

ProConvert™

protocol analysis file conversion

27 974236 TCP Roster
27 974520 TCP HTTP
27 975610 TCP HTTP
27 976845 TCP Roster

User Manual

TCP Roster

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ProConvert 3.0 for Windows

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ProConvert

Welcome to ProConvert, WildPackets' packet file conversion utility. The program converts trace files from the format of one network protocol analyzer to that of another, or to generic formats such as tcpdump or ASCII text. Over two dozen different protocol analyzers and probes are supported, allowing you to convert from one vendor's format to another whenever you need to view a trace file in a different format. Wireless, Ethernet, Token Ring, FDDI, and WAN topologies are supported in a single program.

With ProConvert you can:

- Share trace files with other protocol analyzer users.
- Convert and send files to tech support for any analyzer.
- Convert trace files for training purposes.
- Convert from the Sniffer compressed format to other analyzers.
- Reduce file size by converting to the same format using the frame slicing option.
- Convert between 802.11 Wireless LAN traces and 802.3 Ethernet format
- Convert between Wide Area Network traces

This manual describes how to use ProConvert from the graphical user interface or the command line, and lists the file types it can convert. It also provides notes on special considerations in converting particular types of files and kinds of packet data.

In this chapter:

Basic Operation

- Using ProConvert
- Multiple file conversion
- Command line operation

Supported file formats

Special conversion types

- Converting tcpdump
- Converting to ASCII text
- Conversion between Ethernet and wireless
- Conversion between WAN traces

Technical notes

- Frame data
- Timestamps

CRC error information

Basic Operation

The ProConvert window is divided into three sections: *Source File*, *Destination*, and *Options*. The *Format* drop-down list includes all of the LAN analyzers whose formats can be converted by ProConvert. By default, this list contains only Ethernet analyzers the first time that you open ProConvert; afterward, this list will contain either wireless LAN analyzers or Ethernet analyzers, depending on which was selected for the *Destination* file the last time ProConvert was opened.

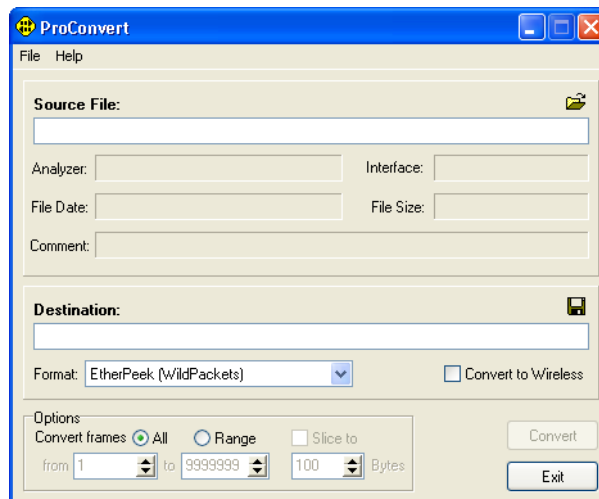


Figure 1.1 The ProConvert window

Using ProConvert

ProConvert can be started in any one of several ways. You can choose **ProConvert** from the **Start > Programs** menu to open the program without specifying the file to be converted. Alternatively, you can open ProConvert with a particular file ready to be converted, either by dragging a supported trace file over the ProConvert application icon or shortcut icon, or by right clicking on a trace file and selecting **Send To > ProConvert** from the context menu. In either case, ProConvert will start up with the specified trace file already entered in the *Source File* edit box.

Note: ProConvert can also be started from a DOS command prompt. This can be handy for creating a batch file to convert multiple files. For details, please see “Command line operation” on page 6.

To convert a trace file from one analyzer file format to another, follow these steps:

1. Start ProConvert.
2. If you have not already done so, enter the path and file name of the trace file to be converted in the *Source File* edit box. You can browse for the file by choosing **Open** from the **File** menu or by clicking the open file folder icon to the right of the *Source File* edit box. When you select a file, ProConvert will display any information it contains about the *Analyzer* used to capture the trace, the type of *Interface* on which it was captured, the date and time of the capture in *File Date*, the *File Size*, and any *Comment* embedded in the trace file.

Note: Each analyzer is identified by the file format in ProConvert. Therefore, for example, if an *.enc file was created by an analyzer other than Sniffer, *Analyzer* will still show as Sniffer in the area directly below *Source File*. Likewise, LinkView source files will show as Domino, and all Finisar/Shomiti Surveyor OEMs such as the Acterna FireBerd PC, Agilent LAN Analyzer, or Fluke Protocol Inspector, will show as Surveyor.

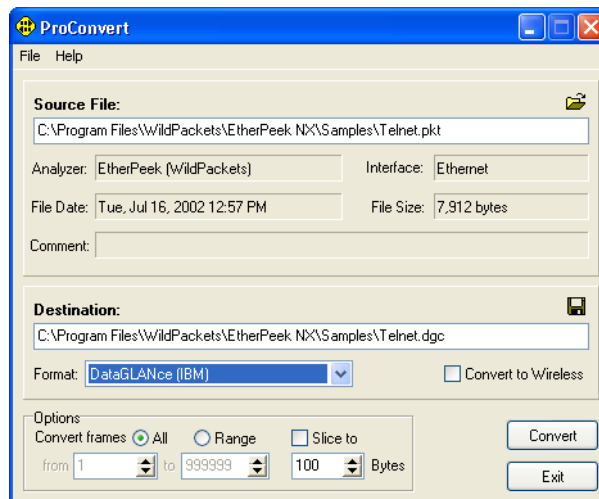


Figure 1.2 ProConvert file format conversion

3. Choose a supported analyzer file format for the *Destination* file in the *Format* drop down list.
4. If necessary, name the new file to be created. By default, ProConvert automatically generates the same path and file name for the new file and appends a different file extension corresponding to the *Destination* file *Format* you selected in step 3. If the destination file has the same extension as the source file (.cap is a popular extension, for instance), you will need to rename the destination file. The destination file cannot have the exact same path and file name as the source file.
5. In the *Options* section, use the radio buttons to choose to convert *All* packets or a *Range* of packets. Use the *from* and *to* data entry boxes to specify which frames to convert. For example, enter *from 1 to 5,000* to convert the first 5,000 frames. Note that range values are inclusive. To convert a single packet, choose a *Range* such as *from 5 to 5* to convert only the fifth packet in the file.
6. To convert only the first portion of each packet and discard the rest, check the *Slice to* check box in the *Options* section and, in the data entry box, enter the number of *Bytes* to keep. Packet slicing counts from the beginning of the packet the number of *Bytes* you specify, converts that portion of the packet, and discards the rest. Header information is located at the beginning of the packet. Data (such as a part of a web page) is carried further back in the packet. Setting an appropriate slice value will convert only the packet headers of interest without converting the data contained in the body of the packet. Slicing can substantially reduce the size of the destination file.

Setting up wireless conversions

When you wish to convert an Ethernet trace file into an 802.11WLAN trace, enter the path and file name of your *Source File* as described above and check the checkbox labeled *Convert to Wireless* to the right of the *Format* drop-down list in the *Destination* section. The choices in the *Format* drop-down list will now list only wireless LAN analyzers, from which you can make your selection.

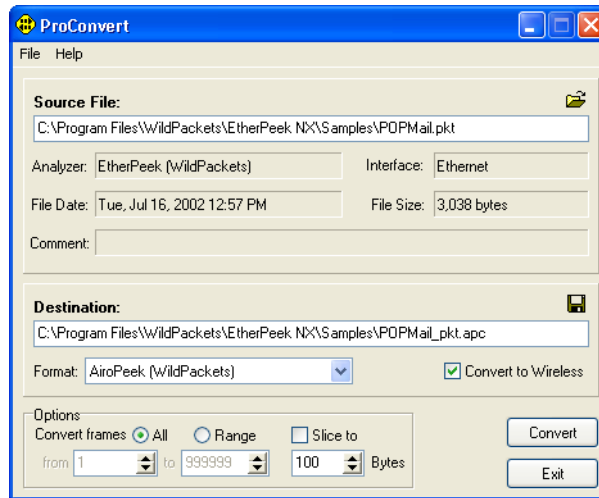


Figure 1.3 ProConvert window showing Convert to Wireless checkbox

When you choose an 802.11WLAN trace as your *Source File*, the checkbox to the right of the *Format* drop-down list in the *Destination* section changes from *Convert to Wireless* to *Convert to Ethernet*. Check this checkbox to convert the selected file to an Ethernet equivalent.

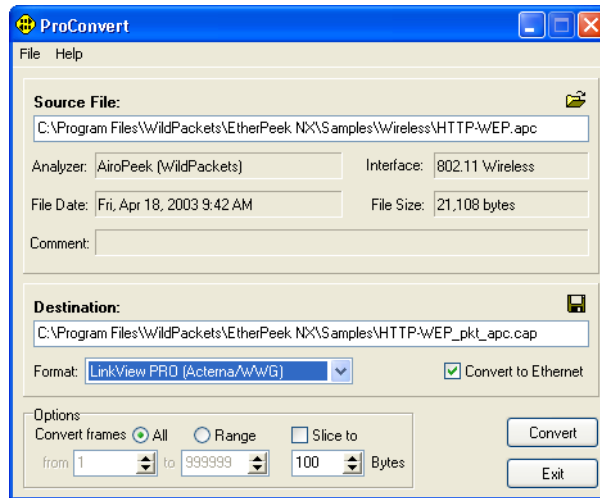


Figure 1.4 ProConvert window showing Convert to Ethernet checkbox

Note: When you check the *Convert to Wireless* or the *Convert to Ethernet* checkbox, ProConvert includes the old *Source File* suffix as a part of the new *Destination* file name, replacing . (the dot or period) with _ (an underscore).

Multiple file conversion

ProConvert will convert more than one trace file simultaneously to a different file type. These files to be converted must all be of the same type. Select the files you wish to convert, drag them onto ProConvert, and they will be converted to the new file type. Alternatively, select multiple files in the open file dialog for conversion to the new file type.

Command line operation

ProConvert for Windows can be run by calling it from a DOS command prompt, as long as Windows itself is running. (In other words, you cannot run ProConvert for Windows if you boot the computer in DOS without loading Windows.) You can also pass command line parameters in a Windows shortcut icon, by using the shortcut's properties settings. This can be very useful when you do one particular type of conversion frequently.

The command line syntax is:

```
PROCONVERT FILENAME.EXT TA
```

Where the `FILENAME.EXT` term is the source trace file you wish to convert, and the `TA` term is the two-letter code for the target analyzer or destination file type. For a list of supported analyzer file types and their TA codes, see “Supported file formats” on page 7, and check the **TA Code** column of Table 1.1.

Note: Command line operation offers only a direct conversion, without any options and without the ability to alter the default output file name or path. The converted file will be placed in the same directory as the source file, and will have the same name with the new file extension.

For specific information on how ProConvert converts trace files, see “Technical notes” on page 16.

Supported file formats

ProConvert supports conversion of trace files from the analyzers and probes shown in Table 1.1. Conversions are supported in the following network topologies: wireless, Ethernet, Token Ring, FDDI, and WAN. The table Key appears immediately after the table. For the latest information on supported file types, please consult the Readme file.

The target analyzer codes (TA Codes) are provided for use when calling ProConvert from the command line (see “Command line operation” on page 6).

For converting between WAN traces, the WAN types supported include PPP, Frame Relay, ISDN, HDLC (Cisco), and X25 over T1/E1.

Table 1.1 Supported formats, networks and target analyzer (TA) codes

Analyzer/Probe	Company	Network Type	File Suffix	TA Code
AiroPeek 1.1 or higher, AiroPeek NX (also compressed as source only)	WildPackets	WLAN	*.apc *.wpz	AP
Advisor	Agilent	Eth TR FDDI WAN	*.dat	IA
DA-30 (DOS version)	Acterna/ WWG	Eth TR	*.an1	DA
DataGLANce	IBM	Eth TR	*.dgc	DG
Domino	Acterna/ WWG	Eth TR FDDI WAN	*.cap	DM
EtherPeek, EtherPeek NX (also compressed as source only)	WildPackets	Eth	*.pkt *.wpz	EP
Fireberd500	Acterna/TTC	Eth TR	*.pkt	FB
Fireberd500 PC	Acterna/TTC	Eth TR FDDI	*.cap	SH
GigaPeek NX (also compressed as source only)	WildPackets	Gigabit Eth	*.pkt *.wpz	GP
Internet Advisor LAN	Agilent (pre-Win95)	Eth TR FDDI	*.eth *.trn	HP
LAN900	Digitech, Inc.	Eth TR	*.dat	L9
LANalyzer	Novell	Eth TR	*.tr1	LZ
LAN Analyzer	Agilent	Eth TR FDDI	*.cap	SH

Table 1.1 Supported formats, networks and target analyzer (TA) codes

Analyzer/Probe	Company	Network Type	File Suffix	TA Code
LinkViewPRO	Acterna/WWG	Eth TR	*.cap	LV
Network Analyzer	Agilent	Eth TR WAN	*.dat	AN
NetMetrix Probe (as source only)	Agilent	Eth	*.trc	(none)
NetScout Probe (as source only)	NetScout	Eth	*.dat	(none)
NetXRay	Network Associates	Eth TR FDDI	*.cap	XR
Network Monitor (SMS 1.2)	Microsoft	Eth TR FDDI	*.cap	NM
Network Monitor (SMS 2.0)	Microsoft	Eth TR FDDI	*.cap	N2
Nokia Firewall (as source only)	Nokia	Eth	*.dmp	(none)
Observer (through version 8.2)	Network Instruments	Eth TR FDDI WLAN	*.bfr	OB
Protocol Inspector	Fluke	Eth TR FDDI	*.cap	SH
Sniffer (DOS version)	Network Associates	Eth TR FDDI WAN	*.enc *.trc *.fdc *.sync	SN
SnifferPro (also compressed as source only)	Network Associates	Eth TR FDDI WLAN WAN	*.cap *.caz	XR
Snoop	Sun Microsystems	Eth TR FDDI	*.snoop *.cap	SO

Table 1.1 Supported formats, networks and target analyzer (TA) codes

Analyzer/Probe	Company	Network Type	File Suffix	TA Code
Surveyor or OEM	Finisar/Shomiti	Eth TR FDDI, Gigabit	*.cap	SH
tcpdump/libpcap	UNIX and Linux Platforms	Eth TR FDDI WLAN	*.dmp	TD
TokenPeek	WildPackets	TR	*.tpc	TP
WANPeek NX (also compressed as source only)	WildPackets	WAN	*.wpc *.wpz	WP

Key to Table 1.1	
Analyzer	Network analyzer or packet capture program used to create packet files of this type.
Probe	Network probe utilizing packet files of this type.
Company	Vendor, manufacturer, or equivalent for this packet capture program
Network Type	Types of network on which this program can be used. Choices are:
	Eth = Ethernet
	TR = Token Ring
	FDDI = Fiber Distributed Data Interface
	WLAN = IEEE 802.11 Wireless LAN
	WAN = Wide Area Network
File Suffix	Required file extension for packet files created by this program

TA Code	Two letter Target Analyzer code, used to specify the file type of the destination file when using ProConvert from the command line.
(as source only)	The (as source only) marker denotes one-way conversion only. These file formats can be chosen for <i>Source File</i> only, and therefore do not have a TA code for use in command line operation. TA codes are used to define destination files only.

Note: Files saved by the remote capture utilities EtherHelp or PacketGrabber cannot be converted directly in ProConvert. Such files must first be opened with EtherPeek and saved under a new name. These files can then be handled by ProConvert as ordinary EtherPeek files.

Special conversion types

This section describes how ProConvert handles the following file types:

- Converting tcpdump
- Converting to ASCII text
- Conversion between Ethernet and wireless
- Conversion between WAN traces

Converting tcpdump

When you choose *tcpdump/libpcap* as the *Format* for the *Destination* file, a button labeled **Settings** appears beside the *Format* drop-down list. Click the **Settings** button to open the **tcpdump/libpcap Output Options** dialog, where you can make additional configuration choices for the *Destination* file.

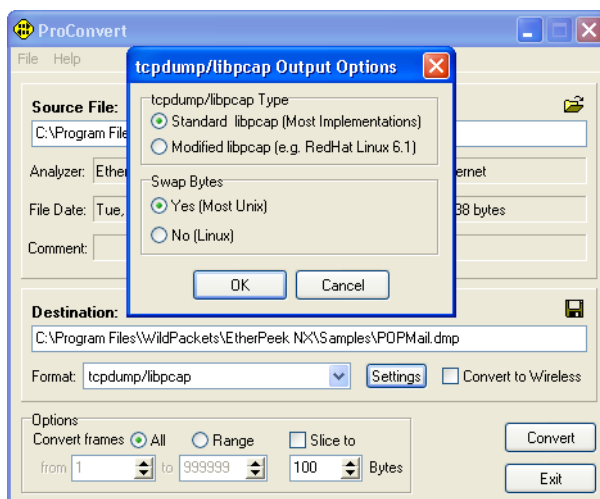


Figure 1.5 tcpdump/libpcap Output Options dialog

The majority of Unix-based tcpdump implementations use the *Standard* format type. This is the default output. For example, if the file is to be read by a version of tcpdump running under Red Hat Linux 6.1, you can change the *tcpdump/libpcap Type* to *Modified*. Selecting *Modified* in *tcpdump/libpcap Type* will also set the *Swap Bytes* section to *No*. Again, this is to match RedHat Linux which runs on Intel platforms, using an opposite byte order from the RISC-based platforms typical of most Unix systems.

Converting tcpdump wireless

ProConvert supports converting to and from the “generic” wireless tcpdump data link type “105.” This generic format does not include any RF (radio frequency) information such as channel, speed, and signal strength. When converting from tcpdump to a wireless analyzer that does support this information, you will see it filled in as Channel 1, 11 Mbps, and 100 percent signal strength, in order to avoid potential problems with statistics and expert systems. You will still get 802.11 frames and frame headers.

Note: If you use tcpdump in a channel scanning mode, you will not preserve any of the channel information even when natively saving a tcpdump file. ProConvert does not currently support conversion of tcpdump or libpcap files specific to a wireless NIC or chip set that has a data link type other than 105.

For more information on how ProConvert converts trace files to and from wireless formats, see “Conversion between Ethernet and wireless” on page 13.

Converting to ASCII text

When you choose *ASCII Text* as the *Format* for the *Destination* file, a button labeled **Settings** appears beside the *Format* drop-down list. Click the **Settings** button to open the **ASCII Text Settings** dialog, where you can make additional configuration choices for the *Destination* file.

Check the appropriate checkboxes to place the *Descriptive header on first line*, and/or to *Include Field Headers* in the output text file. Choose a *Delimiter* to separate entries in the output file. You can choose *Tab*, *Comma*, or *Fixed* width. Choose which *Fields* to include in the output by checking the appropriate checkbox. You can choose any combination of: *Frame Number*, *Timestamp (date)*, *Timestamp (microseconds)*, *Frame Length*, *Frame Data (hex)*, and *Frame Data (ASCII)*. Click **OK** to enable your choices or click **Cancel** to close the dialog without making any changes.

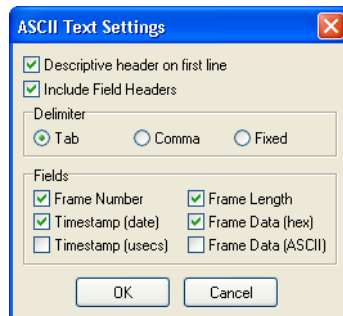


Figure 6 ASCII Text Settings dialog

Conversion between Ethernet and wireless

The differences in physical media impose different requirements on Ethernet and 802.11 Wireless LAN packets. Their different packet structures require some substitutions and the deletion of some inapplicable parameters when converting from one to the other. The sections below describe the details of Ethernet to wireless and wireless to Ethernet conversion.

Ethernet-to-wireless conversion

When you convert WAN packet traces to the format of a wireless analyzer, ProConvert makes a number of translations and substitutions. The output of each frame consists of packet information for the 802.11b WLAN medium, the 802.11b MAC header, the 802.2 LLC header, and finally, the data. Each frame grows 10 or more bytes in size, depending on the encapsulation translation as noted below.

- For your convenience, the wireless medium information is set to identical values for all frames, as follows: the data rate is set to 11.0 Mbps, the Channel to 1, and the signal strength to 100%. This satisfies the wireless packet information for the wireless analyzers and makes it easy to identify translated files.
- An 802.11 MAC header is created that sets the frame type to “Data” and the DS bits to zero (indicating a station-to-station transfer). Destination and source addresses are set to the original Ethernet destination and source addresses, and the BSSID is set to the Ethernet source address. Sequence number, frag number, and all other bits of the MAC header are set to zero.
- An 802.2 LLC header is created based on the original Ethernet encapsulation type.
 - Ethertype is converted to LLC SNAP Ethertype (18 byte increase in frame size)
 - Novell Raw is converted to LLC SAP E0 (13 byte increase in frame size)
 - LLC or SNAP need no conversion and are copied directly, byte for byte. (10 byte increase in frame size)
- The data after the 802.2 LLC header (for example, IP and other higher level protocols) is copied identically, byte-for-byte.

Wireless-to-Ethernet conversion

Wireless traces containing data frames can be converted to Ethernet traces. ProConvert properly converts wireless 802.11a and 802.11b data frame headers to 802.3 headers, preserving the end-point source and destination MAC addresses, and retaining all of the protocol information from the LLC header and up. Because they have no meaning to an 802.3 analyzer, all wireless control and management frames are discarded when converting to 802.3. For this reason, an 802.11 trace will typically show fewer total frames when converted to 802.3.

802.11 WLAN traffic can have frames smaller or larger than those permitted on 802.3 networks. To avoid decode problems, ProConvert slices 802.11 WLAN frames to 1518

bytes (the Ethernet maximum) and sets the LLC length to 1500 bytes. 802.11 WLAN frames less than 64 bytes (the Ethernet minimum) are padded with 0's to 64 bytes.

Conversion between WAN traces

ProConvert supports two-way conversion of Wide Area Network traces from PPP, Frame Relay, ISDN, HDLC (Cisco), and X25 over T1/E1 to and from the following WAN analyzers:

- WANPeek NX
- Acterna/WWG Domino
- Agilent Network Analyzer
- HP/Agilent Advisor
- Sniffer DOS (or any analyzer that can save to .sync)
- SnifferPro

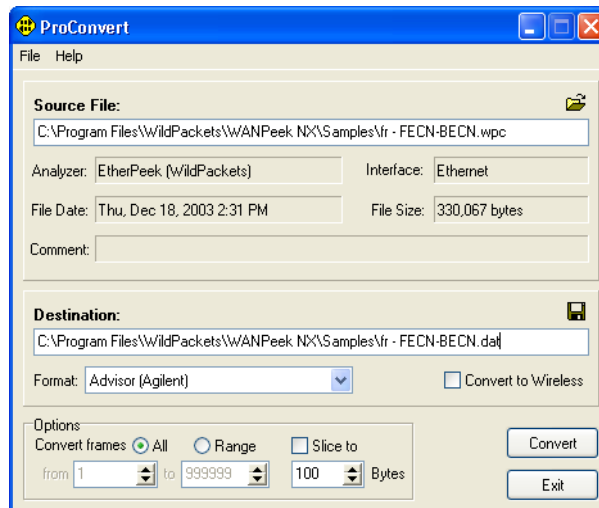


Figure 1.7 Conversion from a WANPeek NX file format

Technical notes

This section contains information on how ProConvert handles the following types of packet trace information or file conversion functions:

- Frame data
- Timestamps
- CRC error information

Frame data

All frame data is preserved between analyzers. All data frames are converted; statistical information and proprietary frames, whether with statistics or other information, are discarded during conversion. The user may choose to slice each frame by specifying that only the first so many bytes of each frame be saved during conversion. The user can also choose to specify a range of frames to convert, such as frames 1 through 1000 or 2,000 through 15,000. As little as one frame can be converted by specifying a range like *from 1 to 1* or *from 1,500 to 1,500*.

Timestamps

The program's internal conversion resolution is one microsecond. Data from analyzers with a higher stored resolution, such as Internet Advisor, will be rounded to the nearest microsecond. Data from analyzers with a lower stored resolution will be converted to that precision. Please consult your analyzer's documentation for information on its timestamp resolution.

CRC error information

CRC flags are carried over where applicable (that is, for Ethernet or wireless traces).

Some analyzers, most notably Sniffer and some Windows-based analyzers relying on off-the-shelf NDIS drivers (such as Network Monitor), do not capture the actual 32-bits of Cyclic Redundancy Check (CRC) data in Ethernet frames.

When converting to Sniffer or Network Monitor format, the CRC is stripped. When converting from Sniffer or Network Monitor to another format that does support CRCs, ProConvert re-computes the CRC and appends it to the end of the frame. If a frame is flagged as having a CRC error, its CRC is set to all zeros. The frame size is also adjusted

accordingly. Hence, an Ethernet frame which appears as a 60-byte frame on Sniffer, will appear as a 64-byte frame on an analyzer such as EtherPeek, and vice-versa.

For token ring captures, no analyzers support storing the frame CRC. Thus, all conversion is done without the CRC for token ring formats.

Contacting WildPackets



During normal business hours, we are available by phone. You can also contact us by fax or email, and we will usually get back to you by the next business day.

Phone	(925) 937-3200
Domestic	(800) 466-2447
FAX	(925) 937-3211
Support	http://www.wildpackets.com/support/contact
Email	sales@wildpackets.com
Web	http://www.wildpackets.com

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Walnut Creek, CA 94597

Training and Certification:

WildPackets Academy
(800) 466-2447

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