Summary

Part A: Overview

NetDisturb is an IP network emulator software that can generate impairments (latency, delay, jitter, limited bandwidth, lost packets) over IP networks. NetDisturb allows the user to disturb flows on an IP network and so to study the behavior of applications, devices or services in a disturbed network environment.

NetDisturb is inserted between two Ethernet segments (on the same IP network or two different IP networks) and operates bi-directional packet transfer on Ethernet, Fast Ethernet and Gigabit network interface cards.
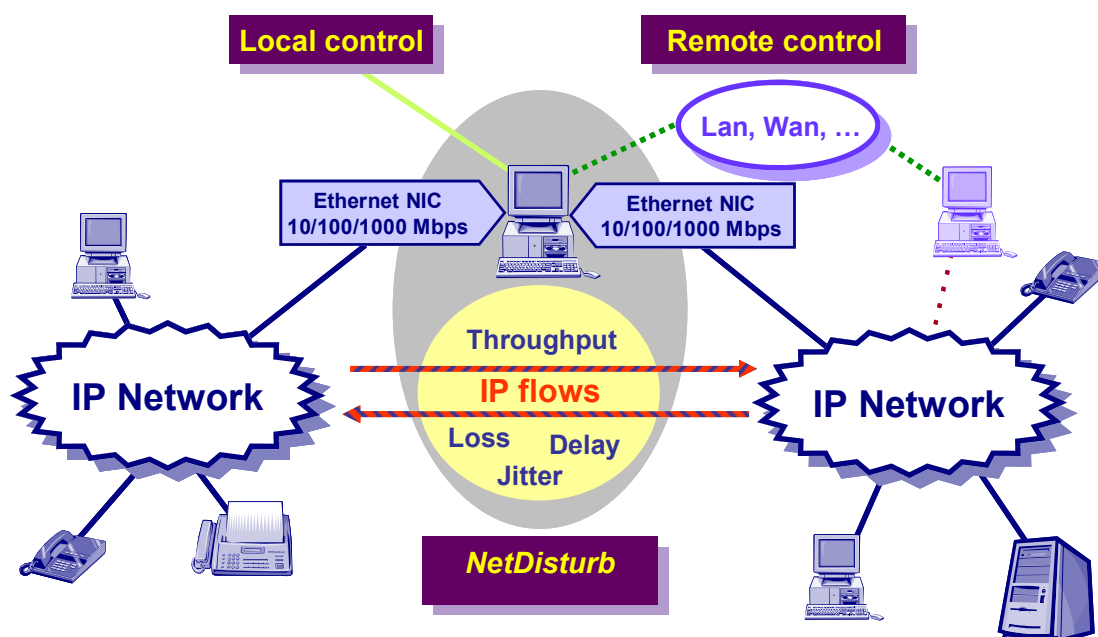
Product Requirements

* Platform: PC running Windows NT4 (SP6), 2000 or XP
with Microsoft TCP/IP installed and at least 256 MB Ram.
* PC multiprocessors and hyper-threading supported.
* Display: 800 x 600 min. resolution.
* Two Identical Network Interfaces Cards (NIC): Ethernet,
Fast Ethernet, or Gigabit Ethernet network interface card.

Configurations

Based on a Client-Server architecture, the NetDisturb software comprises of two
parts 'Server' and 'Client' where the Server handles the impairment characteristics
and the Client manages the Server using a simple graphical interface.
This allows two configurations where the Server and Client parts may be installed on
the same PC host (local control) or the Server part resides on one PC and the Client
part resides on a second PC (remote control). In this second configuration, the Client
dialogs with the Server by using a Wan (for example: PSTN or ISDN) or LAN link.
Both configurations require two identical Ethernet Cards for the Server.

Client and Server on the same PC   *Client and Server on 2 PCs*
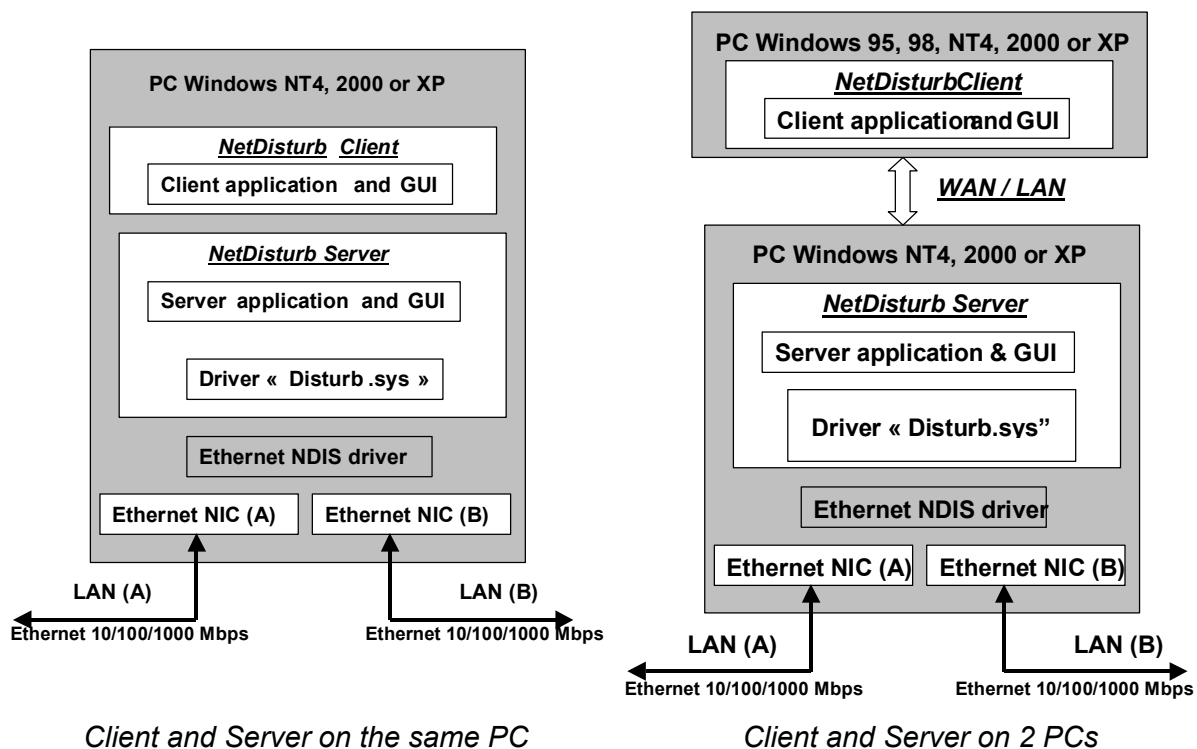
The "Disturb.sys" NetDisturb driver sets in the kernel of the operating system and is
installed above the NIC drivers. This driver is used by NetDisturb to handle the
exchanges with the NICs.

Part B: install, uninstall and license configuration

To install this software testing tool, you need a PC Windows NT 4 / SP4 (Service Pack 4 or more), Windows 2000 or Windows XP, and a 800 x 600 display resolution. If you have the NetDisturb CD-ROM software version, please refer directly to paragraph 2.

The NetDisturb software is configured by default with a 15-days limited license. When the time limit expires, NetDisturb will cease to run. See the License configuration part for more information about the license program.

1. Install NetDisturb from a downloaded trial version

The installation procedure is a standard installation program.

Please note that the installation procedure of the NetDisturb software will be different in the last part, depending on the target Operating System: Windows NT4 or Windows 2000 and Windows XP.

*Warning: The installation procedure requires to be logged on with **administrator privileges.***

- If you have downloaded the "NetDisturb" software trial version from our website, you have downloaded the file NetDisturb.zip containing the Setup_NetDisturb.exe file.

- Before to proceed with the NetDisturb Setup, please be sure your system does meet the following minimum requirements:
  ⇨ OS supported: Windows NT4 (SP4 at least), Windows 2000 or XP.
  ⇨ Minimum screen resolution: 800 x 600
  ⇨ Your PC needs at least 2 NIC already installed, configured and fully operational.

  NetDisturb is composed of two parts: Client and Server. **This setup will install Client and Server parts on the same system.**

- Run "Setup_NetDisturb.exe" and follow the NetDisturb setup instructions to proceed with the installation.

  By default, the "NetDisturb" software will be installed in the following directory:
  C:\Program Files\NetDisturb with the following subdirectories:
  C:\Program Files\NetDisturb
  C:\Program Files\ NetDisturb \Client
  C:\Program Files\ NetDisturb \Driver
  C:\Program Files\ NetDisturb \Server
  C:\Program Files\ NetDisturb \Server\Script

- At the end of the setup, after copying files to the system:

⇨ A text file is automatically opened to explain the next step: installation of the NetDisturb driver on the system

⇨ The control panel is automatically opened in order to proceed with the driver installation.

The NetDisturb driver installation depends of the target O.S. (NT4 or 2000/XP).

NetDisturb - driver installation for Windows 2000 or Windows XP

The NetDisturb driver sets in the kernel of Windows 2000. This driver is installed on top of the driver of network cards. For Windows 2000 or XP, it is considered as a protocol. The NetDisturb Driver goal is to handle the exchanges between two Network Interface Cards (NICs).

The installation of the driver is realized transparently. The Driver is mapped on top of each Ethernet or wireless NIC when the interface returns by that NIC is NDIIS compatible.

In order to avoid unexpected traffic generated by the protocol stack (TCP/IP, Client or Microsoft Networks, etc.) on the NIC that will use NetDisturb, you should unselect all protocols to have only the NetDisturb component linked to the selected NICs. Then close this window. The NetDisturb driver is now linked to all LAN connections defined in your system.

> **To unselect protocols form the NIC used by NetDisturb, use the "Control Panel/Network and Dial-up Connections" application to *uncheck* protocols.**

NetDisturb - driver installation for Windows NT4

NetDisturb Driver sets in the kernel of Windows NT. This driver must be installed over the driver of network cards. For Windows NT, it is considered as a protocol. The NetDisturb Driver goal is to handle exchanges between two networks interface cards (NIC).

The NetDisturb Driver is a protocol named 'Disturbing Ethernet Driver over NDIS'.
The driver installation is carried out as any usual network driver installation. It must be installed after the network cards drivers. Different protocols can be bound to your NIC. NetDisturb applications need a TCP protocol stack for Client/Server data exchange. So before installation, check that your Windows NT4 computer gets 2 NIC installed and a TCP stack installed.

To install the NetDisturb Driver, you have to use the Windows control panel, and select the following items:

1. Choose "Network" icon

2. Choose "Protocols" tab

3. Click on "Add"

4. Choose "Have Disk..."

5. Type the folder where following files are located: OEMSETUP.INF and DISTURB.SYS (by default: C:\Program Files\NetDisturb\Driver) and press 'OK',

6. Then select the "Disturbing Ethernet Driver over NDIS " and click on "OK",

7. The item 'Disturbing Ethernet Driver over NDIS' appears in the protocol list of 'Protocols' tab,

8. Disable the other protocols bound to the network adapters as follows:
> * Choose "Bindings" tab,
> * In the list box select "show bindings for: all adapters",
> * Disable all protocols bound to each Network adapter used by NetDisturb except Disturb protocol: "Disturbing Ethernet Driver over NDIS" (you need to do it for the 2 used network adapters)
> * Disable "Disturbing Ethernet Driver over NDIS" for all other adapters

9. As a TCP stack is required for NetDisturb Client/Server applications exchange, you must bind the TCP protocol to another one adapter - for example to a modem or another adapter.

This is an example to add a TCP/IP stack onto a modem, which is not necessarily physically connected to your PC. The procedure is as follows:

a) Add a modem via Control Panel / Modem, select "add", then "don't detect my modem, I will select it from a list" and click on "Next",
b) Select any standard modem from the Standard Modem Types manufacturer list (for example Standard 14400 bps modem). Click on "Next",
c) Select a port and click on "Next ".
d) Windows NT should present you a dialog box indicating the end of modem installation.

When you have finished using the control panel, press close to save all changes.

Your system is now configured: you will need to reboot your PC to take changes into account.

Start Menu shortcuts created:

Start > Programs > **NetDisturb**

> ⇨ **1) NetDisturb Server**
> ⇨ **2) NetDisturb Client**
> ⇨ **License help**
> ⇨ **Uninstall NetDisturb**
> ⇨ **User Guide**

2. Install NetDisturb from the CD-ROM

The installation procedure is a standard installation program. On the CD-ROM, you will find the "Setup_NetDisturb.exe" file. **This setup will install Client and Server parts on the same system.**
Execute this setup and follows the installation steps as described in the previous paragraph.

On the CD-ROM, a second setup allows to install the NetDisturb Client on a system. This is useful if you want to install the Server and the Client on two different systems. To install the Client on a system (Windows 95, 98, NT4, 2000 or XP), run "Setup_NetDisturbClient.exe", and follow the setup instructions to proceed with the installation.

3. <u>License configuration</u>

<u>Note</u> : The NetDisturb software is licensed on a per workstation basis. You will need to have a separate license for each machine that you install it on. Each licensed copy of the software installed on a system has a unique Site Code which requires the 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 again the software, the license program disables the trial period).

3.1 To configure a license

If you have a NetDisturb trial version, when you launch the NetDisturb Server a message is displayed showing remaining days of use (for example, 15 days left out of 15 in the following example).
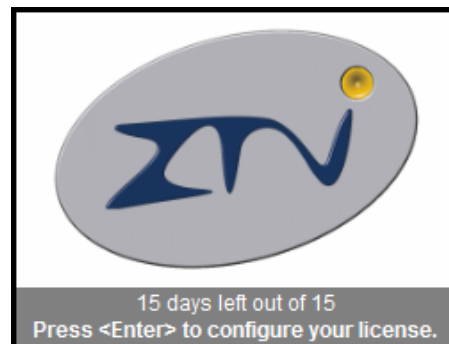
If you wish to configure your license before trial period end, please press <Enter> when this message is displayed. So you will obtain the *License Configuration* window.

Note: at the end of the trial period when you run "NetDisturb Server", the same license configuration dialog appears, with a specific mention instead of the remaining days of use: "Program not authorized" as shown below.
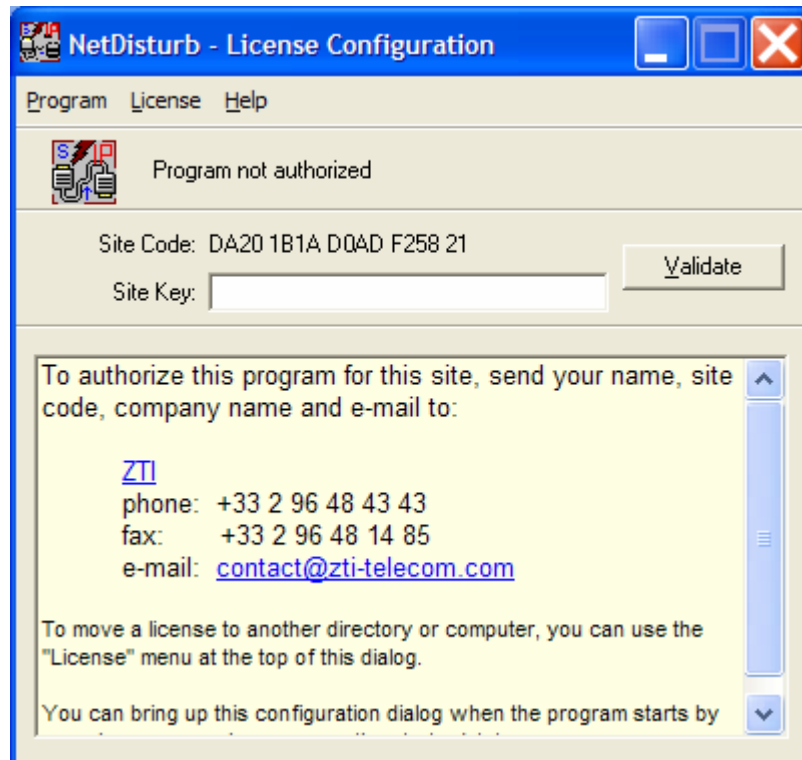

To get the 'Site Key' and obtain an unlimited version, please send your name, 'Site Code' (specific to your system), company name, email and preferred method of payment (if you haven't bought the NetDisturb software yet) to: contact@zti.fr or contact@zti-telecom.com.
We will send you your Site Key once we receive payment.
If you have already bought, please email your Site Code and we will email you back the Site Key for an unlimited license.

After you have entered your 'Site Key', you will get the following message:
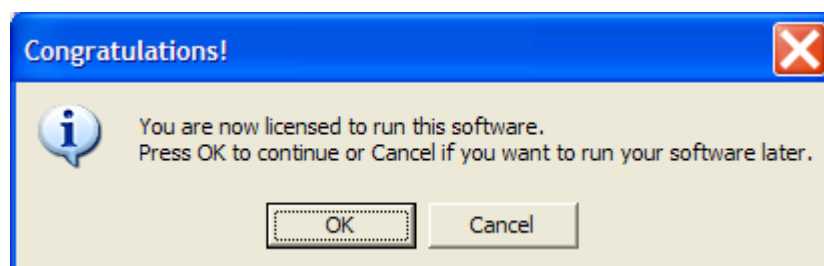
Note: the following window is displayed when you run NetDisturb if you have an unlimited license.

At the end of the trial period, when you run NetDisturb Server (the server part), the following *License Configuration* window will be displayed:
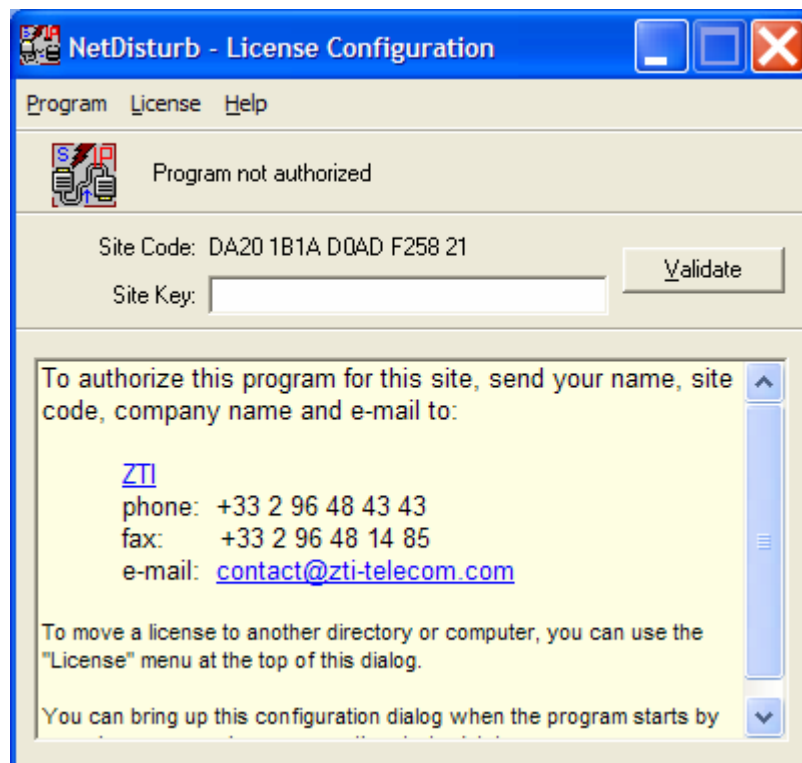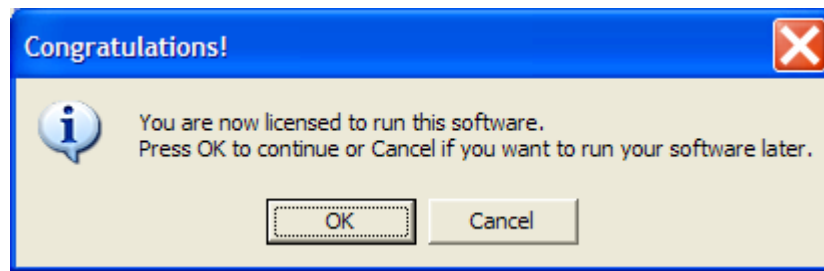

To get the site key, please send your 'Site Code' (specific to your installation), company name, e-mail and preferred method of payment to: contact@zti.fr or contact@zti-telecom.com

We will send you your site key when we receive your payment.

After you have entered your Site key, you will get the following message:

3.2 License transfers

Warning: a license transfer is not a duplication of any type.
Please contact ZTI or your authorized distributor for site license information and for 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 networked PCs.

⇨ Transfer by media: move the license from a source PC to a target PC by using a floppy disk or USB key.

3.2.1 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 the folder "NetDisturb") to the target directory.
  For example from "C:\Program Files\NetDisturb" to "C:\Temp\NetDisturb"

- Then run the program in the original directory (*from "C:\Program Files\NetDisturb\Server"*). When the license configuration window appears, press <Enter> and select in the menu "License > Transfer to directory", as shown below:
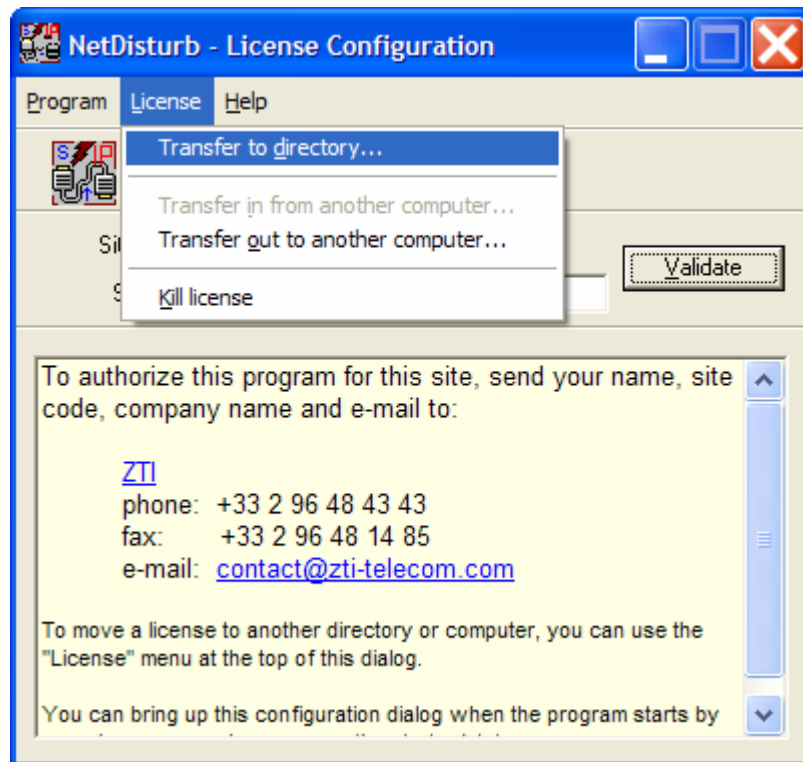
- Provide the path name of the target program (*for example C:\Program Files\NetDisturb\Server\NetDisturbServer.exe*).
  The program copy now has the license awarded the original.

3.2.2 Transfer by media (floppy disk or USB key) from a PC to another PC

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

**Point 1:** First install the program on the target PC (PC# 2).

Point 2: Run the software on PC# 2 and kill the trial license in order to have an unauthorized license on this PC. You need to kill the license if the "Transfer in from another computer …" item of the license menu is disabled.

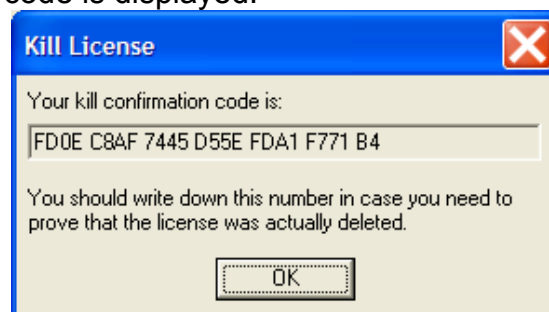To kill the license, please proceed as follows.
When the license configuration window appears, press enter and select in the menu "License > Kill license".
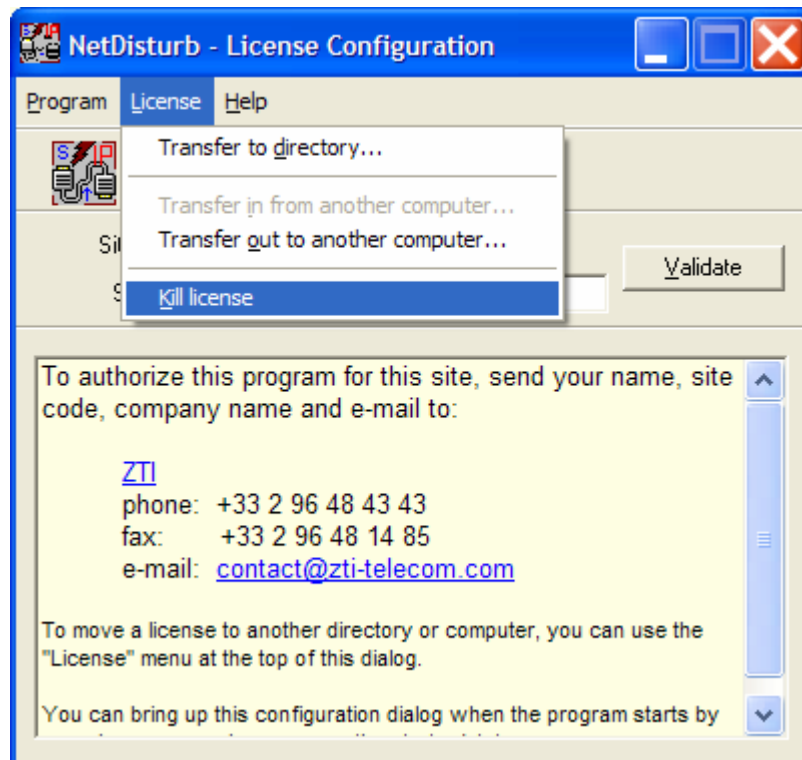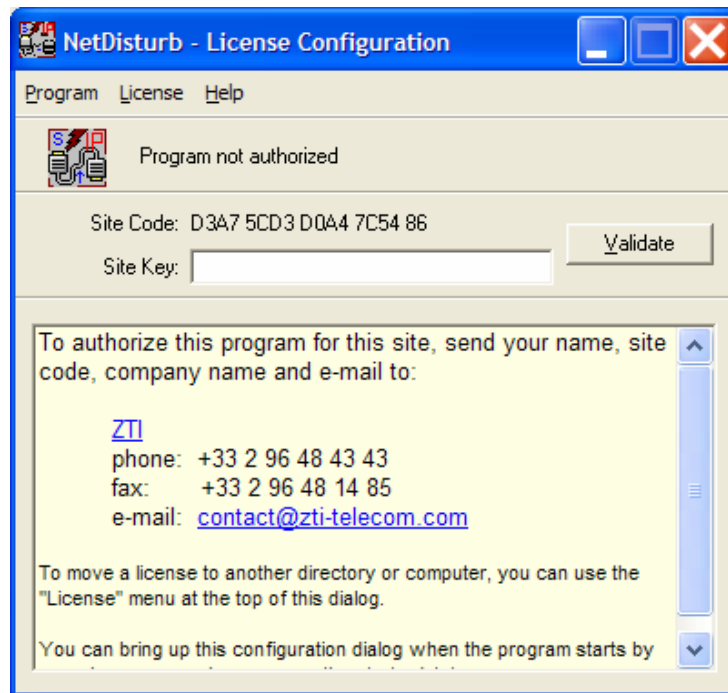
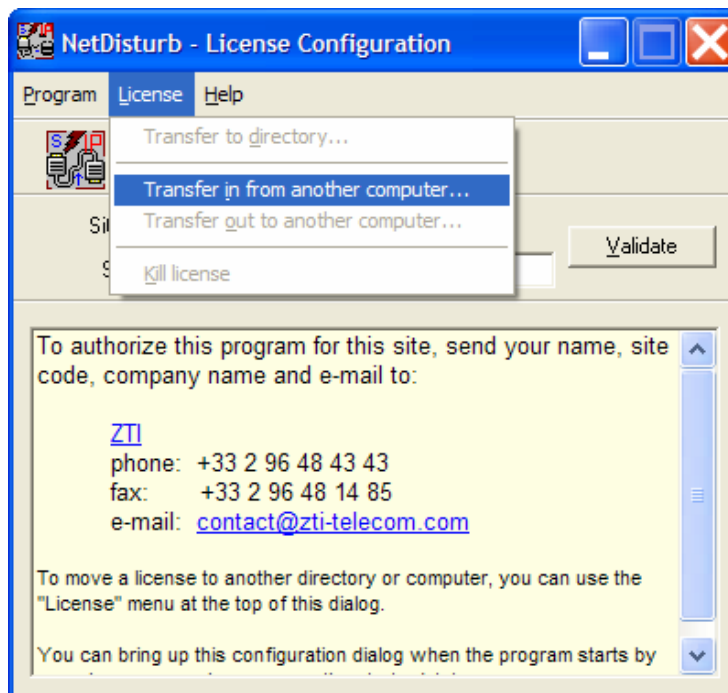A message box appears, press 'Yes' to kill the license.
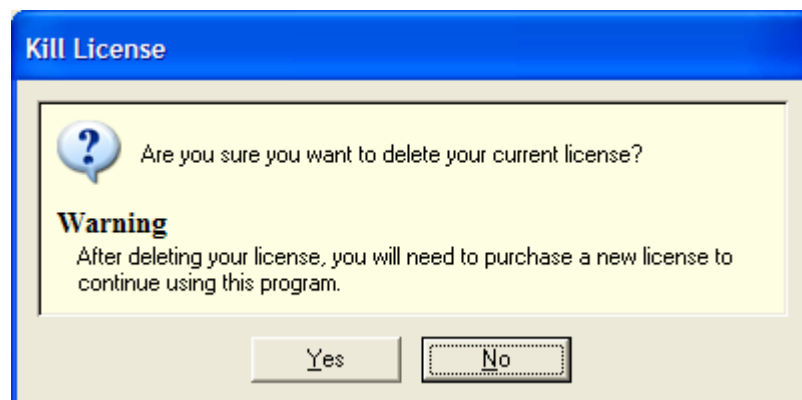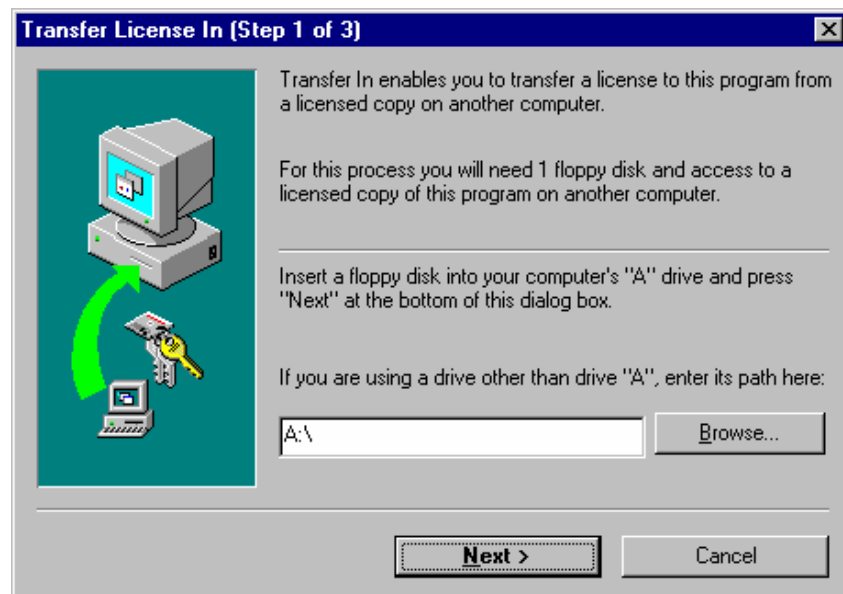
And a kill confirmation code is displayed.

The license window displays now "Program not authorized" as shown below:

Point 3: select in the license menu, the item: "License > Transfer in from another computer …".

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

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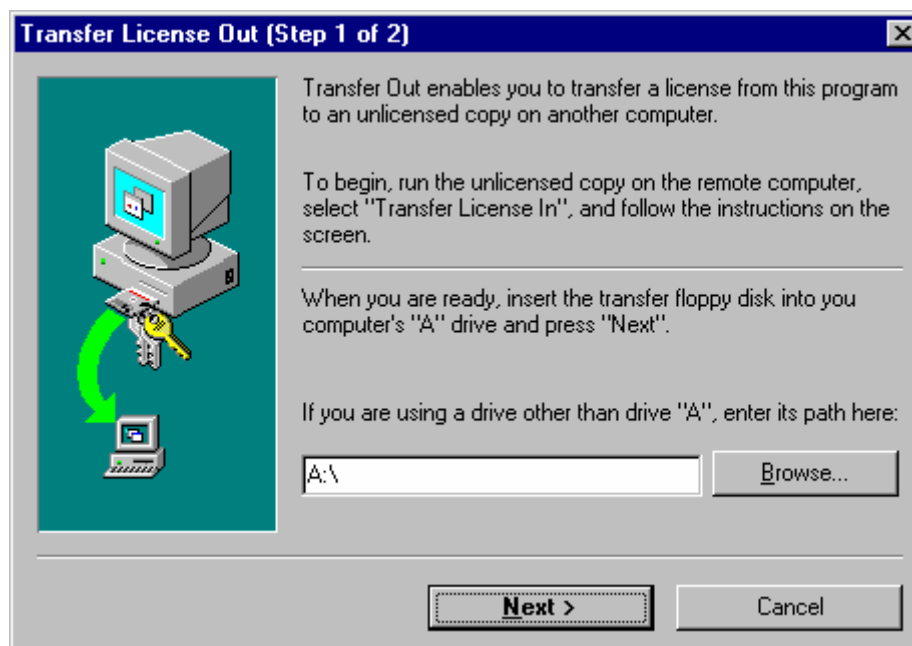Then press "Next >" and the "Transfer License In (Step 2 of 3)" window is displayed:

Point 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 in the menu "License > Transfer out to another computer …" as shown below:
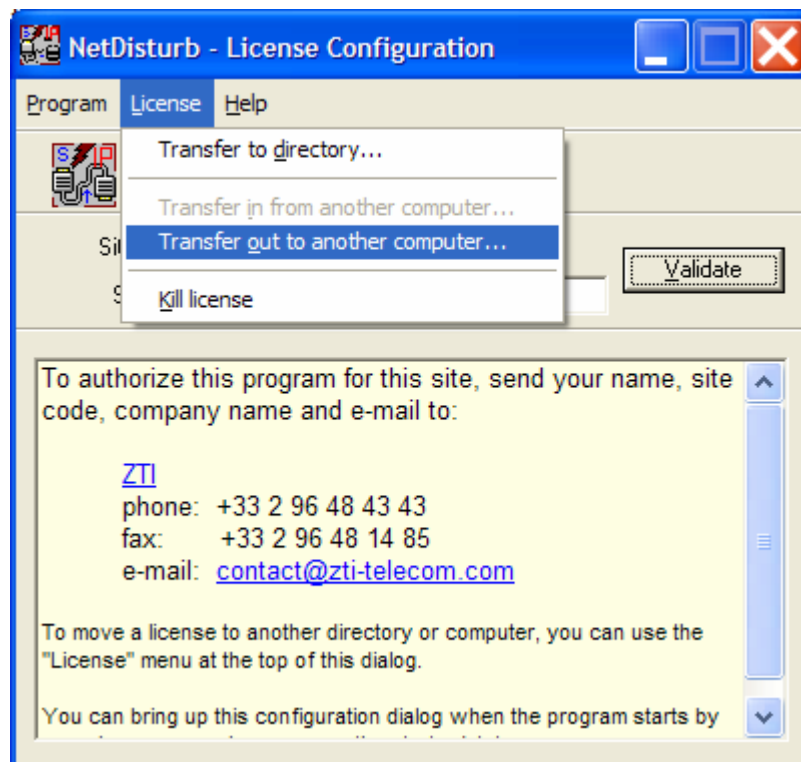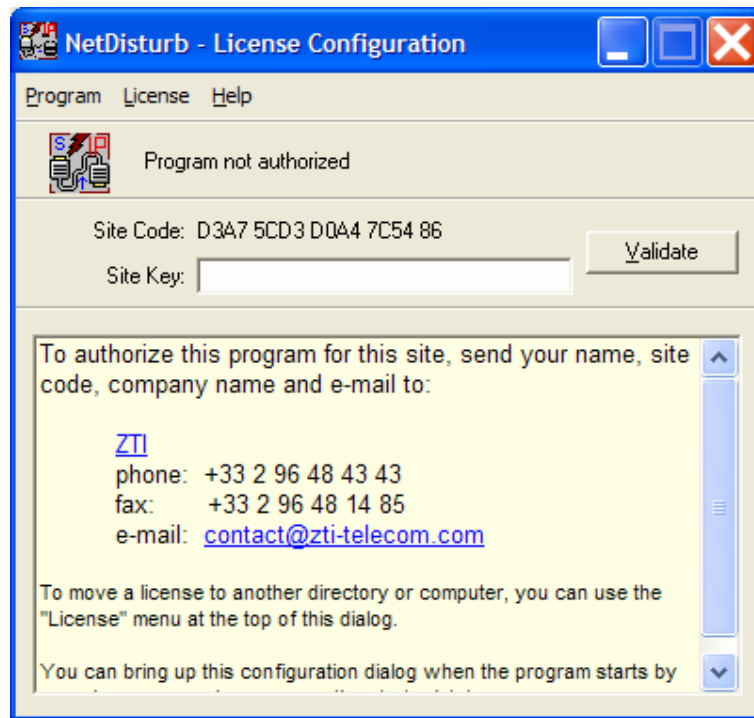
Then the following window is displayed:

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 no more available on the source PC since the NetDisturb software license is on a per workstation basis. Contact us to get information on site license (contact@zti.fr or contact@zti-telecom.com).

Point 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:
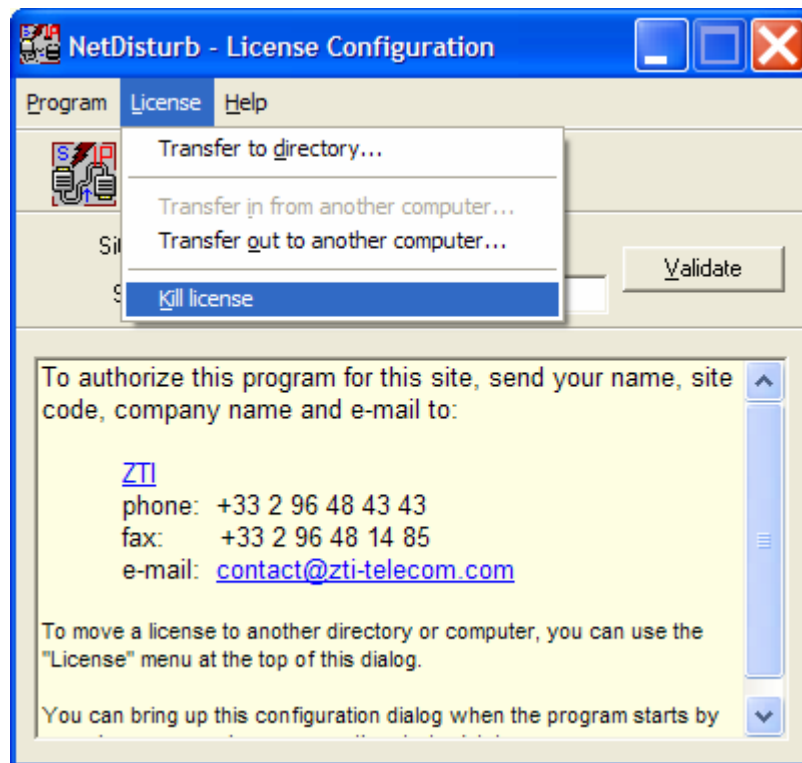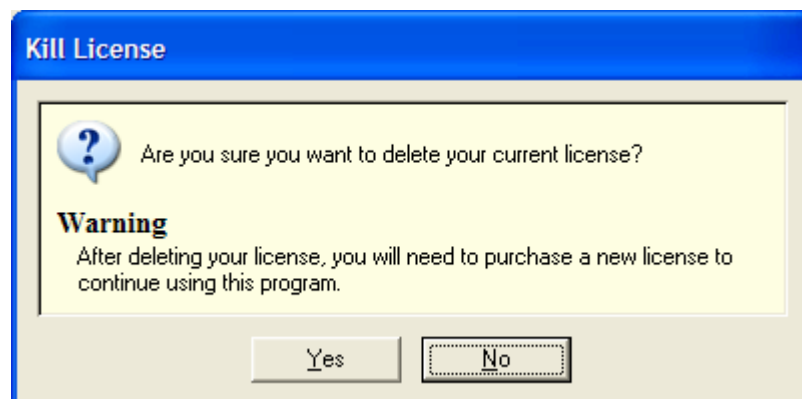

Click Finish to continue.

3.3 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 kill the active trial period. If you don't kill the active trial period, you will not be able to transfer an unlimited license. To kill the trial license, you should proceed as follows:
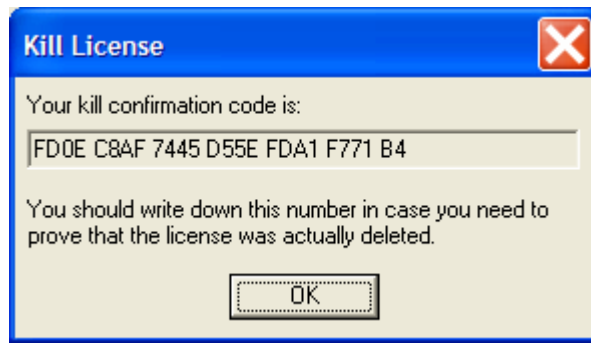
- In the license configuration window, select in the menu "License > Kill License" as shown below.

- A message box appears, press 'Yes' to kill the license.

Kill License

Your kill confirmation code is:

FD0E C8AF 7445 D55E FDA1 F771 B4

You should write down this number in case you need to prove that the license was actually deleted.

OK

Your license is now killed. Please, write down the kill confirmation code. This code may be requested by ZTI.

4. Uninstall NetDisturb

The uninstall procedure is a standard uninstall program.
In the "Start > Programs > NetDisturb" Menu, select "Uninstall NetDisturb".

⇨ **Windows 2000 or XP**

All network components installed by the installation procedure are removed during the uninstall procedure, including the NetDisturb Driver.

⇨ **Windows NT4**

The uninstall procedure is executed and a text file is automatically opened in order to explain how to uninstall the NetDisturb driver.

In Windows NT, the Disturb Driver is not removed by the uninstall procedure because it has not been added by the installation procedure. You should use the Control Panel, run "Network" and choose the "Protocols" tab. Then select the driver "Disturbing Ethernet Driver over NDIS" and click on "Remove".
Then you must restart your PC.

Part C: Run NetDisturb

As the NetDisturb tool is composed of 2 parts (Server and Client), you need to run these two programs with the following order:
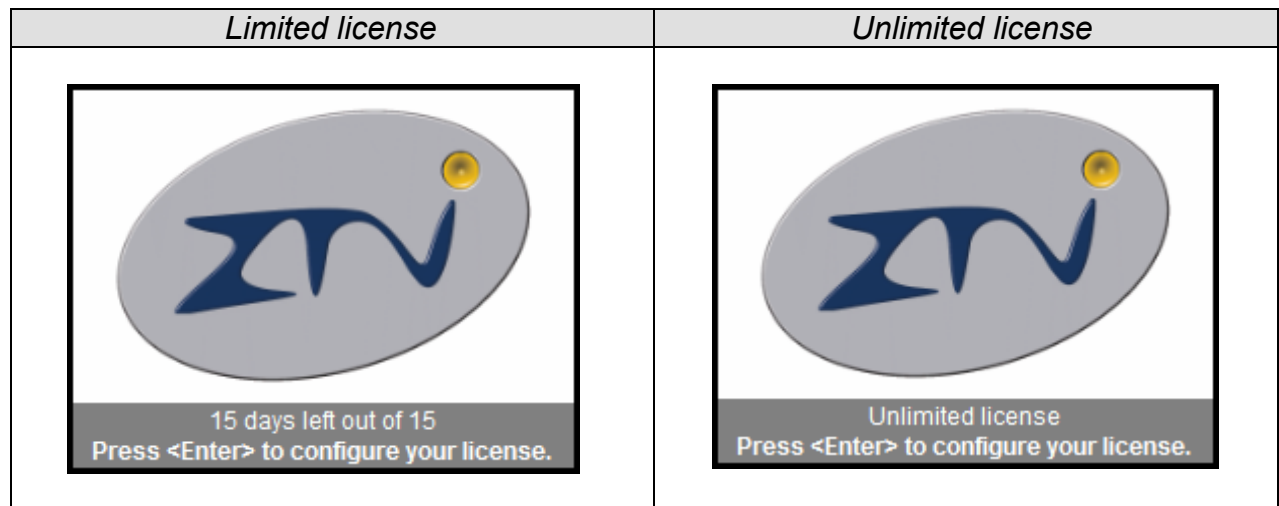
1. **NetDisturb Server**
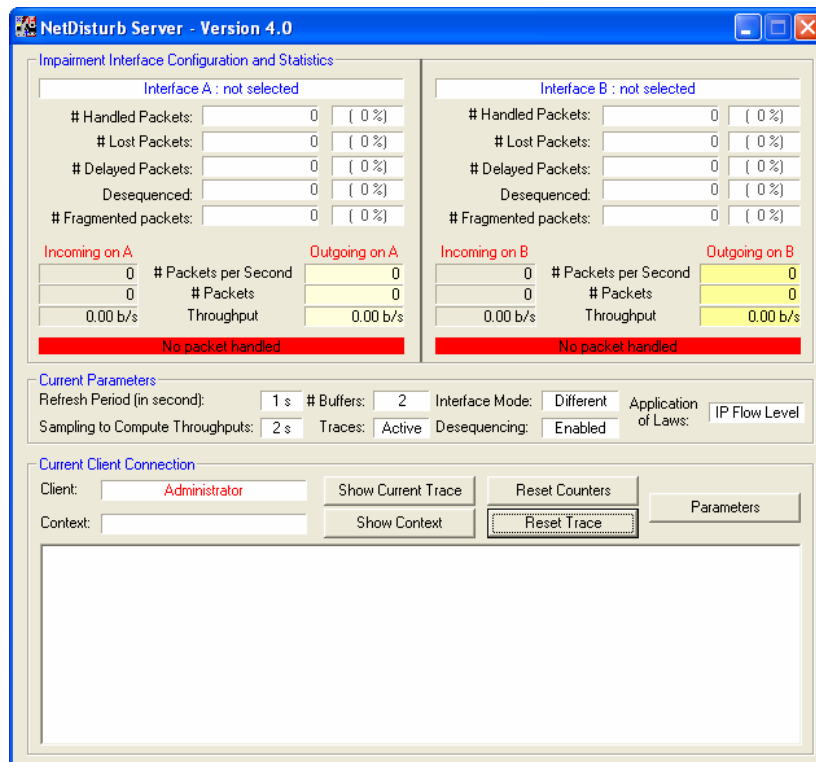2. **NetDisturb Client**

1. First Run

1.1. To start the **NetDisturb Server**, click in the Start Menu on

Start > Programs > NetDisturb > 1) NetDisturb Server

Depending of your license, you will get the following license window:

Limited license	Unlimited license
15 days left out of 15 Press <Enter> to configure your license.	Unlimited license Press <Enter> to configure your license.

When you run NetDisturb server for the first time, the default window is displayed:
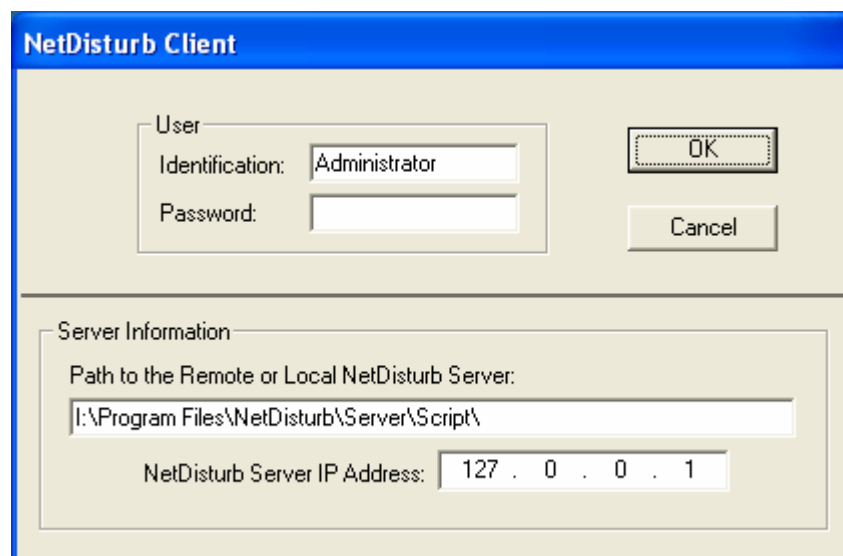
No board (or NIC) has been selected: NetDisturb Server selection interfaces (or NICs) will be done later by the NetDisturb Client application.

1.2. To start the **NetDisturb Client**, click in the Start Menu on

Start > Programs > NetDisturb > 2) NetDisturb Client

NetDisturb Client will ask you to input parameters, as shown in the following window:

- **User Identification** = Administrator

- **User Password** = (no password needed)

- **Path to the remote NetDisturb Server** (Script folder) = C:\Program Files \ NetDisturb\ Server \ Script (if NetDisturb Server is located at C:\Program Files \ NetDisturb\ Server)

- **NetDisturb Server IP address** = 127.0.0.1 (default local IP address, if NetDisturb Server is installed on the same system).

Click on "OK" and then the NetDisturb Client window is pop up:
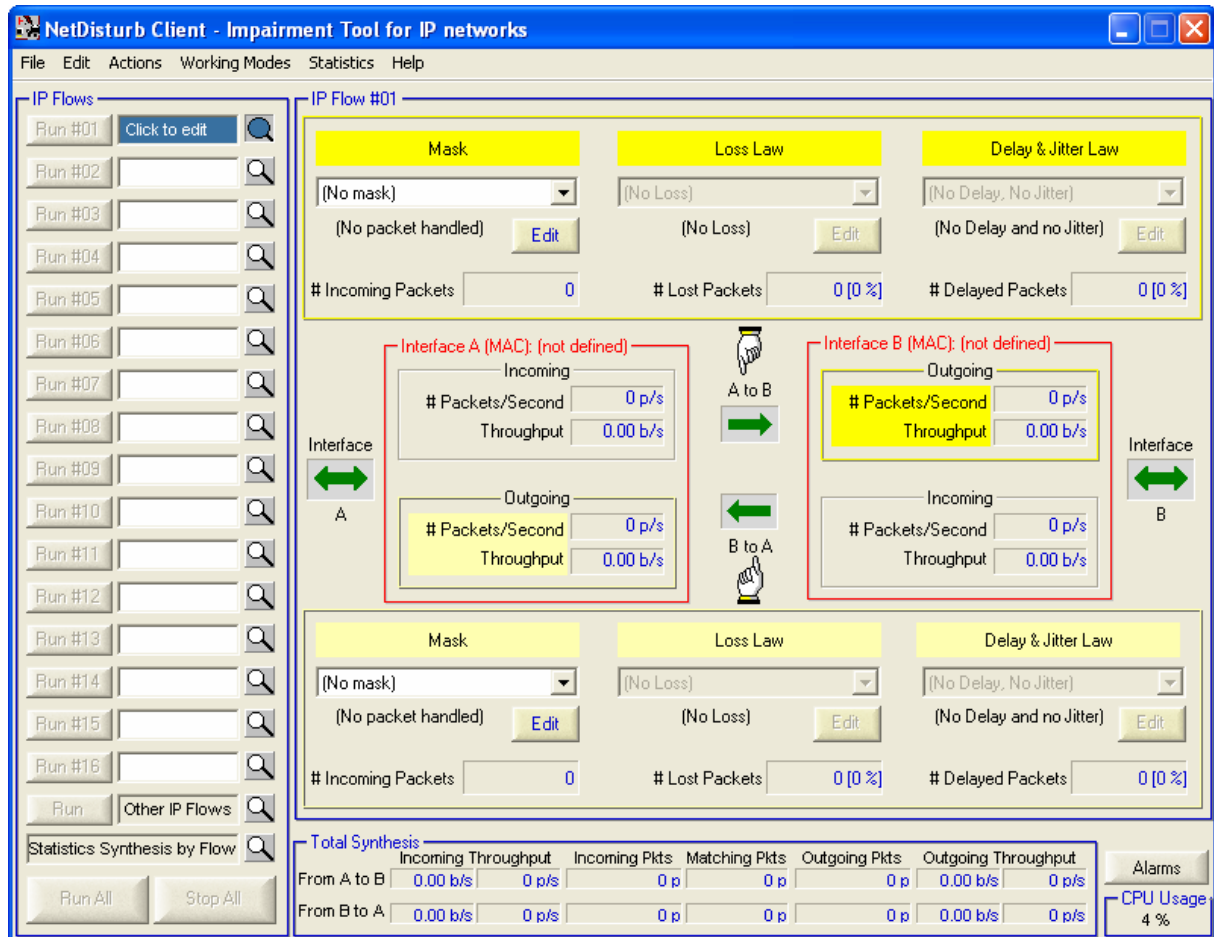
You must configure the NetDisturb Server and select the NICs that NetDisturb is going to use.

Open the "Action/Configuration" menu in the menu bar. The configuration parameters window is displayed:
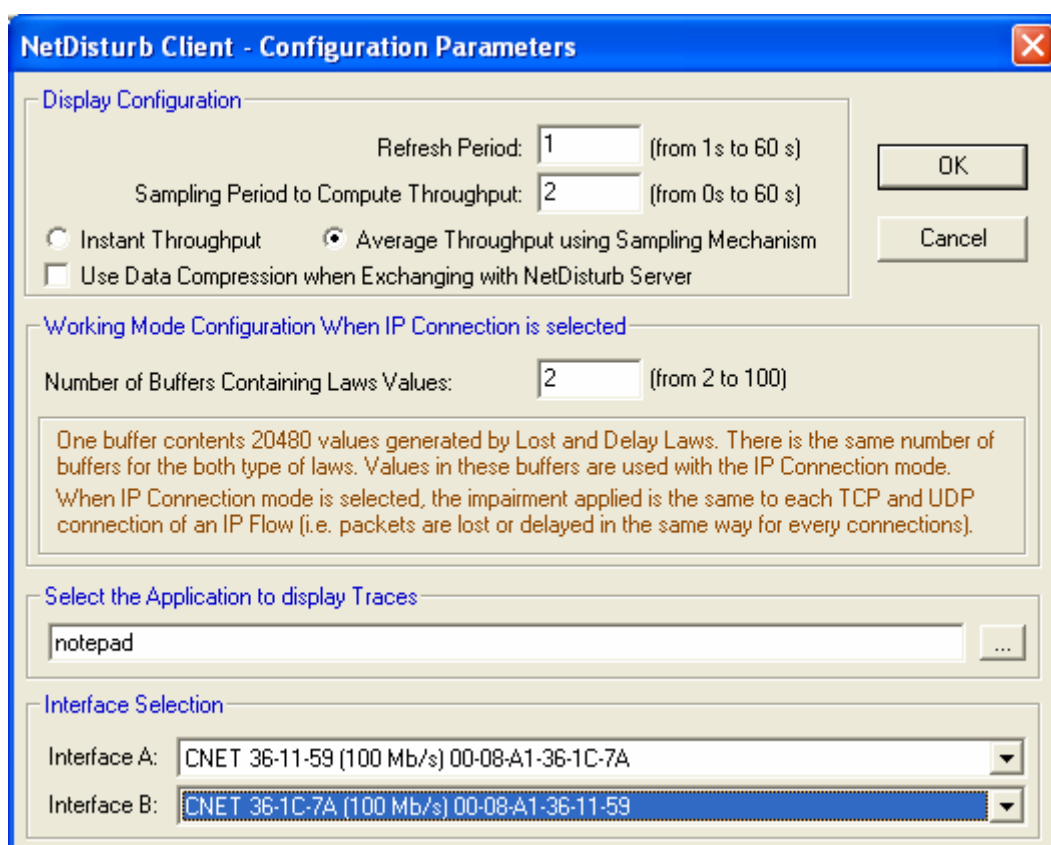
Select one NIC for Interface A and another NIC for Interface B, and then validate with "OK".

Note: you must see in the combo-box (Interface A or Interface B) all NICs available and operational. If you don't see any NICs, please do the following steps:

- Verify that your NICs are installed and enabled
- Enable the NICs needed
- Stop NetDisturb Client
- Stop NetDisturb Server
- Reboot your system if necessary
- Start NetDisturb Server
- Start NetDisturb Client

Normally, you should see your installed NICs in the Interface A combo-box.

As soon as the configuration is done, "Interface A" and "Interface B' are recognized by NetDisturb. The MAC Address of the interfaces is displayed in the Client and in the Server window as shown:
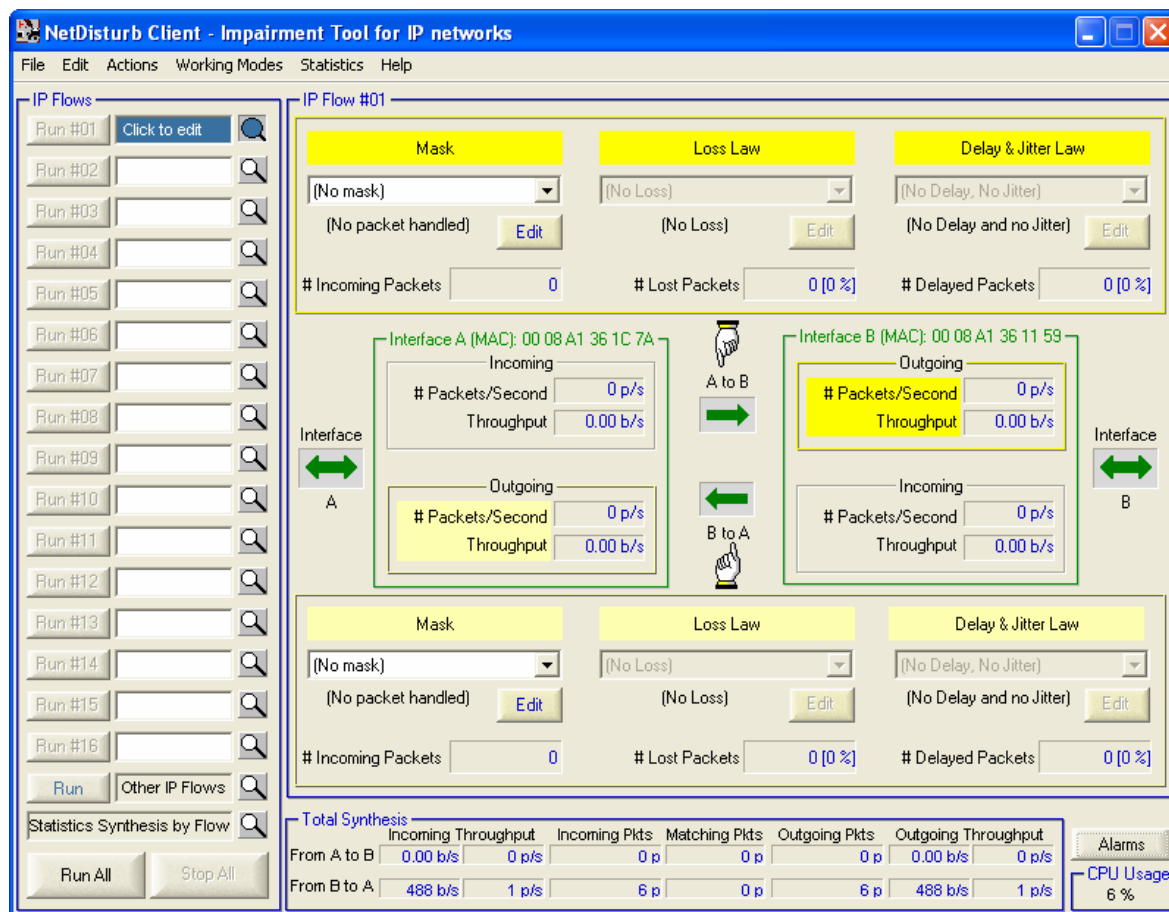
Graphical user interface for NetDisturb Client with two Ethernet cards configured.
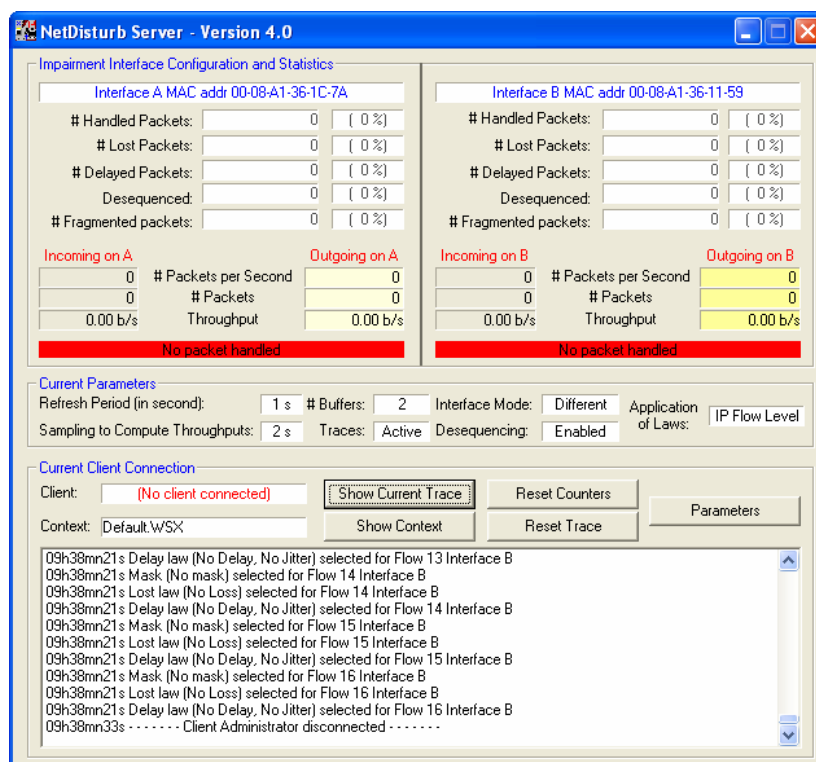
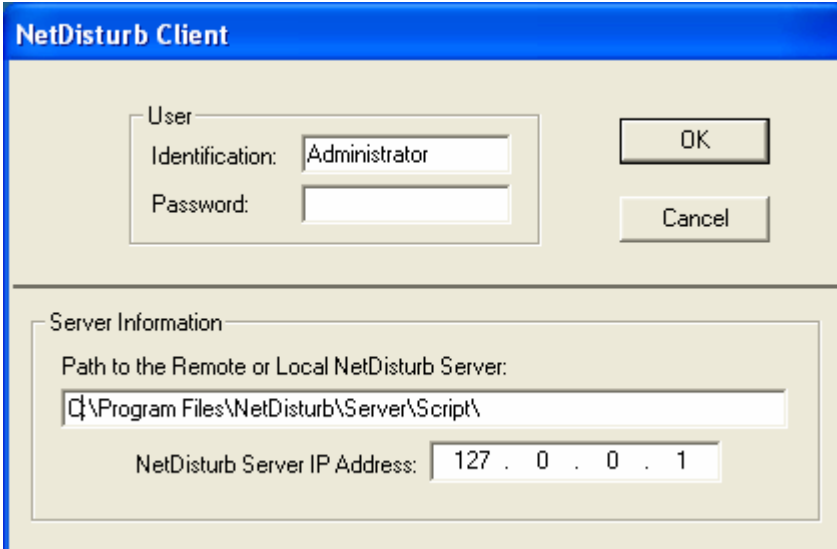*Graphical user interface for Server part with two Ethernet cards configured*

2. Detailed description of Client and Server startup

2.1 Server startup modes

The level of functionality depends on the availability of the NetDisturb Driver. If the Driver is lacking, a message warns the user. In this case it is possible to continue, however only some functions will be available - this is called "Restricted Mode".

2.2 Client startup modes

When starting the **NetDisturb Client**, the User identification and Server parameters window is displayed.

The user identification window is composed of two sections:

❖ **User section**
This section allows user identification. The identification could be either any user name, or the 'Administrator' name depending of the chosen mode (Administrator or User mode). Password is necessary only in association with Administrator name.

ADMINISTRATOR mode:
To be connected as Administrator, Client must provide the corresponding password. With this mode the NetDisturb functionalities are fully available: Client can modify laws, stop or activate the relaying process or change contexts.

USER mode:
To be connected as User, Client provides a different identification than Administrator. Password is not necessary. NetDisturb functionality is reduced to the use of contexts located on the PC Server. Masks and laws can't be defined.

❖ **Server Information section**

In order to connect with the Server application, Client application needs following information:

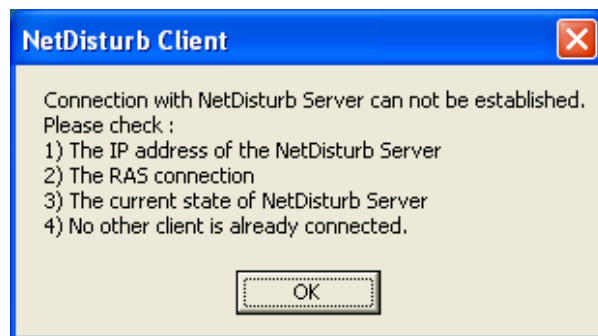1. Path to the remote Server folder
   This path is composed of two parts:
   - The drive, the virtual drive or the name of the Server machine.
   - The directory location of the Server application where the script subdirectory (containing NetDisturb.tst) can be found.
2. Server IP address

In case of connection failure (if one of the parameters is invalid), an error window is displayed to specify the connection error. Then the identification window is displayed again.

Errors windows may be:	Check:

NetDisturb Client

Connection with NetDisturb Server can not be established.
Please check :
1) The IP address of the NetDisturb Server
2) The RAS connection
3) The current state of NetDisturb Server
4) No other client is already connected.

OK

1) The IP address is correct.
2) The RAS link is correctly established and that data are exchanged between client and server.
3) Server application is running.
4) Another user is not already connected to the Server or the NetDisturb Client is already running on the Server machine.

NetDisturb Client

The NetDisturb Server directory is not available.
Please check the path.

OK
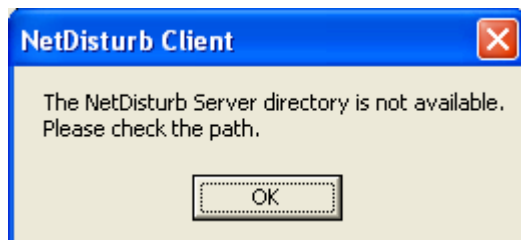
Check that the remote machine name is correct. If necessary, try a connection with the remote machine using the Window Explorer: browse the Neighborhood Network until to reach the Script folder (this handling could reveal a necessary password to reach the Server)