

EtherShaper

Ethernet Shaper

User's Guide

Version 0.9



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About This Guide

This chapter describes how to use this guide. Topics discussed in this chapter include following:

- “Purpose and Scope” on page 3
- “Assumptions” on page 3

Purpose and Scope

The purpose of this guide is to help you successfully use the features and capabilities of the EtherShaper Ethernet Shaper.

Assumptions

This guide is intended for experienced users who want to use the EtherShaper Ethernet Shaper effectively and efficiently. We assume that you have basic computer experience and that you are familiar with Ethernet principles, terminology and safety.



Getting Started

This chapter provides a general description of the EtherShaper Ethernet Shaper. Topics discussed in this chapter include the following:

- “Ship List” on page 4
- “Features and Capabilities” on page 4
- “Preparation for Use” on page 4
- “Exploring the Front Panel” on page 5
- “Exploring the Bottom Panel” on page 6
- “Powering ON the Unit” on page 6
- “Powering OFF the Unit” on page 6
- “Restarting the Unit” on page 6
- “Navigating the Graphical User Interface” on page 7

Ship List

The following items ship standard with the EtherShaper Ethernet Shaper:

- EtherShaper Ethernet Shaper minitower PC unit with power cord (230V).
- 17" LCD monitor with D-Sub connector with power cord (230V) and D-Sub cables.
- Proof desktop USB keyboard.
- Documentation CD. The User's Guide is included in PDF on the CD.
- Two printed copies of User's Guide.

When unpacking the unit, verify that all of the standard items are included in the package.

Features and Capabilities

Features and capabilities of the EtherShaper Ethernet Shaper include the following:

- Two RJ-45 ports for Ethernet testing (port A and port B).
- Supported Ethernet versions: 10Base-T, 100Base-Tx
- Duplex: Half, Full, auto-negotiation
- Speed: 10 Mbps, 100 Mbps, auto-negotiation
- Minimal Ethernet frame size 50 bytes
- Maximal Ethernet frame size 1500 bytes
- Independent adjustable true linear delay in both directions in range from 500 μ s to 30 s
- Independent adjustable “RAMP” delay in both directions. RAMP is defined with start delay, finished delay and incremented in μ s per ms.
- Independent adjustable frame loss in both directions in range from 0 % to 100 %
- Load/Save user configuration

Preparing for Use

This section explains how to start using your EtherShaper Ethernet Shaper.

General Preparation

When you unpack the unit with all components, do the following:



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- Items on ship list must be the same as in packages.
- Inspect the unit for the damage.
- Inspect the monitor for damage.
- Inspect the keyboard for damage.

Before using the EtherShaper for the first time, do the following:

- Connect the video D-Sub connector to the appropriate connector at bottom of the EtherShaper Unit.
- Connect the keyboard USB cable to the sufficient USB connector on EtherShaper Unit.
- Connect the EtherShaper Unit using the power cable to the main power supplies (230V, Euro connector).
- Turn ON the unit.
- Now, the EtherShaper Unit is starting.

Exploring the Front Panel



Figure 1 - Front Panel

- Power Button – use the power button to turn the unit ON or OFF.
- Restart Button – use the restart button to RESTART the unit.
- USB Connectors – use one of these connectors to connect the keyboard to the unit.



Exploring the Bottom Panel

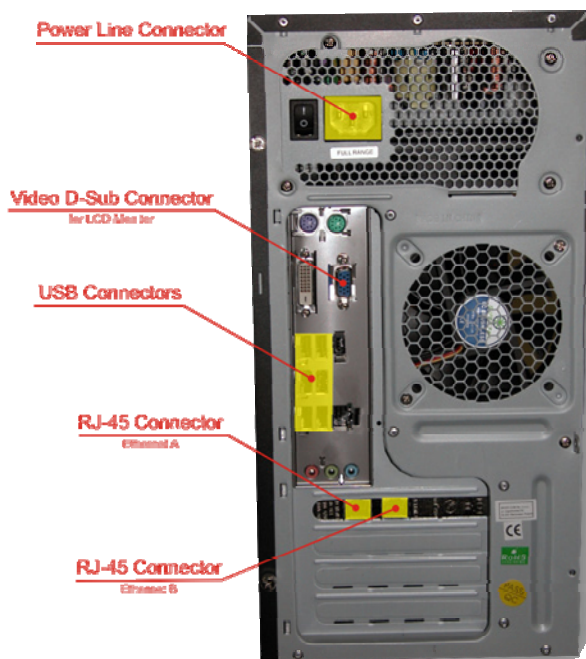


Figure 2 - Bottom Panel

- Power Connector – use this connector for connecting the unit to the power line supply.
- D-Sub Video Connector – use this connector for connecting the LCD monitor.
- USB Connectors – use one of these connectors for connecting the keyboard.
- RJ-45 Connectors – use these connectors for connecting to the Ethernet network.

Powering ON the Unit

The following procedure describes how to power ON the EtherShaper.

To power ON your unit

- Press the power button for approximately 1 second.

The EtherShaper splash screen appears shortly, and then the Main Menu appears.

Powering OFF the Unit

The following procedure describes how to power OFF the EtherShaper.

To power OFF your unit

- Press the power button for approximately 1 second.

The unit will be shut down.

Restarting the Unit

The following procedure describes how to RESTART the EtherShaper.

To RESTART your unit



- Press the restart button for approximately 1 second.

The unit will be restarted.

Navigating the User Interface

The user interface of the EtherShaper is designed to be intuitive and easy to use. Using the monitor and keyboard, you can set up the Ethernet frames processing. This section describes the user interface and explains how to navigate through menus and screens.

The navigation through the program menu is carry out by the cursor keys (Left, Right, Up, Down or Tab key) while the selection must be confirmed by Enter key. You can exit the Menu by pressing the CTRL+X keys.

You can exit the program by shutting down the EtherShaper Unit using Power OFF button (see “Powering OFF the Unit” on the page 6).

Every configuration use must by apply by use of “(re)Apply” in the Main Screen.

Main Screen

When you power up the EtherShaper Ethernet Shaper, the Main Menu of the user interface appears. Figure 3 illustrates the Main Screen for a fully optioned unit.



Figure 3 - Main Screen

The main screen is split into four parts which are shown on Figure 3.

- Part 1 and Part 2 show current configuration of the Ethernet bridges in both directions. After powering up the unit is restarted to the default settings. The interfaces have in default configuration all parameters in automatic mode and all traffic modifications features are disabled. The user can load the previous settings from saved configuration.
- Part 3 depicts Main Menu of the EtherShaper unit. The Main Menu contains these items:
 - A to B – Configure the bridging for direction A to B.
 - B to A – Configure the bridging for direction B to A.



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- Default – Reset application to default settings.
 - Save/Load – Save and load previously stored configuration.
 - Stats – Display brief system statistics.
 - (re)Apply – (re)Applies current configuration.
- Part 4 shows informative and helpful information.



Physical Interface Settings

This section describes the physical layer (L1) configuration on both interfaces.

The first, you have to select the bridge which you want to configure ("A to B" or B to A"). In the bridge menu, you can select "L1 Type" or "L1 Duplex" as the physical interface parameters. Figure 4 shows the Bridge Menu.

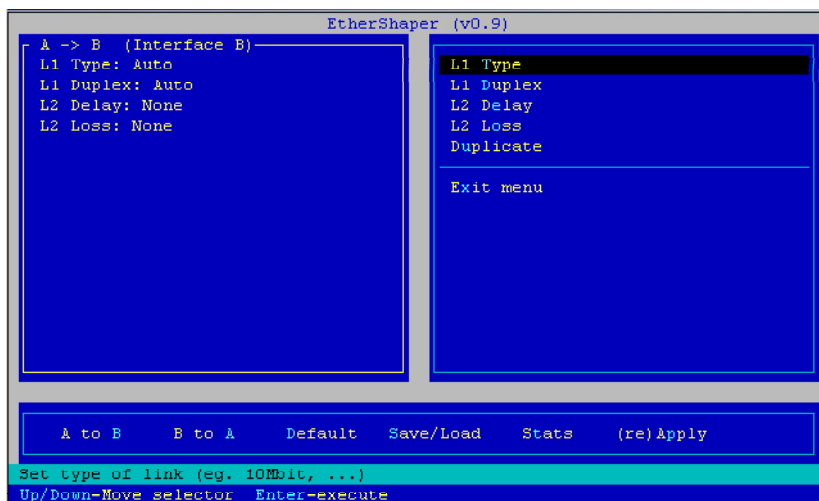


Figure 4 - Bridge Menu

In the "L1 Type" menu, you can change the Ethernet standard version. Applicable settings are displayed in Figure 5.

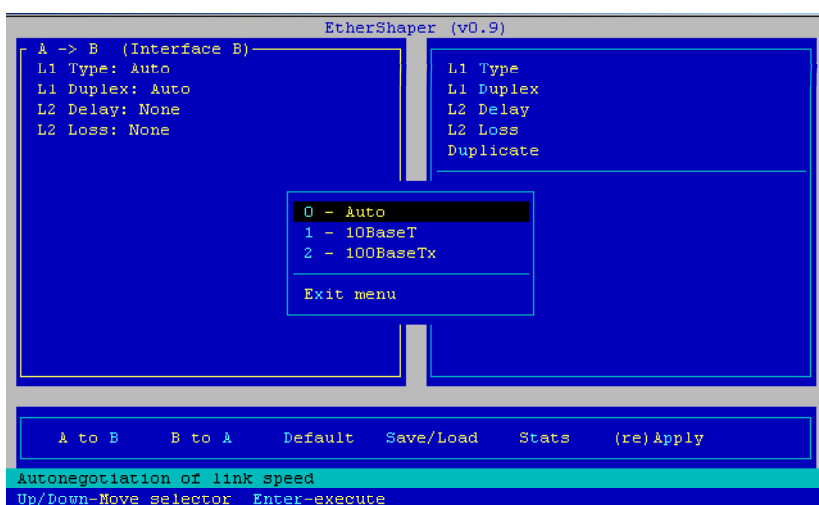


Figure 5 – L1 Type Menu



The duplex option setting can be changed in the “L1 Duplex” menu. The options are displayed in Figure 6.

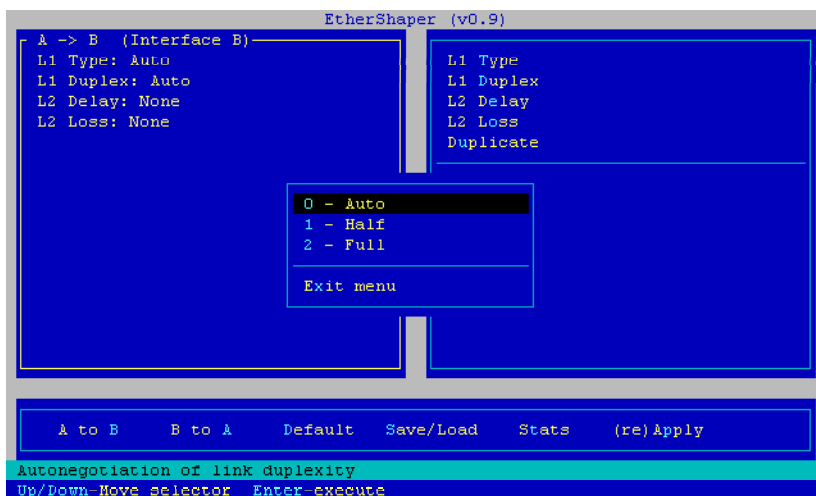


Figure 6 - L1 Duplex menu

You can exit the option menu is possible by selecting the “Exit Menu” or pressing the “X”/”x” key.

Delay Setting

This section describes setting of delay between interfaces. Delay can be configured in two modes that are displayed on Figure 7.

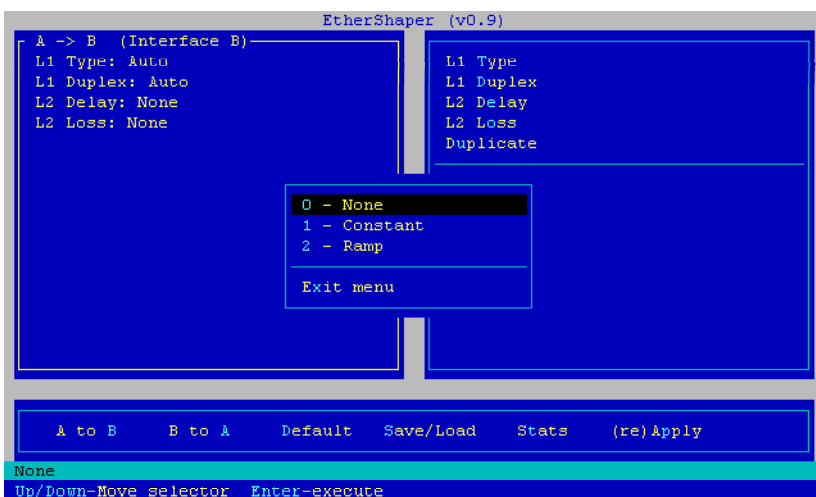


Figure 7 - Delay Menu



Constant Delay

Constant delay between interfaces can be configured in range from 500 μ s to 30 s. The value of Delay must be numerically inserted in microseconds. You can see the Constant Delay Menu on Figure 8.

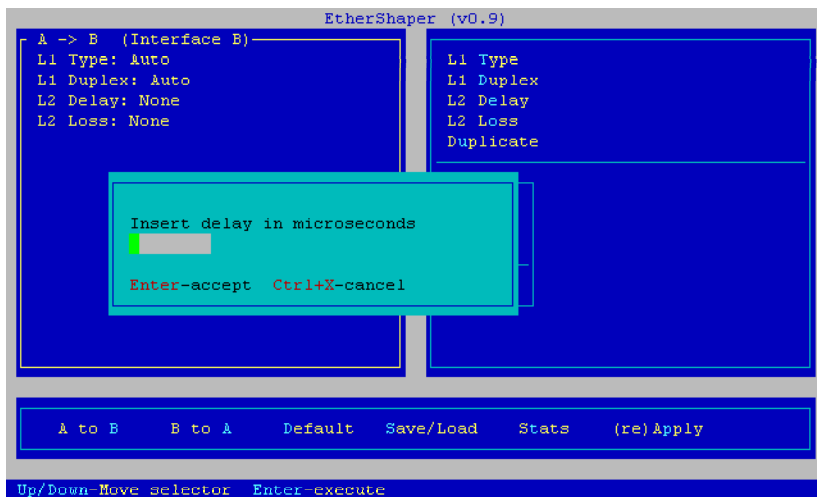


Figure 8 - Constant Delay Menu

Ramp Delay

The Ramp delay between Ethernet interfaces A and B can be configured in range from 500 μ s to 30 s. The increment of delay can be configured in range from 1 μ s to 30 s. Values must be inserted in microseconds. The step of the increment can be configured in range from 1 ms to 30 s, again in millisecond. The Ramp Delay Menu is shown on Figure 9. You can navigate through various entries pressing a Tab key.

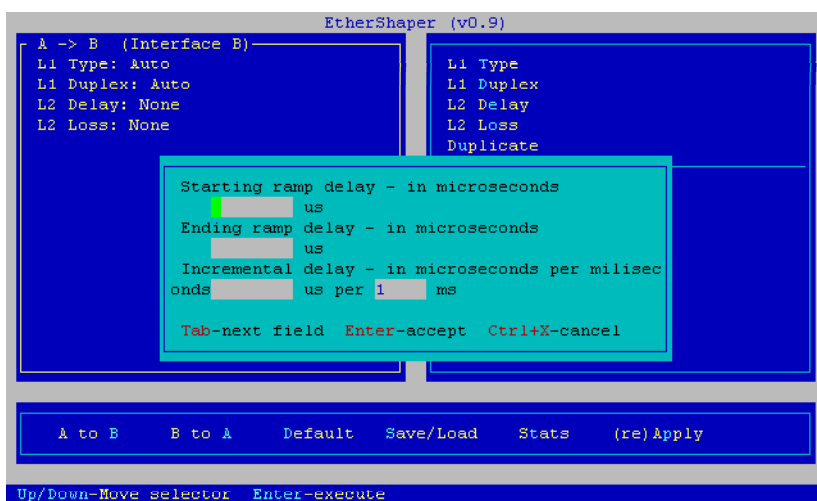


Figure 9 - Ram Delay menu



Loss Setting

This section describes the setting of the frames loss between interfaces A and B. The frames loss can be configured in “L2 Loss Menu”, which displayed on Figure 7. Only one frame loss mode is currently supported.

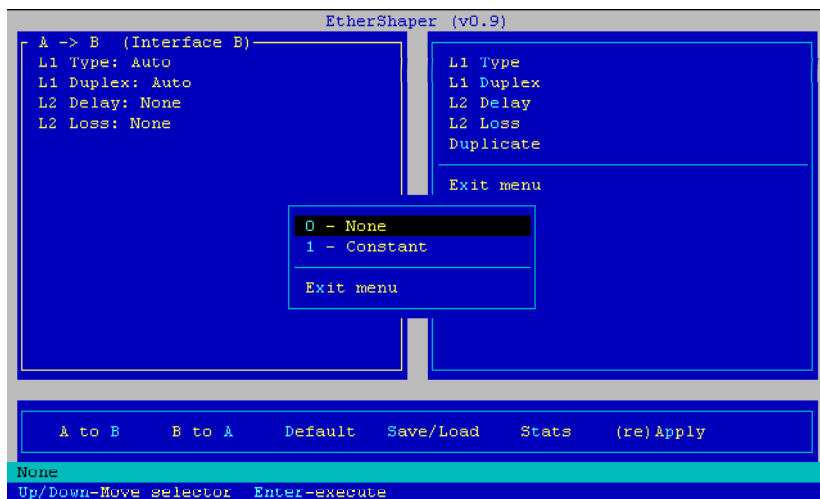


Figure 10 – L2 Loss Menu

Constant Loss

The frame loss can be configured in range from 0.01 % to 100 % with minimal step 0.01 %. The Ethernet frames are then dropped with given probability. The “Constant Loss Menu” is shown on Figure 11.

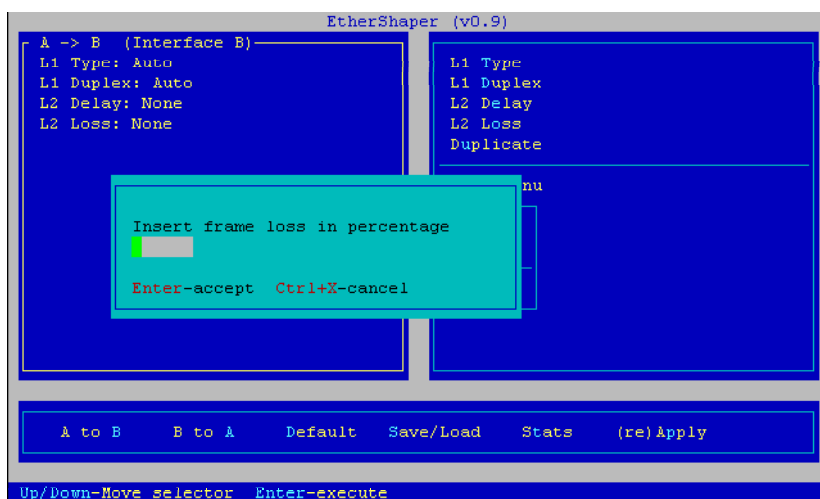


Figure 11 - Constant Loss Menu

Duplicate

You can copy settings from the current bridge direction (for example A to B) to the second one (B to A).



Cooperation with Ethernet Devices

This section describes cooperation between the EtherShaper Unit and the Ethernet Frames Generators and Analyzers. Figure 12 - Figure 16 illustrate typically interconnection of the EtherShaper Unit with other Ethernet measuring equipments.

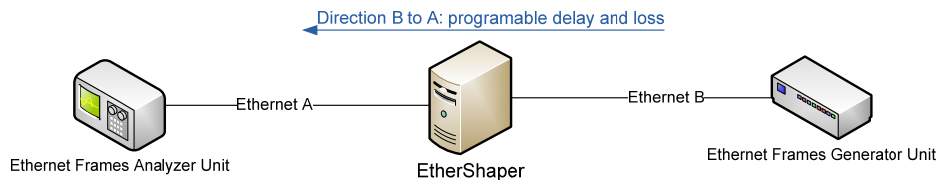


Figure 12 - Cooperation with the Ethernet Generator and Analyzer Units

In Figure 12 the EtherShaper Unit is connected between the Ethernet Generator and Analyzer anywhere in a broadcast domain. In this case generated Ethernet traffic is modified in the EtherShaper Unit and sent to the Analyzer. Ethernet traffic can be modified only in one direction. The EtherShaper Unit and the measuring equipment must be both placed in the same broadcast domain!

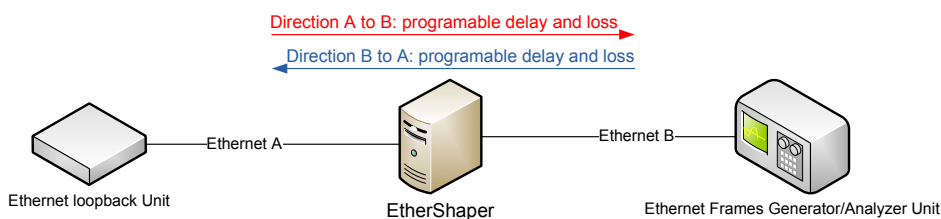


Figure 13 - Cooperation with the Ethernet generator/analyzer and loopback units

Figure 13 depicts the EtherShaper Unit as being connected between the Ethernet Generator/Analyzer and the loopback units placed anywhere in a broadcast domain. In this case generated Ethernet traffic is modified in the EtherShaper Unit and sent afterwards to the loopback device. The Loopback device loops the traffic back to the analyzer through the EtherShaper unit. The Ethernet traffic can be modified on both directions. The EtherShaper Unit and measuring equipment must be placed in the same broadcast domain!

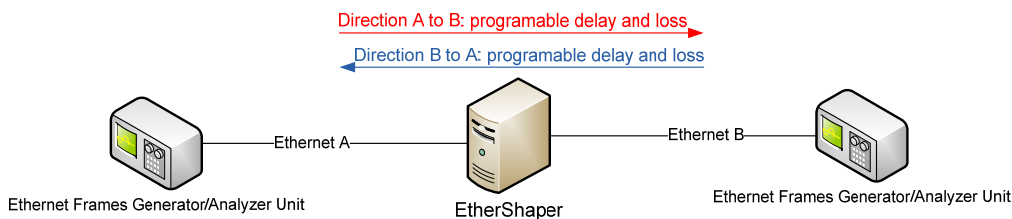


Figure 14 - Cooperation with two Ethernet Generator/Analyzer Units

In Figure 14 images the EtherShaper Unit is connected between two Ethernet Generator/Analyzer Units placed anywhere in a broadcast domain. The Ethernet traffic generated in the first generator is modified by the EtherShaper Unit and sent to the second Analyzer Unit. The second generator generates the traffic and sends it back to the first analyzer through the EtherShaper Unit. The



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Ethernet traffic can be modified on both directions. The EtherShaper Unit and the measuring units must be placed in the same broadcast domain!

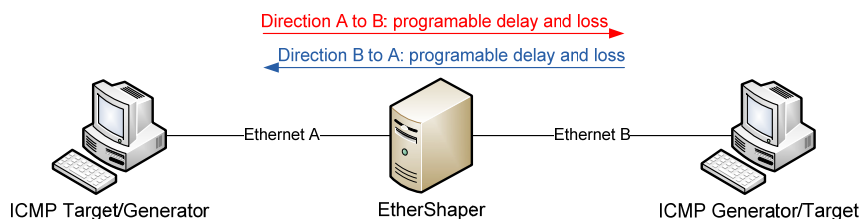


Figure 15 - Cooperation with ICMP's measure devices

Figure 15 shows the EtherShaper Unit connected between two computers placed anywhere in a broadcast domain. Required information like frame loss or delay are determined through the ICMP protocol. The ICMP's traffic can be modified on both directions. The EtherShaper Unit and the measuring units must be placed in the same broadcast domain!

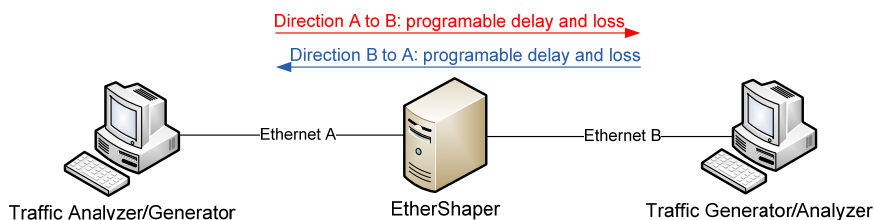


Figure 16 - Cooperation with traffic's measure devices

The Figure 16 relates the same as Figure 14 side of the Ethernet Frames Generator/Analyzer Units which use a software implementation of unit run on common personal computers.



Application Examples

This section describes most common applications of the EtherShaper Ethernet Shaper. The EtherShaper Unit can be utilized in networks that are compatible with Ethernet standards. Placing the EtherShaper Unit into the same broadcast domain (as the devices whose traffic is shaped) is necessary condition for a good function. The Figure 17 and Figure 18 (see below) illustrate an integration of the EtherShaper Unit within a common wired and wireless networks based on the Ethernet.

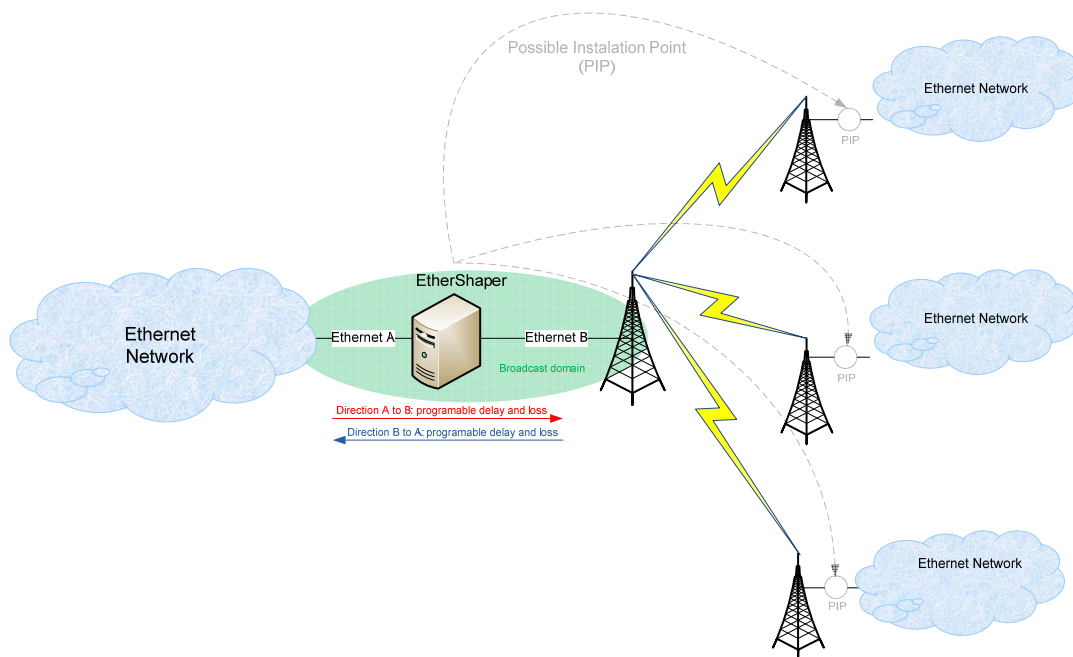


Figure 17 - Typical application in wireless networks

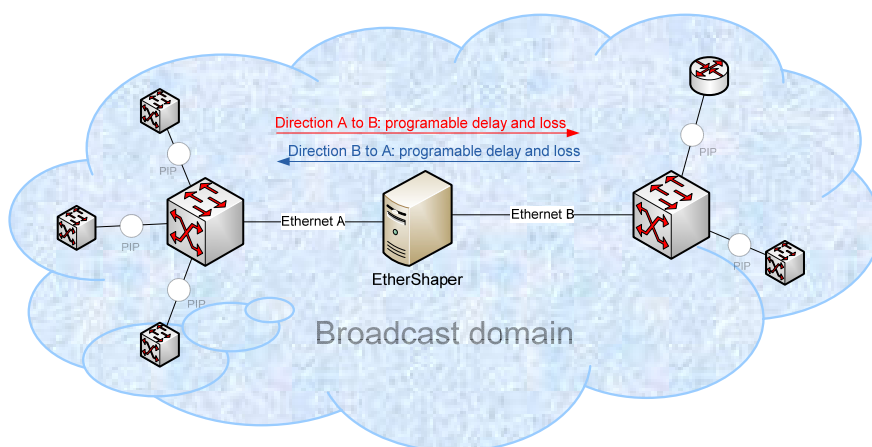


Figure 18 – Typical application in wired networks

Points marked as POP figure out the points which are capable to be installed as EtherShaper Unit.



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