windows IP Configuration

Host Name . . . . . : Hybrid
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Local Area Connection 6:

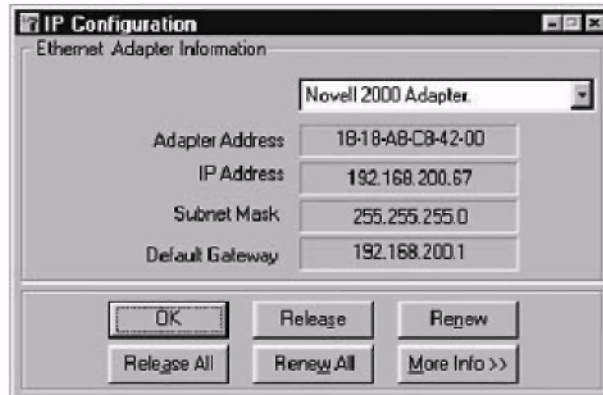
Connection-specific DNS Suffix . . : atlssl.adelphia.net
Description . . . . . : 3Com 10/100 Mini PCI Ethernet Adapter
Physical Address. . . . . : 00-81-02-04-7C-C0
Dhcp Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IP Address. . . . . : 192.168.200.65
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.200.1
DHCP Server . . . . . : 192.168.200.1
DNS Servers . . . . . : 192.168.200.1
                        68.168.1.42
```

- ☞ type CMD and press the enter key. A plain black window with a prompt similar to "C:\>" should appear.
- ☞ Type IPCONFIG /ALL in the plain black window and press the enter key. Some information should appear. Look for a line with the word "IP Address." To the right a number in four parts, divided by dots should appear. Write down the network address.
- ☞ Also in the lower part of the dialog box, an odd looking identification number in the format of "00:40:D0:19:51 :B2" should appear. This is your MAC number. Not all users will need this later, but write it down, also, and note that there are no letter "O"'s here... those are zeros.

Cable

For Users of Windows 98 or Windows ME

- ☞ Type winipcfg and press the enter key. A small dialog box like the one below should appear.
- ☞ Within the dialog box, look for the dropdown list without a label. Most likely the list defaults to "PPP Adapter." Pull down the list; most likely it will only have two choices. If it has more than two choices, you will have to choose your network card by name; if it has only two, it's the one other than PC adapter.



- ☞ After choosing, a number in four parts divided by dots should appear below, with the word "IP Address" next to it. Write down the network address.
- ☞ Also in the lower part of the dialog box, an odd looking identification number labeled "Adapter Address," in the format "00:40:D0:19:51:B2" should appear. This is your MAC address. Not all users will need this later, but write it down, also, and note that there are no letter "O"'s here... those are zeros.

T3: My PC Does Not See the MTA

- ☞ First, follow the directions in topic T2, "How do I Find Out my PC Network Information." Then, jump down to the bullet point below that best fits, then continue as directed:
- If the number begins with 169 and this is the first time you've set up the MTA, your network cabling is not correct or you have a faulty cable. Review the sections of this manual starting with the phrase "Connecting..."
 - If the number begins with 169 and you had previously reconfigured the MTA, verify that you didn't turn off the DHCP server in the MTA. These settings are described in Troubleshooting topic T13: "I have a DHCP server and/or wish to disable this MTA feature."
 - If there is a number and it begins with 192.168.200 (in other words, the first three sets of numbers in your address match these numbers), then most likely you either typed the command (<http://192.168.200.1>) in the "Checking the PC to MTA Connection" section wrong, you didn't reboot as instructed, or you have a PC firewall set to an unusually high level of protection (note: this also assumes that you previously were able to use your PC's browser). You may correct the first two conditions by returning to the previous directions. If the latter, look on your system tray (lower right hand corner of your screen), find your firewall controls, turn to a lower security level, and retry. Note that the just by being "behind" the MTA you've gained firewall protection from inbound "mischief." For more details on the firewall, see Troubleshooting topic T15: "How Do I Configure the Router/Firewall/Advanced Capabilities of the MTA?"
 - If there is a number and it begins with anything other than 192.168.200 (in other words, the first three sets of numbers in your address don't match these numbers), then most likely you had either set a static IP address previously for your computer, you have a DHCP server on your network other than the MTA, or you didn't reboot the computer when previously directed. If the last is the case, please reboot and start the "tests" again. If you have a DHCP server on your network (if you do have, you probably know what that is) and wish to disable the DHCP server in the MTA, proceed to Troubleshooting topic T13, "I have a DHCP server and wish to disable this MTA feature." If the first is the case, that you had previously set a static IP address, you may change to a dynamically set address (which means that the MTA provides your PC with an address when it boots up) through the instructions continuing below.

Network

Tip: there may be cases in which a home user has a device (for example, a wireless router) with a DHCP server, and the user may not even know they have such a server. If you are in this situation, and are not sure what to do, you should most likely disable the DHCP server in the MTA as described in the Troubleshooting topic; if you have someone you often ask technical questions of, this would be a good time to describe the situation and ask if that person agrees with this description of the situation.

- ✚ To reset your PC to expect a Dynamically Assigned Network Address, open Control Panel (press the Start button, and choose Control Panel). The control panel appears.



- ✚ Locate Network Connections and double click. A folder window or a dialog may appear, depending on your version of Windows. If a folder window, locate "Local Area Connection," right click, and select "Properties" from the popup menu; else, continue on to the next step.
- ✚ Locate Internet Protocol (TCP/IP), select it, and press the Properties button.
- ✚ Locate an option entitled "Obtain an IP AddressAutomatically" and select it.
- ✚ Locate an option entitled "Obtain DNS Server AddressAutomatically and select it.
- ✚ Press OK. In older versions of Windows you will be prompted to reboot your system.

- ☞ After a moment, or after rebooting if prompted by the operating system, follow the instructions for connecting to the MTA via your browser again.

Tip: if you are an expert network technician and wish to reset the MTA so that it's in your range (subnet) of network addresses, proceed to Troubleshooting section T8: "I Have a Static IP Address But Haven't Set Up the Static IP Address in the MTA." Or, if you are an expert network technician, you can reset the static address(es) on your PC's to the 192.168.200 subnet if you wish.

T4: How Do I Log Into the MTA to Change a Setting

- ☞ Open your Internet browser and type `http://192.168.200.1` in the address bar. (Note: if you've chosen to change the MTA's network address, it's expected that you know how to reach the address you set!)



- ☞ In the login box which then appears, fill in the user name and password. Unless your service provider had change it, these should be, respectively, "user" and "user."
- ☞ Press the login button. If a screen advises that your user name or password is wrong, please check your typing before calling your service provider (and remember, your password is probably case sensitive!). If logging in correctly, a summary screen should appear, as above

T5: My ISP Expects a Login and I Haven't Set Up the UserName/Password in the MTA

- ☞ This is almost always the case for a DSL connection. First log into the MTA as per the direction in section T4, "How Do I Log Into the MTA to Change a Setting."

DSL

- On the left side of the browser screen main menu page, in the menu links, locate and click on "WAN Configuration." The WAN Configuration page should appear, part of which appears below:

<u>WAN Configuration</u>	
WAN Access Interface	<input checked="" type="radio"/> PPPoE <input type="radio"/> Ethernet
PPPoE User Name	<input type="text" value="sbell"/>
PPPoE User Password	<input type="password" value="*****"/> (write only)
Host name (Required by some ISPs)	<input type="text"/>
Domain (Required by some ISPs)	<input type="text"/>

- Locate the "WAN Access Interface" choice at the top and select the "PPPoE" option.
- Immediately below the previous option, enter the user name that your Internet Service Provider expects in the PPPoE User Name box.
- Immediately below the previous option, enter the password that your Internet Service Provider expects in the PPPoE User Password box.
- Some Internet Service Providers expect the login to include a host name (a name for your computer) and/or a domain name (their network name). If this is required, your Internet Service Provider probably included written instructions with the information at the time you received your user name and password. Fill in these boxes (below the previous entries) if necessary, but other wise, leave them blank.
- Press the Submit button.
- Now you must reboot the MTA. Please see the Troubleshooting section entitled "How do I reboot the MTA?"

T6: How Do I Reboot the MTA?

- First log into the MTA as per the direction in section T4, "How Do I Log Into the MTA to Change a Setting."
- On the left side of the browser screen main menu page, in the menu links, locate and click on "Reboot." It's in the section near the bottom entitled "etc."
- In the next screen, a Reboot button appears. Press it. After rebooting it, please look at the Ready and WAN LED lights on the front panel. If the WAN light is very active (blinking on and off) for a few minutes upon reboot, it may be getting a firmware update. Please do not proceed further with any PC or telephone related

tasks till the WAN light is constant again (most likely, it will only flash briefly every few seconds). Note that each time the MTA reboots, it automatically checks to see whether a firmware upgrade is available. If so, then it could take up to ten minutes to download and reboot again before you can make or receive calls. When the TEL1 light is lit, the MTA is ready.

T7: My ISP Checks MAC Addresses and I Haven't Set Up the Custom MAC for the MTA

Though this task may appear somewhat daunting, it's actually simple and straightforward; the key is writing down the right information and then typing it in correctly. Setting a MAC address when it's not needed by your Internet Service Provider won't hurt anything.

Cable

Tip: setting an incorrect MAC address when your Internet Service Provider checks it will probably disconnect you from the Internet, and it may require a call to your Internet Service Provider to set things straight if you don't change back to the right address quickly. Note that it's mostly cable companies which require this, though the requirement may not apply to all areas within that company's system. There's a list of known cable companies that make this check in the "Before You Start" section.

- ✚ First you need to know the MAC address of the network card that was previously connected to your broadband modem. See section T2, "How Do I Find out my PC Network Information" if you haven't already written it down. Just be sure you remember which network card you had previously connected to the broadband modem!
- ✚ Next, log into the MTA as per the direction in section T4, "How Do I Log Into the MTA to Change a Setting."
- ✚ On the left side of the browser screen main menu page, in the menu links, locate and click on "Wan Configuration."

- ✎ The IP Configuration should appear, below the WAN configuration area (see below for illustration). Locate a choice entitled "Cloning Mac Address" and select it. This enables the box below it.
- ✎ In the "Cloning Mac Address" box, type in the MAC address you previously wrote down. Please double check your typing.
- ✎ Press the Submit button. You should see a "configuration change is successful" message. (Note: you still have to reboot the MTA).
- ✎ Reboot the MTAs as per the instructions in section T6, "How do I Reboot the MTA."

IP Configuration	
IP Type	<input checked="" type="radio"/> Dynamic IP <input type="radio"/> Static IP
IP Address	<input type="text" value="59.172.99.172"/>
Gateway IP	<input type="text" value="59.172.96.1"/>
Subnet Mask	<input type="text" value="255.255.240.0"/>
DNS Server Configuration	<input checked="" type="radio"/> Automatic <input type="radio"/> Manual
Primary DNS IP	<input type="text" value="68.168.1.42"/>
Secondary DNS IP	<input type="text" value="68.168.1.46"/>
Mac Cloning	<input type="radio"/> Original Mac Address <input checked="" type="radio"/> Cloning Mac Address <input type="text" value="00-0A-E6-73-C5-C5"/>
NTP	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
NTP Server Address	<input type="text" value="195.18.140.242"/>
MTU size	<input checked="" type="radio"/> Automatic <input type="radio"/> Manual <input type="text" value="0"/>

T8: I Have a Static IP Address But Haven't Set Up the Static IP Address in the MTA

In preparation, you **MUST** write down (or have a printed copy) not only the static IP address that your Internet Service Provider assigned, but probably a few other items as well. Most likely, you'll also need to know several other pieces of information, such as a gateway, a name server, a subnet mask and so forth. You should have a written communication from your ISP with all the information you need. If you don't have this information, unless you're an experienced network technician and know how to gather this data from the machine that was previously connected to the broadband, you'd best call your local network technician, or ask your ISP to fax the information.

- ✎ If you have the information you need, log into the MTA as per the direction in section T4, "How Do I Log Into the MTA to Change a Setting."
- ✎ On the left side of the browser screen main menu page, in the menu links, locate and click on "Wan Configuration."

- ☞ The IP Configuration should appear, below the WAN configuration area. Locate a choice entitled "Static IP" and select it. This enables the boxes below it.
- ☞ Enter the IP address provided by your ISP.
- ☞ Enter the gateway IP address provided by your ISP.
- ☞ 6. Enter the subnet mask provided by your ISP. Note: for security reasons, you should never guess at this.
- ☞ You must now enter the nameserver (DNS) information manually; if you received nameserver addresses, select the Manual choice for the DNS Server Configuration. If you do not have the nameserver information already written down, call your ISP and ask for it. Enter the Primary and Secondary DNS addresses in the next two boxes.
- ☞ Double check your typing, and if correct, press the Submit button. You should see a "configuration change is successful" message.
- ☞ Reboot the MTAs as per the instructions in section T6, "How do I Reboot the MTA."

T9: I Have No Dial Tone

- ☞ Verify that the MTA's power light is on.
- ☞ Verify that your broadband modem is powered on.
- ☞ Verify the cable connections between broadband modem, MTA, PC and/or home network, as described in the chapter two, are correct.
- ☞ Check to make sure your phone is plugged into the "TEL1" jack.
- ☞ If you have a telephone company analog plug available, test the telephone by plugging it in and making a call.
- ☞ Check the "Ready" light on the MTA. Is it on? If not, and you've followed the instructions for installations carefully, verify that your VOIP service provider has activated your account.
- ☞ Upon plugging the telephone back into the MTA, check if the TEL1 LED light is on. If the LED is off and your PC can contact the Internet, follow the instructions in section T6, "How do I Reboot the MTA," and try again. If your PC still cannot contact the Internet, double check all the applicable topics in the Troubleshooting sections. If the situation continues, contact your service provider.

T10: I Have Dial Tone But Cannot Reach my Party

- ☞ Make sure you've dialed the number correctly (with 1 and the area code; 011 plus country code if International).
- ☞ Verify that the TEL1 LED panel light is on and that your computer can "see" the Internet. If your PC cannot contact the Internet, double check all the applicable topics in the Troubleshooting sections.

- ☞ Have you changed the dialing rules (digit map) on the "Phone Configuration" page of the MTA's web interface? It's possible that you may have put in a dialing string unsuitable for your location. Try dialing the number followed by a # character. This tells the MTA not to wait to see if any other digits are to be dialed, but instead, just dial the call.
- ☞ If dialing internationally, verify that your service provider allows your account to make international calls.
- ☞ Have you placed the MTA behind a firewall that blocks the SIP protocol? Unblocking these ports but leaving the MTA behind the firewall is still not a proper solution, as it may disable the Quality of Service requests that the MTA makes to provide for the highest quality connection. If you are an expert, and can configure your firewall yourself, the ports to unblock are 5060 and 5090.
- ☞ If the situation continues, contact your service provider.

T11: I Can Place Calls, Hear Ringing, but Cannot Talk or Hear, or Cannot Receive Calls

- ☞ Have you placed the MTA behind a firewall that blocks the SIP protocol? If you are an expert, and can configure your firewall yourself, the ports to unblock are 5060 and 5090. Unblocking these ports but leaving the MTA behind the firewall is still not a proper solution, as it may disable the Quality of Service requests that the MTA makes to provide for the highest quality connection.
- ☞ Is the ringer on the telephone set to off position? If you call your own number, does the TEL1 light blink? If so, the phone should be ringing, and perhaps the ringer does not work. Please try another phone.
- ☞ Have you set up call forwarding and forgotten? This is actually a very common mistake.
- ☞ Please double check that the telephone ringer works by attaching it to another line if available.

T12: How Can I Improve My Line Quality

- ☞ Have you placed the MTA behind a firewall in a situation where other devices on the network are very active? If so, can you put it "in front" of the firewall? The firewall may disable the Quality of Service requests that the MTA makes to provide for the highest quality connection. Remember that sometimes you may not realize that, for example, peer-to-peer networking applications may be using bandwidth without your realizing it; placing the MTA "in front" allows the MTA to request a higher priority for the voice communications over the Internet.
- ☞ If you are a PC expert, try downloading a file from the Internet to your PC. Is your download time normal compared to what you normally see for your connection? Does your Internet speed normally fluctuate?
- ☞ Are you calling internationally? If the situation persists for more than an acceptable period of time, contact your service provider.

Essential!

T13:I have a DHCP server and/or wish to disable this MTA feature

This step should be taken only if the user is an expert and knows that the PC(s) behind the MTA use static IP addresses, if another DHCP server is set up on the network and the user prefers that the other server assigns the addresses, and finally, if the LAN address of the MTA is then set to the same subnet as the rest of the home network. Note: if you're running Windows 2000 or Windows XP, the IPCONFIG /ALL command includes a line called "DHCP Enabled." If you see "Yes" on this line, and an address further down for "DHCP Server," then you can be sure you have a DHCP server. Just be sure that the DHCP Server address isn't the address of the MTA!

LAN Configuration	
Bridge function	<input type="radio"/> Bridge mode <input checked="" type="radio"/> Router mode
DHCP Server	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
LAN Side IP Address	192.168.200.1
Local Subnet Mask	255.255.255.0

DHCP Server Configuration	
Server IP	192.168.200.1
Server Subnet Mask	255.255.255.0
Gateway IP	192.168.200.1
Start IP	192.168.200.65
End IP	192.168.200.254
Lease Time (sec)	359200

- ☞ First log into the MTA as per the direction in the "How Do I Log Into the MTA to Change a Setting" section.
- ☞ On the left side of the browser screen main menu page, in the menu links, locate and click on "LAN Configuration."
- ☞ In the LAN Configuration section, locate the area labeled "DHCP Server" and click the "Disabled" option.
- ☞ Press the Submit button. You should see a "configuration change is successful, please reboot your system now" message.
- ☞ Reboot the MTAs per section T6, "How do I Reboot the MTA."

T14: How do I Set the Basic Parameters of the MTA Using My Telephone Instead of the PC?

The MTA provides a concise touch tone menu interface for basic configuration options; the tasks are geared for experts who wish to set up the MTA's networking functions in short order. Each of the scenarios for the commands below are explained in other sections of the Troubleshooting section. Note that in each case, a successful entry leads to three beeps. If you enter something unsuccessfully, you will hear a fast busy signal.

Code	Action	Note
""90	MTA responds with two beeps. User enters 0# or 1#. MTA responds with three beeps.	Turn on or off MTA's DHCP server. 1 for on, 0 for off, followed by "#."
""91	MTA responds with two beeps. User enters an IP address with * instead of dots (e.g. 68*79*21 *29#). MTA responds with three beeps.	Set a static IP address for the MTA's WAN port.
""92	MTA responds with two beeps. User enters a netmask with * instead of dots (e.g. 255*255*255*0#). MTA responds with three beeps.	Set a netmask for a static IP address for the MTA's WAN Port.
""93	MTA responds with two beeps. User enters an IP address with * instead of dots (e.g. 68*79*21 *1#). MTA responds with three beeps.	Set a default gateway for the MTA.
""94	MTA responds with two beeps. User enters 0# or 1#. MTA responds with three beeps	Turn on or off access to the web interface to the MTA for remote users. 1 for on, 0 for off
""00	MTA responds with three beeps	Reset factory defaults. Important: this should only be

T15: How Do I Configure the Router/Firewall/Advanced Capabilities of the M

The MTA is not a firewall device, but because it provides for routing, network address translation, filtering, forwarding, and because it provides routing to the non-routable subnet addresses "behind" it, simply by placing the MTA in front of your single PC or home network, it prevents inbound intrusions. It can also prevent outbound "mischief" in cases where a PC infected with a virus or spyware/malware program is behind it by shutting down Internet access for specific IP addresses or ports, if the user configures it. This section provides the network technician or expert user with a reference to the router, firewall, and DHCP features.

The MTA can be operate in one of two modes: Router Mode or Bridge Mode. If Bridge Mode is selected, the Router, UPnP, DHCP and NAT features are not active. Bridge Mode can be used when the ADSL Modem, Cable Modem or Broadband Router is used as a router for your LAN; this is probably not the case if you have a home network and multiple computers. Typically, the MTA is left in Router mode. Use Bridge mode only if you know exactly how a brouter should fit into your network and have configured the MTA accordingly.

- ☞ **DHCP Server Settings** : DHCP Server works only when Router Mode is set. Use the "LAN Configuration link on the main page to access these settings.

Server IP	Type in the DHCP server IP address.(default value : 192.168.200.1)
Server Subnet Mask	Type in the subnet mask of IP pool.(default value : 255.255.255.0)
Gateway IP	Type in the gateway IP address.(default value : 192.168.200.1)
Start IP	Type in the start IP address of IP pool that DHCP server manages. (default value : 192.168.200.2)
End IP	Type in the end IP address of IP pool that DHCP server manages, (default value : 192.168.200.254)
Lease Time(sec)	Type in the lease time of IP address by seconds.(default value : 86400 seconds)
Server IP	Type in the DHCP server IP address.(default value : 192.168.200.1)

- ☞ **DHCP Active IP Table**: This table shows the current DHCP client information. To delete lease information, press the DEL link. Use the "LAN Configuration link on the main page.
- ☞ **UPnP Configuration**: This MTA supports both UPnP IGD and CP functions (all for automatic client discovery), but only one of these functions can be active at once; that is to say, these two functions are mutually exclusive. This may or may not be required by your devices or by your VOIP Service Provider. Do not change the defaults unless instructed.

UPnP IGD	Enables UPnP IGD (Internet Gateway Device) Function. This allows the MTA to advertise itself as an Internet Gateway Device to PC's and other devices on the network. For security reasons it is disabled by default. There may be situations in which you wish to allow UPnP-capable devices or computers to gather information about their upstream Internet connection from the MTA. Do not change this setting unless you are an expert.
UPnP CP	Enables UPnP CP(Control Point) Function.When the MTA is connected to a broadband router supporting UPnP IGD, you should enable this UPnP CP function which may enhance VoIP service. With it the MTA can configure itself according to the information it receives from the router or other device that is further upstream from the MTA. In order to determine whether your broadband modem supports UPnP PGP, you must consult the modem manual; however, your broadband modem manual may not even provide this information. This is a desirable feature, if your modem supports it.

STUN Configuration: Advanced proxy server settings. Do not change the defaults unless instructed. Use the "NAT/Conf" link on the main page.

STUN	If a STUN server is available, the MTA can learn additional information about the path between it and the Internet. If you do not know whether a STUN server is available, leave this setting at its default. To enable this feature, click on Enable, and click the Submit button. To disable this feature, click on Disable. This feature may possibly be required by your VOIP Service Provider; see their configuration guides for details.
STUN Server IP	Enter the IP address you wish to connect to the STUN server. This will be provided by your VOIP Service Provider, if they use this optional feature.
STUN Server Port	Enter the STUN server Port. This will be provided by your VOIP Service Provider if they use this optional feature.

Remote Management: allows you (and others) to access the browser management screens from a remote location. Do not change these settings unless you have a very clear understanding of the security issues. Use the "NAT/Conf" link on the main page.

Remote HTTP	To enable this feature, click on Enable, and click Submit button. Remote Management must be activated before you can manage the MTA from a remote location. If you wish to use this feature on the browser, enter http://Public IP address:80. To disable this feature, click on Disable.
HTTP Port	To access web browser, the standard HTTP service port 80 is used. But, to increase web security, this service port can be changed. The range is between 1024 ~ 65534. Note that if altered, this port number may not be used by other services on your network behind the MTA's NAT.

- ☞ **DMZ Host Configuration:** allows you to directly expose one computer (in the 192.168.200.0 subnet) to the internet in a DMZ arrangement. Do not change these settings unless you have a clear understanding of the security issues. Use the "NAT/Conf" link on the main page. Select Enable or Disable, then enter the last part of the IP address for the host you wish to expose.
- ☞ **Filter Settings:** this allows you to screen specific IP addresses from the Internet (up to five single computers or ranges of addresses) or specific ports (one port or range per each of the five computers or ranges previously assigned). This enables

The screenshot shows a window titled "Filter Settings". It contains two columns: "Private IP Range" and "Private Port Range". There are five rows of input fields. The first row has "192.168.200" in the IP range field and "TCP" in the port range field, with "1433" and "1434" entered in the range boxes. The other four rows have empty fields for IP ranges and "TCP" for port ranges, with empty range boxes.

you to cut off all or parts of Internet access on a customizable basis. This can be beneficial, as in the case below which would guard a single PC on the PC side of network against a famous worm attack. Do not change these settings unless you have a clear understanding of Internet firewalls. Use the "VPN/Filters" link on the main page.

Private IP Range	Enter the IP addresses you wish to filter into the Private IP Range fields. The users who have these IP addresses will not be able to access the Internet.
Private Port Range	You can also filter users by entering their source port number. Users who are connected to the MTA will no longer be able to any port number listed here.
Private Mac Address	Enter the MAC addresses you wish to filter into the Private Mac Address fields. The users who have these MAC addresses will not be able to access the Internet.

- ☞ **VPN Pass-Through:** the MTA supports pass-through function for IP-Sec packets and PPTP packets. The default mode is to enable for both IP-Sec pass-through and PPTP pass-through function. You can change the option for the pass-through function (enable/disable). Use the "VPN/Filters" link on the main page.
- ☞ **Multi-cast Pass Through:** the MTA supports pass-through function multi-cast multi-media traffic. You can change the option for the pass-through function (enable/disable). Use the "VPN/Filters" link on the main page.
- ☞ **Port Forwarding:** if the PC's behind the MTA are to provide services such as a web server, ftp server and so forth to other computers on the Internet, you may designate the specific ports to forward to specific addresses. In simple terms, the MTA provides a barrier against internet attacks for the internal network; forwarding

Port Forwarding

Application Name

IP Address
192.168.200.

Protocol
TCP

Well-known Port
Well-known Port

Port Range
-

ADD
APPLY

- You must press the APPLY button for changes to take effect permanently.

Port Forwarding List

	Use	Application	IP Address	Protocol	Port Range
DEL	<input checked="" type="checkbox"/>	ssh	192.168.200.2	TCP	22~22
DEL	<input checked="" type="checkbox"/>	ssh	192.168.200.2	UDP	22~22
DEL	<input checked="" type="checkbox"/>	ssx-x	192.168.200.2	TCP	6010~6010

exposes individual services on individual PC's that you select so that they can be seen from the Internet. The example below allows for an encrypted command shell service, to be forwarded to an individual machine on the internal network. Do not change these settings unless you have a clear understanding of the security issues. Each service/host added is kept in a table. Use the "Port Forwarding" link on the main page and the Add and Save buttons to manage the individual service/host pair.

Service Name	The name of service being added.
IP Address(PC)	The target IP address of your PC that should have packets routed towards it.
Protocol	Specify the protocol, TCP or UDP.
Well-Known Port	If you want to redirect packets having a well-known port, please select one among the list of well-known ports. This is simply a shortcut to save you the trouble of looking up the port number.
Port Number	Type the number of port for the static routing if you haven't chosen it from the "Well-Known" port list.

- ☞ **Port Triggering:** is a method of dynamically forwarding ports to a specific PC on the LAN that requests them at a particular time; such as connecting to an IRC server that requires an IDENT (sort of like a callback) reply. Do not change these settings unless you have a clear understanding of the security issues, and of the application that requires port triggering. Use the "Port Triggering" link on the main page and the Add and Save buttons to manage the individual protocol.

Application Name	Enter the application name of the trigger.
Protocol	Select protocol of the triggered port and Incoming port. You can select TCP, UDP or Both.
Trigger Port Range	For each application, list the triggered port number range. Check with the application documentation for the port number needed.
Incoming Port Range	For each application, list the forwarded port number range. Check with the application documentation for the port number needed. When finished making your changes on this tab. click the Save button to save these changes.

Index

Bridge Mode	27
Call Forwarding.....	24
Cloning Mac Address.....	22
connectors	2,7
country code	23
DEBUG	7
DHCP server.....	17, 18, 25, 27
digit map	24
DMZ.....	28
DSL.....	4, 5, 6, 7, 19
filtering	26
firewall.....	1, 3, 9, 17, 24, 26, 29
firmware update	13, 20
gateway	22, 23, 26
home network	8, 23, 25, 26, 27
install.....	8
IPCONFIG	16,25
IP-Sec.....	29
LAN Configuration	25, 27
line quality.....	3, 13, 24
login	3, 12, 19
login screen	12
MAC address	12, 16, 22, 29
multi-cast	29
name server.....	22
network address	16, 18, 19, 26
network address translation.....	26
Network Information	5, 7, 15, 17, 21

Index

ON/OFF button	8, 11
pass-through.....	29
Password.....	6, 12, 19, 20
Phone Configuration	24
Port Forwarding	29,30
Port Triggering	30
Power light.....	15, 23
PPPOE	6, 12
Quality of Service	5, 9, 24
Reboot	20, 21, 22, 23, 25
Remote Management	28
Requirements	2, 5, 6
ringer.....	24
Router Mode	27
routing.....	9, 26
SIP protocol	24
spyware	26
static IP address	3, 12, 17, 19, 22, 25, 26
subnet	19,22, 23, 27
TEL1	21, 23
touch tone menu	26
troubleshooting	13, 14, 15, 18, 19, 20, 23
UPnP	27
User Name	2, 4, 6, 12, 19, 20
VPN/Filters.....	29
WAN Configuration	20, 21, 22, 23
winipcfg	16