



JetSpeed 5000



ADSL NETWORK TERMINAL DEVICE

USER'S MANUAL

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Introduction

This User's Manual

About this User's Manual

This User's Manual provides detailed information about your jetSpeed 500/500i modem. This manual enables the target audience to:

- Get knowing the jetSpeed 500/500i and its capabilities
 - Connect the jetSpeed 500/500i in various network configurations and applications
 - Launch the web management application
 - Indicate and localize malfunctions and perform a first level maintenance
-

Target Audience

Target Audience

This User's Manual is written to be read by a specific target audience. The characteristics of the target audience are given below.

Target Audience Name

PC users, PC technicians and PC network administrators.

Target Audience Skills

The target audience shall have enough experience in handling with home and office installations as well as with PC configurations. Furthermore they shall have enough experience with Internet surfing.

Target Audience Knowledge

The target audience shall have enough technical knowledge regarding the following:

- LAN and WAN Ethernet networks
 - Servers and their applications
 - ISDN and ADSL services
 - Internet
-

Target Audience Tools

No specific tools are required.

The ADSL Technology

The ADSL Technology

ADSL (Asymmetric Digital Subscriber Line) technology provides simultaneous high-speed Internet access and regular phone or ISDN services over the existing telephony twisted copper pairs already running all the way from the CO (Central Office) to the subscriber's house. More specifically, it transforms the preinstalled phone cable in a superhighway for data communications, without interfering with the telephone or ISDN service. In this way, it can satisfy the consumers' demand for faster Internet connection and new multimedia applications such as Video on Demand, Video Conferencing and Voice over IP.

Who can use ADSL Technology

ADSL, because of the high-bit rate supported, addresses the Internet user, the home subscriber (residential and SOHO) and the Small and Medium Enterprise (SME).

Bit Rates

The bit rates that ADSL can achieve come up to 8Mbps for the downstream connection (Central Office side towards subscriber) and up to 864 kbps for the upstream connection (subscriber side towards Central Office). This asymmetry suits perfectly the needs of Internet applications that usually demand much more bandwidth for downloading than uploading.

Note:

It should be noted that the maximum attainable bit rate is directly influenced by the condition of the copper cable and the distance between the Telephone Exchange and the subscriber's premises.

Continued on next page

The ADSL Technology, Continued

INTRACOM's Solutions

INTRACOM invests thoroughly in the xDSL technologies and brings up solutions that offer broadband access for all the POTS and ISDN subscribers. Such a solution is the jetSpeed family of ADSL Network Terminal Devices. The variety of user interfaces, the ease of use and the advanced network capabilities of the jetSpeed devices make them the ideal solution for home users, telecommuters, SOHO or SME users:

- **jetSpeed 100** (ADSL over POTS Terminal Device with USB interface)
 - **jetSpeed 100i** (ADSL over ISDN Terminal Device with USB interface)
 - **jetSpeed 500** (ADSL over POTS Router with USB and Ethernet interfaces)
 - **jetSpeed 500i** (ADSL over ISDN Router with USB and Ethernet interfaces)
 - **jetSpeed 600** (ADSL over POTS Router with USB and 4-port Ethernet hub)
 - **jetSpeed 600i** (ADSL over ISDN Router with USB and 4-port Ethernet hub)
-

The jetSpeed 500/500i Features

jetSpeed 500/500i Features

jetSpeed 500 is an ADSL network terminal devices with USB and Ethernet interfaces that takes full advantage of the ADSL technology, the ATM backbone and the IP infrastructure in order to deliver broadband connections.

It allows data rates up to 120 times faster than traditional analogue voice band modems and 80 times faster than ISDN counterparts.

Data connection is established immediately and the long waiting for traditional modems to establish dial-up connections is a thing of the past.

INTRACOM's jetSpeed 500/500i is a compact external ADSL network terminal device with both USB and Ethernet interfaces, therefore ensuring connectivity to all types of new and legacy computers. Furthermore, jetSpeed 500 encompass DHCP client and server, NAT and RIP functionalities, which effectively transform the unit from a simple bridge into a powerful router. jetSpeed 500 is the ideal solution for home users, telecommuters and Small Office Home Office (SOHO) users as it offers enhanced networking functionalities, true plug-and-play installation and additional security to the "always on" ADSL connections by a "POWER-LOCK" button that prevents unauthorized access when jetSpeed 500/500i is not in use.

Configuration and control of the jetSpeed 500/500i device is achieved easily and efficiently through a Web interface. The user-friendly Windows based (Netscape, IE, etc.) graphical environment enables initialisation and configuration of the unit with a minimal effort required from the user.

jetSpeed 500/500i at a glance

- Simultaneous lifeline voice-telephone support (only jetSpeed 500)
 - Simultaneous lifeline ISDN-BRA support (only jetSpeed 500i)
 - Operating mode ADSL full rate or ADSL lite
 - Elegant design, available in multiple colours
 - USB and/or Ethernet connectivity
 - Plug-and-play installation
 - Web-based easy configuration and local management
 - Auto configuration following Open DSL and ADSL Forum recommendations (Future release)
-

Packaging

Delivery Check

When you receive the box containing the jetSpeed 500/500i modem, assure that it contains the following items (see Figure 1):

- The **jetSpeed 500/500i**
- A power supply adapter with connecting cable
- Ethernet cable
- USB cable
- Telephone cable (RJ11/RJ11)
- A stand for vertical support
- A CD-ROM containing the installation software and installation instructions
- This User manual

In the event of damaged or missing items, contact your local product dealer for further instructions.



Figure 1: The packaging list of jetSpeed 500/500i

Continued on next page

Packaging, Continued

Identify your Model

In order to identify your model (jetSpeed 500 or jetSpeed 500i) please follow the instructions below:

Step	Action
1.	Turn your modem upside-down
2.	Take a look at the label on the bottom of the modem (see Figure 2)
3.	The model (jetSpeed 500 or 500i) is indicated on this label.

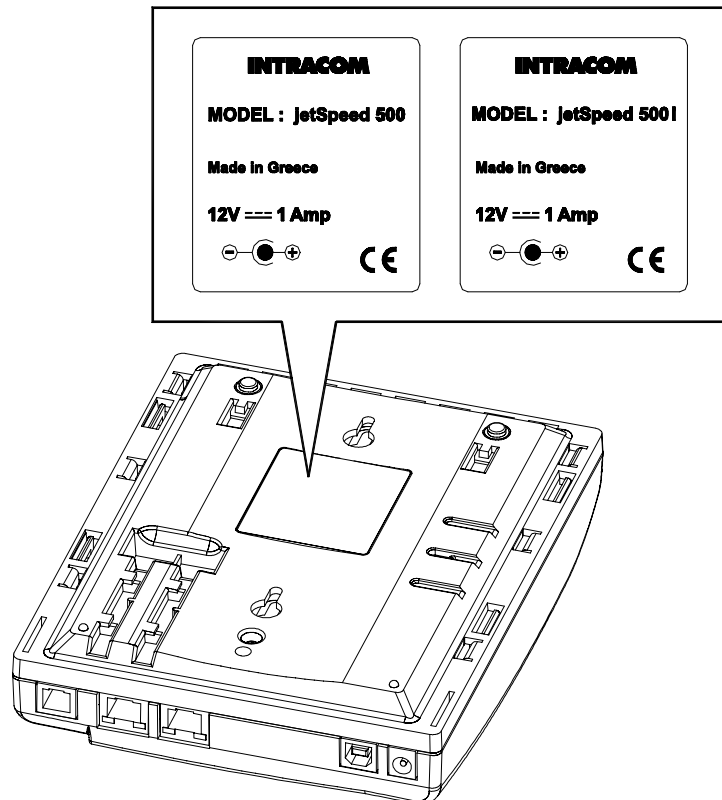


Figure 2: The label on the bottom of jetSpeed 500/500i

Applications

About this Chapter

This chapter describes in figures the various applications and connections that can be performed with jetSpeed 500/500i. Note also that a simultaneous USB and Ethernet connection is feasible.

USB connection

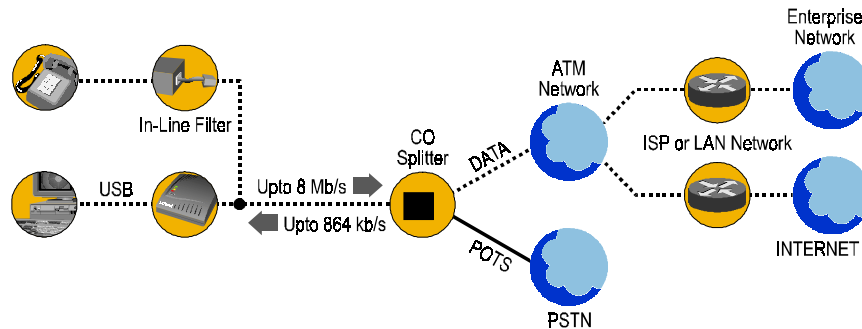


Figure 3: The jetSpeed 500/500i in the network (USB connection)

Ethernet connection

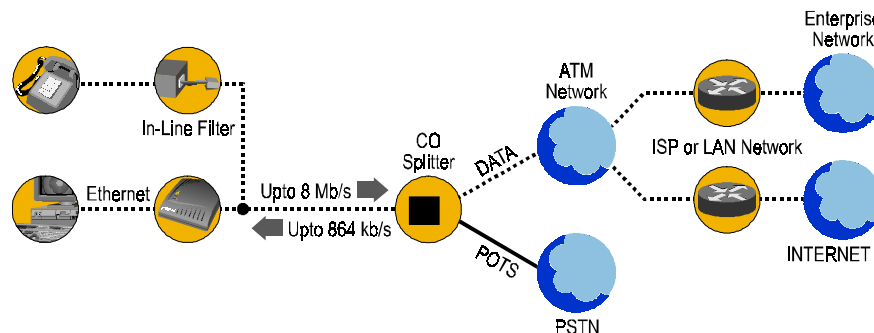


Figure 4: The jetSpeed 500/500i in the network (Ethernet)

HUB connection

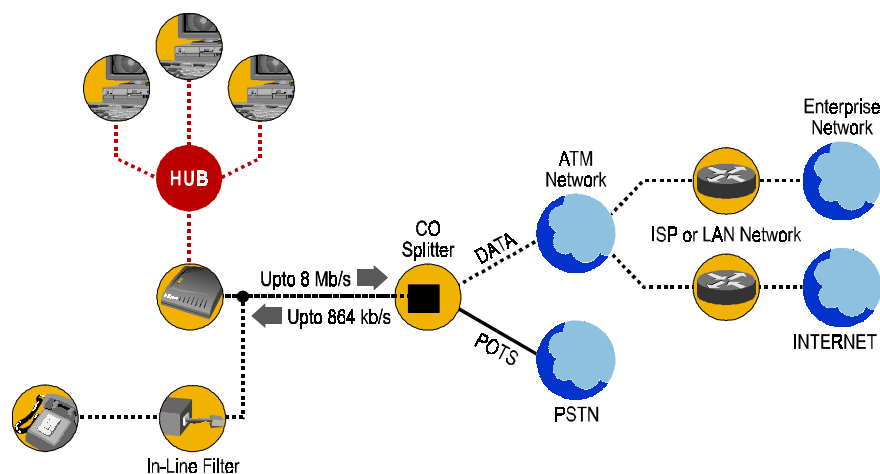


Figure 5: The jetSpeed 500/500i in the network (HUB)

System Requirements

About this Chapter

This chapter describes the requirements that have to be fulfilled in order to install and work with jetSpeed 500/500i correctly.

Requirements for USB connection

For the installation and operation of jetSpeed 500/500i, you need a PC meeting the following **minimum** requirements:

- one free USB port.
 - one of the following Operating Systems (OS) must be readily installed on your PC: Microsoft Windows 98, Windows 98 Second Edition (98SE), Microsoft Windows Millennium (ME), Microsoft Windows 2000, or Windows XP. You may need the Windows CD-ROM during the installation of jetSpeed 500/500i software.
 - 30 MB of free hard disk space.
 - Pentium processor 166 MHz, or higher (or compatible) and 32 MB of memory, or more, for Windows 98/98SE/ME.
 - Pentium II processor, or higher (or compatible) and 64 MB of memory, or more, for Windows 2000.
 - Pentium II processor, or higher (or compatible) and 128 MB of memory, or more, for Windows XP.
-

Requirements for Ethernet connection

In case of Ethernet connectivity it is required an Ethernet NIC (Network Interface Controller) on your PC.

Finally, you need the ADSL service enabled in your telephone line.

Connectors and Indicators

The Connectors

jetSpeed 500/500i Rear View

At the rear side of jetSpeed 500/500i presented in Figure 6 identify the labelled ports:

- The Power connector labelled POWER
 - The USB port labelled USB
 - The ADSL port (RJ11) labelled ADSL
 - The Ethernet port labelled PC
 - The HUB port labelled HUB
-



Figure 6: Rear view of jetSpeed 500/500i

The LEDs

jetSpeed 500/500i Front Panel

Figure 7 presents the indication LEDs, which are located at the top of jetSpeed 500/500i modem, along the left side of the unit.

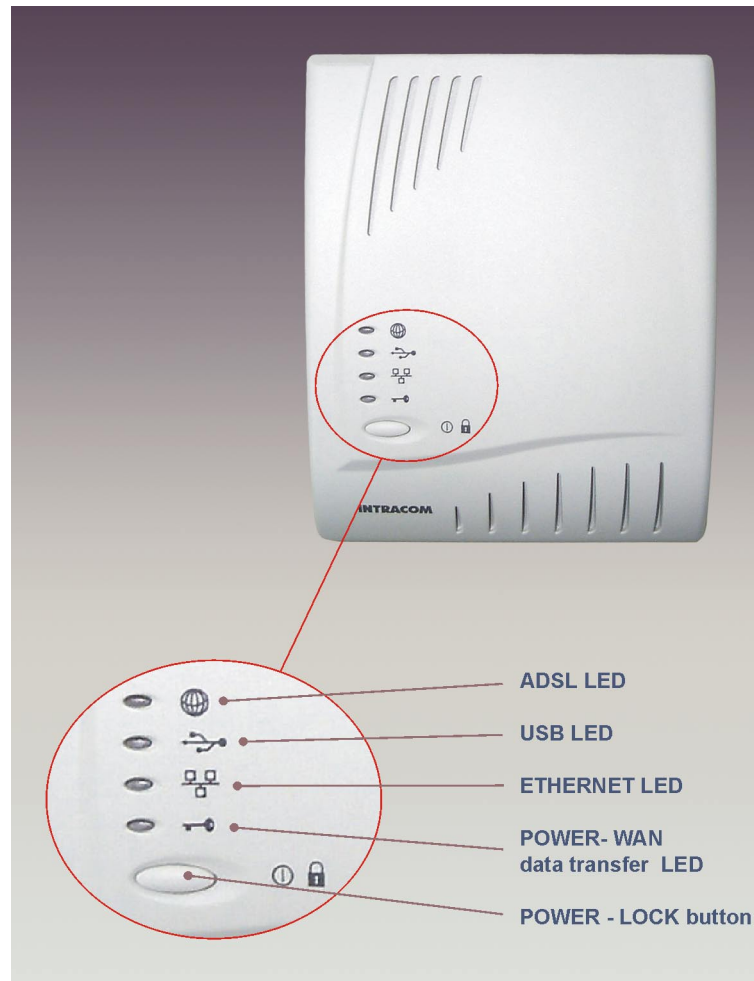


Figure 7: Front panel of jetSpeed 500/500i

Continued on next page

The LEDs, Continued

LEDs Description

Hereafter follows the description of the LEDs and the corresponding indication.

LED	Indication	Description
ADSL	Red	Hardware failure is indicated.
	Orange (flashing slow)	The jetSpeed 500/500i failed to synchronize with the provider's ADSL network and it is in a standby mode.
	Orange (flashing fast)	The jetSpeed 500/500i is attempting to synchronize with the provider's ADSL network.
	Green (flashing slow)	The ADSL connection has been established.
ETHERNET	Orange	The ETHERNET connection has not been established.
	Green	The ETHERNET connection has been established.
USB	Orange	The USB connection has not been established.
	Green	The USB connection has been established.
POWER WAN Data Transfer Lock	OFF	The power adapter has not been connected to the modem.
	Orange	The unit is on. The WAN data transfer is locked.
	Green	The unit is on. The WAN data transfer is unlocked.

The “POWER-LOCK” button

The functionality of the “POWER-LOCK” button (see Figure 7) is described in the following table.

Functionality	Modem's status	Description
Hardware	On	Press the button and keep it pressed for two (2) seconds. The modem will turn on.
	Off	Press the button and keep it pressed for four (4) seconds. The modem will turn off.
Software	ATM LOCK	Press the button once for a few mS (instantly) and will be blocked. The modem will enter to the ATM LOCK status and the LED POWER-WAN Data Transfer lock will turn orange.
	ATM UNLOCK	Being in the ATM LOCK status, press the button once for a few mS (instantly) and the WAN interface of jetSpeed 500 will be unblocked. The modem will enter to the ATM UNLOCK status and the LED POWER-WAN Data Transfer lock will turn green.
	On	Press the button four times (instantly) and the modem will return to the default factory settings (default configuration, default IP address etc.)

Installation Instructions

Home Telephone Installation

POTS

A common home telephony cabling is depicted in the following figure:

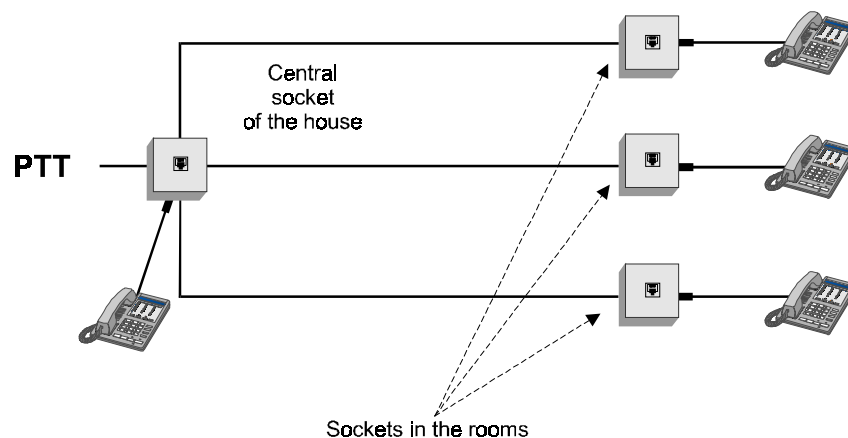


Figure 8: Existing telephone cabling with POTS only

ADSL over POTS

In order to decouple the ADSL and the telephone signals, you will need a central splitter or a low pass filter (LPF).



Figure 9: The Central Splitter (POTS)

Continued on next page

Home Telephone Installation, Continued

ADSL over POTS (continued)

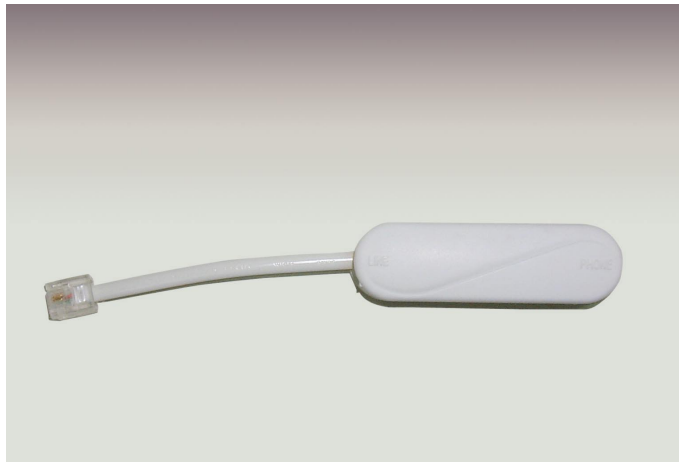


Figure 10: The Low Pass Filter

To install the Low Pass filter, plug your phone into the filter and then plug the Low Pass filter into your telephone jack.

The use of distributed LP filters is shown in the following figures:

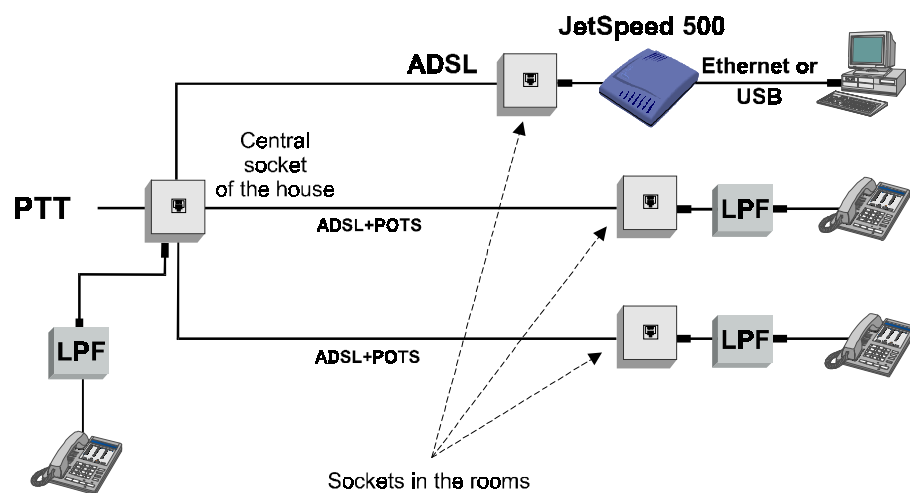


Figure 11: Use of distributed Low Pass Filters (LPF)

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Home Telephone Installation, Continued

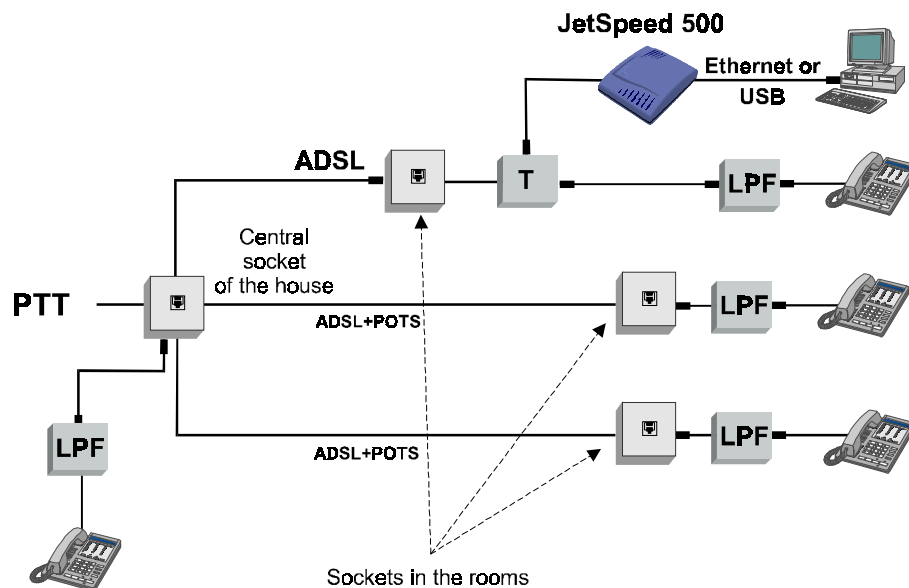


Figure 12: Use of a T junction plus the distributed low pass filters

The use of distributed LP filters simplifies the installation procedure as there is no need for intervention in the existing home cabling.

Continued on next page

Home Telephone Installation, Continued

Alternatively, a central splitter (Figure 9) can be used as shown in the figure below:

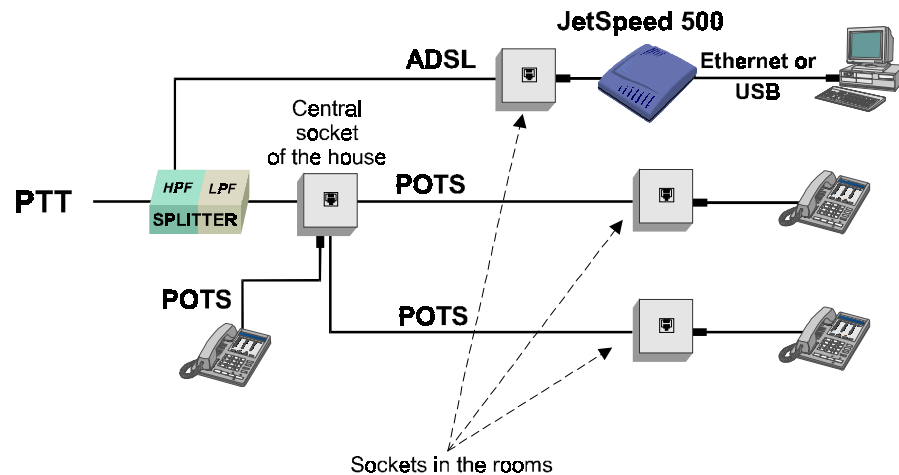


Figure 13: Use of a central splitter (POTS)

Attention! Only qualified installation personnel should perform the installation of the central splitter. The splitter has to be installed before the central socket of the house and next to it, if it is possible, so as the already existing cable from the central socket up to the jetSpeed 500 installation point is used. If it is not possible, the installation personnel should install a new cable between the splitter and the jetSpeed 500.

Continued on next page

Home Telephone Installation, Continued

ADSL over ISDN

In case of an ISDN connection, it's necessary to use the ISDN Central Splitter.



Figure 14: The Central Splitter (ISDN)

The relative solution is depicted in the following figure:

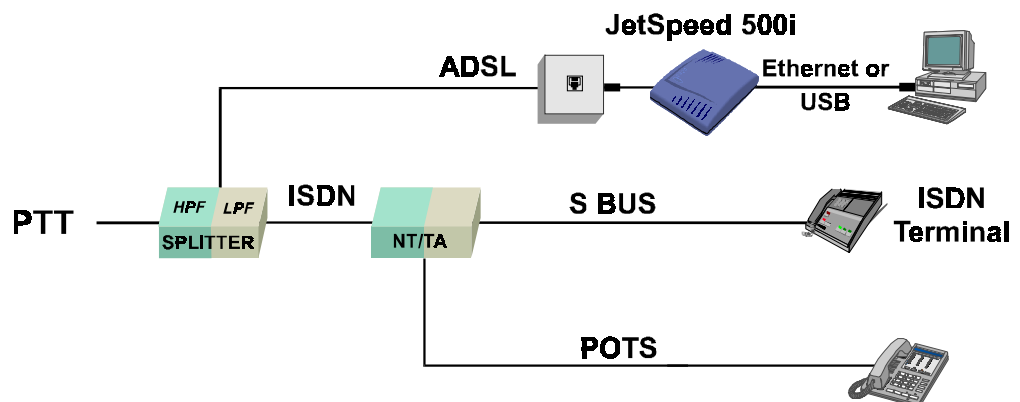


Figure 15: Use of a Central Splitter (ISDN)

Attention! Only qualified installation personnel should perform the installation of the central splitter. The splitter has to be installed before the central socket of the house and next to it, if it is possible, so as the already existing cable from the central socket up to the jetSpeed 500i installation point is used. If it is not possible, the installation personnel should install a new cable between the splitter and the jetSpeed 500i.

Installing the jetSpeed 500/500i

Horizontal or vertical Installation

The jetSpeed 500/500i can be positioned either horizontally or vertically. The vertical positioning requires the stand that is provided along with the unit.



Figure 16: The horizontal and vertical installation of jetSpeed 500/500i

Continued on next page

Installing the jetSpeed 500/500i, Continued

The Power Supply Connection

In order to connect the jetSpeed 500/500i on the power supply, follow the instructions below:

Step	Action
1.	Plug one end of the power cable into the POWER receptacle on the back of the jetSpeed 500/500i
2.	Plug the power supply adapter to a mains socket.

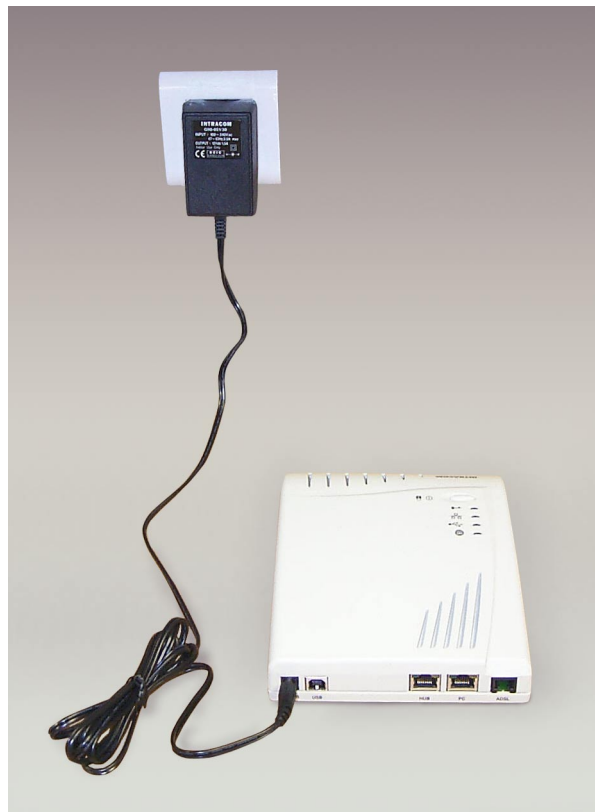


Figure 17: Connecting jetSpeed 500/500i to the mains socket

Continued on next page

Installing the jetSpeed 500/500i, Continued

The ADSL Line Connection

In order to connect the jetSpeed 500/500i on the ADSL line, follow the instructions below:

Step	Action
1.	Plug the telephone cable into the ADSL receptacle (RJ11) of the jetSpeed 500/500i.
2.	Plug the other end of the telephone cable into the wall telephone socket.



Figure 18: Connecting jetSpeed 500/500i to the ADSL line

Note


Before connecting jetSpeed 500/500i to the ADSL line, make sure that the home telephony cabling has been arranged according to given instructions (**Home Telephone Installation**).

Continued on next page

Connecting to a PC (via USB)

Connection via USB

In order to connect the jetSpeed 500/500i to a PC, via the USB interface, follow the instructions below:

Step	Action
1.	Plug the USB cable into the USB port of the jetSpeed 500/500i.
2.	Plug the other end of the USB cable into the PC's USB port. This port is marked with the typical USB symbol  .

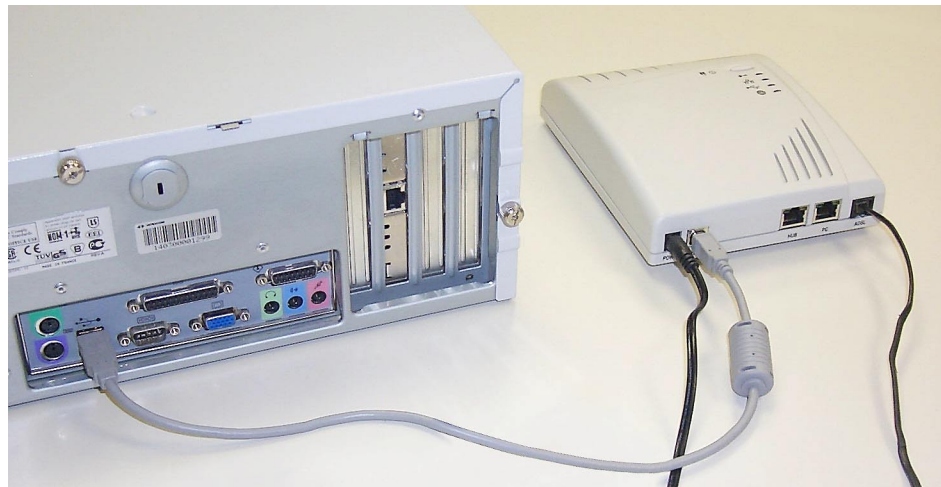


Figure 19: Connecting jetSpeed 500/500i to a PC (via USB)

Connecting to a PC (via Ethernet)

Connection via Ethernet

In order to connect the jetSpeed 500/500i to a PC, via the Ethernet interface, follow the instructions below:

Step	Action
1.	Plug the Ethernet cable to the Ethernet port on the back of the jetSpeed 500/500i.
2.	Plug the other end to the Ethernet network card on your computer.

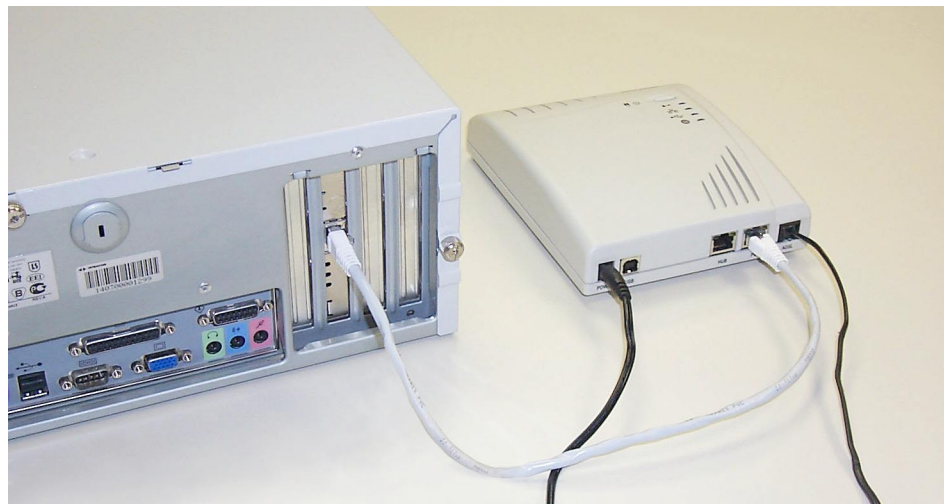


Figure 20: Connecting jetSpeed 500/500i to a PC (via Ethernet)

Connecting to an Ethernet LAN

Connecting to an Ethernet LAN

In order to connect the jetSpeed 500/500i to an Ethernet LAN, follow the instructions below:

Step	Action
1.	Plug the Ethernet cable to the HUB port on the back of the jetSpeed 500/500i.
2.	Plug the other end of the cable to any free port of the HUB.

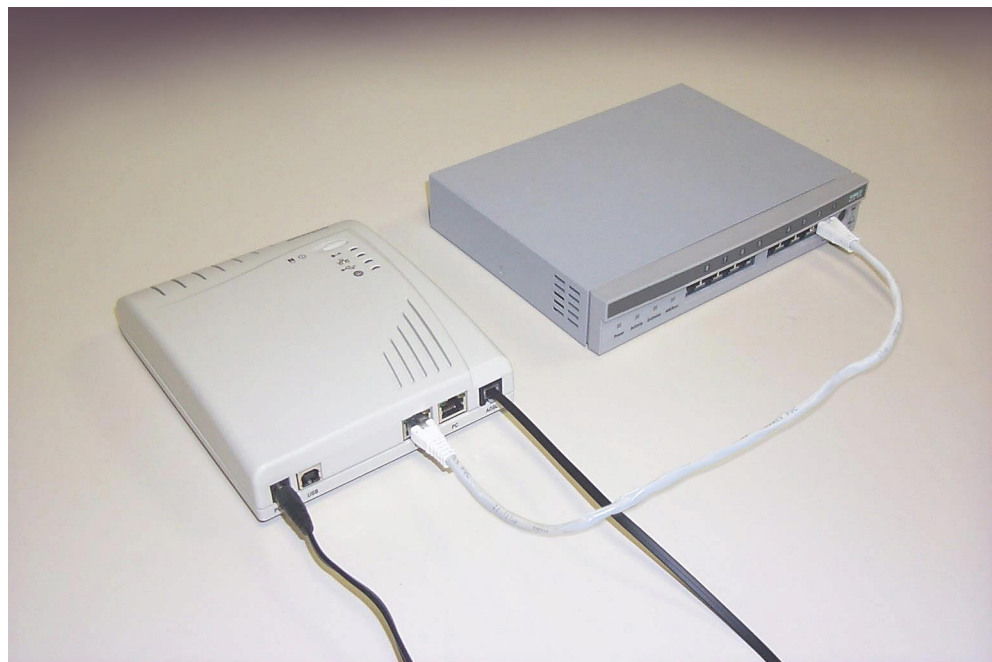


Figure 21: Connecting jetSpeed 500/500i to an Ethernet LAN

Once you have jetSpeed 500/500i installed correctly, you can use it to be connected to the Internet. To do so, you must have an account to an Internet Service Provider (ISP) for Internet access. In order to be connected to the Internet, there are two sets of data you need to know. The one set concerns ATM settings while the other set concerns TCP/IP settings. The NAP (Network Access Provider) and the ISP (Internet Service Provider) should provide to you this information. In the following paragraphs describing the jetSpeed 500/500i installation, instruction will be given on how to fill in the relative fields.

Configuration

Installing jetSpeed 500/500i ADSL modem through USB

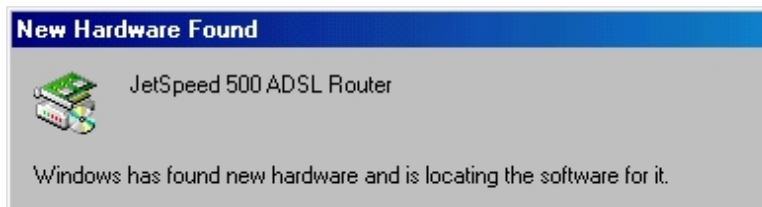
Installing jetSpeed 500 ADSL modem through USB

Once the cables are connected, the OS will automatically request for the appropriate USB driver. Follow the instructions described below, according to the operating system of your computer.

Note: The USB driver files are located in the "Driver" folder on the jetSpeed 500 CD-ROM.

Installing jetSpeed 500 in Win 98

Insert the jetSpeed 500 CD-ROM into your CD driver.



Windows have detected the jetSpeed 500 ADSL modem.



Click "Next" in the "Add New Hardware Wizard" window.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 98 (continued)



Select the option "Search for the best driver for your device (Recommended)" and click "Next".



Clear all except "Specify a location". Click on "Browse" button and guide the Wizard to the appropriate location (folder "Driver" in jetSpeed 500 CD-ROM). Click "Next" to continue.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

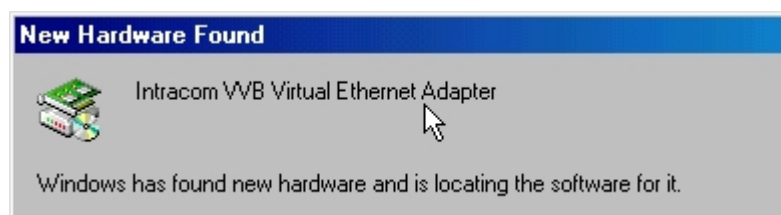
Installing jetSpeed 500 in Win 98 (continued)



jetSpeed 500 device Driver
had been found.
Click "Next" to continue.



The jetSpeed 500 system
device driver had been
installed.
Click "Finish" to continue with
the next step of the
installation procedure.



The system now detects the
jetSpeed 500 Ethernet
Adapter driver.
Note: During this procedure
you may be asked to insert
the Windows installation CD-
ROM.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 98 (continued)



Click "Next" to continue.



Select the first option and click "Next".

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 98 (continued)



In this step you need only the "Specify a location" option selected. Select again the folder "Driver" on jetSpeed 500 CD-ROM and click "Next" to continue.

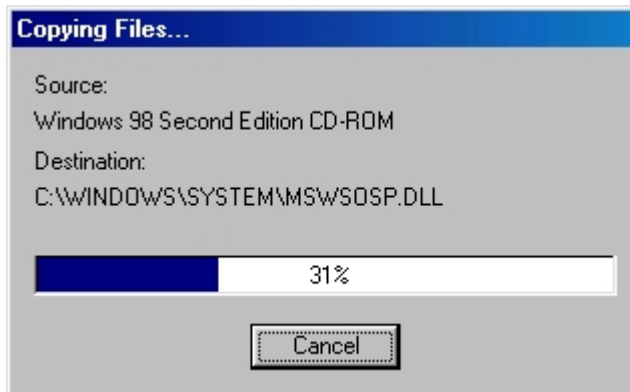


The appropriate driver has been found. Click "Next" to continue.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 98 (continued)



Windows is copying the appropriate files from the installation CD-ROM.



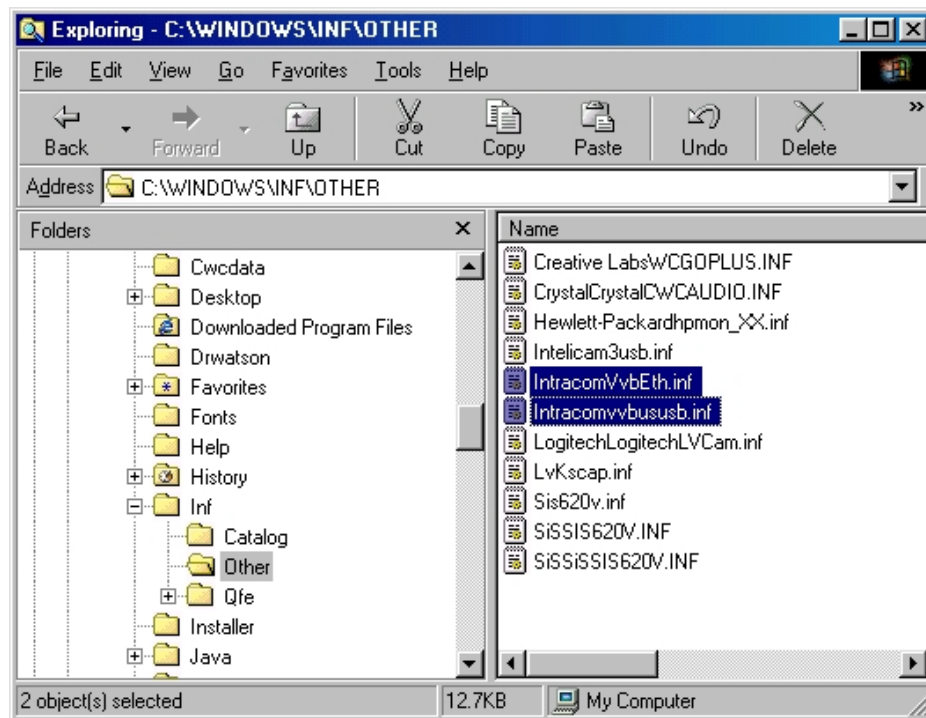
The jetSpeed 500 Ethernet Adapter is now installed. Click "Finish".

Continued on next page

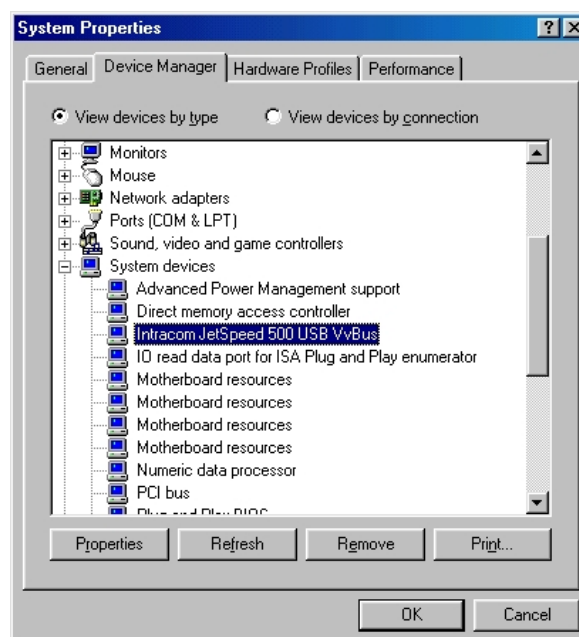
Installing jetSpeed 500/500i ADSL modem through USB, Continued

Uninstalling jetSpeed 500 in Win 98

Through Windows Explorer locate the files “IntracomVvbEth.inf” “Intracomvbususb.inf” (Under “C:\windows\inf\Other”). Under “C:\windows\inf\other” find and delete the two mentioned files.



Open the Device Manager window (right click on “My Computer” icon and choose Properties).



Unroll the section “System devices” and locate the device named “Intracom JetSpeed 500 USB VvBus”. Highlight it and then press on button “Remove”

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Uninstalling jetSpeed 500 in Win 98 (continued)



Confirm the device removal by pressing on "OK" button.

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000



Windows has detected the
jetSpeed 500 ADSL Router.



The Hardware Wizard has
started.
Click "Next" to continue.

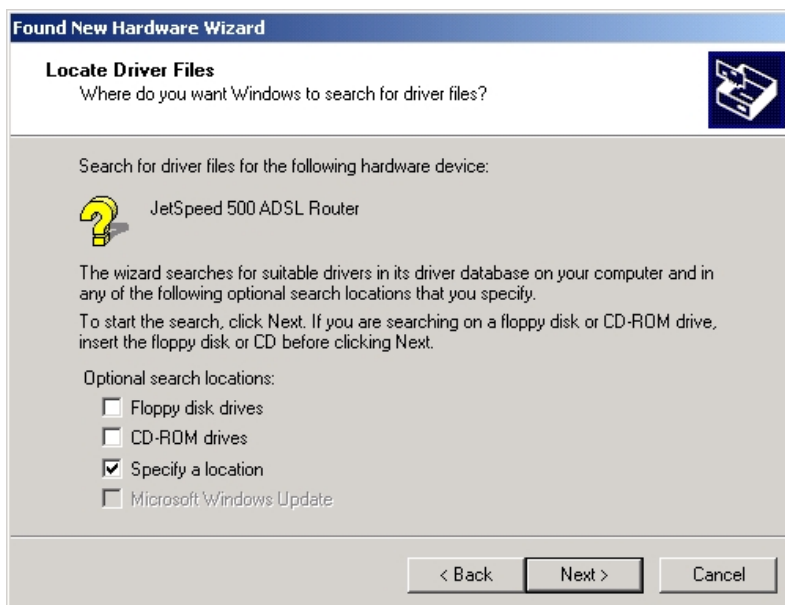
Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



Leave the first option selected and click "Next".

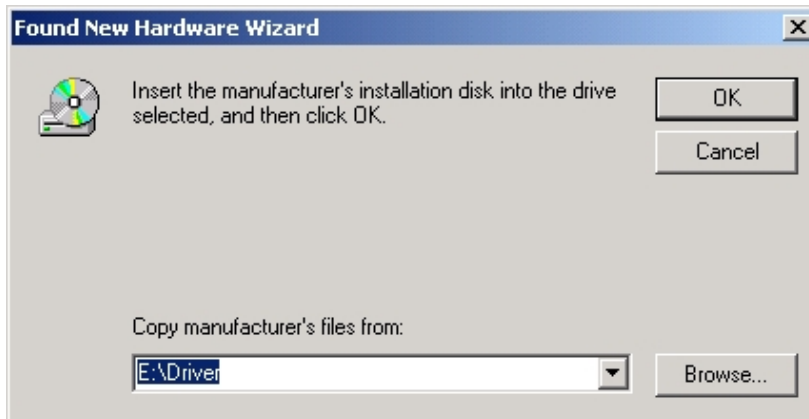


Select "Specify a location" option.
Select the folder "Driver" on jetSpeed 500 CD-ROM and click "Next" to continue.

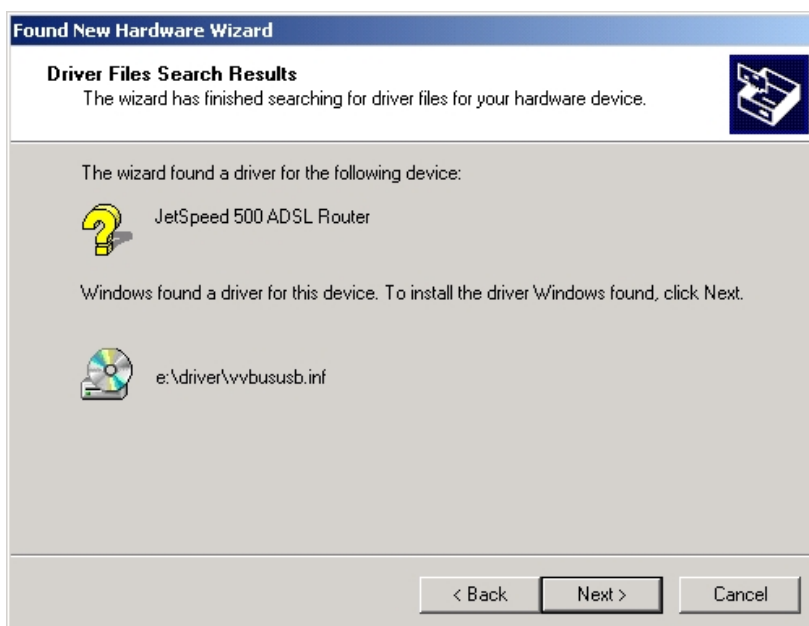
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Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



In this Window click "Browse" and guide the Hardware Wizard to folder "Driver" in jetSpeed 500 CD. Click "OK" to continue.



Windows found the appropriate driver file. Click "Next" to continue.

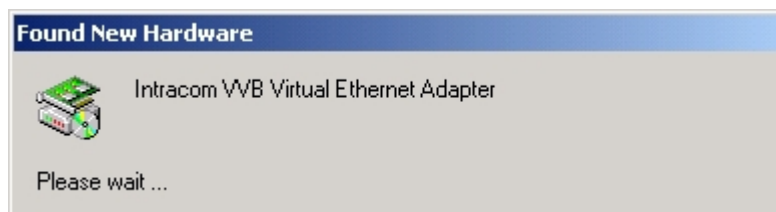
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Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



The installation of jetSpeed 500 system device driver has been completed. Click on button "Finish" to continue with the installation procedure.



The system now detects the jetSpeed 500 Ethernet Adapter driver.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



Click "Next" to continue.

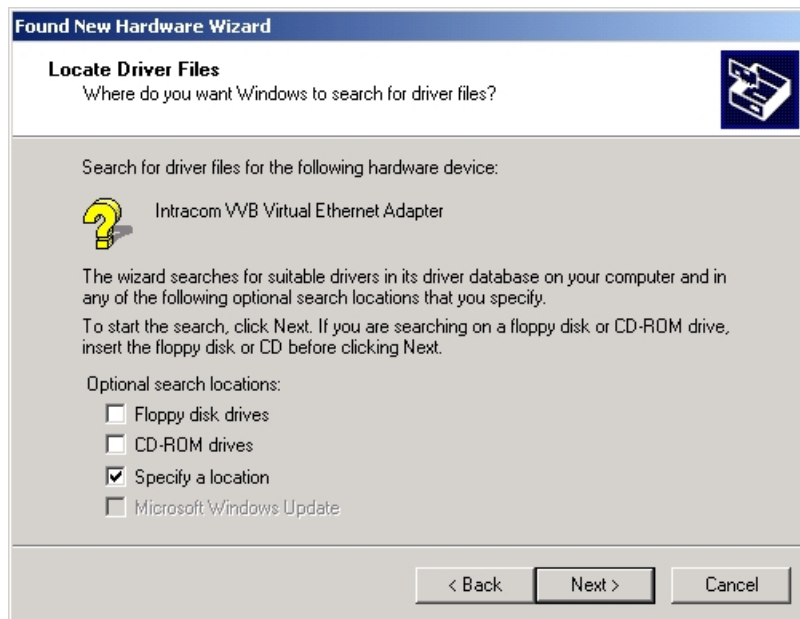


Leave the first option selected and click "Next".

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



Select "Specify a location" option.
Select the folder "Driver" on jetSpeed 500 CD-ROM and click "Next" to continue.

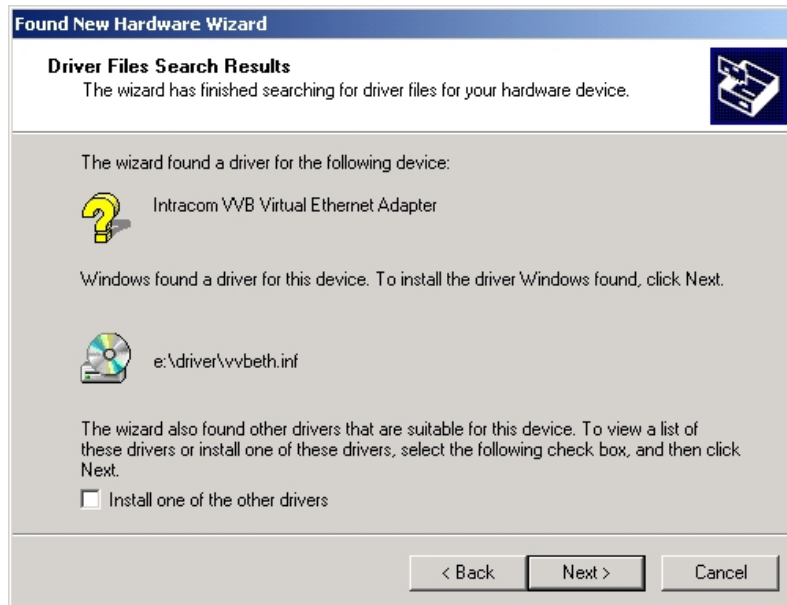


Click "Browse" and guide the Hardware Wizard to folder "Driver" in jetSpeed 500 CD. Click "OK" to continue.

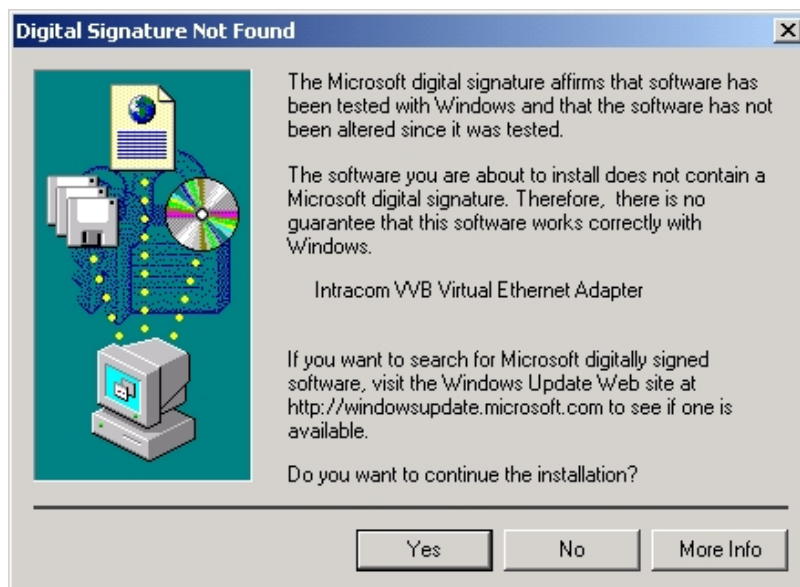
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Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



Wait until Windows find the appropriate driver file.
Click "Next" to continue.

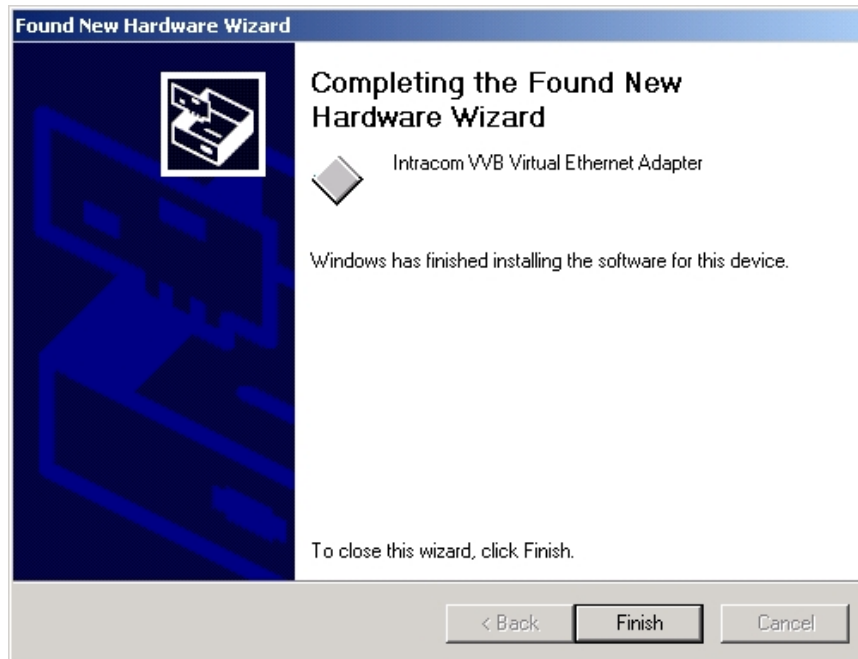


Click "Yes" to continue the installation.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Installing jetSpeed 500 in Win 2000 (continued)



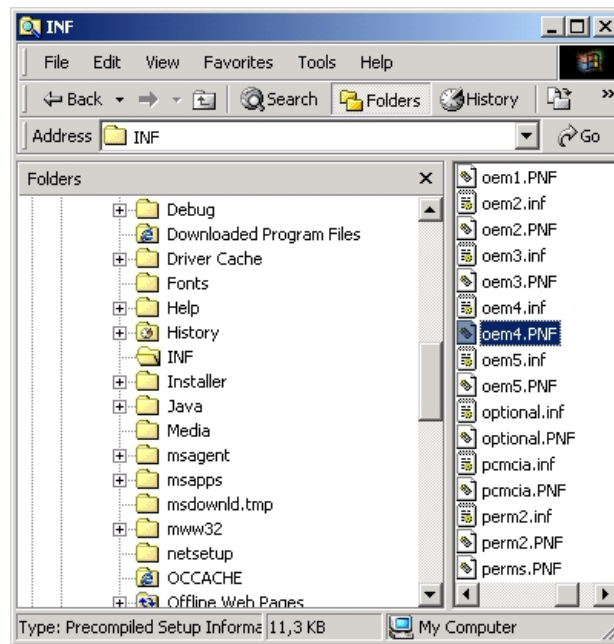
The installation of jetSpeed 500 Ethernet Adapter device driver has been completed. Click on "Finish" to complete the installation.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

Uninstalling jetSpeed 500 in Win 2000

In order to uninstall the device you must logon as Administrator. Go to "C:\WinNT\INF" directory and search for files named "oemxx.inf" where "xx" is a number.



Double click on each
"oemxx.inf" file to open it.

Continued on next page

Installing jetSpeed 500/500i ADSL modem through USB, Continued

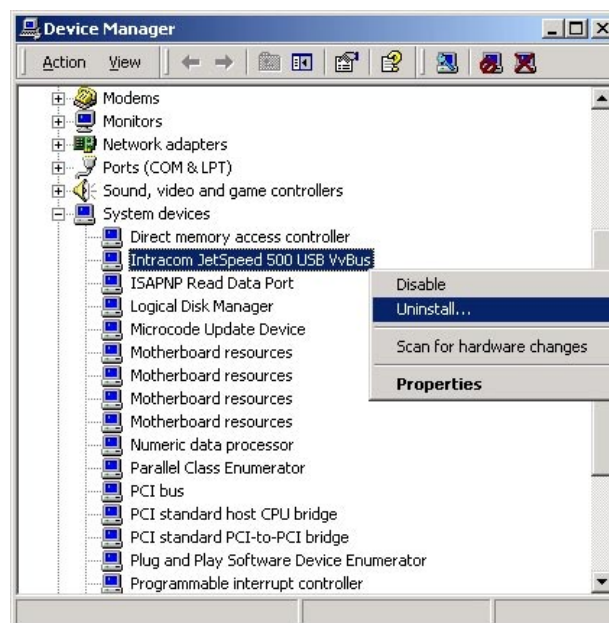
Uninstalling jetSpeed 500 in Win 2000 (continued)

When you open the file search for a text string like:

"Disk1 = "Intracom JetSpeed 500 drivers disk"

If the above string exists then close the specific file and delete it. You must find two oem files that include the above text string. Delete both of them.

Open the "Device Manager" window (right click on "My Computer" select properties then "Hardware" and press on button "Device Manager").



Open the "Device Manager" window (right click on "My Computer" select properties then "Hardware" and press on button "Device Manager"). Unroll the section "System Devices" and locate the "Intracom JetSpeed 500 USB Vvbus" device. Right click on it and select Uninstall.



Confirm the device removal by pressing on "OK" button.

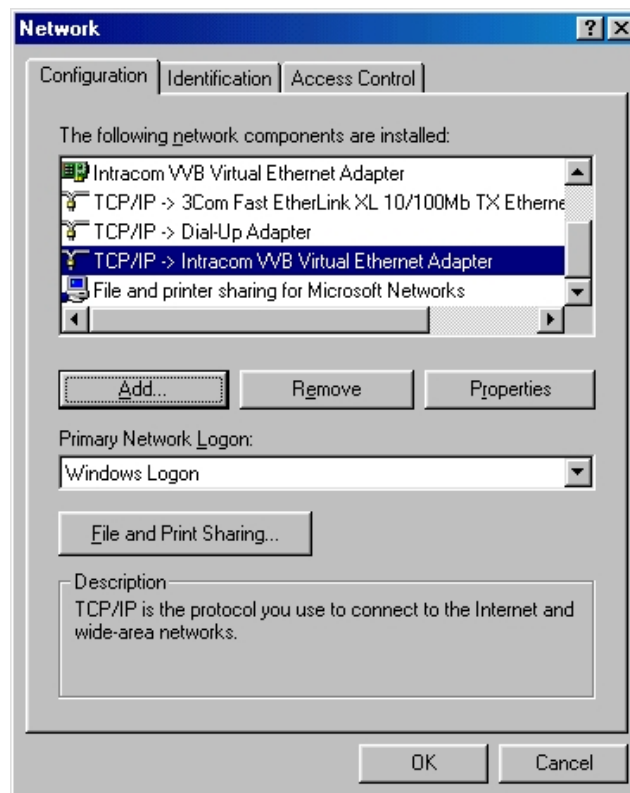
Configure TCP/IP settings

In order to be able to connect to the jetSpeed 500 embedded web server, the TCP/IP configuration settings must be performed.

Note: In case of direct connection of the jetSpeed 500 device with the host PC, there is no need for TCP/IP setting, because jetSpeed 500 has an internal DHCP server, which will assign an IP address automatically when you finish the USB installation or when you connect the UTP cable into the Ethernet port. Therefore, in case of a single PC connected only to jetSpeed 500 you may skip the “Configuration of TCP/IP settings” and continue with the configuration of the jetSpeed 500. However, in case of a LAN environment the TCP/IP configuration settings should be followed.

Win 98

The following procedure describes how to configure TCP/IP on Windows 98.



In case of a USB connectivity:

From “Start” go to “Settings → Control Panel”. Double click on “Network” icon.

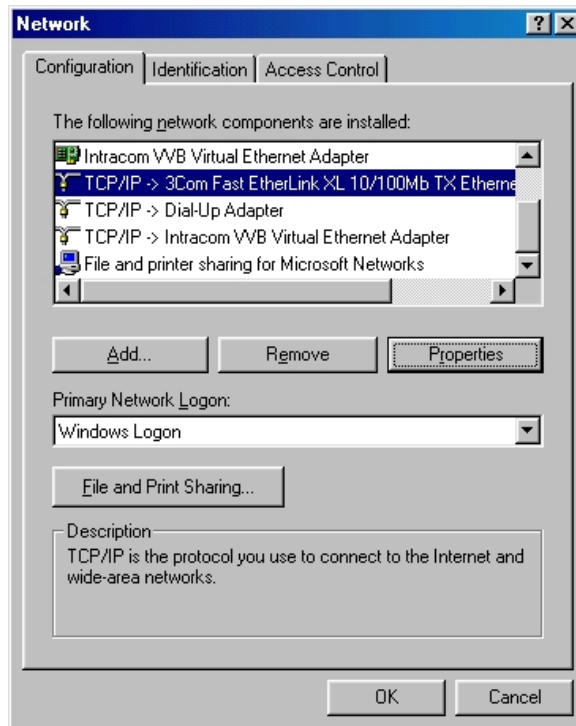
The window on the left will appear.

Select the “TCP/IP → Intracom VVB Virtual Ethernet Adapter” and click on “Properties”.

Continued on next page

Configure TCP/IP settings, Continued

Win 98 (continued)

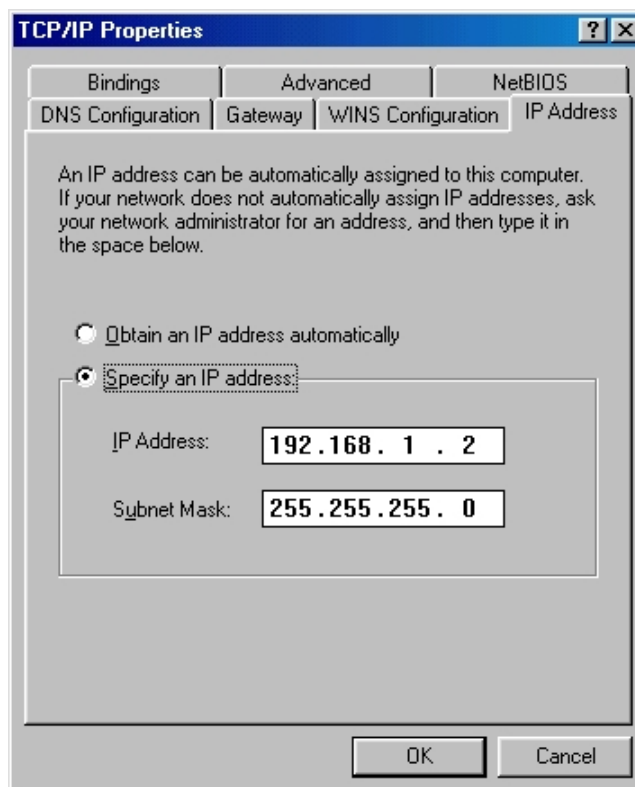


In case of an Ethernet connectivity:

From "Start" go to "Settings → Control Panel". Double click on "Network" icon.

The window on the left will appear.

Select the TCP/IP driver of the Ethernet NIC and click on "Properties".

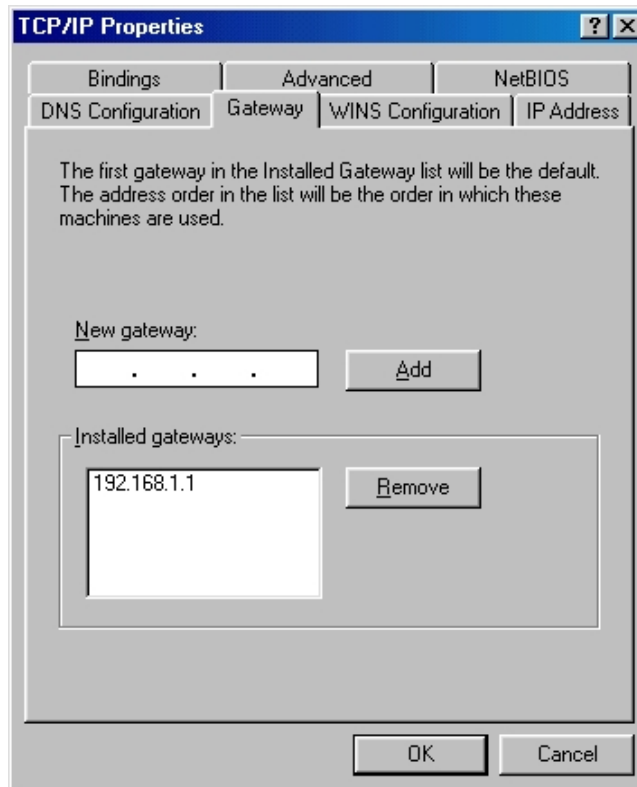


The default IP address of JetSpeed 500 ADSL router is **192.168.1.1**. A second IP assigned to the host PC is added to the same subnet.

Continued on next page

Configure TCP/IP settings, Continued

Win 98
(continued)

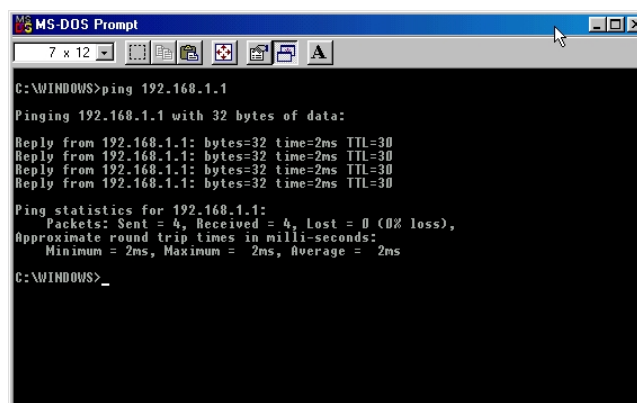


On the "Gateway" tab add a default gateway. This will be the IP address of the jetSpeed 500 ADSL router. Click "OK" to save the changes. Click again "OK" to close and exit from "Network" preferences.

The following window informs you that you must restart your PC so as the changes are activated.



Click "Yes" to restart your Computer.



Open an MS-DOS prompt and type:
ping 192.168.1.1

A successful ping indicates correct TCP/IP settings.

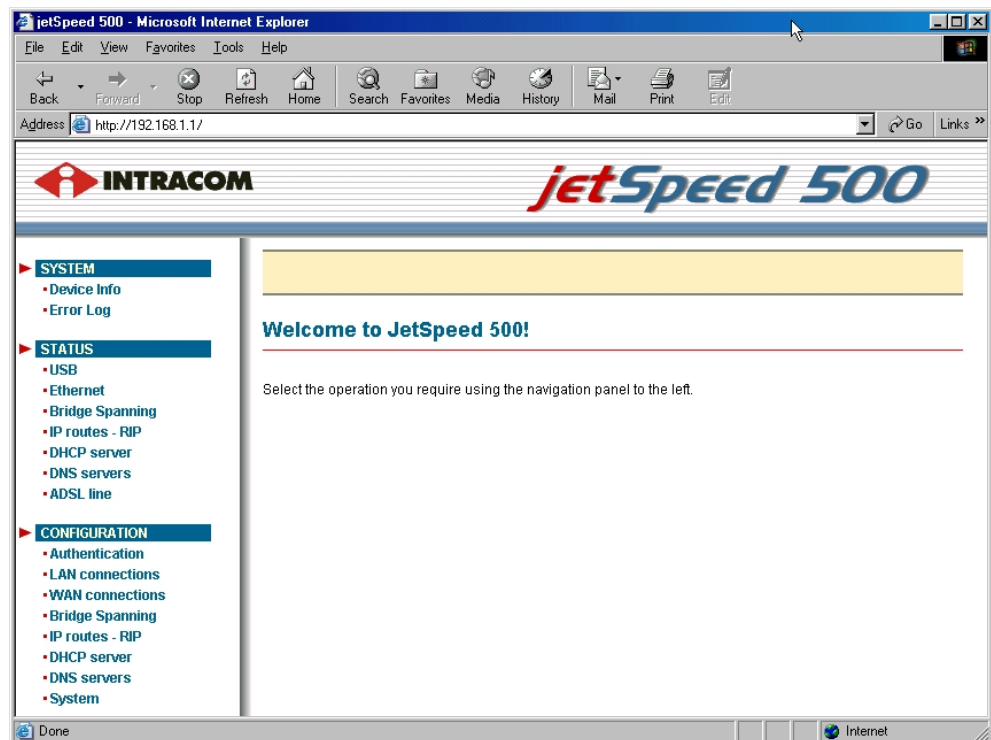
The modem now is configured and it is ready to respond to an HTTP request from your browser.

Continued on next page

Configure TCP/IP settings, Continued

Win 98 Win 98
(continued)

Open your browser (Internet Explorer, Netscape etc.) and in the Address field type the jetSpeed IP address (default: 192.168.1.1). In your browser window you will see the introductory page of the embedded web server.



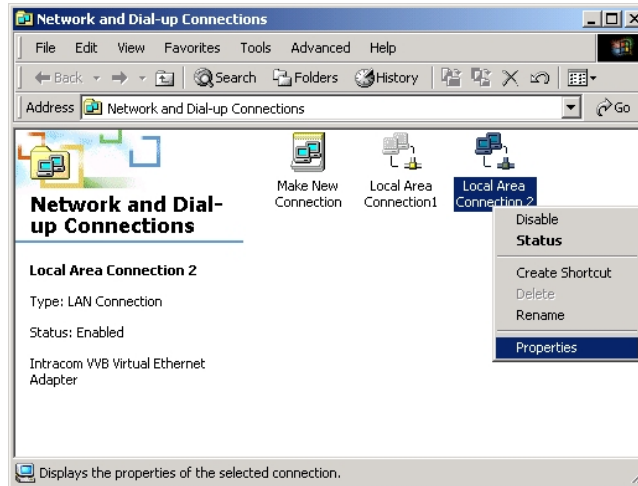
Note: Many users may have a proxy server configured in their browser settings. In order to bypass the proxy server you have to add the IP address of jetSpeed 500 to the "Exceptions" list (if you have Netscape you must add it under "Edit → Preferences → Advanced → Proxies → No proxy for").

Continued on next page

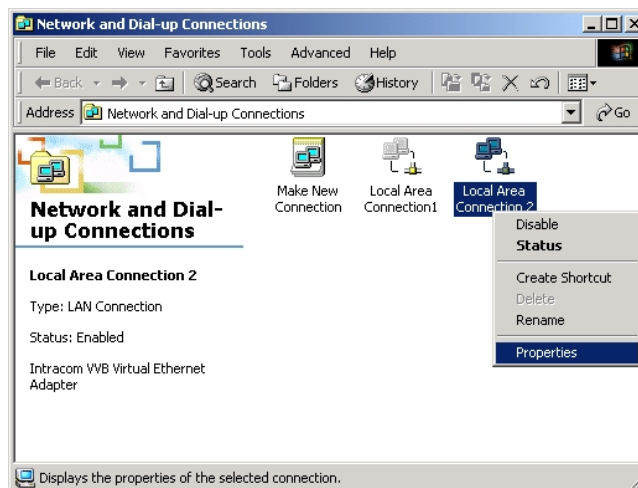
Configure TCP/IP settings, Continued

Win 2000

The following procedure describes how to configure TCP/IP on Windows 2000.



In your “Network and Dial-up Connections” window you will see a new connection named “Local Area Connection x” (where “x” is a number).

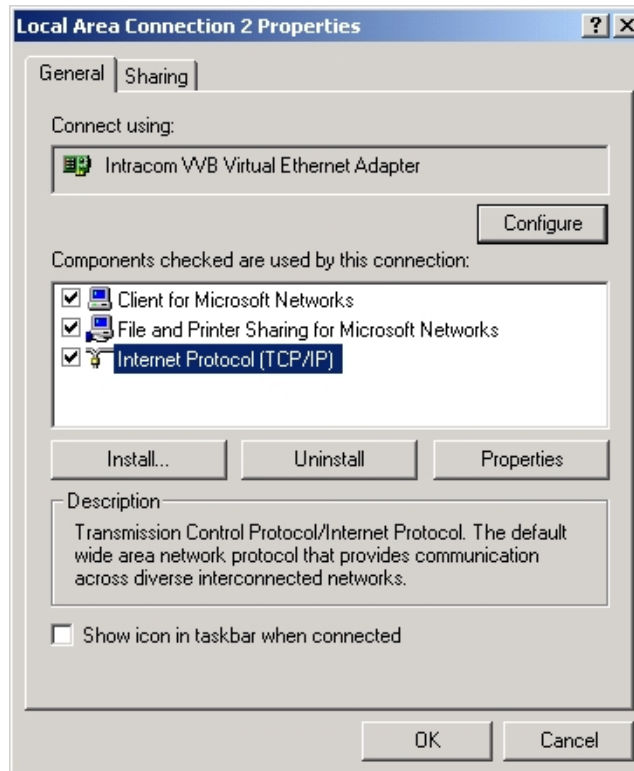


Right click on the “Connection” icon and choose “Properties”.

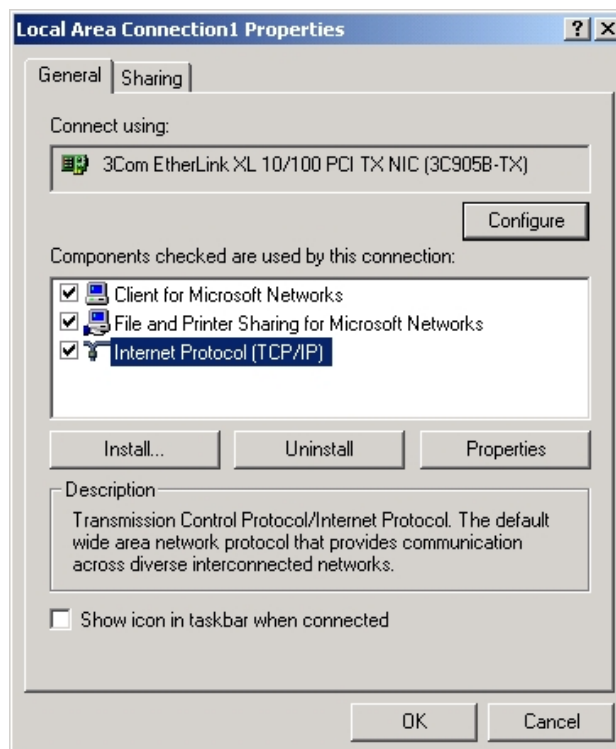
Continued on next page

Configure TCP/IP settings, Continued

Win 2000 (continued)



In case of a USB connection the window on the left hand side appears. Highlight the "Internet Protocol (TCP/IP)" component and click on "Properties" button.

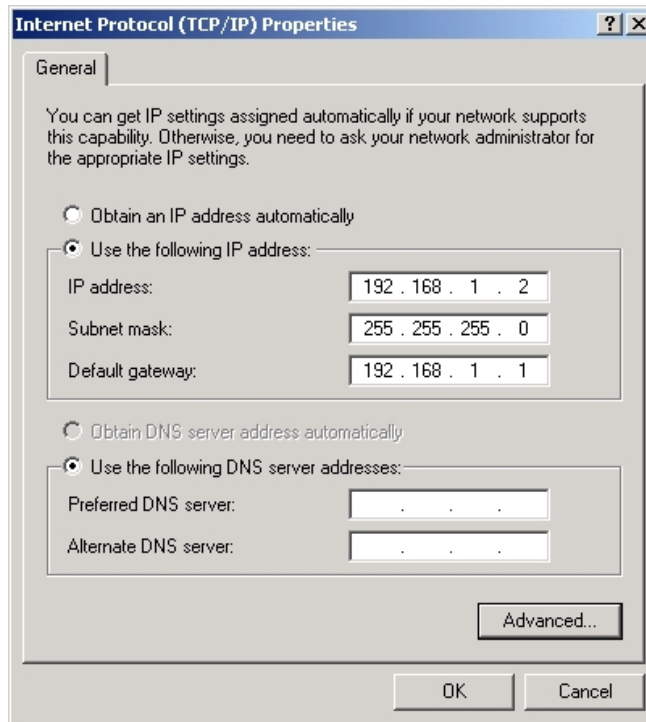


In case of an Ethernet connection the window on the left hand side appears. Highlight the "Internet Protocol (TCP/IP)" component and click on "Properties" button.

Continued on next page

Configure TCP/IP settings, Continued

Win 2000 (continued)

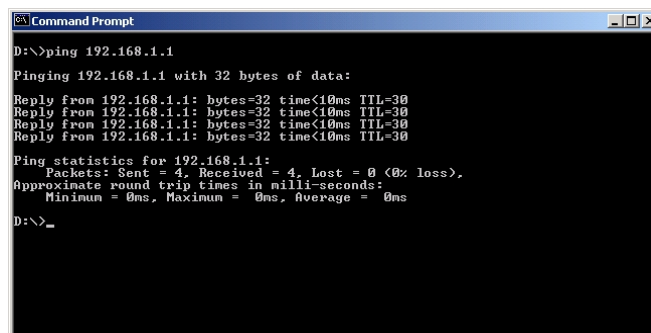


The default IP of jetSpeed 500 ADSL modem is **192.168.1.1**. Add to the same subnet a second IP address that is assigned to the host PC. Leave the DNS entry empty. Click "OK" to close and save the changes.

The new settings will not take effect until you disable and re-enable your connection.

Right click on your connection icon choose "Disable". Re-enable the connection and the new settings will be activated.

Open a Command Prompt window.



Open a MS-DOS prompt and type:
ping 192.168.1.1

A successful ping indicates correct TCP/IP settings

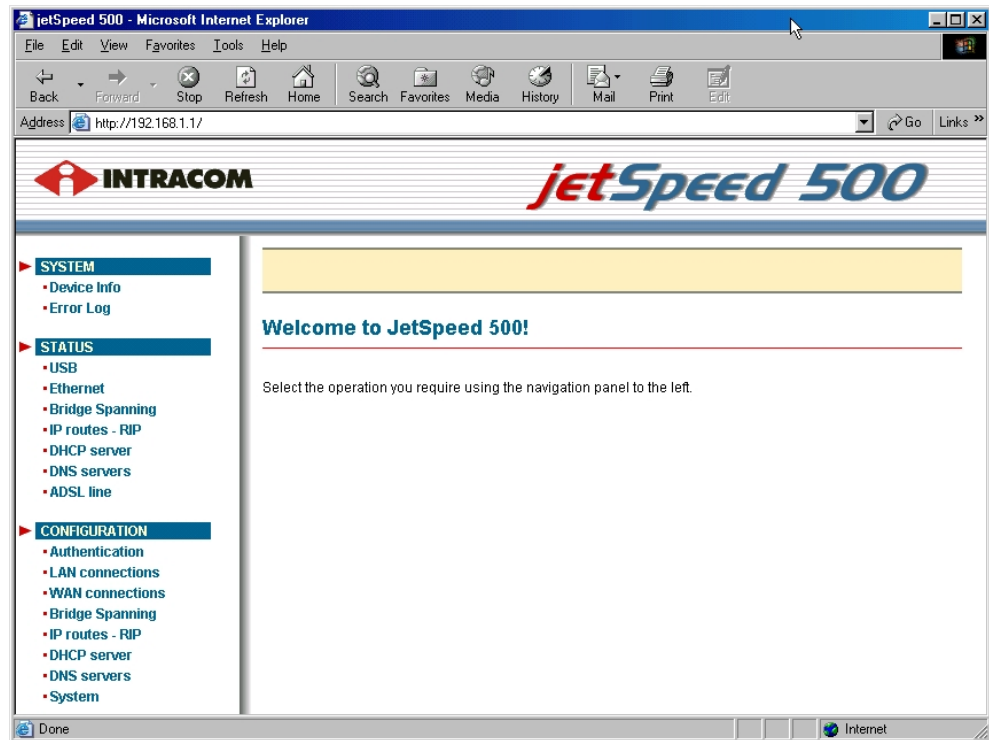
The modem now is configured and it is ready to respond to an HTTP request from your browser.

Continued on next page

Configure TCP/IP settings, Continued

Win 2000 (continued)

Open your browser (Internet explorer, Netscape etc.) and in the Address field type the jetSpeed IP address (default: **192.168.1.1**). In your browser window you will see the introductory page of the jetSpeed 500 embedded web server.



Note: Many users may have a proxy server configured in their browser settings. In order to bypass the proxy server you have to add the IP address of jetSpeed 500 to the “Exceptions” list (if you have Netscape you must add it under “Edit → Preferences → Advanced → Proxies → No proxy for”).

Configure jetSpeed 500/500i

Introduction

The jetSpeed 500/500i ADSL router being equipped with two different interfaces (USB and Ethernet) is able to interconnect with any PC in the home or a small office (SOHO). The configuration of the jetSpeed 500/500i router is performed through the ebbed web server (default IP address: **192.168.1.1**) .

▶ SYSTEM

- Device Info
- Error Log

▶ STATUS

- USB
- Ethernet
- Bridge Spanning
- IP routes - RIP
- DHCP server
- DNS servers
- ADSL line

▶ CONFIGURATION

- Authentication
- LAN connections
- WAN connections
- Bridge Spanning
- IP routes - RIP
- DHCP server
- DNS servers
- System

SYSTEM

- Display information about jetSpeed 500/500i device.
- Error reporting concerning device status and connection.

STATUS

- Information regarding USB connection
- Information regarding Ethernet connection
- Display the status of Bridge spanning
- Display configured IP routes
- Display the status of the internal DHCP server.
- Display the configured DNS servers.
- Display the current status of the ADSL line.

CONFIGURATION

- Manage users and their access permissions.
- Manage LAN connections and corresponding IP's.
- Create WAN connections.
- Manage bridging between ports.
- Create IP route tables.
- Select the operation mode of DHCP server
- Manage the DNS functionality
- Manage system options of jetSpeed 500 router
 - *Lock Line*
Lock/Unlock WAN interface.
 - *Save Config*
Save jetSpeed 500 router parameters.
 - *Update software*
Download device firmware.
 - *Default configuration*
Restore default factory parameters.
 - *OAM*
Enable/Disable OAM loop backs.

Continued on next page

Configure jetSpeed 500/500i, Continued

Management of user accounts

As in all routers, jetSpeed 500 has a typical security grading, which is applied in the Configuration menu. If you try to access a menu under the "CONFIGURATION" section the following window will appear:



The image shows a Windows-style dialog box titled "Enter Network Password". It has a blue title bar with a question mark icon and a close button. The main area is light gray. At the top left is a key icon. To its right is the text "Please type your user name and password." Below this, there are two labels: "Site:" followed by the value "192.168.1.1" and "Realm:" followed by the value "\WebAdmin". Below these are two text input fields. The first is labeled "User Name" and contains the text "admin". The second is labeled "Password" and contains a series of asterisks "xxxxxx". Below the password field is a checkbox labeled "Save this password in your password list". At the bottom right are two buttons: "OK" and "Cancel".

In the "User Name" and "Password" fields type:
admin (User name)
admin (Password)

Then press "OK" to login. After that full access into jetSpeed 500 configuration menu is granted. The user "admin" is the default user who has the privilege to alter the configuration settings and also to create new users.

Note: For security reasons do not share the admin account with others.

Continued on next page

Configure jetSpeed 500/500i, Continued

Change Admin Password

For security reasons it is suggested to change the Admin Password, when you use the jetSpeed 500 for the first time. In order to do that, select the option "Authentication" under the "Configuration" menu. Then click on "Admin" user.

Change details for user 'admin':

Username:	admin
Password:	<input type="password" value="jklklklk"/>
May configure?	<input type="checkbox"/> true <input type="checkbox"/>
Comment:	<input type="text" value="Default admin user"/>

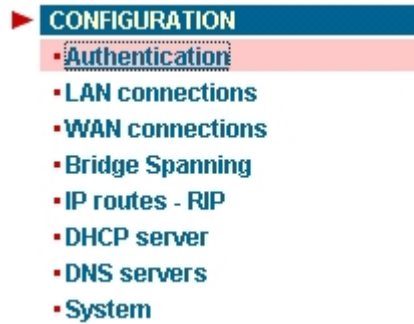
[Help](#)

In the field "Password" enter the desired password.
Press on "Apply" button to save the changes.
The administrator password has been changed.

Continued on next page

Configure jetSpeed 500/500i, Continued

Create a new User



1. Select the "Authentication" menu

Authentication

Users currently defined:

User	Configure?	Comment
admin	true	Default admin user

Create a new user

2. Press on "Create a new User" button

Authentication: create user

Enter details for new user:

Username:

Password:

May configure? ☐

Comment:

Create

3. Complete the appropriate fields and press on "Create" button.

Continued on next page

Configure jetSpeed 500/500i, Continued

Create a new User (continued)

Authentication

Users currently defined:

User	Configure?	Comment
test	false	this is a test user
admin	true	Default admin user

Create a new user

4. The new user has been created. If you want to make further changes click on the specific username.

Authentication: edit user 'test'

Change details for user 'test':

Username: **test**
 Password:
 May configure? **true**
 Comment:

Apply

Delete this user

5. If you want to allow the user to have access to jetSpeed 500 configurations, change the value in the appropriate field. Press "Apply" to enable the changes. Press, "Delete this user" to delete the user account.

Authentication

Users currently defined:

User	Configure?	Comment
test	true	this is a test user
admin	true	Default admin user

Create a new user

6. The users with access rights are depicted.

Continued on next page

Configure jetSpeed 500/500i, Continued

Change the LAN IP address

Regardless of the type of connection (USB or Ethernet) you can always change the IP address of jetSpeed 500, through the "LAN connections" option under the "CONFIGURATION" menu. The default IP address of jetSpeed 500 is **192.168.1.1**, which is a factory setting. In order to set another IP address that is free in the LAN, press on button "Change Modem LAN IP address" and the next window will appear :

Please enter the new IP address for the Modem LAN port.

IP address:

Netmask:

Note: there may be a short pause between clicking *Apply* and receiving a response.

In the IP address field enter the preferred IP address and the appropriate netmask. Then click on "Apply" button.

After completion of the above procedure a new message will inform you that the jetSpeed 500 IP address has been changed. You have to wait a few seconds before you try to contact the jetSpeed 500 via its new IP address.

Continued on next page

Configure jetSpeed 500/500i, Continued

DHCP server/ relay agent

When multiple PC's are connected to a TCP network a number of various IP parameters must be configured on these PC's. These involve:

- IP Address
- Netmask
- Gateway
- DNS servers.

These parameters can be set manually on each PC.

However, there is a feature that is supported by jetSpeed 500 router, called DHCP through which these settings can be assigned automatically to the PC's during their boot up. In that case the jetSpeed 500 ADSL router must be configured as a DHCP server.

There is also the possibility that the jetSpeed 500 router only forwards the DHCP queries from the Clients (PC's) to some other DHCP server somewhere in the ISP network. In this case the jetSpeed 500 ADSL router must be configured as a DHCP relay agent.

Note that in case the PC IP parameters have been already configured manually, the jetSpeed 500 will not try to assign IP parameters to them even if it is configured as DHCP server.

Continued on next page

Configure jetSpeed 500/500i, Continued

Setting up DHCP on jetSpeed 500

- **CONFIGURATION**
- Authentication
 - LAN connections
 - WAN connections
 - Bridge Spanning
 - IP routes - RIP
 - **DHCP server**
 - DNS servers
 - System

Select the option "DHCP server" under "CONFIGURATION" menu.

DHCP server

Please select the DHCP server mode:

- ☐ Disabled
☒ DHCP server
☐ DHCP relay agent

Configure

The available options regarding the DHCP server operation mode are depicted.

Setting up DHCP at PC's (clients)

Win 98	Win 200
Go to TCP/IP properties (Start → Settings → Control Panel → Network) select the TCP/IP icon associated with the NIC or the Virtual Ethernet Adapter (USB connection) and select the option "Obtain an IP address automatically".	Go to your Local Area Connection properties (Start → Settings → Network and Dialup Connections) Highlight the Internet Protocol (TCP/IP) and select "Properties". Select the option "Obtain an IP address automatically".

Continued on next page

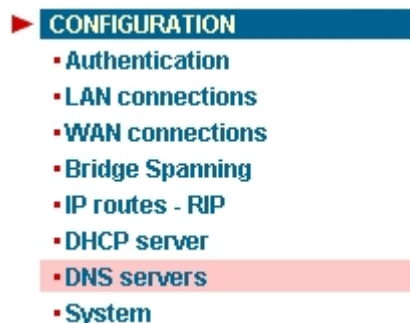
Configure jetSpeed 500/500i, Continued

DNS Relay Agent.

The **Domain Name System (DNS)** is an Internet service that translates Internet names to IP addresses. Every time a domain name is used a DNS server must translate the name into the corresponding IP address. A DNS Client in an IP network forwards to an associated DNS server all queries regarding the resolution of domain names into IP address.

The jetSpeed 500 ADSL router can be configured as DNS Relay agent. In this case clients send all their DNS requests to jetSpeed 500, which then forwards these requests to the real DNS server (it could be located somewhere on the Internet or in your ISP's network) and then passes replies back to the clients.

Configure jetSpeed 500 as DNS relay agent.



Select the option "DNS servers" under the "CONFIGURATION" menu.

DNS relay

Please select the DNS relay mode:

- ☐ Disabled
☒ Enabled

Configure

Enable DNS relay agent by selecting the "Enabled" option. Press on "Configure" to enter to the configuration menu.

DNS: enable relay

Please enter details for DNS relay configuration:

DNS server IP address:

Apply

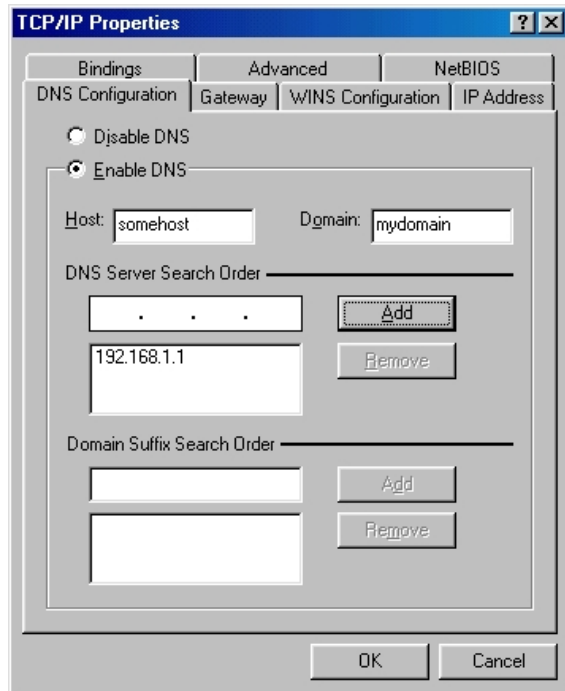
Enter the IP address of the "real" DNS server. Press on "Apply" in order to save the configuration and return to the above screen.

Continued on next page

Configure jetSpeed 500/500i, Continued

Configure the Clients

Win 98



Go to TCP/IP properties (Start → Settings → Control Panel → Network). Highlight the TCP/IP protocol that is associated with the Ethernet Card or the Virtual Ethernet Adapter (USB connection). Press on properties button and select the "DNS Configuration" tab.

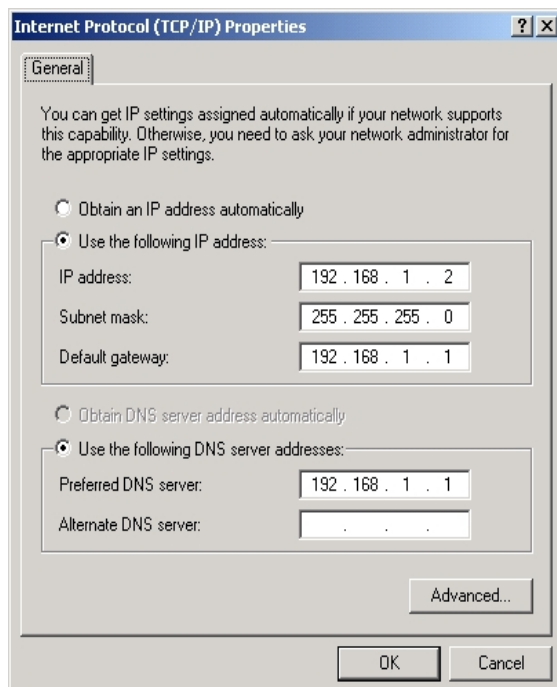
Select "Enable DNS" and complete the appropriate fields as shown.

The IP address of jetSpeed 500 will be the DNS server.

Click on "OK" and then "OK" on the main Network menu. Please note that the original installation CD might be required during this procedure.

Windows will ask to restart your PC in order to enable the new settings. Answer "YES".

Win 2000



Go to your Local Network Settings (Start → Settings → Network and DialUp Connections). Double click on your Local Area Connection and choose properties. Highlight the Internet Protocol (TCP/IP) and click on properties.

Select "Use the following DNS server addresses" and type in the first field the IP address of the jetSpeed 500.

Click on "OK" and then "OK" on the main window to save and exit.

Continued on next page

Configure jetSpeed 500/500i, Continued

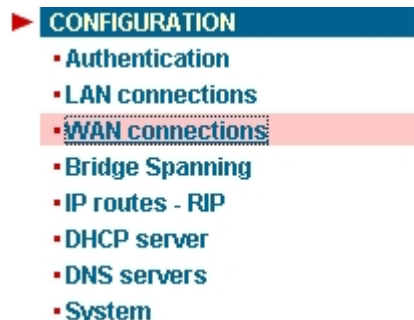
Create an Internet WAN account.

Now with your LAN network settings configured you are ready to create an Internet connection using the jetSpeed 500 ADSL Router. You need an Internet account that will be provided by an ISP (Internet Service Provider).

Along with the Internet account you will get additional information regarding the following:

- Connection Protocol (PPPoA routed, PPPoA bridged...)
- VPI channel
- VCI channel
- Authentication Protocol (PAP, CHAP)
- Quality of Service class (UBR, CBR, VBR...)
- Encapsulation type (VCMUX, LLC)
- IP address (In case a static IP address has been provided)
- Domain Name Server (DNS)

How to create a WAN connection



Under the "CONFIGURATION" menu click on the "WAN connections" option.

WAN connections

WAN services currently defined:

Name	Description	Creator
rfc1483-0	Wan0	WebAdmin

Create a new service

The "WAN0" connection is created by default (factory setting). Click on "Create a new service" to create a new connection.

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a WAN connection (continued)

WAN connection: create service

Please select the type of service you wish to create:

- ATM: ☒ RFC 1483 routed ☐ RFC 1483 bridged
☐ PPPoA routed ☐ PPPoA bridged
☐ IPoA routed ☐ PPPoE routed

Configure

Choose the type (protocol) of your connection (this option will be provided the ISP).

WAN connection: create service

Please select the type of service you wish to create:

- ATM: ☐ RFC 1483 routed ☐ RFC 1483 bridged
☒ PPPoA routed ☐ PPPoA bridged
☐ IPoA routed ☐ PPPoE routed

Configure

In case of PPPoA routed connection, choose the suggested protocol and click on "Configure".

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a WAN connection (continued)

- | | |
|---|--|
| Description: | ▪ the name for your connection |
| VPI: | ▪ VPI channel number |
| VCI: | ▪ VCI channel number |
| QoS: | ▪ Quality of Service class selection |
| WAN IP address: | ▪ This is needed only if a Static IP address has been assigned |
| Netmask: | ▪ Netmask address |
| <input type="checkbox"/> Enable NAT on this interface | ▪ Enables or disables Network Address Translation |
| LLC header mode: | ▪ Encapsulation Mode |
| HDLC header mode: | ▪ Enables/disables High level Data Link Control protocol |
| <input checked="" type="radio"/> No authentication | ▪ Selection of the Authentication Protocol |
| <input type="radio"/> PAP | ▪ Password Authentication Protocol |
| <input type="radio"/> CHAP | ▪ Challenge Handshake Authentication Protocol |
| User name: | ▪ Enter here your username |
| Password: | ▪ Enter here your Password |

By pressing on "Apply" you can save and enable the previous settings

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a WAN connection (continued)

WAN connection: PPPoA routed

Description:	<input type="text" value="pppoar"/>	
VPI:	<input type="text" value="0"/>	
VCI:	<input type="text" value="34"/>	
QoS:	<input type="text" value="UBR"/>	<input type="button" value="Change QoS"/>
WAN IP address:	<input type="text" value="0.0.0.0"/>	
Netmask:	<input type="text" value="255.255.255.0"/>	
<input checked="" type="checkbox"/> Enable NAT on this interface		
LLC header mode:	<input type="text" value="VCMUX"/>	
HDLC header mode:	<input type="text" value="off"/>	
<input type="radio"/> No authentication <input checked="" type="radio"/> PAP <input type="radio"/> CHAP		
User name:	<input type="text" value="xenia"/>	
Password:	<input type="text" value="xoxoxoxox"/>	
<input type="button" value="Apply"/>		

These are typical settings for a PPPoA routed WAN connection. After you have finished the configuration press on "Apply" button to save and enable the account. Connection will be established within a few seconds.

As seen above, the NAT option is enabled for the WAN interface. This means that your Local network is completely hidden from the Internet.

This also means that only one IP address is visible towards the Internet side (it will be assigned when the WAN connection is up) and multiple IP addresses (which don't belong to the same subnet) are assigned in the local network (LAN).

In case a pool of IP addresses has been provided by the ISP, you could disable the NAT option and assign a different IP address to every PC in the LAN.

Using the NAT feature has its advantages and disadvantages. The advantages are that a) it allows you to have multiple PC's behind a single Internet account and b) it is acting as a firewall between Internet and LAN.

The disadvantage is that some application (IP based communication software) needs a real IP address (the one that the WAN interface has) to work.

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a WAN connection (continued)

WAN connections

WAN services currently defined:

Name	Description	Creator
ppp-0	pppoar	WebAdmin
rfc1483-0	Wan0	WebAdmin

Create a new service

The WAN connection has been created. You can create another one by pressing on "Create a new service". In case you want to delete it, click on the name of the connection

Please confirm deletion of this connection:

Description: pppoar
 Creator: WebAdmin
 VPI: 0
 VCI: 34
 Type: PPPoA routed

Delete this connection

Press on "Delete this connection" to confirm deletion.

STATUS
pppoar
Wan0

When a new connection has been established it will appear under the "STATUS" menu.

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a WAN connection (continued)

Status: ppp-0 - pppoar

IP interface:

IP address	100.0.0.28
Subnet mask	255.0.0.0
NAT enabled?	true

ATM connection:

Port name	fast	Active	TRUE
Rx VPI	0	Tx VPI	0
Rx VCI	34	Tx VCI	34
Rx packets	312	Tx packets	328
Rx bad packets	0	Tx bad packets	0

Quality of Service:

QoS type	ubr	PCR	2000
BT	0	SCR	0
MBS	0	CDVT	5
MCR	0	NRM	0

PPPoA parameters:

Status	open for IP, sent 328, received 312
LLC headers	VCMUX
HDLC headers	false
Authentication	pap
Username	xenia

Refresh

By clicking on the name of the connection under the "Status" menu, details regarding the connection status and configuration will appear. If an invalid IP address appears then there is an error in the configuration. Check again the settings and be sure that you have entered correctly all connection's settings. You may need to contact your ISP for further help.

Note: As shown, no gateway address was assigned. This option is assigned automatically via Routing Information Protocol (RIP). Routing Information Protocol is a simple protocol, which is responsible for broadcasting routing information between routers.

Continued on next page

Configure jetSpeed 500/500i, Continued

How to create a PPPoA bridged connection

In case of a bridged WAN connection, the jetSpeed 500 does not have any IP functionality and simply forwards transparently datagrams. Furthermore, in LAN extension applications you need also multiple IP addresses to be assigned to each one of the PCs in the LAN. This pool of IP addresses will be provided from the ISP. When jetSpeed 500 works in bridged mode it is absolutely transparent to your network and for this reason the whole LAN is exposed to the Internet. Therefore, you might need to set a higher security level between your LAN and the Internet.

Please select the type of service you wish to create:

- ATM: ☐ RFC 1483 routed ☐ RFC 1483 bridged
☐ PPPoA routed ☒ PPPoA bridged
☐ IPoA routed ☐ PPPoE routed

Configure

Under "WAN Connections" select "PPPoA bridged" and press "Configure".

WAN connection: PPPoA bridged

Description:

VPI:

VCI:

QoS: [Change QoS](#)

LLC header mode:

HDLC header mode:

☐ No authentication
☒ PAP
☐ CHAP

User name:

Password:

[Apply](#)

Typical settings for a PPPoA bridged WAN connection are depicted. Press on "Apply" to save and enable the account. Connection will be established within a few seconds.

Continued on next page

Configure jetSpeed 500/500i, Continued

PPPoE routed WAN connection

JetSpeed 500 has an internal **PPPoE** client, meaning that PPPoE connection can be established without the use of a third party PC client.

Description:	<input type="text"/>
VPI:	<input type="text" value="0"/>
VCI:	<input type="text" value="35"/>
QoS:	<input type="text" value="UBR"/> Change QoS
WAN IP address:	<input type="text" value="0.0.0.0"/>
Netmask:	<input type="text" value="255.255.255.0"/>
<input type="checkbox"/> Enable NAT on this interface	
Access concentrator:	<input type="text"/>
Service name:	<input type="text"/>
LLC header mode:	<input type="text" value="VCMUX"/>
HDLC header mode:	<input type="text" value="off"/>
<input checked="" type="radio"/> No authentication	
<input type="radio"/> PAP	
<input type="radio"/> CHAP	
User name:	<input type="text"/>
Password:	<input type="text"/>
Apply	

The PPPoE configuration screen is very similar to PPPoA routed connection. The fields:

- Access concentrator
 - Service name
- are both optional. If they are necessary then they will be provided by the ISP.

Technical Characteristics

Hardware Characteristics

Support of ADSL over POTS (jetSpeed 500)	
Support of ADSL over ISDN (jetSpeed 500i)	
Support for Fast and Interleaved dual latency channels	
Operation with central splitter or splitter less (with in-line filters)	
LAN Interface:	<ul style="list-style-type: none"> • USB, specification 1.1 • Ethernet IEEE 802.3 standard 10base-T RJ-45 (both direct and crossed connectors available)
WAN Interface:	Standard RJ-11 connector
Power Supply requirements:	<ul style="list-style-type: none"> • External power adaptor 230VAC / 50Hz input • 12VDC 1Amp output

ADSL Transmission Specifications

Data Rates:	1) G.dmt ADSL: <ul style="list-style-type: none"> • Downstream: 32 to 8032 kb/s • Upstream: 32 to 864 kb/s 2) G.lite ADSL: <ul style="list-style-type: none"> • Downstream: 32 to 1536 kb/s • Upstream: 32 to 512 kb/s
jetSpeed 500 is fully compliant with:	<ul style="list-style-type: none"> • G.lite (G.992.2 Annex A), • G.dmt over POTS (G.992.1 Annex A), • ANSI T1.413 Issue 2
jetSpeed 500i is fully compliant with:	G.dmt over ISDN (G.992.1 Annex B)

Management and Ease of Use

ATM Forum and ADSL Forum MIB
Web based local management
Open DSL and ADSL Forum auto-configuration (future release)
Default IP address: 192.168.1.1

Continued on next page

Technical Characteristics, Continued

Modem Software

ATM Functionality

- ATM Termination
- ATM traffic classes:
 UBR, CBR, rt-VBR, nrt-VBR
- 8 PVCs supported concurrently
- Encapsulation over AAL5
- UNI 3.1
- OAM F4/F5

Bridging

- IEEE 802.1d Transparent Bridging
- Spanning Tree

Routing

- DHCP Server and Client
- Static Routing
- RIP v2
- NAT

WAN Protocols

- Multiple protocol over AAL5 (RFC 1483-RFC 2684)
 - Bridged-Routed
 - VC multiplexing and LLC
- IP over ATM RFC 1577 (IPoA routed)
- PPP Support (RFC 1661)
 - PPP over ATM (PPPoA-RFC 2364)
 - Bridged-Routed
 - VC multiplexing and LLC
 - PPP over Ethernet client (PPPoE routed-RFC 2516)
 - VC multiplexing and LLC
 - Authentication
 - PPP authentication PAP (RFC 1334)
 - PPP authentication CHAP (RFC 1994)
 - IPCP Internet Protocol Control Protocol (RFC 1332)
- BCP Bridged Control Protocol (RFC 1638)

Continued on next page

Technical Characteristics, Continued

Dimensions	45x145x180mm (HxWxD)
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**Environmental
Conditions**

Operating Temperature	-5 °C to 45 °C ETS 300019-2-3 class 3.2
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Humidity	Up to 95%RH, 0°C to 45°C
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Regulatory

	In compliance with:
Safety and Protection	EN 55022, EN 55024, EN 60950, FCC Part 68, FCC Part 15, UL 1950, IC CS03, Ulc.

Troubleshooting

About this Chapter

The following procedure will reset the configuration values of jetSpeed 500 and restore the default factory settings.

Press the button POWER-LOCK four (4) times.

The modem will reboot and will come online with the default settings.

If needed, reconfigure the modem, as described in chapter Configuration.

Further Information

Further Information Sources

For further information regarding the jetSpeed 500/500i modem, please refer to the by INTRACOM specially designed Helpdesk at jetSpeed.intracom.gr or at INTRACOM's web-site www.intracom.gr.

Declaration of Conformity

US FCC Notice

**FCC Part 15
class B
Statement**

In compliance with the Federal Communications Commission (FCC), the following FCC Part 15 Regulations are provided regarding the installation and operation of the jetSpeed 500/500i ADSL Modem.

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 the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Continued on next page

US FCC Notice, Continued

FCC Part 68 Statement

This equipment complies with Part 68 of the FCC Rules. A label is attached to the equipment that contains, among other information, its FCC registration number and ringer equivalence number. If requested, this information must be provided to the telephone company.

This equipment uses the following USOC Jack: RJ-11.

An FCC compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is FCC Part 68 compliant. Connection to the telephone network should be made by using the standard telephone jack.

The REN is useful to determine the quality of devices that may be connected to the telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of RENs should not exceed 5. To be certain of the number of the of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

If the equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

In the event this equipment should fail to operate properly, disconnect the unit from the telephone line. Try using another FCC approved device in the same telephone jack. If the trouble persists, call the telephone company repair service bureau. If the trouble does not persist and appears to be with the this unit, disconnect the unit from the telephone line and discontinue use of the unit until it is repaired. Please note that the telephone company may ask that you disconnect the equipment from the telephone network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

Continued on next page

US FCC Notice, Continued

**FCC Part 68
Statement
(continued)**

The user must use the accessories and cables supplied by the manufacturer to get optimum performance from the product.

No repairs may be done by the customer. If trouble is experienced with this equipment, please contact your authorized support provider for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved. This equipment cannot be used on telephone company provided coin service. Connection to Party Line Service is subject to state tariffs.

Abbreviations

AAL5	ATM Adaptation Layer 5
ADSL	Asymmetric Digital Subscriber Line
ATM	Asynchronous Transfer Mode
CO	Central Office
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Ssystem
DSLAM	Digital Subscriber Line Access Multiplexer
FTP	File Transfer Protocol
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LAN	Local Area Network
LPF	Low Pass Filter
NAT	Network Address Translation
NIC	Network Interface Controler
PPPoA	Point to Point Protocol over ATM
RIP	Routing Information Protocol
TCP	Transmission Control Protocol
USB	Universal Serial Bus
VCI	Virtual Circuit Identifier
VPI	Virtual Path Identifier
WAN	Wide Area Network



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