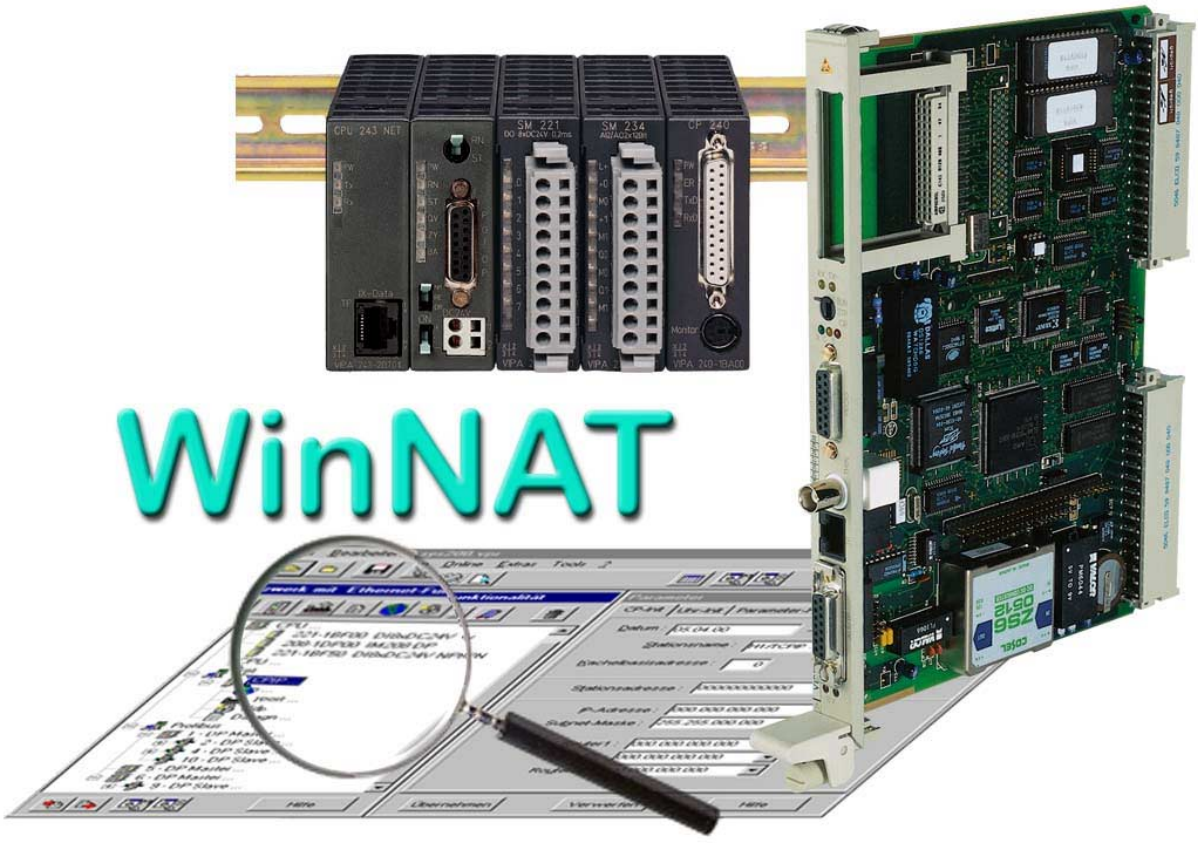
Manual

WinNAT

Rev. 00/32



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Contents

Introduction

Welcome

The WinNAT software is an Ethernet-based network analyzer.

The name WinNAT is an acronym for Windows Network-Analyzer-Tool. This analyzer is compatible with Windows NT4. We hope you will enjoy working with WinNAT.

Getting started

Scope of delivery

The WinNAT program is delivered with the following components:

- WinNAT
- BDE (Borland Database Engine)
- WinNAT driver
- Manual

System requirements

The following hardware components are required for WinNAT:

- Original or IBM compatible PC that supports Windows NT
- 80486 processor or better
- 16 MB RAM, we recommend 64 MB
- Display resolution of 800x600 or better, 65536 colors
- Hard disk of 100 MB or larger.
- Windows NT4
- 1 unused slot for the network adapter

Installation of WinNAT

WinNAT is installed by means of a setup program. WinNAT is a component of the VCL (VIPA Component Library) and it can be installed as a component of the VCL-setups.

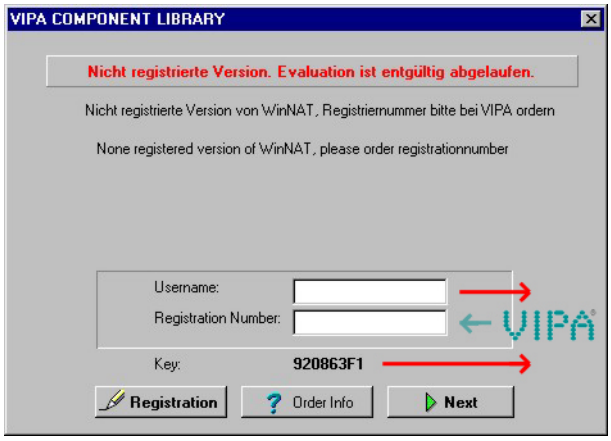
We strongly advise that you terminate all other Windows programs before installing WinNAT. Insert the WinNAT-CD and start the program Setup.exe. The following procedure is executed:

- The setup assistant is initialized. You must select a language and confirm your selection with [OK]
- The *Welcome* window is displayed. This contains information on the installation and on the copyright – confirm by clicking [Next] and indicate your agreement with the licensing conditions by means of [Yes].
- Enter your name and the name of your company into *User information*.
- Select the WinNAT directory as the *Path*.
- All files of WinNAT and of the data collection system are copied to your PC.
- Registration and software release

Registration and software release

The version of WinNAT supplied to you is a 3-day demo version that can be enabled for full operation by contacting VIPAs support, i.e. during the first 3 days you can use the unrestricted version for test purposes. After 3 days certain WinNAT functions will be limited. They will be re-enabled when you register WinNAT with VIPA.

For this purpose you must start WinNAT. A dialog box is displayed with a key word after the heading "Key":



Submit this key word (Key) along with your respective user name (Username) to the following address by e-mail requesting a release code: support@vipa.de or you can phone the Hotline number shown above.

You will receive the required user name together with your registration number by return e-mail.

Start WinNAT and enter the "Username" and the "Registration-Number" into the dialog box and click on the "Registration" button.

If all the entries were correct WinNAT will be started and all restrictions are removed.

Installing the driver

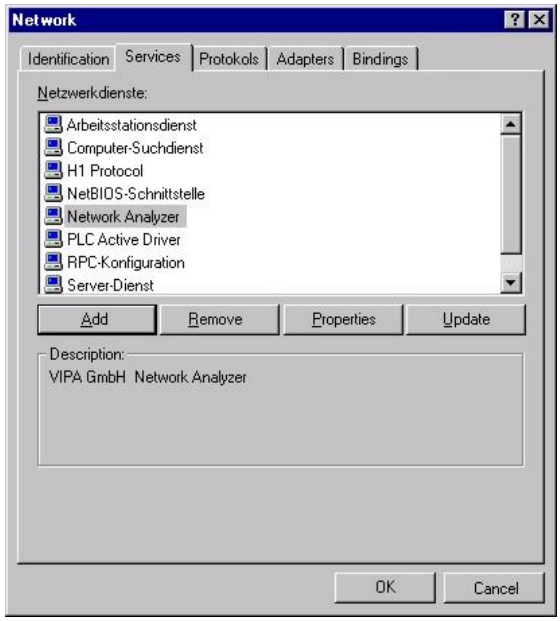
A special driver is included with WinNAT. This driver contains all the functions required for communications between WinNAT and a network adapter.

The driver is only compatible with WINDOWS-NT4. It must be installed via **network** environment icon located in the **control panel**.

Right-click the **network** environment with the mouse and click on *Properties*. This opens a multi-page dialog box. Select the *Services* tab and add the WinNAT driver that was supplied to you.

For this purpose you must click on the [Add] button. This opens the dialog box "Select Network Services". Click on the [Have Disk] button and select directory path \NatDrv\WinNT on the CD-ROM drive.

In the list that is displayed you must now select "VIPA GmbH Network Analyzer" and the click the [OK] button. This concludes the installation of the Network Analyzer service.



Click on the [OK] button and restart your computer.

Network setup

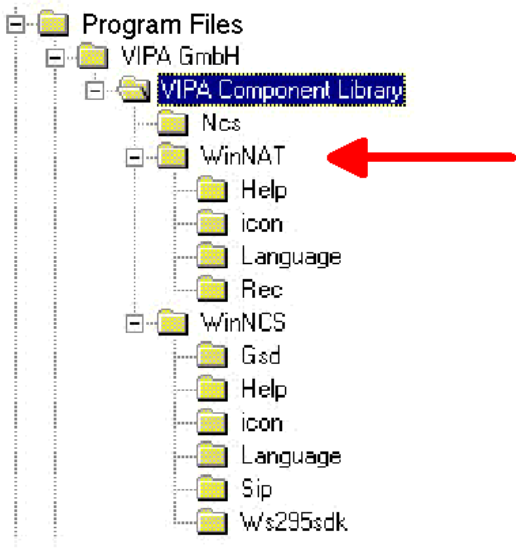
WinNAT requires that your computer be connected to an Ethernet network. You must have installed a network adapter and informed your operating system of the new hardware component.

The current configuration for your network is accessible via the *Network* icon in the **Control Panel**. Add the network component for the *TCP/IP protocol* if it does not exist. Click on "Properties" to assign an IP address to the TCP/IP network component. The IP addresses of the computer used to perform the analysis and those of the network nodes you wish to analyze must be located in the same segment of the network to allow monitoring of the communication activity.

You can obtain the IP-address and other details required for the configuration of the network adapter you're your system administrator.

WinNAT directory structure

The WinNAT directory is defined during the setup procedure. The following directory structure is created on your hard disk during the installation.



Starting the program

The simplest method to start WinNAT is by opening the WINDOWS Start button and selecting *WinNAT* located in "VIPA Component Library". You can also start the program by executing *WinNAT.EXE* directly.

You will be reminded to register WinNAT when you start the program if you have not registered previously.

The program starts by displaying the Start box, which contains information on the program version. The optimum display settings for WinNAT are defined in the Control Panel by means of the "Display" icon. Select *Small Font* and a resolution equal to or better than "800x600" pixel. You should also choose 65535 colors to be able to distinguish the different images properly.

Closing the program

You can close WinNAT via the main menu. A file named *WinNAT.ini* is saved when you terminate WinNAT. *WinNAT.ini* contains all the settings you have defined for the program.

WinNAT Environment

Help system

WinNAT offers a variety of help functions. You can always access the help topics located in the main menu under menu item **?** when you are configuring WinNAT.

When you require help in the WinNAT window you can always press the function key F1 or the Help button. This opens the context-sensitive Help window with the respective explanation.

If you access the help topics a help window is opened that provides an overview of the help topics sorted according to categories pertaining to the respective program. You can reach the topic of your search by clicking on the Book icon. One "Book" can contain other "books".

If you double-click the topic the help text of the selected topic is displayed. You can close an open book by double-clicking the book.

If you are searching for an expression in the help items you can either enter the expression directly into the dialog box or you can search the index.

For more information on the help system refer to the description of your Windows system or press F1 in your Help window.

Popup menu

Since WinNAT was programmed in accordance with standard Windows conventions it also offers a popup menu that is accessible by clicking the right mouse button.

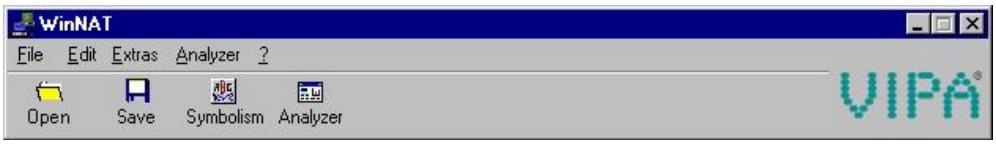
This menu provides direct access to those functions that are only applicable to the current cursor position.

Depending on the cursor position you can use the context menu to:

- Define parameters
- Specify filters

Main window

The main window is displayed when WinNAT has started. It contains the menu bar and the toolbar that provide access to the most important functions.



Menu bar

The menu bar provides access to all available main functions. The menu bar is located at the top of the main window. The following table shows an overview of the available menu items:

Menu	Item
File	Open/save a capture file, Print options, Exit
Edit	Symbolism (symbol manager)
Extras	German, English
Analyzer	Network, Parameter, Filter
?	Help topics, About, Registration

Menu items of the main window

Here follows a list of menu items with the respective buttons and a short description of the operation. Buttons provide access to the most important functions.

 **File** > Open capture file

Opens an existing file that contains the results of a previous analysis. A file selection window is displayed where you can choose the file for the analysis.

 **Edit** > *Symbolism*

The symbol manager is used to assign symbolic names to absolute addresses. These addresses may either be Ethernet or IP addresses.

 **Analyzer** > Recording window -*Functions*

This button transfers you to the recording window where you can start recording immediately.

Extras > German and/or **Extras** > English

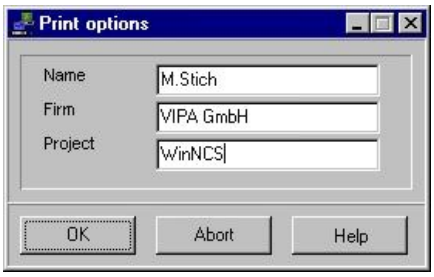
Here you can select the required language without terminating the program. At present you can choose either German (Deutsch) or English.

Print

You can use the print function to document your settings or to troubleshoot the settings you have defined. Every WinNAT window has a Print button. This provides various options for printing the recorded data. You can also print a certain number of frames.

Print options

You can define the printer settings by means of the Print options. When you select **File** > *Print options* the "Print options" dialog box is displayed.



Project, Name, Firm,

Here you can specify optional entries that will appear in the footer of the printout.

Network analyzer

General information on the network analyzer

The network analyzer for Windows NT is a networking, analysis and documentation tool for Ethernet networks. When WinNAT is used in conjunction with a network adapter it provides a user-friendly environment that is based on the Windows NT operating system.

Facilities provided by the network analyzer

- Summary of those activities that are currently active on the network.
- Recording of historical data on the network activities over a specific period of time.
- Long term recording
- List of stations that are active on the network.
- Summary of stations that are currently communicating and what data is being exchanged.
- Messages of individual recording sessions are presented in list form together with a short description.
- Individual messages can be displayed in detail via a plain text window.
- You can use your computer while recording is taking place.
- You can use hardware (recording filters) and software filters.
- The product provides decoding facilities for the ISO-TP4 protocol (Siemens SINEC H1) and TCP/IP.

Network analyzer options

- All settings are saved automatically.
- Messages can be displayed and printed with different levels of detail.
- Recording sessions can be saved and restored from hard disk.
- You can assign symbolic names for addresses by means of the symbol manager.
- You can use hardware-related filters for recording sessions.
- Various software filters can be used for displaying the data.
- The size of the recording buffer is variable.

Principle of operation

All the traffic on the network is available on the network adapter since this is connected to the local area network. The driver for the network adapter transfers the information into the protocol driver. This is where the recording filters accept only the data from those stations that have been selected in the filter. This data is saved in a ring buffer. The originator and the recipient of the message are determined when the data is entered into the buffer. This is then used to generate the recording.

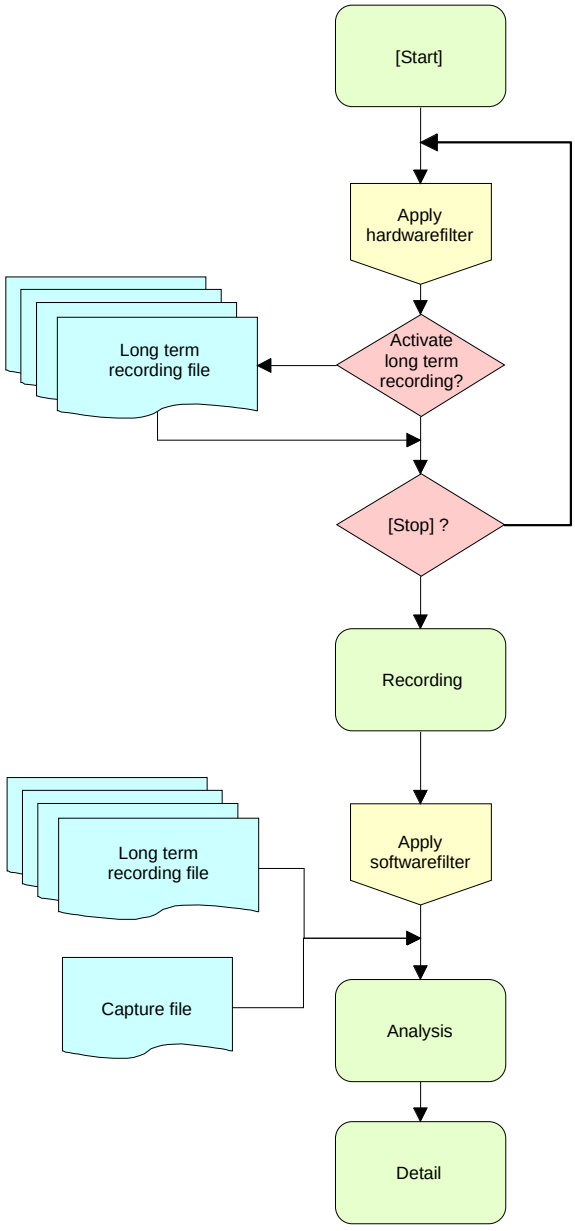
Once recording has been stopped the recorded data of the stations can be analyzed. You can activate the display filter (software filter) when you view the recording. The analysis of messages displays these in chronological sequence.

You can page through the analysis list by means of the page and the arrow keys or by means of the mouse.

A single analysis procedure consists of three stages: recording → analysis → detailed analysis

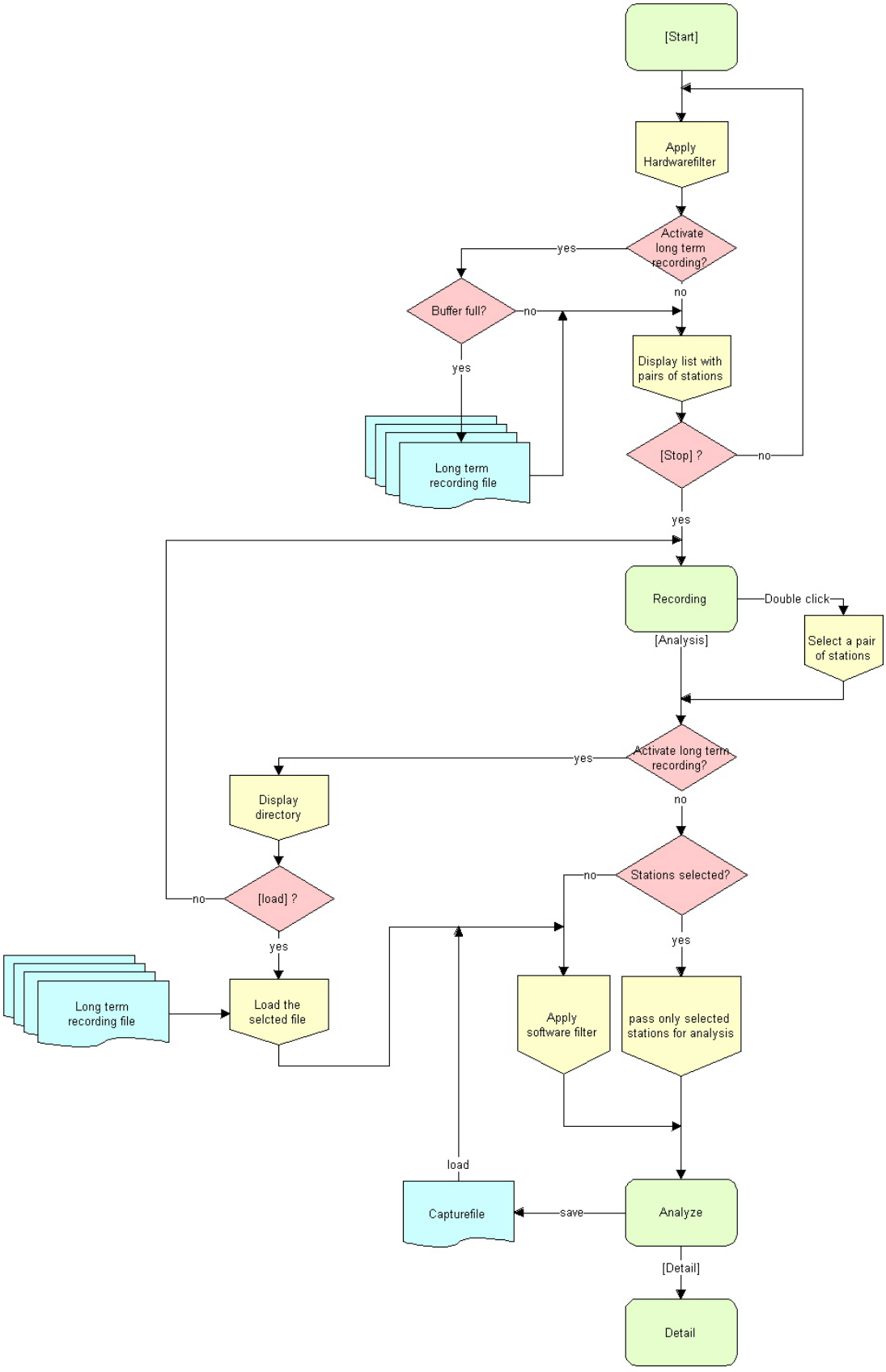
Recording is always started on the recording level. Recording includes all the stations that participate in the communications on the network and these are then displayed in the recording. You can then use this list for analysis purposes or to perform a detailed analysis.

The following flow charts illustrate this procedure:



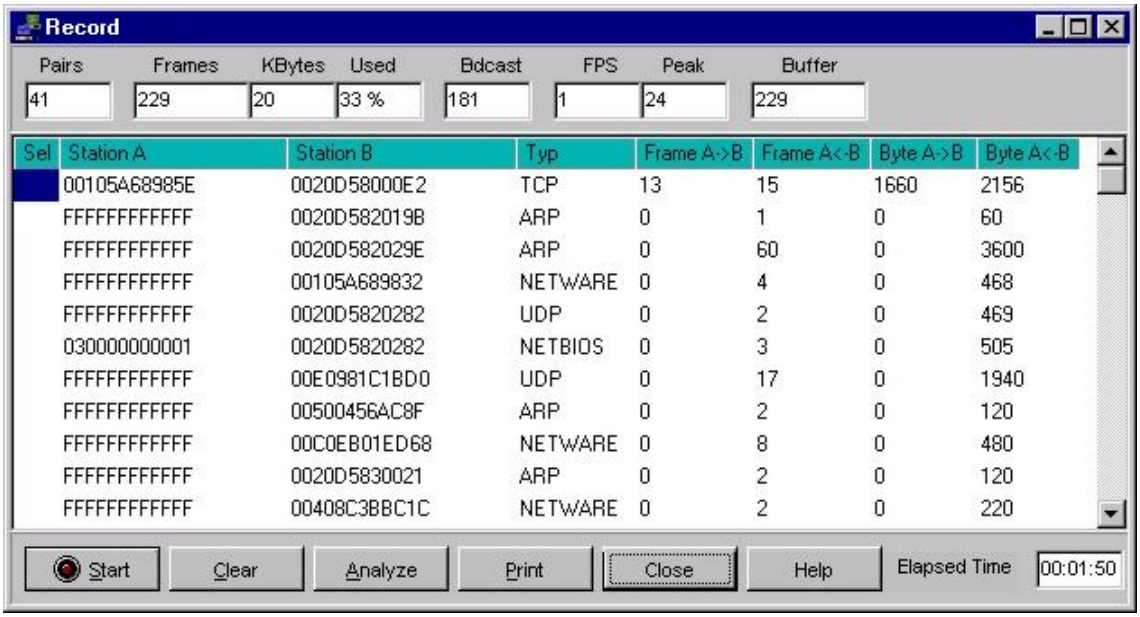
WinNAT structure

This flow chart contains an explanation of the different sections. You can also see which areas are affected by filters and parameters.



Recording

The recording window contains a list of all the station pairs and statistics on the rate of traffic in your network.



Recording is started when you click on the [Start] button. This is displayed by means of an indicator on the [Start/Stop] button. If the network adapter is connected to a working network the display will immediately show all the stations communicating with each other. The station list can be cleared at any time by clicking on the [Clear] button. When you have cleared the list any active recording resumes immediately with up to date station names. If you have activated symbolic addressing the station names are displayed in symbolic form. You cannot activate an analysis of messages while recording is in progress.

When you have stopped recording you can analyze the recording. You can select one or more pairs of stations for an analysis of the data in the recording. If you do not specify a selection the analysis includes all the station pairs. Station pairs are selected in the column *Sel*. The analysis of the messages is started by clicking on the button **[Analyse].**

The [Print] function creates a printout of the recording.

Column heading:

Sel	the column *Sel* is used to select a station pair after recording has completed
Station A	Ethernet address of the destination station that was the first station to receive messages after recording was started
Station B	Ethernet address of the source station that was the first to start sending messages after recording was started
Typ	Type of protocol (see protocol summary on page 16)
Frame A->B	Number of frames transferred from station A to station B
Frame A<-B	Number of frames transferred from station B to station A
Byte A->B	Number of bytes of all the frames that were transferred from station A to station B
Byte A<-B	Number of bytes of all the frames that were transferred from station B to station A

Statistic:

Pairs	Number of pairs detected during the recording session
Frames	Number of frames recorded and analyzed

Kbytes	The size of all the frames in Kbytes
Used	The usage of memory for recording in percent
Bdcast	Number of broadcast messages that were detected
FPS	Frames per second
Peak	Peak value of frames per second
Buffer	Number of received frames
Buttons:	
Start	Start recording
Clear	Clear a recording session
Analyse	Analyze a recorded session
Print	Print the recorded stations

Recording messages

The [Start] button clears the recording and starts a new recording session. The [Start] button is provided with a LED indicator that shows whether the network analyzer is recording or not. Messages are transferred from the network adapter into the recording buffer for display in the recording list.

Stopping a recording session

The recording session is stopped by clicking on the [Stop] button. It is necessary to stop recording when:

- You want to analyze a recorded session
- You wish to save the data
- You want to change parameters and to activate filters.

Clearing a recording session

The recording is cleared by clicking on the [Clear] button. You can clear the recording buffer at any time. No verification is required for this action.

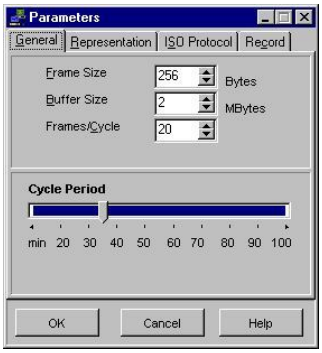
Any previous recording sessions are cleared by a new start.

Long term recording

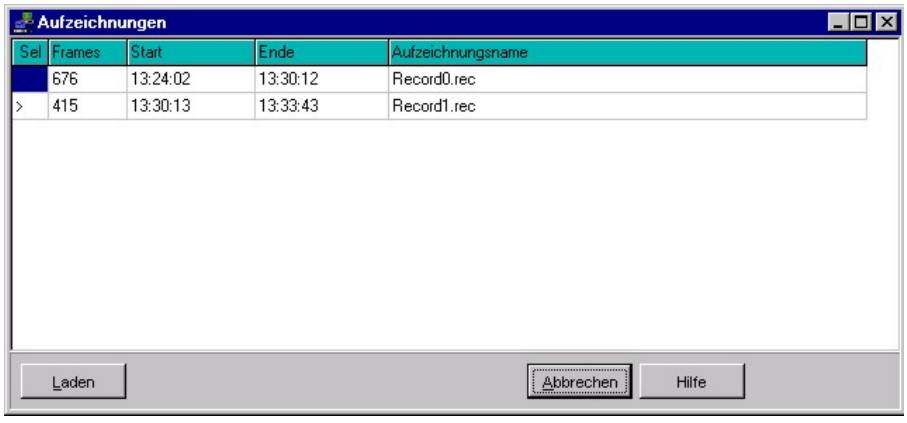
You can activate a long term recording session by selecting "Long term recording" in the "Recording" tab located in **Analyzer** > *Parameter*. Here you can also specify target directory for your recording. If you do not define this directory the data is saved sequentially in the directory "WinNAT\Rec" as Record0.rec, Record1.rec, Record2.rec ...

The file size of the individual recording files is determined by the "Buffer size" you have specified via **Analyzer**>*Parameter* in the "General" tab.

Pay special attention to the parameters that you must define under *Parameter Recording*.



You start long-term recording session by means of the [Start] button in the recording window. As for the normal recording phase, all the station pairs will be displayed in the recording window. The long-term recording phase is stopped as soon as you click on [Stop]. When you click the [Analyse] button another recording window is opened containing a list of the long-term recording files:



When you select a file and click the [Load] button the analysis window is opened and the messages of the selected recording session are displayed.

Column heading

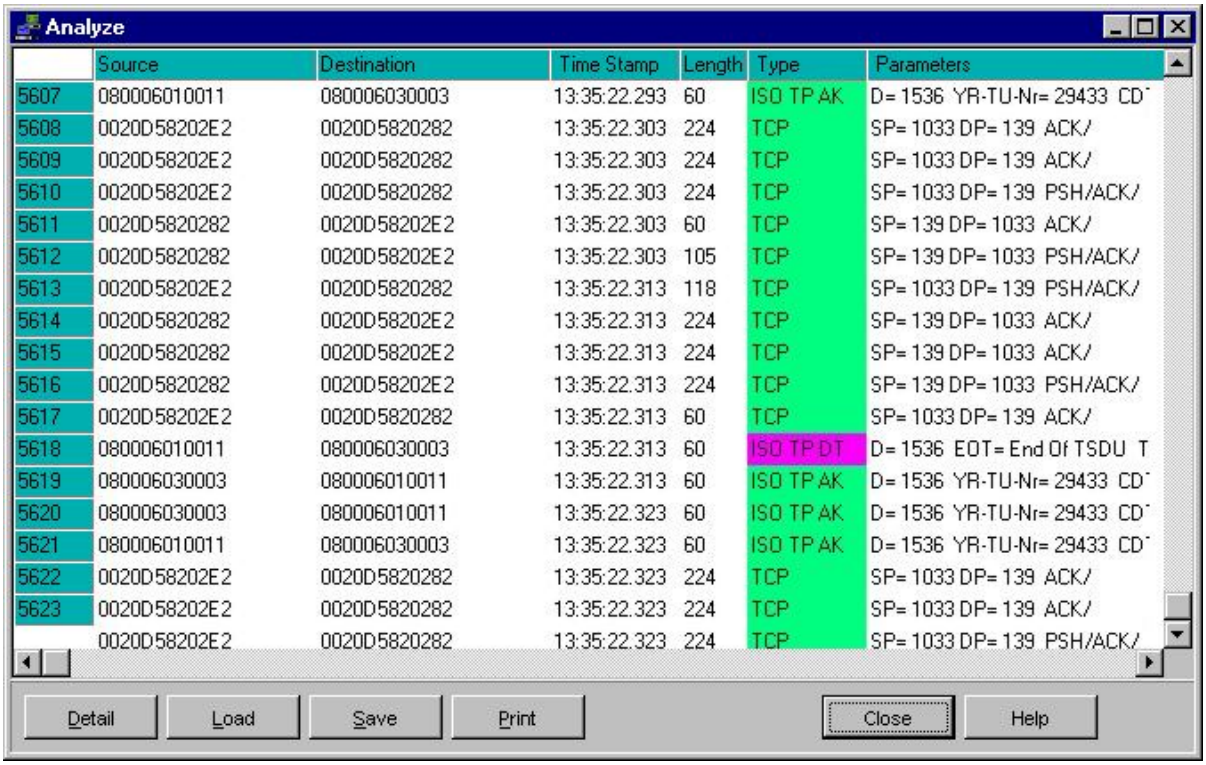
Sel	the column *Sel* is used to select a capture file for analysis
Frames	Number of frames in the capture file
Start	Start recording to this capture file
End	End recording to this capture file
Recorded file name	Sequential name of the capture file during long term recording

Buttons:

Load	The data of the file that you have selected is loaded for display in the analysis window. You can only load one file at a time.

Analysis

It is a requirement for an analysis that recording has taken place. A completed recording session can be saved to a file or loaded from a file.



Click the [Detail] button to display detailed information about a specific message. The detail window is displayed showing the selected message together with all the logical components and the different layer of the message.

Column heading

Source	The source station where the message originated
Destination	The destination station that has received the message
Time-Stamp	A time stamp
Length	The length of the message
Typ	The type of protocol (can change for a pair of stations)
Parameter	The most important parameters are: **TP4**: (D=Destination-Reference, YR-TU=next TPDU-Nr, CDT=Credit) **TCP/UDP/ARP/RARP**: (SP=Source-Port, DP=Destination-Port and Flags)

Buttons:

Detail	A detailed analysis of a message
Load	Load a previously saved file with analysis data
Save	Save analysis data to a file
Print	Printout of the analyzed message data

Analyzing messages

All the messages in the analysis window are listed in the sequence in which they occurred. In contrast to the recording in list form you can determine the time when a station transmitted or received data. The list also contains an indication of the length of the messages and possible parameters.

All types of protocol are recorded and displayed.

At the moment the following protocols are analyzed; the analysis of additional protocols is under development:

- **ISO-TP4 (H1)** Transport TP4, ARP, RARP, IP (TCP, UDP)
- **TCP/IP 802.2** ARP, RARP, IP (TCP, UDP)
- **TCP/IP Ethernet** ARP, RARP, IP (TCP, UDP)

802.2 – ISO TP4:

Transport-TP4 messages have one of the following TPDU-types. These are used to establish the connection, for flow control purposes or to transport the data.

ISO TP4 messages are assigned to layer 4 of the ISO/OSI layer model.

CR (Connect Request)	To establish a connection
DR (Disconnect Request)	Issued by the station to terminate a connection
CC (Connect Confirm)	Returned by the station that received a CR
DC (Disconnect Confirm)	Transmitted by the station that has received a DR
AK (Acknowledges)	Used for flow control and confirms data was received correctly
EA (Expedited Acknowledges)	Used for flow control and confirms correct reception of expedited data
DT (Data)	This is used to transmit user data
ED (Expedited Data)	This TPDU transmits expedited data
RJ (Reject)	Issued to request a repeat when messages have been lost
ER (Error)	Message containing the reason for the reject
DG (Datagram)	Datagram service

TCP/IP 802.2 or in accordance with the Ethernet spec.:

TCP/IP-messages comprise a.o. TCP, UDP, ARP and RARP. These messages are assigned to layer 3 and 4 of the ISO/OSI or the TCP/IP layer model.

TCP (Transmission-Control-Protocol)

UDP (User-Datagram-Protocol)

ARP (Address Resolution Protocol)

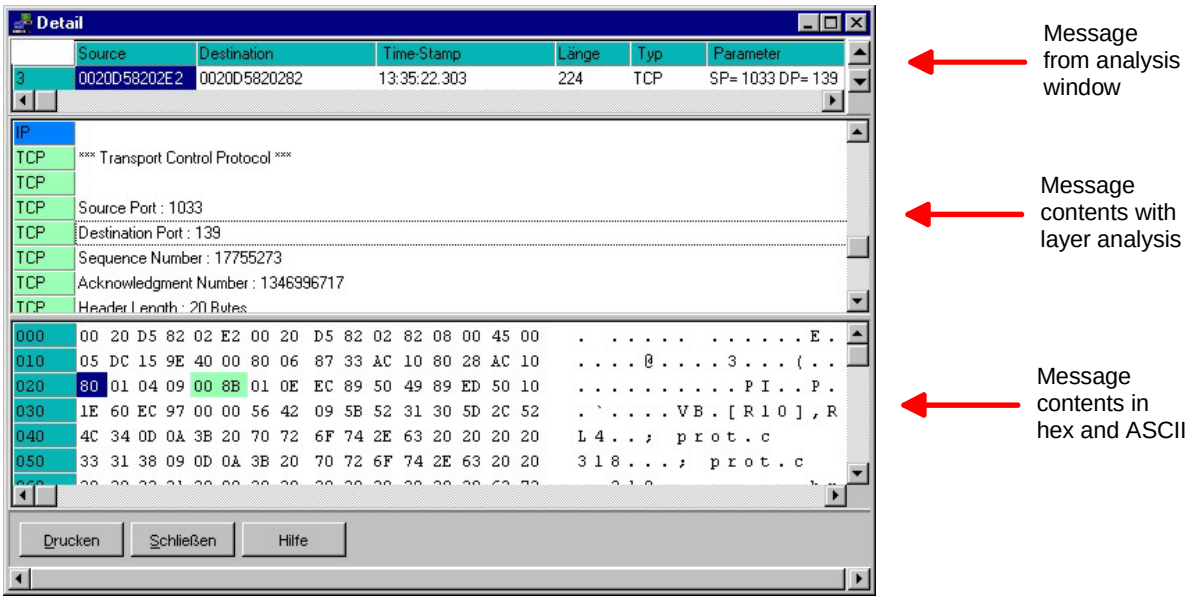
RARP (Reverse Address Resolution Protocol)

NETWARE, NETBEUI, NETBIOS these messages are not analyzed at present.

Detailed analysis

You can select a specific message from the list displayed in analysis window. When you click on the [Detail] button the "Detail"-window is opened showing the logical parts of the message and the different layers of the telegram.

In this case a direct relationship is provided in hexadecimal form between the contents of the telegram and the respective plain text significance.



The dialog box consists of 3 sections:

Message from analysis window

In this section of the window you can scroll through the list of messages.

Message contents with layer analysis

This section displays a description of the separate message fragments. Every fragment of a message that could be recognized is described in a separate line. You can quickly locate the description of the different bytes in the message by means of the line that the cursor is located on since this is shown with a direct relationship to the hexadecimal display. The different layers of a message are displayed in different colors and provided with a name at the beginning of each line that is suitable for the layer.

- *MAC* Layer 1 Media Access Control
- *DLC/LLC* Layer 2 Datalink Control-Header / Local Control/Header
- *ISO CLNP* Layer 3 Connectionless Network Protocol
- *ISO TP* Layer 4 Transport Layer Protocol
- *ISO SESS* Layer 5 Connection-oriented Session Protocol
- *ISO API* Layer 7 S5 AP-Header, TF, FMS

For messages that are not analyzed any further only the *MAC* layer is displayed.

Message in the hexadecimal display section

This section displays all types of message in hexadecimal representation. The different fragments of the message are displayed in different colors with relationship to the plain text.

Parameter

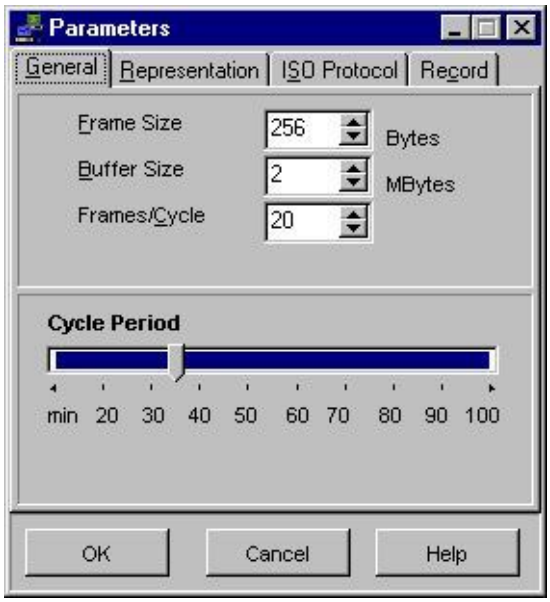
Parameter provides access to the different settings for WinNAT. The respective parameters are accessible via **Analyzer** > *Parameter* on the main menu or in the WinNAT windows by means of the right mouse button.

At present you can change the following parameters via 4 tabs:

- **General** (parameters for the recording operation)
- **Detail** (display format for time and address)
- **ISO protocol** (define TPDU format)
- **Recording** (define parameters for long term recording)

General

In this tab you can specify the general settings for the recording process and to determine the load on the local computer.



Frame size	The maximum message size in bytes that will be recorded.
Buffer size	The size of the recording buffer in Megabytes
Frames/Cycle	Maximum number of frames that can be retrieved in one cycle from the driver.
Cycle time	The duration of a cycle in milliseconds. This determines the frequency with which message data that is provided by the NAT driver is retrieved. If this time is high the data quantity retrieved per cycle is also high (maximum see *Frames/Cycle*).

The NAT-Driver requests a data area that is equal in size to the buffer size setting and that cannot be relocated.

Detail

Detail refers to the format with which addresses and time stamps are displayed in the analysis window.

Address TCP/IP messages can be displayed with the Ethernet address or the IP address. However, the IP address is only displayed when the message is analyzed and not during the recording phase.

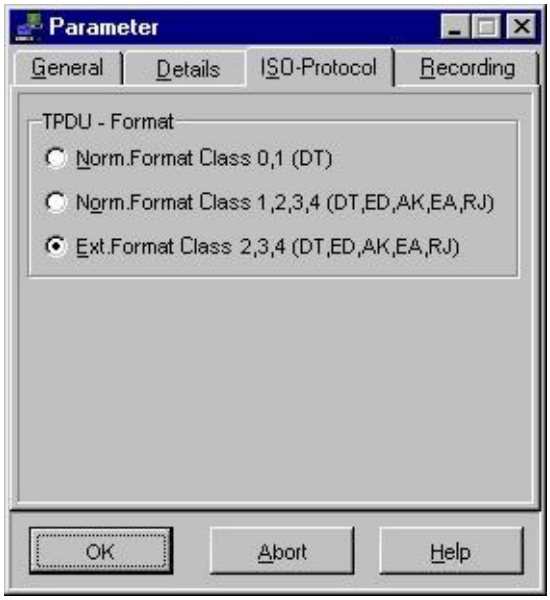
Tome format At present only the absolute format is supported.

Other formats are under development.

ISO protocol

Various TPDU formats can be used for an ISO-TP4 (H1) message. These are divided into *normal* and *extended* classes. Over and above this the classes are also differentiated by means of sequential numbers.

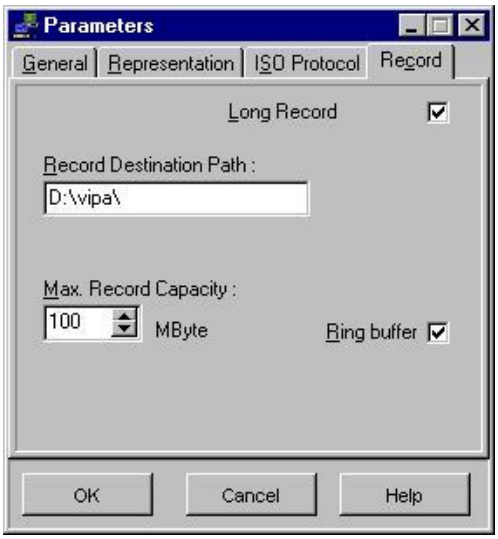
The exact format of a TP4 message can only be determined when the connection is being established. However, since the connect procedure was not necessarily recorded, the format may be indeterminable. You may safely assume that TP4 (H1) messages originating at a CP always have the "extended format class 2, 3, 4" (default).



TPDU-Format This selector determines the interpretation of the TPDU format. The default is the interpretation of the extended format for classes 2,3,4... .

Recording

Enter the parameters required for long-term recording on the recording tab.



Destination directory Enter the path name where you want to save the capture file that is used for long-term recording.

Max. Capacity Enter the maximum capacity that you wish to make available for long term recording sessions.

Ring buffer Here you determine whether long-term recording should take place via a ring buffer consisting of capture files or if it should continue until the absolute limit of recording capacity is reached.

Filter

You can access filter functions on the main menu via **Analyzer** > *Filter* or in the respective window by means of the right mouse button.

In the filter tab you can define the filter conditions that apply to the recording of data required for the following analysis.

The recording filters (hardware filter) prevent certain messages from being saved on file whilst the display filter (software filter) selects certain messages from the total that was recorded. If you deactivate the display filter a new analysis will again include all messages.

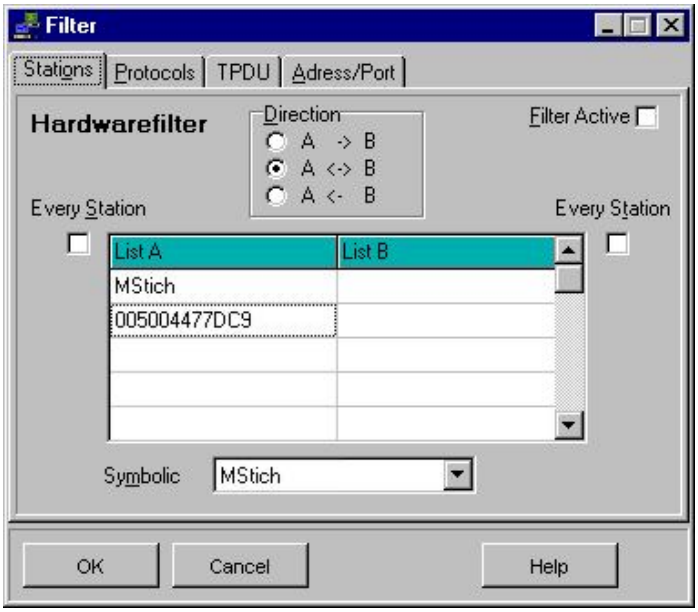
Every dialog page contains the check box *Filter active* that enables or disables the filter function for the current page.

The status of the filters is included for your information, i.e. if the hardware filter was activated in the recording window "Hardware filter active" and if the software filter was activated in the analysis window "Software filter active".

Stations (hardware filter)

The *Stations* filter is a recording filter. Here you must always enter the 12-digit Ethernet address.

Only stations appearing on list A and/or list B are recorded. A maximum of 10 stations each can be accommodated in the list.



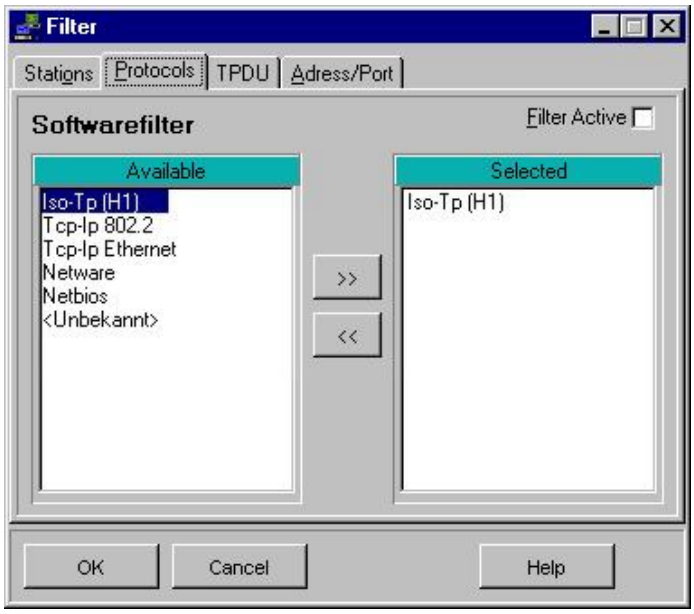
If you wish to enter a station address you must select a list element and enter the respective Ethernet address. If you have activated the symbolism you can select a symbolic name in the selection filed which is transferred into the list.

To delete an element you must first select the element on the list and then press the Del.-key.

Direction	Determines the recording direction for all the entries in the list
Every station	You may select station by entering the respective addresses into a list or you may select "Every station". This corresponds to entering all stations into the list.

Protocols (software filter)

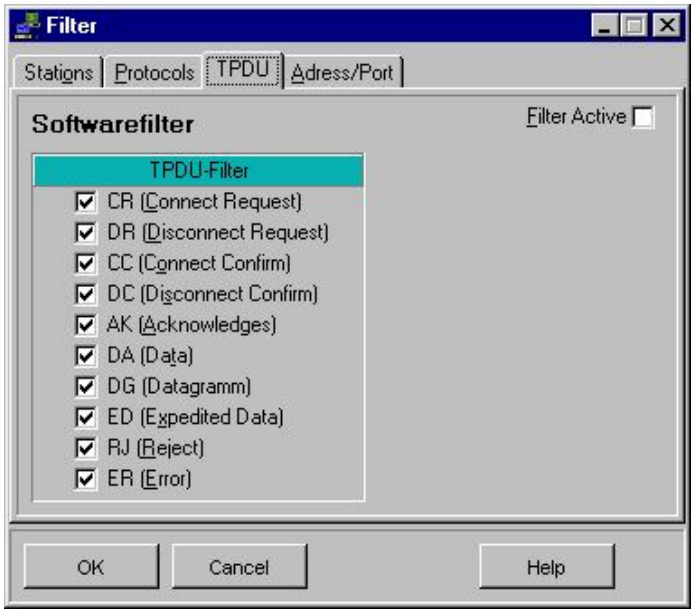
The *Protocols* filter is a display filter for the selection of the required protocol.



One or more protocols can be transferred from the list of available protocols into the list of protocols that was selected. You can transfer or reverse a transfer by selecting the respective entry in the list and pressing the transfer button [>>] or the reverse button [<<].

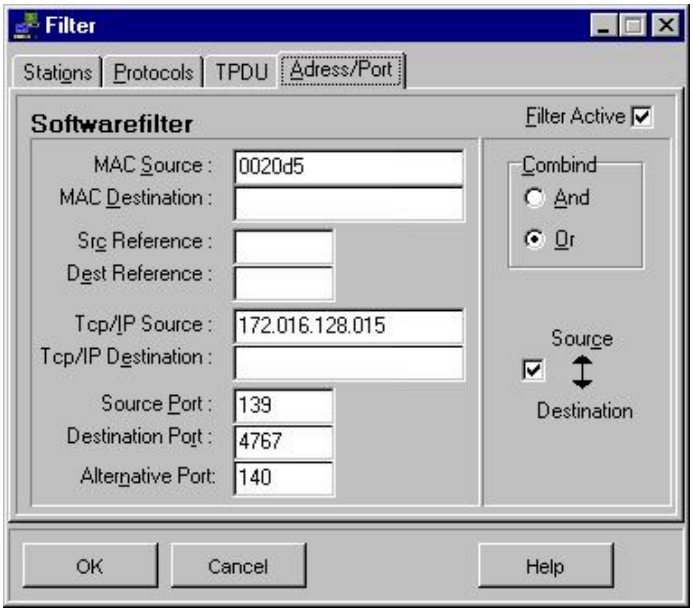
TPDU (software filter)

The *TPDU* filter is a display filter used for the TPDU- selection of H1-messages. One or more TPDU-types can be selected.



Addresses (software filter)

The *Addresses/Ports* filter is a display filter that selects messages by means of the address and the port. Only those messages that contain the address and/or the port specified in the filter are displayed.



MAC-Source/Destination

Enter the required Ethernet address (MAC-address) into source and/or destination.

If you should enter an incomplete address the filter will use this fragment for the filtering operation.

Src/Dest Reference

The source- and destination reference are numeric values that are associated with the respective TSAP. These are determined at the time when the connection is established between the stations.

TCP/IP-Source/Destination

Enter an IP address into source and/or destination.

Source/Destination/ Alternative Port

Port corresponds to the port no. of a TCP/IP connection. You can specify an additional port no. under *Alternative Port* that is used instead of the source/destination port if required.

If you should choose to activate this function the directions (source and destination) are ignored.

Und/Or function

The *And* function specifies that only those messages are displayed that meet all the specified conditions. For the *Or* function only one or more of the specified conditions is required.

Symbol-Manager

Symbolic addressing

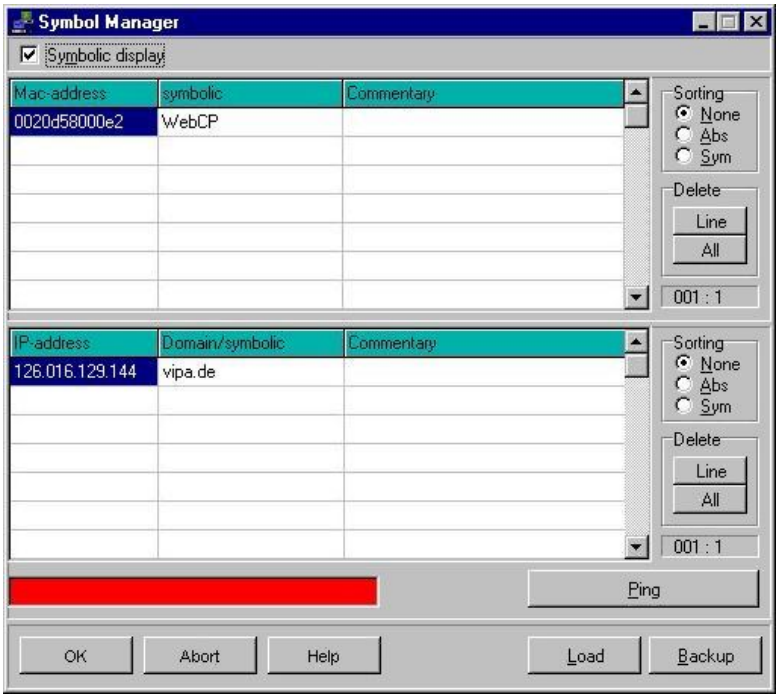
Symbolic addressing provides you with the option to assign symbolic names to Ethernet addresses and to IP-addresses. Names are not subject to any conventions. The only restriction is a limit on the length of the names, since these are truncated after 20 characters by different routines, e.g. the documentation function.

If you have enabled symbolic addressing the symbolic names will be displayed in all the locations where absolute addresses would otherwise be used. The symbolic names are also available for the selection and input fields.

Duplicate names for Ethernet addresses and/or IP-addresses are located and displayed during the compilation. These can be sorted in accordance with the absolute address or the symbolic name. You can request that the display is sorted in accordance with *abs*olute addresses or according to the *sym*bolic name. If you do not want the result sorted you select *none*.

Symbol manager functions

The different functions will be described in detail:



Symbolic display

If you have selected *symbolic display*, the symbolic address assigned to every absolute address appears in all routines. The commentary appears only in the symbol management.

Sorting

You may choose to use *Absolute* or *Symbolic* sorting or you may disable sorting by selecting *None*.

Buttons:

OK

When you press the [OK] button the lists are examined and a reference window is displayed if you should have entered invalid and/or duplicate symbolic names. If you press [Abort] all changes the addresses that were entered automatically are lost.

Load, Backup

When the program starts the most recent list of symbols is loaded. It may be necessary, however, to save the list of symbols in a file. You can save a list of symbols to a file by means of the [Backup] button and/or load a list of symbols from a previously saved file by means of the [Load] button.

Ping

You can use the Ping function to check whether a destination module is available on the physical network.

For this purpose you must place the focus on the required IP-address in the symbol table.

The Ping transmits an ICMP-message to the destination module. The respective module returns an answer within a certain reaction time. The result is displayed in text form.

If the Ping was successful the message "Ping-Echo" in n ms is displayed, otherwise the display contains an error message.

Delete **All**

If you click [All] the entire set of entries is deleted after you have been requested to confirm this.

Delete **Line**

You can delete the line where your cursor is located by pressing Ctrl-Del.

Insert **Line**

You can insert a blank line above the current selection by pressing Ctrl-Ins.

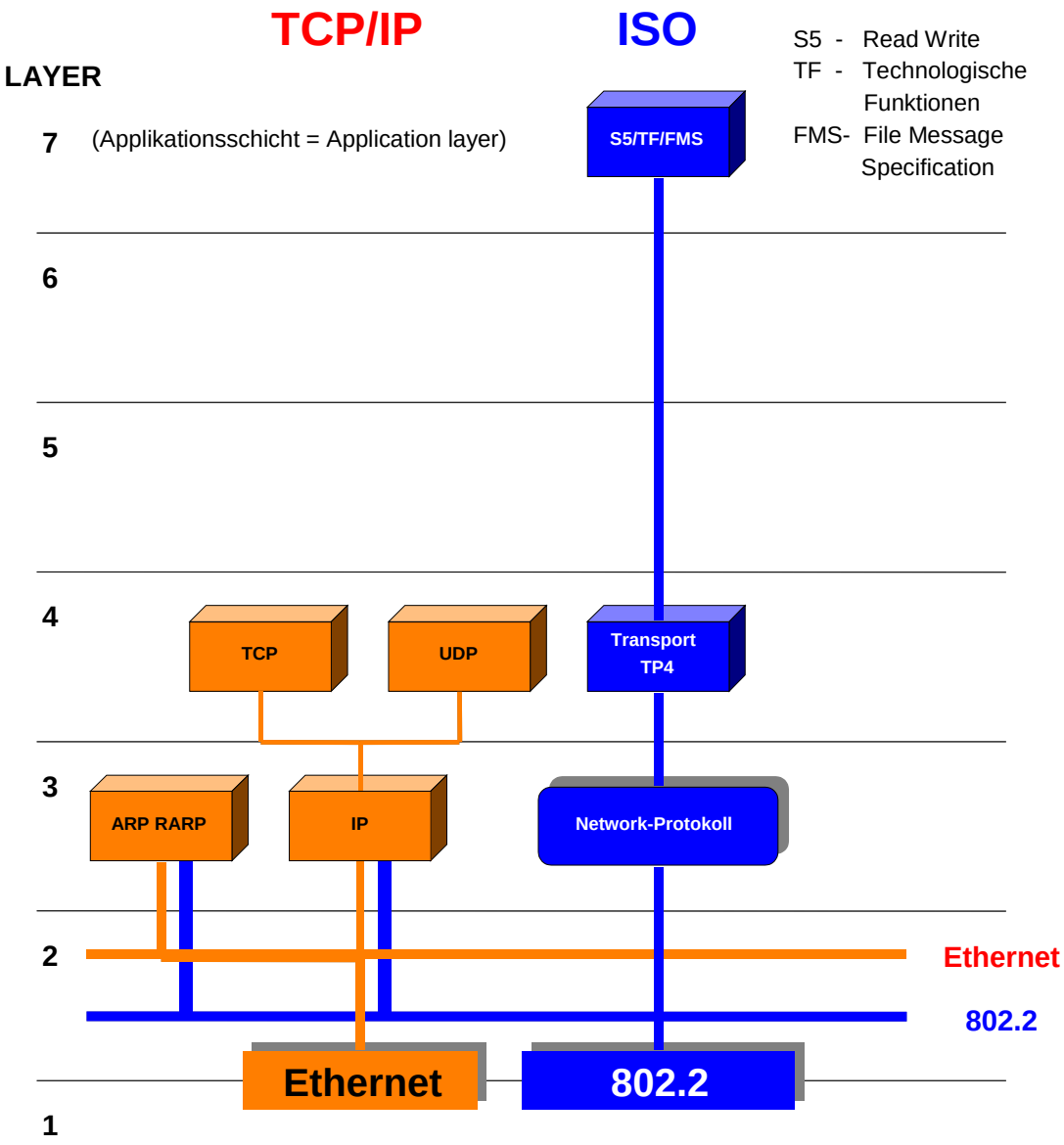
The numbers displayed in the bottom border of the lists provide information on the current cursor position *Line* : *Column*. This is also included in the error messages.

Overview of protocols

All types of protocol are accepted, however, the analysis currently only includes the following protocols:

Ethernet-TCP/IP ARP, RARP, IP (TCP, UDP)

802.2 – ISO Transport TP4, ARP, RARP, IP (TCP, UDP)



Glossary

AP

Application Protocol

AS

Automation System

BCD

Binary-Coded Decimal number

CP

Communication-Processor (H1 and TCP/IP)

DNS

Domain Name System

GSD

Gerätestammdatei (master device file)

HTB

Handler block

IP

Internet Protocol

IPK

Intelligent Process communications

ISO

International Organization for Standardization

LAN

Local Area Network

Layer

A layer in the ISO/OSI-layer-model (1 to 7)

MMS

Manufacturing Message Specification

NAT

Network Analyzer driver

OSI

Open Systems Interconnection

PDU

Process Data Unit

QVZ

Quittungsverzug (delayed acknowledgment)

SNMP

Simple Network Management Protocol

TCP

Transport Control Protocol

TP

Transport-Protocol

TPDU

Transport Protocol Data Unit

TRADA

Transparenter Datenaustausch (transparent data exchange)

TSAP

Transport Service Access Point

UDP

User Datagram Protocol

VDE

Database Engine, for the administration of the database

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