Version 2.7

Traffic Generator for IP Networks (IPv4 & IPv6)
FTTx, LAN, MAN, WAN, WLAN, WWAN, Mobile, Satellite, PLC, etc.

Designed for Windows x64 platforms and 10Gbps Ethernet

Read Me First

Summary

PART 0   Overview

0.1 LanTraffic V2 Enhanced Key Features

The **LanTraffic V2 Enhanced** software generates traffic for IP networks by using the following protocols: TCP (Transmission Control Protocol), UDP (User Datagram Protocol), ICMP (Internet Control Message Protocol).

LanTraffic V2 Enhanced is supported on Windows 64-bit platforms: Windows Vista, Windows Server 2003, Seven or Server 2008. It needs at least one Ethernet connection (LAN or WLAN card i.e. NIC, remote access…).
The minimum screen resolution is 1024 x 768 and the DPI setting should be "Normal size (96 DPI)".
LanTraffic V2 Enhanced requires Acrobat Reader to display the software's Help file.
The add-on software called **Automation Tool for LanTraffic V2 Enhanced** allows automating operations with **LanTraffic V2 Enhanced**. For instance, you can run test campaigns automatically.

Various testing configurations can be implemented using more than two PCs. **LanTraffic V2 Enhanced** creates TCP or UDP (Unicast, Multicast or Broadcast) connections between PCs through the IP network. **LanTraffic V2 Enhanced** creates also ICMP connections.
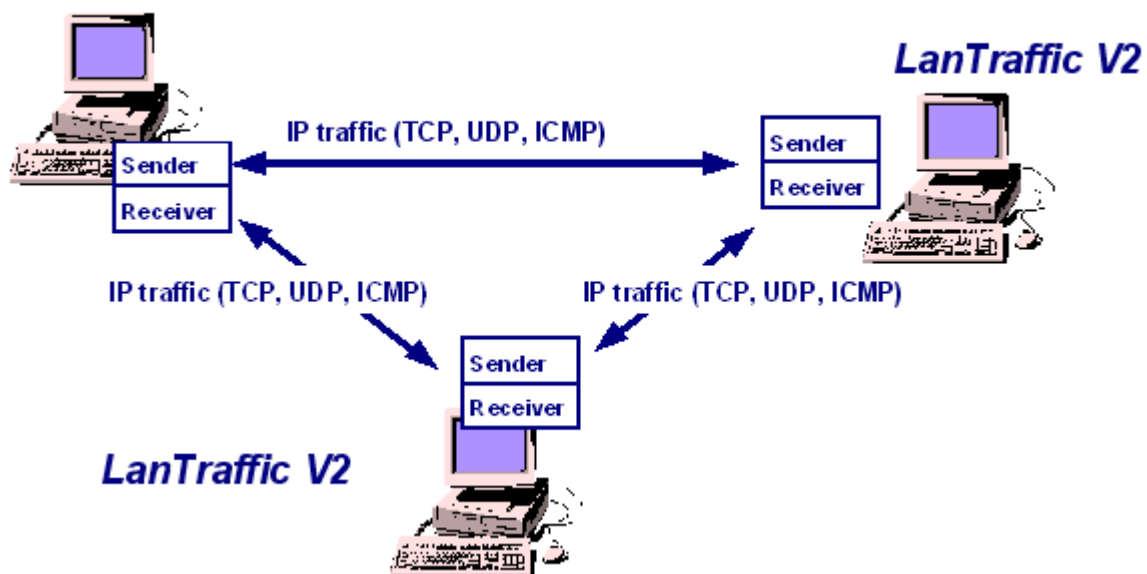
The **LanTraffic V2 Enhanced** testing tool is made of a **Sender** part and a **Receiver** part.
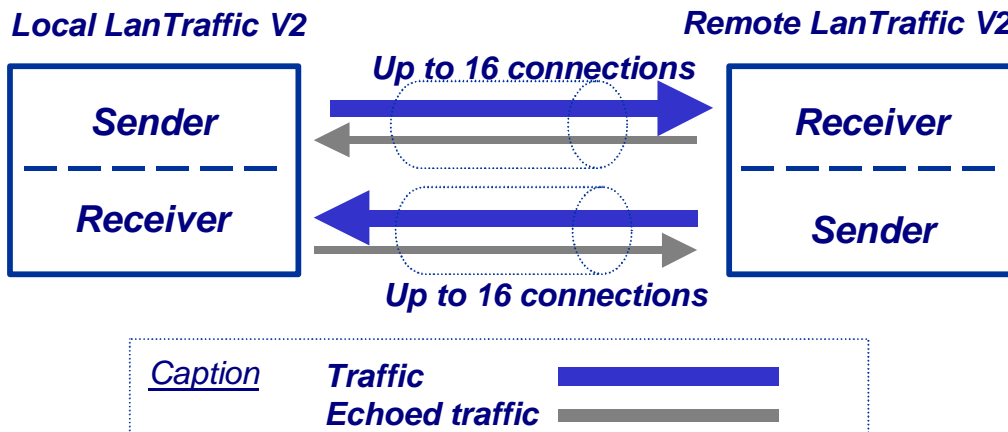
❑   The **Sender** generates up to 16 simultaneous UDP (Unicast, Multicast or Broadcast) and/or TCP connections and/or ICMP connections. The connections can be established in two different testing modes:

> ***Unitary Mode:*** you can select the traffic generator data source and configure packets size and inter packet delay for each connection. With the ICMP protocol you can:
>
>   ⇨   ICMP Echo request packet number and content: packet generator (fixed, randomized, alternated and increasing / decreasing).
>
>   ⇨   ICMP Echo Request data size: fixed, randomized, alternated and increasing / decreasing.
>
>   ⇨   ICMP Echo Reply receiving timeout: fixed, randomized, alternated, increasing / decreasing or use of a mathematical law.
>
> **LanTraffic V2 Enhanced** offers three different data sources:
>
>   •   Automatic data generator by using mathematical laws,
>
>   •   Packets generator: many parameters can be defined (number of packets to send, inter packet delay, packet contents, …)
>
>   •   File: selection of a file to send.

⇨   ***Automatic Mode***: select one mathematical law for connections generating (up to 16 connections) and starting time, and then select a second mathematical law for data volume to be sent. This mode is available with UDP and TCP only. With this mode, ICMP connections can not be started.

⇨   **Statistics**: for each connection the following statistics parameters are displayed by the **Sender** and can be saved in a file:

>   •   Sent throughput[1]
>
>   •   Received throughput[1]
>
>   •   Sent packet throughput[1]
>
>   •   Received packet throughput[1]
>
>   •   Sent data volume[1]
>
>   •   Received data volume (volume of data sent by the remote) [1]
>
>   •   Sent packets

- Received packets (packets sent by the remote)
- Data volume to send[1]
- Remaining volume (of data to send) [1]
- Sequence numbering errors
- RTT Mean (Round Trip Time)
- Jitter[1]

[1] These statistics are not available with ICMP protocol.

❑ The **Receiver** receives traffic (up to 16 simultaneous connections) and operates five different working modes: Absorber, Absorber File, Generator, Echoer and Echoer File.

. Each Receiver connection can be set up according to one of the following five modes:

Local Sender →── Connection # n ──→ *Remote Receiver (Absorber mode)*

Local Sender →── Connection # m ──→ *Remote Receiver (Absorber File mode)*

Local Sender ←── Connection # p ──→ *Remote Receiver (Generator mode*)*

Local Sender ←── Connection # q ──→ *Remote Receiver (Echoer mode*)*

Local Sender ←── Connection # r ──→ *Remote Receiver (Echoer File mode*)*

*Those modes are not available with SCTP
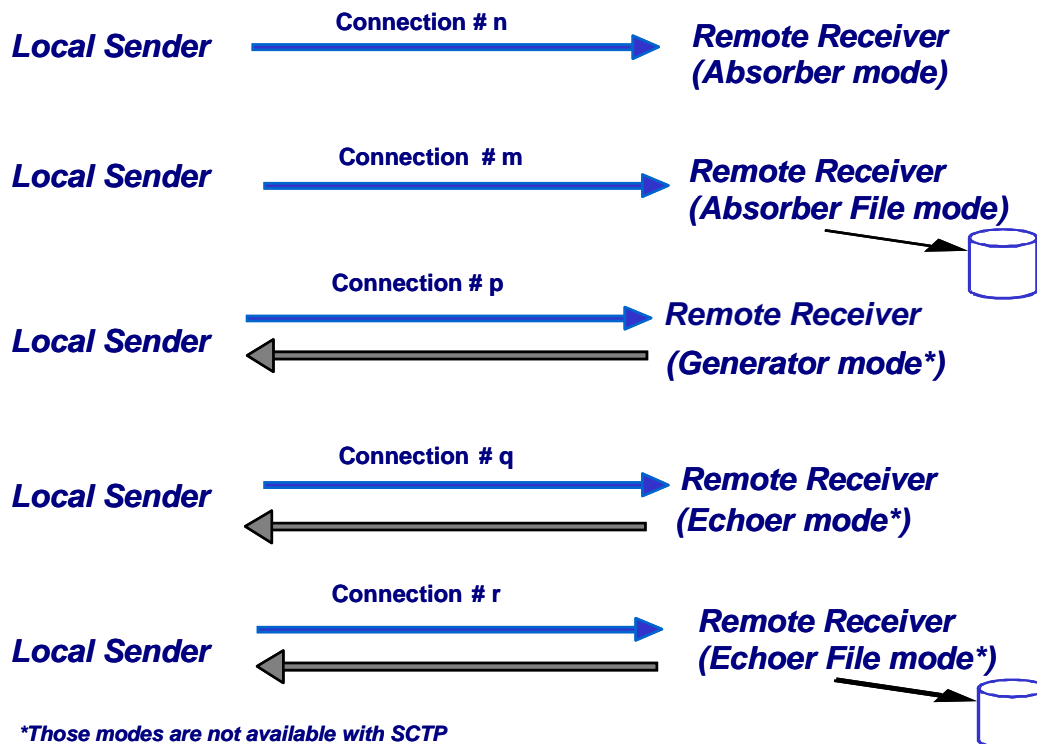
Note: *We consider that the local machine is used for sending traffic and the remote one is used for receiving traffic.*

⇨ **Statistics**: for each connection the following statistics parameters are displayed by the **Receiver** part and can be saved in a file:

- Sent throughput
- Received throughput
- Sent packet throughput
- Received packet throughput
- Sent data volume
- Received data volume (volume of data sent by the remote)
- Sent packets
- Received packets (packets sent by the remote)
- Data volume to send
- Remaining volume (of data to send)
- Sequence numbering errors
- Data not echoed
- Jitter

Multicast feature

LanTraffic V2 Enhanced is able to generate and receive Multicast IP traffic (IPv4 and IPv6). The multicast feature is used for the UDP protocol only.

- **Multicast & IPV4**: IPv4 addresses from 224.0.0.0 to 239.255.255.255 are MULTICAST IP addresses. These addresses can be used to generate multicast IP traffic (define the multicast IP address in the Sender part) or to receive multicast IP traffic (define the multicast IP address in the Receiver part).

- **Multicast & IPv6**: IPv6 multicast addresses are defined in "IP Version 6 Addressing Architecture" [RFC2373].
  This defines fixed and variable scope multicast addresses. IPv6 multicast addresses are distinguished from unicast addresses by the value of the high-order octet of the addresses: a value of 0xFF (binary 11111111) identifies an address as a multicast address; any other value identifies an address as a unicast address (FE80::/10 are Link local addresses, FEC0::/10 are Site Local addresses where FF00::/8 are Multicast addresses).
  Multicast addresses from FF01:: through FF0F:: are reserved.
  The complete list of Reserved IPv6 multicast addresses can be found in "IPv6 Multicast Address Assignments" [RFC 2375].
  The ICMPv6 messages are used to convey IPv6 Multicast addresses resolution.

Broadcast feature (available with IPv4 only)

LanTraffic V2 Enhanced is able to generate and receive Broadcast IP traffic (IPv4 only). The broadcast feature is used for the UDP protocol only.

- **Broadcast & IPV4**: IPv4 addresses as 255.255.255.255 or 192.168.0.255 are BROADCAST IP addresses. These addresses can be used to generate broadcast IP traffic (define the broadcast IP address in the Sender part). To receive broadcast IP traffic, specify the unicast IP address of the Sender in the Receiver part.

- **Broadcast & IPv6:** broadcast does not apply to IPv6.

IP version selection

LanTraffic V2 Enhanced supports IPv6. To use it, please check IPv6 stack is selected on the network interface you want to use.

*LanTraffic V2 Enhanced supports the IPv6 numerical address format (128 bits long) as well as canonical addresses. The IPv6 multicast is available with **LanTraffic V2 Enhanced** in accordance to RFC 2373 where a multicast IPv6 address starts with FF.*

On Ethernet, the maximum size of the IPv6 packet to avoid fragmentation is **1440** bytes whereas it is 1460 bytes in TCP with IPv4.

Interface selection

The interface selection of a LAN card (NIC), a virtual NIC such as an IP tunneling protocol or a remote access is useful to control the data traffic hardware route. **LanTraffic V2 Enhanced** is able to generate and receive Unicast and Multicast IP traffic on a selected interface, giving the user a deeper control where data are exchanged and makes multiple routes definition easier.

Statistics values

Statistics values presented by **LanTraffic V2 Enhanced** are calculated at the Application level. They don't include the protocol header, the IP header nor data link header and/or trailer.

0.2 The Automation Tool for LanTraffic V2 Enhanced

The add-on software **Automation Tool for LanTraffic V2 Enhanced** allows you to edit scenarios, to carry out scenarios, to set the **LanTraffic V2 Enhanced** parameters and to pilot **LanTraffic V2 Enhanced** automatically on the same PC.
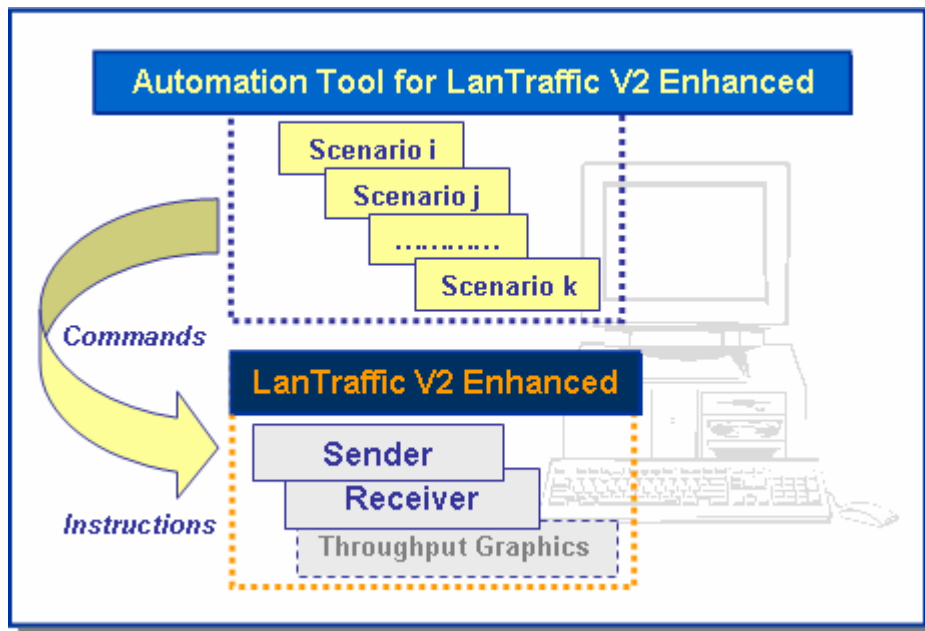
A scenario is a succession of commands and instructions.

A command is used to set parameters and/or activate a function of **LanTraffic V2 Enhanced**.
For example the *Set and Start connection(s)* command helps to set parameters for IP connections and to start the traffic on these connections. With such command you specify the IP address, port number, protocol, packet size, inter packet delay, duration, etc. and you start the traffic generation for these connections.

An instruction is used by the Automation Tool to create an internal process. For example, the *Wait Date/Time* instruction suspends the scenario execution up to the specified date and time before to continue.

By using the **Automation Tool for LanTraffic V2 Enhanced** you can:

- Set automatically the parameters of the **LanTraffic V2 Enhanced** software,
- Start and stop IP connections based on timers,
- Execute the scheduled operations in accordance with your own timing,
- Make repetitive tests operations automatically,
- Simplify the tests reproduction,
- And more…

PART 1   Install LanTraffic V2 Enhanced

LanTraffic V2 Enhanced requires less than 15 MB of free disk-space. The default settings folder is C:\Program files\LanTraffic V2 Enhanced. The "**Automation Tool for LanTraffic V2 Enhanced**" add-on software is automatically installed with **LanTraffic V2 Enhanced**.

** To run **LanTraffic V2 Enhanced** your computer screen resolution must be at least 1024 X 768 and the DPI setting should be set up with the "Normal size (96 DPI)" value.*

** To install **LanTraffic V2 Enhanced** you must log on with the administrator rights.*

*We recommend that you shutdown first your anti-virus application before installing **LanTraffic V2 Enhanced**. Please note that you should mask the task bar in a 1024x768 screen resolution, so you get an optimal view of the software interface.*

1.1 How to install the software downloaded from the Internet

*To install **LanTraffic V2 Enhanced,** you must log on with the administrator rights.*

If you have downloaded **LanTraffic V2 Enhanced** trial version from our website, you have downloaded the "LanTrafficV2Enhanced.zip" file including the software and the related documentation. You must first unzip this file in a temporary directory. Then run Setup_LanTrafficV2_Enhanced.exe from this temporary directory to launch the setup procedure.

1.2 How to install the software from the CD-ROM

The installation procedure is a standard installation program.

*To install **LanTraffic V2 Enhanced,** you must log on with the administrator rights.*

- First, insert the **LanTraffic V2 Enhanced** CD-ROM in your CD-ROM drive.
- Click on "Start", "Execute" and type "CD unit>: \Setup_LanTrafficV2_Enhanced.exe". Follow the **LanTraffic V2 Enhanced** setup instructions to proceed with the installation.

1.3 During the installation

1.3.1 64-bit version required

LanTraffic V2 Enhanced requires a 64-bit version of Windows.

When you start the setup on 32-bit version of your OS, the Setup proposes you to install the **LanTraffic V2 Standard** edition instead of **LanTraffic V2 Enhanced**.
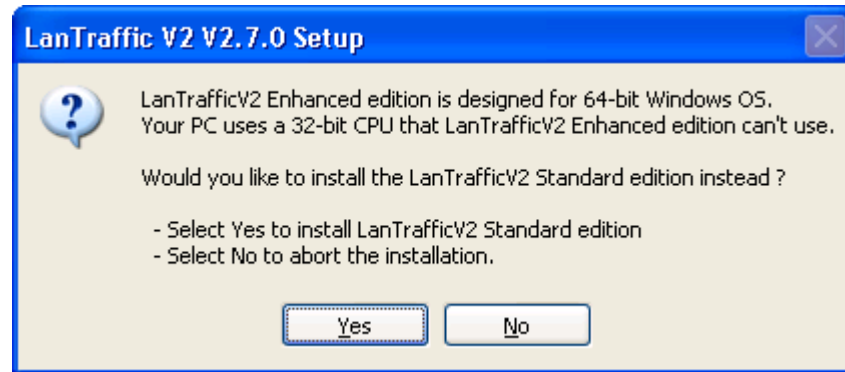
You select **Yes** to install **LanTraffic V2 Standard** or **No** to stop the setup.
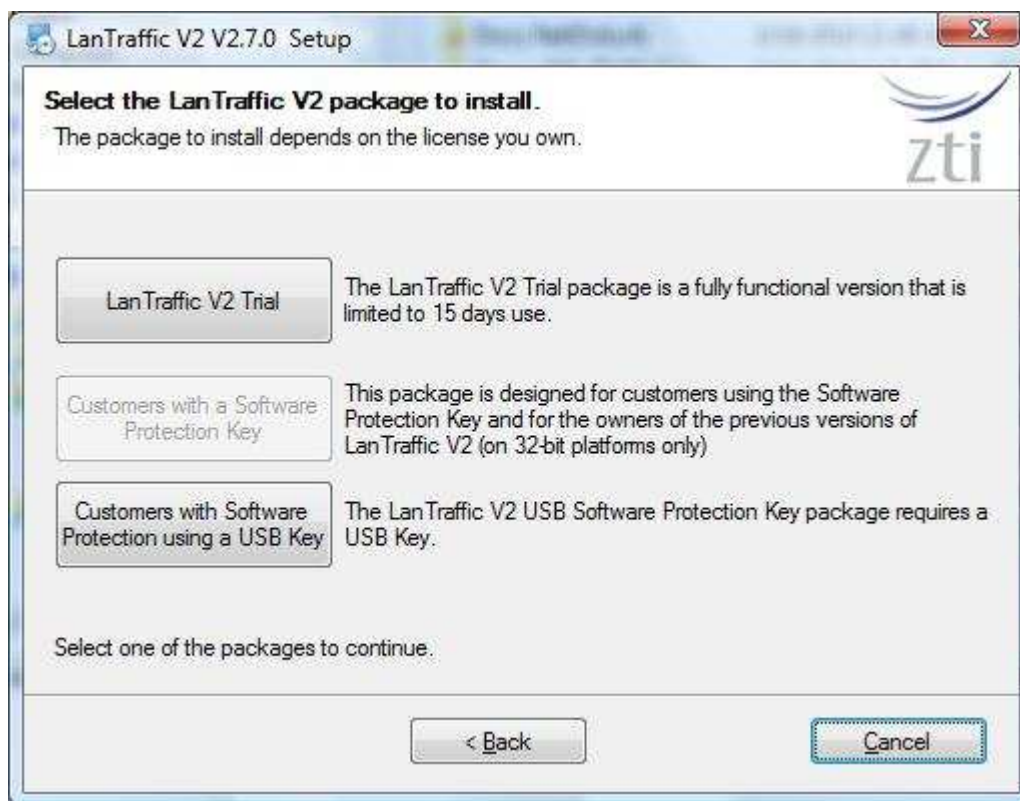
> **To install the LanTraffic V2 Standard edition, please refer to the LanTraffic V2 Standard documentation (Read Me First or User Guide).**
>
> **The next paragraphs refer only to LanTraffic V2 Enhanced**

1.3.2 Choose the LanTraffic V2 Enhanced package to install

Follow the instructions until reaching the **LanTraffic V2 Enhanced** package selection window.

1.3.3 LanTraffic V2 Enhanced packages in a few words

To use the **LanTraffic V2 Enhanced** software, there are 2 license schemes:

- The **LanTraffic V2 Enhanced Trial package** allows you to use **LanTraffic V2 Enhanced** during 15 days after the first run. When the trial period has expired, the license should be purchased.

- For new users, the **LanTraffic V2 Enhanced USB Software Protection Key package** requires a USB key with the **LanTraffic V2 Enhanced** license. The **USB key** is provided with **LanTraffic V2 Enhanced** from version 2.6. This package allows the installation of **LanTraffic V2 Enhanced** on several PCs but the only PC able to run **LanTraffic V2 Enhanced** is the one having the USB key plugged in.

This software is licensed on a per workstation basis. This means that you will need to get a separate license for each machine you will run it on. The license may be a software key (for previous users) or the USB key. Each licensed copy of the software gets a USB Software Protection key that can be moved from one installation to the other.

The USB key contains only the license information. The software is available on a separate CD-ROM.

1.3.4 Which package should I install?

Depending on your needs, please find here below the package most suitable for you.

1.3.4.1   I want to evaluate LanTraffic V2 Enhanced

In that case, choose the *"LanTraffic V2 Enhanced Trial"* package. You will be able to use **LanTraffic V2 Enhanced** during 15 days only.

1.3.4.2   I already use LanTraffic V2 Enhanced …

This paragraph is dedicated to the users owning a previous version of **LanTraffic V2 Enhanced.**

1.3.4.2.1 … and I want to upgrade and keep my permanent license (installed with a previous 32-bit version)

In that case, please contact the ZTI Customer sales or your reseller to upgrade from the *"Customers with a Software Protection Key"* package to the *"Customers with Software Protection using a USB Key"* package.

1.3.4.2.2 … and I want to upgrade and use the USB Software Protection Key I bought

In that case, choose the package *"Customers with Software Protection using a USB Key"*. Plug the USB Software Protection Key before launching **LanTraffic V2 Enhanced.**

1.3.4.3   I just bought LanTraffic V2 Enhanced …

This paragraph is related to the users purchasing **LanTraffic V2 Enhanced version 2.7.**

1.3.4.3.1 … and I received the CDROM & USB Software Protection Key

In that case, choose the package *"Customers with Software Protection using a USB Key"*. Plug the USB Software Protection Key before running **LanTraffic V2 Enhanced.**

1.3.4.3.2 … and I will receive the CDROM & USB Software Protection Key in a few days.

In that case, choose the package *"LanTraffic V2 Enhanced Trial"*. You will get a fully functional but time-limited **LanTraffic V2 Enhanced**.

1.4 What has been installed on my computer?

The default settings install **LanTraffic V2 Enhanced** in the following directory: C:\Program Files\LanTraffic V2 Enhanced.

The **LanTraffic V2 Enhanced** installation procedure installs the main following files on your hard disk:

- LanTrafficV2.exe: program file
- LanTraffic V2 Enhanced User Guide: PDF file.
- Read Me First: PDF file
- Aut_LTV2.exe: program file (Automation tool)
- Automation Tool for LanTraffic V2 Enhanced User Guide: PDF file
- Automation scenario samples and other files required by the software
- Viewer.exe: program file installed with the USB Software Protection package
- ElevateLanTrafficV2.exe: allows running **LanTraffic V2 Enhanced** as Administrator
- Version.txt: text file containing information about the versions.

Start Menu shortcuts created:

Start > Programs > **LanTraffic V2 Enhanced**

⇨ **Automation Tool for LanTrafficV2 Enhanced** (click to run the software)

⇨ **Automation Tool for LanTrafficV2 Enhanced** User Guide (PDF file)

⇨ **LanTraffic V2 Enhanced** (click to run the software)

⇨ **LanTraffic V2 Enhanced** User Guide (PDF file)

⇨ Read Me First (PDF file)

⚠️ *If the RPC mechanism is disabled, a message will ask automatically for the system reboot at the end of the installation. This is mandatory to allow the dialog between the Automation Tool and* **LanTraffic V2 Enhanced***.*

1.5 How to reinstall another package?

If you already have installed one of the **LanTraffic V2 Enhanced** V2.7 packages, click Setup_LanTrafficV2_Enhanced.exe and select, in the window below, the new package you want to install.

⚠️ *Don't forget that the "Customer with a Software Protection Key" package is available with the 32-bit version of the software only.*

1.6 How to transfer the software to another computer?

Install the software on the target computer. You don't need to do any particular operation with the *"Customers with Software Protection using a USB Key"* and *"LanTraffic V2 Enhanced Trial"* packages.

With **LanTraffic V2 Enhanced** & USB Software Protection Key, you do need to plug the USB key before running the software on the target computer.

PART 2   How to handle your license

2.1 LanTraffic V2 Enhanced Trial

You don't require any license to install the **LanTraffic V2 Enhanced Trial package**. After the first run of **LanTraffic V2 Enhanced,** the **LanTraffic V2 Enhanced Trial package** can be used during 15 days.

2.1.1 LanTraffic V2 Enhanced License Information window

When you run **LanTraffic V2 Enhanced,** the information about your trial license is displayed, as shown below.
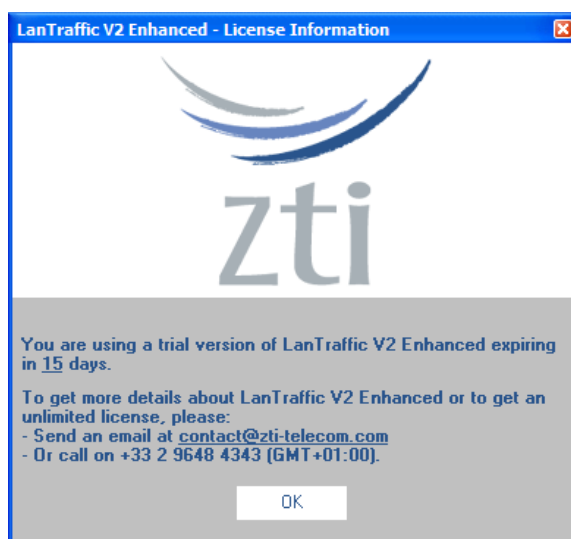
You are now able to use **LanTraffic V2 Enhanced** during the next 15 days.

2.1.2 End of the fifteen-day trial period

Once the trial period is finished, you are not allowed to use **LanTraffic V2 Enhanced** anymore, as shown below:

When you press the **OK** button, **LanTraffic V2 Enhanced** will stop running. To continue to use **LanTraffic V2 Enhanced please contact you local distributor or ZTI** to get a license.

2.2 LanTraffic V2 Enhanced & USB Software Protection Key

The USB Software Protection Key is the most flexible way to transfer your license to any other PC. Plug it in the computer you want to use **LanTraffic V2 Enhanced** on.

If you are a user of a previous version of **LanTraffic V2 Enhanced** (version 2.5 and under) change for more flexibility to a **USB Software Protection Key** by contacting the Sales Offices (sales@zti-telecom.com) and get some information about how to exchange your Site Key to a **USB Software Protection key**.

PART 3   Uninstall LanTraffic V2 Enhanced

The uninstall procedure is a standard uninstall program. To uninstall **LanTraffic V2 Enhanced** select "Uninstall LanTraffic V2 Enhanced" in the "Start > Programs > LanTraffic V2 Enhanced" menu.

PART 4   LanTraffic V2 Enhanced Getting Started

*Anti-virus or firewall applications may disrupt **LanTraffic V2 Enhanced** when sending or receiving data. Please set up your security software before using **LanTraffic V2 Enhanced** (see PART 5 and PART 6).*

New users can use this help as an introduction to **LanTraffic V2 Enhanced** and generate or receive TCP and UDP data with the IPv4 protocol in a few clicks. Just after launching **LanTraffic V2 Enhanced**, the Getting Started Window is displayed:
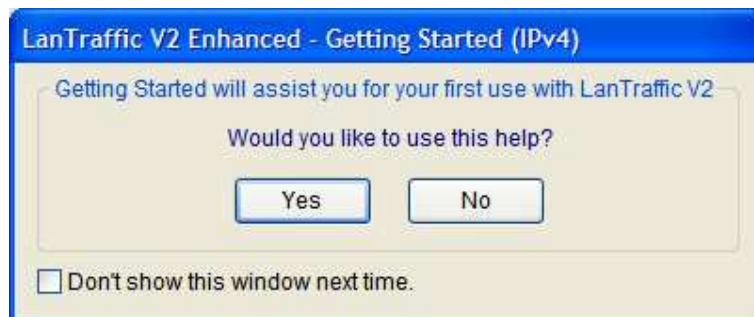
Press **No** if you don't want to use this help.
Press **Yes**, the next window will ask you if you want to use 1 or 2 PCs:
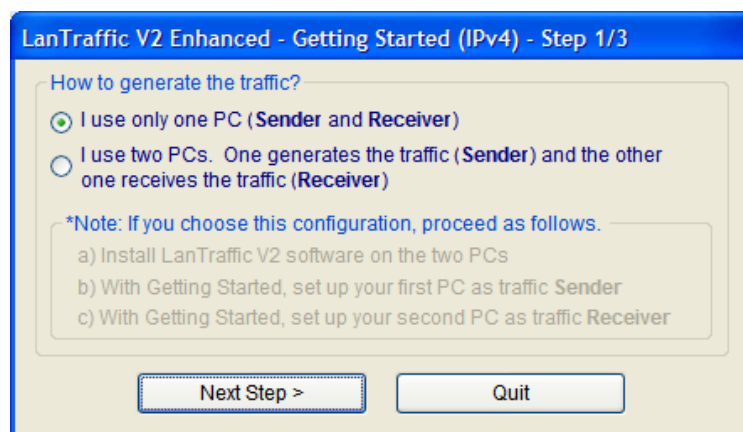
Depending on your choice to use 1 or 2 PCs, the plan below shows the steps:
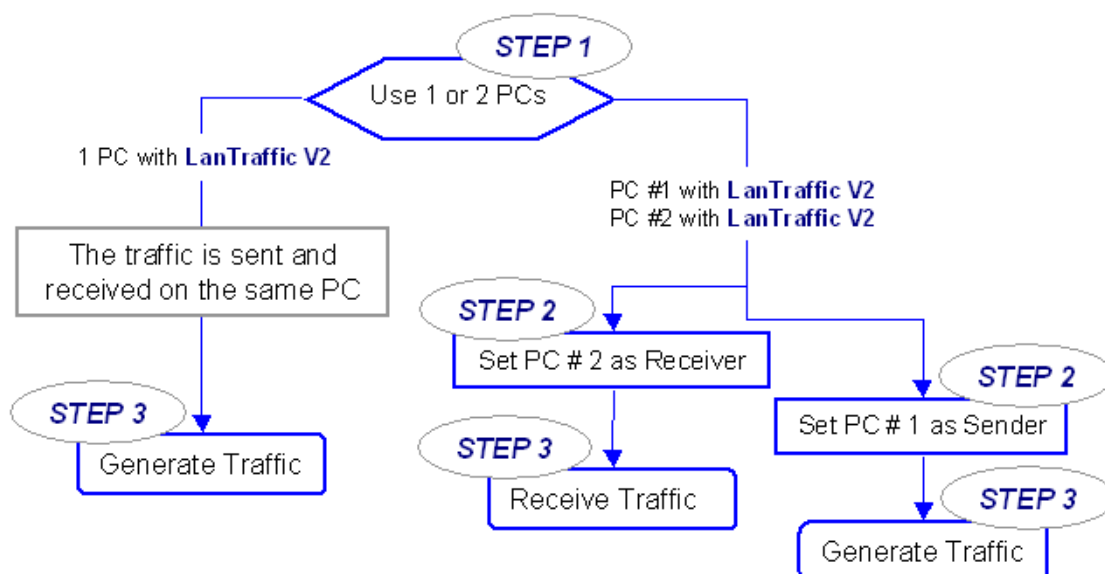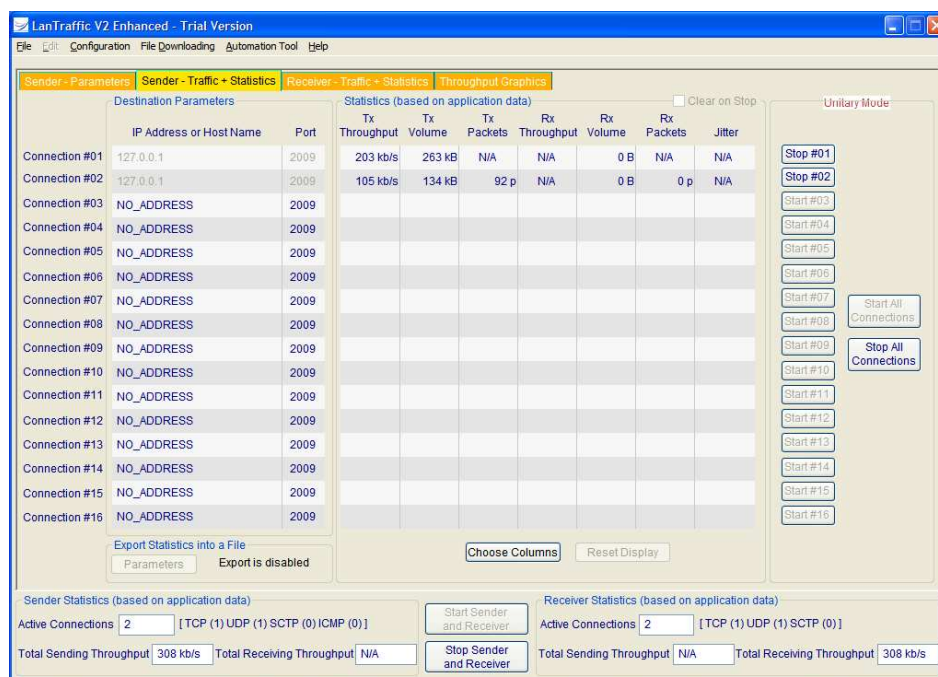
For the use of 1 PC
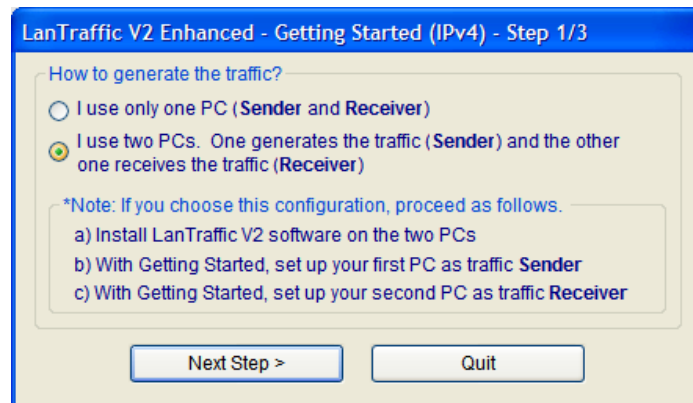
The following window is displayed.
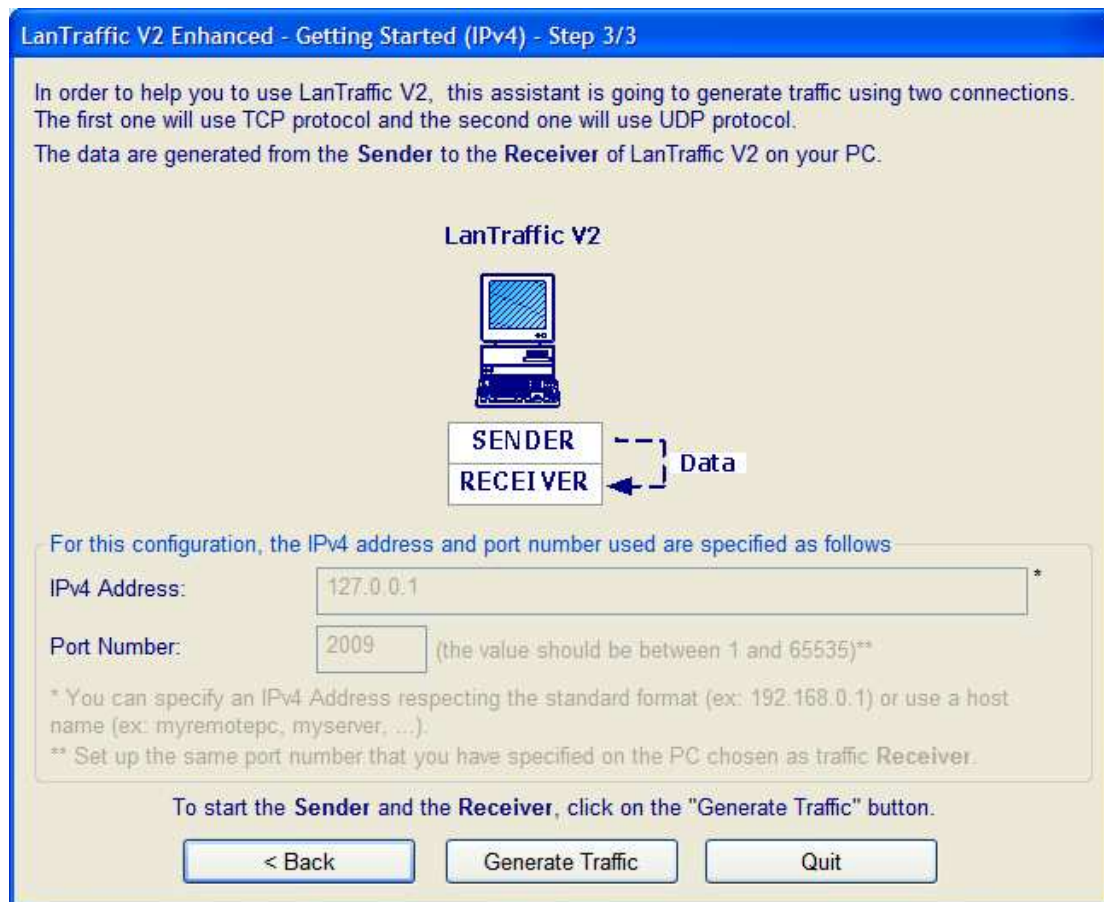
Then press the "Generate traffic" button to continue. The "Sender – Traffic + Statistics" tab of LanTraffic V2 Enhanced will display the two first active connections as shown on the following window:
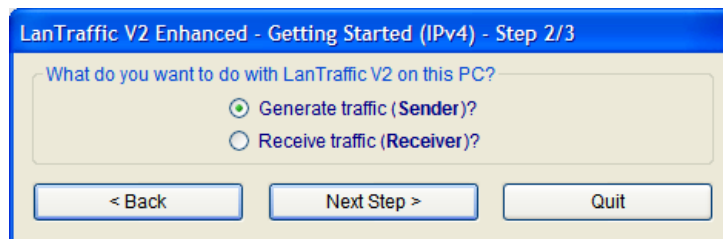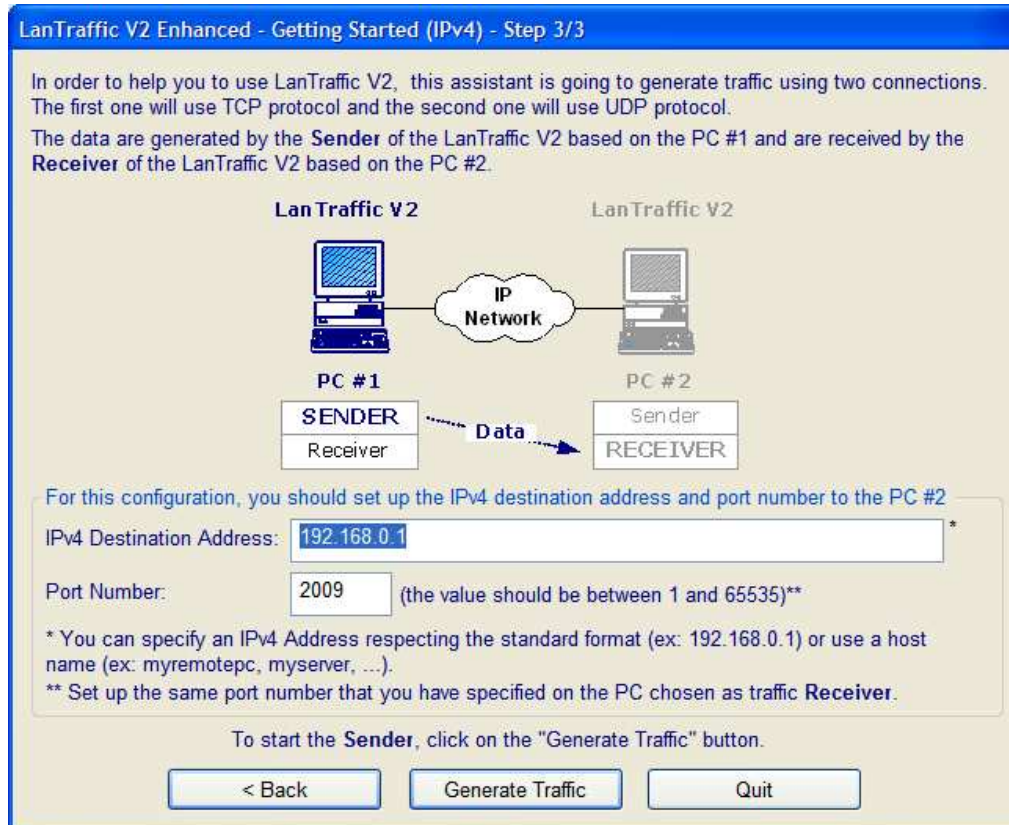
For the use of 2 PCs

If you select the option: **I use two PCs**, read the following instructions. **LanTraffic V2 Enhanced** must be installed on the two PCs.

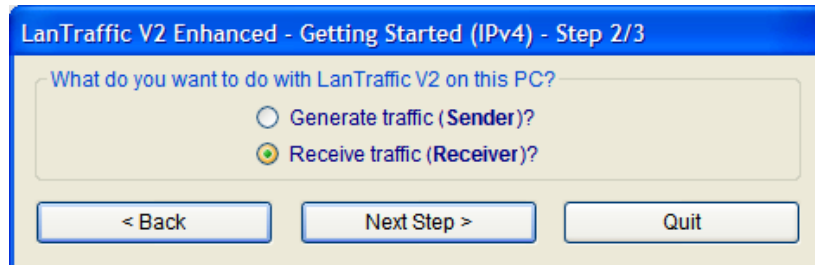Press "Next Step >" to continue.

Then choose if you want to generate or receive the traffic on this PC. If you select "Generate traffic" the following window will appear:
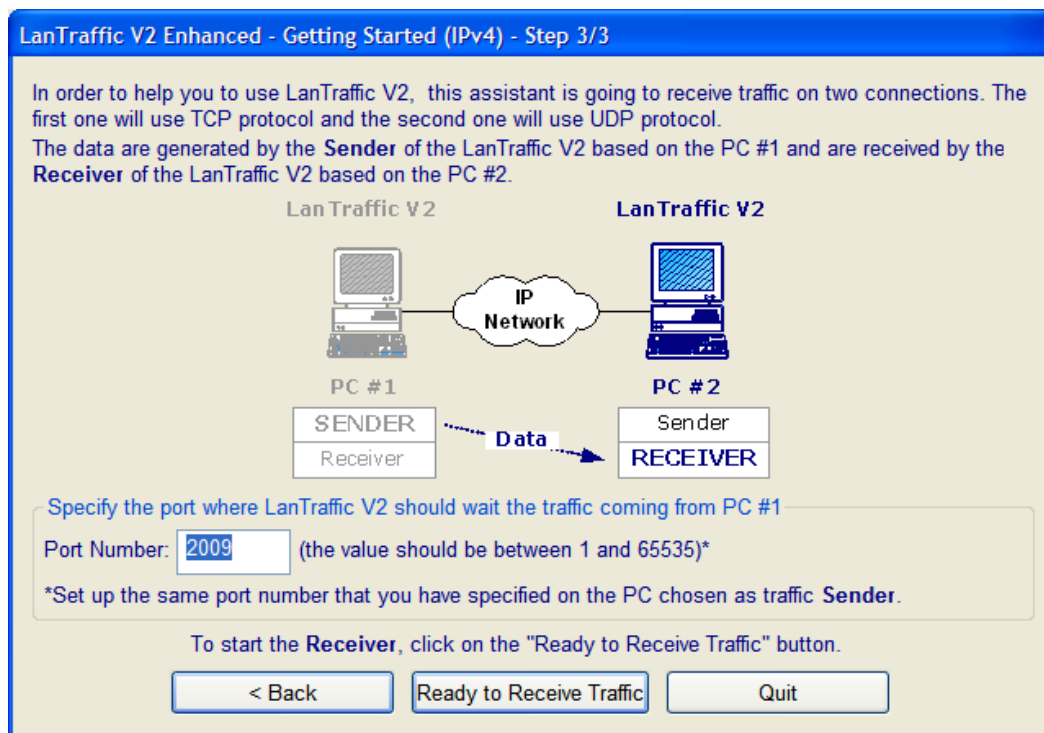

Define the IPv4 address and port number to use. Then press the "Generate traffic" button and a warning dialog is displayed:
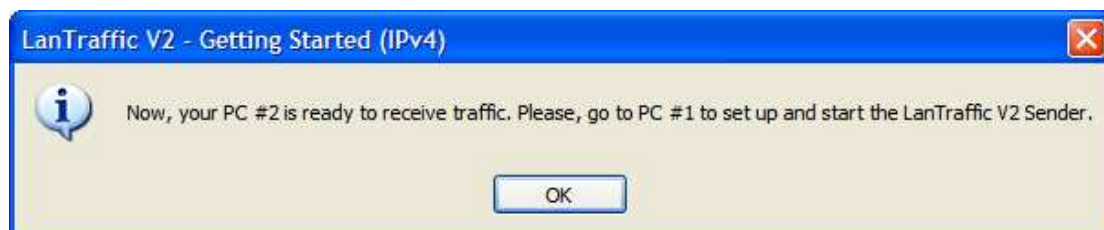
Before generating traffic towards PC # 2, the PC # 2 must be configured as Receiver.

Press "Next Step >" to continue on PC # 2.

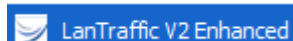After pressing the "Ready to Receive Traffic" button, a warning message will appear:

Press "OK" and the "Receiver – Traffic + Statistics" tab of **LanTraffic V2 Enhanced** is displayed on PC # 2.
Then go to PC # 1 and start the **LanTraffic V2 Enhanced** Sender. The "Sender – Traffic + Statistics" tab of **LanTraffic V2 Enhanced** displays now the two first active connections. You have now 2 connections generating traffic from PC #1 to PC # 2.

PART 5 Run LanTraffic V2 Enhanced

Use the Windows start menu:

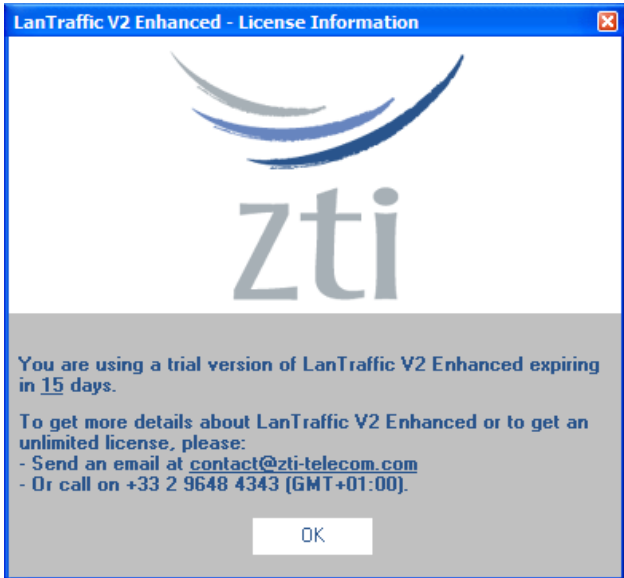Start ► All Programs ► LanTraffic V2 Enhanced ►   [LanTraffic V2 Enhanced]   Click here.

⚠️ *Under Windows Vista, you must have the administrator rights to be able to use the DSCP field. To launch LanTraffic V2 Enhanced with the administrator rights, right-click on the LanTraffic V2 Enhanced shortcut and choose "Run as administrator".*

After a few seconds and depending on your license, you will get one of the following license windows:

15 days trial version	*USB Software Protection Key version*
	If you use a USB Software Protection Key, there is no window!

The Windows Firewall window below may appear. This window allows configuring the Windows Firewall settings for **LanTraffic V2 Enhanced**. Click on the "Unblock" button to add **LanTraffic V2 Enhanced** into the authorized programs list.
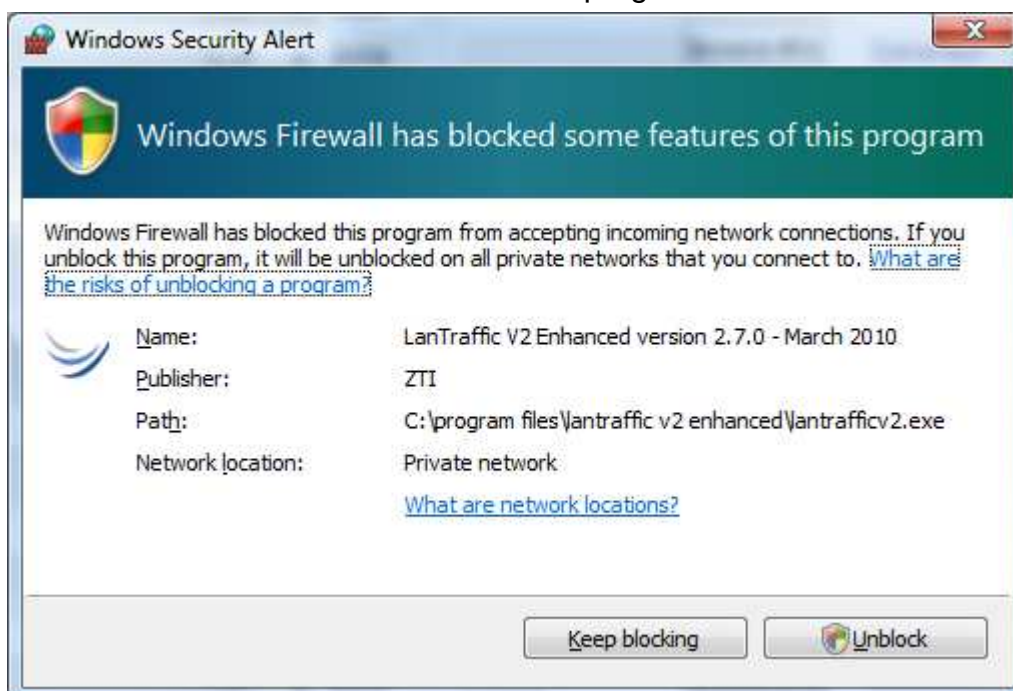
PART 6   LanTraffic V2 Enhanced and Windows Firewall

🔍 *Anti-virus or firewall applications may disrupt **LanTraffic V2 Enhanced** from sending or receiving data. Please set up your security software before using **LanTraffic V2 Enhanced**.*

🔍 *Windows Firewall may also disrupt the **LanTraffic V2 Enhanced** performances. To get best performances, you should disable Windows Firewall.*

Some anti-virus configurations can stop **LanTraffic V2 Enhanced** working because of their security settings. For commercial anti-virus, please refer to the related documentation to authorize **LanTraffic V2 Enhanced** to work.

6.1 How to authorize TCP and UDP connections with Windows Firewall

Windows Firewall blocks incoming network connections except for the authorized programs. To allow **LanTraffic V2 Enhanced** receiving incoming TCP or UDP connections, you must add it in the exceptions list of Windows Firewall by proceeding as follows:

Step1: Open a command prompt window. You should be logged on an account giving the administrator rights to be able to modify the firewall configuration.

Step 2: type the command line below and press "Enter".
> *%> netsh firewall add allowedprogram program="C:\Program Files\LanTraffic V2 Enhanced\LanTrafficV2.exe" name="LanTraffic V2 Enhanced" mode=ENABLE scope=ALL profile=ALL*

Make sure that "C:\Program Files\LanTraffic V2 Enhanced\" is the installation directory of LanTraffic V2 Enhanced. A message of confirmation is returned by *netsh* if the command is succeeded. If the path you have specified is invalid, *netsh* returns an error message close to the following message: *The system cannot find the file specified.* In that case, please renew Step 2.
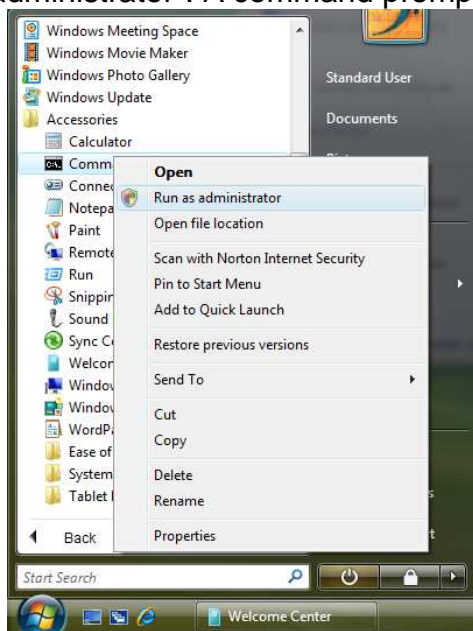
🔍 *Unlike under Windows Vista, the firewall allows the incoming echo replies. You don't need to add a rule to be able to receive ICMPv4/ICMPv6 "echo reply" messages.*

6.2 How to authorize UDP and TCP connections with Windows Vista

The Windows Firewall blocks incoming and outgoing network connections except for the authorized programs. By default, all outgoing connections are allowed. But to authorize **LanTraffic V2 Enhanced** receiving incoming connections, you must add it in the exceptions list of Windows Firewall by proceeding as follows:

Step1: Open a command prompt window with the administrator rights. The administrator rights are mandatory to set up the firewall configuration. Open the "All Programs / Accessories" folder and right-click on the "Command Prompt" icon as shown on the figure below and choose "Run as administrator". A command prompt window is opened.

Step 2: type the command line below and press "Enter".

> %> netsh firewall add allowedprogram program="C:\Program Files\LanTraffic V2 Enhanced\LanTrafficV2.exe" name="LanTraffic V2 Enhanced" mode=ENABLE scope=ALL profile=ALL

Make sure that "C:\Program Files\LanTraffic V2 Enhanced\" is the installation directory of LanTraffic V2 Enhanced. A message of confirmation is returned by *netsh* if the command is succeeded. If the path you have specified is invalid, *netsh* returns an error message close to the following message: *The system cannot find the file specified.* In that case, please renew Step 2.

> *The firewall blocks the incoming echo replies. You must add a rule to be able to receive ICMPv4/ICMPv6 "echo reply" messages. Please refer to the paragraphs here after.*

6.3 How to authorize ICMPv4 and ICMPv6 traffic with Windows Firewall

Windows Firewall blocks incoming ICMPv4 and ICMPv6 "echo reply" messages. To be able to receive these messages, you must add two new rules by proceeding as follows:

Step1: Open a command prompt window with the administrator rights. The administrator rights are mandatory to do the firewall configuration. Open the "All Programs / Accessories" folder and right-click on the "Command Prompt" icon as shown on the figure below and choose "Run as administrator". A command prompt window is opened.
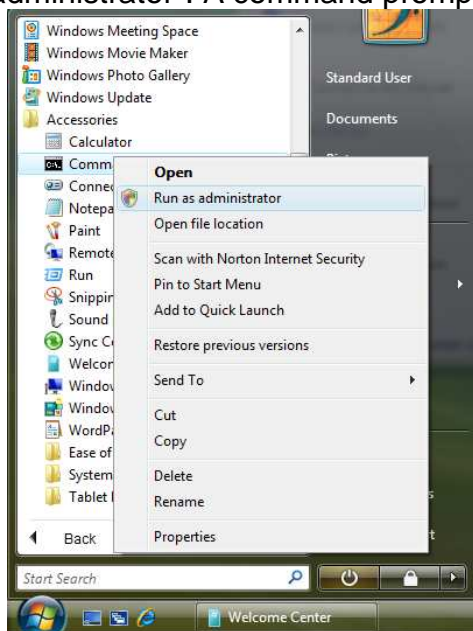
Step 2: To create the rule for ICMPv4 echo reply messages, type the command line below and press "Enter".

> *%> netsh advfirewall firewall add rule name="Echo Reply ICMPv4 (used by LanTraffic V2 Enhanced)" dir=in action=allow profile=any localip=any remoteip=any protocol=icmpv4:0,0 interfacetype=any*

A message of confirmation is returned by *netsh* if the command is succeeded.

Step 3: To create the rule for ICMPv6 echo reply messages, type the command line below and press "Enter".

> *%> netsh advfirewall firewall add rule name="Echo Reply ICMPv6 (used by LanTraffic V2 Enhanced)" dir=in action=allow profile=any localip=any remoteip=any protocol=icmpv6:129,0 interfacetype=any*

A message of confirmation is returned by *netsh* if the command is succeeded.