



## "IP Traffic – Test & Measure"

Version 2.4

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

**Read Me First**

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## PART 0 Preface

### 0.1. Organization of this manual

This user guide is aimed at helping you to discover and use **"IP Traffic – Test & Measure"**. This manual is organized as follows:

- **Part 1: Product Overview**

This part briefly describes the key features of the **"IP Traffic – Test & Measure"** and **Automation Tool for "IP Traffic – Test & Measure"**.

- **Part 2: What's new in "IP Traffic – Test & Measure" version 2.4**

This part is a general overview of new features, main improvements provided with **"IP Traffic – Test & Measure"** version 2.4 and important information to upgrade from previous versions.

- **Part 3: Install "IP Traffic – Test & Measure"**

Product requirements and how to install the software downloaded from the Internet or from the CD-ROM.

- **Part 4: Software License Configuration**

Describes how to configure the license and how to proceed for the license transfer

- **Part 5: Uninstall "IP Traffic – Test & Measure"**

How to uninstall the software.

- **Part 6: "IP Traffic – Test & Measure" Getting Started**

New users can use this help as an introduction to **"IP Traffic – Test & Measure"** and generate or receive traffic with the IPv4 protocol in a few clicks.

- **Part 7: Run "IP Traffic – Test & Measure"**

How to run the software and configure the license if needed.

- **Part 8: "IP Traffic – Test & Measure" / Windows Firewall**

How to configure the Windows firewall to authorize the use of **"IP Traffic – Test & Measure"**.

### 0.2. Minimum System Requirements

To appropriately operate **"IP Traffic – Test & Measure"** you need the following minimum system requirements:

- Windows 98 (SE recommended), 2000 (SP 3 or earlier recommended), XP or Server 2003
- Pentium processor with 128 MB memory
- 1024 x 768 display
- 25 MB free hard disk space

### 0.3. References

[WINSOCK2] « Windows Socket 2 - Application Programming Interface » Revision 2.2.0 - May 10, 1996

[IPV6-XP] <http://www.microsoft.com/windowsserver2003/technologies/ipv6/ipv6.msp>

[RFC2460] "Internet Protocol, Version 6 (IPv6) - Specification"

[RFC2373] "IP Version 6 Addressing Architecture"

[RFC1889] "RTP: A Transport Protocol for Real-Time Application" explaining the jitter calculation.

### 0.4. Terms used in this document

**Interface** Generic term used to reference a NIC (LAN adapter), a connected RAS connection (ISDN, ADSL, Modem) or a tunneling path.

**Tooltip** A tooltip is a popup window displayed when you move the mouse over a sensitive area. "IP Traffic – Test & Measure" displays the tooltip during 5 seconds.

**Automation** Automation is an add-on scripting tool used to pilot automatically "IP Traffic – Test & Measure".

### 0.5. Technical Support

ZTI Technical Support can assist you with all your technical problems from installation to troubleshooting.

Before contacting our Technical Support, please read the relevant sections of the product documentation and the "Read Me First" file.

Before contacting our technical support, make sure you record the following information:

- Product name and version.
- Demo version or licensed product.
- System configuration.
- Problem details: settings, error messages...
- If the problem is persistent, give the details of how to create the problem.

You can contact Technical Support by:

Email	Send as many details as possible to <a href="mailto:support@zti-telecom.com">support@zti-telecom.com</a> or <a href="mailto:support@zti.fr">support@zti.fr</a>
Fax	Send as many details as possible to +33 2 9648 1485
Telephone	Telephone support is available from 09:00 am to 06:00 pm (GMT Time +1 or +2), Monday to Friday. Call +33 2 9648 4343

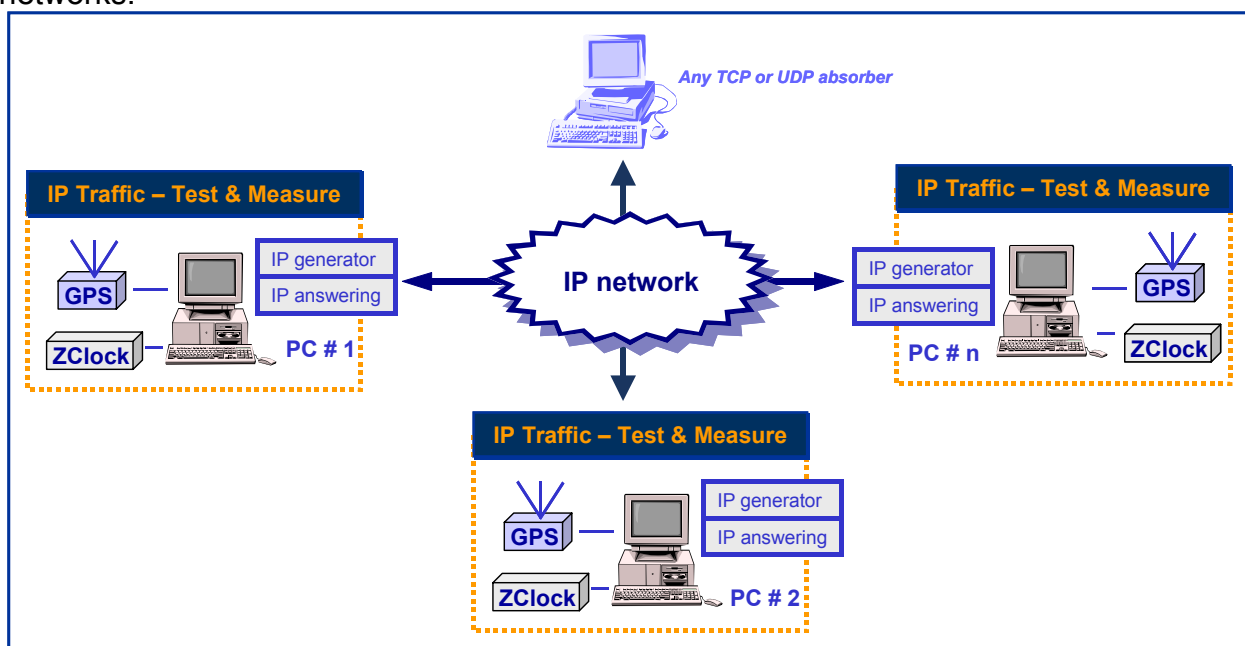
## PART 1 Overview

### 1.1. General Description

"IP Traffic – Test & Measure" is a connection and data generation tool for IP networks. Data flows use TCP (Transmission Control Protocol), UDP (User Datagram Protocol) or ICMP (Internet Control Message Protocol) protocols, which are used by mailing exchanges, file transfers, ping programs and World Wide Web transmissions.

"IP Traffic – Test & Measure" needs at least two PCs running on Windows 98, 2000, XP or Server 2003. The screen resolution must be at least 1024x768.

Various testing configurations can be implemented using more than two PCs. "IP Traffic – Test & Measure" establishes TCP or UDP connections between PCs through IP networks.

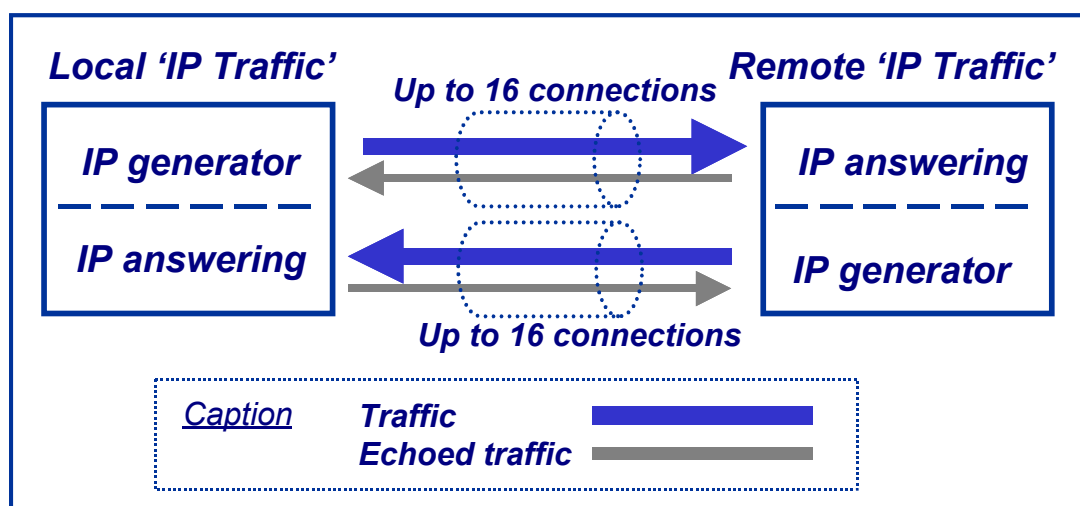


"IP Traffic – Test & Measure" is an IP software testing tool using the Microsoft Windows TCP/IP stack (Winsock2 interface). So, "IP Traffic – Test & Measure" is independent of any transmission or telecom link and can use any transmission link managed by the Windows operating system: LAN (Ethernet, Token-ring, hyperlan...), WLAN, WAN (modem, ISDN, ATM, satellite link...), remote access, mobile or cellular networks.

"IP Traffic – Test & Measure" can be used with two optional external products to have a very precise time reference to realize measurements with a high accuracy: a GPS kit and a very precise clock (ZClock) manufactured by ZTI (see next paragraph for more information).

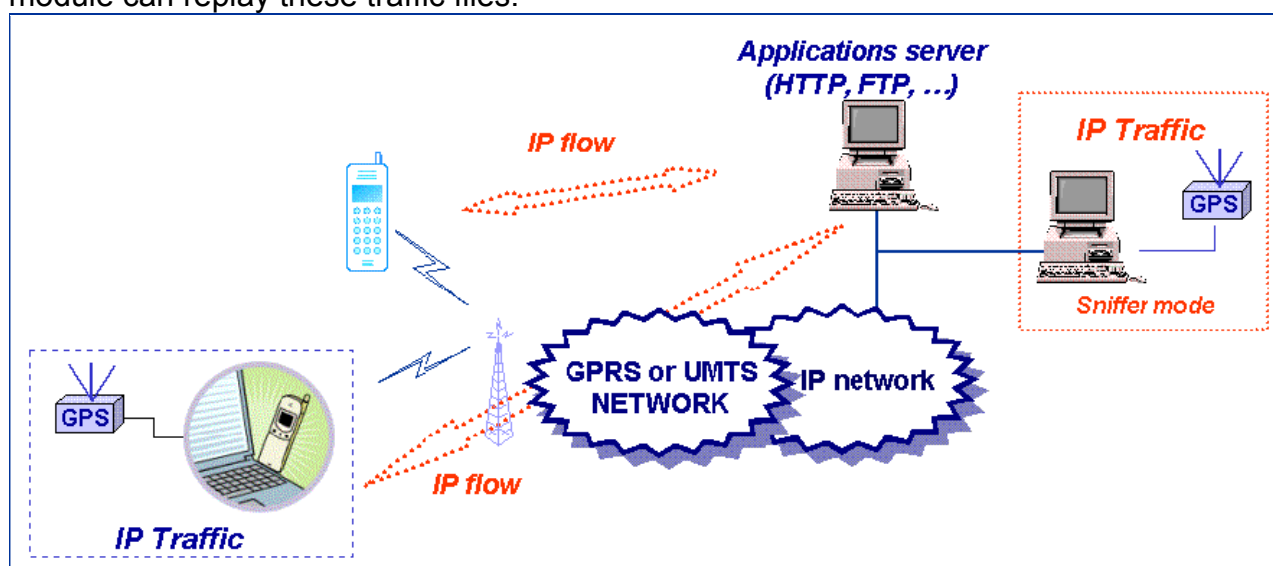
"IP Traffic – Test & Measure" is composed of four modules: 'IP Generator', 'IP Answering', 'Traffic Sniffer' and 'Traffic Observer'.

- **Module 1: 'IP Generator'** to generate IP traffic on 16 simultaneous connections.
- **Module 2: 'IP Answering'** able to receive IP traffic on 16 simultaneous connections with different working modes (Absorber, Absorber file, Echoer, Echoer file and Absorber + Generator).



The 'IP Generator' and 'IP Answering' modules

- **Module 3: 'Traffic Sniffer'** to capture traffic files at the driver level (under the TCP/IP stack) in order to calculate traffic statistics and timestamp IP packets. The **'IP Generator'** module can replay these traffic files.



"IP Traffic – Test & Measure": sniffer mode

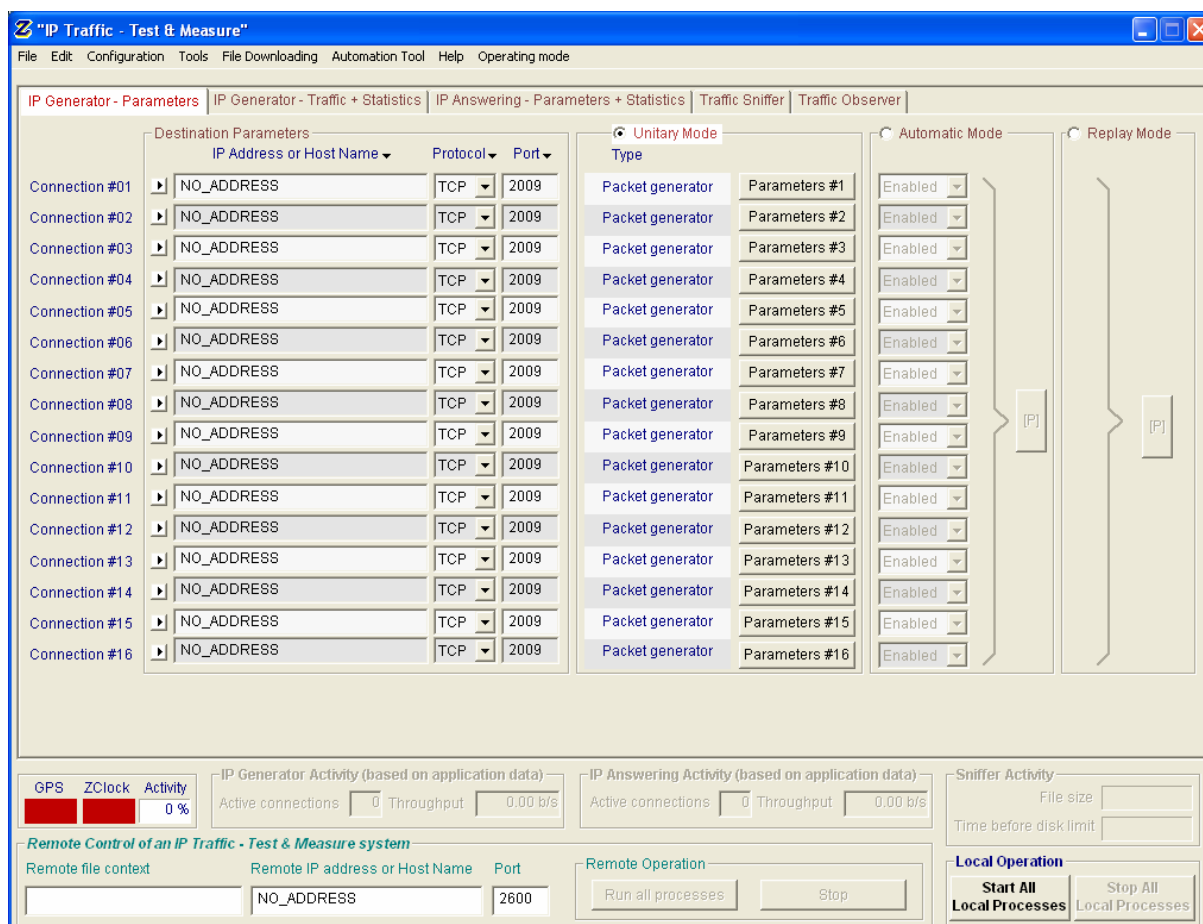
"IP Traffic – Test & Measure" can be used to capture IP traffic with the 'Traffic Sniffer': for example, the IP flows between a mobile and an application server (web, video telephony...) can be captured and saved in a file. IP packets are time stamped, to replay IP traffic with the same timing as for the capture. The user can then use an internal **"IP Traffic – Test & Measure"** algorithm in order to obtain two traffic files (traffic client file and traffic server file). These traffic files can be used by the **"IP Traffic – Test & Measure"** generator as source traffic.

- **Module 4: the 'Traffic Observer'** is a powerful **graphic tool** to display and visualize traffic statistics of IP connections. Statistics are displayed in real time [on-line mode] or by using an off-line mode [user can replay traffic files by using a 'video recorder' mode (play, pause, stop) with index management].

"IP Traffic – Test & Measure" can be operated with two main modes:

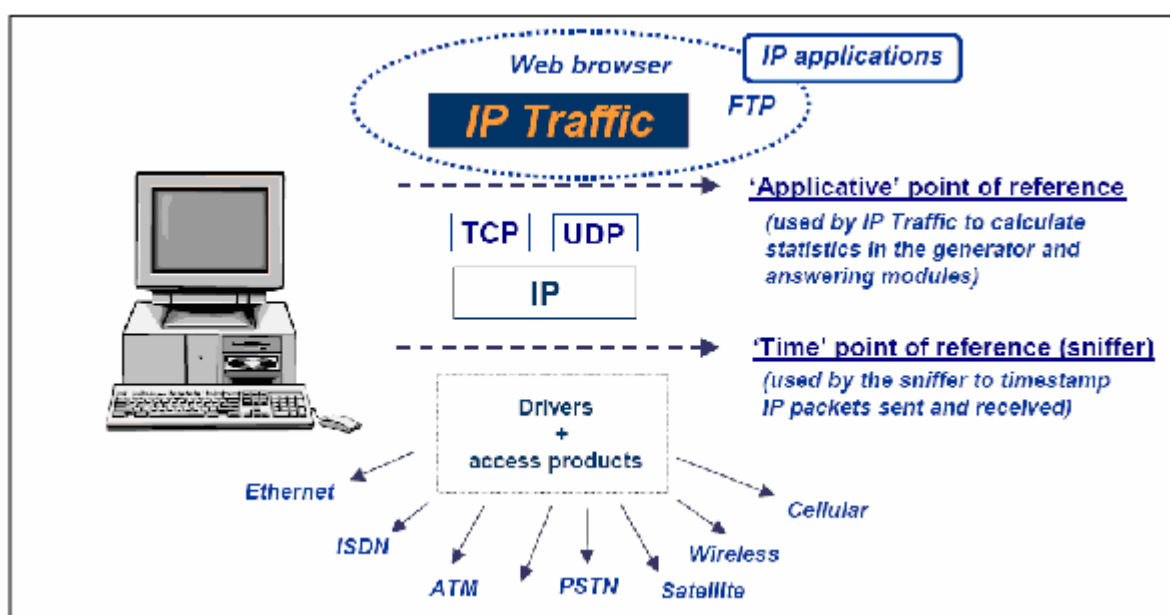
- The **normal** mode: the user can access all commands and functionalities
- The **remote control** mode: the user can't access locally commands of "IP Traffic – Test & Measure". It's mainly used for control by a remote "IP Traffic – Test & Measure" system. It's very useful for example to use an "IP Traffic – Test & Measure" system as a server that the user can operate remotely.

The design of the "IP Traffic – Test & Measure" man machine interface offers a main window allowing easy access to all functionalities and commands. Counters and Indicators give an overview of the overall traffic activities.



"IP Traffic – Test & Measure" main window

## 1.2. Architecture



Two points of reference are used by "IP Traffic – Test & Measure".

### 'Applicative' point of reference

In the '**IP Generator**' and the '**IP Answering**' modules, statistics (e.g. throughput, RTT...) are calculated at the application level (above the TCP/IP stack). These statistics refer to data sent or received by "**IP Traffic – Test & Measure**", and are independent of the protocol (TCP or UDP).

### 'Time' point of reference

The '**Traffic Sniffer**' uses this point of reference in order to timestamp IP packets sent and received. Timestamp of packets is made at the nearest of the physical link (under the TCP/IP stack). Therefore, "**IP Traffic – Test & Measure**" can identify lost and retransmitted IP packets. Values and statistics of the '**Traffic Observer**' tab use this point of reference.

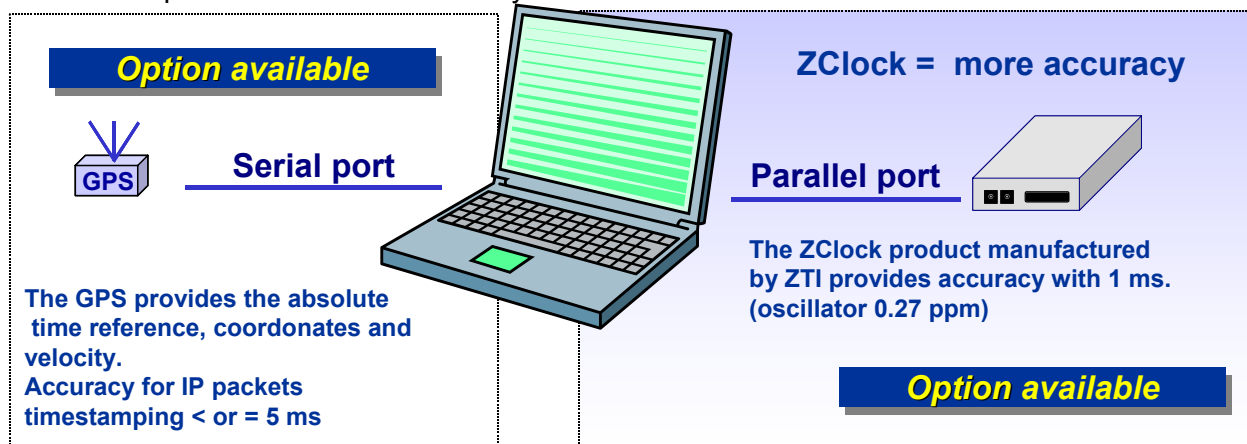
To have a good accuracy to timestamp IP packets, additional hardware options are available as described in the following paragraph.

When no additional hardware is used, the '**Traffic Sniffer**' uses the PC internal clock to timestamp IP packets sent and received. Because, the PC internal clock can't provide an absolute time reference, and needs to be synchronized with all the PCs internal clocks used by "**IP Traffic – Test & Measure**" ZTI recommends an additional hardware option to allow precise time propagation delays calculations into IP networks.



## 1.3. Hardware Options Available

To free "IP Traffic – Test & Measure" from the constraints related to the use of the PC internal clock, ZTI proposes two optional systems, allowing the 'Traffic Sniffer' to timestamp sent and received IP packets with more accuracy.



With the GPS Kit and ZClock options, 4 configurations to use "IP Traffic – Test & Measure":

Configuration	Description	Absolute Time reference	Accuracy for Measurement
0	"IP Traffic – Test & Measure"	No or user defined	Not defined (PC clock used)
1	"IP Traffic – Test & Measure" + GPS	<b>GPS</b>	<b>5 milliseconds</b>
2	"IP Traffic – Test & Measure" + ZClock	No or user defined (ZClock is initialized with the PC clock). This provides a relative reference.	<b>1 millisecond</b>
3	"IP Traffic – Test & Measure" + GPS + ZClock	<b>GPS</b> (ZClock is initialized with the GPS time) This provides an absolute reference.	<b>1 millisecond</b>

***It is recommended to use ZClock to have the best accuracy for measurement.***

The GPS and ZClock systems provide time reference with more accuracy than the PC internal clock. ZClock provides a very precise clock time reference (relative) - by the use of a high stability quartz oscillator < +/- 1.10<sup>-9</sup> on 1 day - and authorizes to lose the GPS signal, without yet losing the time reference. For example, whereas GPS signal on a mobile system is lost in a tunnel, ZClock continues to timestamp the IP packets in a precise way.

When the ZClock and GPS work together, the GPS provides the reference time to the ZClock. Then the ZClock time is used to timestamp the packets.

The GPS system provides an absolute time reference. So each IP Traffic system equipped with one GPS system will have the same time reference. By using only the GPS system and the internal PC clock, accuracy for IP packets time stamping is < or = 5 milliseconds. ZClock provides a very precise clock with a high stability (long term stability is < 1 ms for 1 hour on 1 year). When used with IP Traffic, accuracy is one (1) millisecond for IP packets time stamping. When the GPS time signal is available, IP traffic initializes the ZClock product with this time reference. Even if the GPS signal is lost during many hours, the accuracy of one (1) millisecond is preserved.

## 1.4. "IP Traffic – Test & Measure" key features

### Module 1: 'IP Generator' Overview with TCP or UDP protocol

- The '**IP Generator**' module generates up to 16 simultaneous unicast – or multicast UDP - connections. Connections can be generated following three different testing modes:

⇒ **Unitary mode**: for each IP connection, you can select the traffic generator data source (**internal** or **external**), define a time code option (time code is added as data in the packet data), specify the ToS (Type of Service) byte, specify the Time To Live (TTL) and if needed save incoming traffic in a file.

**Internal data generator** with five parameter groups:

- Data to send: automatic data generation by using a mathematical law, packet generator (fix, random, alternate and increasing / decreasing) or file to send
- TCP or UDP Data size: fix, random, alternate and increasing / decreasing
- Inter packet delay: fix, random, alternate, increasing / decreasing or use of a mathematical law
- Mean Throughput for the connection in Kb/s: data size or inter packet delay adjustable
- Mean Packet Throughput for the connection in p/s (packets per second): this option is only available with UDP connections
- Save generated traffic in a file

**External data source generator**: select a file or an external DLL providing traffic to send (packet starting time, size, contents, inter packet delay...) and if needed use of a loop counter with an idle time between each loop.

⇒ **Automatic mode**: use of a mathematical law for connections generation starting time and another mathematical law for data volume to send, in order to generate up to 16 outgoing IP connections.

⇒ **Replay sniffed traffic**: use of a traffic file previously captured by the Traffic Sniffer and the 'IP Generator' module replays this traffic file with timing accordingly to time capture (IP resolution addressing is made by the user before replay).

- **Statistics**: different statistics parameters are displayed by the 'IP Generator' module for each connection
  - 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)
  - Seq. numb errors (sequence numbering errors)

- Mean RTT (Round Trip Time)
- Min RTT
- Max RTT
- Jitter

A RTT summary is also available. This summary shows the minimum, maximum and Mean RTT values for all connections of the 'IP Generator' part. These statistics can be saved in a CSV file defined by the user.

### Module 1: 'IP Generator' Overview with ICMP protocol

- The '**IP Generator**' module generates up to 16 simultaneous connections. Connections can be generated using only one testing mode:

⇒ **Unitary mode**: for each IP connection, only the **internal** data source is allowed. Moreover you can specify the ToS (Type of Service) byte or specify the Time To Live (TTL).

**Internal data generator** proposed three parameter groups. Below are listed the different possibilities offer with ICMP protocol:

- ICMP Echo request packet number and content: packet generator (fix, random, alternate and increasing / decreasing).
- ICMP Echo Request data size: fix, random, alternate and increasing / decreasing.
- ICMP Echo Reply receiving timeout: fix, random, alternate, increasing / decreasing or use of a mathematical law.
- Mean Packet Throughput for the connection in p/s (packets per second)

- **Statistics**: different statistics parameters are displayed by the IP Generator module for each connection:

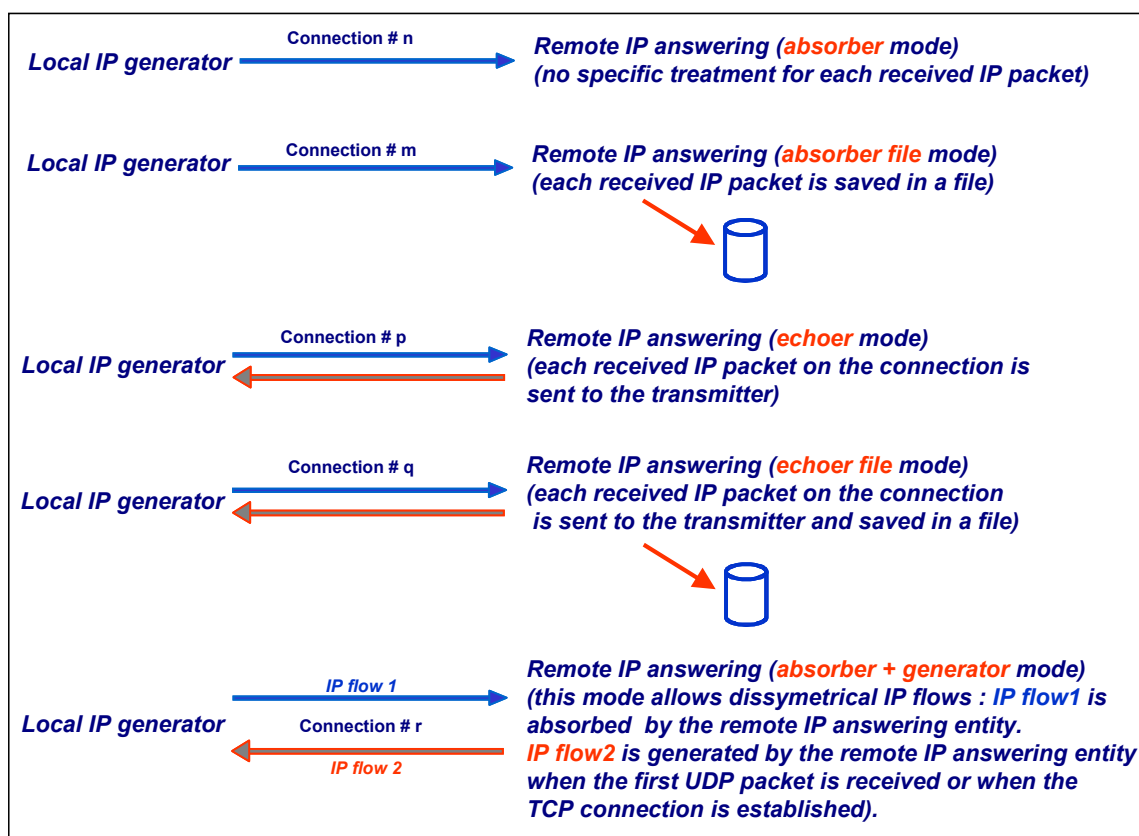
- Sent ICMP requests (Tx Packets)
- Received ICMP replies (Rx Packets, responses sent by the target remote)
- Seq. numb errors (sequence numbering errors)
- Mean RTT (Round Trip Time)
- Min RTT
- Max RTT

A RTT summary is also available. This summary shows the minimum, maximum and Mean RTT values for all connections of the 'IP Generator' part. These statistics can be saved in a CSV file defined by the user.

## Module 2: 'IP Answering' Overview

- The '**IP Answering**' module receives traffic (up to 16 simultaneous connections), and operates for each connection following different working modes: '**Absorber**', '**Absorber file**', '**Echoer**', '**Echoer file**', '**Absorber + Generator**' or '**Disable**'.

In this User Guide, we will consider that the local machine is used for generating IP traffic and the remote one is used for IP answering.



- **Statistics:** different statistics parameters are displayed by the IP Answering module for each connection:
  - 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)
  - Seq. numb errors (sequence numbering errors)
  - Data not echoed
  - Jitter

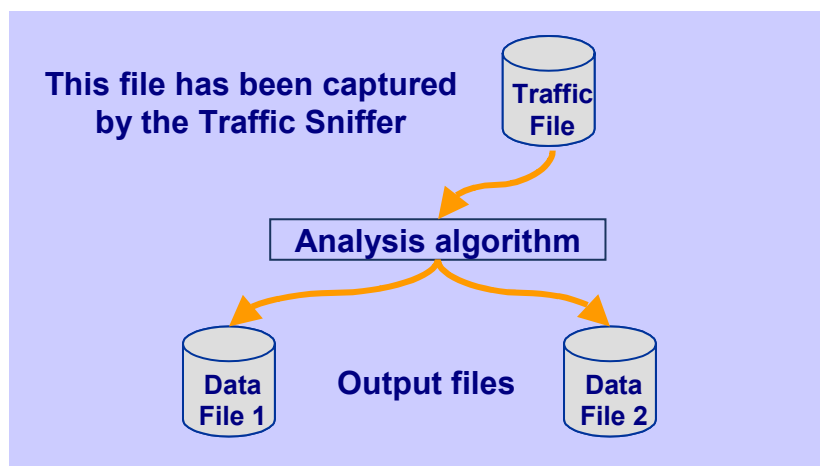
These statistics can be saved in a CSV file defined by the user.

## Module 3: 'Traffic Sniffer' Overview

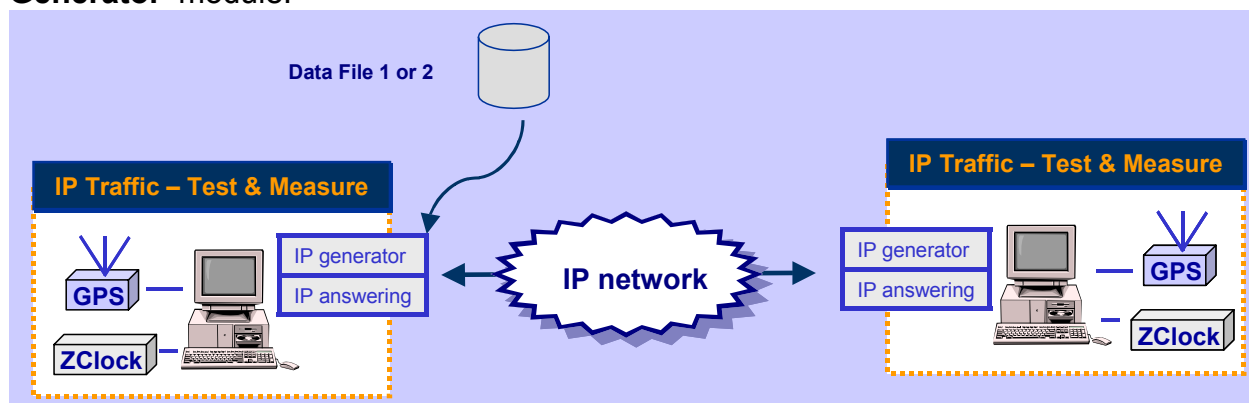
Sent and received IP packets are time stamped by the '**Traffic Sniffer**' and then saved in a file to generate capture traffic files.

The user can define IP filters to capture IP traffic in a file.

From one traffic file captured by the 'Traffic Sniffer', an analysis algorithm produces two data files as shown below (because a traffic file contains IP packets sent and received):



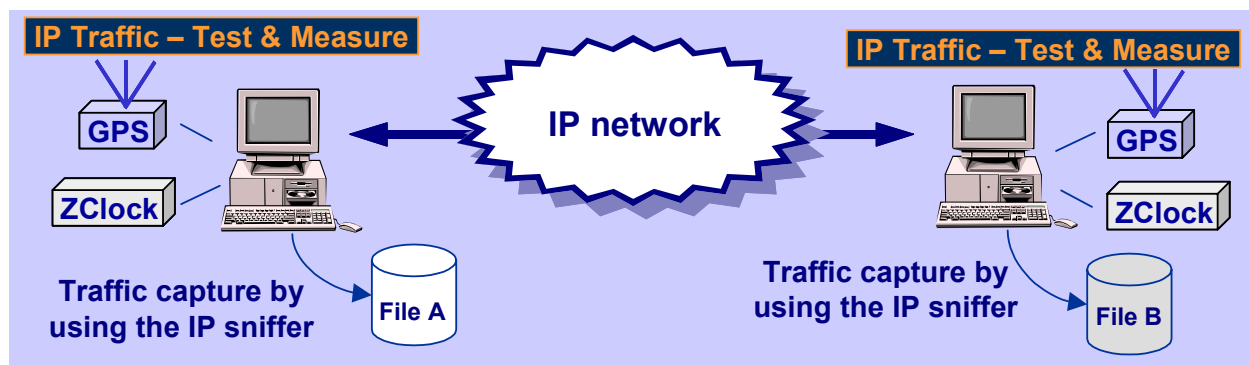
Then it is possible to use a data file generated in order to replay traffic via the '**IP Generator**' module:



## Module 4: 'Traffic Observer' Overview

The '**Traffic Observer**' displays statistics for the '**IP Generator**' or the '**IP Answering**' modules according two modes: on-line (real time) and off-line (batch mode). Two traffic files are produced: File A and File B. The '**Traffic Observer**' can then use these traffic files A and B in order to calculate off-line statistics.

The off-line mode allows calculating statistics parameters (e.g. 'Packet Erasure Rate' and 'Packet Transit Delay') needing to have time stamped packets from the local and the remote systems.



This mode uses and analyzes the two traffic files (Files A and B in the schema) captured by the '**Traffic Sniffer**'. The statistics in red are only available with the offline mode. The green values are available with both offline and online modes.

### □ Features available with the on-line mode

- ⇒ Select 'IP Generator' or 'IP Answering' display
- ⇒ Display of statistic parameters in a table for 16 connections:
  - IP throughput snapshot
  - IP throughput average
  - UDP or TCP throughput
  - Inter packet delay

Or

Graphic statistics display for the following parameters with triggers defined by user

- IP throughput
- Inter packet delay

*The graphic display enables to choose 'all connections' or a specific connection (from 1 to 16) and to calculate in real time the following parameters: average, standard deviation and confidence distance*

- ⇒ Export statistics in a CSV file with filters defined by user
- ⇒ Reset statistics
- ⇒ Help window

### □ Features available with the off-line mode

- ⇒ Load traffic files and process analysis for these files to detect that these files are coherent
- ⇒ User can replay traffic files by using a 'video recorder' mode (play, pause, stop) with index management (next, add, remove)
- ⇒ Display of statistic parameters in a table for 16 connections:
  - IP throughput snapshot
  - IP throughput average
  - UDP or TCP throughput
  - Inter packet delay
  - Packet erasure rate

- Packet transit delay

Or

Graphic statistics display for the following parameters with triggers defined by user

- IP throughput
- Inter packet delay
- PER (Packet Erasure Rate) quality
- Packet transit delay

*The graphic display enables to choose 'all connections' or a specific connection (from 1 to 16) and to calculate the following parameters: average, standard deviation and confidence distance.*

Or

Packet statistics display

For each packet:

- Packet Status: Lost or Sent
- Transit Delay
- Packet transit delay
- IP size
- IP Identification (available for each packet with IPv4 and only on fragment packets in IPv6)

For each connection (TCP or UDP) and for each side:

- Number of sent packets
- Mean Transit Delay
- Mean Jitter
- Number (and percentage) of lost packets
- Number of TCP packets which have been retransmitted (only for TCP connection)

- ⇒ Export statistics in a CSV file with filters defined by user (the GPS location is also exported in this CSV file).
- ⇒ Reset statistics
- ⇒ Help window

## Multicast feature



"IP Traffic – Test & Measure" is able to generate and receive Unicast and 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).  
For information: these IPv4 addresses 224.0.0.0 to 224.255.255.255 do not generate IGMP JOIN /LEAVE messages.
- **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.

## IP version selection (Windows XP and later)

Please note that **"IP Traffic – Test & Measure"** supports IPv6 for Windows XP and later versions (i.e. Server 2003) but doesn't support IPv6 for Windows 2000.

IPv6 is not installed by default: it should be added on the network interface you want to use.

**"IP Traffic – Test & Measure"** supports the IPv6 numerical address format (128 bits long) as well as canonical addresses. The IPv6 multicast is available with **"IP Traffic – Test & Measure"** in accordance to RFC 2373 where a multicast IPv6 address starts with FF.

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

## Interface selection

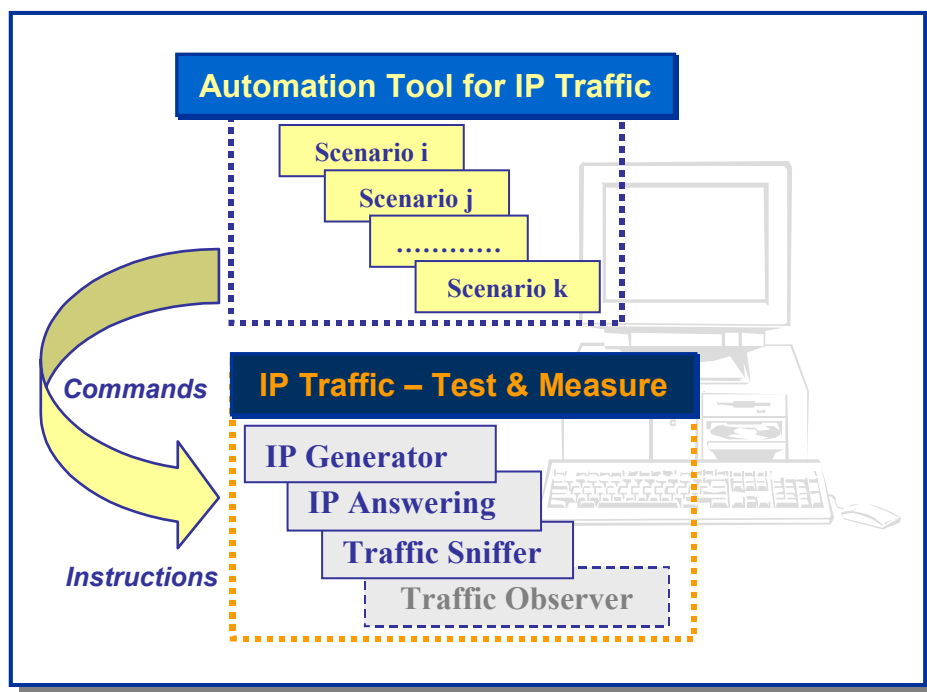
The interface selection of a LAN card (NIC), a virtual NIC such as an IP tunneling protocol or a remote access is useful to control the data traffic hardware route.

**"IP Traffic – Test & Measure"** 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 easily.



## 1.5. The Automation Tool for "IP Traffic - Test & Measure"

The add-on software **Automation Tool for "IP Traffic - Test & Measure"** allows you to edit scenarios, carry out scenarios, set the **"IP Traffic - Test & Measure"** parameters and pilot **"IP Traffic - Test & Measure"** 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 **"IP Traffic – Test & Measure"**.

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 "IP Traffic – Test & Measure"** you can:

- Set automatically the parameters of the **"IP Traffic – Test & Measure"** 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 2 What's new in "IP Traffic - Test & Measure" Version 2.4

This part is a general overview of new features and main improvements of "IP Traffic - Test & Measure" version 2.4. You will find some important information on how to upgrade your software from previous versions. Details regarding features and corrections included in the different versions of "IP Traffic - Test & Measure" can be found in the version.txt file located in the installation directory (by default: C:\Program Files\IP Traffic). To upgrade your software from the version 1.3, 2.0, 2.1, 2.2 or 2.3 to the version 2.4, please refer to paragraphs below.

### 2.1. New features and improvements included in the version 2.4

#### ⇒ "IP Traffic - Test & Measure" (Version 2.4)

- IPv6 ready (generation, capture, replay and conversion)
- First time users: Getting Started information
- Min/Max/Mean RTT values are available for each connection (a synthesis of all values is also available).
- RTT, Sequence numbers errors and jitter values calculation for each connection are now based on a sampling period
- The statistics are saved in CSV files
- By double-clicking on a context file, IP Traffic starts and opens the context file.
- The RPC port number used by the Automation Tool and IP Traffic to dialog can be changed using the key sited into the registry (more details in the "IP Traffic – Test & Measure" User Guide).

*The contexts created with versions 2.0 and higher are reused automatically. When saved, they become the new 2.4 context file format.*

#### ⇒ Automation Tool for "IP Traffic - Test & Measure" (Version 1.4)

- By double-clicking on a .scn file, the Automation Tool starts and opens the scenario file.
- The RPC port number used by the Automation Tool and IP Traffic to dialog can be changed using the key sited into the registry (more details in the "IP Traffic – Test & Measure" User Guide).
- During a wait command execution, the elapsed and the remaining time are displayed
- The number of iteration passed when using a repeat command is shown on the execution result area
- Start and stop the Automation Tool using command lines

*The scenarios created with older versions are reused automatically. When saved, they become the new 1.4 scenario file format.*

## **2.2. Upgrading from "IP Traffic – Test & Measure" version 2.3**

There is no need to uninstall **"IP Traffic - Test & Measure"** version 2.3 before upgrading to version 2.4. The installation procedure checks if a previous version of **"IP Traffic - Test & Measure"** was installed. When the version 2.3 is found, it updates automatically the **"IP Traffic - Test & Measure"** components.

Installation of the **"IP Traffic - Test & Measure"** version 2.4 over the **"IP Traffic - Test & Measure"** version 2.3 replaces the IPTraff.exe application and the old znpf.sys driver by the new znpf.sys driver where they have been installed. The old help file named 'User Guide IP Traffic V2.3.pdf' is replaced by the 'IP Traffic V2.4 User Guide.pdf' file. The registry content is extended with new parameters needed by the help mechanism and the "Automation Tool for IP Traffic". Finally, the DLL file "packet.dll" is replaced by a new version including ZTI extensions (only for Windows 2000/XP/Server 2003 systems).

The license scheme is retained during the upgrade process. If an unlimited license was available, the **"IP Traffic – Test & Measure"** version 2.4 is ready to be used unlimited. If the trial version was used, the number of remaining days isn't changed: it will continue to decrease up to the final date.

Acrobat Reader is needed with **"IP Traffic – Test & Measure"** version 2.4: see 'paragraph 2.7 Acrobat Reader version compatibility' for more details.

## **2.3. Upgrading from "IP Traffic – Test & Measure" version 2.2**

There is no need to uninstall **"IP Traffic – Test & Measure"** version 2.2 before upgrading to version 2.4. The installation procedure checks if a previous version of **"IP Traffic – Test & Measure"** was installed. When the version 2.2 is found, it updates automatically the **"IP Traffic – Test & Measure"** components.

Installation of the **"IP Traffic – Test & Measure"** version 2.4 over the **"IP Traffic – Test & Measure"** version 2.2 replaces the IPTraff.exe application and the Itsnif.sys driver by the znpf.sys driver where they have been installed. The old help file named 'User Guide IP Traffic V2.2.pdf' is replaced by the 'IP Traffic V2.4 User Guide.pdf' file. The registry content is extended with new parameters needed by the help mechanism and the "Automation Tool for IP Traffic". Finally, the DLL file "packet.dll" is replaced by a new version including ZTI extensions (only for Windows 2000/XP/Server 2003 systems).

The license scheme is retained during the upgrade process. If an unlimited license was available, the **"IP Traffic – Test & Measure"** version 2.4 is ready to be used unlimited. If the trial version was used, the number of remaining days isn't changed: it will continue to decrease up to the final date.

Acrobat Reader is needed with **"IP Traffic – Test & Measure"** version 2.4: see 'paragraph 2.7 Acrobat Reader version compatibility' for more details.

## **2.4. Upgrading from "IP Traffic - Test & Measure" version 2.1**

There is no need to uninstall **"IP Traffic – Test & Measure"** version 2.1 before upgrading to version 2.4. The installation procedure checks if a previous version of **"IP Traffic – Test & Measure"** was installed. When the version 2.1 is found, it updates automatically the **"IP Traffic – Test & Measure"** components.

Installation of the **"IP Traffic – Test & Measure"** version 2.4 over the **"IP Traffic – Test & Measure"** version 2.1 replaces the IPTraff.exe application and the Itsnif.sys driver by the znpf.sys driver where they have been installed. The old help file named 'User Guide IP Traffic V2.1.pdf' is replaced by the 'IP Traffic V2.4 User Guide.pdf' file. The registry content is extended with new parameters needed by the help mechanism and the "Automation Tool for IP Traffic". Finally, the DLL file "packet.dll" is replaced by a new version including ZTI extensions (only for Windows 2000/XP/Server 2003 systems).

The license scheme is retained during the upgrade process. If an unlimited license was available, the **"IP Traffic – Test & Measure"** version 2.4 is ready to be used unlimited. If the trial version was used, the number of remaining days isn't changed: it will continue to decrease up to the final date.

Acrobat Reader is needed with **"IP Traffic – Test & Measure"** version 2.4: see 'paragraph 2.7 Acrobat Reader version compatibility' for more details.

## **2.5. Upgrading from "IP Traffic - Test & Measure" version 2.0**

There is no need to uninstall **"IP Traffic – Test & Measure"** version 2.0 before upgrading to version 2.4. The installation procedure checks if a previous version of **"IP Traffic – Test & Measure"** was installed. When the version 2.0 is found, it updates automatically the **"IP Traffic – Test & Measure"** components.

Installation of the **"IP Traffic – Test & Measure"** version 2.4 over the **"IP Traffic – Test & Measure"** version 2.0 replaces the IPTraff.exe application and the Itsnif.sys driver by the znpf.sys driver where they have been installed. The old help file named IPTraff.chm is replaced by the 'IP Traffic V2.4 User Guide.pdf' file. The registry content is extended with new parameters needed by the help mechanism. Finally, the DLL file "packet.dll" is replaced by a new version including ZTI extensions (only for Windows 2000/XP/Server 2003 systems).

The license scheme is retained during the upgrade process. If an unlimited license was available, the **"IP Traffic – Test & Measure"** version 2.4 is ready to be used unlimited. If the trial version was used, the number of remaining days isn't changed: it will continue to decrease up to the final date.

Acrobat Reader is needed with **"IP Traffic – Test & Measure"** version 2.4: see 'paragraph 2.7 Acrobat Reader version compatibility' for more details.

## ***2.6. Upgrading from versions 1 (including version 1.3)***

An upgrade from **"IP Traffic – Test & Measure"** versions earlier than version 2.0 needs to uninstall the current version before upgrading to **"IP Traffic – Test & Measure"** version 2.4. Due to changes in the license scheme introduced with version 2.0, the reinstallation will not keep the unlimited license information. You should contact ZTI ([contact@zti-telecom.com](mailto:contact@zti-telecom.com)) to get back a new unlimited license number when upgrading to version 2.4 with the new site code. Finally, the DLL file "packet.dll" is replaced by a new version including ZTI extensions (only for Windows 2000/XP/Server 2003 systems).

Context files from version 1.3 and earlier are not compatible with the version 2.4. There is no converter tool to translate versions 1's context files into version 2.4.

Acrobat Reader is needed with **"IP Traffic – Test & Measure"** version 2.4: see 'paragraph [2.7 Acrobat Reader version compatibility](#)' for more details.

## ***2.7. Acrobat Reader version compatibility***

To access the **"IP Traffic – Test & Measure"**'s help file, Acrobat Reader is required. **"IP Traffic – Test & Measure"** supports Acrobat Reader version from 4.01 to 7.0 that have been tested successfully.

If the Acrobat reader version you are using is too old, you can find the latest version on the **"IP Traffic – Test & Measure"**'s CD-ROM or download it straight from the Acrobat reader's website: [www.adobe.com](http://www.adobe.com).

## PART 3 Install "IP Traffic - Test & Measure"

"IP Traffic - Test & Measure" requires less than 25 MB of free disk-space. The default settings folder is C:\Program files\IP Traffic.

The **Automation Tool for "IP Traffic - Test & Measure"** add-on software is automatically installed with "IP Traffic - Test & Measure".



***\* To run "IP Traffic - Test & Measure" 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 "IP Traffic - Test & Measure" for Windows 2000, XP and Server 2003, you must log on with your administrators rights.***



***We recommend that you shutdown first your anti-virus application before installing "IP Traffic - Test & Measure".***

***Please note that you should mask the task bar in a 1024x768 screen resolution, so you get an optimal view of the software interface.***

The default settings of "IP Traffic - Test & Measure" come with a 15-day limited license. When it reaches the deadline, "IP Traffic - Test & Measure" stops running. Go to PART 4 for more information about the license program.

The installation procedure is a standard installation program for Windows 98, 2000, XP or Server 2003.

### 3.1. How to install the software downloaded from the Internet



***To install "IP Traffic - Test & Measure" for Windows 2000, XP or Server 2003, you must log on with your administrators rights.***

If you have downloaded "IP Traffic - Test & Measure" trial version from our website, you have downloaded the "IPTraffic.zip" file including the software and the related documentation.

You must first unzip this file in a temporary directory.

Then run [Setup\\_IPTrafficBundle.exe](#) from this temporary directory to launch the setup procedure and follow the instructions on the screen.

The default settings install "IP Traffic - Test & Measure" in the following directory: C:\Program Files\IP Traffic.

The "IP Traffic - Test & Measure" installation procedure installs the following files on your hard disk:

- IPTraff.exe: program file
- "IP Traffic – Test & Measure" User Guide: PDF file (use the free version of Adobe® Acrobat® Reader® software. Available on [www.adobe.com](http://www.adobe.com)).
- Aut\_IPTraff.exe: program file (Automation tool)
- Automation Tool for "IP Traffic – Test & Measure" User Guide: PDF file
- IP Traffic license help file

- Version.txt: a text file that contains information about the versions and the Registry parameters.



*All files created by "IP Traffic - Test & Measure" are saved in the folder where "IP Traffic - Test & Measure" has been installed.*

- The following step of the installation procedure depends on the target Operating System (Windows 98 or Windows 2000/XP/Server 2003). Follow the instructions relating to your Operating System in the table below:

Windows 98 install	Windows 2000/XP/Server 2003 install
<p>Just before the end of the installation, the WinPcap Setup Program is automatically launched in order to install the packet capture driver used by "IP Traffic – Test &amp; Measure".</p> <p>You will find below the different windows displayed by WinPcap 3.0 during the install procedure.</p> <p>Once the install procedure of WinPcap is finished, you can end the "IP Traffic – Test &amp; Measure" installation procedure.</p> <p><a href="#">You must then reboot your PC.</a></p>	<p>The installation procedure automatically installs the packet capture driver named 'znpf.sys' on your system in the 'IP Traffic' directory.</p> <p><a href="#">When the installation is finished, you need to reboot your computer to consider changes.</a></p>

#### Start Menu shortcuts created:

Start > Programs > **IP Traffic – Test & Measure**

- ⇒ [IP Traffic - Test & Measure](#) (click to run the software)
- ⇒ [IP Traffic - Test & Measure User Guide](#) (PDF file)
- ⇒ [Automation Tool for IP Traffic - Test & Measure](#) (click to run the software)
- ⇒ [Automation Tool for IP Traffic - Test & Measure User Guide](#) (PDF file)
- ⇒ [License help](#)
- ⇒ [Read Me First](#)
- ⇒ [Uninstall IP Traffic - Test & Measure](#)



***You will need to restart your system in order to complete the installation.***

When launching a "IP Traffic - Test & Measure" trial version for the first time, a message is displayed showing the remaining days of use (for example, 15 days left out of 15 in the following example):

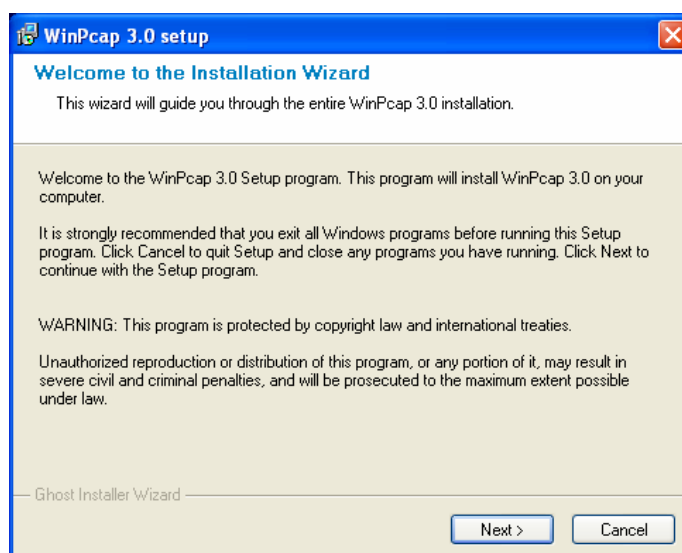




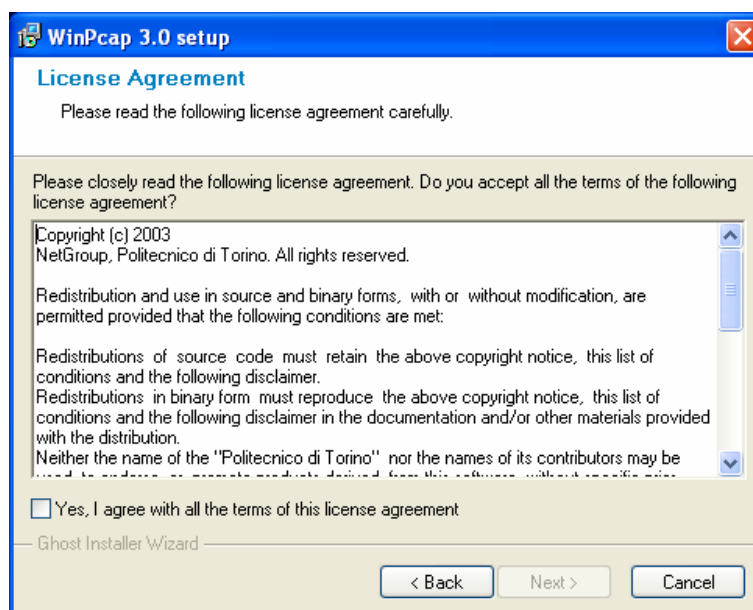
*Please refer to PART 4 (Software License Configuration) to configure your unlimited license.*

### **Automatic install of the packet capture driver by WinPcap for Windows 98**

Note: The WinPcap program includes software developed by the Politecnico di Torino and its contributors.

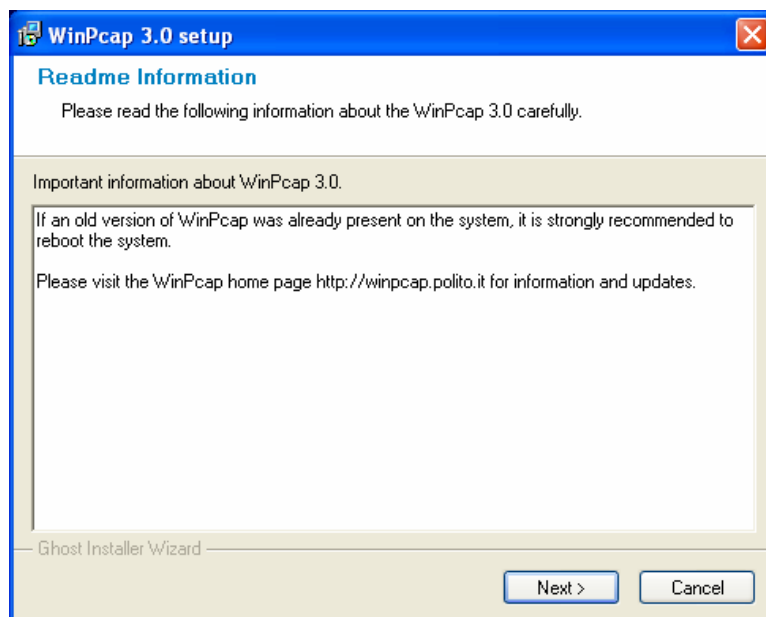


Then press Next to continue and display the License Agreement.

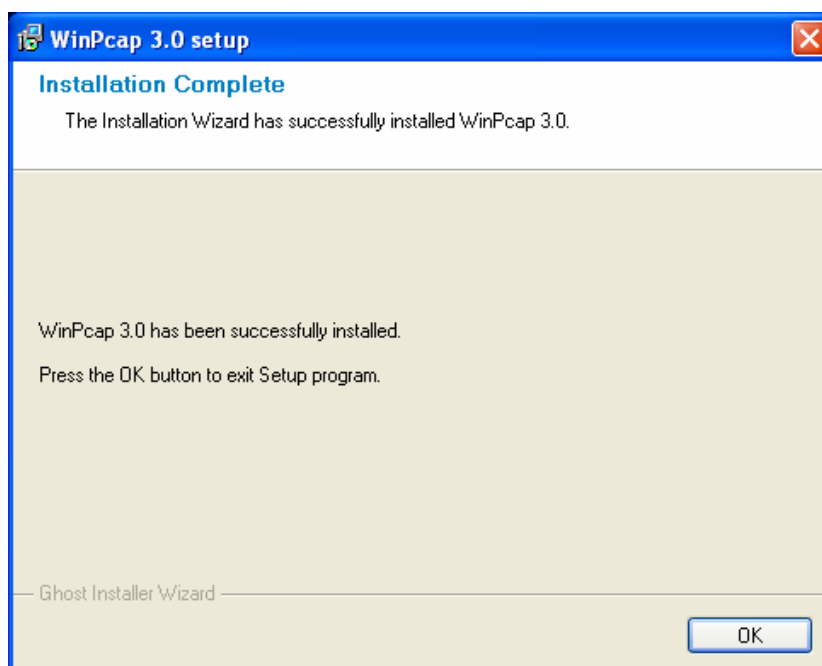




Once you have checked "Yes, I agree with all the terms of this license agreement", then press Next to continue.



Press Next to continue.



## 3.2. How to install the software from the CD-ROM

The installation procedure is a standard installation program.



**To install "IP Traffic - Test & Measure" for Windows 2000, XP or Server 2003, you must log on with your administrators rights.**

- First, insert the **"IP Traffic - Test & Measure"** CD-ROM in your CD-ROM drive.
- Click on "Start", "Execute" and type "CD unit>: \Setup\_IPTrafficBundle.exe". Follow the **"IP Traffic - Test & Measure"** setup instructions to proceed with the installation.  
**"IP Traffic - Test & Measure"** default settings install files in the following directory: C:\Program Files\IP Traffic.
- The following step of the installation procedure depends on the target Operating System (Windows 98 or Windows 2000/XP). Follow the instructions relating to your Operating System in the table below:

Windows 98 install	Windows 2000/XP/Server 2003 install
<p>Just before the end of the installation, the WinPcap Setup Program is automatically launched in order to install the packet capture driver used by "IP Traffic – Test &amp; Measure".</p> <p>You will find below the different windows displayed by WinPcap 3.0 during the install procedure.</p> <p>Once the install procedure of WinPcap is finished, you can end the "IP Traffic – Test &amp; Measure" installation procedure. <a href="#">You must then reboot your PC.</a></p>	<p>The installation procedure automatically installs the packet capture driver named 'znpf.sys' on your system in the 'IP Traffic' directory.</p> <p><a href="#">When the installation is finished, you need to reboot your computer to consider changes.</a></p>

### Start Menu shortcuts created:

Start > Programs > **IP Traffic – Test & Measure**

- ⇒ **IP Traffic - Test & Measure** (click to run the software)
- ⇒ **IP Traffic - Test & Measure User Guide** (PDF file)
- ⇒ **Automation Tool for IP Traffic - Test & Measure** (click to run the software)
- ⇒ **Automation Tool for IP Traffic - Test & Measure User Guide** (PDF file)
- ⇒ [License help](#)
- ⇒ [Read Me First](#)
- ⇒ **Uninstall IP Traffic - Test & Measure**



**You will need to restart your system in order to complete the installation.**

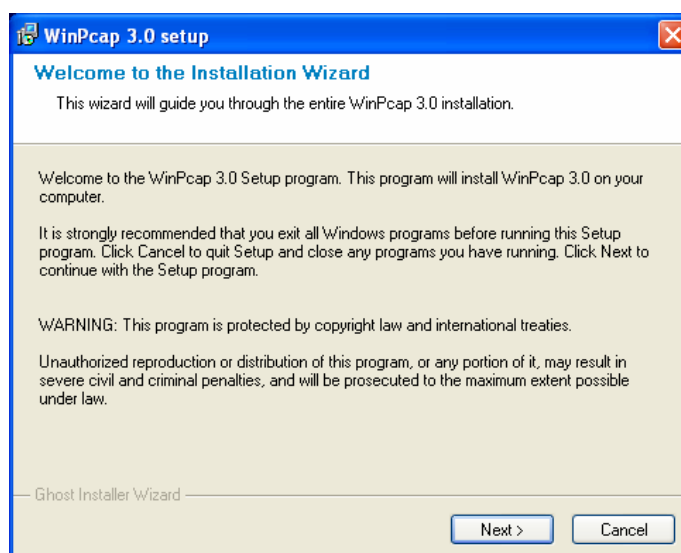
When launching **"IP Traffic - Test & Measure"** for the first time, a message is displayed showing the remaining days of use, even if you have bought an unlimited license (for example, 15 days left out of 15 in the following window):



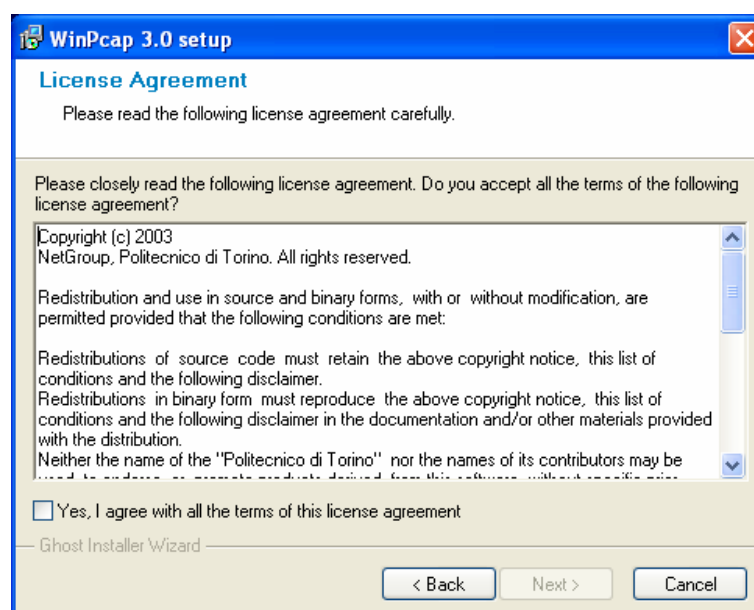
*Please refer to PART 4 (Software License Configuration) to configure your unlimited license.*

### **Automatic install of the packet capture driver by WinPcap for Windows 98**

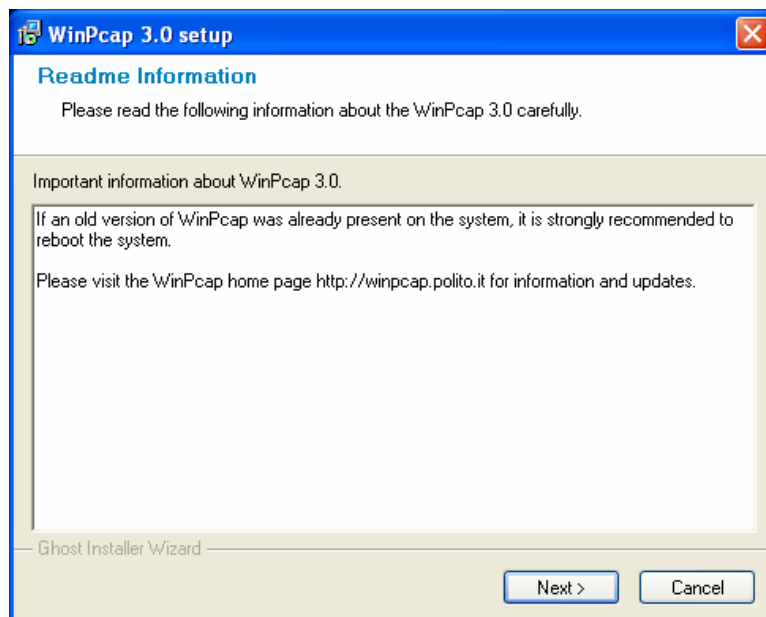
Note: The WinPcap program includes software developed by the Politecnico di Torino and its contributors.



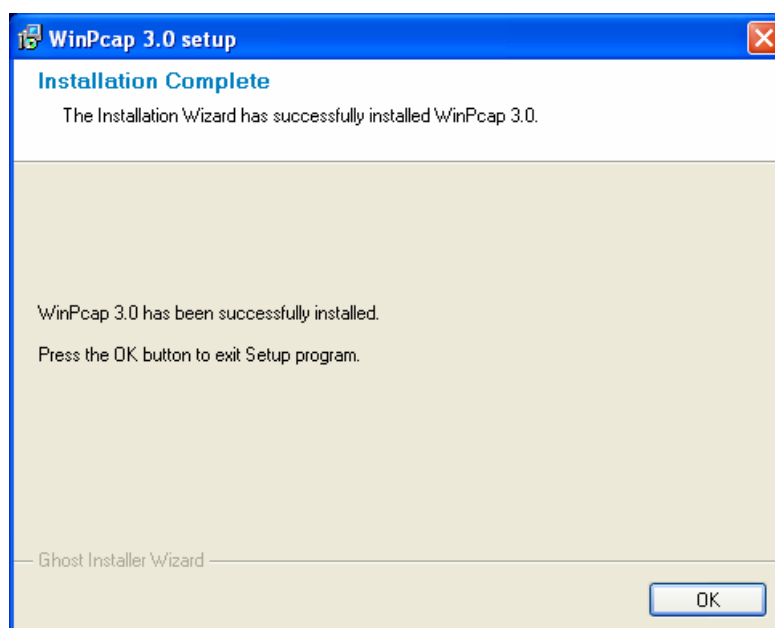
Then press Next to continue and display the License Agreement.



Once you have checked "Yes, I agree with all the terms of this license agreement", then press Next to continue.



Press Next to continue.



## PART 4 Software License Configuration

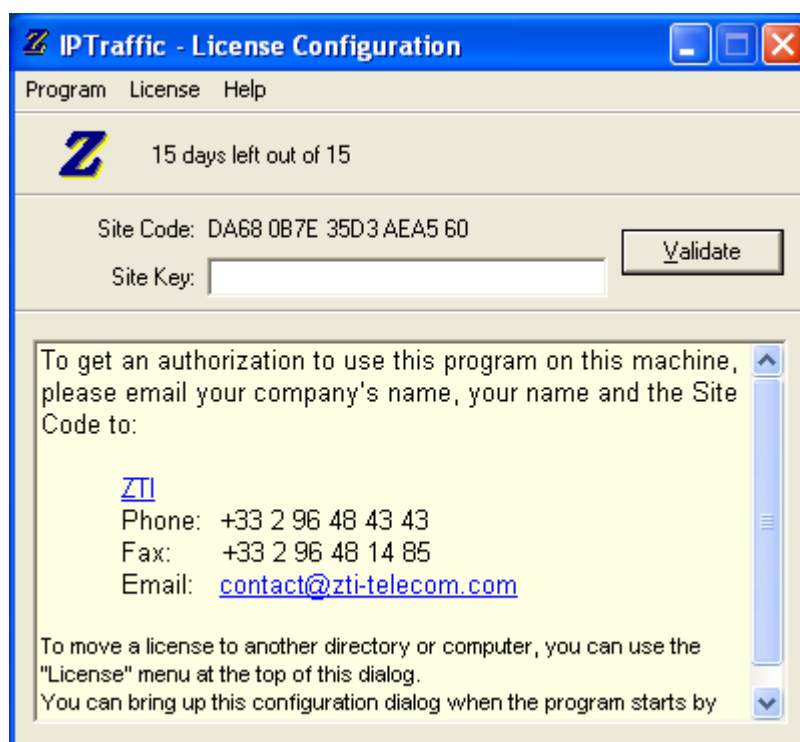
### 4.1. How to configure the license

*Note: This software is licensed on a per workstation basis. This means that you will need to get a separate license for each machine that you'll install it on. Each licensed copy of the software installed on a system has a unique **Site Code** which requires a corresponding unique **Site Key** to be entered before the tool is operational (except for a trial version: a duration of 15 days is automatically enabled at the first installation of the software. If you try to install the software again, the license program will disable the trial period).*

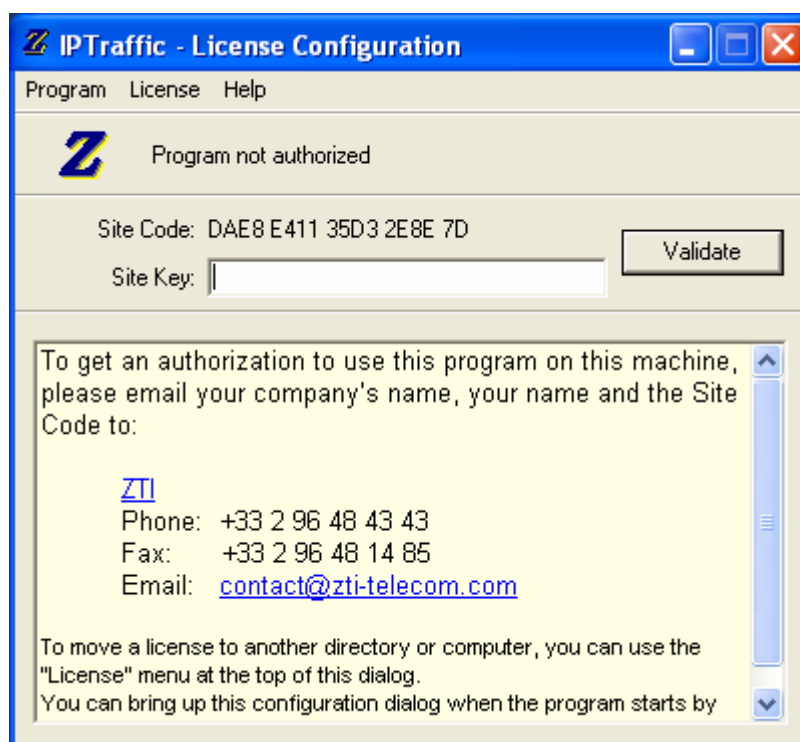
If you wish to configure your license before the trial period ends, press **Enter** just after launching the software when the following message is displayed:



You will then see the following license configuration window:



At the end of the trial period when you launch "**IP Traffic – Test & Measure**", the same license configuration window appears, but says, "Program not authorized" instead of showing the remaining days of use.



To get the **Site Key** and obtain an unlimited version, please send an email to [contact@zti-telecom.com](mailto:contact@zti-telecom.com) or [contact@zti.fr](mailto:contact@zti.fr) with the following information:

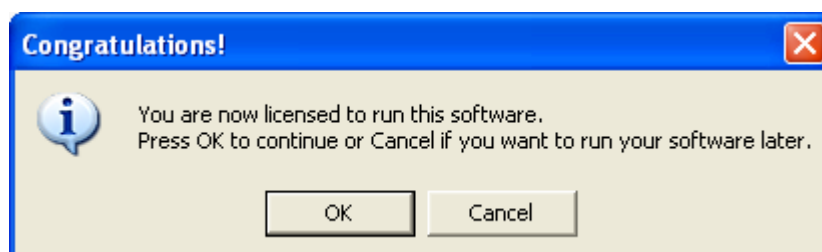
- The **Site Code** (you can copy and paste the Site Code displayed in the license window)
- The name of the software, for example: "**IP Traffic - Test & Measure**" or the "**IP Traffic - Test & Measure**" software bundle (including the **Automation Tool for "IP Traffic - Test & Measure"**)
- The OS used
- Your company's name
- Your name and phone number
- The purchase order number and date of purchase

We will then email you the **Site Key**. You can now close the license window.

After you have received the email with the **Site Key**, open the license configuration window again by pressing the Enter key as explained before.

Copy the Site Key in and then click "Validate".

After validation of the Site Key, you will get the following message:



- ⇒ **Important:** one **Site Code** is associated with one **Site Key**, and only one. A **Site Code** is unique for each PC installed. For security reasons, as soon as you validate a **Site Key** (trial or unlimited), the license program generates a new **Site Code** automatically.
- ⇒ For any question or further information, please contact our technical support:  
Email: [support@zti-telecom.com](mailto:support@zti-telecom.com) or [support@zti.fr](mailto:support@zti.fr)  
Phone: +33 2 9648 4343  
Fax: +33 2 9648 1485



*When you launch "IP Traffic - Test & Measure" with an unlimited license, you will see the following window:*



## 4.2. License Transfers



**A license transfer is not a duplication of any type.  
Please contact ZTI or your authorized distributor for one or several licenses purchase.**

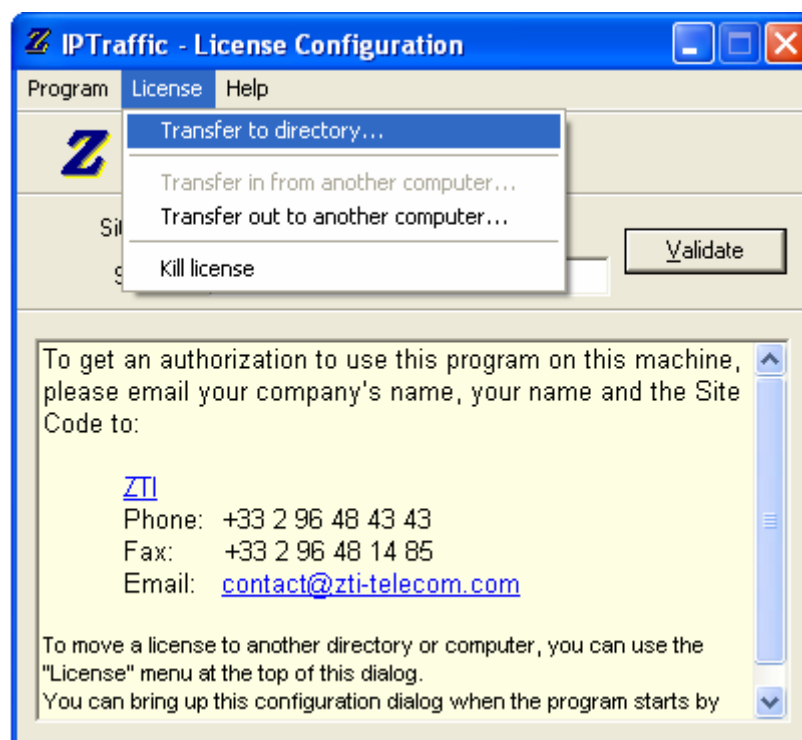
Licenses can be transferred using one of the following methods:

- ⇒ **Direct transfer:** move the license to another directory on the same PC or between two PCs of a same network.
- ⇒ **Transfer by media:** move the license from a source PC to a target PC by using a floppy disk or USB key.

### 4.2.1 Direct Transfer: move the license from one local directory to another

This transfer mechanism must be used to move a license in two cases:

- from a source to a target directory of the same PC
  - from a source to a target directory of networked PCs
- First, copy the program (copy **"IP Traffic - Test & Measure"** folder) to the target directory.  
*For example from "C:\Program Files\IP Traffic" to "C:\Temp\IPTraffic"*
  - Then run the program from its original directory (from "C:\Program Files\IP Traffic"). When the license configuration window appears, press **Enter** and select "License > Transfer to directory ..." in the license menu as shown below:





- Provide the path name of the target program (for example C:\Program Files\IP Traffic\IPTraff.exe).  
The license is now transferred to the new directory.

#### 4.2.2 Transfer by media (floppy disk or USB key) from a source PC to a target PC



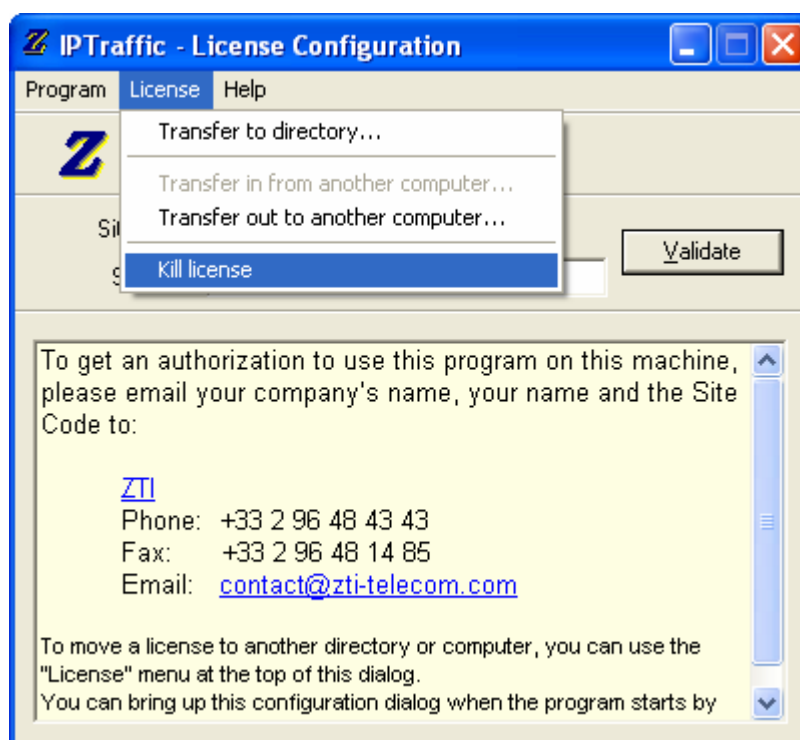
A floppy disk or USB key is needed for this kind of transfer.

To transfer the license from the source PC (PC #1) to the target PC (PC #2), proceed as described in the following order:

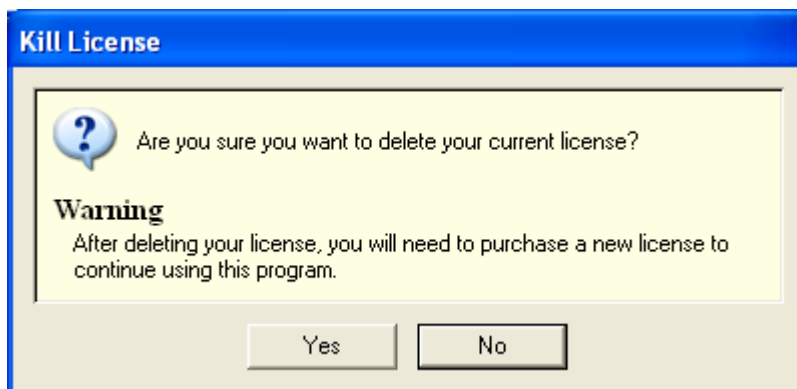
- 1) First install the program on the target PC (PC # 2).
- 2) Run the software on PC # 2 and delete the trial license in order to get an unauthorized license on this PC.  
If the "Transfer in from another computer ..." item of the license menu is disabled, you must kill the license.

##### How to kill a license?

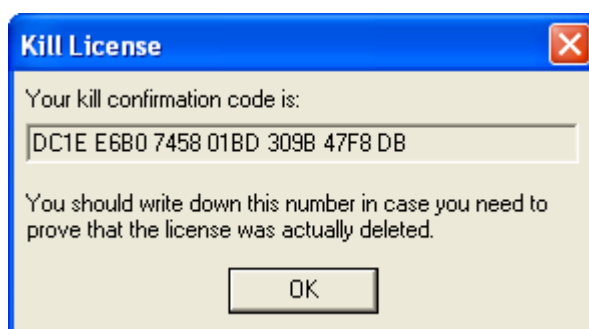
When the license configuration window appears, press **Enter** and select "License > Kill license" in the license menu.



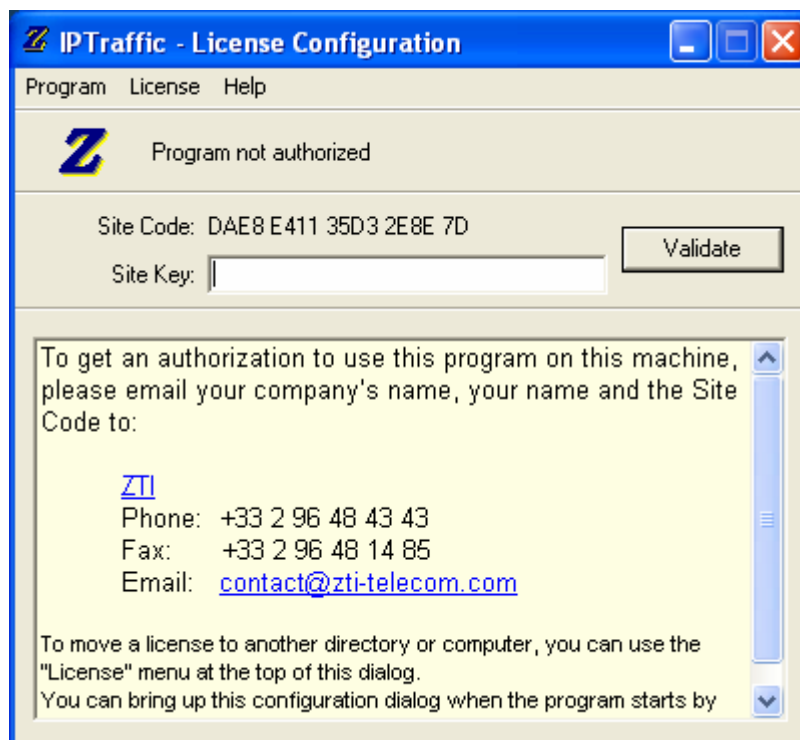
A message box will appear:



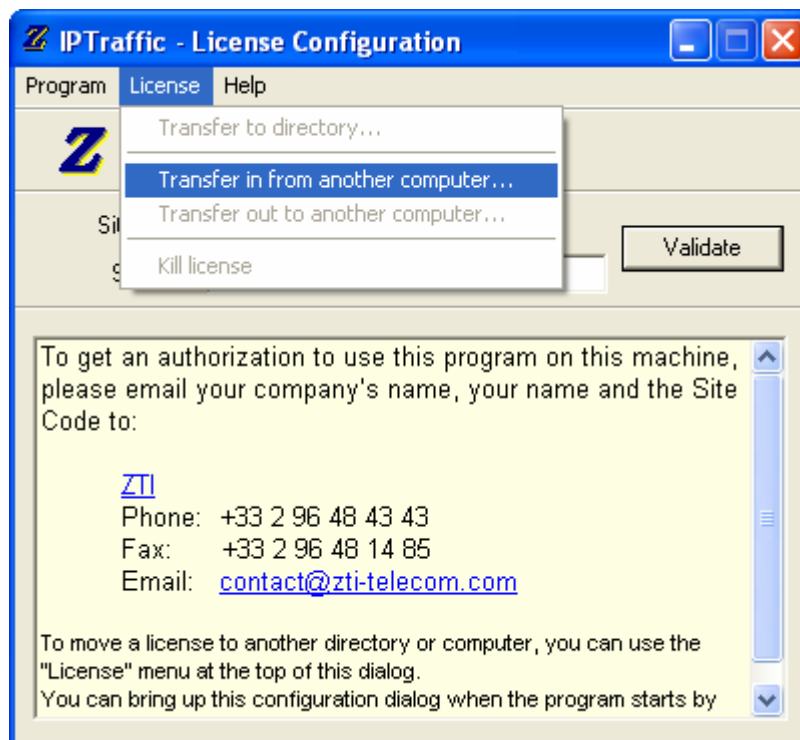
Press 'Yes' to kill the license and a confirmation code is displayed:



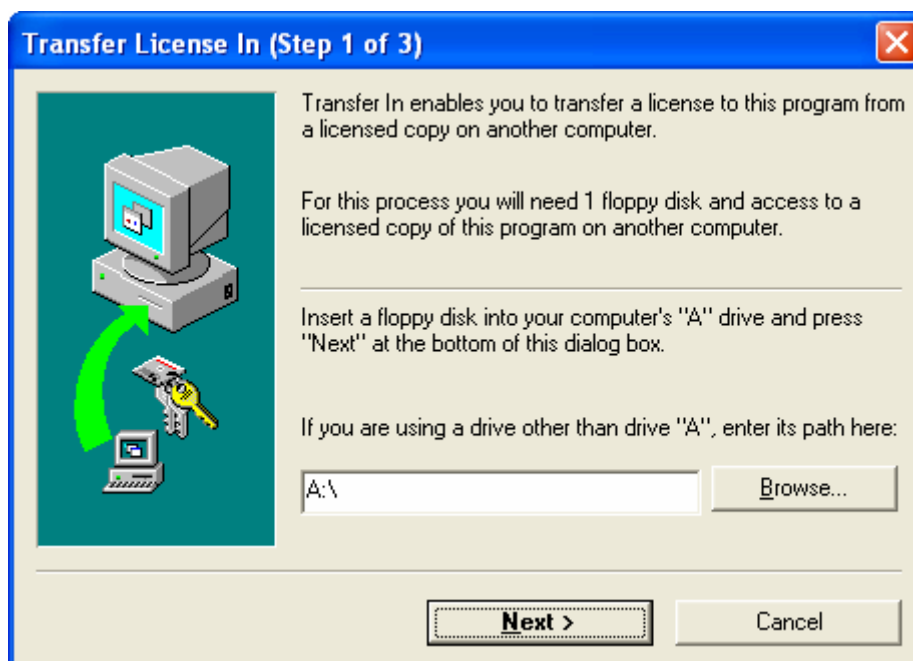
Click 'OK' and the license window displays now "Program not authorized":



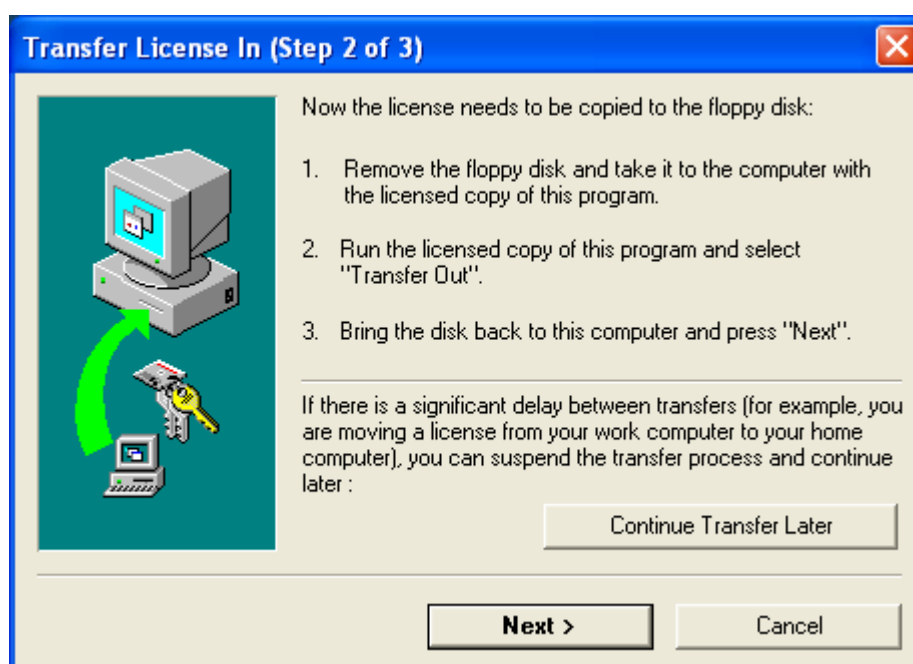
3) Select "License > Transfer in from another computer ..." from the license menu:



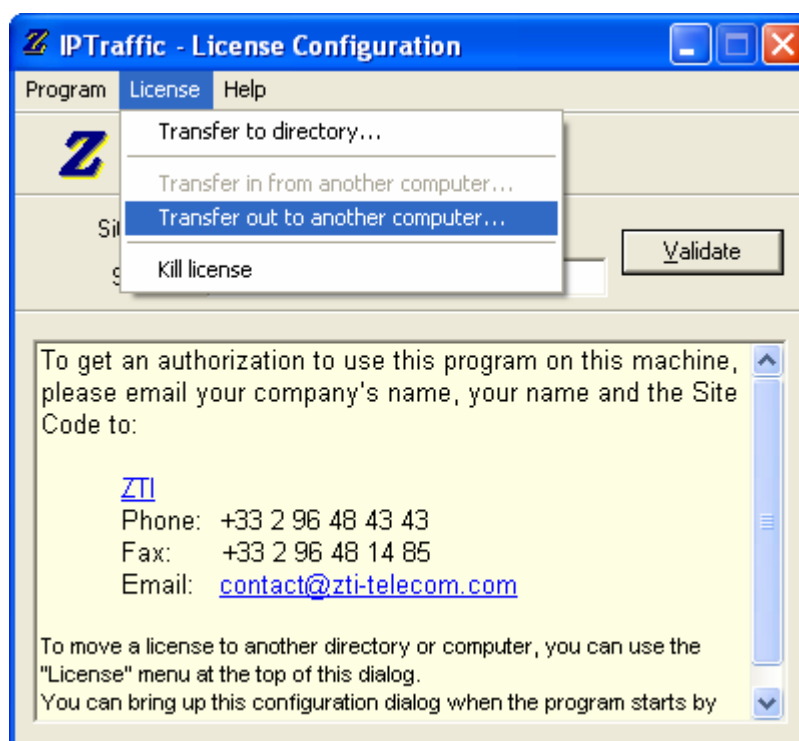
The "Transfer License In (Step 1 of 3)" window is displayed:



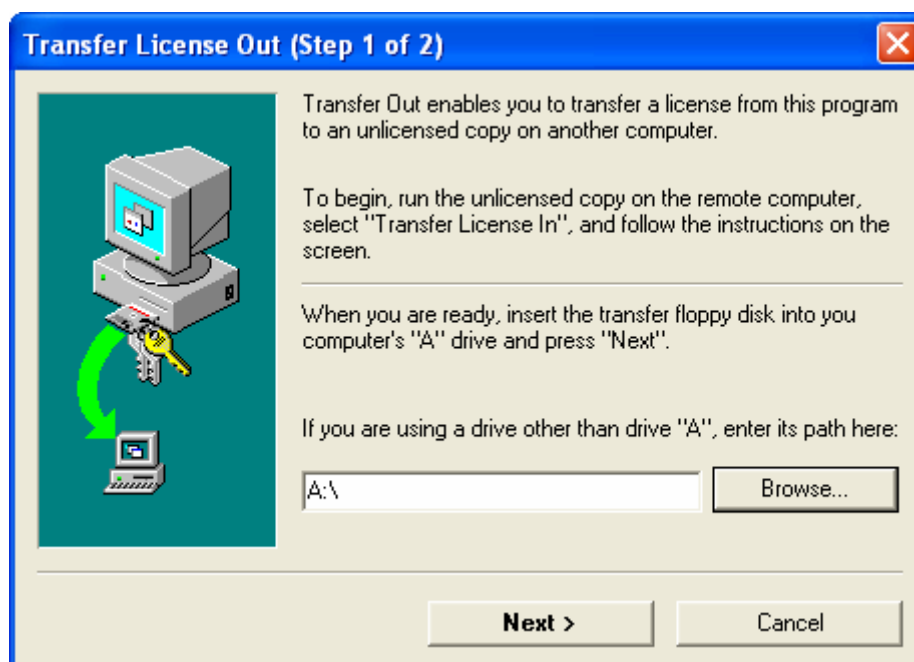
4) Insert a floppy disk or use a USB key as requested in step 1 of 3 and specify the path. Then press "Next >": the "Transfer License In (Step 2 of 3)" window is displayed:



5) Go to the source PC (PC #1) and insert the media (floppy disk or USB key). Then start the program on PC #1. When the license configuration window appears, press **Enter** and select "License > Transfer out to another computer ..." as shown below:

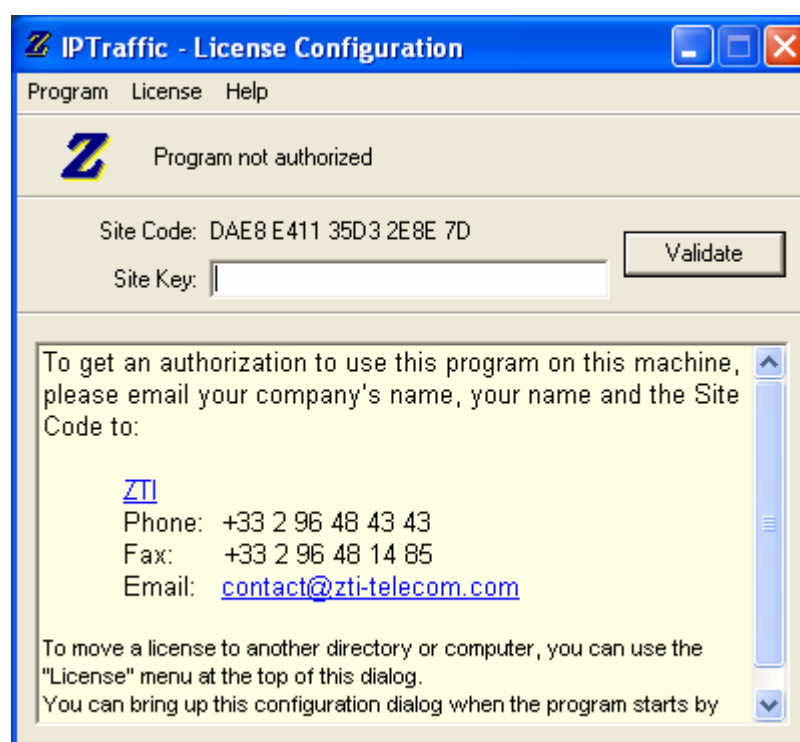


The following window is displayed:



Input the media path (floppy disk or USB key) and then press "Next >".

When the license is put on the media, you get the "Program not authorized" message:



*You can check that the license is not available anymore on the source PC since the "IP Traffic – Test & Measure" software license is on a workstation basis.*

*Contact us to get information on site license ([contact@zti.fr](mailto:contact@zti.fr) or [contact@zti-telecom.com](mailto:contact@zti-telecom.com)).*

**6)** Remove the media from PC #1 and return to PC #2.

Click the 'Next' button on the step 2 of 3 of the "Transfer license in" window (on PC #2) to complete the transfer.

The unlimited license key is now transferred from the source PC to the target PC, and you get the following message:



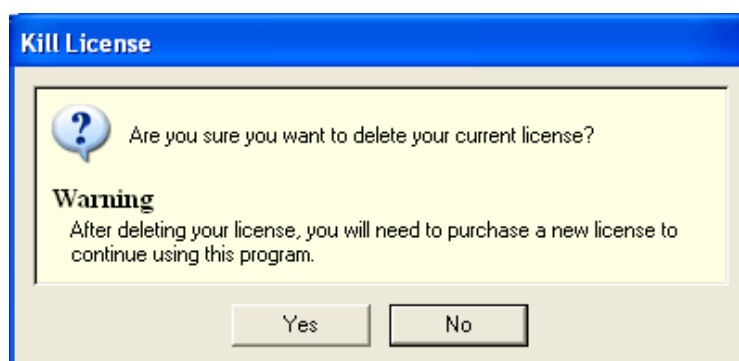
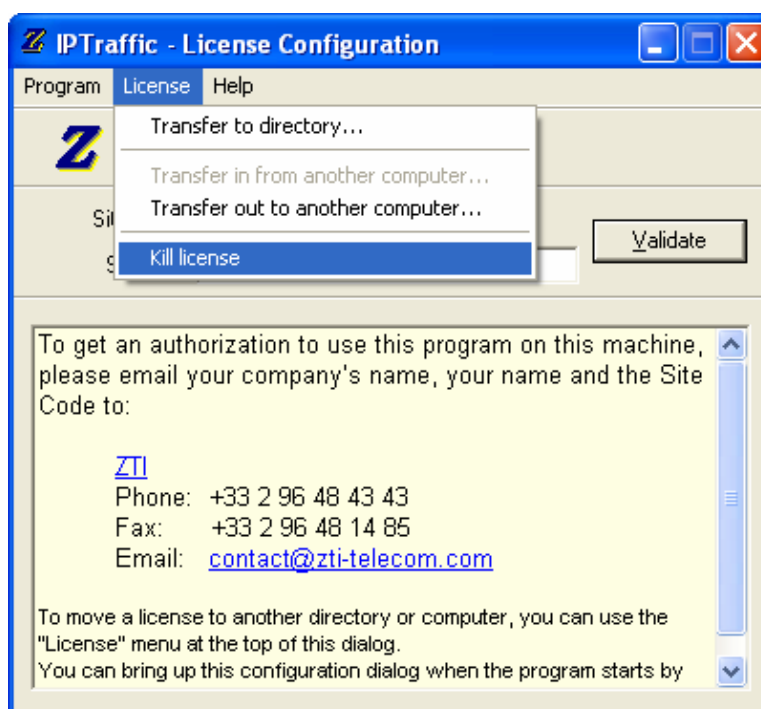
Click Finish to continue.

### 4.3. How to kill a license

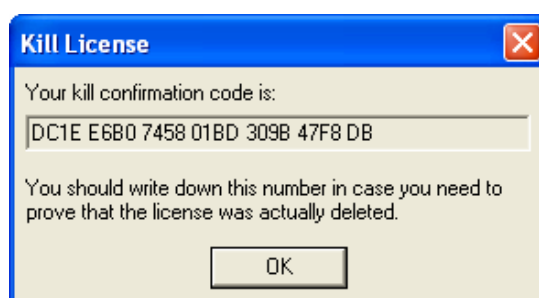
If you would like to transfer an unlimited license key onto a PC where a trial period is still active, you should first delete the active trial period. If you don't delete the active trial period, you will not be able to transfer an unlimited license.

To delete the trial license, you should proceed as follows:

- From the license configuration window, select "License > Kill License" in the license menu as shown below:



- Press 'Yes' and your license is now deleted. Please write down the kill confirmation code. This code may be requested by ZTI.



## PART 5 Uninstall "IP Traffic - Test & Measure"

The uninstall procedure is a standard uninstall program.

To uninstall **"IP Traffic - Test & Measure"** select "Uninstall IP Traffic – Test & Measure" in the "Start > Programs > IP Traffic – Test & Measure" menu.

<i>Windows 98 uninstall</i>	<i>Windows 2000/XP/Server 2003 uninstall</i>
<p>Then delete all remaining files in the directory "C:\Program Files\IP Traffic".</p> <p>To uninstall the packet capture driver installed by the WinPcap Setup program, select the 'Add/Remove programs' icon of the "Control Panel" and then uninstall the "WinPcap 3.0" program.</p> <p><a href="#">Then reboot your PC.</a></p>	<p>Then delete all remaining files in the directory "C:\Program Files\IP Traffic".</p>



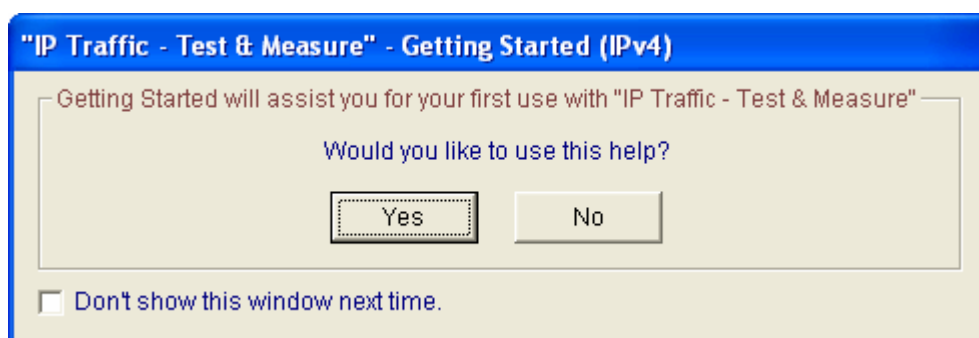
## PART 6 "IP Traffic - Test & Measure" Getting Started



*Anti-virus or firewall applications may disrupt "IP Traffic - Test & Measure" when sending or receiving data.  
Please set up your security software before using "IP Traffic - Test & Measure" (see PART 7 and PART 8).*

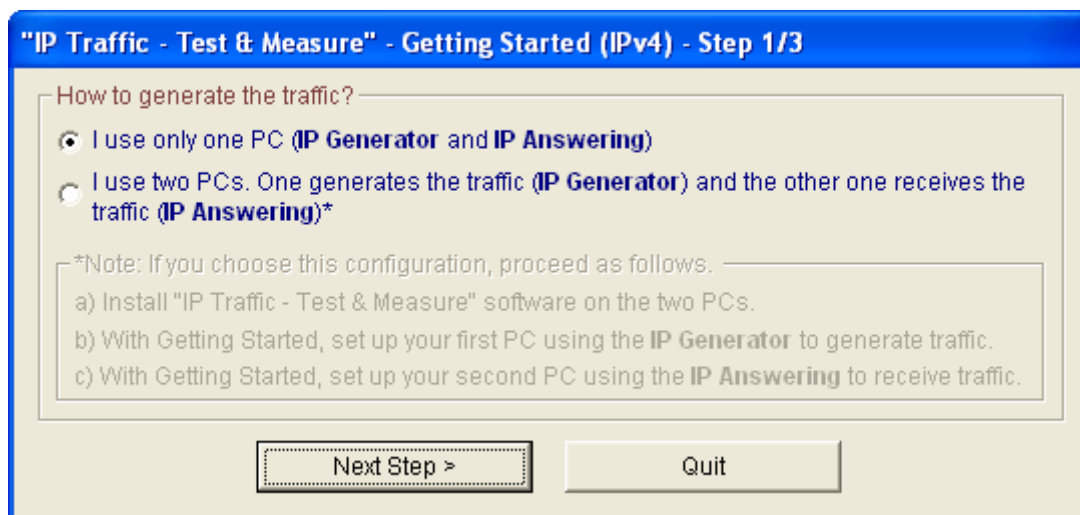
New users can use this help as an introduction to **"IP Traffic - Test & Measure"** and generate or receive traffic with the IPv4 protocol in a few clicks.

Just after launching **"IP Traffic - Test & Measure"**, the Getting Started Window is displayed:

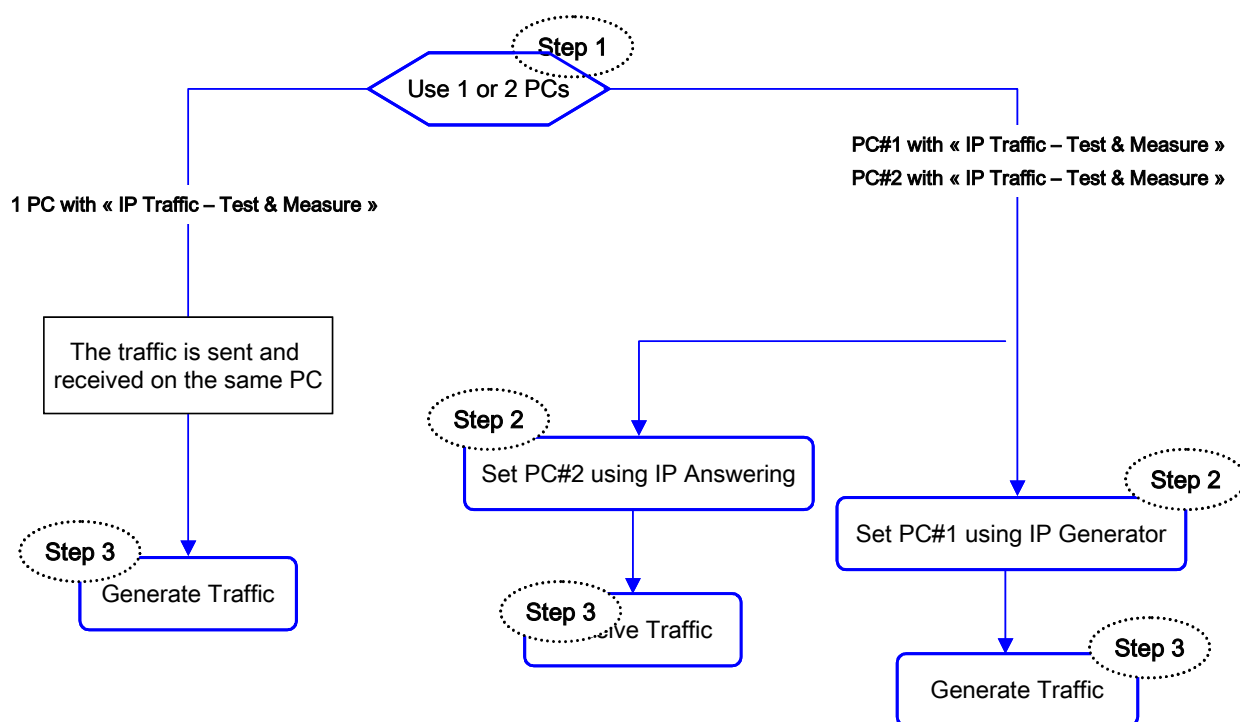


Press **No** if you don't want to use this help.

Press **Yes**, the next window will ask you if you want to use 1 or 2 PCs:

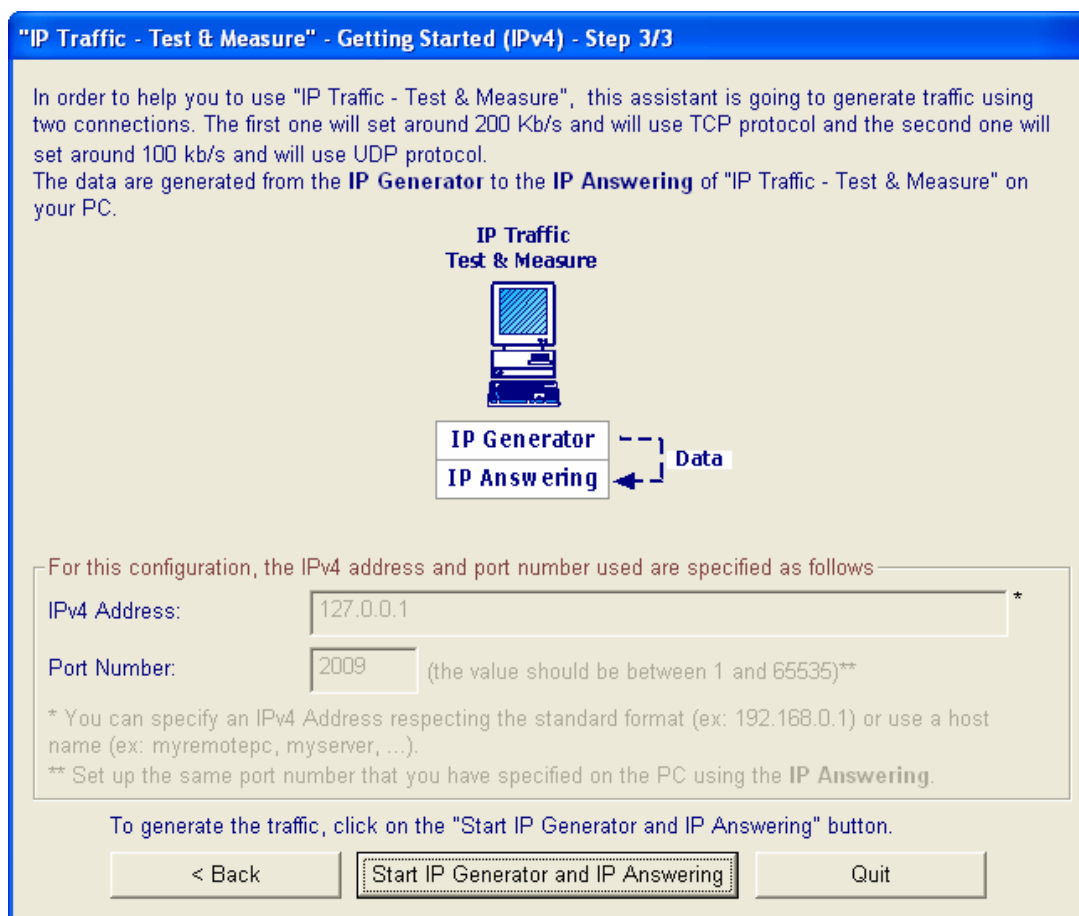


Depending on your choice to use 1 or 2 PCs, the plan below shows the steps:

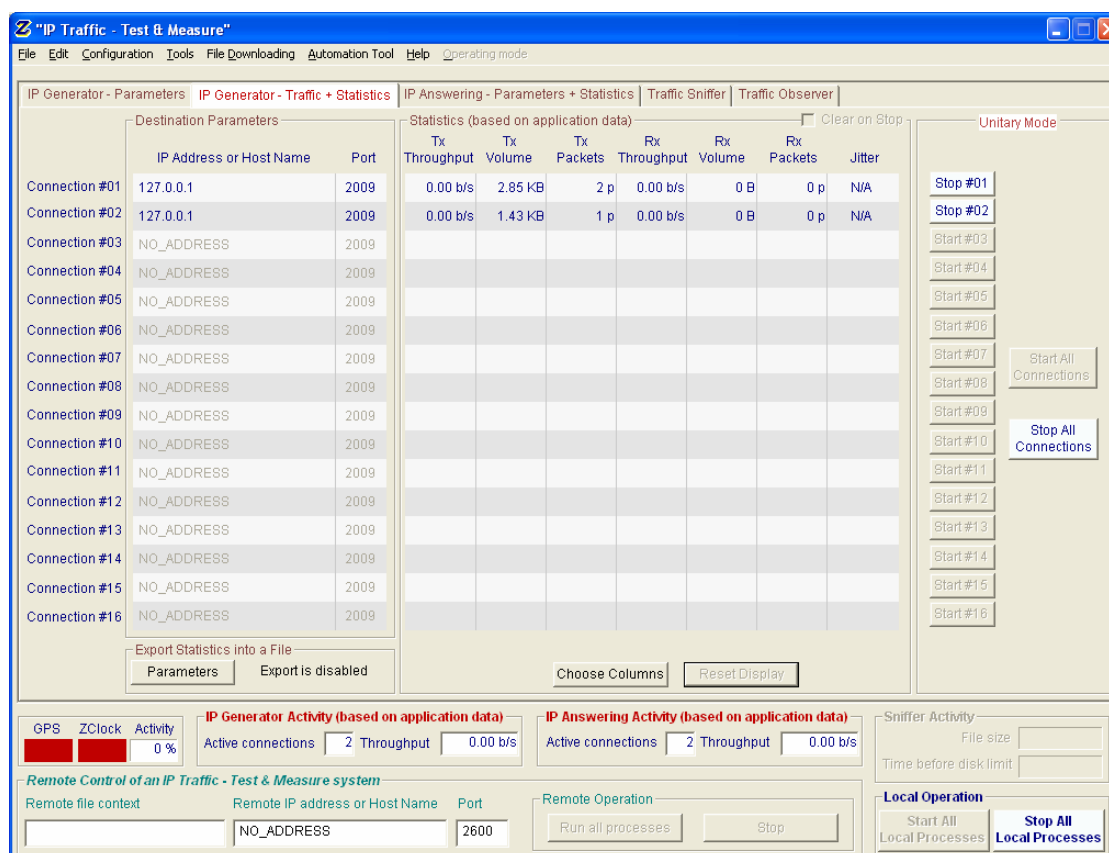


### For the use of 1 PC

The following windows are displayed.



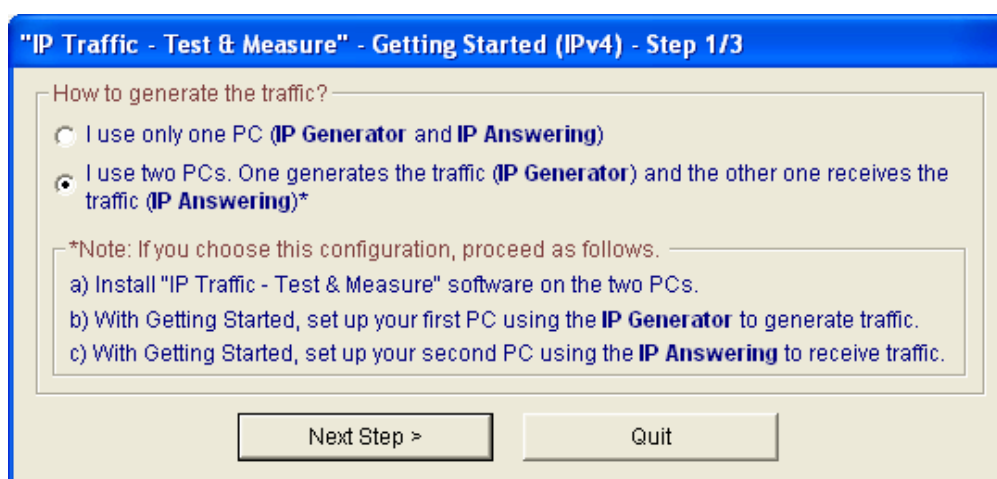
Then press the "Start IP Generator and IP Answering" button to continue. The "IP Generator – Traffic + Statistics" tab of **"IP Traffic - Test & Measure"** will display the two first active connections as shown on the following window:



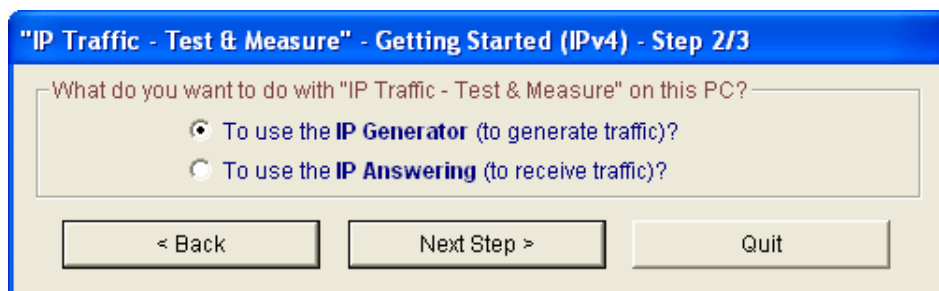
### For the use of 2 PCs

If you select the option: **I use two PCs**, read the following instructions.

**"IP Traffic - Test & Measure"** must be installed on the two PCs.

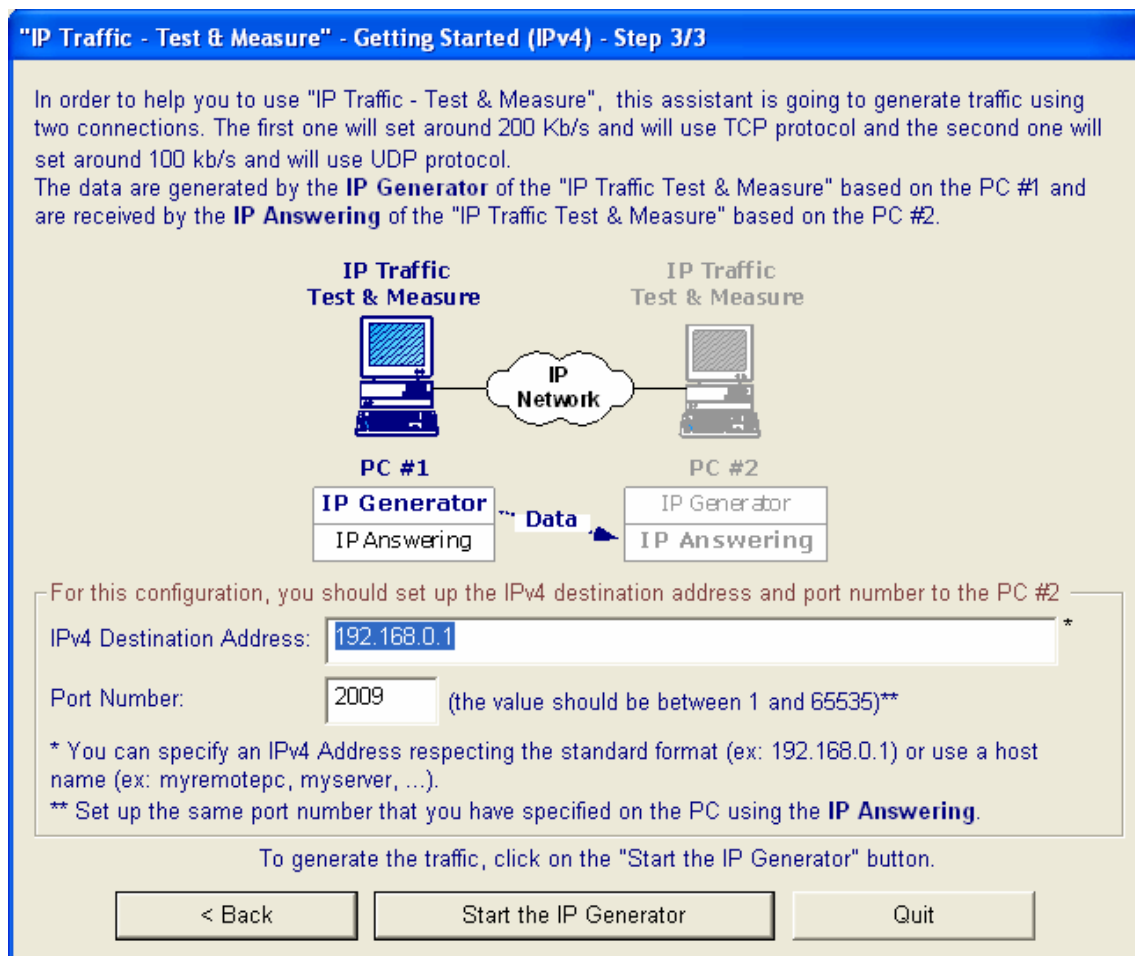


Press "Next Step >" to continue.



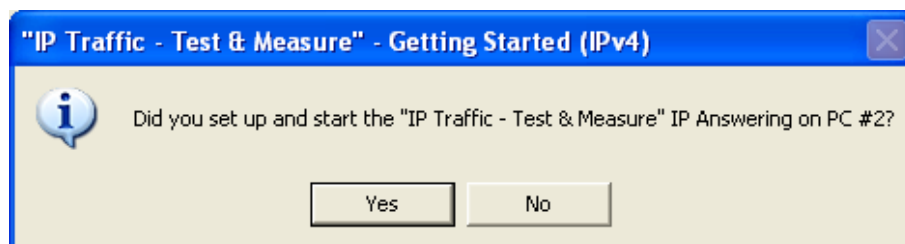
Then choose if you want to generate or receive the traffic on this PC.

If you select "Use the IP Generator" the following window will appear:

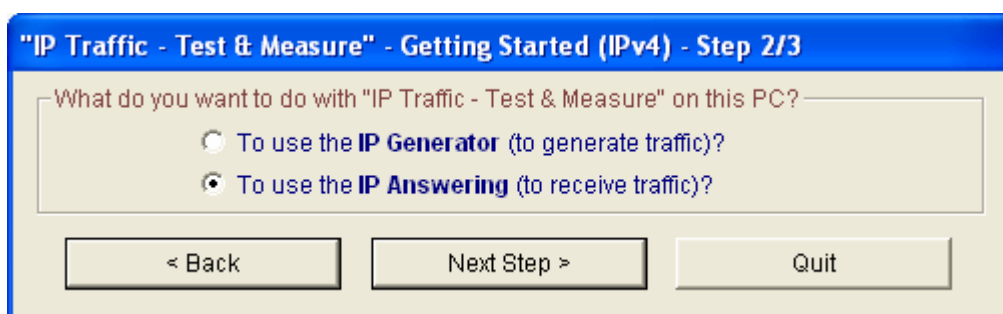


Define the IPv4 address and port number to use.

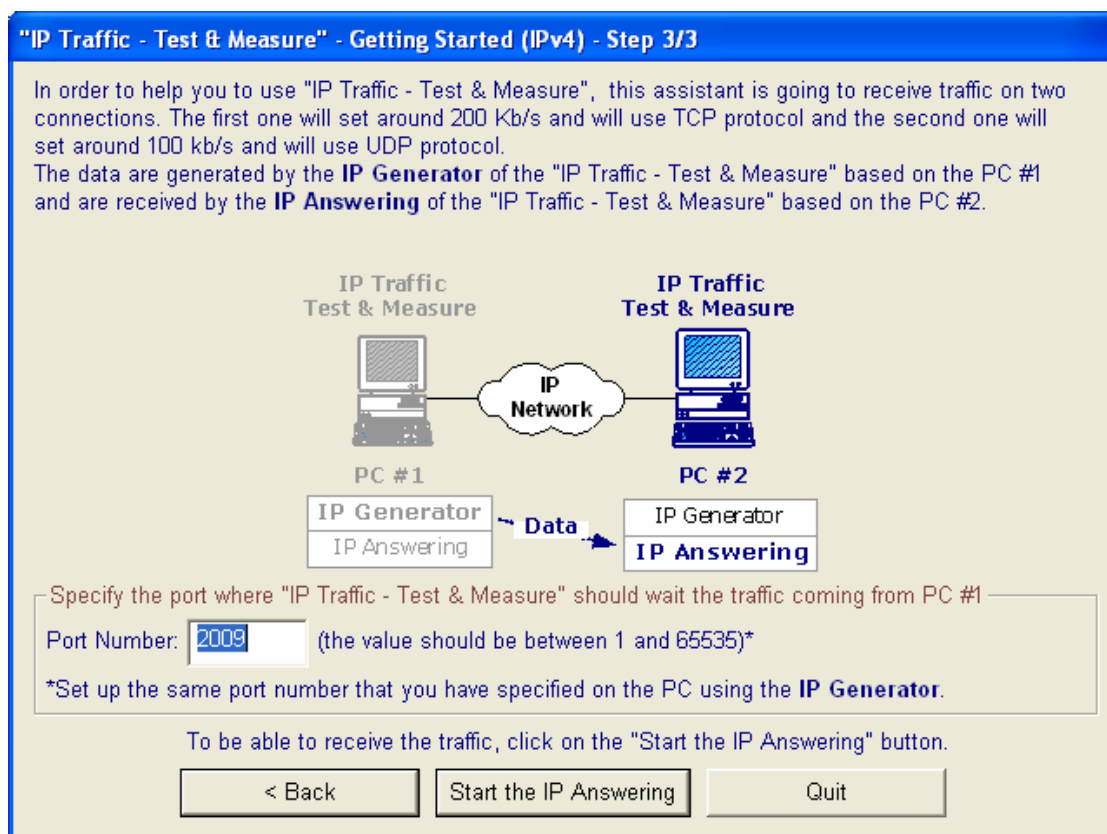
Then press the "Start the IP Generator" button and a warning dialog is displayed:



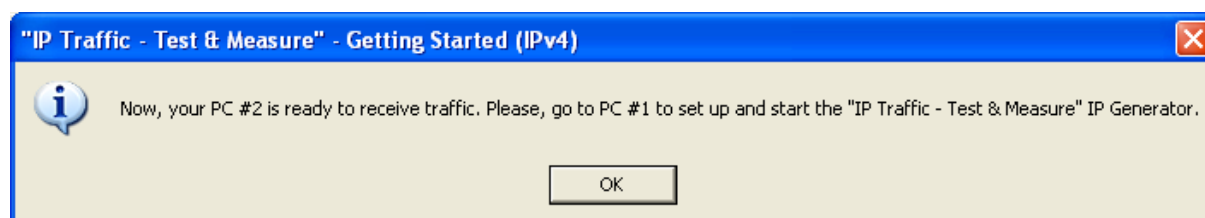
Before generating traffic towards PC # 2, the PC # 2 must be configured as IP Answering.



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



After pressing the "Start the IP Answering" button, a warning message will appear:



Press "OK" and the "IP Answering – Parameters + Statistics" tab of **"IP Traffic - Test & Measure"** is displayed on PC # 2.

Then go to PC # 1 and start the **"IP Traffic - Test & Measure"** IP Generator. The "IP Generator– Traffic + Statistics" tab of **"IP Traffic - Test & Measure"** displays now the two first active connections.

You have now 2 connections generating traffic from PC #1 to PC # 2.

## PART 7 Run "IP Traffic – Test & Measure"

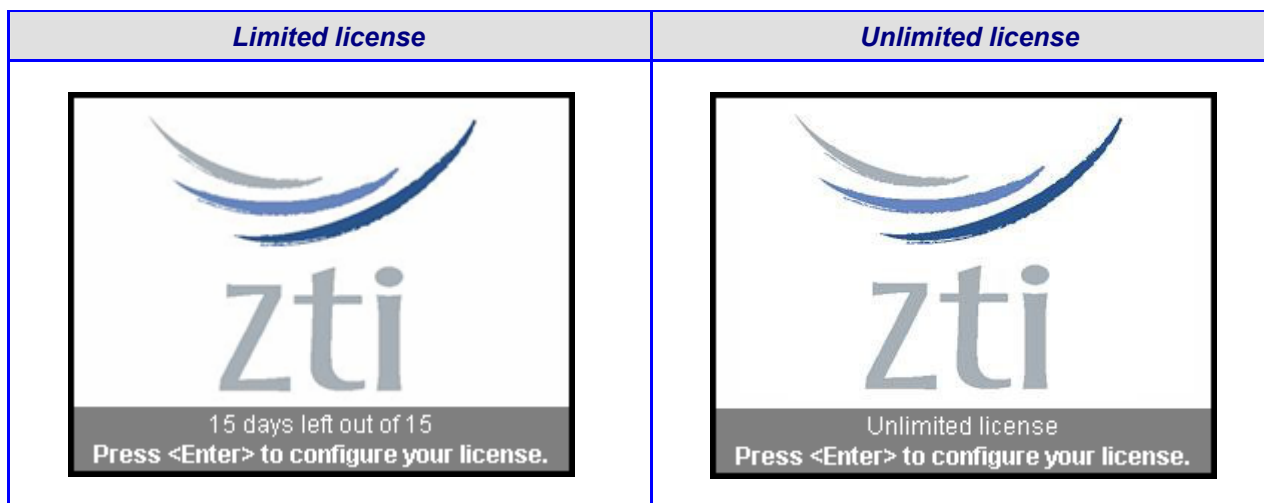
Use the Windows start menu:

Start ► All Programs ► IP Traffic –  
Test & Measure ►



Click  
here.

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



Press **Enter** only if you need to configure your license,

If you don't, allow a few seconds for the main window of **"IP Traffic - Test & Measure"** to open.

With Windows XP Service Pack 2, the window below may appear.

This window allows configuring the Windows Firewall settings for **"IP Traffic - Test & Measure"**. Click on the "Unblock" button to add **"IP Traffic - Test & Measure"** into the authorized programs list.



## PART 8 "IP Traffic - Test & Measure" / Windows Firewall



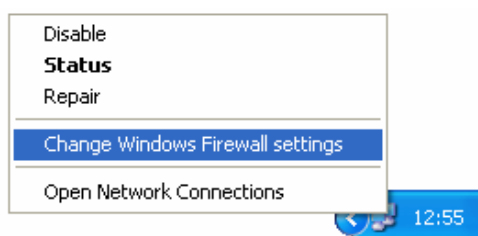
Anti-virus or firewall applications may disrupt **"IP Traffic - Test & Measure"** from sending or receiving data. Please set up your security software before using **"IP Traffic - Test & Measure"**.

Some anti-virus configurations can stop **"IP Traffic - Test & Measure"** working because of their security settings. For commercial anti-virus, please refer to the related documentation to authorize **"IP Traffic - Test & Measure"**.

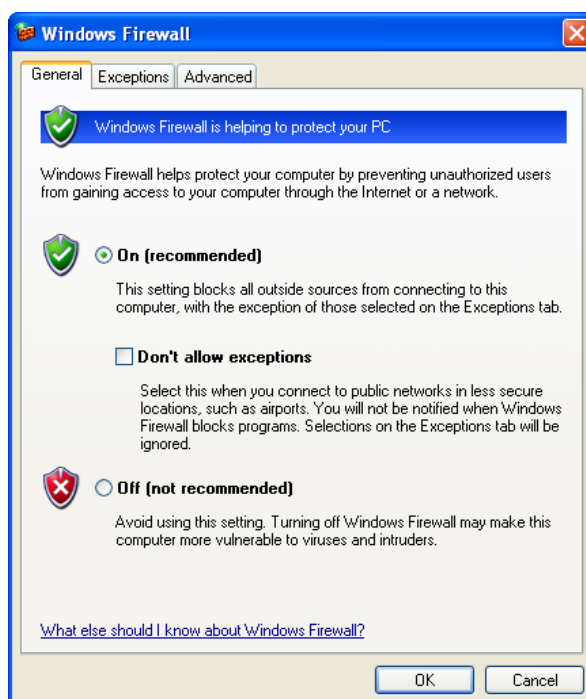
### 8.1. Configuration for UDP, TCP connections and ICMP IPv4

See below how to configure the Windows Firewall included in Windows XP Service Pack 2 or in Windows Server 2003 to use UDP & TCP connections for IPv4 and IPv6, and the ICMP (IPv4) connections.

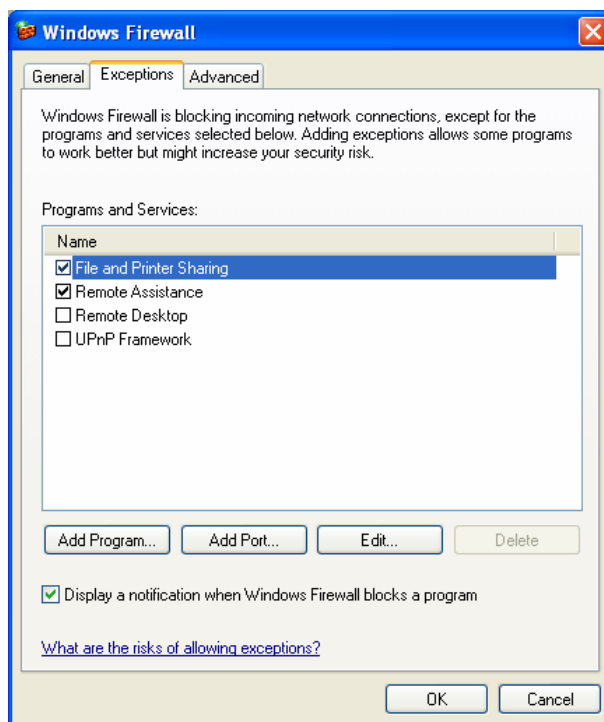
1. Open the Windows Firewall settings window by right clicking on the two computers representing the network interface that **"IP Traffic - Test & Measure"** will use.



2. The window below appears. If the Firewall is off, there is no need to change the settings. If the Firewall is active, proceed as described below:



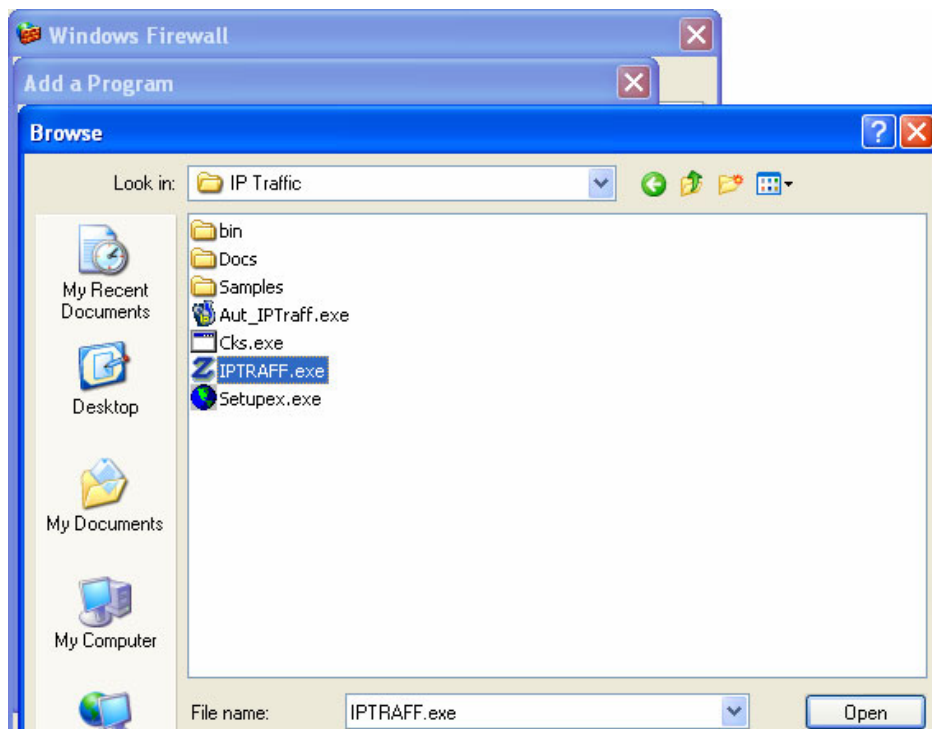
3. First switch on the "Exceptions" tab.



If **"IP Traffic - Test & Measure"** is already in the list, just select it by checking the box and press "OK".

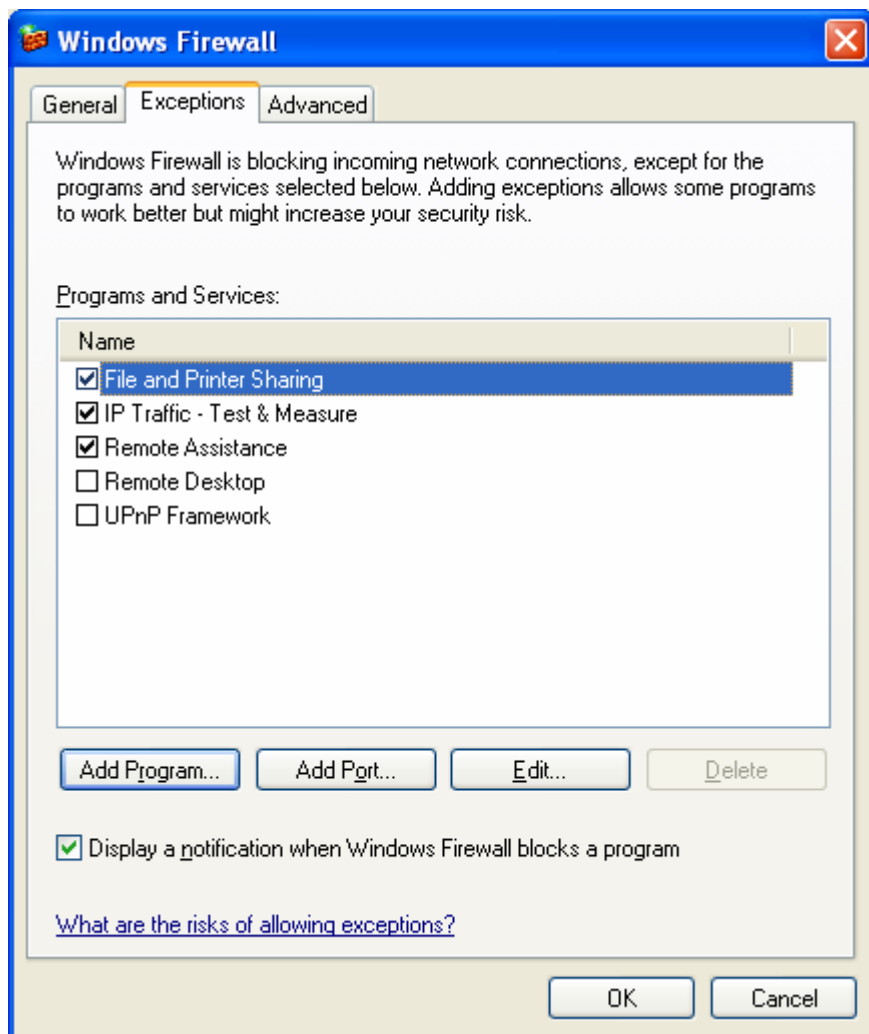
If **"IP Traffic - Test & Measure"** is not in the list, click on the "Add Program ..."

button. Then click on the "Browse" button and add it by selecting the IPTraff.exe file placed in the installation directory (default settings: "[Drive]:\Program Files\IP Traffic").





4. Then select **"IP Traffic - Test & Measure"** into the program list and press "OK".



Now **"IP Traffic - Test & Measure"** is allowed to use ports, generate and receive TCP and UDP IPv4 and IPv6 traffic, including ICMP (IPv4). Click "OK" to save the new settings.

## 8.2. Configuration for ICMP IPv6 connections

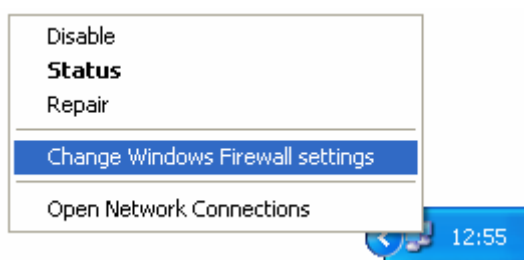


**The use of the ICMP IPv6 connection requires disabling the Windows Firewall before using "IP Traffic - Test & Measure".**

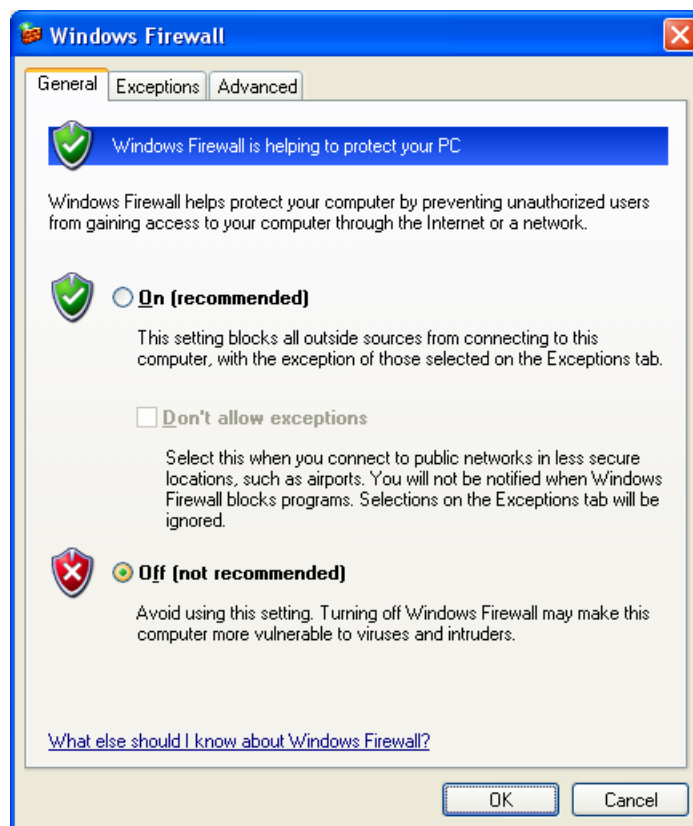
**By disabling the Windows Firewall, you enable the TCP, UDP and ICMP (IPv4) connections as described in the paragraph 8.1.**

See below how to disable the Windows Firewall included in Windows XP Service Pack 2 and in Windows Server 2003 to use ICMP IPv6 connections, as well as TCP, UDP and ICMP (IPv4) connections.

1. Open the Windows Firewall settings window by right clicking on the two computers representing the network interface that **"IP Traffic - Test & Measure"** will use.



2. The window below appears. If the Firewall is off, there is no need to change the settings. If the Firewall is active, select the **Off** option as shown. Then click OK.



### 8.3. How to configure a firewall (list of the ports used)

To be able to quickly configure a firewall, a list of the **default** port's numbers and protocols used by **"IP Traffic - Test & Measure"** is shown hereafter. Please note that the user can redefined all ports used by **"IP Traffic - Test & Measure"**.

Functionality	Port Number	Protocol	IP Version
Remote Mode*	2600	TCP	IPv4 & IPv6
File Downloading*	2500	TCP	IPv4 & IPv6
RPC Server (used to dialog with the Automation Tool)*	1001	TCP	IPv4
Source port number (IP Generator)	1 to 65535	TCP or UDP	IPv4 or IPv6
Destination port Number (IP Generator)	1 to 65535	TCP or UDP	IPv4 or IPv6
Listening to ... (IP Answering)	1 to 65535	TCP or UDP	IPv4 or IPv6
Ping Mode(IP Generator)	-	ICMP	IPv4 or IPv6

\* These ports are opened when the software starts. For the functionalities using IPv4 and IPv6, two ports are opened (one using IPv4 and one using IPv6).