Inter-Tel® Encore CX®

Internet Module Manual

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Introduction

The Internet module is an EncoreCX system module that provides multi-user high-speed Internet access using a Digital Subscriber Line (DSL) or Broadband. It also provides a Local Area Network that allows users to network PCs and share printers and other resources within the office. It is easy to install and manage using the installation wizard and management system. It can be installed during the initial installation phase or added later.

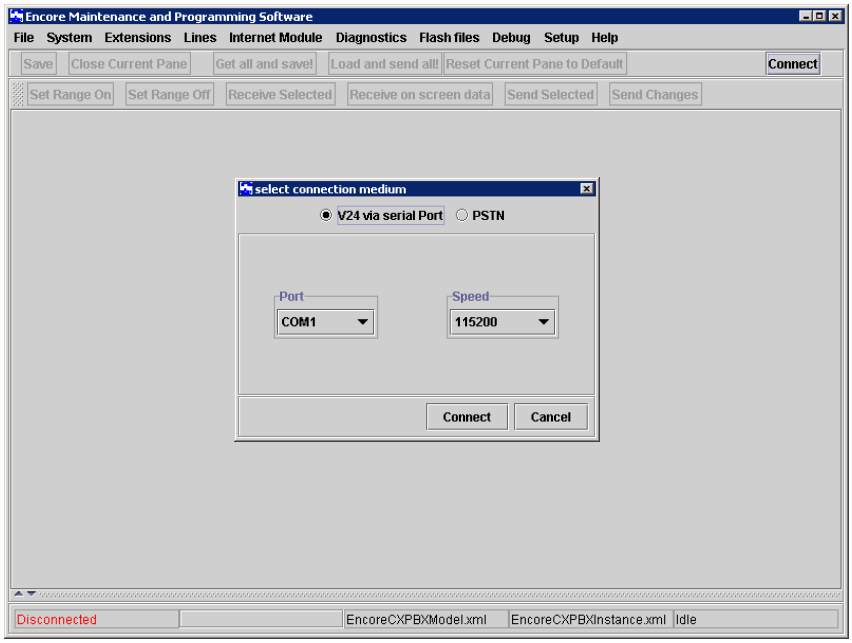
Features

The Internet module has the following features:

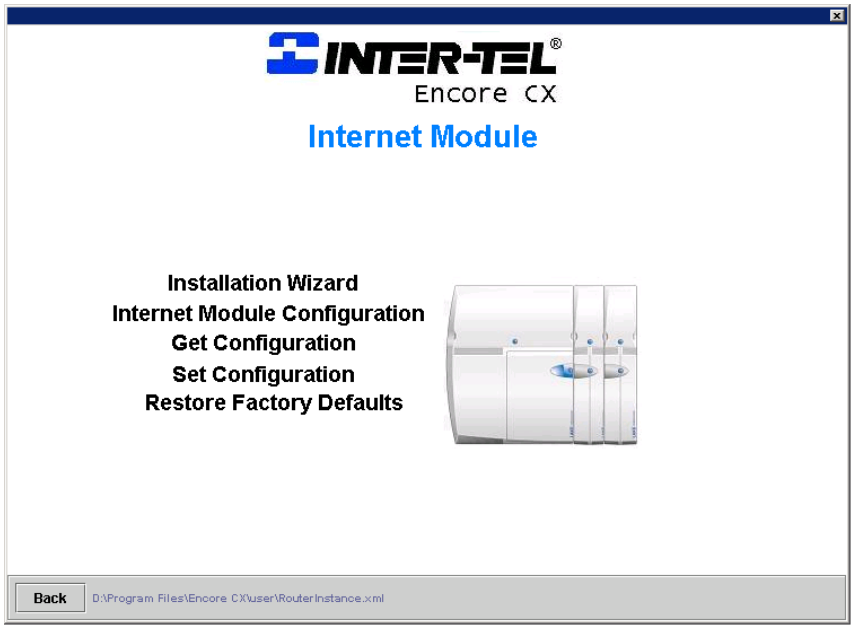
- Installation wizard for easy setup
- Multi-user Internet access
- Local Area Networking
- DSL
- Broadband
- Firewall
- PC-based management
- External indicators

Connecting to the EncoreCX Programming and Maintenance Software

- Select Connect on main screen. The following screen is displayed.
- Select **Connect** on pop-up screen.



- Select **Internet Module**. The following screen is displayed.



- **Installation Wizard** takes you to the Installation Wizard screen.

- **Internet Module Configuration** takes you to the Configuration screen.
- **Get Configuration** receives all settings and updates the corresponding fields in the management system.
- **Set Configuration** sends all management system settings to the Internet Module.
- **Restore Factory Defaults** restores all settings to the original factory settings.
- **Back** takes you back to the previous screen.

For some configuration changes to take effect, a warm reset must be performed on the Internet module. A prompt will appear on the EncoreCX Programming and Maintenance software screen requesting a reset.

Resetting the Internet Module

The Internet module must be reset for some configuration changes to take effect. It can be reset via the Programming and Maintenance software or by using the RESET button on the Internet Module MDF. For reset via the Programming and Maintenance software, go to the main system screen and select Diagnostics \ System Resets \ Internet Module \ Warm Reset.

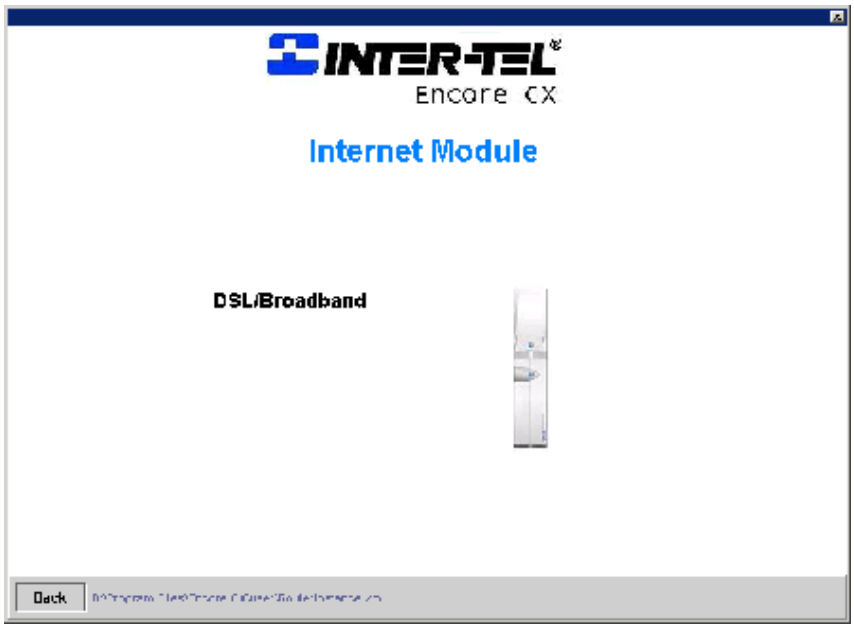
Installation Wizard

The installation wizard allows you to quickly and easily set up an Internet connection.
Before you use the wizard, you must have the following information on hand.

- Will DSL or Broadband be used to access the ISP?
- If DSL is to be used, get the following information. This will be provided by your ISP.
  - Username
  - Password
  - Which of the following protocols are used by the DSL modem ?
    - PPPoE (Point-to-Point Protocol over Ethernet)
    - Dynamic IP address assignment
    - Static IP address assignment
      If static IP addressing is used, skip the DSL Wizard and proceed to the DSL Profile.
- If Broadband is to be used, get the following information. This will be provided by your ISP.
  - Username
  - Password
  - Which of the following protocols are used by the Cable modem ?
    - PPPoE
    - Dynamic IP address assignment
    - Static IP address assignment
      If static IP addressing is used, skip the Broadband Wizard and proceed to the Broadband Profile.

The following procedure is now used to set up Internet access.

- Select **Installation Wizard** on the main screen. The following screen is displayed.



- Select **DSL/Broadband**. The following screen is displayed.

- Enter the **Username**. This will be provided by the ISP.
- Enter the **Password.** This will be provided by the ISP.
- Select either **PPPoE** or **IP.**

Note: If static IP addressing is used, skip the ADSL Wizard and proceed to the ADSL Profile.

- Click on the radio button **- Enabled.**
- Click **Send.**

The Internet module is now set up to access the Internet using DSL or Broadband.

PC Settings

Each PC used to browse the Internet must be configured to obtain an IP address automatically.

- Right click **Network Neighborhood.**
- Left click **Properties.**
- Select **Protocols** tab.
- Scroll through protocols listed and highlight **TCP/IP Protocol** and click the properties tab.
- Click radio button **Obtain an IP address from a DHCP server.**
- Click **OK.**

The PC is now set up to automatically obtain an IP address from the DHCP server in the Internet module.

Internet Explorer must also be configured as follows.

- Select **Tools** on the menu bar.
- Select **Internet Options** on drop-down menu.
- Click **Connections** tab.
- Click **LAN Settings.**
- Ensure that **Use a proxy Server** box is not checked.

Using the Internet

Launching Internet Explorer on any PC connected to the LAN will automatically connect the user to the Internet.

Local Area Network

The Internet module has a LAN (Local Area Network) which allows multiple PCs to connect to the Internet. It also allows users to network PCs and share printers and other resources.

The Internet module has four 10/100 switched Ethernet ports for connecting PCs or other devices. If more than four LAN devices are to be connected, an external Ethernet hub or hubs can be connected to any or all of the ports to expand the LAN. The Internet module can accommodate up to a total of 100 LAN devices.

The RJ-45 connectors for these ports are located on the Internet module's Main Distribution Frame (MDF) and are used to connect PCs or other LAN devices to the Internet module. Each port is set for auto-configuration and auto-sensing to automatically adapt to network card settings in the PC or other device that is connected to it. Also, each port can automatically adapt itself to a standard or crossover cable.

Wide Area Network

The Internet module can use ADSL or Broadband to access the Internet.

DSL

DSL provides "always on" service, meaning the Internet module is permanently connected to the Internet using a standard telephone line. The telephone line is terminated at the user end by a splitter that provides a normal telephone connection as well as a high-speed data connection.

The Internet module is factory fitted with a 10 Base-T port for connecting to an external DSL modem. A RJ-45 connector is provided on the Internet module backplane. The service provider installs the line, the splitter and the DSL modem.

Broadband

Broadband provides "always on" service, meaning the Internet module is permanently connected to the Internet using a cable modem.

The Internet module is factory fitted with a 10 Base-T port for connecting to an external cable modem. A RJ-45 connector is provided on the Internet module backplane for connecting to the modem.

Indicators

The Internet module has six Light Emitting Diodes (LEDs) on the front of the Internet Module to indicate the following:

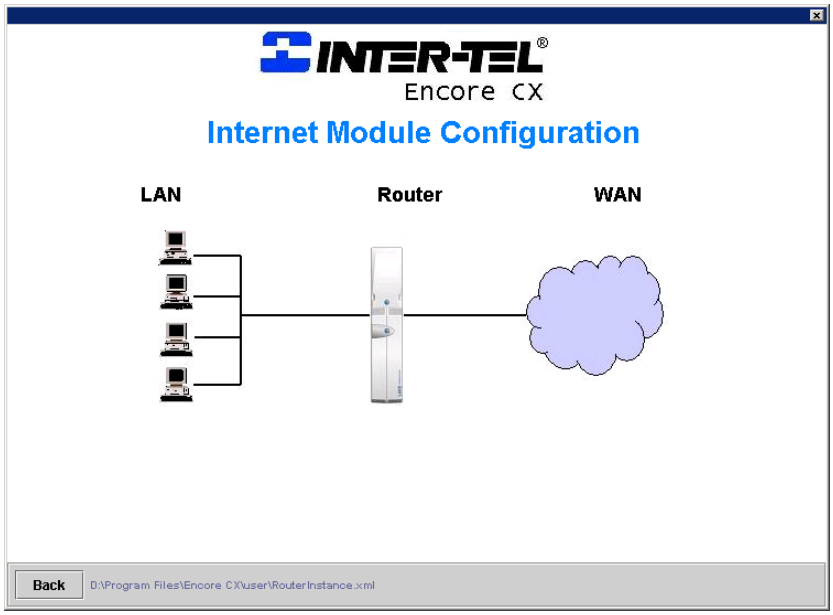
- Active Flashing indicates normal operation
- WAN Flashing indicates traffic on 10 Base-T port
- LAN 1 Indicates activity on LAN port 1
- LAN 2 Indicates activity on LAN port 2
- LAN 3 Indicates activity on LAN port 3
- LAN 4 Indicates activity on LAN port 4

DSL/Broadband Profile

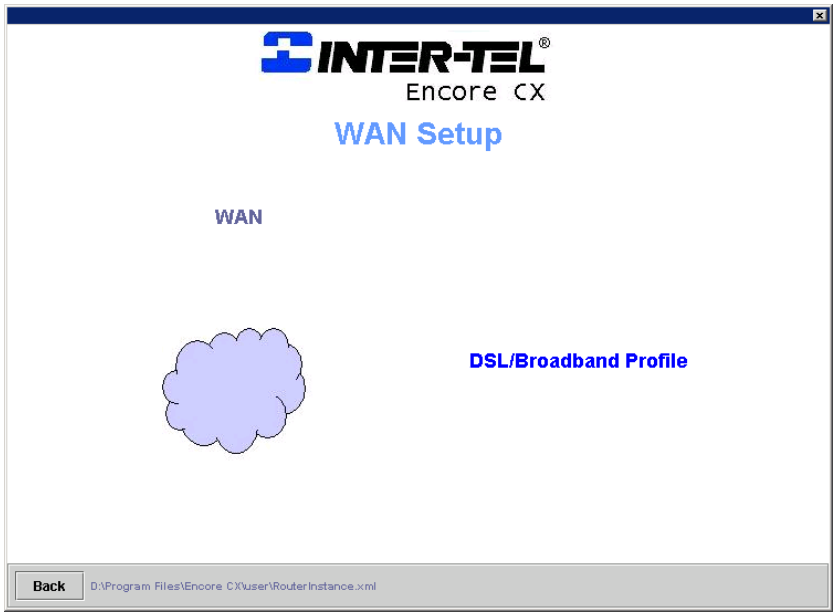
While the installation wizard provides a simple method of setting up the Internet module using the minimum number of settings, the profile settings provide the user with the ability to assign static IP addressing and access to Timebands to control Internet access.

The following procedure is used to set up the DSL/Broadband profile.

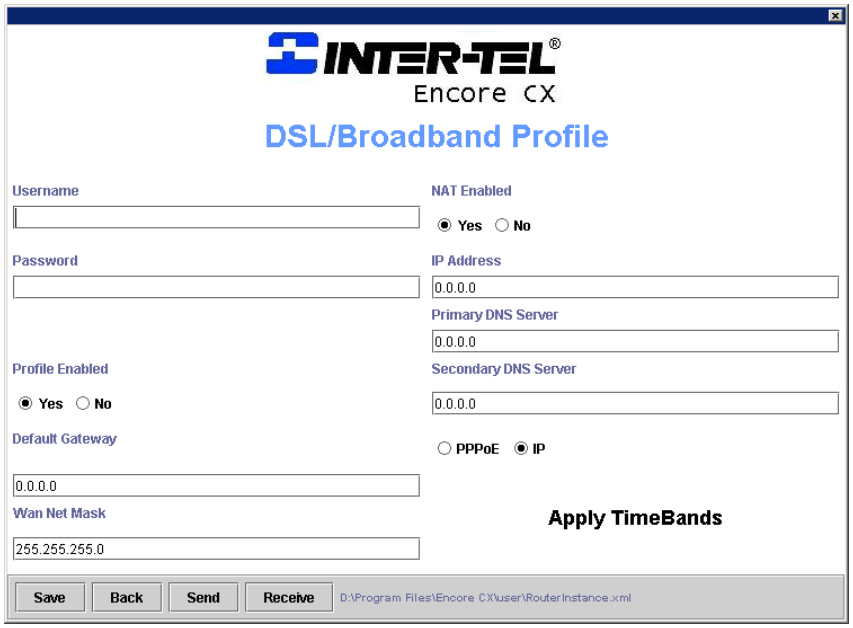
- Select **Internet Module Configuration** on the main screen. The following screen is displayed



- Select **WAN** on the **Internet Module Configuration** screen. The following screen is displayed



- **Select DSL/Broadband Profile** on the **WAN Setup** screen. The following screen is displayed.



- Enter the **Username** assigned by the ISP to allow access to the Internet. The username can be up to 60 alphanumeric characters long.
- Enter the **Password** assigned by the ISP to allow access to the Internet. The password can be up to 20 alphanumeric characters long.
- Selecting a **Protocol.**

  Select **PPPoE** or **IP** depending on how the ADSL service is delivered. This information will be provided by your ISP.
  - If using PPPoE, select **PPPoE** and proceed to the next step (NAT Enabled).
  - If IP addresses are dynamically assigned by the ISP, select **IP** and proceed to the next step (NAT Enabled).
  - If IP addresses are to be statically defined, select **IP** and enter the relevant IP addresses in the following fields:

    Default Gateway IP address
    WAN Net Mask
    WAN IP address
    Primary DNS Server
    Secondary DNS Server

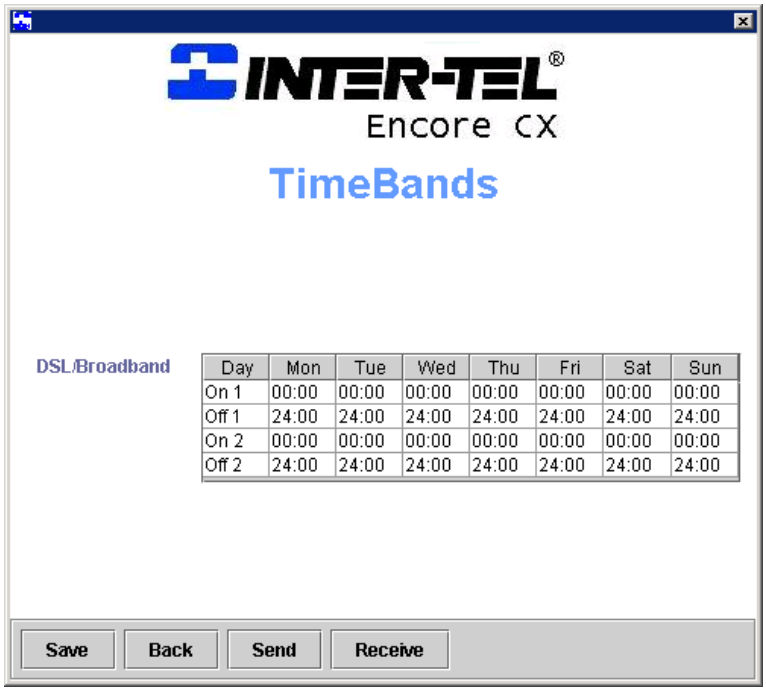
- **NAT Enabled -** this box is checked by default. This allows all PCs connected to the LAN to concurrently access the Internet.
- **Profile Enabled -** this enables the profile.
- Click **Save**.
- Click **Send**.
- **Timebands** takes you into the Timebands menu, which allows you to restrict Internet access during certain times of the day. The default setting is that no restrictions are applied. See the section on Timebands.

The Internet module is now set up for Internet access using DSL.

Timebands

The following procedure is used to program timebands.

- Select **Apply Timebands** on the DSL/Broadband Profile screen. The following screen is displayed.



- Set on-time 1 (hh:mm) for day of week.
- Set off-time 1 (hh:mm) for day of week.
- Set on-time 2 (hh:mm) for day of week.
- Set off-time 2 (hh:mm) for day of week.
- Set on-time 1 for next day, etc.
- Click **Save**.
- Click **Send**.

If Timebands 1 and 2 are both activated, they will work together. For example if off-time 1 overlaps on-time 2, the allowed period extends from on-time 1 to off-time 2. If off-time 2 overlaps on-time 1, the allowed period extends from on-time 2 to off-time 1.

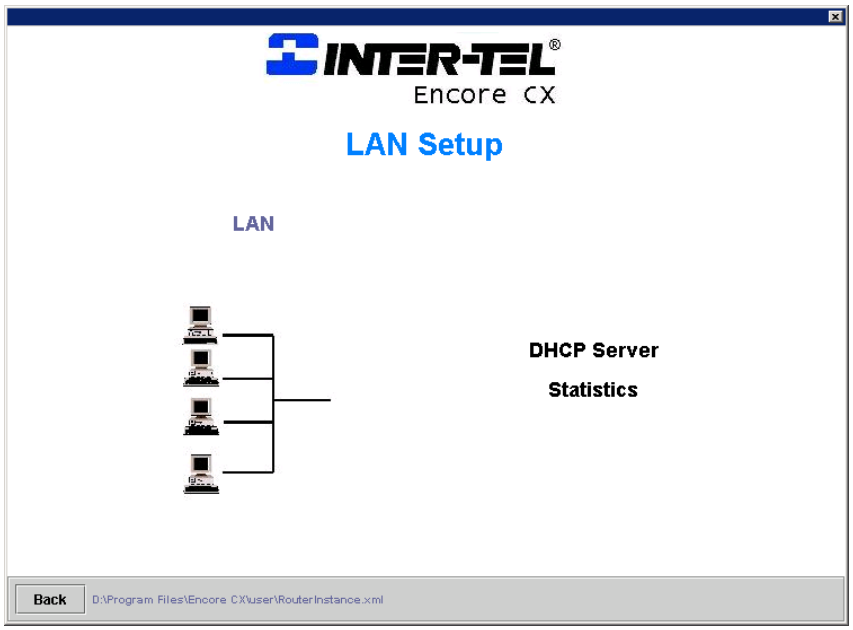
All settings are synchronized with the phone system's time settings.

DHCP Server

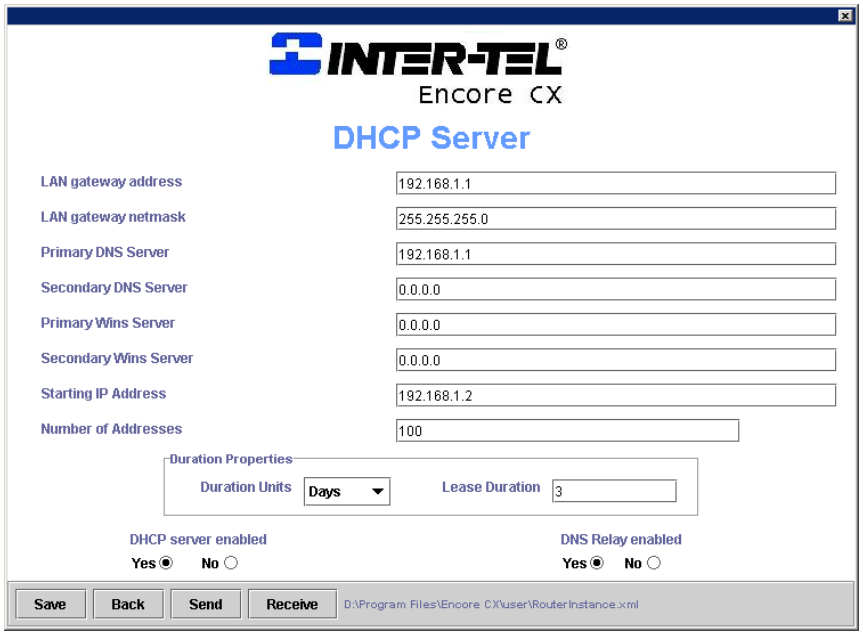
The Dynamic Host Configuration Protocol (DHCP) server automatically assigns IP addresses to each host on the LAN. It also provides the default gateway address, primary and secondary Domain Name System (DNS) server address, and primary and secondary Windows Internet Naming Service (WINS) server addresses.

The following procedures are used to change the DHCP settings.

- Select **LAN** on the **Internet Module Configuration** screen. The following screen is displayed.



- Select **DHCP Server.** The following screen is displayed.



- **LAN Gateway address** defines the IP address of the router. It is set by default to 192.168.1.1. All traffic destined for the Internet is sent to this address and the Internet module then forwards the

traffic. This address can be changed if a different address range is required, if static addressing is used, or if all IP traffic is to be sent to a different gateway on the LAN.

- The **LAN Gateway Subnet Mask** defines the subnet mask to be applied to the LAN Gateway address. This can be changed if the LAN Gateway address is changed from the default setting.

- The **Primary DNS Server** is the address to which all requests to resolve domain names are sent. With the default setting 192.168.1.1, all requests are sent to DNS relay, which in turn forwards the requests to a DNS server at the ISP. If a DNS server other than the one assigned by the ISP is required, the IP addresses should be inserted in the Primary and Secondary DNS server fields in the DSL or Broadband Profile and DNS Relay Enabled on this screen.

- The **Secondary DNS Server** is set by default to 0.0.0.0. to forward requests to the secondary DNS server at the ISP. If a different secondary DNS is to be used, the address is entered here.

- The **Primary WINS Server** is the address of the primary WINS server on the LAN.

- The **Secondary WINS server** is the address of the secondary WINS server on the LAN.

- The **Starting IP address** is the first IP address to be automatically assigned to a LAN host. The default setting is 192.168.1.2. Subsequent addresses assigned follow in ascending order. A different starting IP address can be assigned if required and subsequent numbers in the range will follow in ascending order.

- The **Number of Addresses** defines how many IP addresses the DHCP server can assign. Up to 100 addresses can be allocated and the default setting is 100.

- **Duration Units** defines the units of time used for the IP address lease. Days, Hours or Minutes can be defined. The default setting is Days.

- The **Lease duration** is the period for which the IP address is assigned to a host. The default setting is 3 days.

- **DHCP Server Enabled** - this box is checked by default. The DHCP Server should only be turned off if another DHCP server is connected to the LAN or static addressing is used.

- **DNS Relay Enabled** - this box is checked by default.

- Click **Save**.

- Click **Send**.

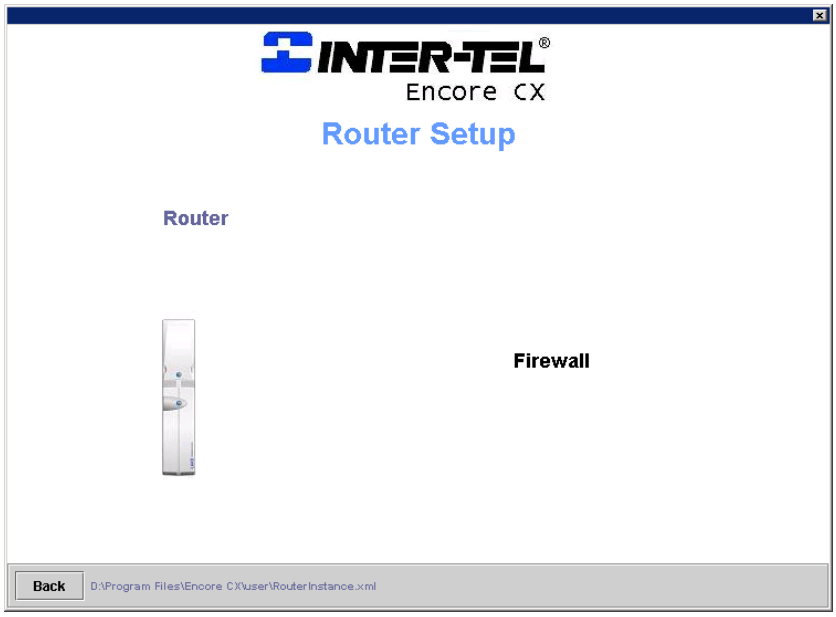
- For the changes to take effect, press **RESET** when prompted on the main screen of the EncoreCX Programming and Maintenance software or press the reset button on the Internet module MDF.

Firewall

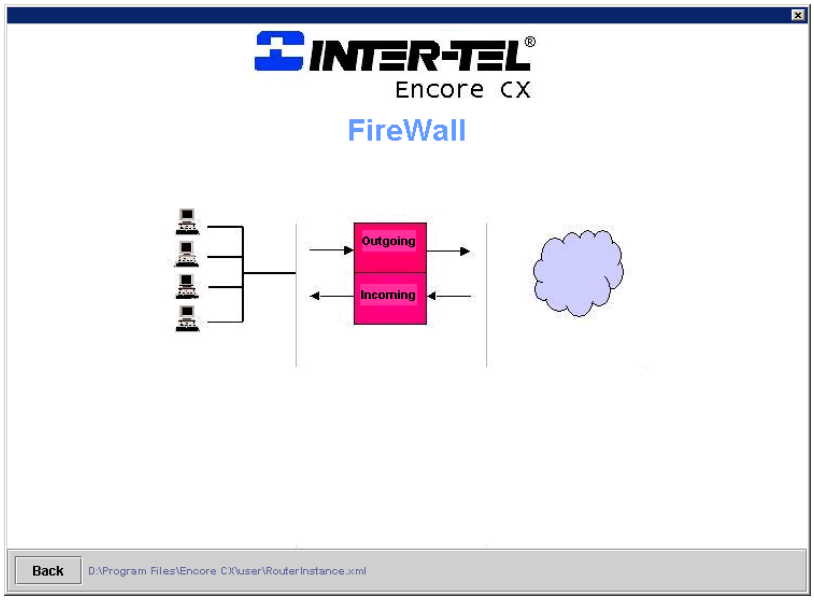
A firewall is used to restrict access between the internal LAN and the Internet. The firewall consists of packet filters, which are used to control the flow of traffic between the internal LAN and the Internet. All traffic passing through the Internet module can be examined and compared to a set of packet filtering rules. Traffic can be allowed to pass through, or it can be blocked depending on the rules defined by the user.

The following procedure is used to program the firewall.

- Select **Router** on the **Internet Module Configuration** screen. The following screen is displayed.



- Select **Firewall**. The following screen is displayed

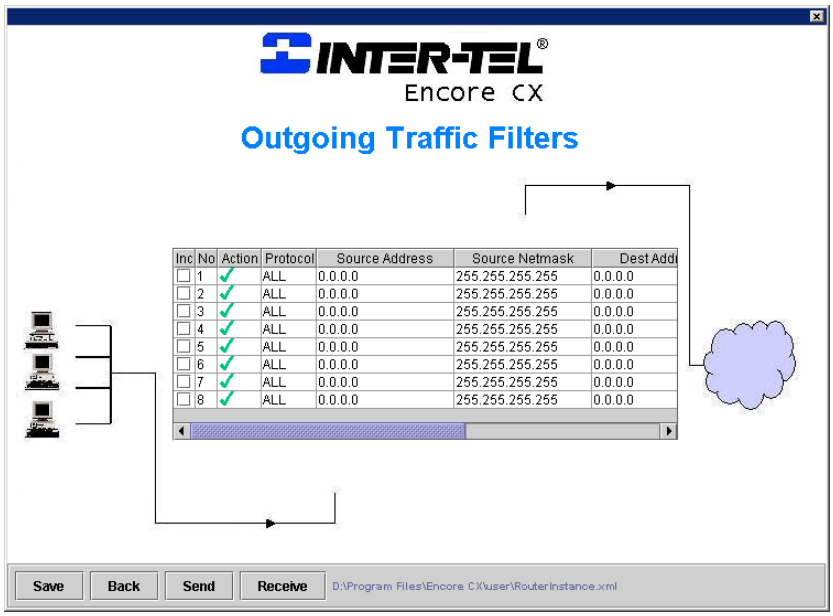


Filters

A filter stack comprising of up to 16 filters can be defined for outgoing and incoming traffic. Each filter contains fields whose contents are compared to every IP packet passing through the firewall. If the contents of any field match the corresponding information in an IP packet, the packet is either blocked or allowed to pass through to the next filter in the stack. The next filter carries out a similar operation using the criteria defined in its fields and so on.

Outgoing Traffic Filters

- Select **Outgoing Traffic Filters** on the Firewall screen. The following screen is displayed.



Each field is programmable as follows:

- **Inc (Include)**
  A ✔ in this box indicates that a filter is enabled and that the contents of its fields are compared to every IP packet. If the box is not checked, then the filter is not applied.

- **No (Number)**
  Each filter is numbered from 1 - 16. This field is not programmable.

- **Act (Action)**
  This field has a drop-down menu with two items. Selecting ✔ allows any packet through whose contents match any of the remaining fields in the filter. Selecting ✕ blocks any packet whose contents match any of the fields in the filter.

- **Prot (Protocol)**
  This field defines a protocol and has a drop-down menu with four items.

  ALL - the filter operates on packets which contain the UDP, TCP or ICMP protocols.
  UDP - the filter operates on packets which contain the UDP protocol.
  ICMP - the filter operates on packets which contain the ICMP protocol.
  TCP - the filter operates on packets which contain the TCP protocol.

- **Source Address**
  The filter compares the source address of the IP packets with the address specified in this field.

- **Source Netmask**
  This is used in combination with the source address field to specify a network address and compare it with the network address of the IP packets.

- **Destination IP Address**
  The filter compares the destination address of the IP packets with the address specified in this field

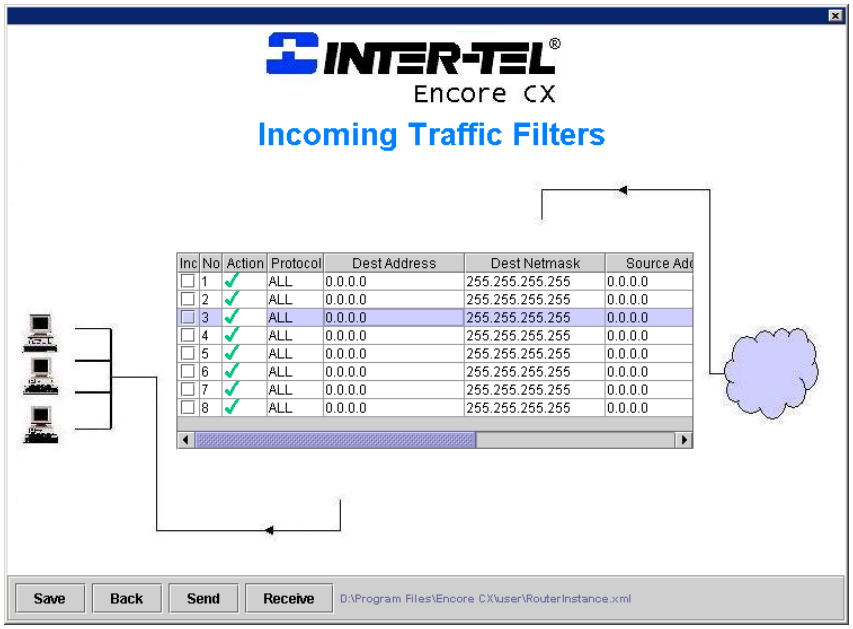
- **Destination Netmask**
  This is used in combination with the destination address field to specify a network address and compare it with the network address of the IP packets.

- **Start Port**
  A range of TCP or UDP destination ports can be defined. This defines the start of the range.

- **End Port**
  This defines the end of the TCP or UDP destination ports range.

Incoming Traffic Filters

- Select **Incoming Traffic Filters** on the Firewall screen. The following screen is displayed



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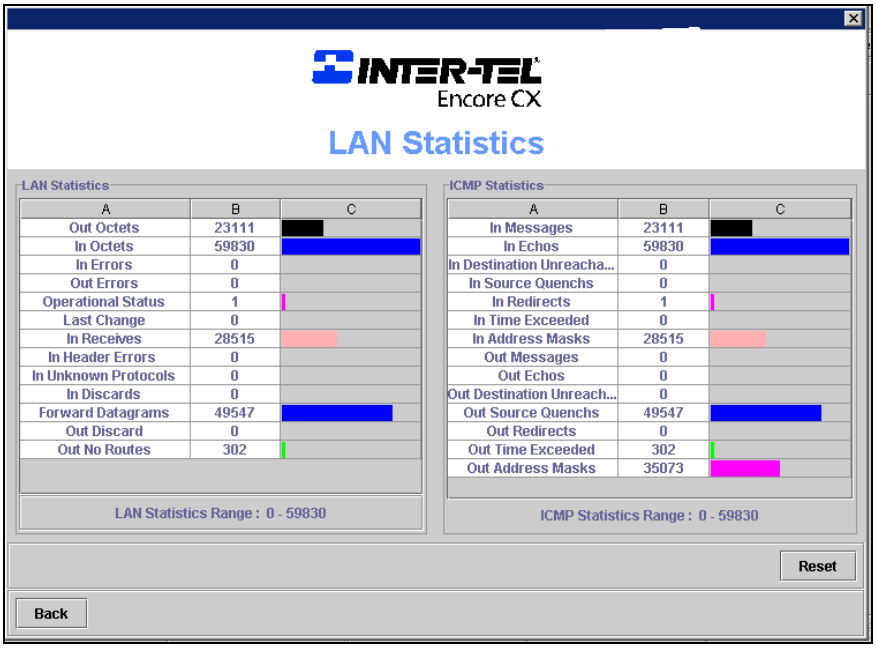
- **Start Port**
  A range of TCP or UDP destination ports can be defined. This defines the start of the range.

- **End Port**
  This defines the end of the TCP or UDP destination ports range.

Statistics

Statistics relating to data traffic on the Internet module are available.

- Select **Statistics** on the **LAN Setup** screen.
- The following screen is displayed.



- **RESET** sets all counters to zero.

LAN Statistics

The LAN statistics provide performance information about data between the LAN and the router.

Statistic	***Description***	***Possible Causes***
Out Octets	The total number of bytes sent from the router to the LAN, including framing characters	This indicates normal traffic.
Out Errors	The number of outbound packets that could not be transmitted because of errors at the MAC level.	Router hardware problem.
In Octets	The total number of bytes sent from the LAN to the router, including framing characters	This indicates normal traffic.

In Errors	The number of inbound packets that contained errors at the MAC layer preventing them from being delivered to a higher-layer protocol.	(1) Faulty NIC on LAN host. (2) Collisions on LAN.
Operational Status	Indicates the state of the LAN interface.	
Last Change	Indicates last router reset.	
In Receives	The number of IP packets received by the router from the LAN.	
In Header Errors	The number of input IP packets discarded due to errors or unsupported options in their IP headers.	(1) Bad checksums. (2) Version number mismatch. (3) TTL exceeded. (4) Other format errors.
In Unknown Protocols	The number of locally-addressed IP packets received successfully but discarded because of an unknown or unsupported layer 4 protocol.	Packet carrying unsupported or unknown level 4 protocol.
In Discards	The number of IP packets received successfully by this device and then dropped during input processing, even though they did not contain errors.	(1) Local resource problem on the hardware (e.g. lack of buffer space). (2) Filtered out by firewall.
Forward datagrams	The number of input datagrams for which the router was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination.	Indicates normal operation of the router.
Out Discards	The number of IP packets received successfully by this device and then dropped during input processing, even though they did not contain errors.	(1) Local resource problem on the hardware (e.g. lack of buffer space). (2) Filtered out by firewall.
Out No routes	The number of IP datagrams discarded because no route could be found to transmit them to their destination.	LAN interface down.

ICMP Statistics

Internet Control Message Protocol generates error messages and performance information to indicate problems in delivering IP packets between LAN hosts and the router.

Statistic	*Description*	*Possible causes*
InMessages	The total number of ICMP messages received from the LAN.	Bursts at high levels indicate some problem on the LAN.
InEchos	Pings sent by LAN hosts.	
InDestUnreachable	Sent by a LAN host to the router indicating a delivery problem at the host.	(1) The protocol in the IP packet is not available on the LAN host. (2) A particular application layer service on the LAN host is not available.
InSrcQuenches	Flow control message sent by a LAN host to the router requesting that the sending source of IP packets slows down.	Low buffer resources on a LAN host.
InRedirects	Sent by a router to suggest a better or alternative LAN default gateway.	
InTimeExcds	Sent by a LAN host to the router to indicate that an attempt to reassemble an IP packet failed.	If this happens frequently, it indicates a problem at the LAN host.
InAddrMasks	Sent by a LAN host to the router to discover the subnet mask of the local network.	
Outmsgs	The total number of ICMP messages sent by the router to the LAN.	Some amount of ICMP may be expected, but bursts at high levels often indicate a problem.
OutEchos	The number of pings sent from the router to the LAN.	
OutDestUnreachs	Sent by the router to a LAN host indicating a delivery problem at the remote network or host.	(1) Remote host unavailable. (2) Remote network unreachable.
OutSrcQuenchs	Flow control message sent by the router to a LAN host requesting that the sending source of IP packets slows down.	(1) Router unable to process packets quickly enough. (2) Router running low on buffer resources.

OutRedirects	Sent by the router to a LAN host to suggest a better or alternative LAN default gateway.	On a LAN with a subnet, a LAN host is sending packets to the wrong gateway because it's default gateway setting is incorrect.
OutTimeExcds	Indicates that the TTL (Time-To-Live) value in the IP header has been decremented to 0.	(1) Traceroutes sent by LAN hosts. (2) Failure in the WAN causing inordinate length routes to be used.
OutAddrmasks	This message sent by the router to the LAN to discover the subnet mask of the local network.	

Specifications

LAN	4 x 10/100 Base-T switched Ethernet ports, autosensing, auto MDI/MDI-X
DSL	10 Base-T port for external DSL or Cable modem PPPoE, Dynamic IP, Static IP supported
Protocols	IP V4, TCP, UDP, ICMP
Authentication	Automatic PAP/CHAP negotiation
DHCP	DHCP server supports up to 100 IP addresses
Routing	IP V4 static routing
Firewall	NAT, Packet filtering
Access control	Time of day restrictions can be applied
Management	Local management Remote management

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