

Kerio**WinRoute**Firewall**5**[™]

Administrator's Guide

Kerio Technologies

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This product contains cryptographic libraries developed in the OpenSSL project (<http://www.openssl.org/>), co-author of which is Eric Young (eay@cryptsoft.com).

This product contains libraries for directory services developed in the OpenLDAP (<http://www.openldap.org/>) project.

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Chapter 1

Quick Setup

In this chapter you can find a brief guide for a quick setup of *Kerio WinRoute Firewall* (called briefly *WinRoute* in further text). After this setup the firewall should be immediately available and able to share your Internet connection and protect your local network. For a detailed guide refer to the separate *WinRoute — Step-by-Step Configuration* guide.

If you are not sure how to set any of the *Kerio WinRoute Firewall* functions or features, look up the appropriate chapter in this manual. For information about your Internet connection (such as your IP address, default gateway, DNS server, etc.) contact your ISP.

Note: In this guide, the expression *firewall* represents the host where *WinRoute* is (or will be) installed.

1. The firewall must include at least two interfaces — one must be connected to the local network (i.e. the *Ethernet* or *Token Ring* network adapters), another must be connected to the Internet (i.e. analog modem, ISDN adapter, network adapter or USB Satellite adapter). TCP/IP parameters must be set properly at both/all interfaces.

Test functionality of the Internet connection and of traffic among hosts within the local network before you run the *WinRoute* installation. This test will reduce possible problems with debugging and error detections.

2. Run *WinRoute* installation. Specify a username and password for access to the administration from the configuration wizard (for details refer to chapters [2.3](#) and [2.8](#)).
3. Set basic traffic rules using the *Network Rules Wizard* (see chapter [5.1](#)).
4. Run the *DHCP server* and set required IP ranges including their parameters (subnet mask, default gateway, DNS server address/domain name). Read more in chapter [4.4](#).
5. Check the *DNS Forwarder's* configuration. Define the local DNS domain if you intend to scan the `hosts` file and/or the DHCP server table. For details refer to chapter [4.3](#).
6. Create or import user accounts and user groups. Set access rights and sort accounts into groups. For details see chapters [9.1](#) and [9.2](#).
7. Define IP groups (chapter [8.1](#)), time ranges (chapter [8.2](#)) and URL groups (chapter [8.4](#)), that will be used during rules definition (refer to chapter [8.2](#)).

Chapter 1 Quick Setup

8. Create URL rules (chapter 6.1) and set the *Cobion Orange Filter* system (chapter 6.3). Set HTTP cache and automatic configuration of browsers (chapter 4.6). Define FTP rules (chapter 6.5).
9. Select an antivirus and define types of objects that will be scanned. If you choose the integrated *McAfee* antivirus application, check automatic update settings and edit them if necessary.
10. Using one of the following methods set TCP/IP parameters for the network adapter of individual LAN clients:
 - *Automatic configuration* — activate the *Obtain an IP address automatically* option. Do not set any other parameters.
 - *Manual configuration* — define IP address, subnet mask, default gateway address, DNS server address and local domain name.

Use one of the following methods to set the Web browser at each workstation:

- *Transparent configuration* — by default *WinRoute* will filter all outgoing HTTP traffic through the HTTP protocol inspector. This does not require any configuration to the Web browser of the workstations.
- *Automatic configuration* — activate the *Automatically detect settings* option (*Microsoft Internet Explorer*) or specify URL for automatic configuration (other types of browsers). For details refer to chapter 4.6.
- *Manual configuration* — select type of connection via the local network or define IP address and appropriate proxy server port (see chapter 4.5).

Chapter 2

Introduction

2.1 Kerio WinRoute Firewall 5.1

Kerio WinRoute Firewall 5.1 is a complex tool for connection of the local network to the Internet and protection of this network from intrusions. It is designed for Windows NT 4.0, 2000 and XP operating systems.

Basic Features:

Transparent Internet Access With Network Address Translation (NAT) technology, the local private network can be connected to the Internet through a single public IP address (static or dynamic). Unlike proxy servers, with NAT technology all Internet services will be accessible from any workstation and it will be possible to run most standard network applications, as if all computers within the LAN had their own connection to the Internet.

Security The integrated firewall protects all the local network including the workstation it is installed on, regardless of whether the NAT function (IP translation) is used or *WinRoute* is used as a “neutral” router between two networks. *Kerio WinRoute Firewall* offers the same standard of protection found in much more costly hardware solutions.

Protocol Maintenance (Protocol Inspectors) You may come across applications that do not support the standard communication and that may for instance use incompatible communication protocols, etc. To challenge this problem, *WinRoute* includes so-called “protocol inspectors”, which identify the appropriate application protocol and modify the firewall’s behavior dynamically, such as temporary access to a specific port (it can temporarily open the port demanded by the server). FTP in the active mode, Real Audio or PPTP are just a few examples.

Access Control All the security settings within *WinRoute* are managed through so-called “traffic policy rules”. These provide effective network protection from external attacks as well as easy access to all the services running on servers within the protected local network (e.g. Web Server, Mail server, FTP Server, etc.). Communication rules in the traffic policy can also restrict local users in accessing certain services on the Internet.

Chapter 2 Introduction

Content Filtering *WinRoute* can monitor all HTTP and FTP communication and block objects that do not match given criteria. The settings can be global or defined specifically for each user. Downloaded objects can also be transparently checked by an external anti-virus application.

Network Configuration *WinRoute* has a built-in DHCP server, which sets TCP/IP parameters for each workstation within your local network. Parameters for all workstations can be set centrally from a single point. This reduces the amount of time needed to set up the network and minimizes the risk of making a mistake during this process.

DNS forwarder module enables easy DNS configuration and faster responses to DNS requests. It is a simple type of caching nameserver that relays requests to another DNS server. Responses are stored in its cache. This significantly speeds up responses to frequent requests. Combined with the DHCP server and the system's HOSTS file, the *DNS forwarder* can be also used as a dynamic DNS server for the local domain.

Remote Administration All settings are performed in the *Kerio Administration Console*, an independent administration console used to manage all Kerio's server products. It can be run either on the workstation with *WinRoute* or on another host within the local network or the Internet. Communication between *WinRoute* and the administration console is encrypted and thus protected from being tapped or misused.

Various Operating Systems Within The Local Network *WinRoute* works with standard TCP/IP protocols. From the point of view of workstations within the local network it acts as a standard router and no special client applications are required. Therefore, any operating system with TCP/IP, such as Windows, Unix/Linux, Mac OS etc., can be run within the LAN.

Note: *WinRoute* can work with TCP/IP protocol sets only. It does not affect the functionality of other protocols (i.e. IPX/SPX, NetBEUI, AppleTalk, etc.).

2.2 Conflicting Software

The *WinRoute* host can be used as a workstation, however it is not recommended as user activity can affect the functionality of the operating system and *WinRoute* in a negative way.

WinRoute can be run with most of common applications. However, there are certain applications that should not be run at the same host as *WinRoute* for this could result in collisions.

Collision of low-level drivers *WinRoute Firewall* may collide with applications that use low-level drivers with either identical or similar technology. The following applications are typical:

- Application for Internet connection sharing — e.g. *Microsoft Internet Connection Sharing*, *Microsoft Proxy Server*, *Microsoft Proxy Client*, etc.
- Network firewalls — i.e. *Microsoft ISA Server*, *CheckPoint Firewall-1*, *WinProxy* (by Osis), *Sygate Office Network* and *Sygate Home Network*, etc.
- Personal firewalls — i.e. *Kerio Personal Firewall*, *Internet Connection Firewall* (included in Windows XP), *Zone Alarm*, *Sygate Personal Firewall*, *Norton Personal Firewall*, etc.
- Software designed to create virtual private networks (VPN) — i.e. software applications developed by the following companies: CheckPoint, Cisco Systems, Nortel, etc. There are many such applications and their features vary from vendor to vendor. We recommend to test each VPN server or client that you intend to use with the trial version of *WinRoute* or to contact Kerio technical support (see <http://www.kerio.com/>).

Note: VPN implementation included in Windows operating system (based on Microsoft's PPTP protocol) is supported by *WinRoute*.

Port collision Applications that use the same ports as the firewall cannot be run at the *WinRoute* host (or the configuration of the ports must be modified). If all services are running, *WinRoute* uses the following ports:

- 53/UDP — *DNS Forwarder*
- 67/UDP — *DHCP server*
- 1900/UDP — *SSDP Discovery* service
- 2869/TCP — *UPnP Host* service

The two recently mentioned services belong to the UPnP support (see chapter 10.5).

- 4080/TCP — WWW administration interface (see chapter 7)
- 4081/TCP — secure (SSL) version of the WWW administration interface (see chapter 7)

Chapter 2 Introduction

- 3128/TCP — HTTP proxy server (see chapter 4.5)
- 44333/TCP+UDP — traffic between *Kerio Administration Console* and *WinRoute Firewall Engine*. This service cannot be stopped and its port number cannot be modified.

Antivirus applications If an antivirus application that scans files on the disc is run on the *WinRoute* host, the HTTP cache file (see chapter 4.6, usually the `cache` subdirectory under the directory where *WinRoute* is installed) and the `tmp` subdirectory (used to scan HTTP and FTP objects) must be excluded from inspection. If the antivirus is run manually, there is no need to exclude these files, however, *WinRoute Firewall Engine* must be stopped before running the antivirus (this is not always desirable).

Note: If *WinRoute* uses an antivirus to check objects downloaded via HTTP or FTP protocols (see chapter 6.6), the cache directory can be excluded with no risk — files in this directory have already been checked by the antivirus.

2.3 Installation

System Requirements

Requirements on minimal hardware parameters of the host where *WinRoute* will be installed:

- CPU Intel Pentium II or compatible; 300 MHz
- 128 MB RAM
- 2 network interfaces
- 8 MB free memory for the installation
- Free memory for logs (depends on traffic load and selected logging level)

The product supports for the following operating systems:

- Windows 98
- Windows Me
- Windows NT 4.0
- Windows 2000

- Windows XP
- Windows Server 2003

Note: *WinRoute* provides full support for the Windows NT 4.0, 2000, XP and Server 2003 operating systems. *Kerio Technologies* cannot guarantee smooth functionality of *WinRoute* under Windows 98 and Me for unstability and specific features of these operating systems.

Warning: To enable running *WinRoute* as a service, the *Client for Microsoft Networks* component is required under the Windows NT, 2000, XP and Server 2003 operating systems.

Steps to be taken before the installation

Install *WinRoute* on a computer which is used as a gateway connecting the local network and the Internet. This computer must include at least one interface connected to the local network (Ethernet, TokenRing, etc.) and at least one interface connected to the Internet. You can use either a network adapter (Ethernet, WaveLAN, etc.) or a modem (analog, ISDN, etc.) as an Internet interface.

We recommend you to check through the following items before you run *WinRoute* installation:

- Time of the operating system should be set correctly (for timely operating system and antivirus upgrades, etc.)
- Current installations of individual applications of the operating system (especially its security components) should be up-to-date
- TCP/IP parameters should be set for all available network adapters
- All network connections (both to the local network and to the Internet) should function properly. You can use for example the `ping` command to detect time that is needed for connections.

These checks and pre-installation tests may protect you from later problems and complications.

Note: Basic installation of all supported operating systems include all components required for smooth functionality of *WinRoute*.

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Installation and Basic Configuration Guide

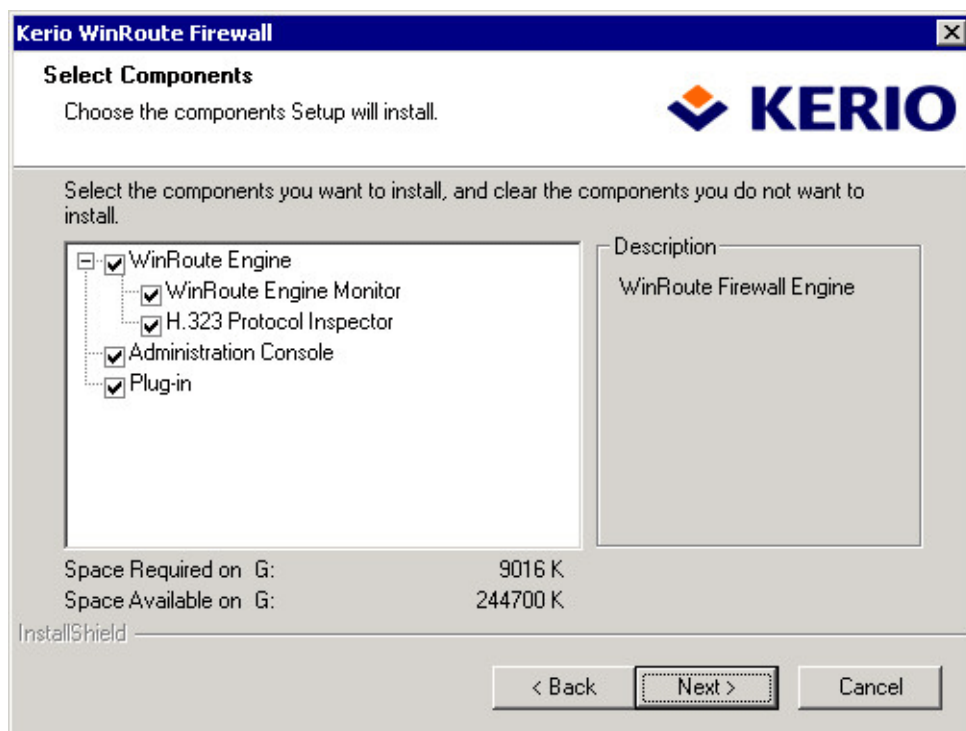
Once the installation program is launched (i.e. through `kerio-kwf-5.1.0-win.exe`), a guide will take you through setting the basic parameters of the server and importing settings from a previous *WinRoute Pro 4.x* installation.

Note: If you have used *WinRoute Pro 4.x* and you intend to import its settings, stop the *WinRoute Engine* before you start the *Kerio WinRoute* installation process. This saves all changes in the system registry.

Warning: Uninstallation of *WinRoute* will result in the loss of all settings!

When the installation program is started, you will be asked to select a language for the installation process. Language settings for *Kerio Winroute* interface will be available within the application itself.

You will be asked to choose between two types of installation — Full or Custom. Choosing the custom mode will let you select *Winroute's* individual components (see also chapter 2.4).



- *WinRoute Firewall Engine* — core of the application
- *WinRoute Engine Monitor* — utility for *WinRoute Firewall Engine* control and monitoring its status (icon in the system's notification area)

- *H.323 Protocol Inspector* — inspection module for the H.323 protocol set (IP telephony protocols— i.e. voice communication via *Microsoft NetMeeting*) ,
- *Kerio Administration Console* — the *Kerio Administration Console* application (universal console for all server applications of Kerio Technologies)
- *Plug-in* — the *Kerio Administration Console* module for *WinRoute* administration

Go to chapter 2.4 for a detailed description of all *WinRoute* components.

Note: If you selected the *Custom* installation mode, the behavior of the installation program will be as follows:

- all ticked components will be installed or refreshed
- all unticked components will not be installed or will be removed

During an update, all components that are intended to remain must be ticked.

Having completed this step, you can start the installation process. All files will be copied to the hard disk and all the necessary system settings will be performed. The initial Wizard will be run automatically after your first login (see chapter 2.8).

Restart the machine when the installation has completed. This will install the *WinRoute* low-level driver into the system kernel. *WinRoute Engine* will be automatically launched after restart. The engine runs as a service or as a background application under NT/2000/XP or 98/Me respectively. The *WinRoute Engine Monitor* will be launched after a user login. This utility monitors the *Engine* status and is used to start or stop the engine. *WinRoute Engine Monitor* icon is displayed in the system's notification area (system tray).

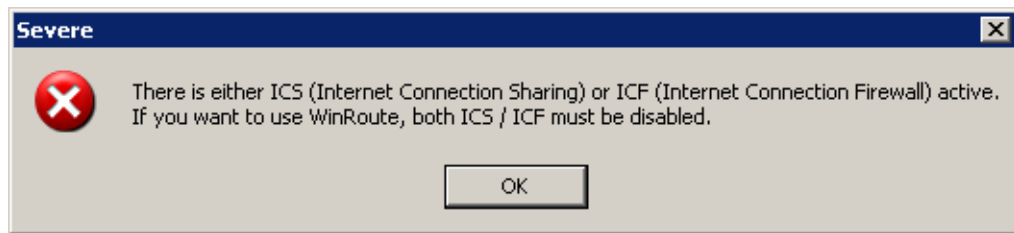
Conflicting System Services

The *WinRoute* installation program detects if system services that might conflict with the *WinRoute Firewall Engine* are not running.

1. Internet Connection Sharing and Internet Connection Firewall

If *Internet Connection Sharing* (Windows Me, 2000, XP) or *Internet Connection Firewall* (Windows XP) is running at any interface of the *WinRoute* host, the following warning will be reported:

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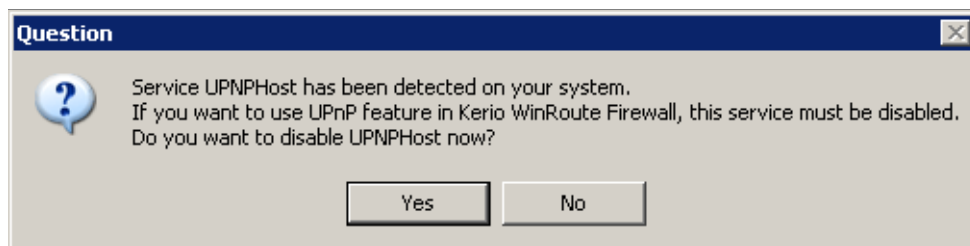


Do not proceed unless both services are disabled on all interfaces. *WinRoute* will not function correctly if this condition is not met.

2. *Universal Plug and Play Device Host* and *SSDP Discovery Service*

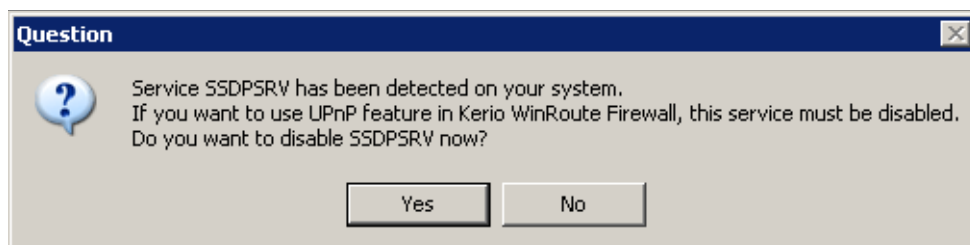
These two services support the *UPnP* (Universal Plug and Play) protocol on the Windows XP operating system. Both services must be disabled if you intend to use *UPnP* in *WinRoute* (see chapter 10.5).

- If the *Universal Plug and Play Device Host* service is detected, the following dialog will appear:



Click on *Yes* to stop the *Universal Plug and Play Device Host* service and to disable its automatic startup when the system is started. Select *No* to keep existing service status and parameters.

- If the *SSDP Discovery Service* service is detected, the following dialog will appear:



The action of the buttons is the same as described above.

Note: To read more about *UPnP* refer to chapter 10.5.

2.4 Winroute Components

Kerio Winroute consists of the three following components:

WinRoute Firewall Engine The core of the program executing all services and functions. It is running either as a service in Windows NT 4.0/2000/XP, or as a daemon in Windows 98/Me.

WinRoute Engine Monitor With this application you can monitor the *Engine* and/or *Monitor* applications, you can switch the engine's on/off status, edit startup preferences or launch the administration console. For more info see chapter 2.5.

Note: WinRoute Firewall Engine is independent on the *WinRoute Engine Monitor*. This means that the *Engine* can be run even when the icon is not displayed on the toolbar (it is running in the background or as a hidden application under Windows 98/Me).

Kerio Administration Console It is a versatile console for local or remote administration of Kerio products. For successful connection to an application you need a plug-in with an appropriate interface. *Kerio Administration Console* is installed hand-in-hand with the appropriate module, called *plug-in*, during the installation of *Kerio Winroute*. Go to chapter 3 to see how *Kerio Administration Console* can be used for *Kerio Winroute* administration.

2.5 WinRoute Engine Monitor

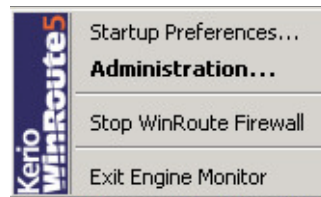
WinRoute Engine Monitor is a utility used to control and monitor the *WinRoute Engine* status. The icon of this component is displayed on the systray.



If *WinRoute Engine* is stopped, a white crossed red spot appears on the icon. Under different circumstances, it can take up to a few seconds to start or stop the *WinRoute Engine* application. Meanwhile, the icon gets grey and is inactive — does not respond to mouse clicking.

By double-clicking on the icon with the left mouse button, *Kerio Administration Console* (see below) will be launched. By clicking the right mouse button on the icon, a menu offering the following functions will be displayed:

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Startup Preferences With these options *WinRoute Engine* and/or *WinRoute Engine Monitor* applications can be set to be launched automatically when the operating system is started. In default settings (after the installation) both functions are on.

WinRoute Administration This option starts *Kerio Administration Console*. The application can be also started by double-clicking on the *WinRoute Engine Monitor* icon with the left mouse button.

Start / Stop WinRoute Engine Switches between the Start and Stop modes. The text displays the current mode status.

Exit An option to exit *WinRoute Engine Monitor*. It does not affect status of the *WinRoute Engine* application (this will be announced by a report).

2.6 Upgrade and Uninstallation

In this chapter you can find a description of *WinRoute* upgrade within the version 5 (i.e. upgrade from the 5.0.0 version to the 5.1.0 version). Upgrade from the 4.x version to the 5.x version is described in chapter 2.3.

Simply run the installation of a new version to upgrade *WinRoute* (i.e. to get a new release from the *Kerio* Web pages — <http://www.kerio.com/>). All of the three *WinRoute* components will be stopped and closed automatically. The installation program detects the directory with the former version and updates it by replacing appropriate files with the new ones automatically. All logs and user defined settings are saved.

Warning: We strongly recommend you not to change the installation directory!

To uninstall *WinRoute*, stop all three *WinRoute* components. The *Add/Remove Programs* option in the *Control Panel* launches the uninstallation process. All files under the *WinRoute* directory can be deleted.

Update Checker

WinRoute enables automatic checks for new versions of the product at the *Kerio Technologies* website. Whenever a new version is detected, its download and installation will be offered automatically.

2.7 Backup and Import of Configuration

For detailed information refer to chapter 10.7.

2.7 Backup and Import of Configuration

All *WinRoute* configuration data is stored in the following files under the same directory where *WinRoute* is installed:

winroute.cfg Chief configuration file

users.cfg Information about groups and user accounts.

logs.cfg Log configurations

host.cfg Parameters of the host where *WinRoute* is installed. Backup of this file is not essential.

ids.cfg Stored for future use

The data in these files are saved in XML format so that it can be easily modified by an advanced user or generated automatically using another application. Configuration backup or/and transfer can be done simply by copying the files.

Warning

Stop *WinRoute Firewall Engine* before handling configuration files as the files are retrieved during the *WinRoute Firewall Engine* startup only. Configuration files are saved after any modification is done and after *Engine* is stopped. All modifications done during *Engine* performance will be overwritten by the configuration in the system memory when the *Engine* is stopped.

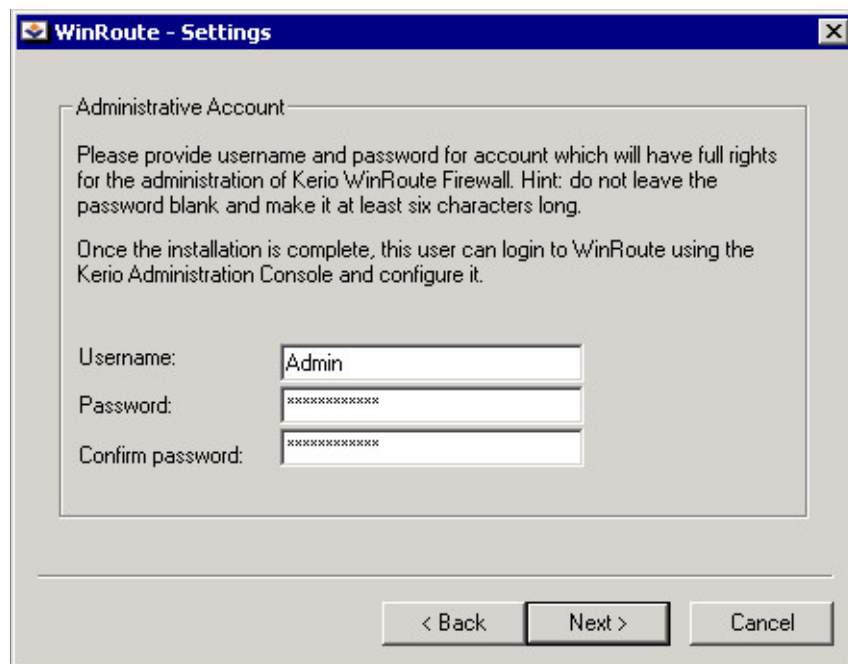
2.8 Configuration Wizard

Using this Wizard you can define all basic *WinRoute* parameters. It is started automatically by the installation program.

Note: In any language version, the configuration wizard is available in English only.

Administrator Account Password

Definition of the administration password is essential for the security of the firewall. Do not use the standard (blank) password, otherwise unauthorized users may be able to access the *WinRoute* configuration.



In the dialog window for the administrative account settings define your *Password* and confirm the definition in the *Confirm Password* text field. The administrator's username (Admin is used as default) can be edited in the *Username* text field.

Note: If *WinRoute* is upgraded from *WinRoute Pro 4.x*, skip this step and import the administrative account from *WinRoute Pro 4.x* (see below).

Remote Access

Immediately after the first *WinRoute Firewall Engine* startup all network traffic will be blocked (desirable traffic must be permitted by traffic rules — see chapter 5). If *WinRoute* is installed remotely (i.e. using terminal access), communication with the remote client will be also interrupted immediately (*WinRoute* must be configured locally).

Within Step 2 of the configuration wizard specify the IP address of the host from which the firewall will be controlled remotely (i.e. using terminal services) to enable remote installation and administration. Thus *WinRoute* will enable all traffic between the firewall and the remote host.

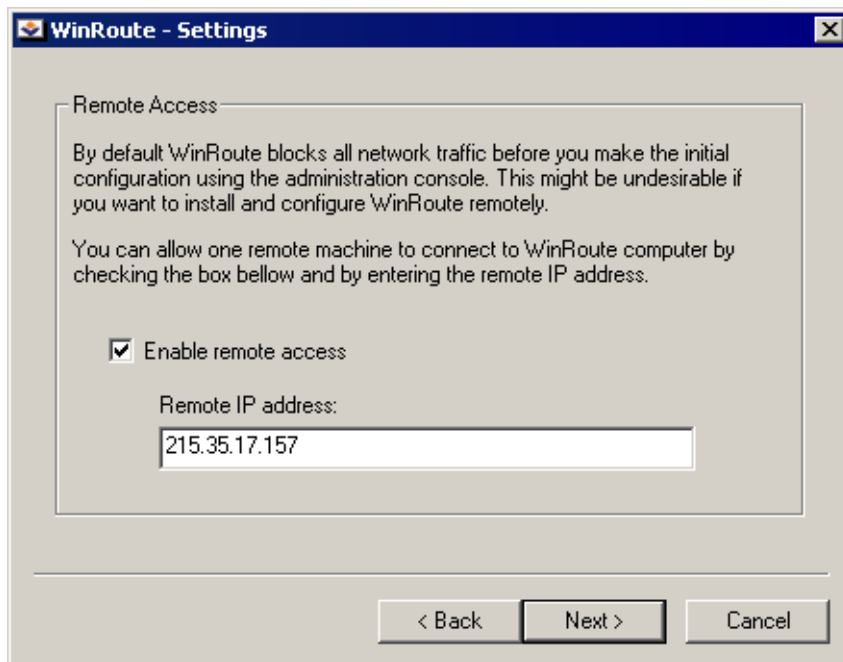
Note: Skip this step if you install *WinRoute* locally.

Enable remote access

This option enables full access to the *WinRoute* computer from a selected IP address

Remote IP address

2.8 Configuration Wizard



IP address of the computer from where you will be connecting (e.g. terminal services client). This field must contain an IP address. A domain name is not allowed.

Notice: After *WinRoute* has been remotely configured, the rule allowing remote access will be removed.

Importing Settings from WinRoute Pro 4.x

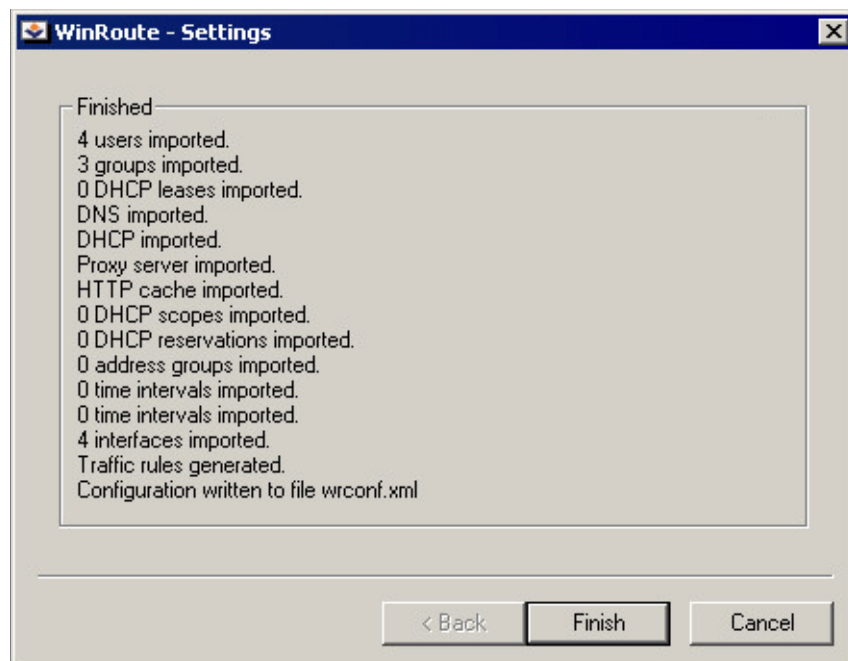
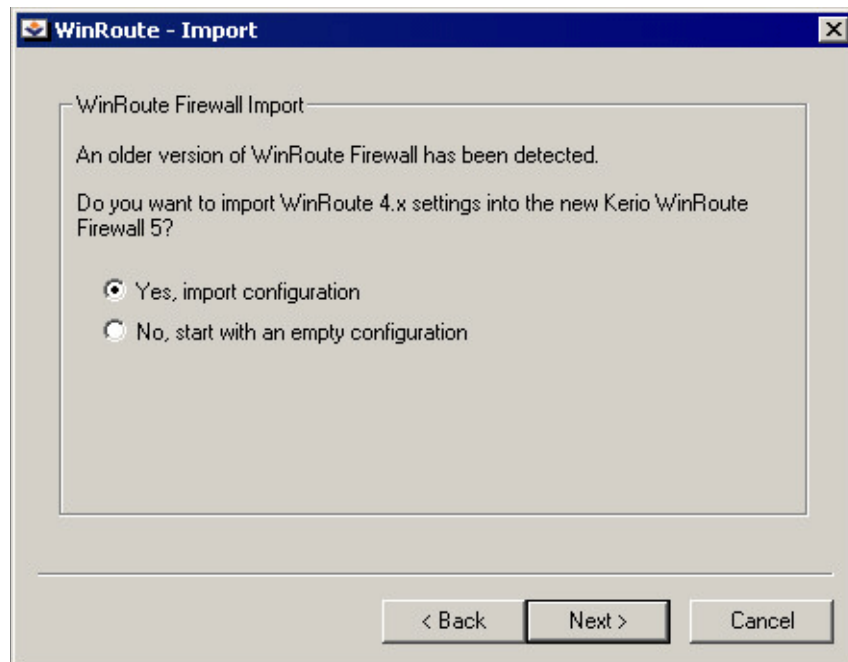
If installation of *WinRoute Pro 4.x* is detected on the host where the installation application is run, the import of settings from this program will be offered by the configuration wizard.

Warning: Stop *WinRoute Pro 4.x* before you install *WinRoute* (you will be warned by the installation program as well). Do not uninstall *WinRoute Pro 4.x*, otherwise all the settings will be lost.

Select *Yes, import configuration* if you intend to import the settings, or *No, start with an empty configuration* if you do not intend to import the settings. If either the first or the second option is selected, the backup of all *WinRoute Pro 4.x* settings will be saved in the OldCfg subdirectory. This will allow the former configuration to be restored if necessary.

When the configuration is imported successfully, you will be informed about the number of imported configuration items.

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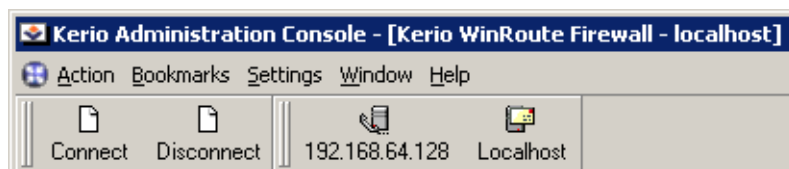


Click on the *Finish* button to finish the configuration wizard and to complete *WinRoute* installation.

Chapter 3

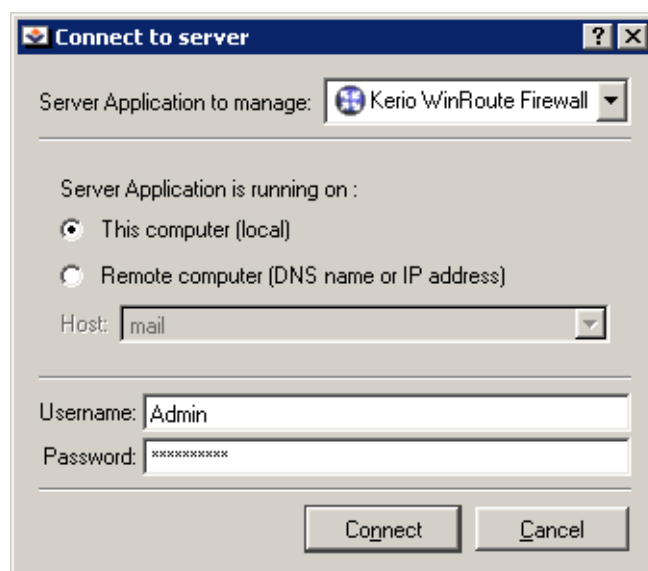
Kerio Administration Console

All Kerio products including *WinRoute* are administered through the *Kerio Administration Console* application. Using this program you can access *WinRoute Engine* either locally (from the *Engine* host) or remotely (from another host). Traffic between *Kerio Administration Console* and *WinRoute Firewall Engine* is encrypted. This protects you from tapping and misuse.



3.1 Local Administration

From the *Kerio* program group menu or by using the *WinRoute Engine Monitor* utility, run *Kerio Administration Console*. Click the *Connect* button (on the toolbar) or use the *Action / Connect* option to activate the connection dialog window.



First, select a type of server application to be administrated (*WinRoute*).

Chapter 3 Kerio Administration Console

Choose the *This computer (local)* option. *Kerio Administration Console* will be connected to the server running on the same host (`localhost`). Insert a username and password (if connecting first time, use the administrator account created during the installation process). Clicking on the *Connect* button to connect to the server. If connected successfully, the *WinRoute Firewall Engine* control window will be opened in the *Kerio Administration Console*.

Note: After the first connection to *WinRoute*, the Rule Wizard will be started automatically. The primary *WinRoute* configuration is done in this wizard. To read a detailed guide of the wizard see chapter 5.1.

3.2 Remote Administration

To connect from a remote host, you will need to install *Kerio Administration Console* with *WinRoute* administration plug-in. Run the *WinRoute* installation program and install *Kerio Administration Console*.

Run *Kerio Administration Console*. In the connection dialog window select the option that *WinRoute Engine* is running at *Remote computer (DNS name or IP address)*. Insert either the appropriate IP address (i.e. `192.168.1.1`) or the DNS name (e.g. `fw.company.com`) of the host where you run *WinRoute Engine* into the *Server* textfield. Insert an appropriate username and the password.

3.3 Why can't I log on?

If the report *Failed to connect to the server application* is displayed after your connection attempt, it can be caused by the following reasons:

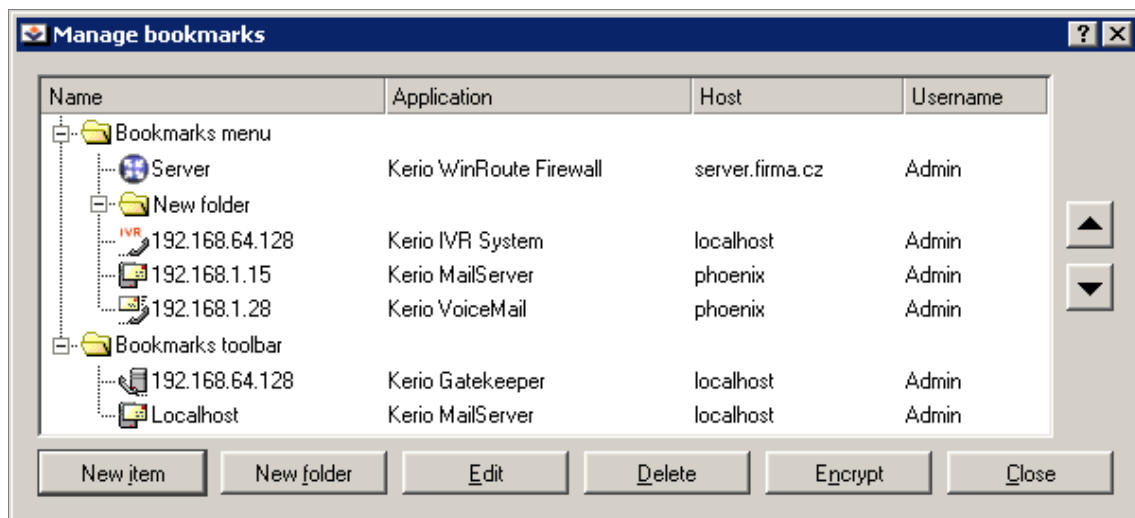
- Invalid username or password. Verify that you have inserted the correct username and password. Bear in mind that the password is case sensitive. Make sure that the *Caps Lock* mode is not on and that you use the correct language mode.
- User does not have administrator rights. Only users with access to the *WinRoute Firewall Engine* administration will be allowed to use *Kerio Administration Console*. For details refer to chapter 9.1.
- *WinRoute Engine* is not running on the host to which you are trying to connect. Run it first (using either *WinRoute Engine Monitor* or the *Services* panel under Windows NT 4.0 / 2000 / XP).
- Remote administration is not allowed or it is only allowed from a certain IP group. See chapter 10.1 for details.

3.4 Bookmarks

If you use *Kerio Administration Console* frequently to connect to various server applications (for example if you administer several *WinRoutes* installed on different hosts), you can save parameters (IP addresses, usernames and passwords) for these connections and connect to the chosen system by simply selecting an item from a list or by pressing a button on the toolbar. In *Kerio Administration Console* this can be done with bookmarks.

How to Define and Manage Bookmarks

Bookmarks can be created and sorted into different folders using the *Bookmarks / Manage Bookmarks* menu entry.



There are two bookmark trees in the left part of the window. The *Bookmarks menu* includes bookmark entries displayed in the menu whereas the *Bookmarks toolbar* represents buttons on the toolbar. The *Bookmarks toolbar* is displayed next to the *Connect* and *Disconnect* buttons at the top part of the dialog window by default. You can move it within or even out of the main *Kerio Administration Console* window.

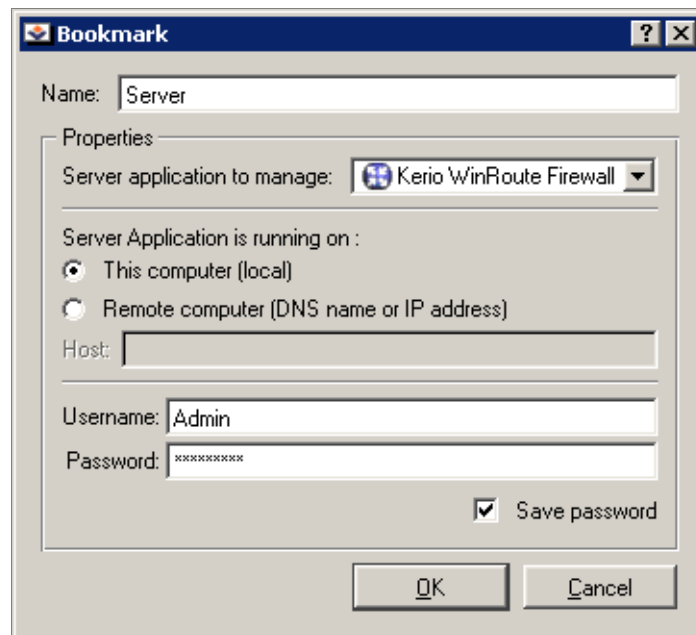
Use the buttons in the right part of the window to create, edit or remove bookmarks:

New Item Use this option to create a new bookmark.

Use *Name* entry to give your bookmark a name, which will then be displayed in the *Bookmarks menu* or the toolbar.

If the *Save Password* option is enabled, the password will be saved in the file with other information. In this case, you can access the bookmark by a single click. If the password is not saved, you will have to enter it each time you use the bookmark.

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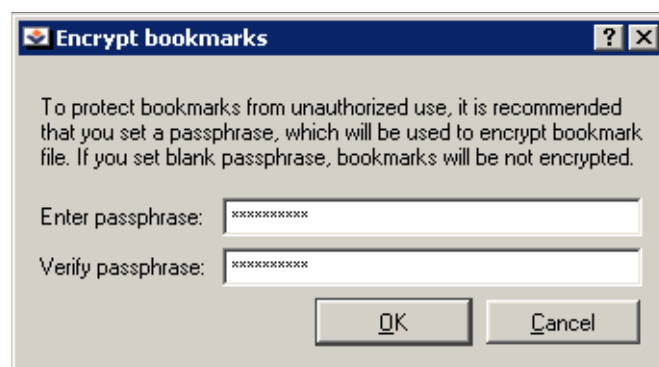


For safety reasons, you can encrypt the whole bookmark file in *Kerio Administration Console* and protect it using a password (see below).

New Folder creates a new folder (only applicable for the *Bookmarks* menu).

Encrypt encrypts the bookmark file and allows you to define a password. During the next connection attempt the user is asked for the password to access the bookmarks.

Caution: The password can contain printable characters only (letters, digits and punctuation). It is case sensitive.



Every time *Kerio Administration Console* is started, the user will be asked to insert the password to access the bookmark file. If the user enters an incorrect password or cancels the dialog, he/she can use the *Kerio Administration Console* but bookmarks will not be available.

3.5 Startup Preferences and Language Settings

Close closes the *Manage Bookmarks* dialog window.

TIP: To ensure full use of bookmarks save passwords for individual connections, as this will speed things up. However, make sure you encrypt the bookmarks file and define the password so that unauthorized persons cannot misuse it. Use the *Encrypt* button to do so.

Bookmarks Context Menu

By right-clicking on a selected bookmark the context menu will be displayed. It contains all functions described above — *New Item*, *New Folder*, *Edit*, *Delete*, *Up* and *Down*. Other standard functions, such as *Cut*, *Copy* and *Paste* are also included. Using these functions, you can do many things such as move bookmarks from one folder to another easily.



3.5 Startup Preferences and Language Settings

Start-up preferences and language can be set in the *Setting / Options* menu.

Start-up settings define the *Kerio Administration Console*'s behavior after it is started:

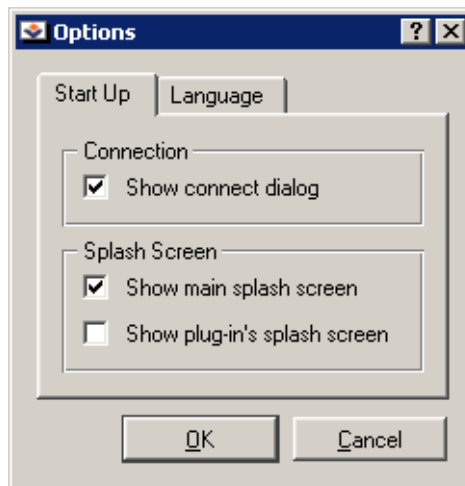
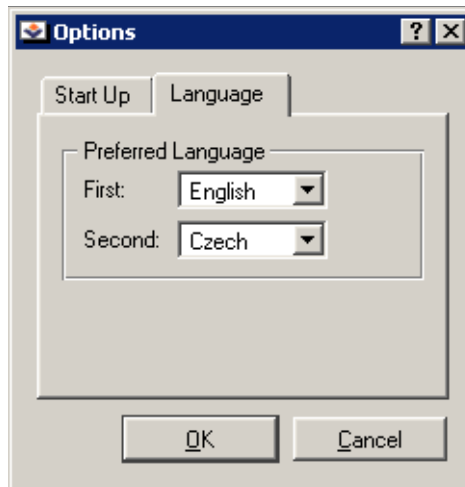
Show connect dialog A connection dialog will be opened automatically after *Kerio Administration Console* is started (by clicking the *Connect* button or by selecting the *Action / Connect* option from the menu the window can be opened as well).

Show main splash screen Defines whether the introductory *Kerio Administration Console* screen is displayed after the console is started.

Show plug-in's splash screen Defines whether a splash screen will be displayed for server plug-ins (e.g. *WinRoute*) after connection.

The *Language* bookmark contains setting options for primary and secondary languages that will be used in *Kerio Administration Console*.

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These settings determine the order in which *Kerio Administration Console* will seek for particular language definition files (*.qm). If the primary language definition file is not found, *Kerio Administration Console* will attempt to find the secondary one. If this also fails, the default language (English) will be used.

The option *Automatic* sets the language automatically according to the operating system settings (if the appropriate definition file is available).

3.6 Help

Administrator's Guide

Administrator's Guide (this document) is available in the *Kerio Administration Console* (the *Help / Administrator's Guide* option in the main menu).

The following steps must be taken to make the *Help* section available from the *Kerio Administration Console*:

1. Download the guide in the *HTML Help* format (*.chm) from the *Kerio Technologies* website (<http://www.kerio.com/>) písuný manuál ve formátu.
2. Save this file into the *Kerio Administration Console* directory

(typically C:\Program Files\Kerio\Admin)

as

k wf_<version>_<subversion>_<language abbreviation>.chm

the <version> and <subversion> items represent number of *WinRoute Firewall Engine* version and of a corresponding administration plug-in (the wradmin_x_y.dll file).

<language abbreviation> are two characters representing preferred language (see chapter 3.5). This information is also included in the name of a corresponding file (wradmin_x_y_zz.qm).

Example: Administration plug-in for the *Kerio WinRoute Firewall 5.1* is called wradmin_5_1.dll. The file containing English version of the product is wradmin_5_1_en.qm. Therefore, the following name will be used for the help file: k wf_5_1_en.chm

The help will be available by next connection to *WinRoute Firewall Engine*.

Notes:

1. The *Administrator's Guide* item will be available in the *Help* menu after connection to a server application (*WinRoute Firewall Engine*, *MailServer Engine* etc.) — a corresponding product help file is always opened.
2. English is set as the default language. If *Kerio Administration Console* cannot find selected language version of the help file, English help file will be used. If neither

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this file cannot be found, the *Help / Administrator's Guide* option in the main menu will not be available.

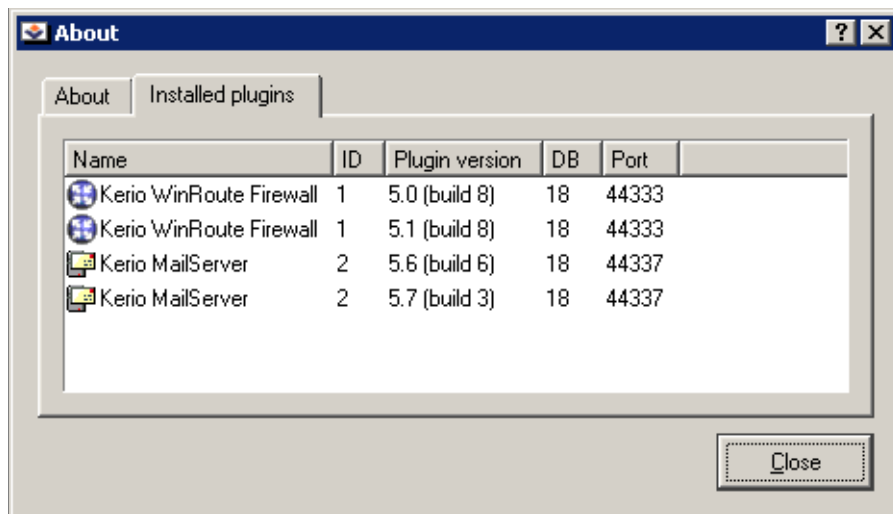
3. If number of version of the administration plug-in does not match with the help file number (e.g. `wradmin_5_1.dll` and `kwf_5_0_cs.chm`), the help will not be opened. The main reason is that help files describing older product versions might provide incorrect information.

About the Application

Use the *Help / About* option in the main menu to open a window providing information about the *Kerio Administration Console* and about all plug-ins used for connection to server applications (*WinRoute Firewall Engine*, *MailServer Engine*, etc.).

Open the *About* tab to view number of version of the *Kerio Administration Console* and information about the producer (version of the *Kerio Administration Console* is independent from a product version).

The following information is provided in the *Installed plug-ins* tab:



Name Name of a product for which the plug-in is used.

ID Plug-in identifier.

Plug-in version The following two items are included in this section:

- version of the product which the plug-in is used for (e.g. 5.0)
- version of the plug-in (e.g. build 8)

DB Number of version of the configuration database (*TinyDB* used by the plug-in).

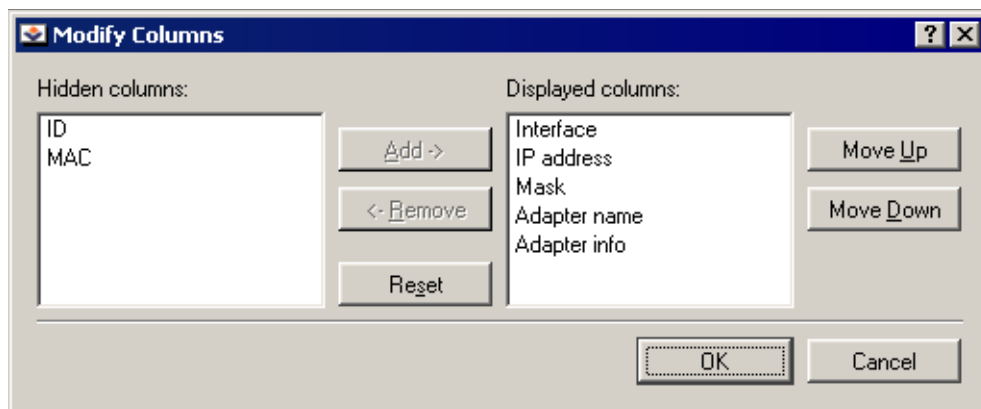
Port Port at which a server application listens for connection which will be used for the administration).

This information is used especially for definition of a traffic rule (refer to chapter 5) which will be applied to remote administration of a corresponding server application. TCP and UDP protocols are used for such traffic.

3.7 Views Setup

Many sections of the *Kerio Administration Console* are in table form where each line represents one record (e.g. detailed information about user, information about interface, etc.) and the columns consist of individual entries for these records (e.g. name of server, MAC address, IP address, etc.).

WinRoute administrators can define — according to their liking — the way how the information in individual sections will be displayed. By clicking the right mouse button in any of the sections listed, a context menu will be displayed. It includes the *Modify Columns* entry. This entry opens a dialog window where users can select which columns will or will not be displayed.



The *Hidden Columns* field contains columns that are intended to be hidden whereas *Displayed Columns* contains columns that are to be displayed. By clicking on the *Add* button, selected columns will be moved from the "hidden" to the "displayed" group. Clicking on the *Remove* button will do the opposite. Clicking on the *Refresh* button will restore default settings.

The *Move Up* and *Move Down* buttons move the selected column up and down within the group. This allows the administrator to define the order the columns will be displayed.

The order of the columns can also be adjusted in the window view. Left-click on the column name, hold down the mouse button and move the column to the desired location.

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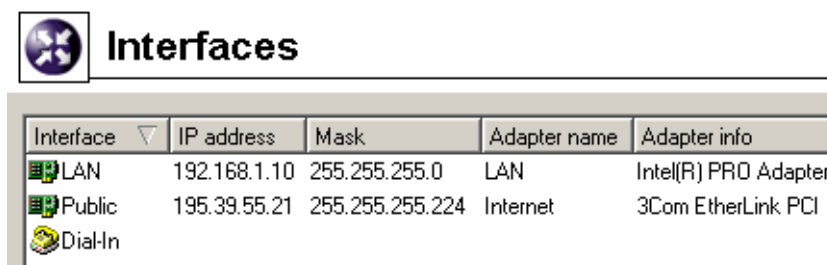
The width of individual columns can be adjusted by moving the dividing line between the column headers.

Chapter 4

Settings for Interfaces and Network Services

4.1 Interfaces

WinRoute functions as a router for all *WinRoute*'s network interfaces installed within the system. The interfaces are listed in the *Configuration / Interface* section of the *WinRoute Administration Console*.



Interface	IP address	Mask	Adapter name	Adapter info
LAN	192.168.1.10	255.255.255.0	LAN	Intel(R) PRO Adapter
Public	195.39.55.21	255.255.255.224	Internet	3Com EtherLink PCI
Dial-In				

Interface The name used for interface identification within *WinRoute*. It should be unique for easy reference, e.g. *Internet* for the interface connected to the Internet connection. We recommend you not to use duplicate interface names as they could cause problems during traffic policy definitions or routing table modifications.

The name can be edited later (see below) with no affect on *WinRoute*'s functionality.

The icon to the left of the name represents the interface type (network adapter or dial-up connection).

Note: Unless the name is edited manually, this item displays the name of the adapter as assigned by the operating system (see the *Adapter name* entry).

Adapter name The name of the adapter (e.g. "LAN connection 2"). The name is for reference only.

Adapter info Adapter identification string returned by the device driver.

IP Address and Mask IP address and the mask of this interface's subnet.

Use the buttons at the bottom of the interface list to remove or edit properties of the chosen interface. If no interface is chosen or the selected interface does not support a certain function, appropriate buttons will be inactive.

Chapter 4 Settings for Interfaces and Network Services

Add Adds a new dial-up interface. If a new network adapter is added it must be installed and configured in the operating system first in order to for *WinRoute* to detect it automatically.

Edit Displays detailed information and enables editing of the interface's parameters.

Remove Removes the selected interface from *WinRoute*. This can be done under the following conditions:

- the dial-up is hung-up
- the network adapter is not active or it is not physically present

WinRoute does not allow removing an active network or dial-up adapter.

Dial or Hang Up You can use *WinRoute's* Web interface (see chapter 7) to dial or hang up lines. If a network adapter is selected, these buttons are inactive.

Refresh Use this button to refresh the list of interfaces.

Adding or Editing Interfaces

The *Add* or the *Edit* button will open a dialog window to define or edit interface parameters.

Note: The following text only describes dial-up connections. In case of network adapters only the *Interface name* option can be edited.

Bind this interface... Select the Windows RAS connection that you use to connect to your ISP.

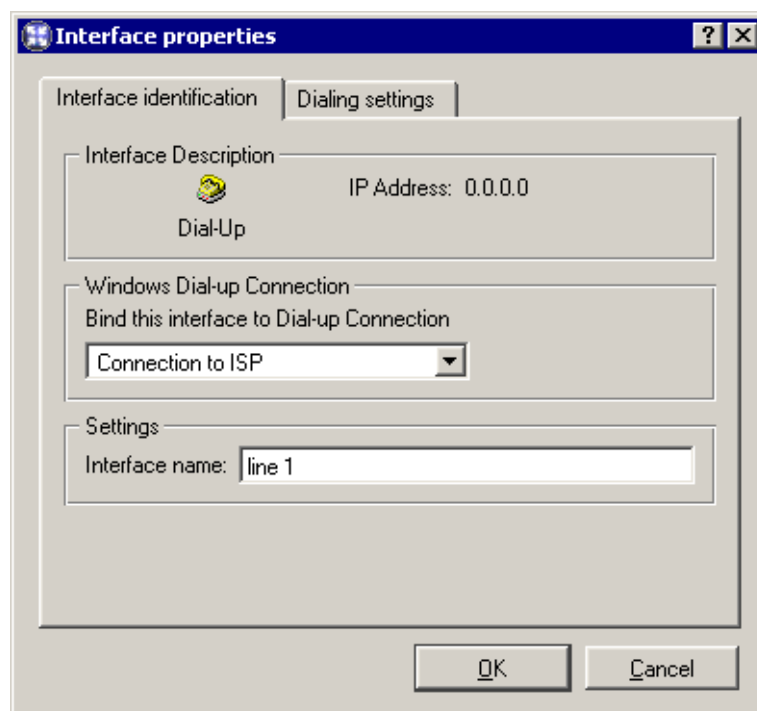
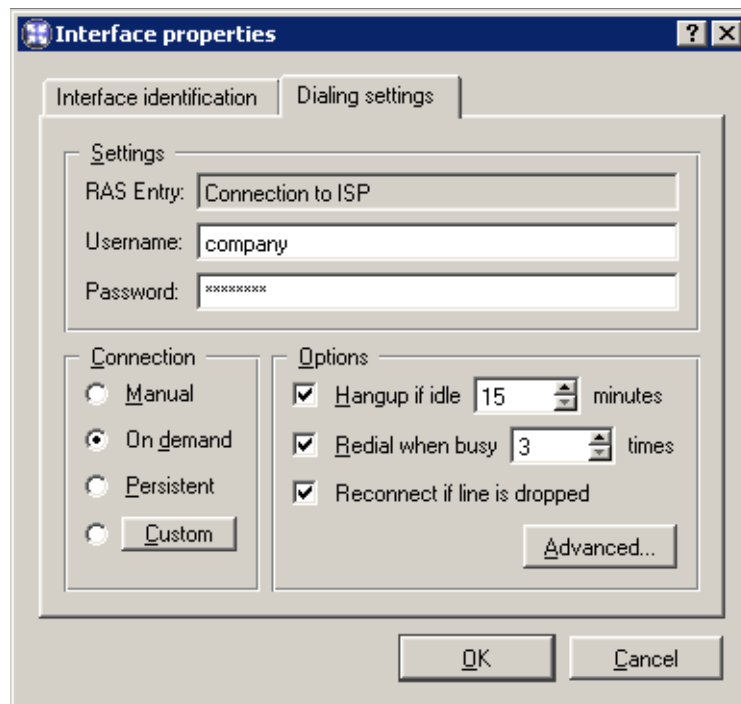
Note: It is recommended to create this connection and test it before the *WinRoute* installation.

Interface name Unique name that will identify the line within *WinRoute*.

In the *Dialing Settings* tab you can specify the details of when and how the line will be dialed. Manual dialing is set as default.

RAS Entry The Windows *Dial-up Connection* entry that has been selected in the *Interface identification* tab. The name RAS item is displayed for informational purposes.

Username and Password Username and login password for this connection are required by *WinRoute* (in Windows, this is saved in the user's profile folder that cannot be accessed by the *WinRoute Firewall Engine*).



Chapter 4 Settings for Interfaces and Network Services

Connection Connection type that can be used for dialing:

- *Manual* — the line can only be dialed manually, either from the *Kerio Administration Console* or from *WinRoute's* Web interface (see chapter 7).
- *On Demand* — the line will be dialed whenever a host on the LAN tries to access the Internet (incoming packet). To see details about the *WinRoute* and system on-demand dial configuration refer to chapter 10.3.
- *Persistent* — the line will be dialed immediately after the *WinRoute Firewall Engine* service is started and it will be kept active (and will be reconnected if the line is dropped for some reason).
- *Custom* — here you can set with great detail and complexity when the line should be dialed persistently or on demand or not dialed at all.



In sections of the dialog window you can select time ranges for each dialing type. Click on the *Edit* button to open a dialog where time ranges can be created or edited. For more information about time ranges refer to chapter 8.2.

This is how the user defined dialing works:

- The *Keep the line disconnected* option is processed prior to all other options. The line is kept disconnected during this period (or it is hung-up automatically).
- The time range for the *Keep the line connected* option is processed as seconds. During this period the line will be kept connected.
- The *On demand dial enabled* option is processed with the lowest priority. If the *always* option is selected, on-demand dial will be allowed anytime when it is not conflicting with the time range of the *never* option.

Options Advanced parameters for the *Manual*, *On Demand* and *Custom* dial types. In case of persistent connection these options are irrelevant (*WinRoute* keeps the line connected).

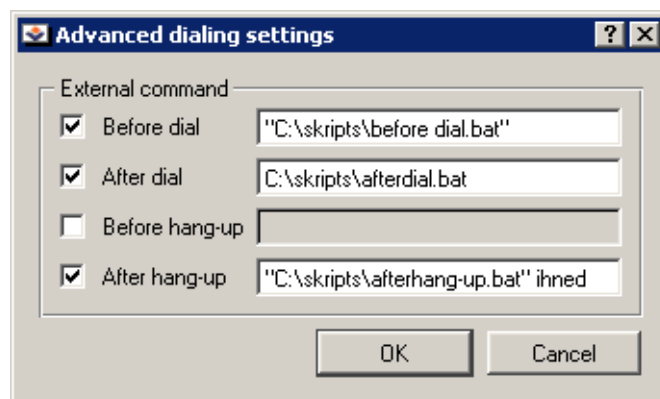
Hangup if idle Defines time range during which no data will be allowed to pass through this interface. Outside this period, the line will be disconnected automatically. With each incoming or outgoing packet, the timer of inactivity is set to zero.

There is no such thing as optimum length of the timeout period. If it is too short, the line is dialed too frequently, if too long, the line is kept connected too long. Both increase the Internet connection costs.

Redial when busy If line is busy when dialed, *WinRoute* will redial unless either connected successfully or the maximal user defined number of attempts is completed. If the connection attempt fails, the demand on dial will be ignored. According to this fact, connection attempts will not be repeated later automatically.

Reconnect if line is dropped If line drop-out is detected, *WinRoute* will try to reconnect automatically.

Advanced dialing settings *WinRoute* allows launching an application or a command in the following situations: *Before dial*, *After dial*, *Before hang-up* or/and *After hang-up*.



Chapter 4 Settings for Interfaces and Network Services

Path to the executable file must be complete. If the path includes spaces it must be closed into quotes, otherwise the part after a space will be considered as a parameter(s) of a batch file. If the path to the file is quoted, the text which follows the closing quote mark is also considered as batch file parameter(s).

Warning: If *WinRoute* is running as a service in the operating system, the application will be executed in the background.

Note: In case of the *Before dial* and *Before hang-up* options, the system does not wait for its completion after startup of the program.

4.2 Connection Failover

WinRoute allows for definition of connection failover (secondary connection). This alternate connection is enabled automatically whenever a dropout of the primary Internet connection is detected. Functionality of the primary connection is tested by sending of *ICMP Echo Requests (PING)* to selected computers. When *WinRoute* finds out that the primary connection is recovered again, the alternate connection is disabled and the primary one is established automatically.

Use the *Connection failover* tab in *Configuration / Interfaces* to define a secondary connection.

Enable automatic connection failover Use this option to enable/disable connection failover.

Current connection This item informs users on which connection is currently active:

- *Primary* — primary connection (in a green field)
- *Secondary* — alternate (secondary) connection (in a purple field)

Note: Current connections can be switched any time. To view the current status click on the *Refresh* button (at the bottom of the *Connection failover* tab).

Probe hosts Use this entry to specify IP address(es) of at least one computer (or a router, etc.). *WinRoute* will test availability of specified IP address(es) in regular intervals. If at least one of the tested devices is available, the primary connection is considered as functioning.

Note:

1. Connection failover is enabled only if at least one probe host is specified (*WinRoute* is not able to detect fails of the primary connection unless at least one probe host is defined).

The screenshot shows the 'Interfaces' configuration window with the 'Connection failover' tab selected. At the top, there are logos for Cobion orangefilter and McAfee SECURITY. The 'Enable automatic connection failover' checkbox is checked. The 'Current connection' is set to 'Primary'. A text box for 'Probe hosts' contains the IP addresses '195.159.33.1;195.159.33.100;222.2.12.11', with a note below it stating 'Use semicolon [;] to separate entries'. Under the 'Primary connection:' section, the 'Interface' is set to 'Internet' (with an 'Auto detect' button next to it) and the 'Default gateway' is '195.159.33.1'. Under the 'Alternate connection:' section, the 'Interface' is set to 'Dial-up connection' and the 'Default gateway' is '0.0.0.0'.

2. Probe hosts must be represented by computers or network devices which are permanently running (servers, routers, etc.). Workstations which are running only a few hours per day are irrelevant as probe hosts.
3. Probe hosts must not block *ICMP Echo Requests (PING)* since such requests are used to test availability of these hosts — otherwise the hosts will be always considered as unavailable.

Primary connection Parameters of the primary Internet connection. The connection can be defined as follows:

- network interface with a default gateway
- dial-up connection

Only interfaces and dial-up connections defined through the *Interfaces* tab are available in the *Interface* entry (see chapter 4.1).

Default settings (default gateway and a corresponding interface) are detected in the operating system after *WinRoute* installation, or when the *Enable automatic connec-*

Chapter 4 Settings for Interfaces and Network Services

tion failover option is enabled the first time. This can be also achieved by clicking on the *Detect* button.

If no default gateway is defined in the operating system (i.e. when the primary connection is performed by a dial-up which is currently hung-up), connection cannot be detected automatically — the primary connection must be set by hand.

Alternate connection Use this section to set parameters for an alternate internet connection which will be established in case that a primary connection dropout is detected can. The alternate connection can be defined as a network interface with a default gateway or as a dial-up connection (like for the primary connection).

Note: The same adapter as for the primary connection can be used, however, the default gateway must be different. This way we can be sure that a different router in the same network (subnet) will be used when the primary connection is dropped out.

Dial-up Use

The following issues must be taken into consideration if a dial-up is used for the primary and/or the alternate connection:

1. Connection failover is relevant only if performed by a permanent connection (using a network adapter or a permanently connected dial-up). If an on-demand dial-up (or a dial-up connection dialed by hand) was used for the primary connection, the alternate connection would be established automatically after each hang-up of the primary connection.
2. If a dial-up is used for alternate connection, it is not important whether this line is dialed on demand — *WinRoute* will dial and hang up the line whenever needed.

However, problems can be caused by the *Hang-up if idle* option — whenever the alternate line is disconnected automatically, *WinRoute* will not dial it again (unless the primary connection is recovered and then fails again).

For these reasons we recommend you to set dial-up parameters as follows:

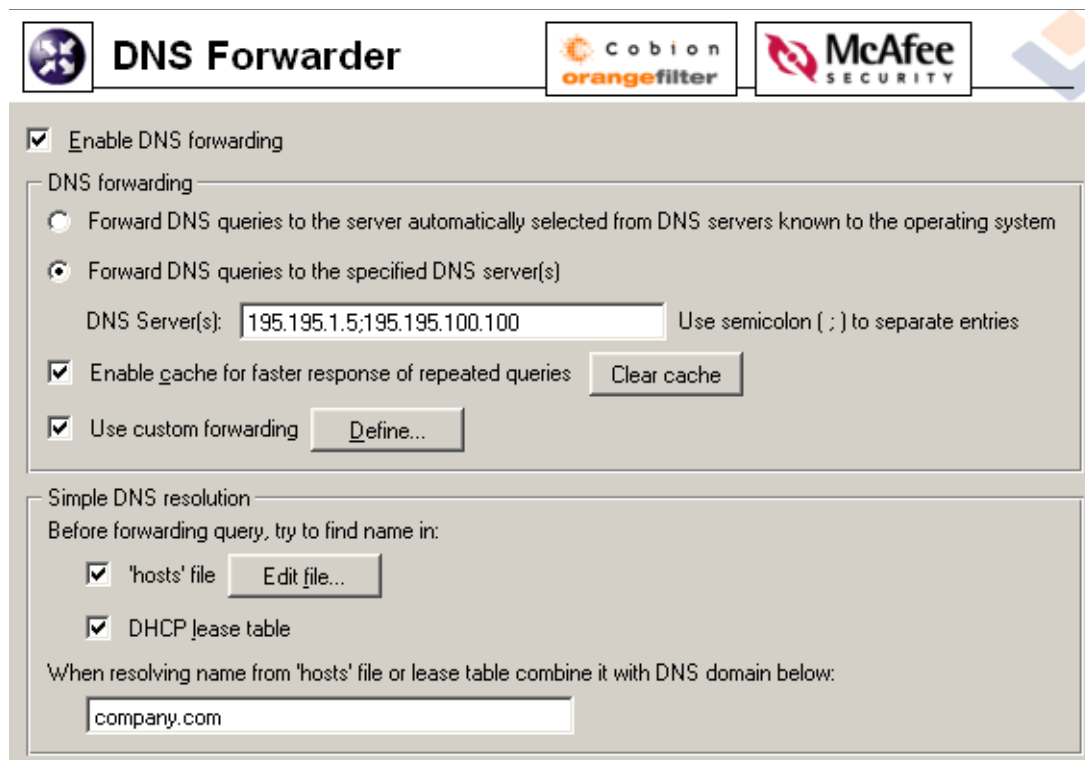
- for the primary connection — *persistent connection*
- for the alternate connection — *manual dialing*

4.3 DNS Forwarder

In *WinRoute*, the *DNS Forwarder* plug-in can be used to enable easier configuration for DNS hosts within local networks or to speed up responses to repeated DNS queries. At local hosts, DNS can be defined by taking the following actions:

- use IP address of the primary or the back-up DNS server. This solution has the risk of slow DNS responses.
- use the DNS server within the local network (if available). The DNS server must be allowed to access the Internet in order to be able to respond even to queries sent from outside of the local domain.
- use *DNS Forwarder* in *WinRoute*. *DNS Forwarder* can be also used as a basic DNS server for the local domain (see below) or as a forwarder for the existing server.

In *WinRoute* default settings the *DNS Forwarder* is switched on and set up so that all DNS queries are forwarded by one of the DNS servers defined in the operating system (usually it is a DNS server provided by your ISP). The configuration can be fine-tuned in *Configurations / DNS Forwarder*.



Chapter 4 Settings for Interfaces and Network Services

Enable DNS forwarding This option switches between the on/off modes of the *DNS Forwarder* (the service is running on the port 53 and UDP protocol is used by this service). If *DNS Forwarder* is not used for your network configuration, it can be switched off. If you want to run another DNS server on the same host, *DNS Forwarder* must be switched off, or there will be a collision on the port.

DNS forwarding *DNS Forwarder* must know at least one DNS server to forward queries to. This option defines how *DNS Forwarder* will identify the IP address of the server:

- *Forward DNS queries to the server automatically...* — functional Internet connection is required. At least one DNS server must be defined within TCP/IP configuration (in Windows, DNS servers are defined at a particular adapter, however, these settings will be used within the entire operating system).

DNS Forwarder can read these settings and use the same DNS servers. This provides the following benefit — the hosts within the local network and the *WinRoute* host will use the same DNS server.

- *Forward DNS queries to the specified DNS server(s)* — DNS queries will be forwarded to the specified DNS server/servers (if more than one server specified, they are considered primary, secondary, etc.). This option should be used when there is the need to monitor where DNS queries are forwarded to or to create a more complex configuration.

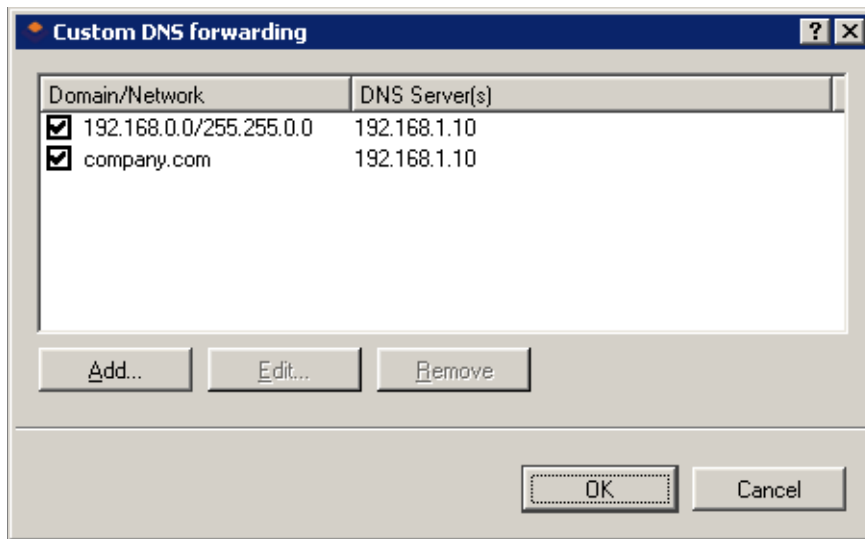
Enable cache for faster response of repeated queries If this option is on, all responses will be stored in local *DNS Forwarder* cache. Responses to repeated queries will be much faster (the same query sent by various clients is also considered as a repeated query).

Notes:

1. Time period for keeping DNS logs in the cache is specified individually in each log (usually 24 hours).
2. Use of DNS also speeds up activity of the HTTP proxy server (see chapter 4.5).

Use custom forwarding Use this option to define custom settings for forwarding certain DNS queries to other DNS servers. This can be helpful for example when we intend to use a local DNS server for the local domain (the other DNS queries will be forwarded to the Internet directly — this will speed up the response).

Use the *Define* button to open the dialog for definition of custom rules.



DNS server can be specified for:

- a domain — queries requiring names of computers included in the particular domain will be forwarded to this DNS server (so called A queries)
- a subnet — queries requiring IP addresses of the particular domain will be forwarded to the DNS server (reverse domain — PTR queries)

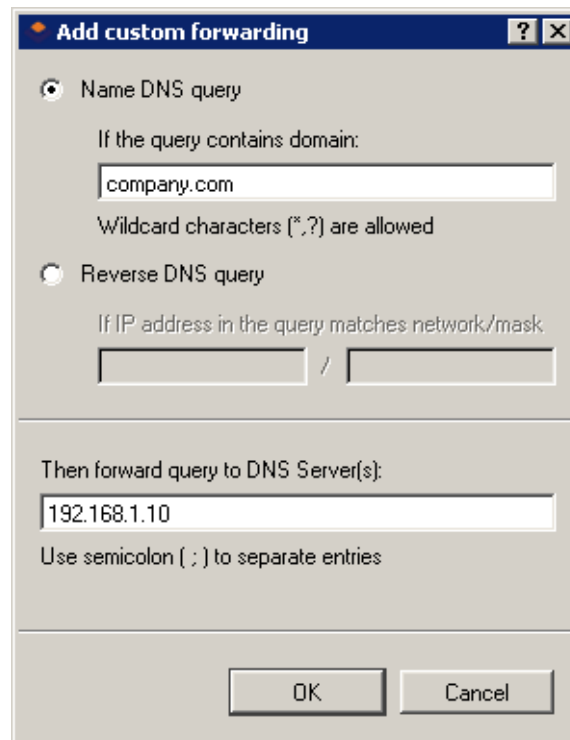
Click on the *Add* or the *Edit* button to open a dialog where custom DNS forwarding rules can be defined.

- Use the *Name DNS query* alternative to specify rule for DNS queries on names of computers included in the particular domain (or multiple domains). Use the *If the query contains domain* entry to specify name of the particular domain.

Specification of a domain name may contain * (asterisk — substitutes any number of characters) and/or ? (question mark — substitutes a single character). The rule will be applied to all domains matching with the string.

Example: Domain name will be represented by the string `?erio.c*`. The rule will be applied for example to domains `kerio.com`, `cerio.cz`, `aerio.c`, etc.

- Use the *Reverse DNS query* alternative to specify rule for DNS queries on IP addresses in a particular subnet. Subnet is specified by a network address and a corresponding mask (i.e. `192.168.1.0 / 255.255.255.0`).
- Use the *Then forward query to DNS Server(s)* field to specify IP address(es) of one or more DNS server(s) to which queries will be forwarded. Use semicolons to separate individual entries.



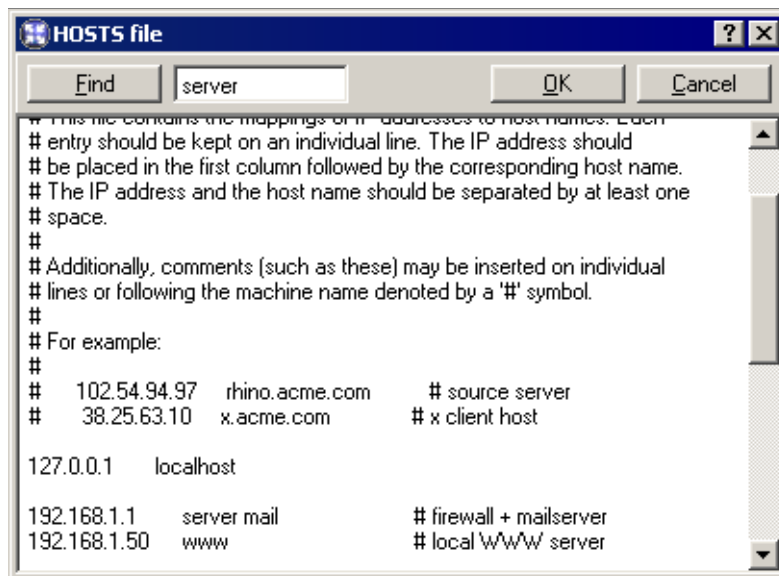
If multiple DNS servers are entered, they are considered as primary, secondary, etc. If no server is specified, then DNS queries meeting the rule will not be forwarded to any DNS server — *WinRoute* will only scan the local *hosts* file or tables of DHCP server (see below).

Simple DNS Resolution *DNS Forwarder* can be used as a simple DNS server for one of your local domains as well. This can be performed due to the following functions:

- *'host' file* — this file can be found in any operating system supporting TCP/IP. Each row of this file includes host IP addresses and a list of appropriate DNS names. When any DNS query is received, this file will be checked first to find out whether the desired name or IP address is included. If not, the query is forwarded to a DNS server.

If this function is on, *DNS Forwarder* follows the same rule. Use the *Edit* button to open a special editor where the *HOSTS* file can be edited via *Kerio Administration Console* even if this console is connected to *WinRoute* remotely.

- *DHCP lease table*— if the hosts within local network are configured by the DHCP server in *WinRoute* (see chapter 4.4), the DHCP server knows what IP address was defined for each host. After starting the system, the host sends a request for IP address definition including the name of the host.



DNS Forwarder can access DHCP lease tables and find out which IP address has been assigned to the host name. If asked to inform about the local name of the host, *DNS Forwarder* will always respond with the current IP address.

... **combine the name ... with DNS domain** Insert the name of the local DNS domain in this text field.

If a host sends a query to obtain an IP address, it uses the name only (it has not found out the domain yet). *DNS Forwarder* needs to know the name of the local domain to answer queries on fully qualified local DNS names (names including the domain).

The problem can be better understood through the following example:

The local domain's name is `company.com`. The host called `john` is configured so as to obtain an IP address from the DHCP server. After the operating system is started the host sends to the DHCP server a query with the information about its name (`john`). The DHCP server will respond with the IP address `192.168.1.56` and it will keep information about assigning the IP address from the table to the `john` host.

Another host that wants to start communication with the host will send a query on the `john.company.com` name (the `john` host in the `company.com` domain). If the local domain name would not have been known by *DNS Forwarder*, the forwarder would send the query to the DNS server as it would not recognize that it is a name from the local domain. However, as *DNS Forwarder* knows the local domain name, the `company.com` name will be separated and the `john` host with the appropriate IP address will be easily looked up in the DHCP table.

Note: If the local domain is specified in *DNS Forwarder*, local names with or without the domain can be recorded in the HOSTS file.

4.4 DHCP server

The DHCP protocol (*Dynamic Host Configuration Protocol*) is used for easy TCP/IP configuration of hosts within the network. The DHCP server selects appropriate configuration parameters (IP address with appropriate subnet mask and other optional parameters, such as IP address of the default gateway, addresses of DNS servers, domain name, etc.) for the client stations.

The DHCP server assigns clients IP addresses within a predefined scope for a certain period (*lease time*). If an IP address is to be kept, the client must request an extension on the period of time before the lease expires. If the client has not required an extension on the lease time, the IP address is considered free and can be assigned to another client.

So called reservations can be also defined on the DHCP server — certain clients will have their own IP addresses reserved. Addresses can be reserved for a hardware address (MAC) or a host name. These clients will have fixed IP address. These addresses are configured automatically.

Using DHCP brings two main benefits. First, the administration is much easier than with the other protocols as all settings may be done at the server (it is not necessary to configure individual workstations). Second, many network conflicts are eliminated (i.e. one IP address cannot be assigned to more than one workstation, etc.).

DHCP Server Configuration

To configure the DHCP server in *WinRoute* go to *Configuration / DHCP Server*. Here you can define IP scopes, reservations or optional parameters, and view information about occupied IP addresses or statistics of the DHCP server.

The DHCP server can be enabled/disabled using the *DHCP Server enabled* option (at the top). Configuration can be modified even when the DHCP server is disabled.

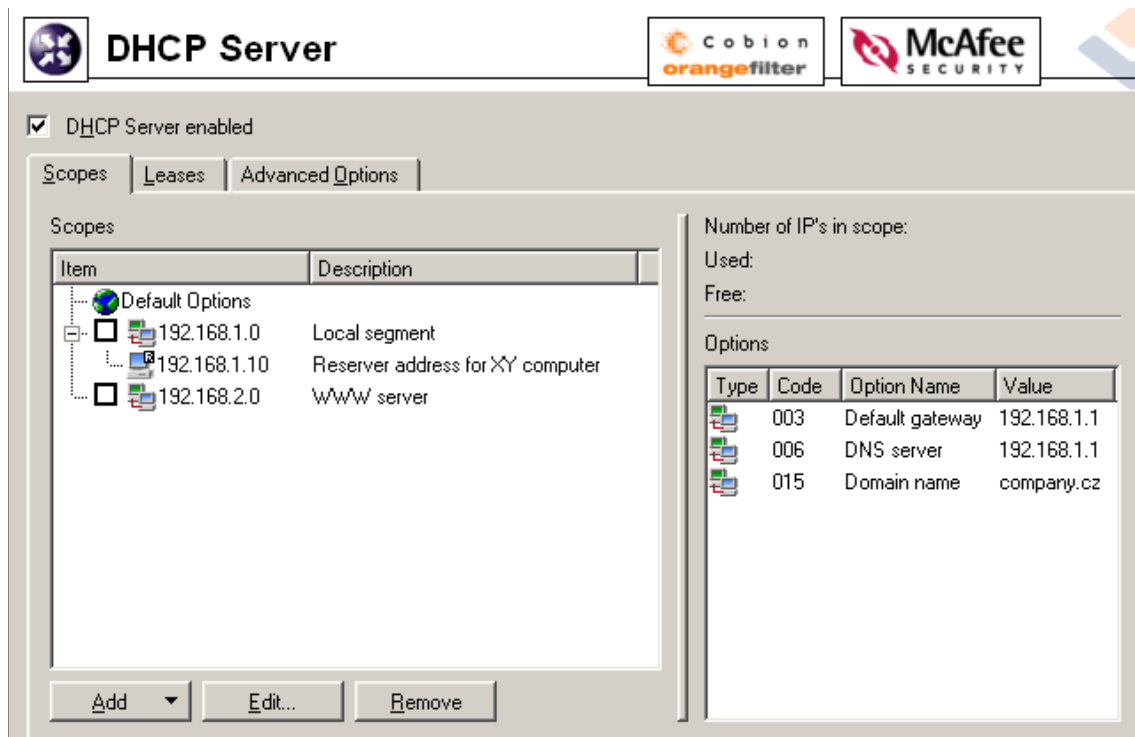
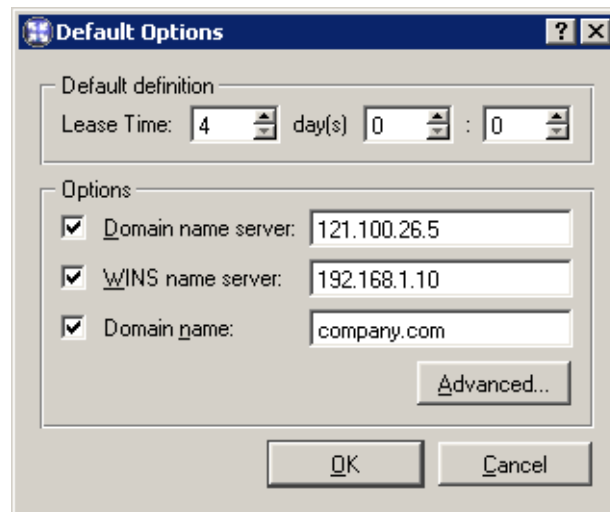
Definition of Scopes and Reservations

To define scopes including optional parameters and to reserve IP addresses for selected clients go to the *Scopes* dialog. The tab includes two parts — in one address scopes and in the other reservations are defined:

In the *Item* column, you can find subnets where scopes of IP addresses are defined. The IP subnet can be either ticked to activate the scope or unticked to make the scope inactive (scopes can be temporarily switched off without deleting and adding again). Each subnet includes also a list of reservations of IP addresses that are defined in it.

In the *Default options* item (the first item in the table) you can set default parameters for DHCP server.

4.4 DHCP server



Lease time Time for which an IP address is assigned to clients. This IP address will be automatically considered free by expiration of this time (it can be assigned to another client) unless the client requests lease time extension or the address release.

DNS server Any DNS server (or multiple DNS servers separated by semicolons) can be defined. We recommend you to use *DNS Forwarder* in *WinRoute* as the primary server (first in the list) — IP address of the *WinRoute* host. *DNS Forwarder* can cooperate

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with DHCP server (see chapter 4.3) so that it will always use correct IP addresses to response to requests on local host names.

WINS server IP address of the WINS server.

Domain Local Internet domain. Do not specify this parameter if there is no local domain.

Advanced Click on the *Advanced* button to open the dialog which includes list of all optional parameters supported by DHCP protocol (including the ones described above). You can add any parameter supported by DHCP protocol and set its value.

Default parameters are automatically matched with address scopes unless configuration of a particular scope is defined (the *Address Scope/Options* dialog). The same rule is applied on scopes and reservations (parameters defined for a certain address scope are used for the other reservations unless parameters are defined for a specific reservation). Weight of individual parameters correspondents with their position in the tree hierarchy.

Select the *Add / Scope* option to view the dialog for address scope definition.

Note: Only one scope can be defined for each subnet.

Address Scope

Description: Local segment 1

Scope definition

First address: 192.168.1.10 Last address: 192.168.1.10

Network mask: 255.255.255.0 Exclusions...

Lease time: 2 day(s) 12 : 0

Options

☒ Default gateway: 192.168.1.1

☒ Domain name server: 192.168.1.1

☐ WINS name server:

☒ Domain name: company.com

Advanced...

OK Cancel

Description Comment on the new address scope (just as information for *WinRoute* administrator).

First address, Last address First and last address of the new scope.

Note: If possible, we recommend you to define the scope larger than it would be defined for the real number of users within the subnet.

Mask Mask of the appropriate subnet. It is assigned to clients together with the IP address.

Note: The *Kerio Administration Console* application monitors whether first and last address belong to the subnet defined by the mask. If this requirement is not met, an error will be reported after the confirmation with the *OK* button.

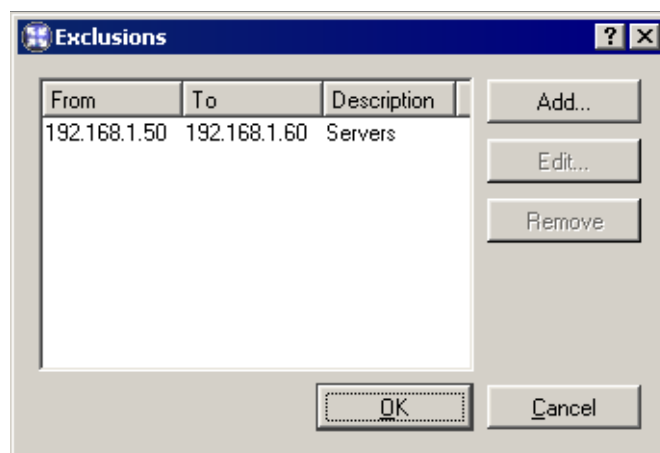
Lease time Time period during which the client can use the IP address. Unless the client has requested extension of the lease time during this period, the IP address is considered free and can be assigned to another client.

Exclusions *WinRoute* enables the administrator to define only one scope in within each subnet. To create more individual scopes, follow these instructions:

- create address scope covering all desired scopes
- define so called exclusions that will not be assigned

Example: In 192.168.1.0 subnet you intend to create two scopes: from 192.168.1.10 to 192.168.1.49 and from 192.168.1.61 to 192.168.1.100. Addresses from 192.168.1.50 to 192.168.1.60 will be left free and can be used for other purposes.

Create the scope from 192.168.1.10 to 192.168.1.100 and click on the *Exclusions* button to define the scope from 192.168.1.50 to 192.168.1.60. These addresses will not be assigned by the DHCP server.



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Parameters In the *Address Scope* dialog, basic DHCP parameters of the addresses assigned to clients can be defined:

- *Default Gateway* — IP address of the router that will be used as the default gateway for the subnet from which IP addresses are assigned.
- *DNS server* — any DNS server (or more DNS servers separated with semicolons). We recommend you to use the *DNS Forwarder* in *WinRoute* as the primary DNS server (IP address of the *WinRoute* host). The reason is that the *DNS Forwarder* can cooperate with the DHCP server (see chapter 4.3) and it will always respond to requests on local host names with the correct IP address.
- *WINS name server* — In networks with multiple routers it is sometimes necessary to use a *WINS* (Windows Internet Naming Service) to resolve local *NetBIOS* computer names.
- *Domain* — local internet domain. Do not define this parameter unless there is a local domain.

Advanced Click on this button to open a dialog with a complete list of advanced parameters supported by DHCP (including the four mentioned above). Any parameter supported by DHCP can be added and its value can be set within this dialog. This dialog is also a part of the *Address Scopes* tab.

To view configured DHCP parameters and their values within appropriate IP scopes see the right column in the *Address Scope* tab.

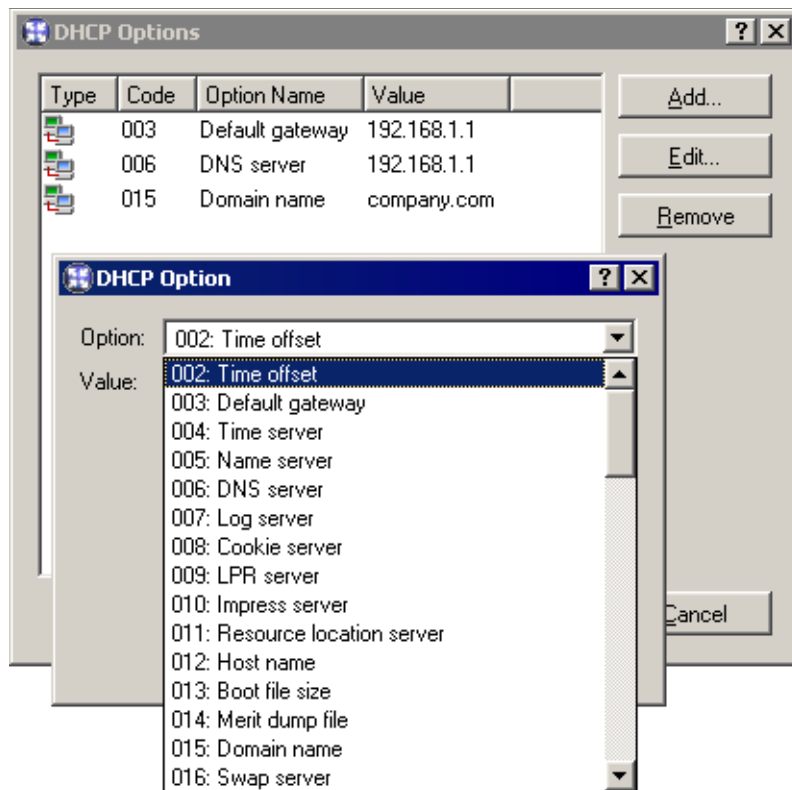
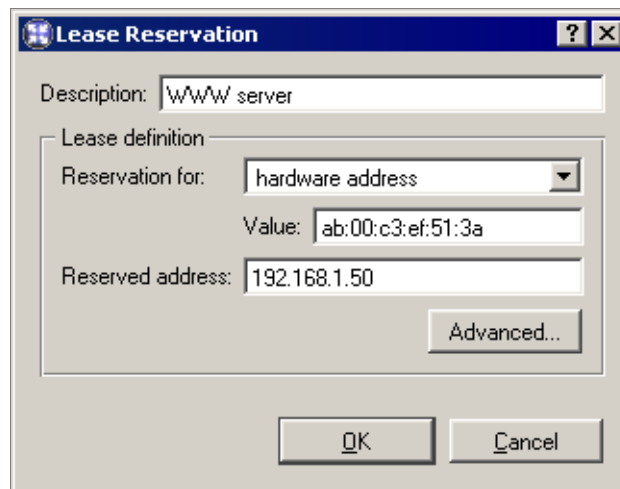
Note: Simple DHCP server statistics are displayed at the right top of the *Address Scope* tab. Each scope is described with the following items:

- total number of addresses within this scope
- number and percentage proportion of leases
- number and percentage proportion of free addresses

Number of IP's in scope:	90
Used:	86 (96%)
Free:	4 (4%)

Lease Reservations

DHCP server enables the administrator to book an IP address for any host. To make the reservation click on the *Add / Reservations* button in the *Scopes* folder.



Any IP address included in a defined subnet can be reserved.

IP addresses can be reserved for:

- hardware (MAC) address of the host — it is defined by hexadecimal numbers separated by colons, i.e.

00:bc:a5:f2:1e:50

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or by dashes— for example:

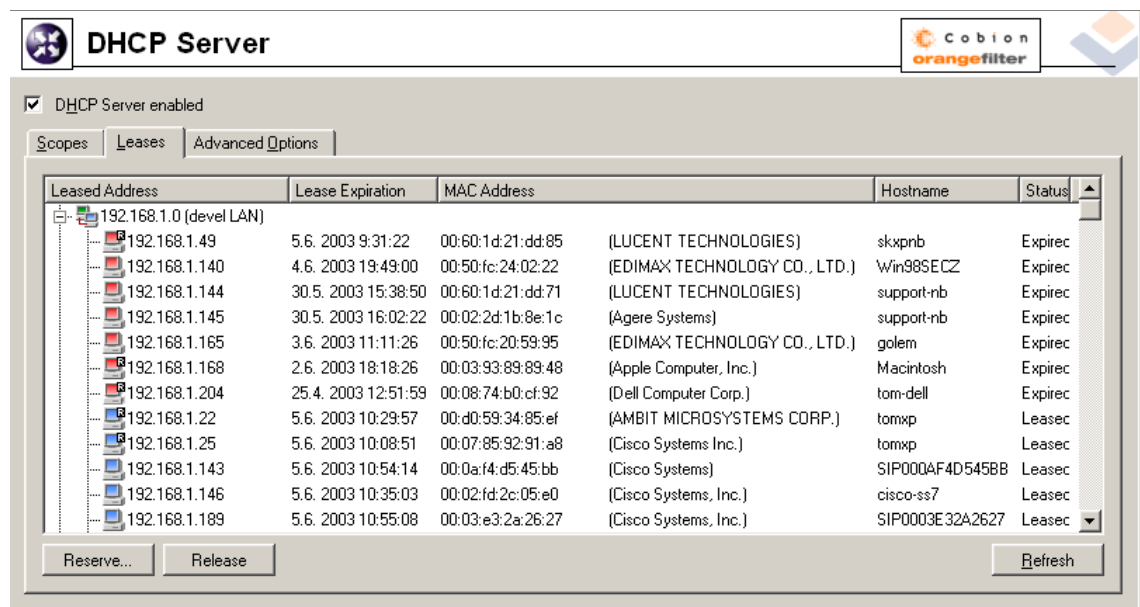
00-bc-a5-f2-1e-50

The MAC address of a network adapter can be detected with operating system tools (i.e. with the `ipconfig` command) or with a special application provided by the network adapter manufacturer.

- **host name** — DHCP requests of most DHCP clients include host names (i.e. all Windows operating systems), or the client can be set to send a host name (i.e. Linux operating system).

Leases

IP scopes can be viewed in the *Leases* tab. These scopes are displayed in the form of trees. All current leases within the appropriate subnet are displayed in these trees.



Note: Icon color represents address status (see below). Icons marked with R represent reserved addresses.

Columns in this section contain the following information:

- *Leased Address* — leased IP address
- *Lease Expiration* — date and time specifying expiration of the appropriate lease
- *MAC Address* — hardware address of the host that the IP address is assigned to (including name of the network adapter manufacturer).

- *Hostname* — name of the host that the IP address is assigned to (only if the DHCP client at this host sends it to the DHCP server)
- *Status* — status of the appropriate IP address; *Leased* (leased addresses), *Expired* (addresses with expired lease — the client has not asked for the lease to be extended yet), *Declined* (the lease was declined by the client) or *Released* (the address has been released by the client).

Notes:

1. Data about expired and released addresses are kept by the DHCP server and can be used later if the same client demands a lease.
2. Declined addresses are handled according to the settings in the *Options* tab (see below).

The following columns are hidden by default:

- *Last Request Time* — date and time when the recent request for a lease or lease extension was sent by a client
- *Lease Remaining Time* — time remaining until the appropriate *Lease Expiration*

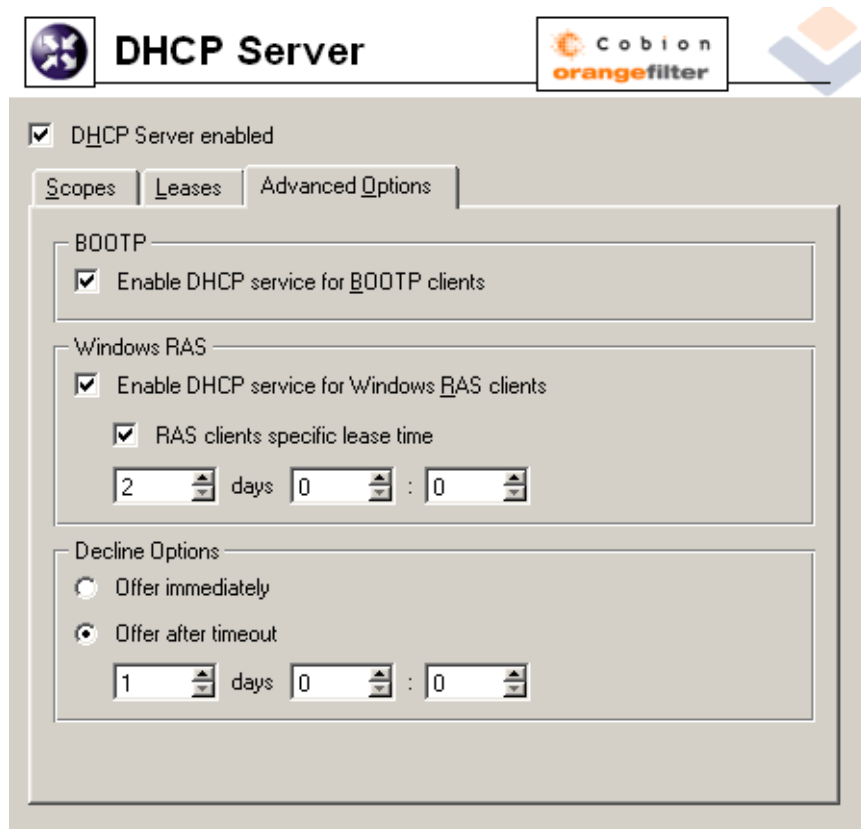
Use the *Release* button to release a selected IP address immediately (independently of its status). Released addresses are considered free and can be assigned to other clients immediately.

Click on the *Reserve* button to reserve a selected (dynamically assigned) IP address based on the MAC address or name of the host that the address is currently assigned to. The *Scopes* tab with a dialog where the appropriate address can be leased will be opened automatically. All entries except for the *Description* item will be already defined with appropriate data. Define the *Description* entry and click on the *OK* button to assign a persistent lease for the IP address of the host to which it has been assigned dynamically.

Note: The MAC address of the host for which the IP is leased will be inserted to the lease reservation dialog automatically. To reserve an IP address for a hostname, change settings of the *Reservation For* and *Value* items.

Options

Other DHCP server parameters can be set in the *Options* tab.



BOOTP If this option is enabled, the DHCP server will assign IP addresses (including optional parameters) also to clients of BOOTP protocol (protocol used formerly to DHCP— it assigns configurations statically only, according to MAC addresses).

Windows RAS Through this option you can enable DHCP service for RAS clients (Remote Access Service). You can also specify time when the service will be available to RAS clients if the default value is not convenient.

Declined options These options define how declined IP addresses (*DHCPDECLINE* report) will be handled. These addresses can be either considered released and assigned to other users if needed (the *Offer immediately* option) or blocked during a certain time for former clients to be able to use them (the *Declined addresses can be offered after timeout* option).

4.5 Proxy server

Even though the NAT technology used in *WinRoute* enables direct access to the Internet from all local hosts, it contains a standard HTTP proxy server. Under certain conditions

the direct access cannot be used or it is inconvenient . The following list describes the most common situations:

1. To connect from the *WinRoute* host it is necessary to use the proxy server of your ISP. In this case the Internet cannot be accessed directly.

Proxy server included in *WinRoute* can forward all queries to so called *parent proxy server*).

2. Internet connection is performed via a dial-up and access to certain Web pages is blocked (refer to chapter 6.1). If a direct connection is used, the line will be dialed before the HTTP query could be detected (line is dialed upon a DNS query or upon a client's request demanding connection to a Web server). If a user connects to a forbidden Web page, *WinRoute* dials the line and blocks access to the page — the line is dialed but the page is not opened.

Proxy server can receive and process clients' queries locally. The line will not be dialed if access to the requested page is forbidden.

3. *WinRoute* is deployed within a network with many hosts where proxy server has been used. It would be too complex and time-consuming to re-configure all the hosts.

The Internet connection functionary is kept if proxy server is used — it is not necessary to edit configuration of individual hosts (or only some hosts should be re-configured).

4. *WinRoute* may be filtering sites and objects transparently, however it is possible for a Web page to contain a redirect to a non-standard TCP port. In this case the transparent HTTP proxy will not be used. If the browser is configured to use a proxy server then the redirect will continue to be processed through the proxy server.

Note: The Proxy server in *WinRoute* supports only the HTTP and HTTPS protocols. Use direct access to support traffic using the FTP protocol unless you use a parent proxy server that supports FTP protocol (*WinRoute's* proxy server can “get” FTP to the parent proxy server).

Proxy Server Configuration

To configure proxy server parameters open the *Proxy server* tab in *Configuration / Content Filtering / HTTP Policy*.

HTTP Policy

URL Rules | Content Rules | Cache | **Proxy Server** | URL Groups | Forbidden Words

General options

☒ Enable non-transparent proxy server

Port:

Advanced options

☒ Forward to parent proxy server

Server: :

☒ Parent proxy server requires authentication

Username:

Password:

Set automatic proxy configuration script to:

☒ Direct access

☐ WinRoute proxy server

☒ Allow browsers to use configuration script automatically via DHCP server in WinRoute

Enable non-transparent proxy server This option enables the HTTP proxy server in *WinRoute* on the port inserted in the *Port* entry (3128 port is set by the default).

Warning : If you use a port number that is already used by another service or application, *WinRoute* will accept this port, however, the proxy server will not be able to run and the following report will be logged into the *Error* log (refer to chapter 13.7):

failed to bind to port 3128: another application is using this port

If you are not sure that the port you intend to use is free, click on the *Apply* button and check the *Error* log (check whether the report has or has not been logged) immediately.

Forward to parent proxy server Tick this option for *WinRoute* to forward all queries to the parent proxy server which will be specified by the following data:

- *Server* — DNS name or IP address of parent proxy server and the port on which the server is running (3128 port is used by the default)
- *Username, Password* — username and password for authentication to the parent proxy server.

Through this option you can also set the *McAfee* antivirus and *Cobion Orange Filter* so that they can automatically use this proxy server to access the Internet.

Leave the *Username* and *Password* entries blank unless your parent proxy server requires authentication.

Note: The name and password for authentication to the parent proxy server is sent with each HTTP request. Only *Basic* authentication is supported.

Allow browsers to use... The Web browsers' parameters at client hosts must be set properly to ensure correct proxy server functionality. These parameters are set automatically on most browsers. The following options are provided if *Enable browsers to use configuration script automatically via DHCP server in WinRoute* is enabled:

- The *Microsoft Internet Explorer* browser is configured automatically if the DHCP server is used and if the *Automatically detect settings* option is enabled in the browser settings.

Note: The DHCP server in *WinRoute* is required by this method of automatic configuration (refer to chapter 4.4).

- Other browsers (i.e. *Netscape/Mozilla*, *Opera*, etc.) enable definition of URL script for automatic configuration. Here is the appropriate URL:

`http://192.168.1.1:3128/pac/proxy.pac`

where 192.168.1.1 represents the IP address of the *WinRoute* host and 3128 represents port of the proxy server (see above).

The *Set automatic proxy configuration script to* option defines which method will be used for automatic configuration of browsers:

- *Direct access* — browser will not use proxy server
- *WinRoute proxy server* — The proxy server in the browser will be set to the IP address of the *WinRoute* host and to the port specified in the *Port* entry (see above).

4.6 HTTP cache

Using cache to access Web pages that are opened repeatedly reduces Internet traffic. Downloaded files are saved to the harddisc of the *WinRoute* host so that it is not necessary to download them from the Web server again later.

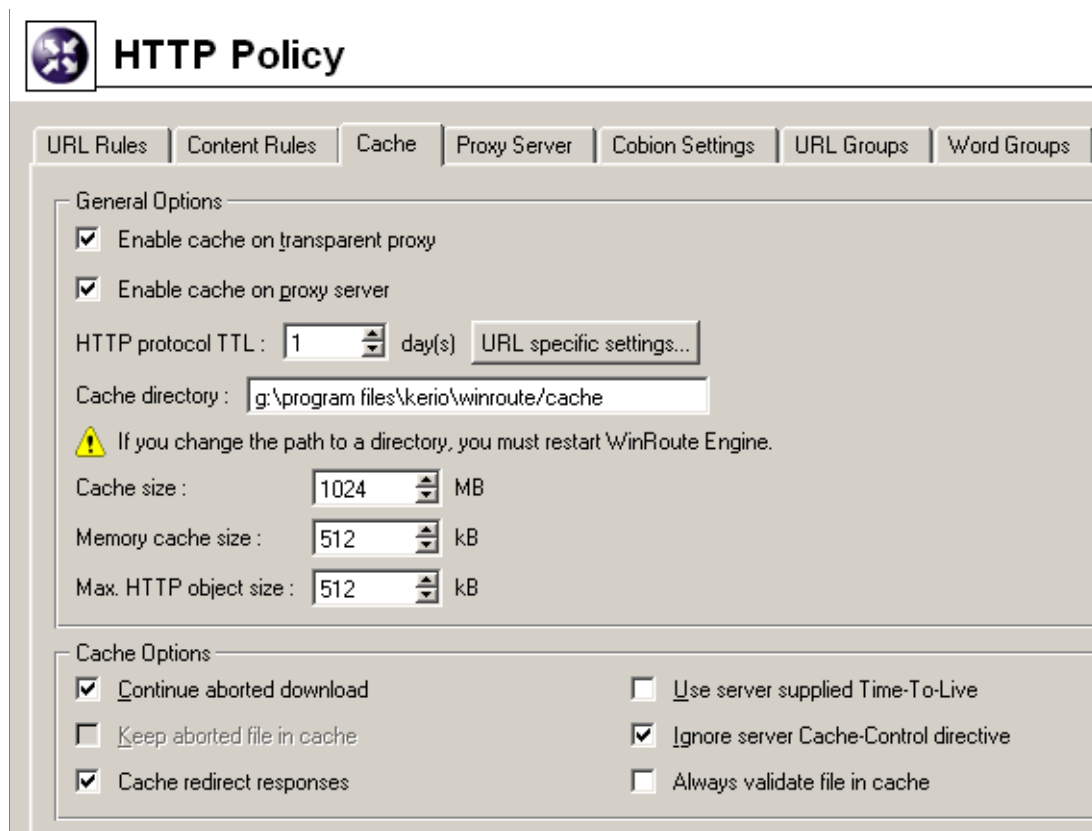
All objects are stored in cache for a certain time only (*Time To Live* — *TTL*). This time defines whether checks for the most recent versions of the particular objects will be performed upon a new request of the page. The required object will be found in cache

Chapter 4 Settings for Interfaces and Network Services

unless the *TTL* timeout has expired. If it has expired, a check for a new update of the object will be performed. This ensures continuous update of objects that are stored in the cache.

The cache can be used either for direct access or for access via the proxy server. If you use direct access, the HTTP protocol inspector must be applied to permitted TCP port 80 and 443 traffic. (refer to chapters 5.2 and 8.3).

To set HTTP cache parameters go to the *Cache* tab in *Configuration / Content Filtering / HTTP Policy*.



Enable cache on transparent proxy This option enables cache for HTTP traffic that uses the HTTP protocol inspector (direct access to the Internet)

Enable cache on proxy server Enables the cache for objects downloaded via *WinRoute's* proxy server (see chapter 4.5)

HTTP protocol TTL Default time of object validity within the cache. This time is used when:

- TTL of a particular object is not defined (to define TTL use the *URL specific settings* button —see below)
- TTL defined by the Web server is not accepted (the *Use server supplied Time-To-Live* entry)

Cache directory Directory that will be used to store downloaded objects. The cache file under the directory where *WinRoute* is installed is used by default.

Warning: Changes in this entry will not be accepted unless the *WinRoute Firewall Engine* is restarted.

Cache size Size of the cache file on the disc. Maximal size of this file is determined by file system: *FAT16* — 2GB, 4GB are allowed for other file systems.

Note: If 98 percent of the cache is full, a so called cleaning will be run — this function will remove all objects with expired TTL. If no objects are deleted successfully, no other objects can be stored into the cache unless there is more free space on the disc (made by further cleaning or by manual removal).

Memory cache size Maximal memory cache size in the main storage. This cache is used especially to accelerate records to the cache on the disc.

If the value is too high the host's performance can be affected negatively (cache size should not exceed 10 per cent of the computing memory).

Max HTTP object size maximal size of the object that can be stored in cache.

With respect to statistics, the highest number of requests are for small objects (i.e. HTML pages, images, etc.). Big sized objects, such as archives (that are usually downloaded at once), would require too much memory in the cache.

Cache Options Advanced options where cache behavior can be defined.

- *Continue aborted download* — tick this option to enable automatic download of objects that have been aborted by the user (using the *Stop* button in a browser). Users often abort downloads for slow pages. If any user attempts to open the same page again, the page will be available in the cache and downloads will be much faster.
- *Keep aborted files in cache* — if this option is enabled, the server will save even incomplete objects into the cache (object downloads which have not been finished). Downloads will be faster when the page is opened again.

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The *Keep aborted files in cache* option will be ignored if the *Continue aborted download* option is enabled.

- *Cache redirect responses* — HTTP responses that contain redirections will be cached.
- *Use server supplied Time-To-Live* — objects will be cached for time specified by the Web server from which they are downloaded. If TTL is not specified by the server, the default TTL will be used (see the *HTTP protocol TTL* item).
- *Ignore server Cache-Control directive* — WinRoute will ignore directives for cache control of Web pages.

Pages often include a directive that the page will not be saved into the cache. Enable the *Ignore server Cache-Control directive* option to make WinRoute accept only *no-store* and *private* directives.

Note: WinRoute examines HTTP header directives of responses, not Web pages.

- *Always validate file in cache* — with each query WinRoute will check the server for updates of objects stored in the cache (regardless of whether the client demands this).

Note: Clients can always require a check for updates from the Web server (regardless of the cache settings). Use a combination of the *Ctrl-F5* keys to do this using either the *Microsoft Internet Explorer* or the *Netscape/Mozilla* browser. You can set browsers so that they will check for updates automatically whenever a certain page is opened (then you will only refresh the particular page).

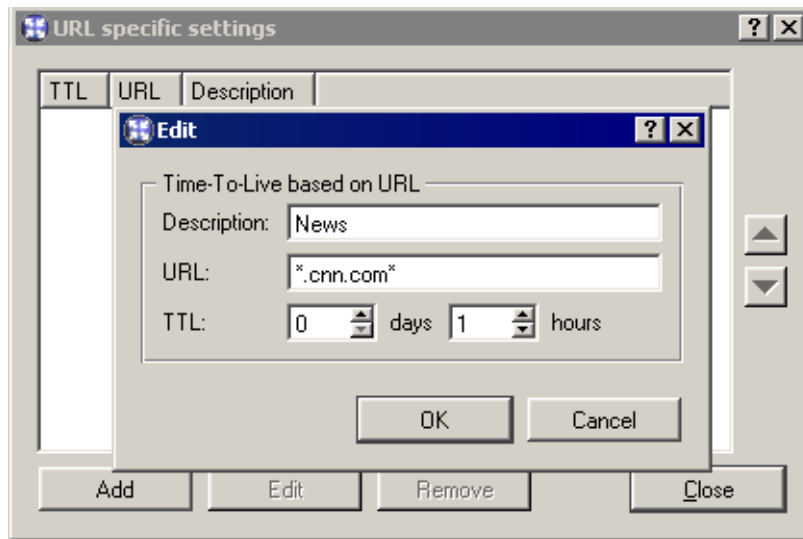
URL Specific Settings

The default cache TTL of an object is not necessarily convenient for each page. You may require not to cache an object or shorten its TTL (i.e. for pages that are accessed daily).

Use the *URL specific settings* button to open a dialog where TTL for a particular URL can be defined.

Rules within this dialog are ordered in a list where the rules are read one by one from the top downwards (use the arrow buttons on the right side of the window to reorder the rules).

Description Text comment on the entry (informational purpose only)



URL URL for which cache TTL will be specified. URLs can have the following forms:

- complete URL (i.e. `www.kerio.com/cz/index.html`)
- substring using wildcard matching (i.e. `*news.com*`)
- server name (i.e. `www.kerio.com`) — represents any URL included at the server (the string will be substituted for `www.kerio.com/*` automatically).

TTL TTL of objects matching with the particular URL.

The *0 days, 0 hours* option means that objects will not be cached.

Chapter 5

Traffic Policy

Traffic Policy belongs to of the basic *WinRoute* configuration. All the following settings are displayed and can be edited within the table:

- security (protection of the local network including the *WinRoute* host from Internet intrusions
- IP address translation (or NAT, Network Address Translation — technology which enables transparent access of the entire local network to the Internet with one public IP address only)
- access to the servers (services) running within the local network from the Internet (port mapping)
- controlled access to the Internet for local users

Traffic policy rules can be defined in *Configurations / Traffic Policy*. The rules can be defined either manually (advanced administrators) or using the wizard (recommended).

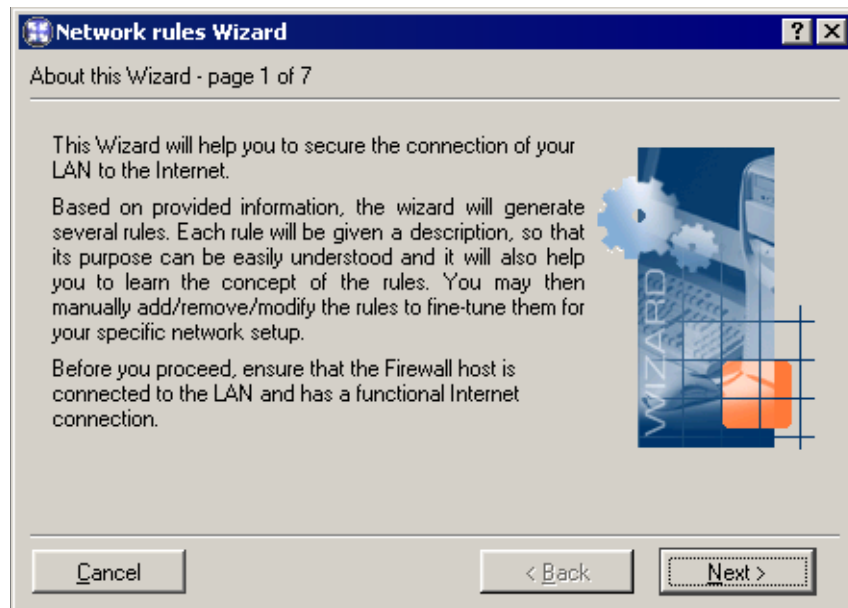
5.1 Network Rules Wizard

The network rules wizard demands only the data that is essential for creating a basic set of traffic rules. The rules defined in this wizard will enable access to selected services to the Internet from the local network, and ensure full protection of the local network (including the *WinRoute* host) from intrusion attempts from the Internet. To guarantee reliable *WinRoute* functionality after the wizard is used, all existing rules are removed and substituted by rules created automatically upon the new data.

Click on the *Wizard* button to run the network rules wizard.

Note: The existing traffic policy is substituted by new rules after completing the entire process after confirmation of the last step. This means that during the process the wizard can be stopped and canceled without losing existing rules.

Step 1 — information

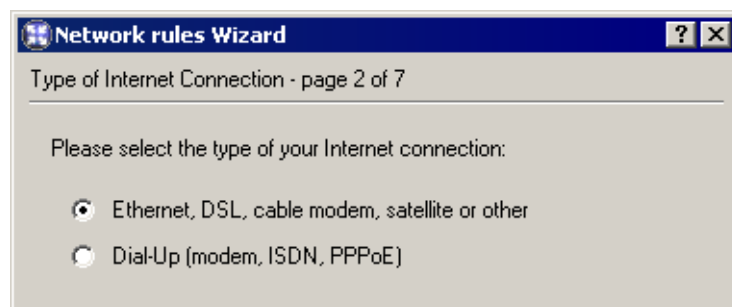


To run successfully, the wizard requires the following parameters on the *WinRoute* host:

- at least one active adapter connected to the local network
- at least either one active adapter connected to the Internet or one dial-up defined.
The dial-up needn't be active to run the wizard.

Step 2 — selection of Internet connection type

Select the appropriate type of Internet connection that is used — either a network adapter (Ethernet, WaveLAN, DSL, etc.) or a dialed line (analog modem, ISDN, etc.).

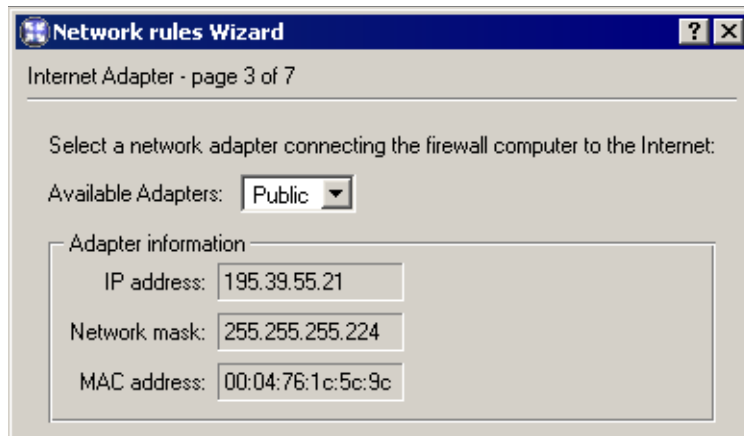


Step 3 — network adapter or dial-up selection

If the network adapter is used to connect the host to the Internet, it can be selected in the menu. To follow the wizard instructions easily, IP address, network mask and MAC address of the selected adapter are displayed as well.

Note: The Web interface with the default gateway is listed first. Therefore, in most cases the appropriate adapter is already set within this step.

5.1 Network Rules Wizard



In case of a dial line, the appropriate type of connection (defined in the operating system) must be selected and the correct username and password must be confirmed.

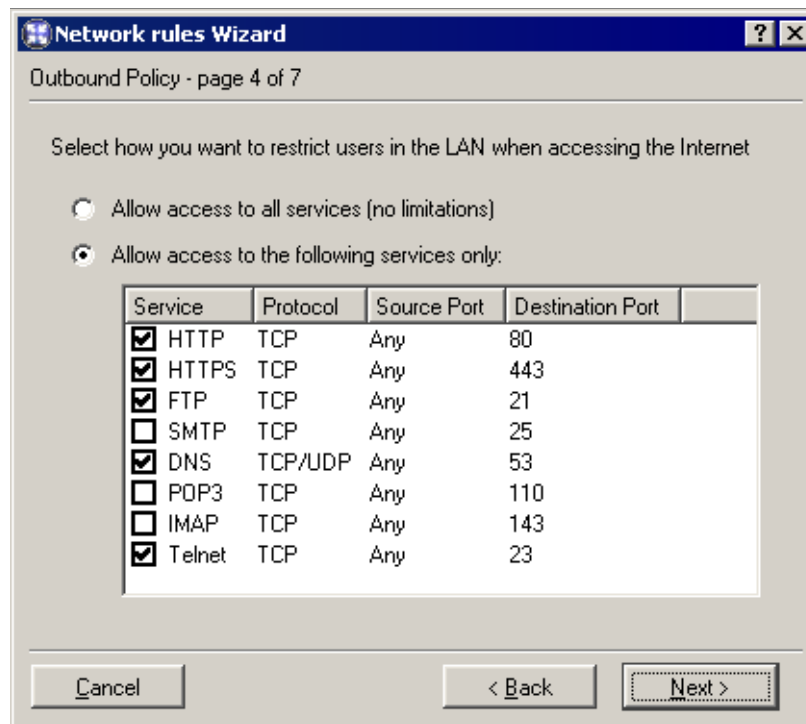


Step 4 — Internet access limitations

Select which Internet services will be available for LAN users:

Allow access to all services Internet access from the local network will not be limited. Users can access any Internet service.

Allow access to the following services only Only selected services will be available from the local network.

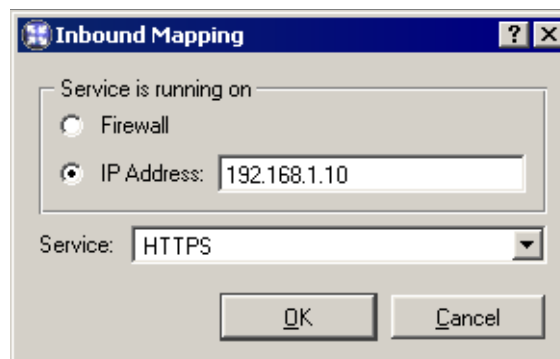


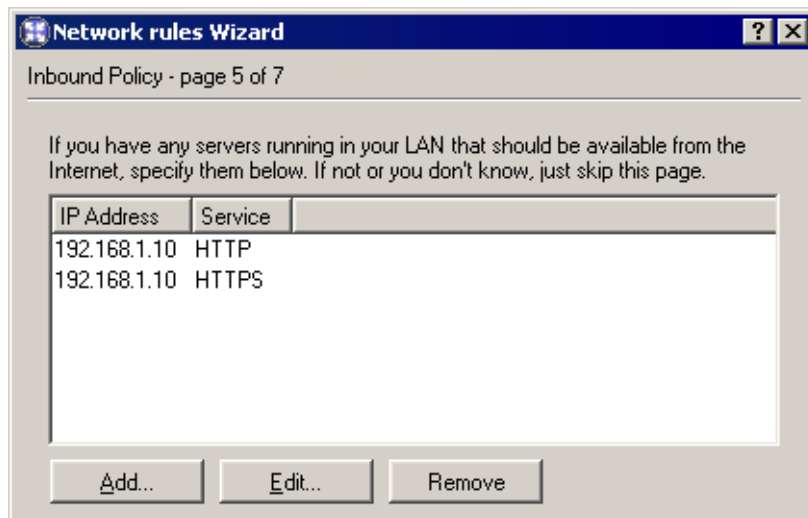
Note: In this dialog, only basic services are listed (it does not depend on what services were defined in *WinRoute* — see chapter 8.3). Other services can be allowed by definition of separate traffic policy rules— see below.

Step 5 — specification of servers that will be available within the local network

If any service (e.g. WWW server, FTP server, etc. which is intended be available from the Internet) is running on the *WinRoute* host or another host within the local network, define it in this dialog.

The dialog window that will open a new service can be activated with the *Add* button.





Service is running on Definition of the host where the service is running:

- *Firewall* — the host where *WinRoute* is installed
- *IP Address* — address of a server within the local network (the host that the service is running on)

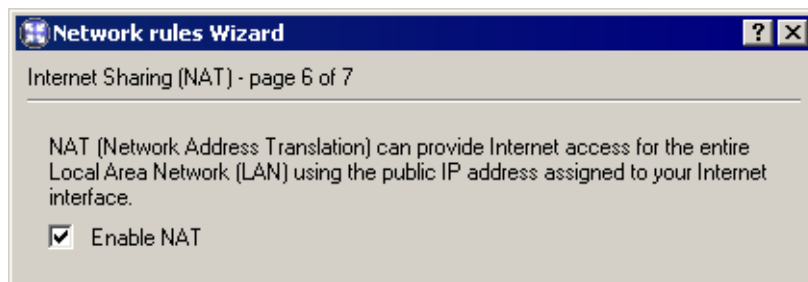
Note: access to the Internet through *WinRoute* must be defined in the default gateway of the host, otherwise the service will not be available.

Service Selection of a service to be enabled. The service must be defined in *Configurations / Definitions / Services* formerly (see chapter 8.3).

Note: Majority of common services is predefined in *WinRoute*.

Step 6 — NAT

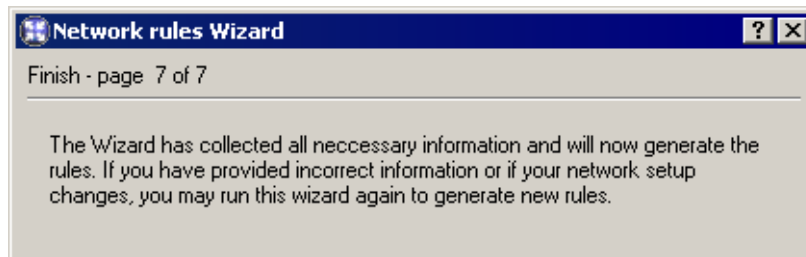
If you only use one public IP address to connect your private local network to the Internet, run the NAT function (IP address translation). Do not trigger this function if *WinRoute* is used for routing between two public networks or two local segments (neutral router).



Chapter 5 Traffic Policy

Step 7 — generating the rules

In the last step an information window warns users that the traffic policy will be built upon the inserted data and all the existing data will be deleted and removed with the new rules.



Warning: This is the last chance to cancel the process and keep the existing traffic policy. Click on the *Finish* button to delete the existing rules and replace them with the new ones.

Rules Created by the Wizard

The traffic policy is better understood through the traffic rules created by the Wizard in the previous example.

ICMP traffic This rule can be added whenever needed with no respect to settings within individual steps. You can use the *PING* command to send a request on a response from the *WinRoute* host. Important issues can be debugged using this command (i.e. Internet connection functionality can be verified).

Note: The *ICMP traffic* rule does not allow clients to use the *PING* command from the local network to the Internet. If you intend to use the command anyway, you must add the *Ping* feature to the *NAT* rules (for details see chapter 5.2).

NAT If this rule is added, the source (private) addresses in all packets directed from the local network to the Internet will be substituted with addresses of the interface connected to the Internet (see the Wizard, steps 3 and 6). However, only services selected within step 4 can be accessed.

Local Traffic This rule enables all traffic between local hosts with the *WinRoute* host. The *Source* and *Destination* items within this rule include all *WinRoute* host's interfaces except the interface connected to the Internet (this interface has been chosen in step 3).

Note: Access to the *WinRoute* host is not limited as the Wizard supposes that this host belongs to the local network. Limitations can be done by modification of an



Traffic Policy

Name	Source	Destination	Service	Action	Translation
☒ ICMP traffic	Firewall	Any	Ping	✓	
☒ NAT	Test Interface LAN	Internet	HTTP HTTPS FTP DNS	✓	NAT (Default outgoing interface)
☒ Local Traffic	Firewall Test Interface LAN	Firewall Test Interface LAN	Any	✓	
☒ Firewall Traffic	Firewall	Internet	HTTP HTTPS FTP DNS	✓	
☒ Service HTTP	Internet	Firewall	HTTP	✓	MAP 192.168.1.10
☒ Service HTTPS	Internet	Firewall	HTTPS	✓	MAP 192.168.1.10
Default rule	Any	Any	Any	✗	

appropriate rule or by creating a new one. An inconvenient rule limiting access to the *WinRoute* host might block remote administration or it might cause some Internet services to be unavailable (all traffic directed to the Internet passes through this host).

Firewall Traffic This rule enables access to certain services from the *WinRoute* host. It is similar to the *NAT* rule except from the fact that this rule does not perform IP translation (this host connects to the Internet directly).

HTTP and HTTPS These rules map all *HTTP* and *HTTPS* services running at the host with the 192.168.1.10 IP address (step 6). These services will be available on IP addresses of the external interface (step 3).

Default rule This rule denies all communication that is not allowed by other rules. The default rule is always listed at the end of the rule list and it cannot be removed.

The default rule allows the administrator to select what action will be taken with undesirable traffic attempts (*Deny* or *Drop*) and to decide whether packets or/and connections will be logged.

Note: To see detailed descriptions of traffic rules refer to chapter 5.2.

5.2 Definition of Custom Traffic Rules

To fine-tune the *WinRoute* settings, you can define your own rules or edit the rules generated by the wizard. Advanced administrators can create all the rules according to their specific needs without using the wizard.

Note: If you would like to control user connections to WWW or FTP servers, use the special tools available in *WinRoute* (see chapter 6) rather than traffic rules.

How traffic rules work

The traffic policy consists of rules ordered by their priority. When the rules are applied they are processed from the top downwards and the first suitable rule found is applied. The order of the rules can be changed with the two arrow buttons on the right side of the window.

An explicit rule denying all traffic is shown at the end of the list. This rule cannot be edited or removed. If there is no rule to allow particular network traffic, then the “catch all” deny rule will discard the packet.

Rule definitions

The traffic rules are displayed in the form of a table, where each rule is represented by a row and rule properties (name, conditions, actions — for details see below) are described in the columns. Left-click in a selected field of the table (or right-click a rule and choose the *Edit...* option in the context menu) to open a dialog where the selected item can be edited.

To define new rules press the *Add* button. Move the new rule within the list using the arrow buttons.

Name Name of the rule. It should be brief and unique. More detailed information can be included in the *Description* entry.

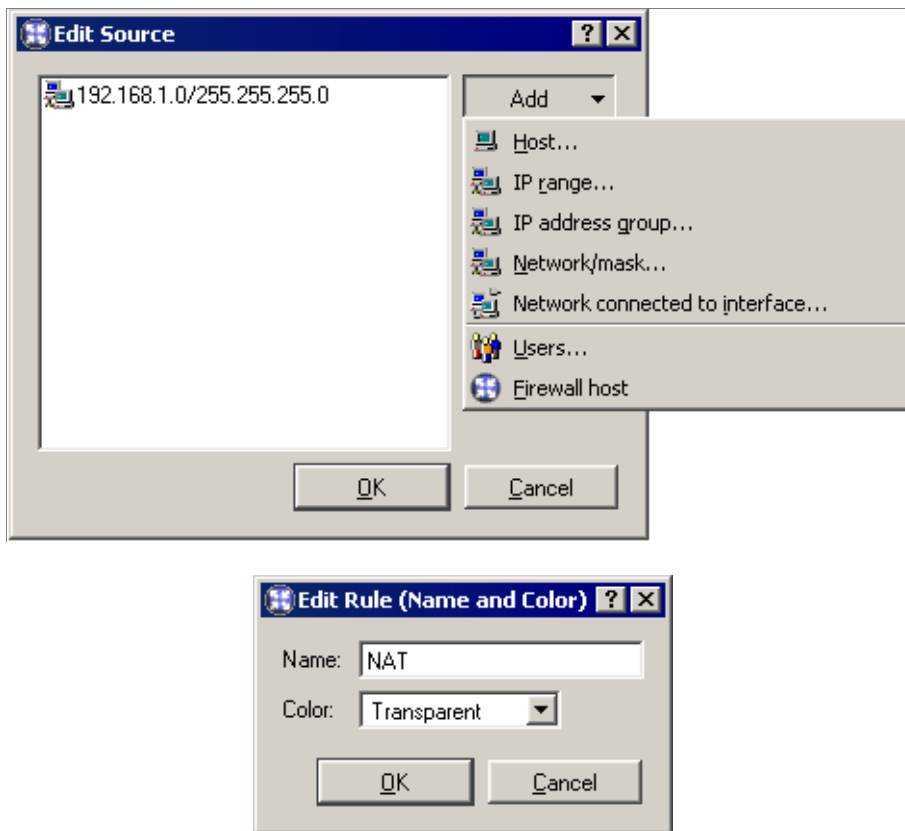
Matching fields next to names can be either ticked to activate or unticked to disable. If a particular field is empty, *WinRoute* will ignore the rule. This means that you need not remove and later redefine these rules when troubleshooting a rule.

The background color of each row can be defined as well. To set the color of the list background right click in a cell belonging to the desired row in the *Name* column and select *Edit name and color*.

Note: Colors do not affect rule functionality.

Source and Destination Definition of the source or destination of the traffic defined by the rule.

5.2 Definition of Custom Traffic Rules



A new source or destination item can be defined after clicking the *Add* button:

- *Host* — the host IP address or name (e.g. 192.168.1.1 or www.company.com)

Warning: If either the source or the destination computer is specified by DNS name, *WinRoute* tries to identify its IP address while processing a corresponding traffic rule.

If no corresponding record is found in the cache, the *DNS forwarder* forwards the query to the Internet. If the connection is realized by a dial-up which is currently hung-up, the query will be sent after the line is dialed. The corresponding rule is disabled unless IP address is resolved from the DNS name. Under certain circumstances denied traffic can be let through while the denial rule is disabled (such connection will be closed immediately when the rule is enabled again).

For the reasons mentioned above we recommend you to specify source and destination computer only through IP addresses in case that you are connected to the Internet through a dial-up!

- *Network* — subnet defined with network address and mask (e.g. 192.168.1.0/255.255.255.0)



Traffic Policy

Name	Source	Destination	Service	Action	Translation
☒ ICMP traffic	Firewall	Any	Ping	✓	
☒ NAT	Test Interface LAN	Internet	HTTP HTTPS FTP DNS	✓	NAT (Default outgoing interface)
☒ Local Traffic	Firewall Test Interface LAN	Firewall Test Interface LAN	Any	✓	
☒ Firewall Traffic	Firewall	Internet	HTTP HTTPS FTP DNS	✓	
☒ Service HTTP	Internet	Firewall	HTTP	✓	MAP 192.168.1.10
☒ Service HTTPS	Internet	Firewall	HTTPS	✓	MAP 192.168.1.10
Default rule	Any	Any	Any	✗	

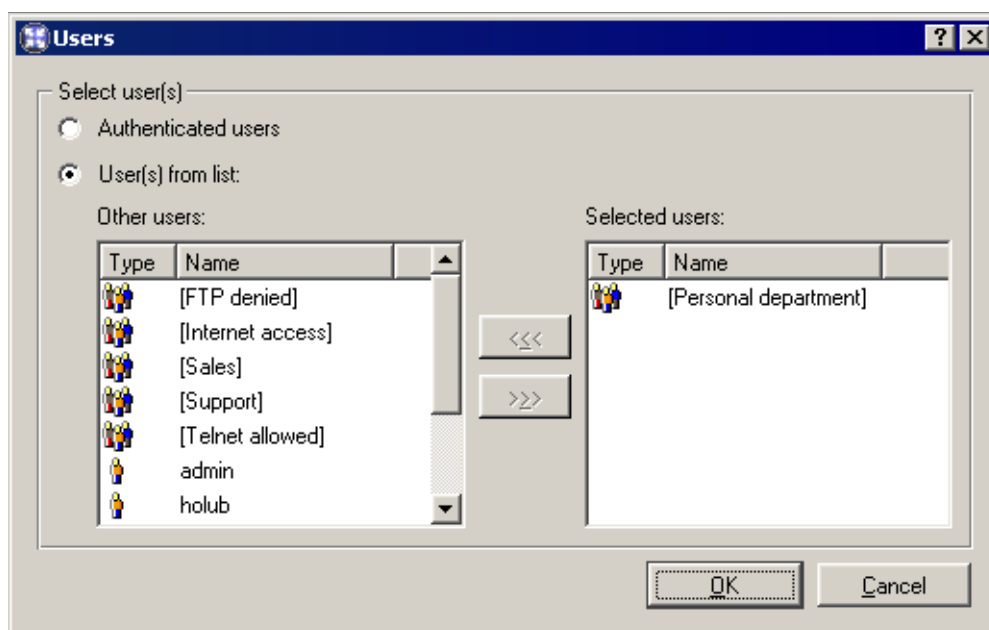
- *IP range* — e.g. 192.168.1.10—192.168.1.20
- *Subnet with mask* — subnet defined by network address and mask (e.g. 192.168.1.0/255.255.255.0)
- *Network connected to interface* — This represents all IP addresses which reside behind the particular interface.
- *Users* — users or groups that can be chosen in a special dialog

The *Authenticated users* option makes the rule valid for all users authenticated to the firewall (see chapter 7.2).

In the traffic policy, each user/group or host is represented by IP address from which it/he/she is connected (for more details about user authentication see chapter 7.2).

Notes:

5.2 Definition of Custom Traffic Rules



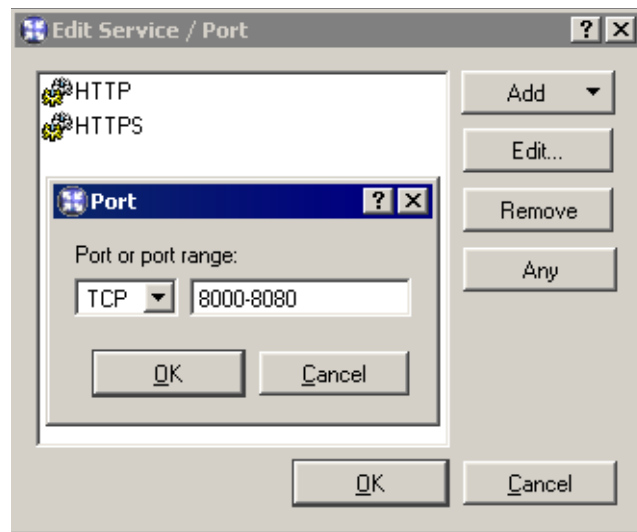
1. If you require authentication for any rule, it is necessary to ensure that a rule exists to allow users to connect to the firewall authentication page. This service uses TCP port 4080 for HTTP and 4081 for HTTPS.
 2. If you use HTTP, *WinRoute* can automate user re-direction to the authentication page (for details see chapter 6.1). Other services do not allow this feature. Users should be informed that they are required to pass through the authentication page prior to accessing demanded services (see chapters 7 and 7.2).
- *Firewall* — a special address group including all interfaces of the host where the firewall is running. This option can be used for example to permit traffic between the local network and the *WinRoute* host.

Note: Use the *Any* button to replace all defined items with the *Any* item (this item is also used by default for all new rules). This item will be removed automatically when at least one new item is added.

Service Definition of service(s) on which the traffic rule will be applied. Any number of services defined either in *Configurations / Definitions / Services* or using protocol and port number (or by port range — a dash is used to specify the range) can be included in the list.

Notes:

1. If the protocol inspector of the particular protocol is used for the service definition, this module will be applied on the traffic meeting this rule. If the rule can

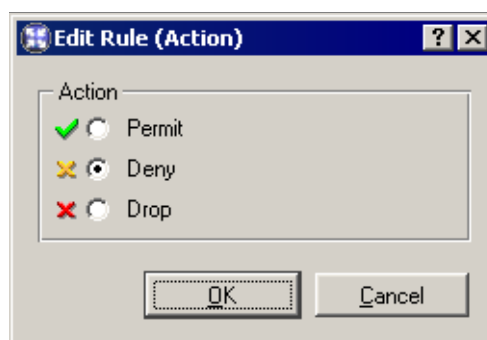


be applied on all services (the *Any* button), all necessary protocol inspectors will be applied automatically.

If desired, you can define a rule without using protocol inspectors (for details see chapter 8.3) in order to bypass the protocol inspector for particular IP hosts.

2. To substitute all defined items by the *Any* item use the *Any* button (this is also the default value for creating a new rule). If at least one new service is added, the *Any* item will be removed automatically.

Action Action that will be taken by *WinRoute* when a given packet has passed all the conditions for the rule (the conditions are defined by the *Source*, *Destination* and *Service* items). The following actions can be taken:



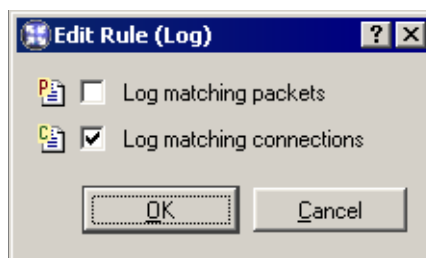
- *Permit* — traffic will be allowed by the firewall
- *Deny* — client will be informed that access to the address or port is denied. The client will be warned promptly, however, it is informed that the traffic is blocked by firewall.

5.2 Definition of Custom Traffic Rules

- *Drop* — all packets that fit this rule will be dropped by firewall. The client will not be sent any notification and will consider the action as a network outage. The action is not repeated immediately by the client (it expects a response and tries to connect later, etc.).

Note: It is recommended to use the *Deny* option to limit the Internet access for local users and the *Drop* option to block access from the Internet.

Log The following actions can be taken to log traffic:



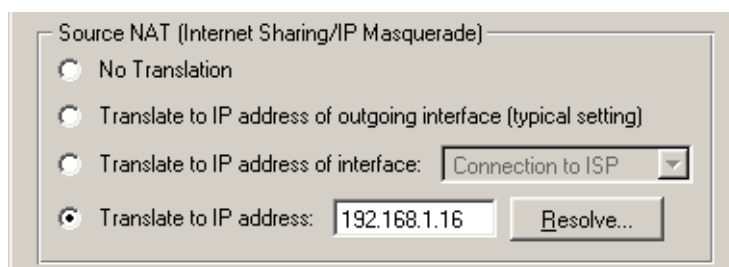
- *Log matching packets* — all packets matching with rule (permitted, denied or dropped, according to the rule definition) will be logged in the *Filter* log.
- *Log matching connections* — all connections matching this rule will be logged in the *Connection* log (only for permit rules). Individual packets included in these connections will not be logged.

Note: Connections cannot be logged for deny nor drop rules.

Translation Source or/and destination IP address translation.

The source IP address translation can be also called IP masquerading or Internet connection sharing. The source (private) IP address is substituted by the IP address of the interface connected to the Internet in packets routed from the local network to the Internet. Therefore, the entire local network can access the Internet transparently, but it is externally considered as one host.

IP translation is defined as follows:



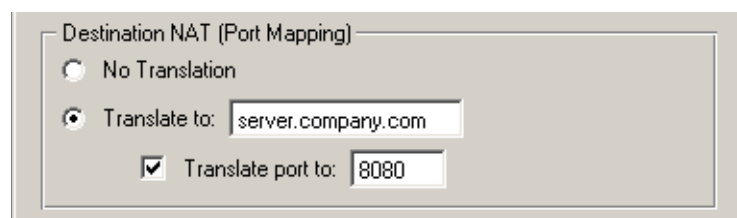
Chapter 5 Traffic Policy

- *No Translation* — source address is not modified. This option is set by default and it is not displayed within traffic rules.
- *Translate to IP address of outgoing interface* — *WinRoute* will translate the source address of an outgoing packet to the IP address of the network interface from where the packet will be forwarded.
- *Translate to IP address of interface* — selection of an interface. IP address of the appropriate packet will be translated to the primary address of this interface. This option is relevant if the return path should be different than the upstream path.
- *Translate to IP address* — an IP address to which the source address will be translated. (i.e. secondary IP address of an interface connected to the Internet). If you only know DNS name of your host, use the *Resolve* button to translate the DNS name to IP address.

Note: The IP address must be assigned to an interface (bound by TCP/IP stack) of the *WinRoute* host!

Destination address translation (also called port mapping) is used to allow access to services hosted behind the firewall. All incoming packets that meet defined rules are re-directed to a defined host (destination address is changed). From the client's point of view, the service is running on the IP address of the Firewall.

Options for destination NAT (port mapping):



- *No Translation* — destination address will not be modified.
- *Translate to* — IP address that will substitute the packet's destination address. This address also represents the IP address of the host on which the service is actually running.

The *Translate to* entry can be also specified by DNS name of the destination computer. In such cases *WinRoute* finds a corresponding IP address using a DNS query.

5.2 Definition of Custom Traffic Rules

Warning: We recommend you not to use names of computers which are not recorded in the local DNS since rule is not applied until a corresponding IP address is found. This might cause temporary malfunction of the mapped service.

- *Translate port to* — during the process of IP translation you can also substitute the port of the appropriate service. This means that the service can run at a port that is different from the port from which it is mapped.

Note: This option cannot be used unless only one service is defined in the *Service* entry within the appropriate traffic rule and this service uses only one port or port range.

Description This item can contain any comment on purpose and type of the appropriate rule (up to 1024 characters).

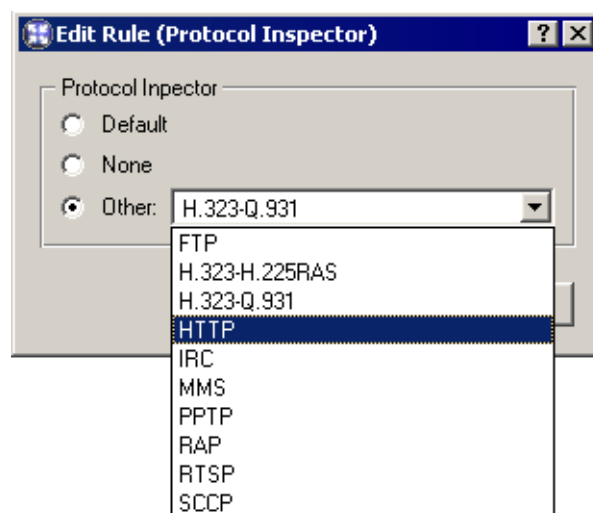
We recommend describing all created rules thoroughly (you can also make comments on rules created by the Wizard). This will help you to follow your rule list easily.

The following columns are hidden by the default settings of the *Traffic Policy* dialog:

Valid on Time interval within which the rule will be valid. Apart from this interval *WinRoute* ignores the rule.

The special *always* option can be used to disable the time limitation (it is not displayed in the *Traffic Policy* dialog).

Protocol Inspector Selection of a protocol inspector that will be applied on all traffic meeting the rule. You can choose from the following options:



Chapter 5 Traffic Policy

- *Default* — all necessary protocol inspectors (or inspectors of the services listed in the *Service* entry) will be applied on traffic meeting this rule.
- *None* — no inspector will be applied (regardless of how services used in the *Service* item are defined).
- *Other* — selection of a particular inspector which will be used on traffic meeting this rule.

Warning: Do not use this option unless the appropriate traffic rule defines a protocol belonging to the inspector. Functionality of the service might be affected by using an inappropriate inspector.

Note: Use the *Default* option for the *Protocol Inspector* item if a particular service (see the *Service* item) is used in the rule definition (the protocol inspector is included in the service definition).

5.3 Basic Traffic Rule Types

In this chapter you will find some rules used to manage standard configurations. Using these examples you can easily create a set of rules for your network configuration.

IP Translation

IP translation (NAT) is a term used for the exchange of a private IP address in a packet going out from the local network to the Internet with the IP address of the Internet interface of the *WinRoute* host. The following example shows an appropriate traffic rule:

☒ NAT	 LAN	 Internet	 Any		NAT (Default outgoing interface)
---	---	--	---	---	----------------------------------

Source Interface connected to the private local network.

If the network includes more than one segment and each segment is connected to an individual interface, specify all the interfaces in the *Source* entry.

If the local network includes other routers, it is not necessary to specify all interfaces (the interface which connects the network with the *WinRoute* host will be satisfactory).

Destination Interface connected to the Internet.

Service This entry can be used to define global limitations for Internet access. If particular services are defined for IP translations, only these services will be used for the IP translations and other Internet services will not be available from the local network.

5.3 Basic Traffic Rule Types

Action To validate a rule one of the following three actions must be defined: Permit, Drop, Deny.

Translation In the *Source NAT* section select the *Translate to IP address of outgoing interface* option (the primary IP address of the interface via which packets go out from the *WinRoute* host will be used for NAT).

To use another IP address for the IP translation, use the *Translate to IP address* option and specify the address. The address should belong to the addresses used for the Internet interface, otherwise IP translations will not function correctly.

Warning: Only in very specific and unique situations is it necessary to define both source and destination NAT. For example, you are hosting a service on the LAN that requires a port mapping, however the local server cannot have a default gateway, or it uses a gateway other than *WinRoute*. In this case it is possible to perform source NAT on traffic passed to the internal server so that it will reply back to the *WinRoute* firewall.

Note: The previously defined rule allows outgoing traffic initiated from the local network to the Internet. It is also necessary to define a rule to allow traffic initiated from the *WinRoute* host (defined by source *Firewall*). Because the *WinRoute* host is directly connected to the Internet, it is not necessary to enable translation. The default "catch all" rule at the bottom of the filter list will enforce stateful packet inspection of the *WinRoute* host.

☒ Firewall Traffic	 Firewall	 Internet	 Any	
--	--	--	---	---

Port mapping

Port mapping allows services hosted on the local network (typically in private networks) to become available over the Internet. The locally hosted server would behave as if it existed directly on the Internet. The traffic rule therefore must be defined as in the following example:

☒ Web server	 Internet	 Firewall	 HTTP  HTTPS		MAP 192.168.1.50	
--	--	--	---	---	------------------	--

Source Interface connected to the Internet (requests from the Internet will arrive on this interface).

Chapter 5 Traffic Policy

Destination The *WinRoute* host labelled as *Firewall*, which represents all IP addresses bound to the firewall host.

Service You can select one of the predefined services (see chapter 8.3) or define an appropriate service with protocol and port number.

Any service that is intended to be mapped to one host can be defined in this entry. To map services for other hosts you will need to create a new traffic rule.

Action Select the *Allow* option, otherwise all traffic will be blocked and the function of port mapping will be irrelevant.

Translation In the *Destination NAT (Port Mapping)* section select the *Translate to IP address* option and specify the IP address of the host within the local network where the service is running.

Using the *Translate port to* option you can map a service to a different port. This allows services to be available on non-standard ports without the necessity of modifying the port used by the server application.

Warning: In the *Source NAT* section should be set to the *No Translation* option. Combining source and destination IP address translation is relevant under special conditions only .

Note: For proper functionality of port mapping, the locally hosted server must point to the *WinRoute* firewall as the default gateway. Otherwise, it will be necessary to enable *Source NAT* in addition to *Destination NAT* .

Multihoming

Multihoming is a term used for situations when one network interface connected to the Internet uses multiple public IP addresses. Typically, multiple services are available through individual IP addresses (this implies that the services are mutually independent).

Example: In the local network a web server web1 with IP address 192.168.1.100 and a web server web2 with IP address 192.168.1.200 are running in the local network. The interface connected to the Internet uses two public IP addresses — 63.157.211.10 and 63.157.211.11. We want the server web1 to be available from the Internet at the IP address 63.157.211.10, the server web2 at the IP address 63.157.211.11.

The two following traffic rules must be defined in *WinRoute* to enable this configuration:

5.3 Basic Traffic Rule Types

☒	Mapping for server Web1		Internet	 63.157.211.10	 HTTP		MAP 192.168.1.100
☒	Mapping for server Web2		Internet	 63.157.211.11	 HTTP		MAP 192.168.1.200

Source Interface which is connected to the Internet (incoming requests from Internet clients will be accepted through this interface).

Destination An appropriate IP address of the interface connected to the Internet (use the *Host* option for insertion of an IP address).

Service Service which will be available through this interface (the *HTTP* service in case of a Web server).

Action Use the *Permit* option, otherwise the traffic will be blocked.

Translation Go to the *Destination NAT (Port Mapping)* section, select the *Translate to IP address* option and specify IP address of a corresponding Web server (web1 or web2).

Limiting Internet Access

Access to Internet services can be limited in several ways. In the following examples, the limitation rules use IP translation. There is no need to define other rules as all traffic that would not meet these requirements will be blocked by the default "catch all" rule.

Other methods of Internet access limitations can be found in the *Exceptions* section (see below).

Note: Rules mentioned in these examples can be also used if *WinRoute* is intended as a neutral router (no address translation) — in the *Translation* entry there will be no translations defined.

1. Allow access to selected services only. In the translation rule in the *Service* entry specify only those services that are intended to be allowed.

☒	NAT		LAN		Internet	 HTTP  HTTPS  FTP  DNS  Telnet		NAT (Default outgoing interface)
-------------------------------------	-----	---	-----	---	----------	---	---	----------------------------------

2. Limitations sorted by IP addresses. Access to particular services (or access to any Internet service) will be allowed only from selected hosts. In the *Source* entry define the group.

Chapter 5 Traffic Policy

☒ NAT for allowed addresses	 Internet access	 Internet	 Any		NAT (Default outgoing interface)
---	---	--	---	---	----------------------------------

Note: This type of rule should be used only if each user has his/her own host and the hosts have static IP addresses.

3. Limitations sorted by users. Firewall monitors if the connection is from an authenticated host. In this case you must define user accounts in *WinRoute* and users must authenticate using the firewall authentication page before access is granted to the specified service.

☒ NAT for allowed users	 [Internet access]	 Internet	 Any		NAT (Default outgoing interface)
---	---	--	---	---	----------------------------------

Alternatively you can define the rule to allow only authenticated users to access specific services. Any user that has a user account in *WinRoute* will be allowed to access the Internet after authenticating to the firewall. Firewall administrators can easily monitor which services and which pages are opened by each user (it is not possible to connect anonymously).

☒ NAT for authenticated users	 Authenticated users	 Internet	 Any		NAT (Default outgoing interface)
---	---	--	---	---	----------------------------------

Note: Detailed information about user connections to the firewall can be found in chapter 7.2.

The rules mentioned above can be combined in various ways (i.e. a user group can be allowed to access certain Internet services only).

Exceptions

You may need to allow access to the Internet only for a certain user/address group, whereas all other users should not be allowed to access this service.

This will be better understood through the following example (how to allow a user group to use the *Telnet* service). Use the two following rules to meet these requirements:

- First rule will deny selected users (or a group of users/IP addresses, etc.) to access the Internet.
- Second rule will deny the other users to access this service.

5.3 Basic Traffic Rule Types

☒ Allow a user group to use Telnet	 [Telnet allowed]	 Internet	 Telnet	
☒ Deny Telnet	 Any	 Any	 Telnet	

Chapter 6

Content Filtering

WinRoute provides a wide range of features to filter traffic using HTTP and FTP protocols.

Here are the main purposes of HTTP and FTP content filtering:

- to block access to undesirable Web sites (i.e. pages that do not relate to employees' work)
- to block certain types of files (i.e. illegal content)
- to block or to limit viruses, worms and trojan horses

HTTP protocol — Web pages filtering:

- access limitations according to URL (substrings contained in URL addresses)
- blocking of certain HTML items (i.e. scripts, Active X objects, etc.)
- filtering based on classification by the *Cobion Orange Filter* system (worldwide Website classification database)
- limitations based on occurrence of denied words (strings)
- antivirus control of downloaded objects

FTP protocol — control of access to FTP servers:

- access to certain FTP servers is denied
- limitations based on or file names
- transfer of files is limited to one direction only (i.e. download only)
- certain FTP commands are blocked
- antivirus control of transferred files

Content filtering requirements

Chapter 6 Content Filtering

The following conditions must be met to ensure smooth functionality of content filtering:

1. Traffic must be controlled by an appropriate protocol inspector.

Note: An appropriate protocol inspector is activated automatically unless its use is denied by traffic rules. For details see chapter 5.2.

2. Connections must not be encrypted. SSL encrypted traffic (HTTPS and FTPS protocols) cannot be monitored. In this case you can block access to certain servers using traffic rules (see chapter 5.2).

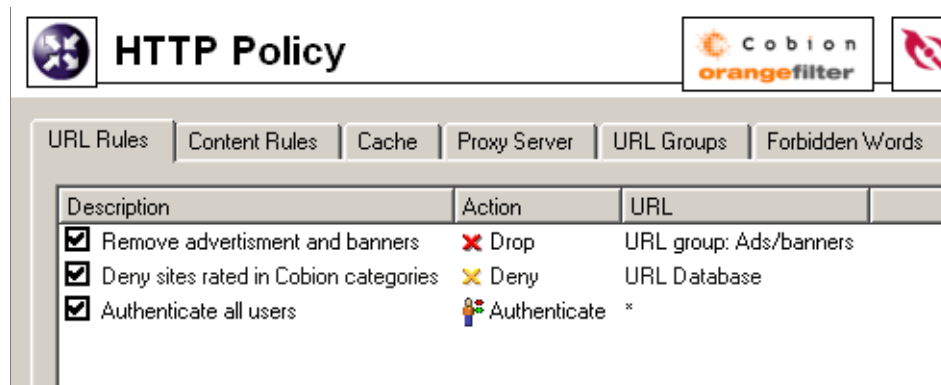
3. FTP protocols cannot be filtered if the secured authentication (SASO) is used.

Note: WinRoute provides only tools for filtering and access limitations. Decisions on which Web sites and file types will be blocked must be made by the administrator (or another qualified person).

6.1 URL Rules

These rules allow the administrator to limit access to Web pages with URLs that meet certain criteria. URL rules can also enforce user authentication by re-directing browsers to the authentication page (see chapter 7.2). This means that the authentication page is not opened manually by the user when accessing a page that requires authentication.

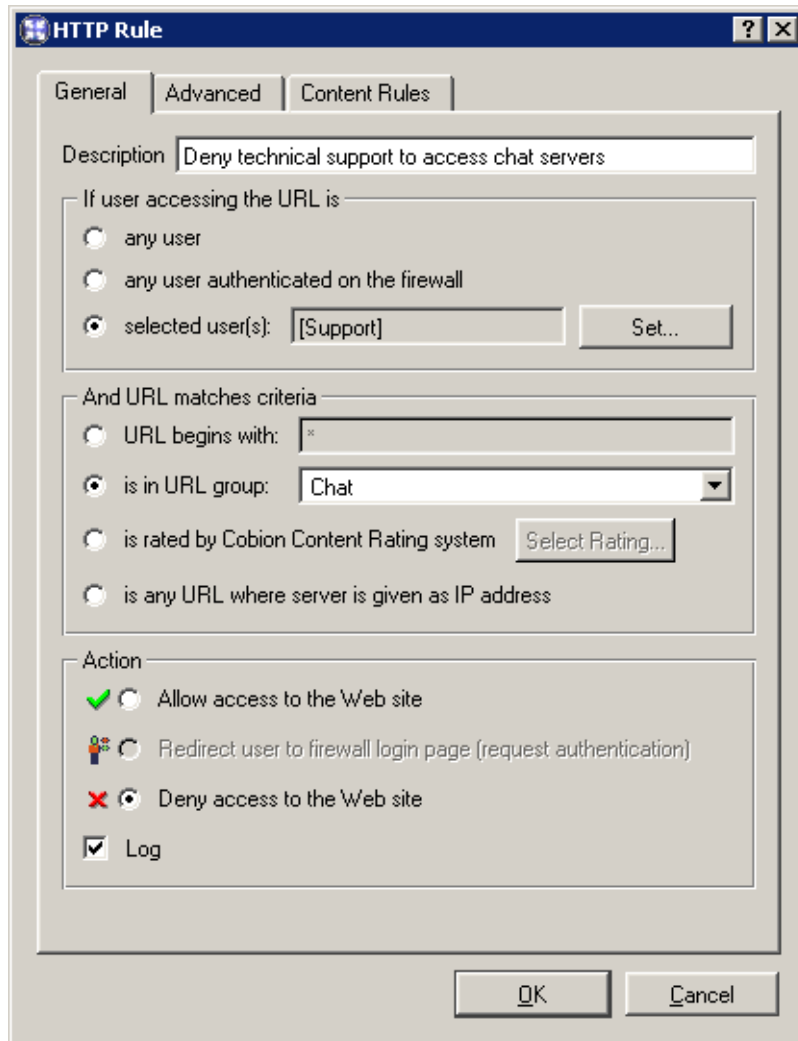
To define URL rules go to the *URL Rules* tab in *Configuration / Content Filtering / HTTP Policy*.



Rules are read starting from the top. The list can be re-ordered using the arrow buttons at the right side of the dialog window. If a requested URL passes through all rules without any match, access to the site is allowed. E.g. all URLs are implicitly allowed unless denied by a URL rule.

Note: The default *WinRoute* installation includes several predefined URL rules. The rules are inactive by default. *WinRoute* administrators can enable or edit them if desirable.

Use the *Add* button to open a dialog for creating a new rule.



Open the *General* tab to set general rules and actions to be taken.

Description Comment on the appropriate rule function (information for *WinRoute*'s administrator).

If user accessing the URL is This option specifies on which users the rule will be applied:

- *any user* — for all users (no authentication required).

Chapter 6 Content Filtering

- *any user authenticated on the firewall* — for all authenticated users.
- *selected user(s)* — for selected users or/and user groups who have authenticated to the firewall.

Use the *Set* button to open a dialog where users and groups can be selected (hold the *Ctrl* and *Shift* keys to select more users/groups at once).

Note: Specification of users/groups is irrelevant unless combined with a rule that requires user authentication.

And URL matches criteria Specification of URL (or URL group) on which this rule will be applied:

- *URL begins with* — this item can include either entire URL (i.e. `www.kerio.com/index.html`) or only a substring of a URL using an asterisk (wildcard matching) to substitute any number of characters (i.e. `*.kerio.com*`)
- *is in URL group* — selection of a URL group which the URL will belong to (see chapter 8.4)
- *is rated by Cobion Content Rating system* — the rule will be applied on all pages matched with a selected category by the *Cobion Orange Filter* system (see chapter 6.3).

Click on the *Select Rating...* button to select from *Cobion Orange Filter* categories. Read more in chapter 6.3.

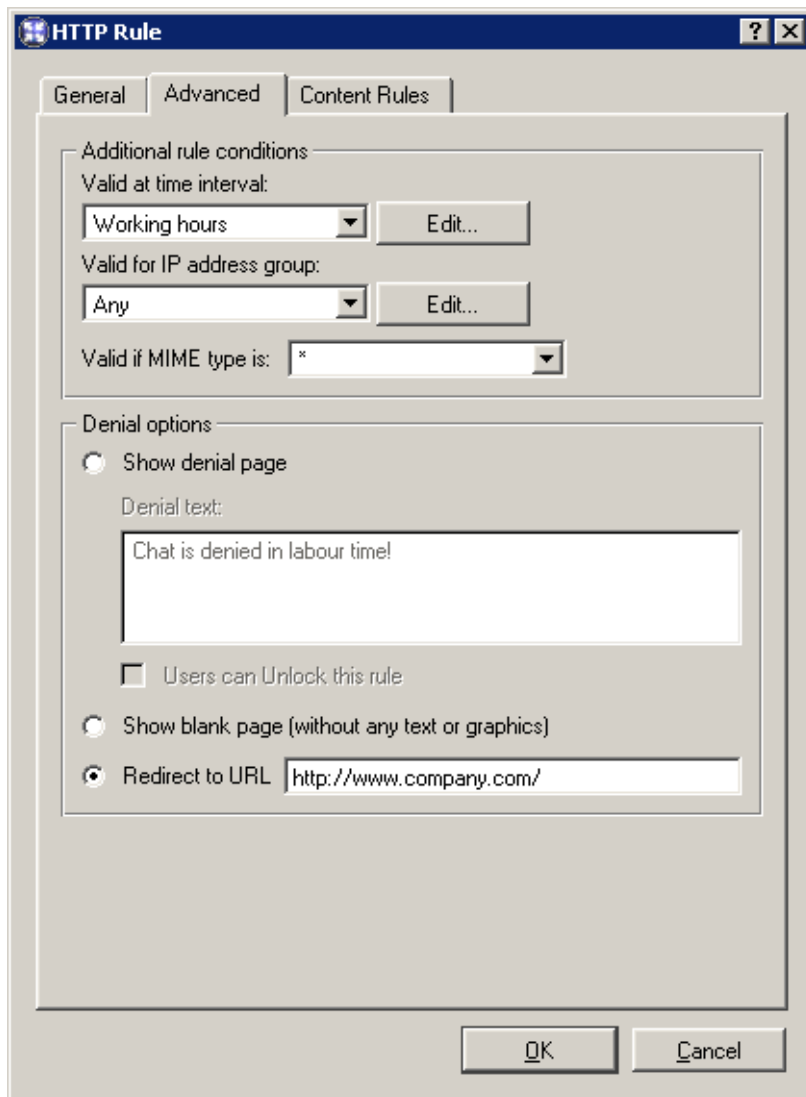
- *is any URL where server is given as IP address* — by enabling this option users will not be able to bypass URL based filters by connecting to Web sites by IP address rather than domain name.

Action Selection of an action that will be taken whenever a user accesses a URL meeting a rule:

- *Allow access to the Web site*
- *Redirect user to the firewall login page (request authentication)* — users will be redirected to the login page (see chapter 7.2) automatically if they have not already authenticated at the firewall.
- *Deny access to the Web site* — requested page will be blocked. The user will be informed that the access is denied or a blank page will be displayed (according to settings in the *Advanced* tab — see below).

Tick the *Log* option to log all pages meeting this rule in the *Filter* log (see chapter 13.8).

Go to the *Advanced* tab to define more conditions for the rule or/and to set options for denied pages.



Valid at time interval Selection of a time interval within which the rule will be valid (out of this interval the rule will be inactive). Use the *Edit* button to open a dialog where time ranges can be modified (for details see chapter 8.2).

Valid for IP address group Selection of IP address group on which the rule will be applied (client addresses). Use the *Any* option if you intend to make the rule independent of client addresses.

Chapter 6 Content Filtering

Click on the *Edit* button to open a dialog where IP addresses can be edited (for details see chapter 8.1).

Valid if MIME type is The rule will be valid for a certain MIME type only (for example, `text/html` — HTML documents, `image/jpeg` — images in the JPEG format, etc.).

You can either select one of the predefined MIME types or define a new one. An asterisk substitutes any subtype (i.e. `image/*`). An asterisk stands for any MIME type — the rule will be independent of the MIME type.

Denial options Advanced options for denied pages. Whenever a user attempts to open a page that is denied by the rule, *WinRoute* will display:

- a page informing the user that access to the required page is denied as it is blocked by the firewall. This page can also include an explanation of the denial (the *Denial text* item).

The *Unlock* button will be displayed in the page informing about the denial if the *Users can Unlock this rule* is ticked. Using this button users can force *WinRoute* to open the required page even though this site is denied by a URL rule. The page will be opened for 10 minutes. Each user can unlock a limited number of denied pages (up to 10 pages at once). All unlocked pages are logged in the *Filter* log (see chapter 13.8).

Notes:

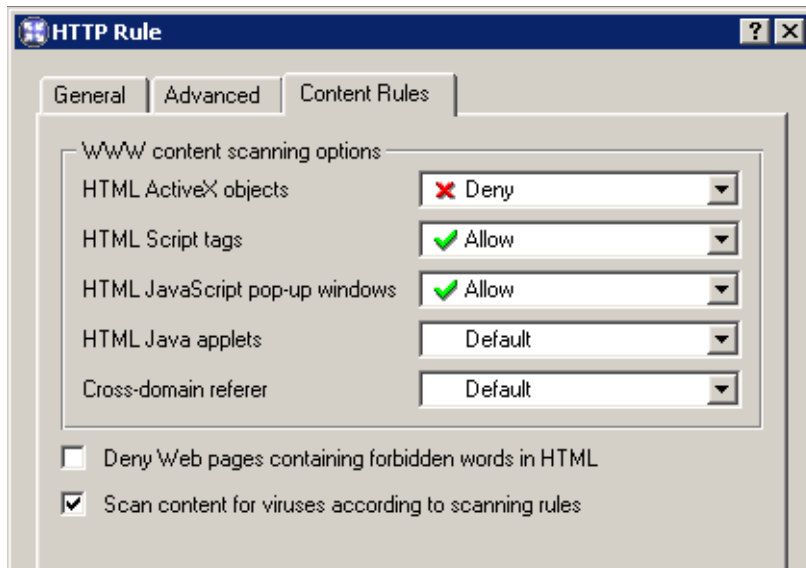
1. Only subscribed users are allowed to unlock rules.
 2. If any modifications are done within URL rules, all unlock rules are removed immediately.
- a blank page — user will not be informed why access to the required page was denied. It will be as if the server is unavailable and a connection could not be established.
 - another page — user's browser will be redirected to the specified URL. This option can be helpful for example to define a custom page with a warning that access to the particular page is denied.

New rules will be added below the rule that had been marked before the *Add* button was used. Use the arrow buttons on the right side of the dialog window to locate the new rule in the list.

You can use the checkboxes next to rules to temporarily disable them without needing to delete and reconfigure the rule if it should be needed at a later time.

Note: Access to URLs which do not meet any rules are implicitly allowed. If you intend to allow access to a limited URL group while denying everything else, you must define a rule that will deny access to any URL (using '*') at the end of the list.

Open the *Content Rules* tab (in the *HTTP Rules* section) to specify details for content filter rules.



WWW content scanning options In this section you can define advanced parameters for filtering of objects contained in Web pages which meet the particular rule (for details refer to chapter 6.2). These parameters will be applied only to users which will not be allowed to “override Content filter rules”. Users allowed to override these rules use their custom settings.

One of the following alternatives can be set for each object type:

- *Allow* — these objects will be displayed.
- *Deny* — these objects will be filtered out of the page
- *Default* — global rules or custom rules of a particular user will be applied to such objects (this implies that this rule will not affect filtering of such objects)

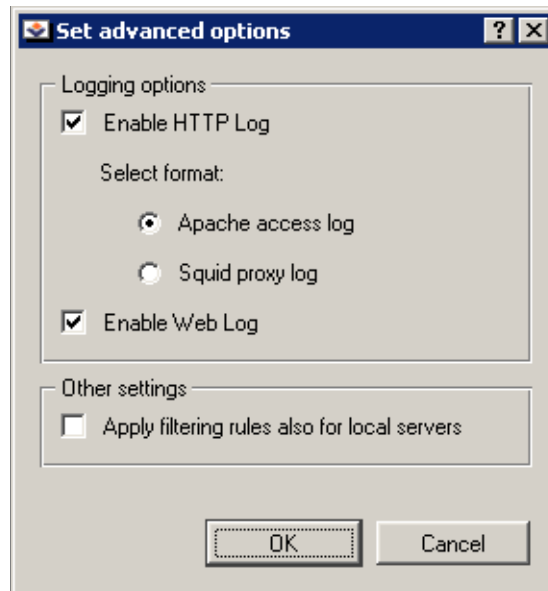
Deny Web pages containing ... Use this option to deny users to access Web pages containing words/strings defined in the *Configuration/HTTP Policy* section (for details refer to chapter 6.4).

Scan content for viruses according to scanning rules Antivirus check according to settings in the *Configuration / Content Filtering / Antivirus* section will be performed (see chapter 6.6) if this option is enabled.

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HTTP Inspection Advanced Options

Click on the *Advanced* button in the *HTTP Policy* tab to open a dialog where parameters for HTTP inspection module can be set.



Use the *Enable HTTP Log* and *Enable Web Log* options to enable/disable logging of HTTP queries (opened web pages) to the *HTTP* log (see chapter 13.9) and to the *Web* log (refer to chapter 13.12).

You can also select format of the log for the *Enable HTTP Log* item (*Apache* access log or *Squid* proxy log). This may be important especially when the log would be processed by a specific analytic tool.

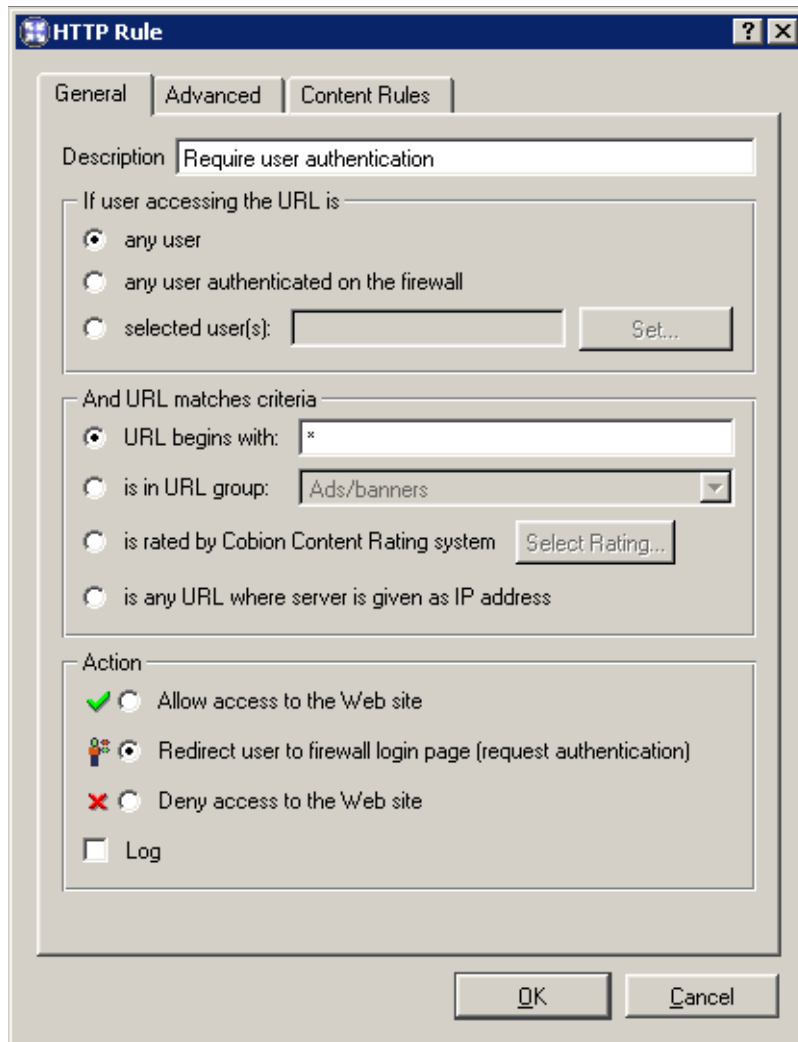
Both *HTTP* and *Web* logs are enabled and the *Apache* option is selected by default.

Use the *Apply filtering rules also for local server* to specify whether content filtering rules will be applied to local WWW servers which are available from the Internet (see chapter 5). This option is disabled by default — protocol inspector only scans HTTP protocol syntax and performs logging of queries (WWW pages) according to the settings.

Required User Authentication

Using URL rules you can require user authentication to the firewall. Browsers will be directed to the authentication page automatically and redirected to the requested Web page after a successful login attempt. Using user authentication you can control users' access to Web sites (or to other services) as well as monitor users' activity (see chapter 12) — Internet usage is not anonymous.

We recommend creating a rule that will require authentication before letting users access any URL.



Authentication of users that have not already authenticated to the firewall will be redirected automatically. Authenticated users will be ignored by this rule.

This rule can be combined with rules that permit or deny access to certain URLs applied to selected users (or with rules that deny access for all users).

Notes:

1. This is the only service that provides this feature. Example: Access to the *Telnet* service is limited by traffic policy rules (see chapter 5.2). Each user will be required to open the login page (see chapter 7.2) and pass the authentication process first.

Chapter 6 Content Filtering

Afterwards, the user will be allowed to connect to the required server (i.e. using the *Telnet* service).

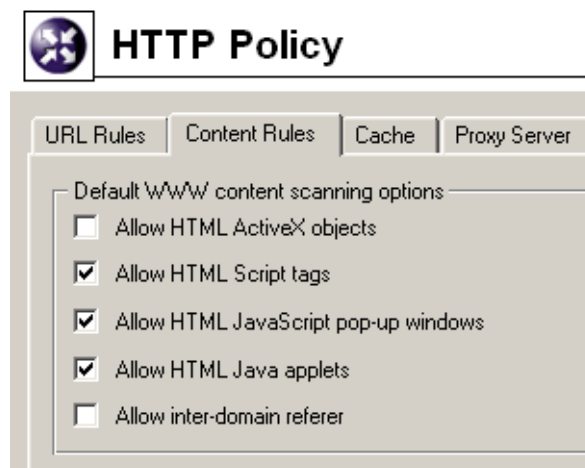
2. The automatic firewall authentication page redirection may conflict with the update process of most anti-virus programs (refer to chapter 6.6). To resolve this problem apply one of the following methods:
 - create a rule that will permit access to the Web server from which the updates are downloaded where no user authentication will be required
 - if allowed by your antivirus, use your proxy server (see chapter 4.5) and define a username and password

6.2 Content Rules

In *WinRoute* you can also block certain features contained in HTML pages.

To define content global filtering rules go to the *Content Rules* tab in the *Configuration / Content Filtering/ HTTP Policy* section. Special settings for individual pages can be defined in URL Rules section (refer to chapter 6.1).

These parameters also apply to HTTP traffic of computers from which no user is connected. Special settings are used for users connected through the firewall (see chapter 9.1).



Allow HTML ActiveX objects Microsoft ActiveX features (security defects during implementation of this technology allow the execution of applications on client hosts, apart from other features).

Allow HTML Script tags HTML `<script>` tags — commands of programming languages, such as JavaScript, VBScript, etc.

6.3 Cobion Orange Filter Content Rating System

Allow HTML JavaScript pop-up windows New browser windows are opened automatically — usually commercial pop-up windows.

The `window.open()` method will be blocked in all scripts by *WinRoute* unless this option is active.

Allow HTML Java applets HTML `<applet>` tags (*Java Applet*)

Allow inter-domain referrer A *Referrer* item included in an HTTP header.

This item includes the URL of the page opened prior to the currently opened page. If the *Allow inter-domain referrer* is off, *Referrer* items that include a server name different from the current HTTP request will be blocked.

The *Cross-domain referrer* function protects users' privacy (the *Referrer* item can be monitored to see which pages are opened by each user).

Note: Settings in the *Content Rules* tab are applied on unauthenticated users. Each authenticated user can customize filtering rules at the user preferences page (see chapter 7.3). However, users that are not allowed to *override WWW content rules* (refer to chapter 9.1) cannot permit HTML features that are denied globally.

6.3 Cobion Orange Filter Content Rating System

Cobion Orange Filter system is integrated in *WinRoute*. It enables *WinRoute* to rate Web page content. Each page is sorted into predefined categories. Access to the page will be either permitted or denied according to this classification.

The *Cobion Orange Filter* system has a dynamic worldwide database that includes URLs and classification of Web pages. This database is maintained by special servers that perform page ratings. Whenever a user attempts to access a Web page, *WinRoute* sends a request on the page rating. According to the classification of the page the user will be either allowed or denied to access the page. To speed up URL rating the data that have been once acquired can be stored in the cache and kept for a certain period.

Note: The *Cobion Orange Filter* system was designed and tested especially on pages in English. Efficiency of its appliance on non-English pages is lower (about 70 % of the full efficiency).

Cobion Orange Filter Deployment

Whenever *WinRoute* processes a URL rule that requires classification of pages, the *Cobion Orange Filter* content rating system is activated. The usage will be better understood

Chapter 6 Content Filtering

through the following example that describes a rule denying all users to access pages containing job offers.

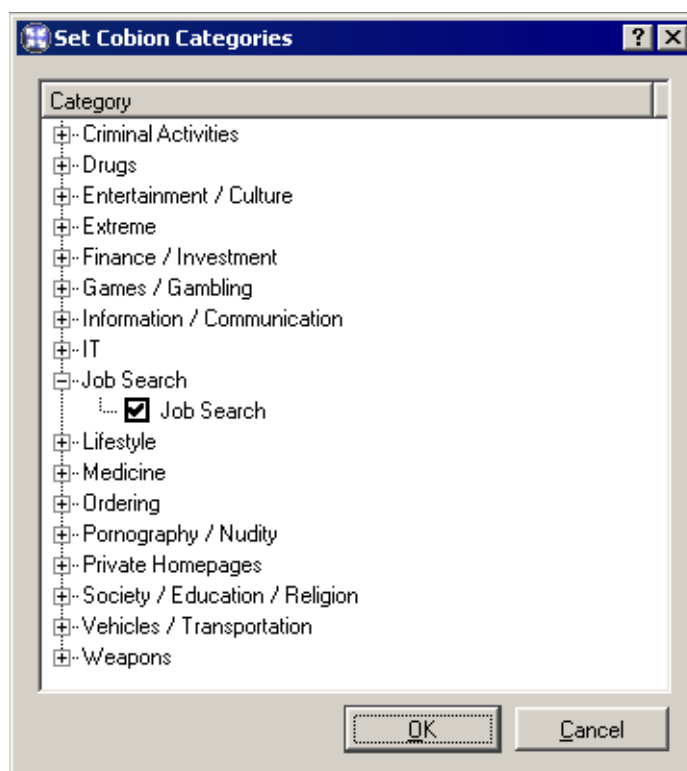
the following rule has been defined in the *URL Rules* tab in *Configuration / Content Filtering / HTTP Rules*:

The screenshot shows the 'HTTP Rule' dialog box with the 'Content Rules' tab selected. The 'Description' field contains 'Deny pages containing job offers'. Under 'If user accessing the URL is', the 'any user' radio button is selected. Under 'And URL matches criteria', the 'is rated by Cobion Content Rating system' radio button is selected, and the 'Select Rating...' button is visible. In the 'Action' section, the 'Deny access to the Web site' radio button is selected, and the 'Log' checkbox is checked. The 'OK' and 'Cancel' buttons are at the bottom right.

The *is rated by Cobion Content Rating system* is considered the key parameter. The URL of each opened page will be rated by the Cobion Orange Filter system. Access to each page matching with a rating category included in the database will be denied.

Use the *Select Rating* button to open a dialog where *Cobion Orange Filter* rating categories can be chosen. Select the *Job Search* rating category (pages including job offers).

6.3 Cobion Orange Filter Content Rating System



Note: We recommend you to enable Unlock for rules that use the *Cobion Orange Filter* rating system (the *Users can Unlock this rule* option in the *Advanced* tab). This option will allow users to unlock pages blocked for incorrect classification.

Cobion Orange Filter Settings

To set parameters of the *Cobion Orange Filter* system go to the *Cobion Orange Filter Settings* tab in *Configuration/Advanced Options*.

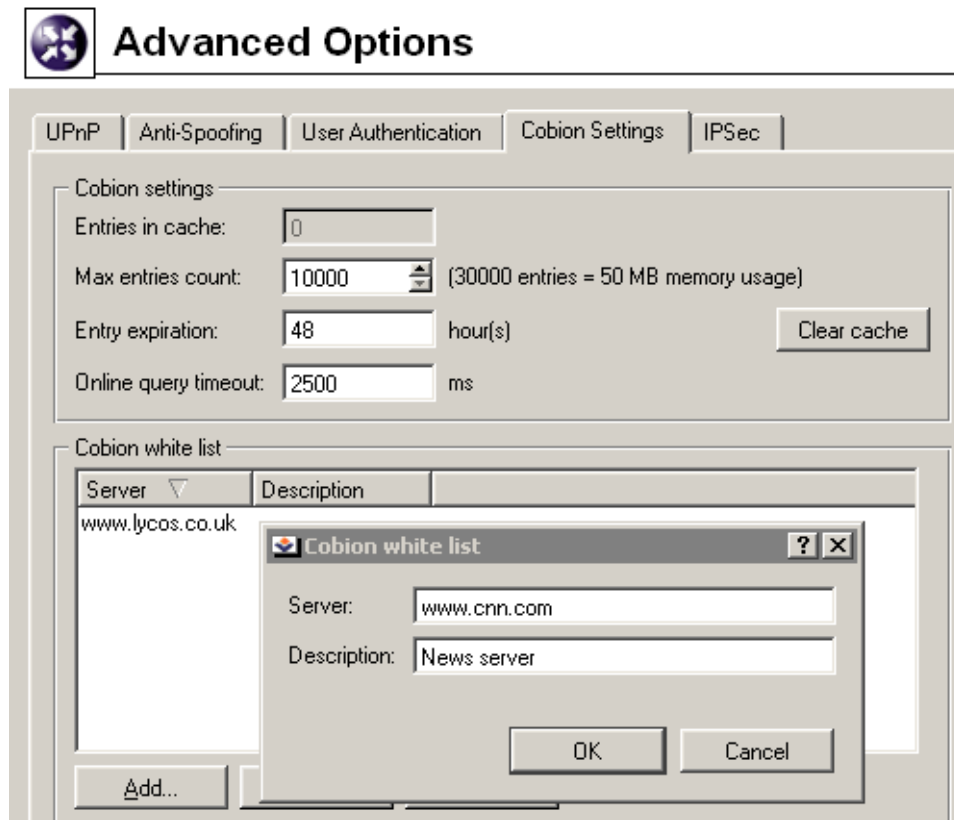
Use the *URL cache* section to enable or disable database cache using URL rating and to set URL cache parameters.

Enabled Using this option you can activate URL cache. URL cache can be helpful especially when there are many users or the Internet connection is slow.

Note: Cache is activated only after *WinRoute Firewall Engine* is restarted.

Directory Location of the URL cache directory (including full path). If the directory does not exist yet, it will be created by *WinRoute* automatically.

Entries in cache Number of entries currently stored in URL cache.



Max entries count Upper bound of entries that can be stored in the cache. This value affects free disc space that will be required and cache scanning speed.

Entry expiration Maximum timeout limit during which an entry will be stored in the cache (entries are invalid after this limit expires). *Cobion Orange Filter* database is dynamic as content of Web pages (and their rating) may change.

Clear cache Click on this button to remove all entries stored in the URL cache.

The *Internet connection* section provides options for communication (traffic) with the database server.

Internet connection Method that will be used by *Cobion Orange Filter* to connect to the database server (directly or via the parent proxy). If you select the *Parent proxy* option, parameters defined in the *Proxy Server* tab will be used see chapter 4.5).

Online query timeout Time during which the system will wait for a response from the database server. If the timeout expires and no response has been received, access to the page will be allowed (the page is considered unclassifiable — it does not meet rules that use *Cobion Orange Filter*).

Note: Information about pages that cannot be rated is not stored in the cache. *WinRoute* sends a new query whenever the page is to be opened.

Cobion white list Servers specified in through this section will not be tested by the *Cobion Orange Filter* system. Click on the *Add* button to add a new item (server).

Server There are several methods of how to define a server. You can define either directly URL (i.e. `www.google.com/index.html`), URL substring using wildcard matching (i.e. `*.google.com*`) or a server name (i.e. `www.google.com`). Server name is represented by any URL on a given server (`www.google.com/*`).

Description For reference only.

6.4 Filtering by Words

WinRoute can also filter Web pages that include undesirable words. This filtering is applied globally on all HTTP traffic . The filtering is applied after URL rules (only if access to the demanded page is permitted).

This is the filtering principle: Denied words are matched with values, called weight (represented by a whole positive integer). Weights of these words contained in a required page are summed (weight of each word is counted only once regardless of how many times the word is included in the page). If the total weight exceeds the defined limit, the page is blocked.

Words are sorted into groups. This feature only makes *WinRoute* easier to follow. All groups have the same priority and all of them are always tested.

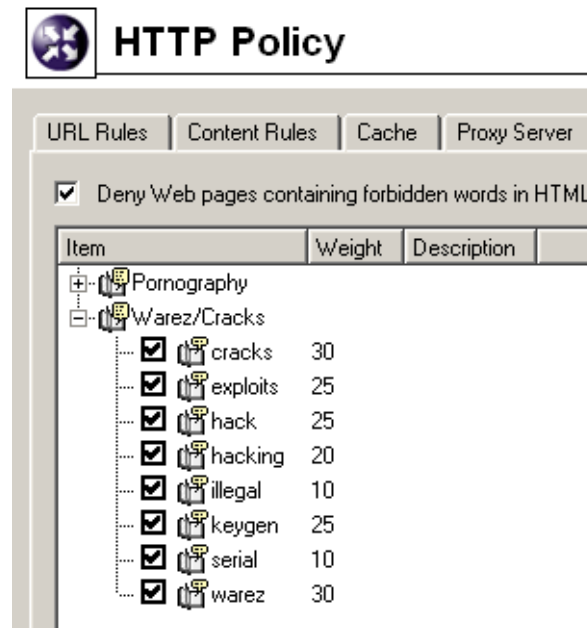
To define word groups go to the *Word Groups* tab in *Configuration / Content Filtering / HTTP Rules*.

Individual groups and words included in them are displayed in form of trees. To switch individual words use matching fields located next to them. Ticked rules will be ignored. Due to this function it is not necessary to remove rules and define them again later .

Note: The following word groups are predefined in the default *WinRoute* installation:

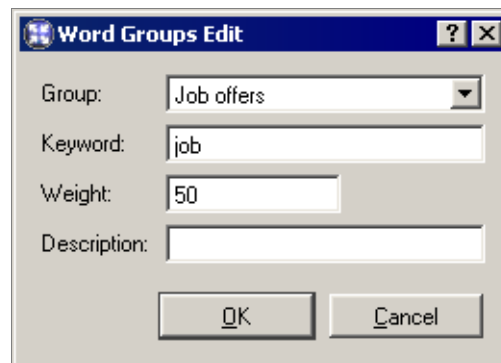
- *Pornography* — Words that typically appear on pages with erotic themes.
- *Warez* — . Words that typically appear on pages offering downloads of illegal software, license key generators etc.

All key words in predefined groups are disabled by default. A *WinRoute* administrator can modify the weight for each word.



Deny pages with weight over Upper bound of total page weight (sum of all forbidden words detected at the page). If the total weight of the tested page exceeds this limit, access to the page will be denied (each word is counted only once, regardless of the count of individual words).

Use the *Add* button to add a new word into a group or to create a new group.



Group Selection of a group to which the word will be included. You can also add a new name to create a new group.

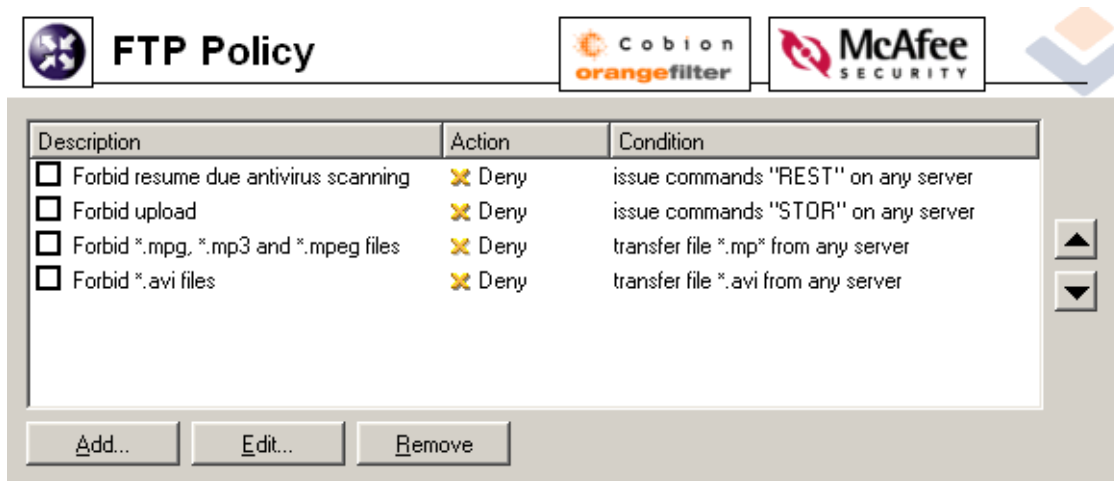
Keyword Forbidden word that is to be scanned for

Weight Word weight (affects decision about the page denial)

Description A comment on the word or group.

6.5 FTP Policy

To define rules for access to FTP servers go to *Configuration / Content Filtering / FTP Rules*.



Rules in this section are tested from the top of the list downwards (you can order the list entries using the arrow buttons at the right side of the dialog window). Testing is stopped when the first convenient rule is met. If the query does not match any rule, access to the FTP server is implicitly allowed.

Note: Several FTP rules are predefined in the default installation of *WinRoute*. These rules are inactive by default. *WinRoute* administrators can use them or edit them if desirable.

Use the *Add* button to define a new FTP rule.

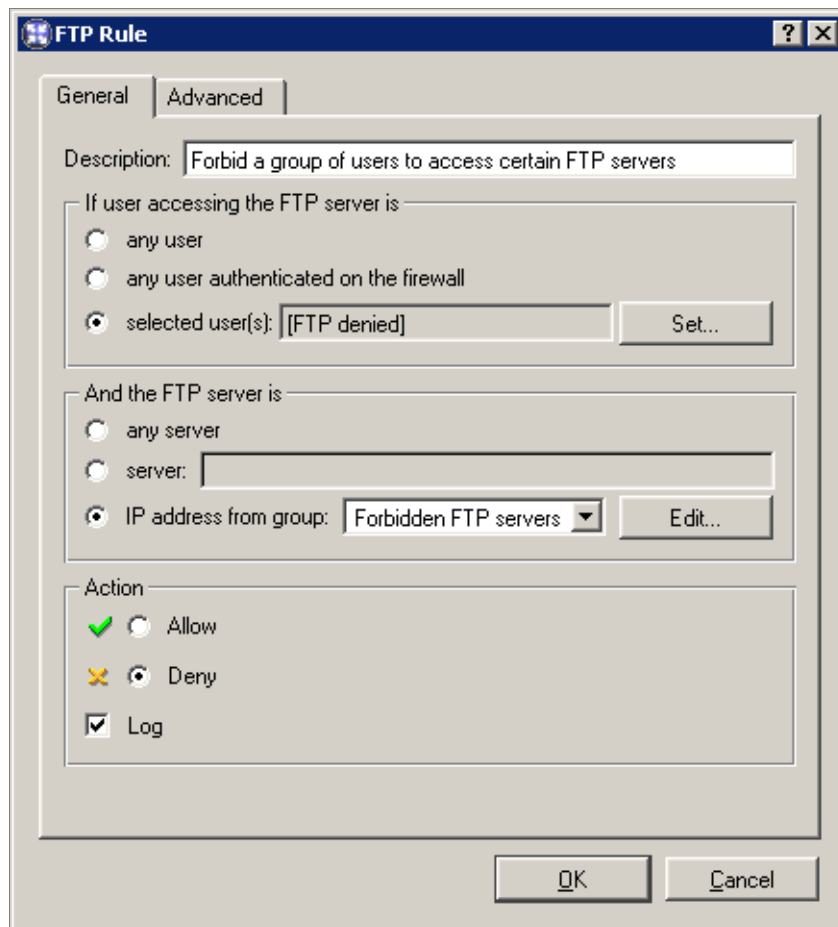
General conditions and actions that are to be taken can be defined in the *General* tab.

Description Description of the rule (information for the administrator).

If user accessing the FTP server is Select which users this rule will be applied on:

- *any user* — the rule will be applied on all users (regardless whether authenticated on the firewall or not).
- *any user authenticated on the firewall* — applied on all authenticated users.
- *selected user(s)* — applied on selected users or/and user groups.

Click on the *Set* button to select users or groups (hold the *Ctrl* and the *Shift* keys to select more than one user/group at once).



Note: Rules designed for selected users (or all authenticated users) are irrelevant unless combined with a rule that denies access of non-authenticated users.

And the FTP server is Specify FTP servers on which this rule will be applied:

- *any server* —any FTP server
- *server* — IP address of DNS name of a particular FTP server.

If FTP server is defined through DNS name, *WinRoute* will automatically perform IP address resolution from the DNS. IP address will be resolved immediately when settings are confirmed by the *OK* button (for all rules where FTP server was defined by DNS name).

Warning: Rules are disabled unless a corresponding IP address is found!

- *IP address from group* — selection of IP addresses of FTP servers that will be either denied or allowed.

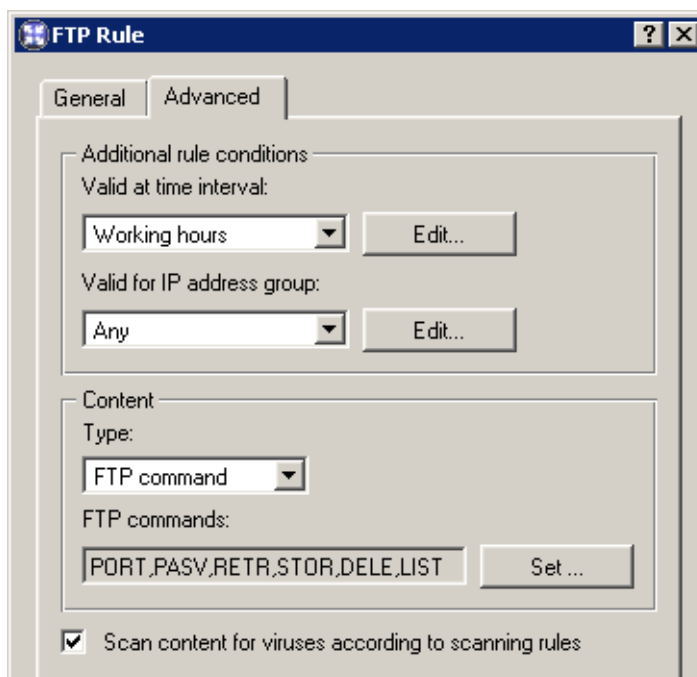
Click on the *Edit* button to edit IP groups (for details see chapter 8.1).

Action Select an action that will be taken when requirements for users and the FTP server are met:

- *Allow* — WinRoute allows connection to selected FTP servers under conditions set in the *Advanced* tab— see below).
- *Deny* — WinRoute will block certain FTP commands or FTP connections (according to the settings within the *Advanced* tab).

Use the *Log* option to log all FTP access attempts that have met this rule into the *Filter* log (see chapter 13.8).

Go to the *Advanced* tab to define other conditions that must be met for the rule to be applied and to set other FTP traffic options.



Valid at time interval Selection of the time interval during which the rule will be valid (apart from this interval the rule will be ignored). Use the *Edit* button to edit time intervals (for details see chapter 8.2).

Valid for IP address group Selection of IP address group on which the rule will be applied. Client (source) addresses are considered). Use the *Any* option to make the rule independent of clients.

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Use the *Edit* button to edit IP groups (for details see chapter 8.1).

Content Advanced options for FTP traffic content.

Use the *Type* option to set a filtering method:

- *Download, Upload, Download / Upload* — transport of files in one or both directions.

If any of these options is chosen, you can specify names of files on which the rule will be applied using the *File name* entry. Wildcard matching can be used to specify a file name (i.e. *.exe for executables).

- *FTP command* — selection of commands for the FTP server on which the rule will be applied
- *Any* — denies all traffic (any connection or command use)

Scan content for viruses according to scanning rules Use this option to enable/disable scanning for viruses for FTP traffic which meets this rule.

This option is available only for allowing rules — it is meaningless to apply antivirus check to denied traffic.

New rules will be added below the rule marked before using the *Add* button. Use the arrow buttons at the right side of the dialog window to move the rule within the list.

Use matching fields next to appropriate rules to switch rules off. Ticked rules will be ignored. Due to this function it is not necessary to remove rules and define them again later.

Note: Access to FTP servers that do not meet any rules are implicitly allowed. To allow access to a limited number of FTP servers and block other pages, add a new rule (using the wildcard ".*") that will deny access to any URL to the end of the list.

6.6 HTTP and FTP Antivirus Control

All objects transferred via HTTP or FTP protocols can be scanned for viruses in *WinRoute*. The administrator can specify which object types will be scanned.

Transferred data of individual objects are stored in the cache and scanned by a specified antivirus. If an infection is detected, *WinRoute* will drop the rest of the file that it still keeps in the cache (this part will not be delivered to the client). The file that the client receives will be damaged. Therefore, it cannot be run and the virus will not be triggered.

6.6 HTTP and FTP Antivirus Control

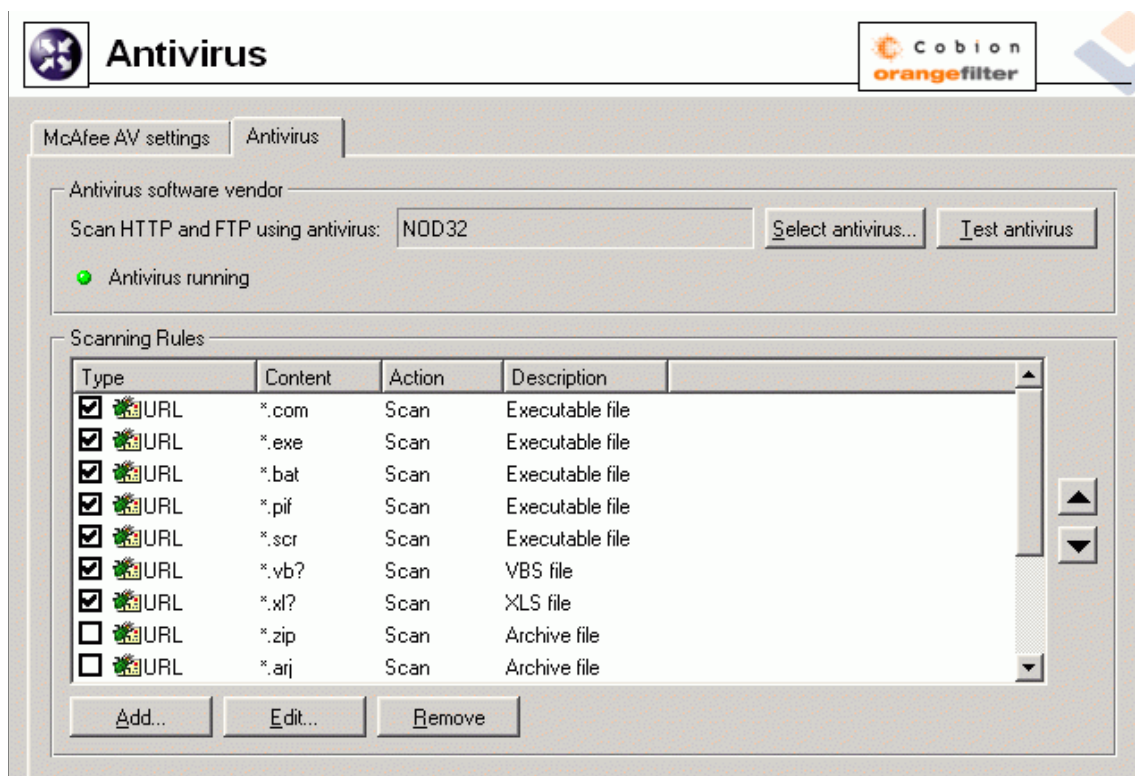
Warnings:

1. Antivirus check only detects and blocks infected files, however, it cannot heal them!
2. If the antivirus check is disabled in rules for HTTP and FTP filtering, objects and files meeting an corresponding rule are not scanned. For details refer to chapters 6.1 and 6.5).

The antivirus licensing policy must meet the conditions proposed by its provider (typically the same or higher number of users as *WinRoute* is licensed for, or a special server license).

A special version of *WinRoute* with integrated *McAfee* antivirus is also available. External *McAfee Anti-Virus* applications are not supported by *WinRoute*.

Go to *Configuration / Content Filtering / Antivirus* to set antivirus parameters.

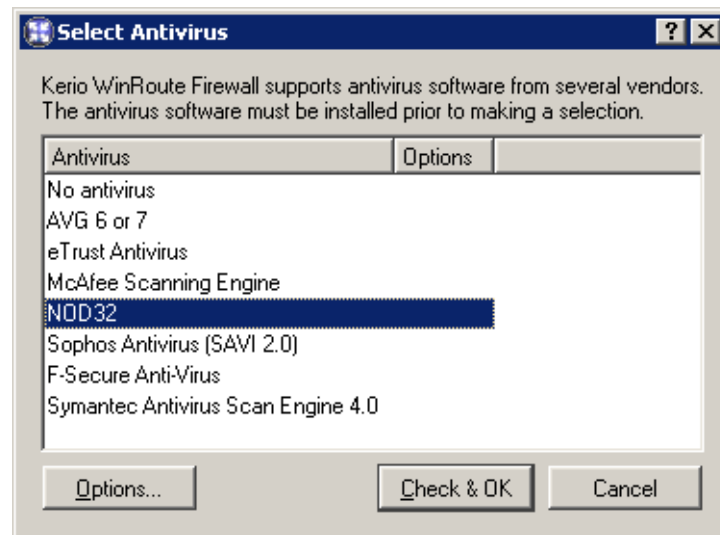


Scan HTTP and FTP using antivirus This entry specifies antivirus that is used to scan objects transferred using HTTP or FTP protocols. The (*none*) option means that no antivirus is selected (HTTP and FTP will not be scanned).

Select antivirus... Use this button to select a plug-in that will cooperate with antivirus.

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The antivirus application must be installed before a plug-in is selected (we recommend stopping the *WinRoute Firewall Engine* prior to running the installation). The *McAfee* antivirus is already integrated into *WinRoute* and is not installed separately.



You can use the *Options* button to set advanced parameters if a plug-in has been selected (only some plug-ins enable this function). Click on the *Check & OK* button to test selected antivirus. This antivirus will be used if tested successfully. If the current plug-in has not passed the test, the previous plug-in will be used and an error will be logged into the *Error* log (see chapter 13.7).

Use the *No antivirus* option to switch the antivirus off.

Test antivirus Click on this button to test antivirus using a tester virus (Eicar). When the test is finished, detailed information about the test is displayed. If the test is not completed successfully, detailed information will be logged into the *Error* log (see chapter 13.7).

Scanning rules These rules define conditions under which scanning will be performed (all HTTP and FTP traffic is scanned by default).

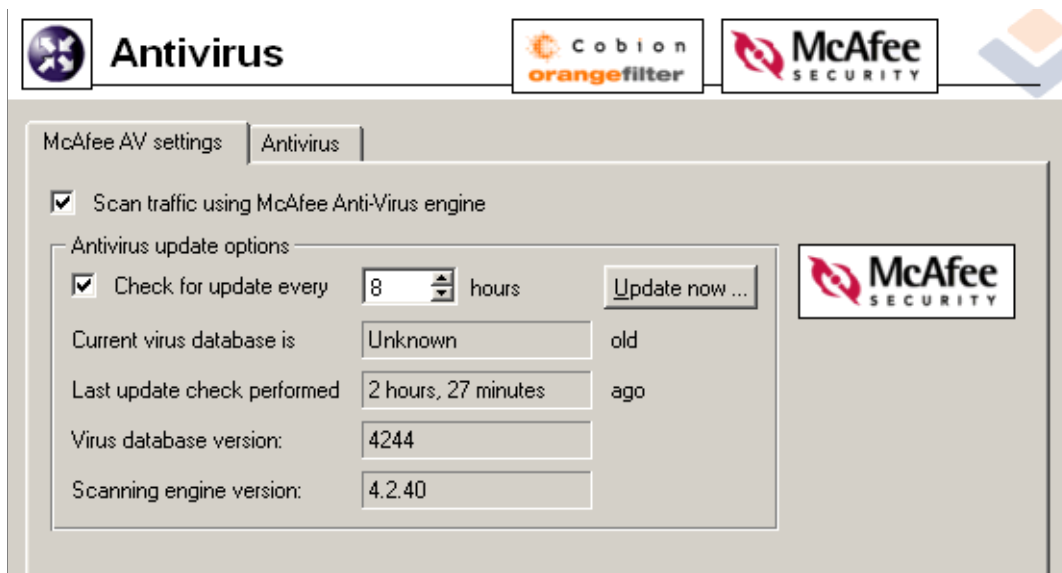
Note: The default *WinRoute* installation includes several predefined scanning rules and *Microsoft Office* files (*WinRoute* administrators can edit these rules if desired).

Supported Antivirus Applications

WinRoute supports several external antivirus applications by various providers, such as Eset Software, Grisoft, F-Secure, etc. Supported antivirus applications or licensing policies, may change. Refer to the *Kerio Technologies* Website (<http://www.kerio.com/>) for up-to-date information on this issue.

Integrated McAfee Antivirus

Set advanced parameters for the integrated *McAfee* antivirus application in the *McAfee AV settings* tab.



Scan HTTP and FTP using antivirus Use this button to enable scanning for viruses using the *McAfee* antivirus.

Check for update every ... hours Time interval of checks for new updates of the virus database and the antivirus engine (in hours). If any new update is available, it will be downloaded automatically by *WinRoute*.

If the update attempt fails (i.e. the server is not available), detailed information about the attempt will be logged into the *Error* log (refer to chapter 13.7).

Each download (update) attempt sets the *Last update check performed* value to zero.

Current virus database is ... old Information about how old the current database is.

Last update check performed Time that has passed since the last update check.

Virus database version Database version that is currently used.

Scanning engine version *McAfee* scanning engine version used by *WinRoute*.

Update now Use this button for immediate update of the virus database and of the scanning engine.

Chapter 6 Content Filtering

After you run the update check using the *Update now...* button, an informational window displaying update process will be opened. You can use the *OK* button to close it — it is not necessary to wait until the update is finished.

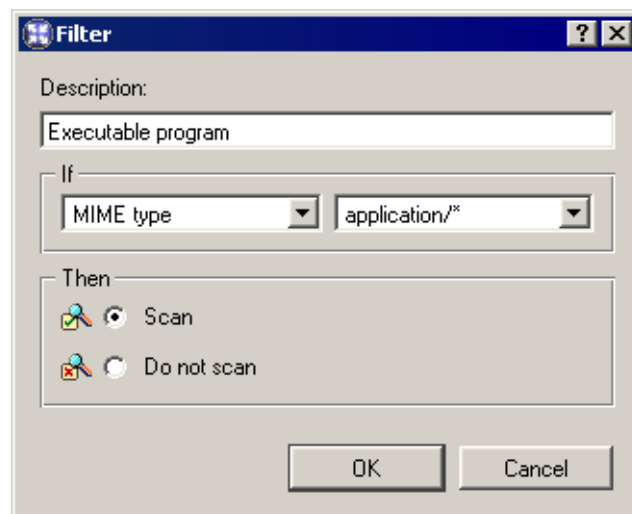
If updated successfully, the version number of the new virus database or/and the new antivirus version(s), as well as information regarding the age of the current virus database will be displayed. If the update check fails (i.e. the server is not available), an error will be reported and detailed information about the update attempt will be logged into the *Error* log.

The *Last update check performed* entry is set to zero whenever a new update check is performed.

Setting Scanning Rules

Scanning rules are ordered in a list. This list is tested downwards, rule by rule. Use the arrow buttons at the right side of the dialog to move the reorder rules. The checking is stopped when the first rule matching the object is found.

Click on the *Add* button to add a new rule.



Description Description of the rule (information for the *WinRoute* administrator).

If Condition of the rule:

- object *MIME type*.

MIME type can be specified using either full name (i.e. *image/jpeg*) or wildcard matching (i.e. *application/**).

6.6 HTTP and FTP Antivirus Control

- *URL of the object* (i.e. `www.kerio.com/img/logo.gif`), a substring using wild-card matching (i.e. `*.exe`) or a server name (i.e. `www.kerio.com`). Server names represent any URL included at the server (`www.kerio.com/*`).
- *HTTP/FTP filename*
Use this option to filter filenames (not complete URLs) transmitted through FTP or HTTP protocol (i.e. `*.exe`, `*.zip` ...).

An asterisk defining a MIME type or a URL represents all objects.

Then This option defines whether the object will be scanned or not.

New rules will be added below the selected rule. Use the arrow buttons to move new rules within the list.

You can disable rules using the checkboxes next to the rule description.

Note: Any object that does not match a rule will be scanned by the antivirus component.

Chapter 7

Web Interface and User Authentication

WinRoute contains a special Web server that can be used for several purposes, such as an interface for user connections, dial-up control or cache management. This Web server is available over SSL or using standard HTTP with no encryption (both versions include identical pages).

Refer to the list below for URLs of individual pages ('server' refers to the name or IP of the *WinRoute* host, 4080 represents a standard HTTP interface port).

- the main page (*Index*) — includes only links to the pages listed below
`https://server:4080/`
- user authentication at the firewall (login and logout page)
`http://server:4080/fw/login`
`http://server:4080/fw/logout`
- viewing user statistics (i.e. IP address, login time, size of the data transmitted, number of filtered objects, etc.)
`http://server:4080/fw/stat`
- modifications of user configuration (password, global limitations for accessing WWW pages, etc.)
`http://server:4080/fw/pref`
- viewing HTTP rules (see chapter 6.1) not related to the user or the host that is used to connect to the Web interface
`http://server:4080/fw/http_restr`
- viewing statistics of HTTP cache with functions for deleting and searching for saved objects
`http://server:4080/fw/cache`
- dialing and disconnecting dial-ups
`http://server:4080/fw/dial`

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To use the encrypted version specify the HTTPS protocol and number of the port that the encrypted Web interface is running on (default is 4081) — e.g.

`https://server:4081/fw/login`

7.1 Web Interface Parameters Configuration

To define basic *WinRoute* Web interface parameters go to the *User Authentication* folder in *Configuration / Advanced Options*.

The screenshot shows a configuration window titled "Web Interface" and "Web SSL Interface". In the "Web Interface" section, there are three checked options: "Enable Web Interface on port: 4080", "Require user authentication", and "Allow access only from: Local network" (with an "Edit..." button). In the "Web SSL Interface" section, there are two checked options: "SSL has priority" (with a "Server SSL Certificate..." button) and "Enable Web Interface over SSL on port: 4081". At the bottom, the "WinRoute server name" is set to "server.company.com" with a note "(could be different than computer name)".

Note: See chapter 7.2 to learn more about the first section of the *User Authentication* tab.

Enable Web Interface on port Number of the port the unencrypted (HTTP) version of the Web interface will run on. 4080 is the default value.

Require user authentication User authentication will be required to open pages for dialing lines and viewing cache content..

Allow access only from Selection of IP address group from which access to the Web interface will be exclusively allowed.

WinRoute administrators can enable access to the Web interface from certain IP addresses without requirements on user authentication. He/she can also combine this option with the *Require user authentication* option to increase security of the Web interface.

Note: The options mentioned above (*Require user authentication* and *Allow access only from*) relate to both the encrypted and the unencrypted version of the Web interface.

7.1 Web Interface Parameters Configuration

SSL has priority If this option is enabled, all users will be re-directed either to the encrypted version of the login page or to the page informing the user that the access is denied.

Enable Web Interface over SSL on port Number of the port the encrypted (HTTPS) version of Web Interface will run on. Default value is 4081.

WinRoute server name Server DNS name that will be used for purposes of the Web interface (e.g. `server.company.com`). The name need not be necessarily identical with the host name, however, there must exist an appropriate entry in DNS for proper name resolution.

Note: If all clients accessing the Web Interface use the *DNS Forwarder* in *WinRoute* as a DNS server, there is no need to add the server name to DNS. The name is already known and combined with the name of the local domain — see chapter 4.3).

Server SSL certificate This button opens a dialog where the server's SSL certificate can be imported or created. For details see below.

Warning: If you insert a port that is already used by another service or application into the *Enable Web Interface on port* or into the *Enable Web Interface over SSL on port* entry, *WinRoute* will not be able to use this port and an error will be recorded into the *Error* log (see chapter 13.7):

```
failed to bind to port 4080:  another application is using this
port
```

If you are not sure whether the defined ports are free, check the *Error* log immediately after clicking on the *Apply* button to see whether such report has been logged or not.

Web Interface Language Preferences

WinRoute's Web Interface is available in various languages. The language is set automatically according to each users' preferences defined in the Web browser (this function is available in most browsers). English will be used if no preferred languages is available .

Individual language versions are saved in so called definition files in the `weblang` sub-directory under the directory where *WinRoute* is installed. Each language is represented by the two following files: `xx.def` and `xx.res`. The `xx` string stands for a standard language abbreviation that consists of two characters (i.e. `en` stands for English, etc.). The first rows of `xx.def` include appropriate language abbreviations (it is equal to the abbreviation contained in the file name). The second row contains coding used for the appropriate language (i.e. ISO-8859-1 is used for English). This coding must be used for both language files.

Chapter 7 Web Interface and User Authentication

WinRoute administrators can easily modify texts of the Web Interface pages or create a new language versions.

Note: Changes in the `xx.def` file will be applied after restarting the *WinRoute Firewall Engine*.

Server SSL certificate

The principle of an encrypted *WinRoute* Web interface is based on the fact that all communication between the client and server is encrypted to protect it from wiretapping and misuse of the transmitted data. The SSL protocol uses an asymmetric encryption first to facilitate exchange of the symmetric encryption key which will be later used to encrypt the transmitted data.

Two keys are used for the asymmetric encryption — public to encrypt and private to decipher. The public (encrypting) key is available to all users that intend to connect to the server, whereas the private (deciphering) key is available for the server only and it must be kept close. The client also needs to verify the server's identity. For this purpose there is a so called certificate. The certificate contains the public key of the server, server name, information about validity and other data. To ensure authenticity of the certificate, it must be verified and subscribed by the third party, or certificate authority.

The communication between the client and server is as follows: the client generates a symmetrical key and encrypts it with the public key of the server (gained from the server certificate). The server deciphers it with the unique private key. Therefore, only these two parties know the symmetrical key.

Generate or Import Certificate

WinRoute provides a sample certificate for testing. You will find it in the `server.crt` file under the `sslcert` subdirectory where *WinRoute* is installed. The other file (`server.key`) includes the private key of the server. This certificate is identical in each *WinRoute* application. This means that only encrypted services will function, but practically no security is ensured (everyone knows the private key — thus any user is allowed to decipher public communication).

Click on the *Server SSL certificate* button (in *Configuration / Advanced Options*, the *User Authentication* folder) to view the dialog with the current server certificate. By selecting the *Field* (certificate entry) option you can view information either about the certificate issuer (*Issuer*) or about the subject (*Subject*) represented by your server.

7.1 Web Interface Parameters Configuration



To get your own unique certificate that you will use to authenticate identity of your server, use one of the two methods described below.

To create your own (self-signed) certificate click on the *Generate certificate* button in the dialog that displays the current server's certificate. Insert required data about the server and your company into the dialog entries. Only entries marked with an asterisk (*) are required.



Chapter 7 Web Interface and User Authentication

Click on the *OK* button to view the *Server SSL certificate* dialog. The certificate will be started automatically (you will not need to restart your operating system).

A new (self-signed) certificate is unique. It is created by your company, addressed to your company and based on the name of your server. Unlike the testing version of the certificate, this certificate ensures your clients security, as only you know the private key and the identity of your server is guaranteed by the certificate. In their browsers, clients will be informed that the certificate authority is not reliable; however, they will install it into the browser as they trust the owner of this certificate. This ensures secure communication and there will be no more warnings displayed as the certificate has all the necessary features.

The other option is to get a signed certificate from a public certificate authority (e.g. Verisign, Thawte, SecureSign, SecureNet, Microsoft Authenticode, etc.). The certification process is quite complex and requires special technical knowledge. For detailed instructions contact Kerio technical support.

7.2 Firewall User Authentication

WinRoute allows administrators to monitor connections (packet, connection, Web pages or FTP objects and command filtering) related to each user. The username in each filtering rule represents the IP address of the host(s) from which the user is connected.

In addition to authentication based access limitations, user login can be used to effectively monitor activity using logs (see chapter 13), and status (see chapter 12.3) and hosts and users (see chapter 12.2). If there is no user connected from a certain host, only the IP address of the host will be displayed in the logs and statistics.

Users can connect:

- manually — in the browser user will open page
`http://server:4080/fw/login`
- re-direction — by accessing any Web site that requires user authentication
- using NTLM— if *Microsoft Internet Explorer* is used and the user is authenticated in a Windows NT or Windows 2000 domain, the user can be authenticated automatically (the login page will not be displayed). For details see below (the *User Authentication Options* section).

Login by re-direction is performed in the following way: user enters URL pages that he/she intends to open in the browser. *WinRoute* detects whether the user has already authenticated. If not, *WinRoute* will re-direct the user to the login page automatically.

7.2 Firewall User Authentication

After a successful login, the user is automatically re-directed to the requested page or to the page including the information where the access was denied.

Note: If the *SSL has priority* option is activated in the parameters for the Web interface (see chapter 7.1), users are re-directed to the encrypted login page automatically. If not, users are re-directed to the unencrypted login page.

Login page

This is the appearance of the login page:



Username: jsmith
Password: *****
Login
☒ Show user menu page

Username, Password Login name and password of the user.

Show user menu page After a successful login attempt, the user will be re-directed to the login page. From the login page users can go to the pages of user preferences, statistics or to the formerly requested site (for details see chapter 7.3).

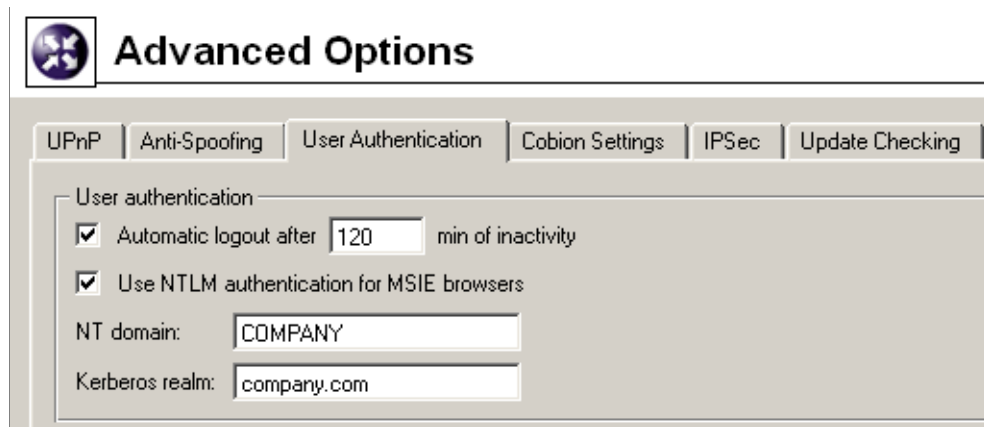
If the user is re-directed to the page automatically (after inserting the URL of a page for which the firewall authentication is required), he/she will be re-directed to the formerly requested site after successful login attempt. This rule will not be applied if the *Show user menu page* option is enabled — if so, the login page (with the link to the formerly required page) will be displayed. For details see chapter 7.3.

User Authentication Options

Optional user parameters can be defined in the *User Authentication* tab in *Configuration / Advanced Options*. To define these parameters go to the *User Authentication* section.

Automatic logout after... Timeout (in minutes) —after its expiration the user will be logged-out from the firewall automatically, if no traffic has been detected. The default value is 120 minutes (2 hours).

This often happens when a user forgets to logout from firewall. Therefore it is not recommended to disable this option (by setting the value to 0). If this option is off, access rights might be misused by other users.



Use NTLM authentication... If you use *Microsoft Internet Explorer* (5.01 and later), users can be authenticated automatically at the firewall (using NTLM authentication). This function requires the following conditions:

1. The *WinRoute* host must belong to a Windows NT or Windows 2000 domain.
2. Client hosts must belong to this domain as well.
3. Users at client hosts must log into this domain. Local user accounts cannot be used in this case.
4. *WinRoute Firewall Engine* must run as a service or it must be run as a user which has administrator rights for the host.
5. NTLM authentication cannot be used for authentication within an internal database.

Authenticate users to NT domain Name of the NT domain where users will be authenticated (i.e. COMPANY). Multiple domains (separated by semicolons) can be included in this entry.

Kerberos realm Name of a Kerberos domain where users will be authenticated (i.e. company.com). To use multiple domains separate their names with semicolons.

This authentication method is used by the Windows 2000 domain (*Active Directory*).

Note: When user accounts are imported from an NT domain or Windows 2000 domain, appropriate items are inserted automatically.

7.3 User Preferences and Statistics

If a user has opened the user menu (by ticking the option at the login page), the user is automatically re-directed to the user menu page. This page provides links to (apart of others):

- formerly requested *URL* page — if the login page has not been displayed automatically, this item will be empty
- user preferences page (*User Preferences*)
- user statistics page (*Statistics*)

User Preferences

The first part of the page enables the administrator to permit or deny certain features of WWW pages.

Content filter options:						
	Pop-Up window	ActiveX	Java applet	Scripts	Cross-domain referer	
Allowed	☒	☒	☒	☒	☒	Save settings
						Undo changes

NOTE: Firewall administrator could setup general rules to eliminate dangerous content from web pages, which might override your settings.

Content filter options If the checkbox under a filter is enabled, this feature will be available (it will not be blocked by the firewall). If there is a global content filter in *WinRoute* (see chapter 6.2) and the user is not allowed to *override WWW content rules*, the field is unavailable within this page and the settings cannot be modified. Users can only make the settings more strict — HTML items that are globally permitted can be denied by the specific user.

- *Pop-Up Window* — automatic opening of new windows in the browser (usually advertisements)

This option will block the `window.open()` method in scripts

- *ActiveX* — Microsoft ActiveX features (this technology enables, for example, execution of applications at client hosts)

This option blocks `<object>` and `<embed>` HTML tags

- *Java applet* `<applet>` HTML tag blocking

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- *Scripts* — <script> HTML tag blocking (commands of JavaScript, VBScript, etc.)
- *Cross-domain referrer* — blocking of the Referrer items in HTTP headers. This item includes pages that have been viewed prior to the current page. The *Cross-domain referrer* option blocks the Referrer item in case this item does not match the required server name.

Cross-domain referrer blocking protects users' privacy (the Referrer item can be monitored to determine which pages are opened by a user).

Save settings To save and activate settings, click on this button.

Undo changes With this button you can restore your former settings.

User password can be modified at the bottom part of the page:



The screenshot shows a web form titled "Change user password:" with a subtitle "(Valid only for Internal User Database authentication)". Below the title, a status bar indicates "User rgabriel via Plaintext". The form contains three input fields: "Old password:" with a masked password "jklklklkl", "New password:" with a masked password "jklklklklklklkl", and "Re-type new password:" with a masked password "jklklklklklklkl". At the bottom of the form is a button labeled "Change password".

To change a password, enter the current user password, new password, and the new password confirmation into the appropriate text fields. Save the new password with the *Change password* button.

Warning: Passwords can be changed only if the user is configured in the *WinRoute* internal database (see chapter 9.1). If another authentication method used, the *WinRoute Firewall Engine* will not be allowed to change the password.

Statistics

The following data will be displayed at the *User statistics* page:

- *Login information* — username, IP address that the user is connected from, login duration and method of login (SSL — encrypted login page (SSL — encrypted login

page; *Plaintext* — unencrypted login page; *NTLM* — secure authentication in Windows NT or Windows 2000, *Proxy* — authentication at *WinRoute's* proxy server)

- *Session information* — size of outgoing and incoming data (in bytes) and number of sent HTTP requests
- *Content filter statistics* — number of filtered objects of all individual types (see above).

All data are recorded and measured after the first login of a user. All statistics are deleted after the user logs out or if the *WinRoute Firewall Engine* is restarted.

7.4 Web Policy Viewing

Click on the *Web policy* link at any page of the *WinRoute* Web Interface to view current rules and limitations of access to Web pages. The policy is related to the appropriate user and host. If no user is connected, limitation settings for the IP address of the host that is used to connect to the Web Interface will be displayed.

To learn more details about rules for accessing Web pages refer to chapter 6.1.

7.5 Dial-up

All RAS lines defined in *WinRoute* are listed at the *Dial-up* page (see chapter 4.1). Each dial-up provides the following information:

- Dial-up Status — *Connected* or *Disconnected*
- Action (according to the dial-up status) — *Dial* or *Hang up*

Note: The *Dial-up* page is automatically refreshed in regular time intervals. This ensures that only the current dial-up status will be displayed.

This page can be viewed by any user (login is not required); however, if the *Dial* or *Hang up* buttons are clicked, authentication may be required by the Web Interface (see chapter 7.1). Users that intend to control dial-up lines need special rights (the *User can dial* option in the user account configurations section — see chapter 9.1).

7.6 HTTP Cache Administration

To view and/or remove objects contained in the HTTP cache go to the *Cache* tab. Open the *Cache content* page of the *WinRoute* Web Interface to view and/or delete objects in the HTTP cache. Only users that have rights to read the *WinRoute* configuration can open

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this page (either by inserting the URL directly or using the *Cache* link at the bottom of any Web interface page). To remove objects from the cache, full administration rights are required. To read detailed information about user access rights see chapter 9.1.

Note: For information on defining HTTP parameters see chapter 4.6.

Cache content

Firewall name/address: **gw**

Cache info	
Size	Disc: 1024 MB Memory: 512 kB
Used	870.95 MB (85.05%)
more information	

Dump list of cache content based on wildmatched URL

URL :

Enter file URL without http://, ie. *www.yahoo.com/* or *www.kerio.com/image/menu.gif*. You can also use wildcards, ie. **yahoo** or **.mpg**.

Click on the *more information* link to view tables including the following features:

- Number of saved files, total size of all files and average file size
- File size distribution table (by 1 KB)
- Number of objects found or not found in the cache
- Information on cache maintenance (number of upkeeps, time since the last upkeep and its duration)

Use the *URL:* textfield with the *Dump* button to search for objects matching the appropriate URL. Located objects are displayed in a table (up to 100 entries). Each entry contains an object's size, time-to-live (TTL) in hours and the *Delete* button to remove the object from the cache if needed.

All objects matching the appropriate URL can be removed from the cache using the *Delete all* button (not only the entries displayed in the table, if more than 100 entries match the specified URL).

TIP: All entries can be removed from the cache by inserting only an asterisk (*) into the *URL:* textfield and using the *Delete all* button.

Chapter 8

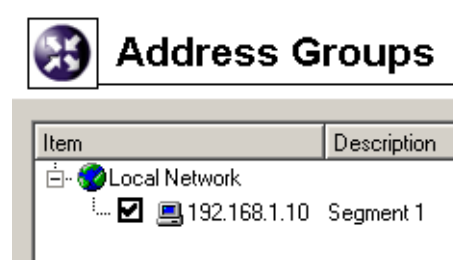
Definitions

8.1 Address Groups

Address groups allow the administrator to easily define restricted access to certain services, such as remote administration. Each group will be given a name during configuration. Groups can include combinations of IP addresses, IP ranges, IP subnets or even other groups.

Adding or Editing Address Groups

You can define the Address groups in *Configuration / Definitions / Address Groups*.



By clicking on the *Add* button you can add a new group or an item to a group. The *Edit* button opens a dialog for editing and the *Remove* button removes the group or the item selected.

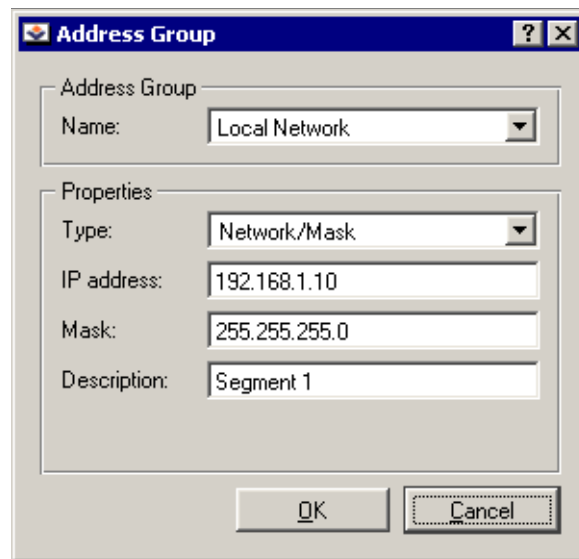
By clicking on the *Add* button a dialog for adding a new address group is displayed.

Name Name of the group. Add a new name to create a new group. Insert the group name to add a new item to an existent group.

Type Defines the type of the new item. There are several options: one IP address (*Host*), range of the IP addresses (*Network / Range*), subnet with appropriate mask (*Network / Mask*) or another address group (*Address Group*). This also means that you can include one group into another.

IP Address and Mask Parameters of the new item (related to the selected type).

Description Description of the address group. Comments for the administrator.



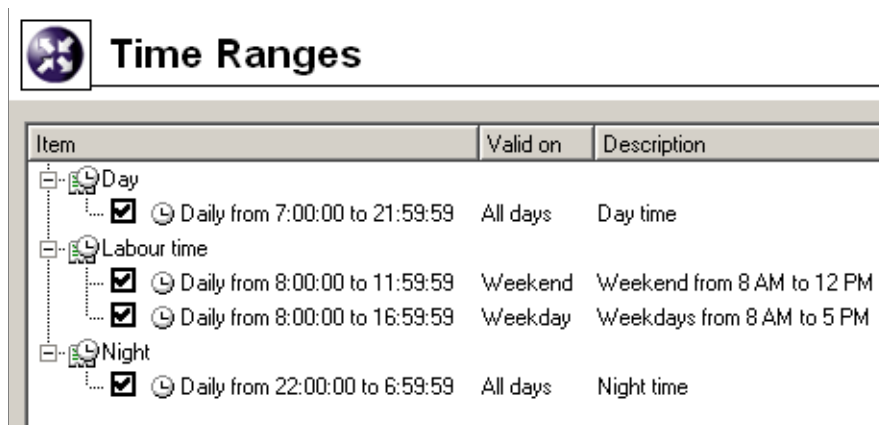
Note: Each IP group must include at least one item. Groups with no item will be removed automatically.

8.2 Time Ranges

Time ranges in *WinRoute* are closely related to traffic policy rules (see chapter 5). *WinRoute* allows the administrator to set a time period where each rule will be applied. These time ranges are actually groups that can consist of any number of various intervals and single actions.

Using time ranges you can also set dial-up parameters — see chapter 4.1.

To define time ranges go to *Configuration / Definitions / Time Ranges*.



Time Range Types and Validity

Three types of time intervals can be used to define time ranges:

Absolute The time interval is defined with the initial and expiration date and it is not repeated

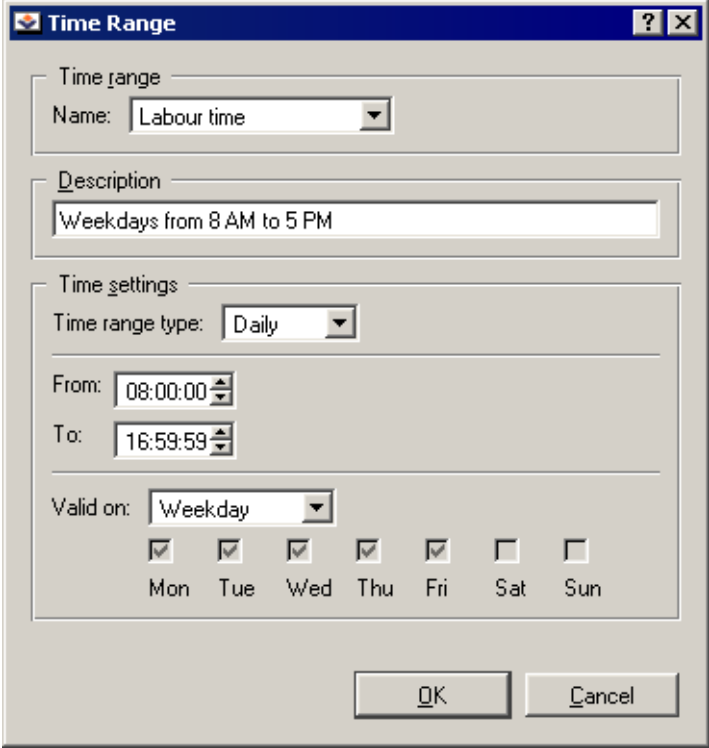
Weekly This interval is repeated weekly (according to the day schedule)

Daily It is repeated daily (according to the hour schedule)

Time Ranges Definition

You can create, edit or remove time ranges in *Configurations / Definitions / Time Ranges*.

Click on the *Add* button to open a dialog for time ranges definition:



The image shows a 'Time Range' dialog box with the following fields and controls:

- Name:** A dropdown menu currently showing 'Labour time'.
- Description:** A text box containing 'Weekdays from 8 AM to 5 PM'.
- Time settings:**
 - Time range type:** A dropdown menu currently showing 'Daily'.
 - From:** A time picker showing '08:00:00'.
 - To:** A time picker showing '16:59:59'.
 - Valid on:** A dropdown menu currently showing 'Weekday'.
 - Days:** A row of checkboxes for 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat', and 'Sun'. 'Mon' through 'Fri' are checked, while 'Sat' and 'Sun' are unchecked.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

Name Unique name (identification) of a time range. Insert a new name to create a new time range. Insert the name of an existent time range to add a new item to this range.

Description Time ranges description, for the administrator only

Chapter 8 Definitions

Time range type Time range type: *Daily*, *Weekly* or *Absolute*. The last type refers to the user defined initial and terminal date.

From / To This function helps to define the beginning and end of a time interval. Beginning and end hours, days or dates can be defined according to the selected time range type

Valid at days Defines days when the interval will be valid. You can either select particular weekdays (*Selected days*) or use one of the predefined options (*All Days*, *Weekday* — from Monday to Friday, *Weekend* — Saturday and Sunday).

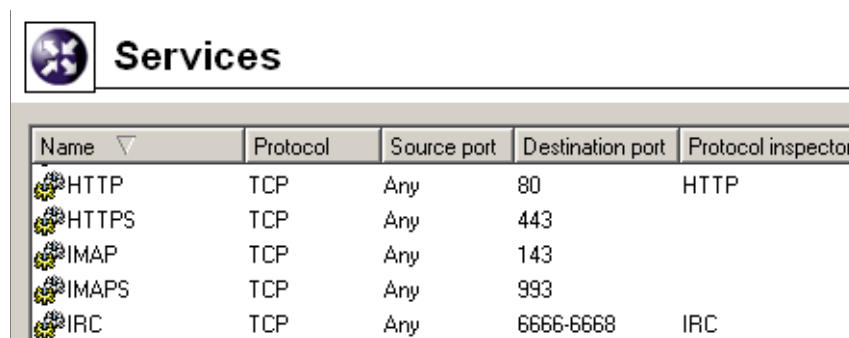
Notes:

1. each time range must contain at least one item. Time ranges with no item will be removed automatically.
2. It is not possible to include one time range into another.

8.3 Services

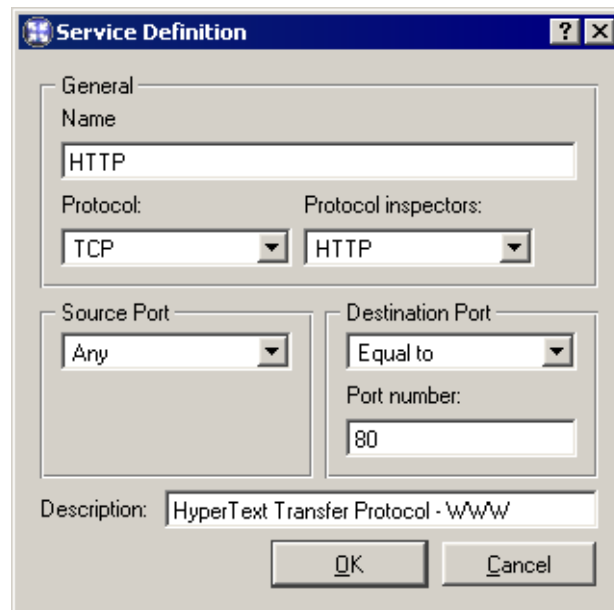
WinRoute services enable the administrator to define communication rules easily (by permitting or denying access to the Internet from the local network or by allowing access to the local network from the Internet). Services are defined by a communication protocol and by a port number (e.g. the *HTTP* service uses the *TCP* protocol with the port number 80). You can also match so-called protocol inspector with certain service types (for details see below).

Services can be defined in *Configurations / Definitions / Services*. Some standard services, such as *HTTP*, *FTP*, *DNS* etc., are already predefined in the default *WinRoute* installation.



Name ▾	Protocol	Source port	Destination port	Protocol inspector
HTTP	TCP	Any	80	HTTP
HTTPS	TCP	Any	443	
IMAP	TCP	Any	143	
IMAPS	TCP	Any	993	
IRC	TCP	Any	6666-6668	IRC

Clicking on the *Add* or the *Edit* button will open a dialog for service definition.

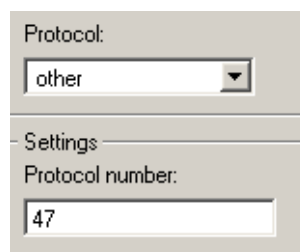


Name Service identification within *WinRoute*. It is strongly recommended to use a concise name to keep the program easy to follow.

Protocol The communication protocol used by the service.

Most standard services use the *TCP* or the *UDP* protocol, or both when they can be defined as one service with the *TCP/UDP* option.

The option *other* enables the administrator to specify a protocol using the number contained in its IP packet header. Any protocol carried in IP (e.g. GRE — protocol number is 47) can be defined this way.



Protocol Inspector *WinRoute* protocol inspector (see below) that will be used for this service.

Warning: Each inspector should be used for the appropriate service only.

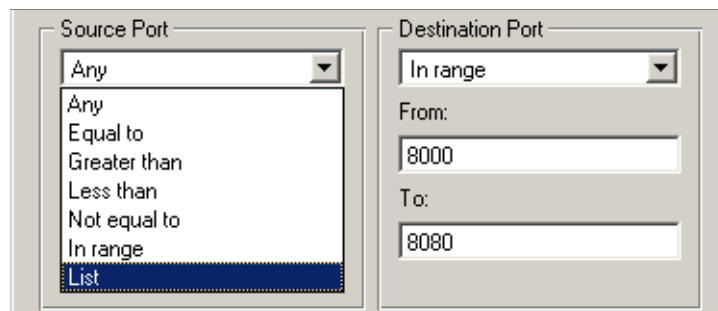
Source Port and Destination Port If the *TCP* or *UDP* communication protocol is used, the service is defined with its port number. In case of standard client-server types,

Chapter 8 Definitions

a server is listening for connections on a particular port (the number relates to the service), whereas clients do not know their port in advance (port are assigned to clients during connection attempts). This means that source ports are usually not specified, while destination ports are usually known in case of standard services.

Note: Specification of the source port may be important, for example during the definition of communication filter rules. For more information go to chapter 5.2.

Source and destination ports can be specified as:



- *Any* — all the ports available (1-65535)
- *Equal to* — a particular port (e.g.80)
- *Greater than*, *Less than* — all ports with a number that is either greater or less than the number defined
- *Not equal to* — all ports that are not equal to the one defined
- *In range* — all ports that fit to the range defined (including the initial and the terminal ones)
- *List* — list of the ports divided by commas (e.g. 80 , 8000 , 8080)

Description Comments for the service defined. It is strongly recommended describing each definition, especially with non-standard services so that there will be minimum confusion when referring to the service at a later time.

Protocol Inspectors

WinRoute includes special plug-ins that monitor all traffic using application protocols, such as HTTP, FTP or others. The modules can be used to modify (filter) the communica-

tion or adapt the firewall's behavior according to the protocol type. Benefits of protocol inspectors can be better understood through the two following examples:

1. *HTTP protocol inspector* monitors traffic between clients (browsers) and Web servers. It can be used to block connections to particular pages or downloads of particular objects (i.e. images, pop-ups, etc.).
2. With active FTP, the server opens a data connection to the client. Under certain conditions this connection type cannot be made through firewalls, therefore FTP can only be used in passive mode. The *FTP protocol inspector* distinguishes that the FTP is active, opens the appropriate port and redirects the connection to the appropriate client in the local network. Due to this fact, users in the local network are not limited by the firewall and they can use both FTP modes (active/passive).

A protocol inspector is active if it is included in a service that is used in a traffic rule. If a rule for any service is defined, all *WinRoute's* protocol inspectors that meet this rule will be activated automatically.

Note: Protocol inspectors recognize application protocols through transport layer protocols (TCP or UDP) and the number of the port that is used by the appropriate service. If a service is running at a non-standard port (i.e. *HTTP* on port number 8080), the protocol inspector will not be used. In this case you could create a custom service for port 8080 which uses the *HTTP* protocol inspector.

8.4 URL Groups

URL Groups enable the administrator to define HTTP rules easily (see chapter 6.1). For example, to disable access to a group of Web pages, you can simply define a URL group and assign permissions to the URL group, rather than defining permissions to each individual URL rule.

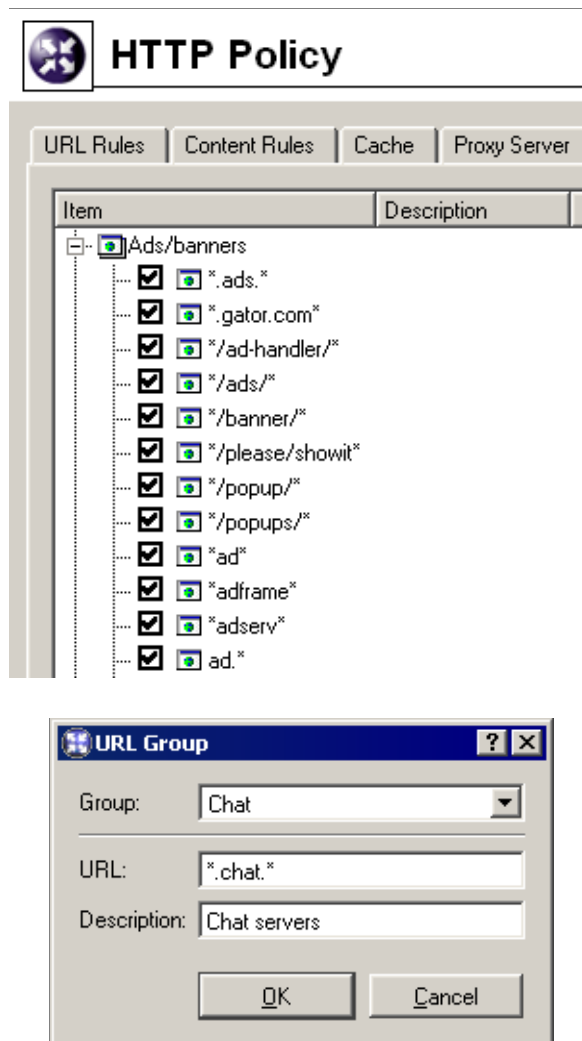
URL groups can be defined in the *Configuration / Definitions / URL Groups* section.

Tick or untick matching fields next to each URL to enable or disable the appropriate URL. This way you can deactivate URLs with no need to remove them and to define them again.

Note: The default *WinRoute* installation already includes a predefined URL group:

- *Ads/Banners* common URLs of pages that contain advertisements, banners, etc.

Click on the *Add* button to display a dialog where a new group can be created or a new URL can be added to existing groups.



Group Name of the group to which the URL will be added. This option enables the administrator to:

- select a group to which the URL will be added
- add a name to create a new group to which the URL will be included.

URL The URL that will be added to the group.

- full address of a server, a document or a webpage without protocol specification (http://)
- use substrings with the special * and ? characters. An asterisk stands for any number of characters, a question-mark represents one character.

Examples:

- `www.kerio.cz/index.html` — a particular page
- `www.*` — all URL addresses starting with `www.` `www.*`
- `www.kerio.com` — all URLs at the `www.kerio.com` server (this string is equal to the `www.kerio.com/*` string)
- `*sex*` — all URL addresses containing the `sex` string
- `*sex??.cz*` — all URL addresses containing such strings as `sexxx.cz`, `sex99.cz`, etc.

Description The URL description (comments and notes for the administrator).

Chapter 9

User Accounts and Groups

9.1 User Accounts

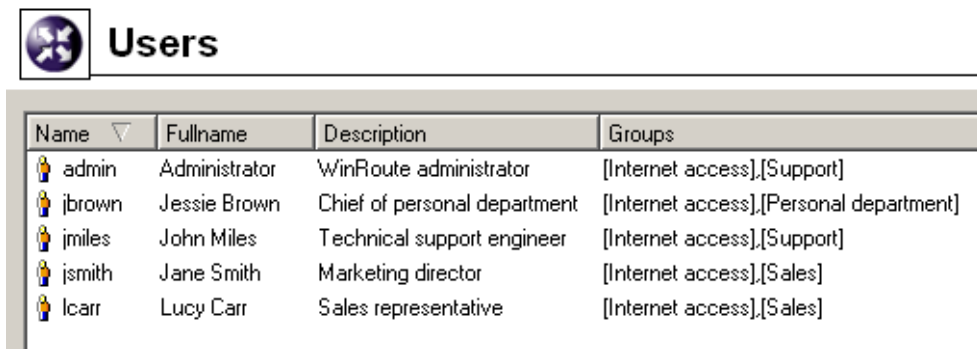
User accounts in *WinRoute* improve control of user access to the Internet from the local network. User accounts can be also used to access the *WinRoute* administration using the *Kerio Administration Console*. A basic administrator account is created during the *WinRoute* installation process. This account has full rights for *WinRoute* administration. It can be removed if there is at least one other account with full administration rights.

Note: If you have lost access to the *WinRoute* administration contact Kerio technical support.

- 1.
- 2.

Creating a New User Account

New user accounts can be defined in *Users and Groups / Users*.

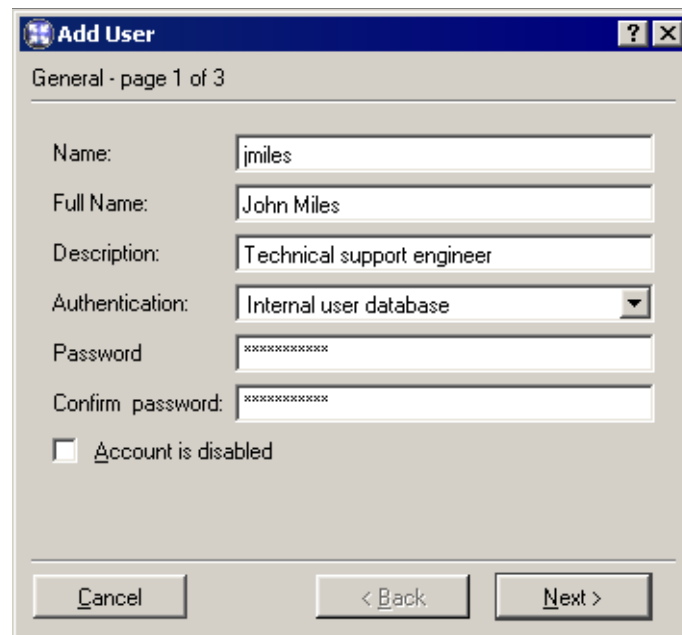


Name ▾	Fullname	Description	Groups
 admin	Administrator	WinRoute administrator	[Internet access],[Support]
 jbrown	Jessie Brown	Chief of personal department	[Internet access],[Personal department]
 jmiles	John Miles	Technical support engineer	[Internet access],[Support]
 jsmith	Jane Smith	Marketing director	[Internet access],[Sales]
 lcarr	Lucy Carr	Sales representative	[Internet access],[Sales]

Use the *Add* button to open a dialog where new user accounts can be defined.

Step 1 — basic information:

Chapter 9 User Accounts and Groups



The screenshot shows a Windows-style dialog box titled "Add User" with a standard icon and window controls. Below the title bar, it says "General - page 1 of 3". The main area contains several labeled text boxes and a dropdown menu. The "Name" field contains "j miles", "Full Name" contains "John Miles", "Description" contains "Technical support engineer", and "Authentication" is a dropdown menu currently showing "Internal user database". Below these are two password fields, both containing a series of asterisks to mask the text. At the bottom left of the main area is a checkbox labeled "Account is disabled" which is currently unchecked. At the very bottom of the dialog are three buttons: "Cancel", "< Back", and "Next >".

Name Username used to log into the program. Usernames are not case-sensitive.

Warning: We recommend not to use special characters (non-English languages) which might cause problems when authenticating via the Web interface.

Full name Full name of the user (usually first name and surname of the user)

Description More information about the user (e.g. grade, position within the company, etc.)

The *Full Name* and the *Description* items have informative values only. Any type of information can be included or the field can be left empty.

Authentication User authentication (see below)

Account is disabled Suspension of a user account without removing it.

Authentication options:

Internal User Database User account information is stored locally to *WinRoute*. Passwords can be later edited using the Web interface — see chapter 7). NTLM authentication cannot be used for this authentication method.

Warning: Passwords can include printable characters only (letters, digits, punctuation) and are case-sensitive. We recommend not to use special characters (non-English languages) which might cause problems when authenticating to the Web interface.

Windows NT Domain Users are authenticated in Windows NT Domain.

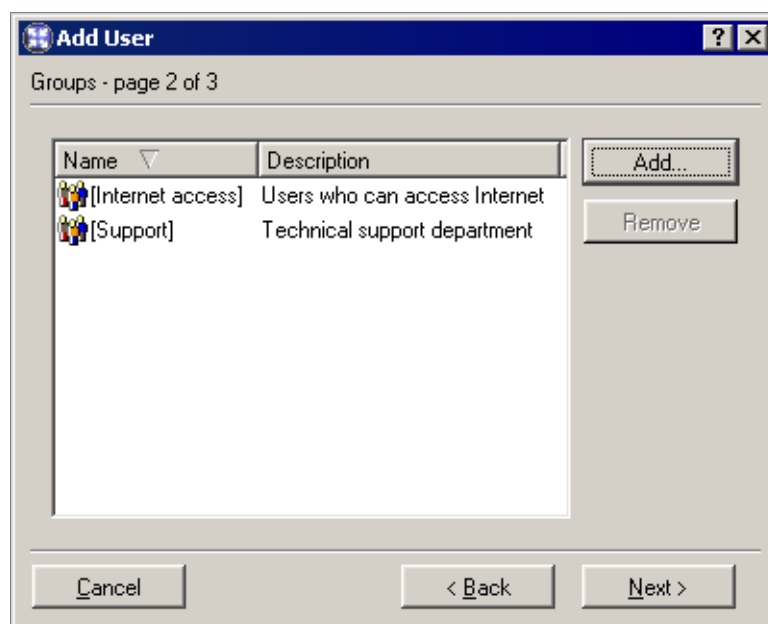
9.1 User Accounts

This method of authentication cannot be used unless *WinRoute* is running on Windows NT 4.0 / 2000 / XP operating systems.

Kerberos 5 User authentication performed by Kerberos 5 authentication system. Windows 2000 domain (Active Directory) uses this authentication method.

Note: To set NT domain and/or Kerberos 5 realm go to *Configuration / Advanced Options / User Authentication*. For details refer to chapter 7.2.

Step 2 — groups:



Groups into which the user will be included can be added or removed with the *Add* or the *Remove* button within this dialog (to create new groups go to *Domain Settings / Groups* — see chapter 9.2). Follow the same guidelines to add users to groups during group definition. It is not important whether groups or users are defined first.

Tip: While adding new groups you can mark more than one group by holding either the *Ctrl* or the *Shift* key.

Step 3 — access rights:

Each user must have one of the three types of access rights.

No access to administration The user has no rights to access the *WinRoute* administration. This setting is commonly used for the majority of users.

Read only access to administration The user can access *WinRoute*. He or she can read records and settings but cannot edit them.



Full access to administration The user can read or edit all the records and settings and his or her rights are equal to the administrator rights (Admin). If there is at least one user with the full access to the administration, the default Admin account can be removed.

Advanced options:

User can override WWW content rules User can customize personal Web content filtering settings independently of the global configuration (for details see chapters 6.2 and 7.3).

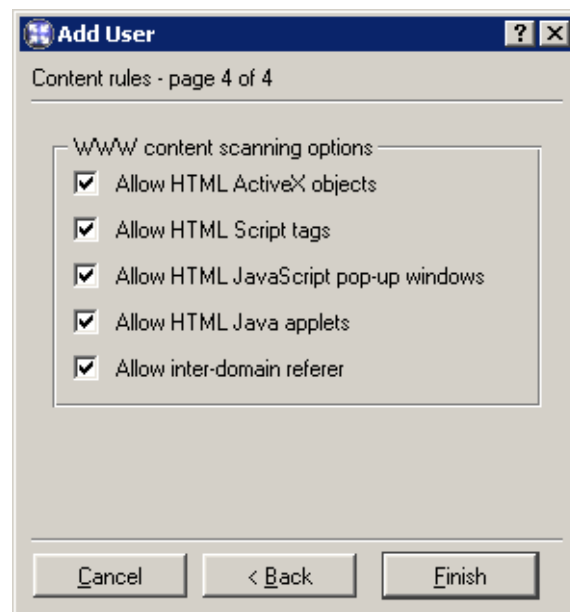
User can dial User can disconnect or connect to dial lines defined with *Kerio Administration Console* or Web administrator interface (— see chapter 7) in *WinRoute*.

User can unlock URL rules User will be allowed to unlock Web pages with forbidden content.

Step 4 — content rules

Within this step special content filter rules settings for individual users can be defined. Global rules (defined in the *Content Rules* tab in the *Configuration / Content Filtering / HTTP Policy* section) are used as default (when a new user account is defined). For details see chapter 6.2).

Note: Users who are allowed to “override content rules” can customize their settings through *Kerio WinRoute Firewall’s* Web interface (read more in chapter 7.3).



User Account Editing and Displaying Statistics

The *Edit* button opens a dialog for editing user account parameters. This dialog has all the properties of the Add User dialog window described above. All the setting options are included in one window only.

User Accounts Import

User accounts can be either defined manually or imported from other sources by clicking on the *Import* button. Click on *Import users from* to choose a source from which accounts will be imported. The sources are as follows:

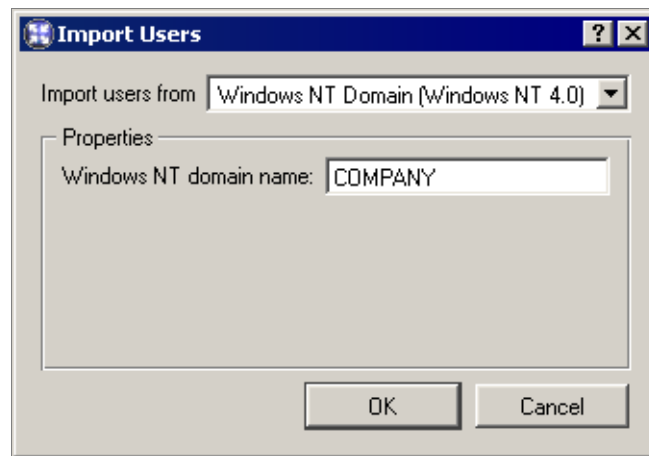
NT Domain (Windows NT 4.0) There is only one parameter to be specified — *Windows NT domain name*. The *WinRoute* host must belong to this domain.

Warning: Do not use this function to import users if the domain server is running under Windows 2000! In this case use the *Active Directory* as a source (see below).

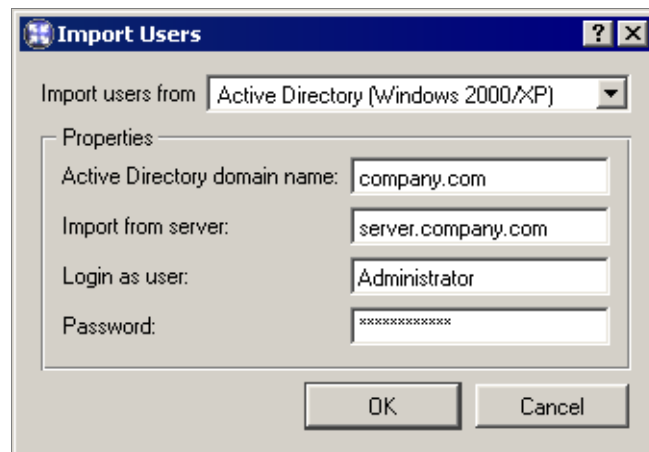
Active Directory (Windows 2000) To import users from *Microsoft Active Directory* the following data must be specified:

- *Active Directory domain name* — name of the domain from which user accounts will be imported (e.g. `domain.com`).
- *Import from server* — name of the domain server (e.g. `server.domain.com`)

Chapter 9 User Accounts and Groups

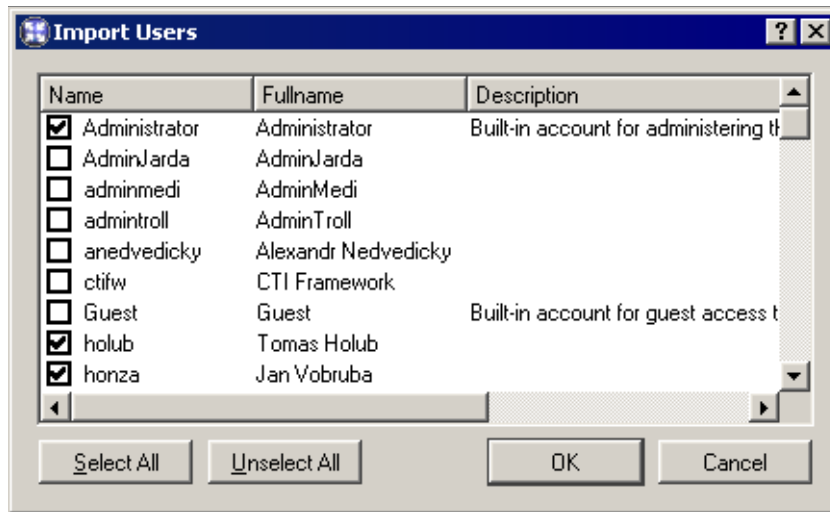


- *Login as user, Password* — name and password of the user with an account in this domain. No special user rights are required.



If all the requirements are met (the information is correct, the server is available, etc.), clicking on the *OK* button will display a user list. Select the names of the users which are to be imported into *WinRoute*.

User accounts will authenticate according to their source. This means that accounts imported from an NT domain will be authenticated by *Windows NT Domain* and user accounts imported from *Active Directory* by *Kerberos 5* (The *Kerberos 5* authentication system is used in *Active Directory*).

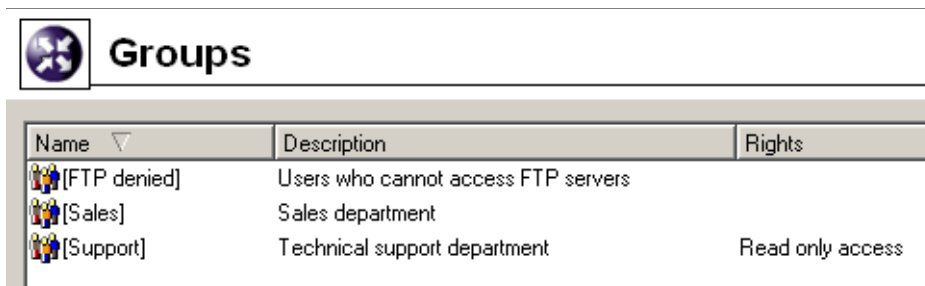


9.2 User Groups

User accounts can be sorted into groups. Creating user groups provides the following benefits:

- Specific access rights can be defined for a user group. These rights complement rights of each user.
- Each group can be used when traffic and access rules are defined. This simplifies the definition process so that you will not need to define the same rule for each user.

User groups can be defined in *User and Groups / Groups*.

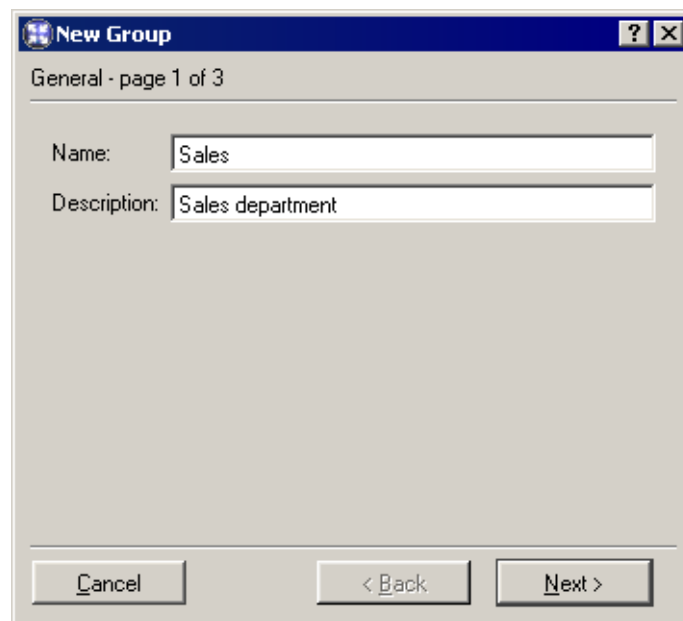


Creating a New User Group

Clicking on the *Add* button will open a dialog where new user groups can be created.

Step 1 — group name and description:

Chapter 9 User Accounts and Groups



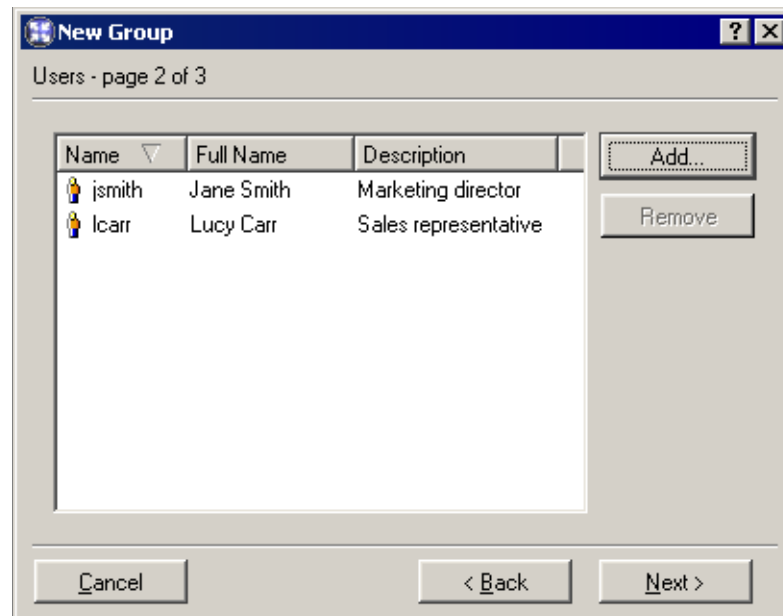
The 'New Group' dialog box is shown on the 'General' tab, page 1 of 3. It contains two text input fields: 'Name' with the value 'Sales' and 'Description' with the value 'Sales department'. At the bottom, there are three buttons: 'Cancel', '< Back', and 'Next >'.

Field	Value
Name	Sales
Description	Sales department

Name Group name (group identification).

Description Group description. It has an informative purpose only and may contain any information or the field can be left empty.

Step 2 — group members



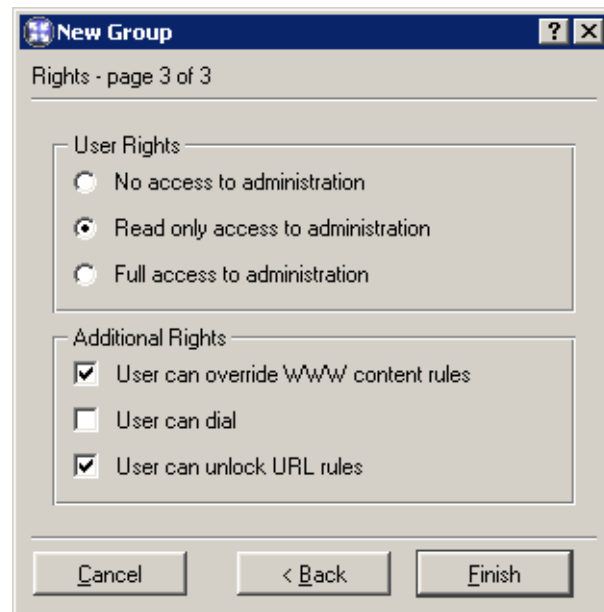
The 'New Group' dialog box is shown on the 'Users' tab, page 2 of 3. It displays a list of users with columns for Name, Full Name, and Description. There are 'Add...' and 'Remove' buttons on the right. At the bottom, there are three buttons: 'Cancel', '< Back', and 'Next >'.

Name	Full Name	Description
jsmith	Jane Smith	Marketing director
lcarr	Lucy Carr	Sales representative

Users can be added or removed from the group with the *Add/Remove* buttons. If user accounts have not been created yet, the group can be left empty and users can be added during the account definition (see chapter 9.1).

Tip: To select more than one user hold the *Ctrl* or the *Shift* key.

Step 3 — group access rights



Each group must have one of the following three types of access rights:

No access to administration Users included in this group cannot access the *WinRoute* administration.

Read only access to administration Users included in this group can access the *WinRoute* administration. However, they can only read the records and settings and they are not allowed to edit them.

Full access to administration Users included in this group have full access rights for the administration.

Advanced options:

User can override WWW content rules User belonging to the group can customize personal Web content filtering settings independently of the global configuration (for details see chapters 6.2 a 7.3).

Chapter 9 User Accounts and Groups

User can dial Users included in this group will be allowed to connect and hang up the dialup lines defined in *WinRoute* (with *Kerio Administration Console* or with WWW administration interface, see chapter 7).

User can unlock URL rules User will be allowed to unlock Web pages with forbidden content.

Group access rights are combined with user access rights. This means that current user rights are defined by actual rights of the user and by rights of all groups in which the user is included.

Advanced Settings

10.1 Remote Administration Settings

Remote administration can be either permitted or denied by definition of the appropriate traffic rule. Traffic between *WinRoute* and *Kerio Administration Console* is performed by TCP and UDP protocols over port 44333. The definition can be done with the predefined service *KWF Admin*.

How to allow remote administration from the Internet

In the following example we will demonstrate how to allow *WinRoute* remote administration from some Internet IP addresses.

- *Source* — group of IP addresses from which remote administration will be allowed.
For security reasons it is not recommended to allow remote administration from an arbitrary host within the Internet (this means: do not set *Source* as the Web interface).
- *Destination* — *Firewall* (host where *WinRoute* is running)
- *Service* — *KWF Admin* (predefined service— *WinRoute* administration)
- *Action* — *Permit*
- *Translation* — Because the engine is running on the firewall there is no need for translation.

☒	Remote administration		Remote administration		Firewall		KWF Admin	
-------------------------------------	-----------------------	---	-----------------------	---	----------	--	-----------	---

TIP: Remote administration of the other Kerio products can be permitted or denied in *WinRoute* following the same type of rule. Appropriate services are predefined in *WinRoute* (i.e. *KMS Admin*, *KNM Admin* etc.).

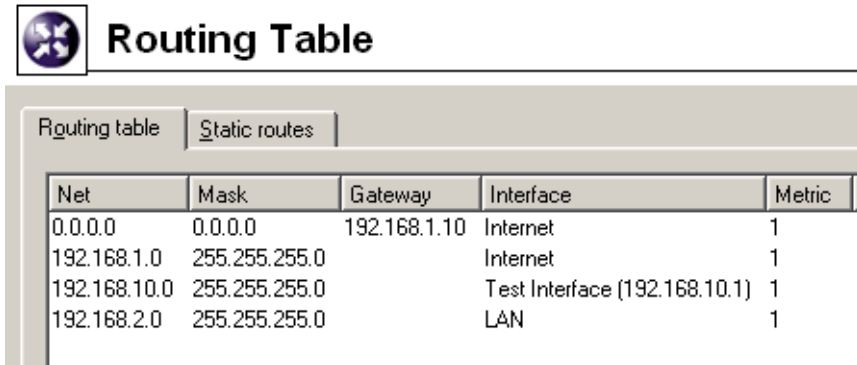
10.2 Routing Table

Using *Kerio Administration Console* you can view or edit the system routing table of the *WinRoute* host. This can be useful especially to resolve routing problems remotely (it is not necessary to use applications for terminal access, remote desktop, etc.).

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To view or modify the routing table go to *Configuration / Routing Table*. This section is divided into two tabs:

- *Routing Table* — current routing table of the operating system (including so called persistent routes under Windows 2000 and Windows XP operating systems).

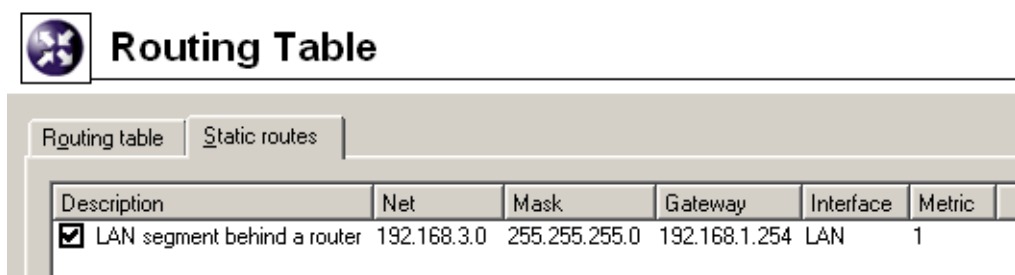


The image shows a dialog box titled "Routing Table" with a network icon. It has two tabs: "Routing table" (selected) and "Static routes". The "Routing table" tab contains a table with the following data:

Net	Mask	Gateway	Interface	Metric
0.0.0.0	0.0.0.0	192.168.1.10	Internet	1
192.168.1.0	255.255.255.0		Internet	1
192.168.10.0	255.255.255.0		Test Interface (192.168.10.1)	1
192.168.2.0	255.255.255.0		LAN	1

You can also add or remove dynamic routes. New dynamic routes are valid only until the operating system restart or unless removed using the `route` system command.

- *Static Routes* — persistent routes refreshed by *WinRoute* even after restart of the operating system.



The image shows a dialog box titled "Routing Table" with a network icon. It has two tabs: "Routing table" and "Static routes" (selected). The "Static routes" tab contains a table with the following data:

Description	Net	Mask	Gateway	Interface	Metric
☒ LAN segment behind a router	192.168.3.0	255.255.255.0	192.168.1.254	LAN	1

WinRoute contains a special mechanism that is used to generate and maintain static routes in the routing table. All routes defined in the *Static Routes* folder are stored in the configuration file and inserted into the system routing table after each startup of *WinRoute Firewall Engine*. These routes are monitored while *WinRoute* is running — if any of the routes are removed with the `route` command, it will be automatically reinserted by *WinRoute*.

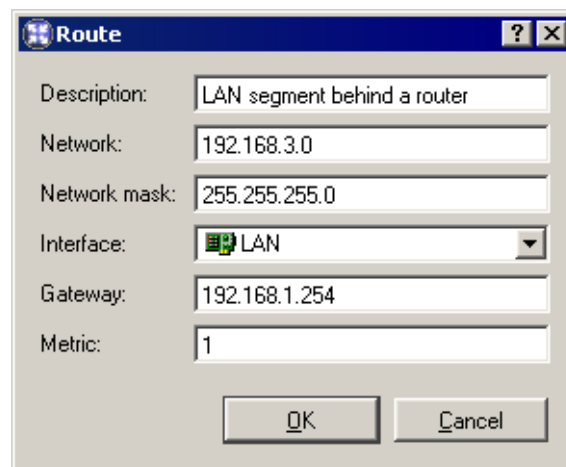
Note: Persistent routes are not used for implementation of static routes as this function is not available on all operating systems.

Note: If you use a dial-up connection, then packets routed via this route dial a line (for more information refer to chapter 10.3).

Warning: Changes in the routing table might interrupt the connection between the *Win-Route Firewall Engine* and the *Kerio Administration Console*. Therefore, only experienced users with knowledge of IP routing should use this feature.

Definitions of Dynamic and Static Rules

Click on the *Add* (or *Edit* when a particular route is selected) button to display a dialog for route definition.

A screenshot of a Windows-style dialog box titled "Route". It contains several input fields: "Description:" with the text "LAN segment behind a router", "Network:" with "192.168.3.0", "Network mask:" with "255.255.255.0", "Interface:" with a dropdown menu showing "LAN" and a small icon, "Gateway:" with "192.168.1.254", and "Metric:" with "1". At the bottom are "OK" and "Cancel" buttons.

Description Comment about the route. This item is available in the *Static Routes* folder only.

Network, Mask IP address and mask of the destination network.

Interface Selection of an interface through which the specific packet should be forwarded.

Gateway IP address of the gateway (router) which can route to the destination network. The IP address of the gateway must be in the same IP subnet as the selected interface.

Metric "Distance" of the destination network. The number stands for the number of routers that a packet must pass through to reach the destination network.

Metric is used to find the best route to the desired network. The lower the metric value, the "shorter" the route is.

Note: Metric in the routing table may differ from the real network topology. It may be modified according to the priority of each line, etc.

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Removing routes from the Routing Table

The following rules are used for route removal:

- Routes in the *Static Routes* folder are managed by *WinRoute*. Removal of any of the routes within this folder would remove the route from the system routing table immediately and permanently (after clicking on the *Apply* button).
- Manually defined dynamic routes will be removed regardless of how they were added, whether in *Kerio Administration Console* or using the route command.
- Persistent routes will be removed from the routing table only after restart of the operating system. It will be automatically refreshed upon reboot. There are many methods that can be used to create persistent routes (the methods vary according to operating system — in some systems, the route `-p` command can be used, etc.).

10.3 Demand Dial

If the *WinRoute* host is connected to the Internet via dial-up, *WinRoute* can automatically dial the connection when users attempt to access the Internet. *WinRoute* provides the following options of dialing/hanging control:

- Line is dialed when a request from the local network is received. This function is called Demand dial. For further description see below.
- Line is disconnected automatically if idle for a certain period (no data is transmitted in both directions). For a description of the automatic disconnection, refer to chapter 4.1.

How demand dial works

First, the function of demand dial must be activated within the appropriate line (either permanently or during a defined time period). This may be defined in *Configuration / Interfaces* (for details see chapter 4.1).

Second, there must be no default gateway in the operating system (no default gateway must be defined for any network adapter).

If *WinRoute* receives a packet from the local network, it will compare it with the system routing table. If no default route is available, *WinRoute* holds the packet in the cache and dials the appropriate line if the demand dial function is enabled. This creates an outgoing route in the routing table via which the packet will be sent.

The line may be either disconnected manually or automatically if idle for a certain time period.

Notes:

1. To ensure correct functionality of demand dialing there must be no default gateway set at network adapters. If there is a default gateway at any interface, packets to the Internet would be routed via this interface (no matter where it is actually connected to) and *WinRoute* would not dial the line.
2. If multiple demand dial RAS lines are defined in *WinRoute*, the one that was defined first will be used. *WinRoute* does not enable automatic selection of a line to be dialed.
3. Lines can be also dialed if this is defined by a static route in the routing table (refer to chapter 10.2). If a static route via the dial-up is defined, the packet matching this route will dial the line. This line will not be used as the default route — the *Use default gateway on remote network* option in the dial-up definition will be ignored.
4. According to the factors that affect total time since receiving the request until the line is dialed (i.e. line speed, time needed to dial the line, etc.) the client might consider the destination server unavailable (if the timeout expires) before a successful connection attempt. However, *WinRoute* always finishes dial attempts. In such cases, simply repeat the request, i.e. with the *Refresh* button in your browser.

Technical Peculiarities and Limitations

Demand dialing has its peculiarities and limitations. The limitations should be considered especially within designing and configuration of the network that will use *WinRoute* for connection and of the dial-up connected to the Internet.

1. Demand dial cannot be performed directly from the host where *WinRoute* is installed because it is initiated by *WinRoute* low-level driver. This driver holds packets and decides whether the line should be dialed or not. If the line is disconnected and a packet is sent from the local host to the Internet, the packet will be dropped by the operating system before the *WinRoute* driver is able to capture it.
2. Typically the server is represented by the DNS name within traffic between clients and an Internet server. Therefore, the first packet sent by a client is represented by the DNS query that is intended to resolve a host name to an IP address.

In this example, the DNS server is the *WinRoute* host (this is very common) and the line to the Internet is disconnected. A client's request on this DNS server is traffic within the local network and, therefore, it will not result in dialing the line. If the

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DNS server does not have the appropriate entry in the cache, it must forward the request to another server on the Internet. The packet is forwarded to the Internet by the local DNS client that is run at the *WinRoute* host. This packet cannot be held and it will not cause dialing of the line. Therefore, the DNS request cannot be answered and the traffic cannot continue.

For these reasons, *WinRoute DNS Forwarder* enables automatic dialing (if the DNS server cannot respond to the request itself). This function is dependent on demand dial — if the demand dial function is disabled, the *DNS Forwarder* will not dial the line.

Note: If the DNS server is located on another host within the local network or clients within the local network use an Internet DNS server, then the limitation is irrelevant and the dialing will be available. If clients' DNS server is located on the Internet, the line will be dialed upon a client's DNS query. If a local DNS server is used, the line will be dialed upon a query sent by this server to the Internet (the default gateway of the host where the DNS server is running must be set to the IP address of the *WinRoute* host).

3. It can be easily understood through the last point that if the DNS server is to be running at the *WinRoute* host, it must be represented by *DNS Forwarder* because it can dial the line if necessary.

If there is a domain that is based on Active Directory in the Windows 2000 local network, Microsoft DNS server must be used as communication with Active Directory is performed according to special types of DNS requests. Microsoft DNS server does not support automatic dialing. Moreover, it cannot be used at the same host as *DNS Forwarder* as it would cause collision of ports.

As understood from the facts above, if the Internet connection is to be available via dial-up, *WinRoute* cannot be used at the same host where Windows 2000 server Active Directory and Microsoft DNS are running.

4. If *DNS Forwarder* is used, *WinRoute* can dial as a response to a client's request if the following conditions are met:
 - Destination server must be defined by DNS name so that the application can create a DNS query.
 - In the operating system, set the primary DNS server to the IP address of the firewall). In Windows operating system, go to TCP/IP properties and set the IP address of this interface as the primary DNS.
 - *DNS Forwarder* must be configured to forward requests to one of the defined DNS servers (the *Forward queries to the specified DNS server(s)* option). Automatic detection of DNS servers are not available. For details refer to chapter 4.3.

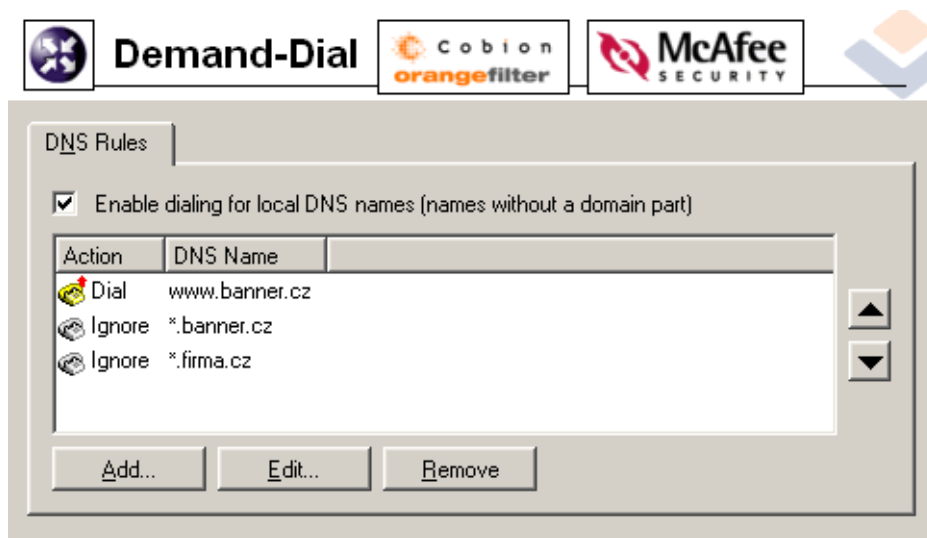
Setting Rules for Demand Dial

Demand dial functions may cause unintentional dialing. It's usually caused by DNS queries that are handled by the *DNS Forwarder*. The following causes apply:

- User host generates a DNS query in the absence of the user. This traffic attempt may be a banner from a local HTML page or automatic update of an installed application.
- *DNS Forwarder* performs dialing in response to requests of names of local hosts. Define DNS for the local domain properly (use the *hosts* system file of the *WinRoute* host — for details see chapter 4.3).

Note: In *WinRoute*, unwanted traffic may be blocked. However, for security reasons it is recommended to detect the root of the problem (i.e. use antivirus to secure the workstation, etc.).

In *Configuration / Demand Dial* within *Kerio Administration Console*, detailed rules for dialing certain DNS names may be defined.



In this section you can create a rule list of DNS names.

Either whole *DNS name* or only its end or beginning completed by an asterisk (*) may be entered. An asterisk may stand for any number of characters.

In *Actions* you can select from the *Dial* or *Ignore* options. Use the second option to block dialing of the line in response to a query on the DNS name.

Rule lists are searched downwards (rule order can be modified with the arrows at the right side of the window). When the system detects the first rule that meets all requirements, the desired action is executed and the search is stopped. All DNS names missing a suitable rule will be dialed automatically by *DNS Forwarder* when demanded.

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The *Dial* function can be used for creating advanced and more complex rules. For example, dial can be permitted for one name within the domain and denied for the others (see the figure).

Dial of local DNS names Local DNS names are names of hosts within the domain (names that do not include a domain).

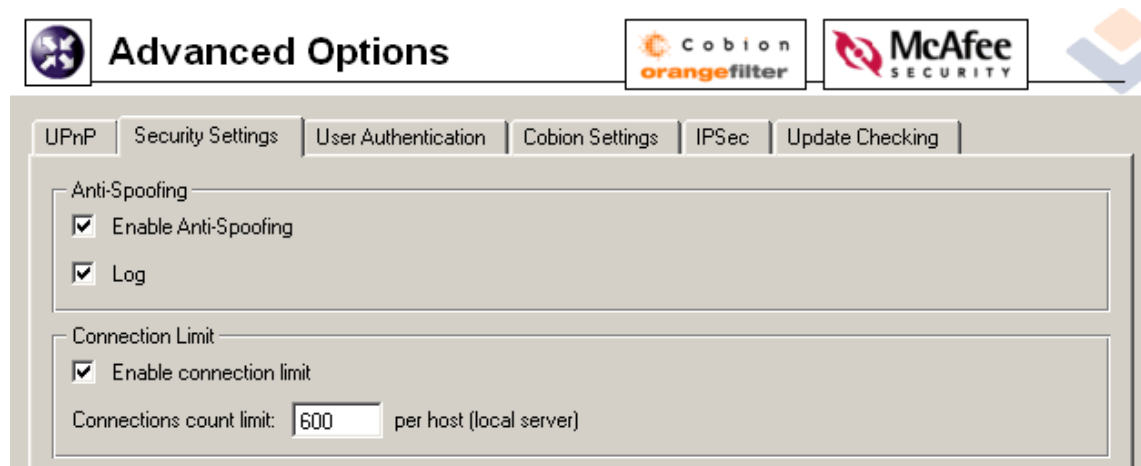
Example: The local domain is called `company.com`. The host is called `pc1`. The full name of the host is `pc1.company.com` whereas local name in this domain is `pc1`.

Local names are usually stored in the database of the local DNS server (in this example, the names are stored in the `hosts` file at the *WinRoute* host that uses *DNS Forwarder*). Set by default, *DNS Forwarder* does not dial these names as names are considered non-existent unless they can be found in the local DNS database.

If the primary server of the local domain is located outside of the local network, it is necessary that the *DNS Forwarder* also dials the line if requests come from these names. Activate the *Enable dialing for local DNS names* option in the *Other settings* tab to enable this (at the top of the *Demand Dial* dialog window).

10.4 Security Settings

WinRoute provides several security options which cannot be defined by traffic rules. These options can be set in the *Security settings* tab of the *Configuration / Advanced Options* section.



Anti-Spoofing

Spoofing is a process of translating the IP address of a given packet so that a firewall will believe the request came from a trusted source. Although the packet cannot be

10.5 Universal Plug-and-Play (UPnP)

routed back to the initial source, there is potential for unnecessary network congestion and possible denial of service. *WinRoute* is capable of monitoring traffic to verify that packets arriving on an interface do not have a source address which is associated with a network of an opposing interface. In other words, such traffic (although possible) is never justified and should therefore be discarded.

The *Anti-Spoofing* function can be configured in the *Anti-Spoofing* folder in *Configuration / Advanced Options*.

Enable Anti-Spoofing This option activates *Anti-Spoofing*.

Log If this option is on, all packets that have not passed the anti-spoofing rules will be logged in the *Security* log (for details see chapter 13.10).

Connections Count Limit

This function enables definition of limits for maximal number of connections per one local host. This function can be enabled/disabled and set through the *Security Settings* tab in *Configuration / Advanced Options*.

This function can be helpful especially for the following cases:

- Any service (e.g. WWW server) which is available from the Internet (allowed by traffic rules — see chapter 5) is running on a local host. Connection count limits protects internal server from flooding (*DoS* type attacks — *Denial of Service*).

In this case the limit is applied to the local server — sum of all connections of all connected clients must not exceed this limit.

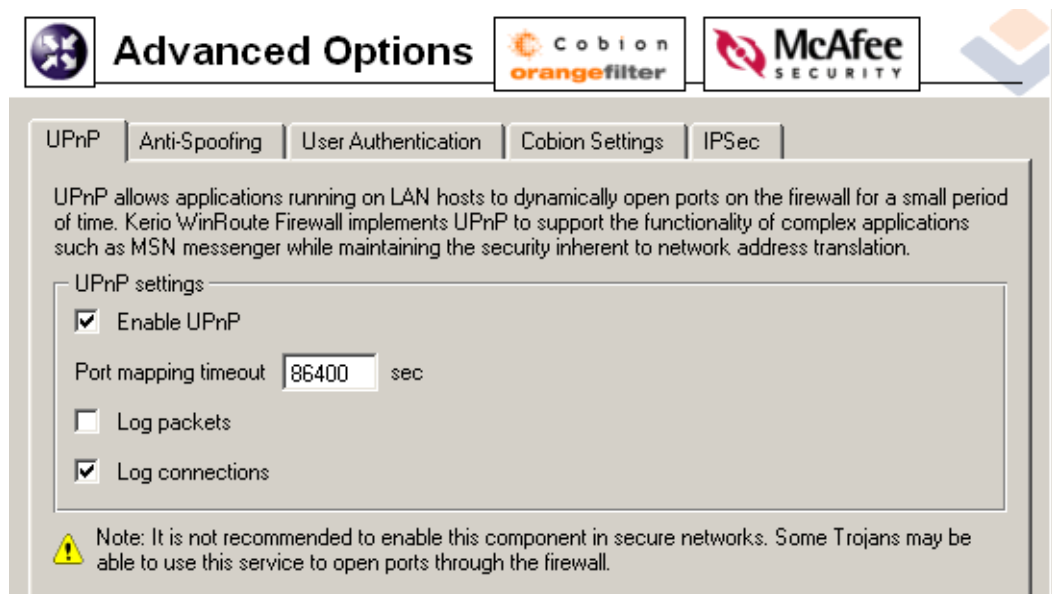
- Client computer (workstation) in the local network is attacked by a worm or a Trojan horse which is trying to establish connection to many servers. Connection count limits protects *WinRoute* host from flooding and it can reduce undesirable activities by worms and rojan horses.

In this case the limit is applied to a host (workstation) in the local network — sum of all connections established from this computer to individual servers in the Internet must not exceed the limit.

10.5 Universal Plug-and-Play (UPnP)

WinRoute supports UPnP protocol (*Universal Plug-and-Play*). This protocol enables client applications (i.e. *Microsoft Messenger*) to detect the firewall and make a request for mapping of appropriate ports for the particular host. This mapping is temporary.

To configure UPnP go to the *UPnP* folder in *Configuration / Advanced Options*.



Enable UPnP This option enables UPnP.

Warning: If *WinRoute* is running on the Windows XP operating system, check whether the following system services are not running before you start the *UPnP* function:

- *SSDP Discovery Service*
- *Universal Plug and Play Device Host*

If any of these services is running, close it and deny its automatic startup.

In *WinRoute* these services cannot be used together with *UPnP*.

Port mapping timeout For security reasons, ports required by applications are mapped for a certain time period only. Mapping is closed automatically on demand of the application or when the timeout (in seconds) expires.

UPnP also enables the application to open ports for a requested period. Here the *Port mapping timeout* parameter also represents a maximal time period that the port will be available to an application (even if the application demands a longer period, the period is automatically reduced to this value).

Log packets If this option is enabled, all packets passing through ports mapped with UPnP will be recorded in the *Security* log (see chapter 13.10).

Log connections If this option is enabled, all connections passing through ports mapped with UPnP will be recorded in the *Connection* log (see chapter 13.4).

Warning: Apart from the fact that UPnP is a useful feature, it may also endanger network security, especially in case of networks with many users where the firewall could be controlled by too many users. A *WinRoute* administrator should consider carefully whether to prefer security or functionality of applications that require UPnP.

Using traffic policy (see chapter 5.2) you can limit usage of UPnP and enable it to certain IP addresses or certain users only.

Example:

☒ UPnP for allowed addresses	 UPnP allowed	 Firewall	 UDP 1900  TCP 2168	✓
☒ Deny UPnP	 Any	 Firewall	 UDP 1900  TCP 2168	✗

The first rule allows UPnP only from *UPnP Clients* IP group. The second rule denies UPnP from other hosts (IP addresses).

10.6 VPN using IPSec Protocol

IPsec (IP Security Protocol) is an extended IP protocol. It provides encrypted security services. These services enable authentication, as well as for access and trustworthiness control. IPsec provides similar services as SSL, but it works on a network layer. Through IPsec you can create encrypted tunnels (VPN) or encrypt traffic between two hosts.

WinRoute includes so called *IPSec* pass-through. This implies that *WinRoute* does not include tools for establishing of *IPSec* connection (tunnel), however, it is able to detect *IPSec* protocol and enable it for traffic between the local network and the Internet.

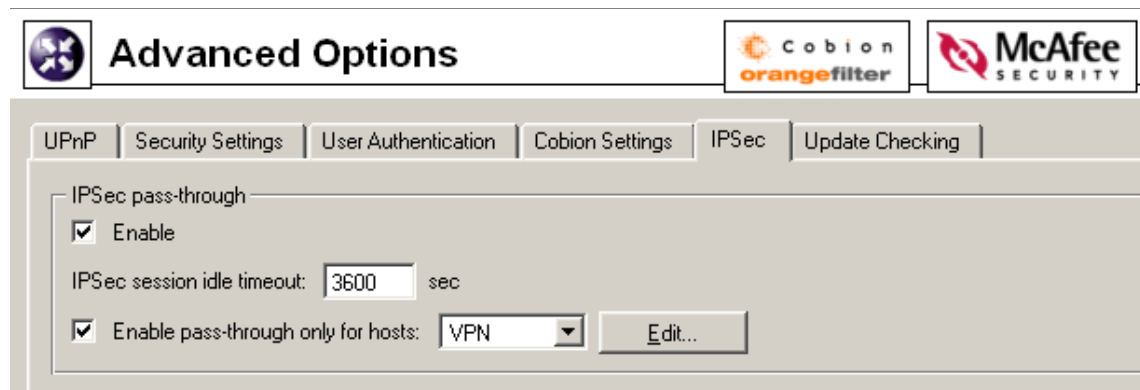
IPSec preferences

IPSec preferences can be set in the *IPSec* tab of the *Configuration / Advanced Options* section. For detailed information on IPsec use refer to chapter *Konfigurace WinRoute pro IPSec*.

Enable This option enables *IPSec* pass-through.

It is necessary to set idle timeout for *IPSec* connections (default time is 3600 seconds which is exactly 1 hour). If no data is transferred for this time and connection is not closed properly, *WinRoute* will consider the connection closed and the pass-through is available to another computer (another IP address).

Chapter 10 Advanced Settings



Enable pass-through only for hosts It is possible to narrow number of hosts using *IPsec* pass-through by defining a certain scope of IP addresses (typically hosts on which *IPsec* client will be run). Use the *Edit* button to edit a selected IP group or to add a new one.

WinRoute's *IPsec* configuration

Generally, communication through *IPsec* must be permitted by firewall policy (for details refer to chapter 5.2). *IPsec* protocol uses two traffic channels:

- *IKE* (*Internet Key Exchange* — exchange of encryption keys and other information).
- encrypted data (*IP* protocol number 50 is used)

For definition of traffic rules, define corresponding services in the *Configuration / Definition / Services* section first.

Open the *Configuration / Traffic Policy* section to define a rule which will permit communication between *IPsec* clients (VPN address group is described in the example) and *IPsec* server for the services (`ipsec.server.cz` server is described in the example).

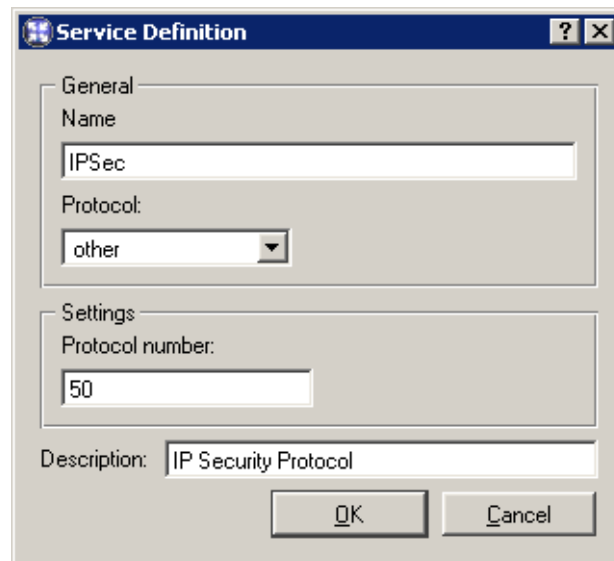
Name	Source	Destination	Service	Action
☒ IPsec traffic	VPN ipsec.server.cz	ipsec.server.cz VPN	IPsec IKE	

IPsec client in local network

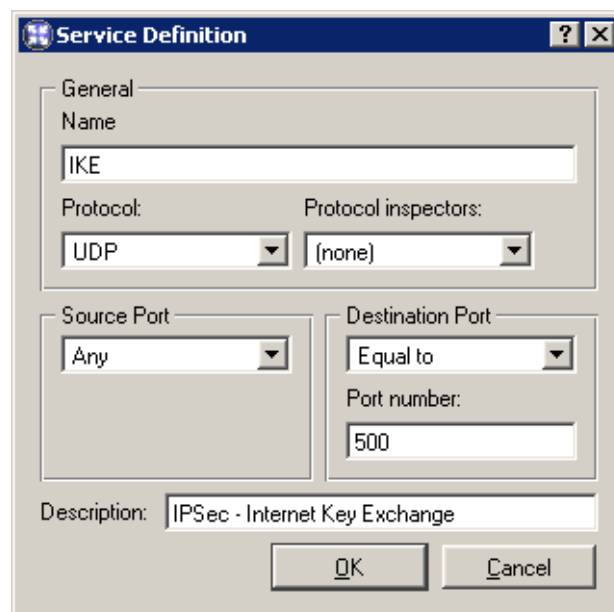
This section of the guide describes *WinRoute* configuration for cases when an *IPsec* client or the server is located in the local network and *WinRoute* provides translation of IP addresses (NAT — for details see chapter 5).

1. *IPsec* client on *WinRoute* host

10.6 VPN using IPSec Protocol



The 'Service Definition' dialog box is shown with the 'General' tab selected. The 'Name' field contains 'IPSec'. The 'Protocol' dropdown menu is set to 'other'. The 'Settings' section has 'Protocol number' set to '50'. The 'Description' field contains 'IP Security Protocol'. The 'OK' and 'Cancel' buttons are at the bottom right.



The 'Service Definition' dialog box is shown with the 'General' tab selected. The 'Name' field contains 'IKE'. The 'Protocol' dropdown menu is set to 'UDP'. The 'Protocol inspectors' dropdown menu is set to '(none)'. The 'Source Port' dropdown menu is set to 'Any'. The 'Destination Port' dropdown menu is set to 'Equal to'. The 'Port number' field contains '500'. The 'Description' field contains 'IPSec - Internet Key Exchange'. The 'OK' and 'Cancel' buttons are at the bottom right.

In this case IPSec traffic is not influenced by NAT (IPSec client must be set so that it uses public IP address of the *WinRoute* host). It is only necessary to define a traffic rule permitting IPSec communication between the firewall and the IPSec server.

Name	Source	Destination	Service	Action	Translation
☒ IPSec traffic	 Firewall	 ipsec.server.com	 IPSec  IKE		

Chapter 10 Advanced Settings

The *Translation* column must be blank — no IP translation is performed. The pass-through setting is not important in this case (it cannot be applied).

2. One IPSec client in the local network (one tunnel)

If only one IPSec tunnel from the local network to the Internet is created at one moment, then it depends on the type of IPSec client:

- If IPSec client and the IPSec server support the *NAT Traversal* function (the client and the server are able to detect that IP address is translated on the way between them), IPSec must be *disabled* (otherwise a collision might arise).

NAT Traversal is supported for example by *Nortel Networks'* VPN software(<http://www.nortelnetworks.com/>).

- If the IPSec client does not support *NAT Traversal*, it is necessary to *enable* IPSec pass-through in *WinRoute*.

In both cases IPSec communication between the client and the IPSec server must be permitted by a traffic rule. NAT must be defined in the *Translation* column (in the same way as for the communication from the local network to the Internet).

Name	Source	Destination	Service	Action	Translation
☒ IPSec client -> server	 192.168.1.10	 ipsec.server.com	 IPSec  IKE		NAT (Default outgoing interface)

3. Multiple IPSec clients in the local network (multiple tunnels)

If multiple IPSec tunnels from the local network to the Internet are supposed to be created, all IPSec clients and corresponding servers must support for *NAT Traversal* (see above). Support for IPSec in *WinRoute* must be *disabled* so that no collisions arise.

Again, traffic between the local network and corresponding IPSec servers must be permitted by a traffic rule.

Name	Source	Destination	Service	Action	Translation
☒ IPSec clients -> servers	 IPSec clients	 IPSec servers	 IPSec  IKE		NAT (Default outgoing interface)

IPSec server in local network

IPSec server on a host in the local network or on the *WinRoute* host must be mapped from the Internet. In this case, traffic between Internet clients and the *WinRoute* host

10.7 Update Checking

must be permitted by a traffic rule and mapping to a corresponding host in the local network must be set.

Warning: Only a single IPSec server can be mapped from the public IP address of the firewall. For mapping of multiple IPSec servers, firewall must use multiple public IP addresses.

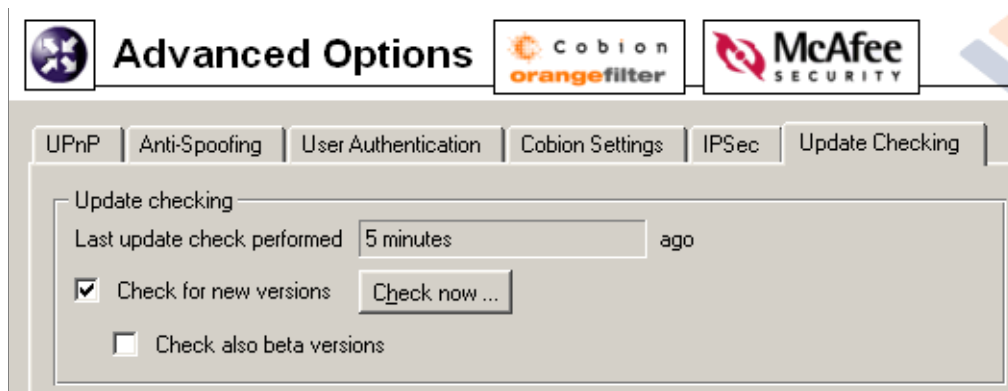
Example: We want to set that two IPSec servers will be available from the Internet — one on the *WinRoute* host and another on a host with the IP address 192.168.100.100. The firewall interface connected to the Internet uses IP addresses 60.80.100.120 and 60.80.100.121.

Name	Source	Destination	Service	Action	Translation
☒ IPSec server #1	 Clients of server #1	 60.80.100.120	 IPSec  IKE		
☒ IPSec server #2	 Clients of server #2	 60.80.100.121	 IPSec  IKE		MAP 192.168.100.100

10.7 Update Checking

WinRoute enables automatic check for new versions at the *Kerio Technologies* website. Whenever a new version is detected, is download and installation is offered.

Open the *Update Checking* tab in the *Configuration / Advanced Options* section to view information on a new version and to set parameters for automatic checks for new versions.



Last update check performed ... ago Information on how much time ago the last update check was performed.

If the time is too long (several days) this may indicate that the automatic update checks fail for some reason (i.e. access to the update server is blocked by a traffic

Chapter 10 Advanced Settings

rule). In such cases we recommend you to perform a check by hand (by clicking on the *Check now* button), view results in the *Debug* log (see chapter 13.5) and take appropriate actions.

Check for new versions Use this option to enable/disable automatic checks for new versions. Checks are performed:

- 2 minutes after each startup of the *WinRoute Firewall Engine*
- every 24 hours
- if the connection to the server cannot be established, update checks are attempted every hour unless the connection is established successfully

Results of each attempted update check (successful or not) is logged into the *Debug* log (see chapter 13.5).

Check also beta versions Enable this option if you want *WinRoute* to perform also update checks for beta versions.

If you wish to participate in testing of *WinRoute* betaversions, enable this option. In case that you use *WinRoute* in operations in your company (i.e. at the Internet gateway of your company), we recommend you not to use this option (betaversions are not tested yet and they could endanger functionality of your networks, etc.).

Check now Click on this button to check for updates immediately. If no new version is available, user will be informed about this fact.

Registration and Licensing Policy

WinRoute must be registered at Kerio Technologies website (<http://www.kerio.com/>) after the purchase. Once the product is registered, you will obtain a license key (an encrypted `license.key` file) that must be imported into the program. If the key is not imported, *WinRoute* will behave as a full-featured trial version and its license will be limited by the expiration timeout.

This also implies that the only difference between a trial version and full *WinRoute* version is whether the registration key has been imported or not. This gives each customer an opportunity to test and try the product in the particular environment during the 30-day period. It is not necessary to re-install nor reconfigure *WinRoute* to after the registration, only the license key is to be imported into the trial version.

If the trial period has expired, *WinRoute* will block all network traffic of its host. You will be allowed to access only the *Kerio Administration Console* in order to import the license key. Full functionality in *WinRoute* will be available after a valid license key is imported.

11.1 License Types

WinRoute can optionally include the following plug-ins: *McAfee* antivirus (refer to chapter 6.6) and/or *Cobion Orange Filter* content rating system (see chapter 6.3). These modules are licensed individually. License keys consist of the following information:

***WinRoute* license** Basic *WinRoute* license. Its validity is defined by the two following factors:

- update right expiration date — specifies the date by which *WinRoute* can be updated for free. When this date expires, *WinRoute* keeps functioning, however, it cannot be updated. The time for updates can be extended by purchasing a subscription.
- product expiration date — specifies the date by which *WinRoute* stops functioning and blocks all TCP/IP traffic at the host where it is installed. If this happens, a new valid license key must be imported or *WinRoute* must be uninstalled.

Chapter 11 Registration and Licensing Policy

McAfee license This license is defined by the two following dates:

- update right expiration date (independent of *WinRoute*) — when this date expires, the antivirus keeps functioning, however, neither its virus database nor the antivirus can be updated yet.

Warning: Owing to persistent incidence of new virus infections we recommend you to use always the most recent antivirus versions.

- plug-in expiration date— specifies the date by which the antivirus stops functioning and cannot be used anymore.

Cobion Orange Filter system license *Cobion Orange Filter* system is provided as a service. License is defined only by an expiration date which specifies when the *Cobion Orange Filter* system will be blocked.

Note: Refer to Kerio Technologies Website (<http://www.kerio.com/>) to get up-to-date information about individual licenses, subscription extensions, etc.

11.2 Viewing License Information and License Key Import

The license information can be displayed by selecting *Kerio WinRoute Firewall* (the first item in the tree in the left part of the *Kerio Administration Console* dialog window — this section is displayed automatically whenever the *WinRoute* administration is entered).

Product name of the product (*WinRoute*)

Copyright Copyright information.

Homepage Link to the *Kerio WinRoute Firewall* homepage (information on pricing, new versions, etc.). Click on the link to open the homepage in your default browser.

Operating system Name of the operating system on which the *WinRoute Firewall Engine* service is running.

License ID License number or a special license name.

Subscription expiration date Date until when the product can be upgraded for free.

Product expiration date Date when the product expires and stops functioning (only for trial versions or special license types).

Number of users Maximal number of hosts (unique IP addresses) that can be connected to the Internet via *WinRoute* at the same time. The *WinRoute* host is not included in the count.

11.3 Subscription / Update Expiration

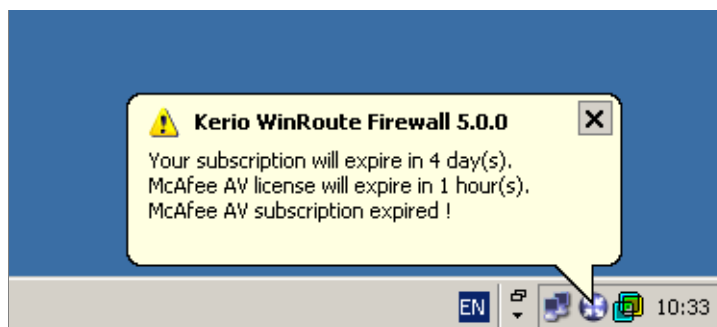


Company name of the company/person that has registered the product

The *Install License...* link will open the standard dialog for opening the file with the license key . The license information will be displayed if the import process has been completed successfully.

11.3 Subscription / Update Expiration

Users will be periodically informed about time that remains to the license or update expiration by the *WinRoute Engine Monitor* when *WinRoute*, the *McAfee* antivirus or the *Cobion Orange Filter* rating system expiration date is getting closer.



Chapter 11 Registration and Licensing Policy

The first time this information is reported 7 days before the expiration date and then it is displayed a few times a day unless *WinRoute* or any of its components automatically stops functioning or until rights for *WinRoute's* or *McAfee's* update expires.

Note: This information will not be displayed unless the *WinRoute Engine Monitor* is running.

11.4 License Management

WinRoute manages number of licences through a table which includes all clients that are currently connected into the Internet. Each unique IP address represents one license (i.e. connection to *WinRoute*). A license is considered free after 15 minutes of idleness.

DNS queries, DHCP nor local traffic are not included in the license.

Chapter 12

Status Information

WinRoute activities can be well monitored by the administrator (or by other users with appropriate rights). There are three types of information — status monitoring, records (logs) and charts.

- Communication of each computer, users connected or all connections using *WinRoute* can be monitored.

Note: Only traffic allowed by traffic rules (see chapter 5) can be viewed. If a traffic attempt which intended to be denied is detected, the rules are not well defined.

- Logs are files where information about certain activity is reported (e.g. error or warning reports, debug information etc.). Each item has one line and is marked with time specification (date and time when the action was taken). In all language versions of *WinRoute*, reports recorded are available in English only and they are generated by the *WinRoute Firewall Engine*.
- In charts, traffic within each interface in a time range is displayed.

To learn what types of information and the methods for monitoring, refer to the following chapters.

12.1 Charts

In *Status / Charts*, the traffic at network interfaces during a time interval (traffic speed in bytes per second, *B/s*) can be monitored.

The following chart parameters can be defined:

Interface In this field select an interface that will be monitored. All active interfaces can be found in the options (e.g. active network adapters and dialed lines).

Time range In the right field, an interval for active monitoring can be selected (from 2 hours up to 30 days). The end of the interval is identical to the current time and the recent past interval is displayed (“recent 2 hours”, “recent 30 days”, etc.).

The interval for chart refreshing can be found in the comment below the chart.

Example: If the *2 hours* time range is selected, there is a refresh interval of 20 seconds. This means that information in the chart is refreshed and updated every 20 seconds.

The *Settings* button opens a dialog for setting the chart parameters.

Chapter 12 Status Information

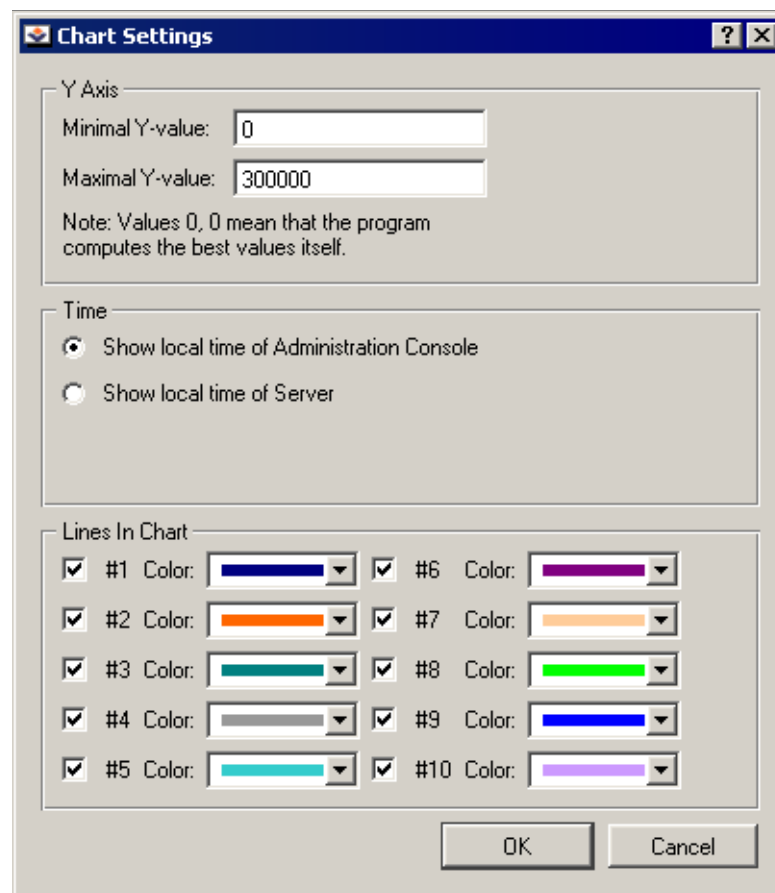


Chart Settings

Y Axis

Minimal Y-value:

Maximal Y-value:

Note: Values 0, 0 mean that the program computes the best values itself.

Time

☒ Show local time of Administration Console

☐ Show local time of Server

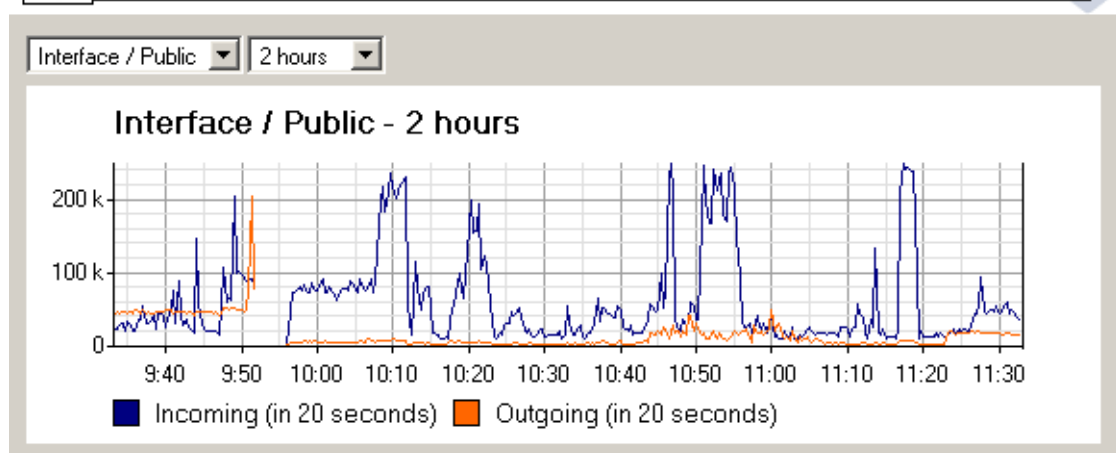
Lines In Chart

☒ #1 Color: <input type="color" value="#0000FF"/>	☒ #6 Color: <input type="color" value="#800080"/>
☒ #2 Color: <input type="color" value="#FFA500"/>	☒ #7 Color: <input type="color" value="#FFDAB9"/>
☒ #3 Color: <input type="color" value="#008080"/>	☒ #8 Color: <input type="color" value="#00FF00"/>
☒ #4 Color: <input type="color" value="#808080"/>	☒ #9 Color: <input type="color" value="#0000FF"/>
☒ #5 Color: <input type="color" value="#00CED1"/>	☒ #10 Color: <input type="color" value="#DDA0DD"/>

OK Cancel



Traffic Charts



The Y Axis Minimal and maximum Y axis values can be set in this dialog. Bytes are used to specify the value (e.g. 100 KB will be inserted as 102400 — 100*1024).

Note: The X value is set up automatically according to the chosen time interval.

Time This option determines whether the server time or the local time of the *Kerio Administration Console* host will be displayed in the chart. The following rules are followed:

- If the *Kerio Administration Console* is running on the host where *WinRoute* is installed, the time values are equal.
- The time values are also equal if times are synchronized (it can be done for example with NTP protocol or in Windows NT domain).
- If the time values are not synchronized and both hosts are in the same time zone, it is highly recommended to use the server
- If the hosts are not in the same time zone, you can choose either the server time or the administration console time according to your need.

Number and Colors of Lines in the Chart In this section, number and colors of traces for the chart can be selected.

Note: Only lines generated by selected functions will be displayed in the chart. There are only two lines used to trace the interface traffic in *WinRoute* — the #1 line traces the traffic of incoming and the #2 curve of outgoing data.

12.2 Hosts and Users

In *Status / Hosts / Users*, the hosts within the local network or active users using *WinRoute* for communication with the Internet will be displayed.

Note: For more details about the firewall user's logon see chapter 7.2.

Look at the upper window to view information on individual hosts, connected users, data size/speed, etc.

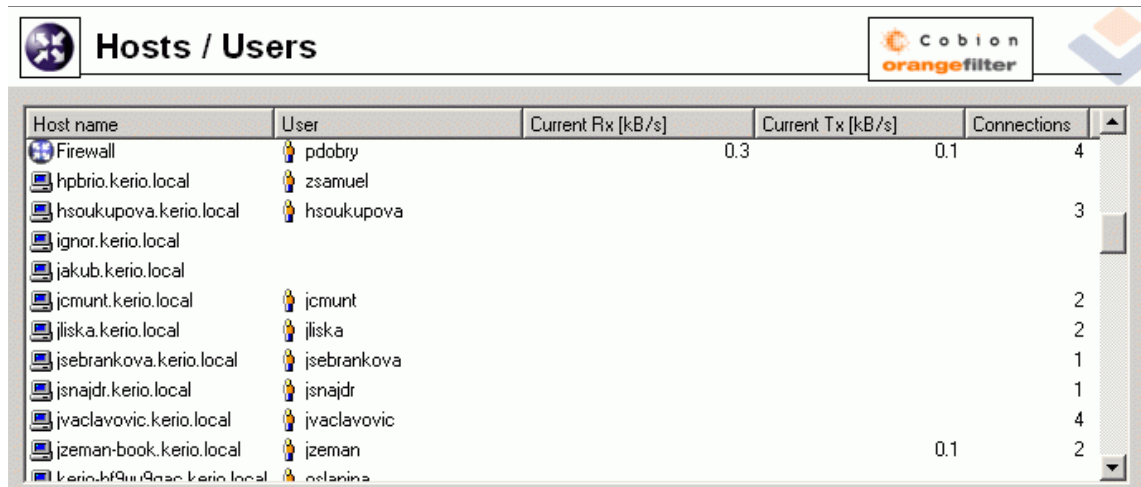
The following information can be found in the *Hosts / Users* window:

Host name DNS name of a host. In case that no corresponding DNS record is found, IP address is displayed instead.

User Name of the user which is connected from a particular host. If no user is connected, the item is empty.

Currently received, Currently transmitted Monitors current traffic speed (kilobytes per second) in both directions (from and to the host)

Chapter 12 Status Information



Host name	User	Current Rx [kB/s]	Current Tx [kB/s]	Connections
Firewall	pdobry	0.3	0.1	4
hpbrio.kerio.local	zsamuel			
hsoukupova.kerio.local	hsoukupova			3
ignor.kerio.local				
jakub.kerio.local				
jcmunt.kerio.local	jcmunt			2
iliska.kerio.local	iliska			2
jsebrankova.kerio.local	jsebrankova			1
jsnajdr.kerio.local	jsnajdr			1
jvaclavovic.kerio.local	jvaclavovic			4
jzeman-book.kerio.local	jzeman		0.1	2
kerio.kerio.local	celarina			

The following columns are hidden by default. To view these columns select the *Modify columns* option in the context menu (see below).

IP Address IP address of the host from which the user is connecting from

Login time Date and time of the recent user login to the firewall

Login duration Monitors length of the connection. This information is derived from the current time status and the time when the user logged on

Inactivity time Duration of the time with zero data traffic. You can set the firewall to logout users automatically after the inactivity exceeds allowed inactivity time (for more details see chapter 7.1)

Start time Date and time when the host was first acknowledged by *WinRoute*. This information is kept in the operating system until the *WinRoute Firewall Engine* disconnected.

Total received, Total transmitted Total size of the data (in kilobytes) received and transmitted since the *Start time*

Connections Total number of connections to and from the host. Details can be displayed in the context menu (see below)

Authentication method Authentication method used for the recent user connection:

- *plaintext* — user is connected through an insecure login site *plaintext*
- *SSL* — user is connected through a login site protected by SSL security system *SSL*

- *proxy* — a *WinRoute* proxy server is used for authentication and for connection to Websites
- *NTLM* — user was authenticated with NTML in NT domain (this is the standard type of login if Microsoft Internet Explorer 5.5 or higher or Mozilla 1.4 or higher is used)

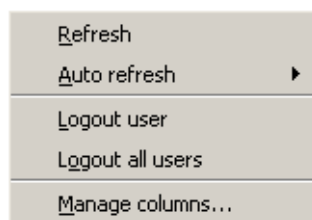
For more details about connecting and user authentication see chapter 7.2.

Information displayed in the *Hosts / Users* window can be refreshed by clicking on the *Refresh* button.

Use the *Show / Hide details* to open the bottom window providing detailed information on a user, host and open connections.

Hosts / Users Dialog Options

Clicking the right mouse button in the *Hosts / Users* window (or on the record selected) will display a context menu that provides the following options:



Refresh This option refreshes information in the *Hosts / Users* window immediately (this function is equal to the *Refresh* button displayed at the bottom of the window).

Auto refresh Settings for automatic refreshing of the information in the *Hosts / Users* window. Information can be refreshed in the interval from 5 seconds up to 1 minute or the auto refresh function can be switched off (*No refresh*).

Logout user Immediate logout of a selected user.

Logout all users Immediate logout of all firewall users.

Manage Columns By choosing this option you can select columns to be displayed in the *Hosts / Users* window (see chapter 3.7).

Detailed information on a selected host and user

Detailed information on a selected host and connected user are provided in the bottom window of the *Hosts / Users* section.

Chapter 12 Status Information

Open the *General* tab to view information on user's login, size/speed of transmitted data and information on activities of a particular user.

The screenshot shows a window with two tabs: 'General' (selected) and 'Connections'. The 'General' tab is divided into three sections. The top-left section, titled 'Login information', contains the following text: 'User: creative.host from andrew.kerio.local (192.168.72.135)' and 'Login time: 2003-08-29 08:08:32 via SSL (idle: 1:40)'. The top-right section, titled 'Traffic information', contains: 'Download: 483.02 MB (current: 0 B/s)' and 'Upload: 34.45 MB (current: 0 B/s)'. The bottom section is a table with three columns: 'Activity Time', 'Activity Event', and 'Activity Description'. It contains one row of data: '12:35:20', a folder icon labeled 'FTP', and 'server 3dgamers.in-span.net, downloaded 186.0 MB (files: 1), idle'. A scrollbar is visible at the bottom of the table.

Activity Time	Activity Event	Activity Description
12:35:20	FTP	server 3dgamers.in-span.net, downloaded 186.0 MB (files: 1), idle

Login information Information on logged-in users:

- *User* — name of a user, DNS name (if available) and IP address of the host from which the user is connected
- *Login time* — date and time when a user logged-in, authentication method that was used and inactivity time (idle).

If no user is connected from a particular host, detailed information on the host are provided instead of login information.

The screenshot shows a small window titled 'Host information'. It contains two lines of text: 'Host: 192.168.40.137' and 'Idle time: 0:01'.

- *Host* — DNS name (if available) and IP address of the host
- *Idle time* — time for which no network activity performed by the host has been detected

Traffic information Information on size of data received (*Download*) and sent (*Upload*) by the particular user (or host) and on current speed of traffic in both directions.

Overview of detected activities of the particular user (host) are given in the main section of this window:

Activity Time Time (in minutes and seconds) when the activity was detected.

Activity Event Type of detected activity (network communication). *WinRoute* distinguishes between the following activities: *SMTP*, *POP3*, *WWW* (HTTP traffic), *FTP* and *P2P* (use of Peer-To-Peer network).

Note: *WinRoute* is not able to recognize which type of P2P network is used. According to results of certain testing it can only "guess" that it is possible that the client is connected to such network.

Activity Description Detailed information on a particular activity:

- *WWW* — title of a Web page to which the user is connected (if no title is available, URL will be displayed instead). Page title is a hypertext link — click on this link to open a corresponding page in the browser which is set as default in the operating system.
- *SMTP*, *POP3* — DNS name or IP address of the server, size of downloaded/uploaded data.
- *FTP* — DNS name or IP address of the server, size of downloaded/uploaded data, information on currently downloaded/uploaded file (name of the file including the path, size of data downloaded/uploaded from/to this file).
- *P2P* — information that the client is probably using Peer-To-Peer network.

12.3 Connection Status

In *Status / Connections*, all the network connections which can be detected by *WinRoute* include the following:

- client connections to the Internet through *WinRoute*
- connections from the host on which *WinRoute* is running
- connections from other hosts to services provided by the host with *WinRoute*
- connections performed by clients within the Internet that are mapped to services running in LAN

Notes:

1. connections among local clients will not be detected nor displayed by *WinRoute*.
2. UDP protocol is also called connectionless protocol. This protocol does not perform any connection. The communication is performed through individual messages (so-called datagrams). Periodic data exchange is monitored in this case.

Chapter 12 Status Information

WinRoute administrators are allowed to close any of the active connections.

 Connections								
Source	Source Port	Destination	Destination Port	Protocol	Timeout	Rx [kB]	Tx [kB]	Info
0.0.0.0	0	192.168.1.11	1820	TCP	00:04:12			H.323-Q.931
0.0.0.0	0	192.168.1.11	1821	TCP	00:04:12			H.323-Q.931
192.168.1.1	123	192.168.101.4	3577	UDP	00:00:08		0.1	
192.168.1.10	1059	192.168.1.16	53	UDP	00:00:19	0.3	0.2	
192.168.1.10	137	192.168.1.163	137	UDP	00:06:07		0.1	
192.168.1.10	1900	192.168.1.154	1165	UDP	00:07:58		3.3	
192.168.1.10	1900	192.168.1.154	1125	UDP	00:02:31		3.3	
192.168.1.10	1900	192.168.1.154	1148	UDP	00:06:41		3.3	
192.168.1.10	1900	192.168.1.154	1131	UDP	00:03:11		3.3	
192.168.1.10	1900	192.168.1.154	1108	UDP	00:00:06		3.3	
192.168.1.10	1039	192.168.1.16	445	TCP	00:39:06	125.6	101.8	
192.168.1.11	2268	195.39.55.4	1719	UDP	00:04:12	12.4	11.0	H.323-H.225RAS
192.168.1.11	2270	195.39.55.4	1719	UDP	00:04:12	11.8	9.9	H.323-H.225RAS
192.168.1.11	4000	198.133.219.27	21	TCP	06:00:48	5.2	1.0	FTP: PwD

One connection is represented by each line of this window. These are network connections, not user connections (each client program can occupy more than one connection at a given moment). The columns provide the following information:

Source and Destination IP address of the source (the connection initiator) and of the destination. If there is an appropriate reverse record in DNS, the IP address will be substituted with the DNS name.

Source Port and Destination Port Ports used for the particular connection.

Protocol Communication protocol (*TCP* or *UDP*)

Timeout Time left until automatic disconnection. The countdown starts when data traffic stops. Each new data packet sets the counter to zero.

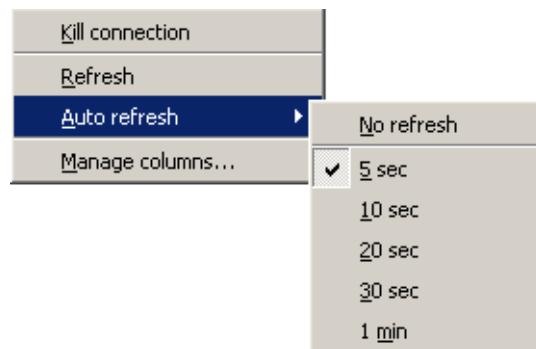
Rx and Tx Total size of data received (*Rx*) or transmitted (*Tx*) during the connection (in kilobytes). Received data means the data transferred from *Source* to *Destination*, transmitted data means the opposite.

Info An informational text describing the connection (e.g. about the protocol inspector with which it is controlled).

Information in *Connections* is refreshed automatically within a user defined interval or the *Refresh* button can be used for manual refreshing.

Connections Dialog Options

Right-click on the *Connections* window (on the connection selected) to view a context menu including the following options:



Kill connection Use this option to finish selected connection immediately (in case of UDP connections all following datagrams will be dropped).

Note: This option is active only if the context menu has been called by right-clicking on a particular connection. If called up by right-clicking in the *Connections* window (with no connection selected), the option is inactive.

Refresh This option will refresh the information in the *Connections* window immediately. This function is equal to the function of the *Refresh* button at the bottom of the window.

Auto refresh Settings for automatic refreshing of the information in the *Connections* window. Information can be refreshed in the interval from 5 seconds up to 1 minute or the auto refresh function can be switched off (*No refresh*).

Manage columns By choosing this option you can select which columns will be displayed in the *Connections* window (see chapter 3.7).

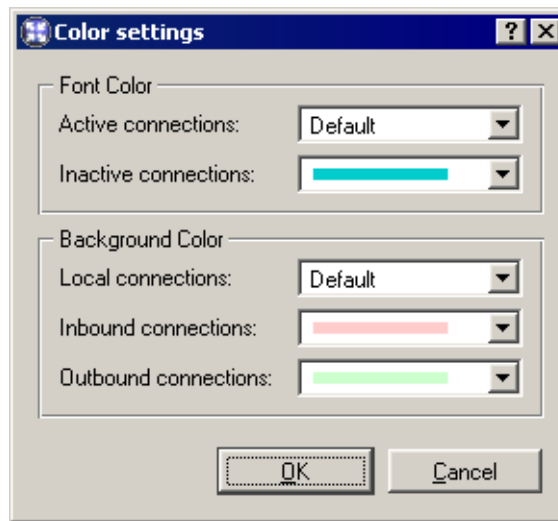
Color Settings

Clicking on the *Colors* button displays the color settings dialog to define colors for each connection:

For each item either a color or the *Default* option can be chosen. Default colors are set in the operating system (the common setting for default colors is black font and white background).

Font Color

- *Active connections* — connections with currently active data traffic
- *Inactive connections* — TCP connections which have been closed but 2 minutes after they were killed they are still kept active — to avoid repeated packet mishandling)



Background Color

- *Local connections* — connections where an IP address of the host with *WinRoute* is either source or destination
- *Inbound connections* — connections from the Internet to the local network (allowed by firewall)
- *Outbound connections* — connections from the local network to the Internet

Note: Incoming and outgoing connections are distinguished by detection of direction of IP addresses — “out” (*SNAT*) or “in” (*DNAT*). For more details see chapter 5.

12.4 Cobion Statistics

Cobion statistics of Web pages categories can be viewed in the *Status / Statistics* section (for more information on Cobion refer to chapter 6.3). Statistics are displayed in a table as well as by a pie chart.

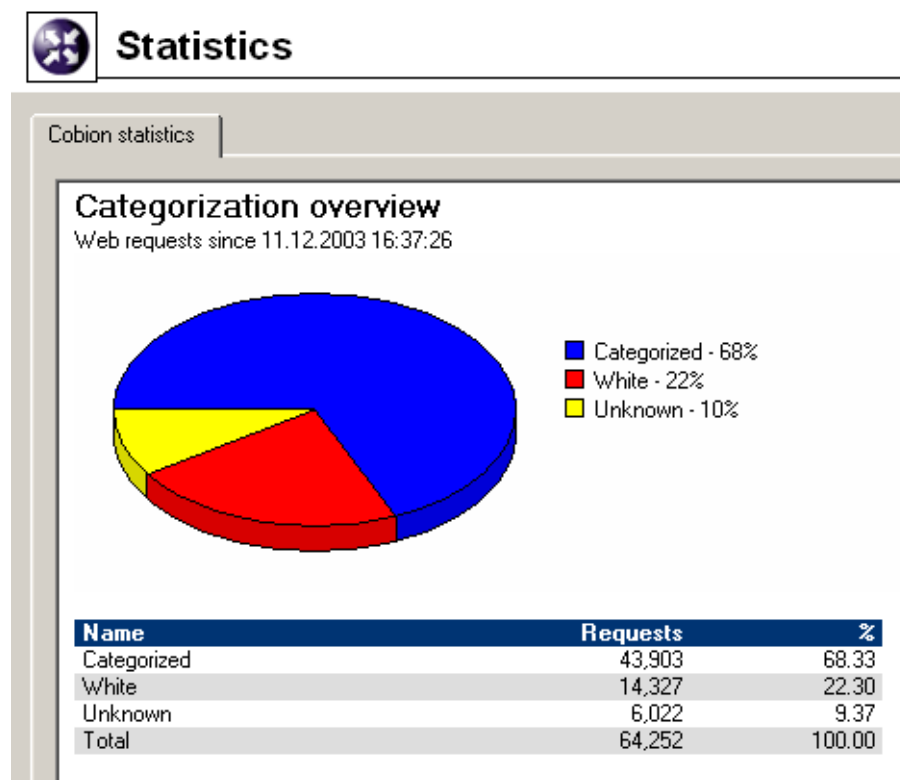
Categorization overview

The *Categorization overview* section provides the following information:

- total count of processed of Web queries (since startup of the *WinRoute Firewall Engine*)
- total count of queries which have been categorized by *Cobion*

- number of queries which have not been categorized (pages which are not in the *Cobion* database or cases when the *Cobion* plug-in in *WinRoute* did not receive a response in the time limit)
- number of queries which match with defined exceptions (see chapter 6.3)

Percentual rate of each group of queries is representing is also provided (100% is the total count).



Distribution of categories

The chart in the *Distribution of categories* section provides information on five most frequented categories.

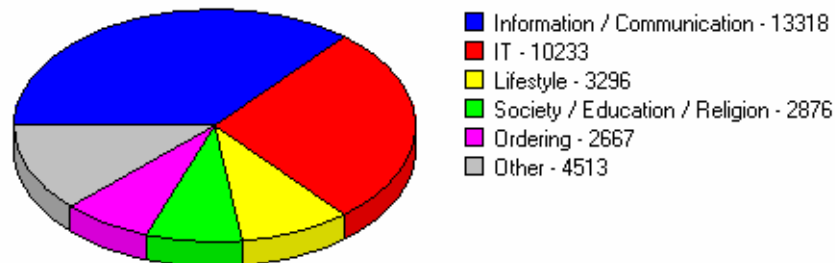
The table below the chart provides overview of all *Cobion* categories (click on the [+] or on the [-] symbols next to a group name to view or hide individual categories included in a particular group). The following information is provided for each category:

- number of requests which were not included into this category
- percentage of these queries in relation to total count of requests.

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Distribution of categories - all users

Web requests since 11.12.2003 16:37:26



Note: Number of requests in all categories included in a particular group and their total percentage in relation to total count of queries are provided.

Category	Requests	%
+ Pornography / Nudity	475	1.08
+ Ordering	2,667	6.07
+ Society / Education / Religion	2,876	6.55
+ Criminal Activities	2	0.00
+ Extreme	0	0.00
+ Games / Gambling	255	0.58
+ Entertainment / Culture	814	1.85
+ Information / Communication	13,318	30.34
+ IT	10,233	23.31
+ Drugs	10	0.02
+ Lifestyle	3,296	7.51
+ Private Homepages	59	0.13
+ Job Search	0	0.00
+ Finance / Investment	1,262	2.87
+ Vehicles / Transportation	1,636	3.73
+ Weapons	0	0.00
+ Medicine	2	0.00

Chapter 13

Logs

Logs are files where history of certain events performed through or detected by *WinRoute* are recorded and kept.

Each log is displayed in a window in the *Logs* section. Each event is represented by one record line. The lines contain time information in brackets (date and time when the event started) followed by information about the event according to the log type.

Events of individual logs can be optionally saved to files on a local drive and/or to a *Syslog* server.

Locally, the logs are saved in the files under the `logs` subdirectory where *WinRoute* is installed. The file names have this pattern:

`file_name.log`

(e.g. `debug.log`). Each log also includes a file with the `.idx` extension. This index file enables smoother access to logs in the *Kerio Administration Console*.

Individual logs can be rotated — after a certain time period or when a threshold of the file size is reached, log files are stored and new events are logged to a new (empty) file.

Storing logs in files enables permanent backup of logs (by copying them to another directory). Logs can be also analyzed using various analysis tools.

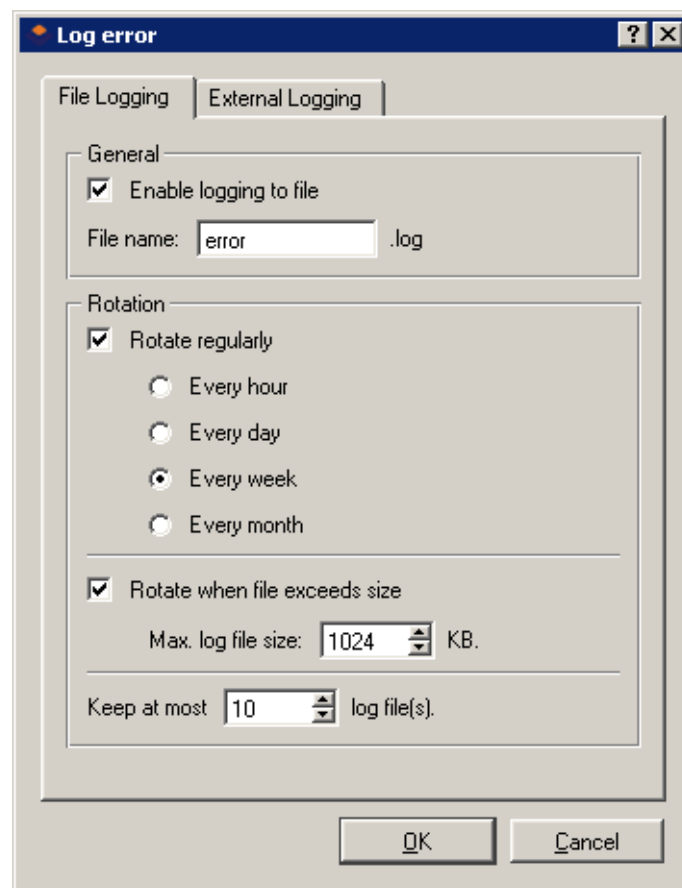
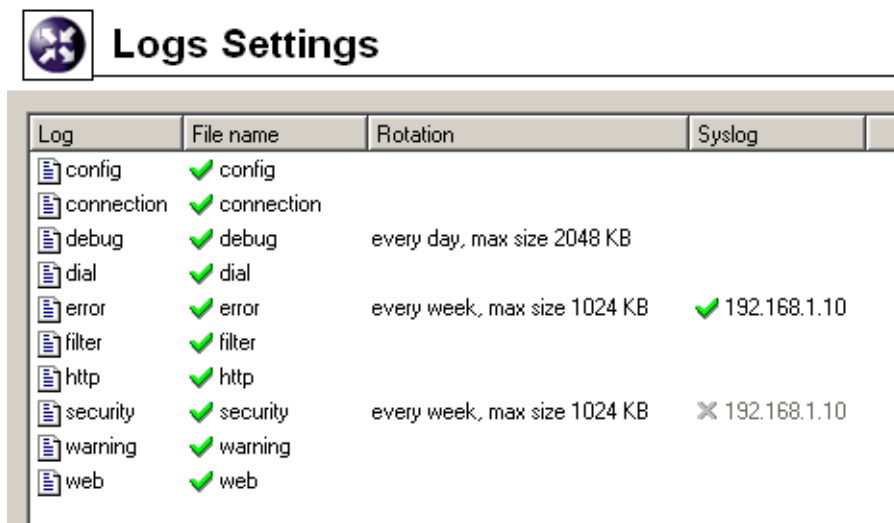
13.1 Log Settings

Log parameters (file names, rotation, sending to a *Syslog* server) can be set in the *Configuration / Log Settings* section. In this section of the guide an overview of all logs used by *WinRoute* are provided.

Double-click on a selected log (or select a log and click on the *Edit* button) to open a dialog where parameters for the log can be set.

File Logging

Use the *File Logging* tab to define file name and rotation parameters.



Enable logging to file Use this option to enable/disable logging to file according to the *File name* entry (the .log extension will be appended automatically).

13.1 Log Settings

If this option is disabled, none of the following parameters and settings will be available.

Rotate regularly Set intervals in which the log will be rotated regularly. The file will be stored and a new log file will be started in selected intervals.

Rotate when file exceeds size Set a maximal size for each file. Whenever the threshold is reached, the file will be rotated. Maximal size is specified in kilobytes (KB).

Note: If both *Rotate regularly* and the *Rotate when file exceeds size* are enabled, the particular file will be rotated whenever one of these conditions is met.

Keep at most ... log file(s) Maximal count of log files that will be stored. Whenever the threshold is reached, the oldest file will be deleted.

Syslog Logging

Parameters for logging to a *Syslog* can be defined in the *External Logging* tab.

The screenshot shows a dialog box titled "Log error" with a blue header bar containing a question mark and a close button. Below the header are two tabs: "File Logging" and "External Logging". The "External Logging" tab is selected. Inside this tab, there is a "Syslog" section with a checkbox labeled "Enable Syslog logging" which is checked. Below the checkbox are three input fields: "Syslog server:" with the value "192.168.1.10", "Facility:" with a dropdown menu showing "3: System daemons", and "Severity:" with a dropdown menu showing "3: Error". At the bottom of the dialog are "OK" and "Cancel" buttons.

Chapter 13 Logs

Enable Syslog logging Enable/disable logging to a *Syslog* server.

If this option is disabled, the following entries will be unavailable.

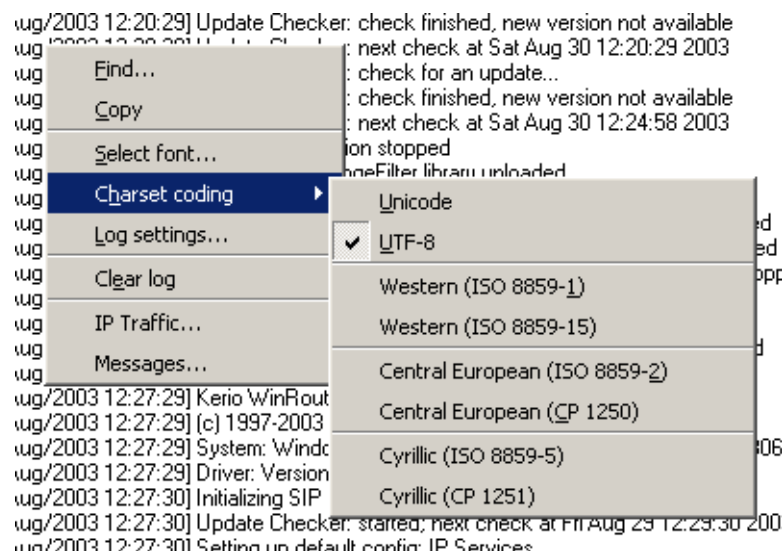
Syslog server IP address of the *Syslog* server.

Facility Facility that will be used for the particular *WinRoute* log (depends on the *Syslog* server).

Severity Severity of logged events (depends on the *Syslog* server).

13.2 Logs Context Menu

Right-click in any of the log windows to view the context menu. Here you can select from various functions or edit log parameters.



Find Use this option to search for a string in the log. Logs can be scanned either *Up* (search for older events) or *Down* (search for newer events) from the current position.

Copy This function copies selected text to the clipboard. A key shortcut from the operating system can be used (e.g. *Ctrl+C* or *Ctrl+Insert* in Windows).

Font Within this dialog you can select a font of the log printout. All fonts installed on the host with the *Kerio Administration Console* are available.

Charset coding Coding that will be used for the log printout in *Kerio Administration Console* can be selected in this section. *UTF-8* is used by default.

13.2 Logs Context Menu

TIP: Select a new encoding type if special characters are not printed correctly in non-English versions.

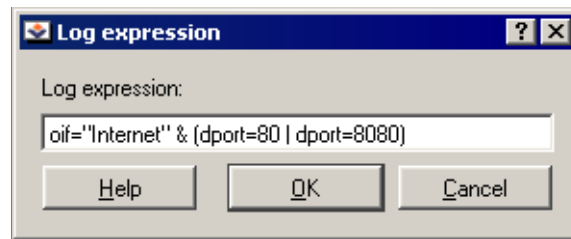
Log settings A dialog where log parameters such as log file name, rotation and *Syslog* parameters can be set. For detailed information refer to chapter 13.1.

Remove Log Removes entire log. The file will be removed (not only the information saved in the selected window).

Warning: Removed logs cannot be refreshed anymore.

The following options are available in the *Debug* log only:

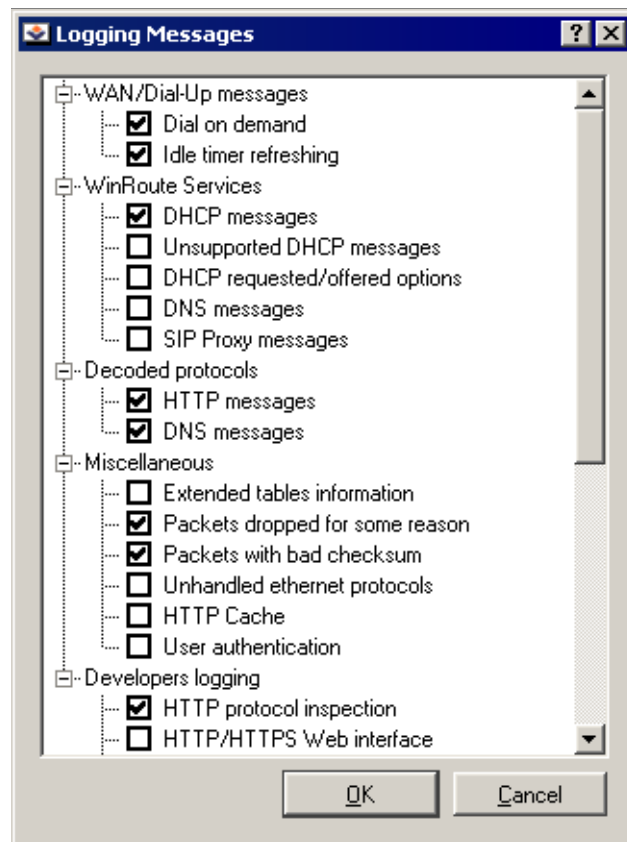
IP Traffic This function enables monitoring of packets according to the user defined log expression.



The expression must be defined with special symbols. After clicking on the *Help* button, a brief description of possible conditions and examples of their use will be displayed.

Messages This option enables the administrator to define advanced settings for information that will be monitored:

- *WAN / Dial-up messages* — information about dialed lines (request dialing, auto disconnection down-counter)
- *WinRoute services* — *WinRoute* services activity (DHCP server, DNS forwarder, SIP proxy)
- *Decoded protocols* — displays message content of all selected protocols that use *WinRoute* modules (HTTP and DNS)
- *Miscellaneous* — more information, such as information about removed packets, packets with errors, HTTP cache, user authentication, etc.
- *Developers logging* — detailed logs for debugging (can be used e.g. when resolving problems with help from technical support)



13.3 Config Log

The *Config* log stores a complete communication history between *Kerio Administration Console* and the *WinRoute Firewall Engine* — the log allows you to find out what administration actions were performed by which user, and when.

The following three types of records are written to the *Config* log:

1. *Information about user logins/logouts to/from the WinRoute's administration*

Example:

```
[18/Apr/2003 10:25:02] standa - session opened
                        for host 192.168.32.100
[18/Apr/2003 10:32:56] standa - session closed
                        for host 192.168.32.100
```

- [18/Apr/2003 10:25:02] — date and time when the record was written to the log
- jsmith — the login name of the user

- session opened for host 192.168.32.100 — information about the beginning of the communication and the IP address of the computer from which the user connected
- session closed for host 192.168.32.100 — information about the end of the communication with the particular computer (user logout or *Kerio Administration Console* closed)

2. Configuration database changes

This type of record informs about changes performed by the user in the *Kerio Administration Console*. A simplified form of the SQL language is used when communicating with the database.

Example:

```
[18/Apr/2003 10:27:46] jsmith - insert StaticRoutes
set Enabled='1', Description='VPN',
Net='192.168.76.0', Mask='255.255.255.0',
Gateway='192.168.1.16', Interface='LAN', Metric='1'
```

- [18/Apr/2003 10:27:46] — date and time when the record was written
- jsmith — the login name of the user
- insert StaticRoutes ... — the particular command used to modify the *Win-Route's* configuration database (in this case, a static route was added to the routing table)

3. Other configuration changes

A typical example of this record type is the change of traffic rules. When the user hits *Apply* in *Configuration / Traffic policy*, a complete list of current traffic rules is written to the *Config* log.

Příklad:

```
[18/Apr/2003 12:06:03] Admin - New traffic policy set:
[18/Apr/2003 12:06:03] Admin - 1: name=(ICMP Traffic)
src=(any) dst=(any) service=("Ping")
snat=(any) dnat=(any) action=(Permit),
time_range=(always) inspector=(default)
```

Chapter 13 Logs

- [18/Apr/2003 12:06:03] — date and time of the change
- Admin — login name of the user who did the change
- 1: — traffic rule number (rules are numbered top to bottom according to their position in the table, the numbering starts from 1)
- name=(ICMP Traffic) ... — traffic rule definition (name, source, destination, service etc.)

Note: The default rule (the last one in the rule table) is marked with `default:` instead of the positional number.

13.4 Connection Log

Connection logs for traffic rules which are configured to be logged using the *Log matching connections* option (refer to chapter 5).

How to read the Connection Log?

```
[18/Apr/2003 10:22:47] [ID] 613181 [User] james
[Connection] TCP 192.168.1.140:1193 -> hit.top.com:80
[Duration] 121 sec [Bytes] 1575/1290/2865 [Packets] 5/9/14
```

- [18/Apr/2003 10:22:47] — date and time when the event was logged (Note: Connection logs are saved immediately after a disconnection)
- [ID] 613181 — *WinRoute* connection identification number
- [User] james name of the user connected to the firewall from a host which participates in the traffic (If no user is connected from this host, the `<null>` value is logged)
- [Connection] TCP 192.168.1.140:1193 -> hit.top.com:80 — protocol, source IP address and port, destination IP address and port. If an appropriate log is found in the *DNS Forwarder* cache (see chapter 4.3), the host's DNS name is displayed instead of its IP address. If the log is not found in the cache, the name is not detected (such DNS requests would slow *WinRoute* down).
- [Duration] 121 sec — duration of the connection (in seconds)
- [Bytes] 1575/1290/2865 — number of bytes transferred during this connection (transmitted/accepted/total)
- [Packets] 5/9/14 — number of packets transferred through this connection (transmitted/accepted/total)

13.5 Debug Log

Debug (debug information) is a special log which can be used to monitor certain kinds of information, especially for problem-solving. Too much information could be confusing and impractical if displayed all at the same time. Usually, only a part of the information or functions is relevant. In addition, displaying too much information slows *WinRoute*'s performance. Therefore, it is strongly recommended to monitor an essential part of information and during the shortest possible period only.

13.6 Dial Log

Data about dialing and hanging up the dial-up lines, and about time spent on-line.

How to read the Dial Log?

```
[02/Apr/2003 15:09:27] Line "Connection to ISP" dialing,  
console 192.168.32.64 - standa  
[02/Apr/2003 15:10:36] Line "Connection to ISP" disconnected,  
connection time 00:01:09, 22458 bytes received,  
16682 bytes transmitted
```

- [02/Apr/2003 15:09:27] — date and time when the event was logged
- Line "Connection to ISP" dialing — marks the event as the start of dialing (the name of the line is in quotation marks, see section 4.1)
- console 192.168.32.64 - jsmith — denotes the cause that triggered the dialing (a command from the *Kerio Administration Console*, a command from the Web interface, or a packet from the local network to the Internet). In this example, the user jsmith dialed the line from the *Kerio Administration Console*.
- Line "Connection to ISP" disconnected — marks the event as line disconnection
- connection time 00:01:09 — the duration of the connection
- 22458 bytes received — the amount of received data (in bytes)
- 16682 bytes transmitted — the amount of transmitted data (in bytes)

13.7 Error Log

The *Error* log displays information about serious errors that affect the functionality of the entire firewall. *WinRoute*'s administrator should monitor the error log on a regular

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basis and solve the detected errors as quickly as possible, otherwise some (or even all) firewall services could become unavailable to the users and/or security problems can arise.

A typical error message in the *Error* log could be: a problem when starting a service (usually a collision at a particular port number), problems when writing to the disc or when initializing anti-virus, etc.

Each record in the *Error* log contains error code and sub-code as two numbers in parentheses (x y). The error code may fall into one of the following categories:

- 1-999 — system resources problem (insufficient memory, memory allocation error, etc.)
- 1000-1999 — internal errors (unable to read routing table or interface IP addresses, etc.)
- 2000-2999 — license problems (license expired, the number of users would break license limit, unable to find license file, etc.)
- 3000-3999 — configuration errors (unable to read configuration file, detected a look in the configuration of *DNS Forwarder* or the *Proxy server*, etc.)
- 4000-4999 — network (socket) errors
- 5000-5999 — errors while starting or stopping the *WinRoute Firewall Engine* (problems with low-level driver, problems when initializing system libraries, services, configuration databases, etc.)
- 6000-6999 — filesystem errors (cannot open/save/delete file)
- 7000-7999 — SSL errors (problems with keys and certificates, etc.)
- 8000-8099 — HTTP cache errors (errors when reading/writing cache files, not enough space for cache, etc.)
- 8100-8199 — errors of the *Cobion* system
- 8200-8299 — authentication subsystem errors
- 8300-8399 — anti-virus module errors (anti-virus test not successful, problems when storing temporary files, etc.)
- 8400-8499 — dial-up error (unable to read defined dial-up connections, line configuration error, etc.)
- 8500-8599 — LDAP errors (server not found, login failed, etc.)

13.8 Filter Log

This log contains information about web pages and objects blocked by the HTTP and FTP filters (see chapters 6.1 and 6.5) and about packets blocked by traffic rules if packet logging is enabled for the particular rule (see chapter 5 for more information). Each log line includes the following information depending on the component which generated the log:

- when an HTTP or FTP rule is applied: rule name, user, IP address of the host which sent the request, object's URL
- when a traffic rule is applied: detailed information about the packet that matches the rule (rule name, source and destination address, ports, size, etc.)

Example of a URL rule log message:

```
[18/Apr/2003 13:39:45] ALLOW URL 'McAfee update'  
192.168.64.142 standa HTTP GET  
http://update.kerio.com/nai-antivirus/datfiles/4.x/dat-4258.zip
```

- [18/Apr/2003 13:39:45] — date and time when the event was logged
- ALLOW — action that was executed (ALLOW = access allowed, DENY = access denied)
- URL — rule type (for URL or FTP)
- 'McAfee update' — rule name
- 192.168.64.142 — IP address of the client
- jsmith — name of the user authenticated on the firewall (no name is listed unless at least one user is logged in from the particular host)
- HTTP GET — HTTP method used in the request
- http:// ... — requested URL

Example of a traffic rule log message:

```
[16/Apr/2003 10:51:00] PERMIT 'Local traffic' packet to LAN,  
proto:TCP, len:47, ip/port:195.39.55.4:41272 ->  
192.168.1.11:3663, flags: ACK PSH , seq:1099972190  
ack:3795090926, win:64036, tcplen:7
```

- [16/Apr/2003 10:51:00] — date and time when the event was logged
- PERMIT — action that was executed with the packet (PERMIT, DENY or DROP)

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- `Local traffic` — the name of the traffic rule that was applied
- `packet to` — packet direction (either to or from a particular interface)
- `LAN` — interface name (see chapter 4.1 for details)
- `proto:` — transport protocol (TCP, UDP, etc.)
- `len:` — packet size in bytes (including the headers) in bytes
- `ip/port:` — source IP address, source port, destination IP address and destination port
- `flags:` — TCP flags
- `seq:` — sequence number of the packet (TCP only)
- `ack:` — acknowledgement sequence number (TCP only)
- `win:` — size of the receive window in bytes (it is used for data flow control — TCP only)
- `tcp len:` — TCP payload size (i.e. size of the data part of the packet) in bytes (TCP only)

13.9 HTTP Log

This log contains all HTTP requests that were processed by the HTTP inspection module (see section 8.3) or by the built-in proxy server (see section 4.5). The log has the standard format of either the *Apache* WWW server (see <http://www.apache.org/>) or of the *Squid* proxy server (see <http://www.squid-cache.org/>). To enable or disable the HTTP log, or to choose its format, go to *Configuration/ContentFiltering/HTTP Policy* (refer to section 6.1 for details).

Notes:

1. Only accesses to allowed pages are recorded in the *HTTP* log. Request that were blocked by HTTP rules are logged to the *Filter* log (see above), if the particular rule has the logging enabled (see section 6.1).
2. The *HTTP* log is intended to be processed by external analytical tools. The *Web* log (see below) is better suited to be viewed by the *WinRoute* administrator.

An example of HTTP log record that follows the Apache format:

[18/Apr/2003 15:07:17] 192.168.64.64 - rgabriel

[18/Apr/2003:15:07:17 +0200]

"GET http://www.kerio.com/ HTTP/1.1" 304 0 +4

- [18/Apr/2003 15:07:17] — date and time when the event was logged
- 192.168.64.64 — IP address of the client host
- rgabriel — name of the user authenticated through the firewall (a dash is displayed if no user is authenticated through the client)
- [18/Apr/2003:15:07:17 +0200] — date and time of the HTTP request. The +0200 value represents time difference from the UTC standard (+2 hours are used in this example — CET).
- GET — used HTTP method
- http://www.kerio.com — requested URL
- HTTP/1.1 — version of the HTTP protocol
- 304 — return code of the HTTP protocol
- 0 — size of the transferred object (file) in bytes
- +4 — count of HTTP requests tranferred through the connection

An example of HTTP log record that follows the Squid format:

1058444114.733 0 192.168.64.64 TCP_MISS/304 0

GET http://www.squid-cache.org/ - DIRECT/206.168.0.9

- 1058444114.733 — timestamp (seconds and milliseconds since January 1st, 1970)
- 0 — download duration (not measured in *WinRoute*, always set to zero)
- 192.168.64.64 — client IP address
- TCP_MISS — the TCP protocol was used and the particular object was not found in the cache ("missed"). *WinRoute* always uses this value for this field.
- 304 — HTTP response code
- 0 — trasferred data amount in bytes (HTTP object size)

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- GET `http://www.squid-cache.org/` — the HTTP request (HTTP method and URL of the object)
- DIRECT — the WWW server access method (*WinRoute* always uses direct access)
- 206.168.0.9 — IP address of the WWW server

13.10 Security Log

A log for security-related messages. Records of the following types may appear in the log:

1. *Anti-spoofing log records*

Messages about packets that were captured by the *Anti-spoofing* module (packets with invalid source IP address — see section 10.4 for details)

Example:

```
[17/Jul/2003 11:46:38] Anti-Spoofing:
Packet from LAN, proto:TCP, len:48,
ip/port:61.173.81.166:1864 -> 195.39.55.10:445,
flags: SYN , seq:3819654104 ack:0, win:16384, tcplen:0
```

- packet from — packet direction (either from interface or to interface)
- LAN — the name of the interface where the packet was captured (see section 4.1 for details)
- proto: — transport protocol (TCP, UDP, etc.)
- len: — packet length in bytes (including headers)
- ip/port: — source IP address and port and destination IP address and port
- flags: — TCP flags (TCP only)
- seq: — sequence number (TCP only)
- ack: — acknowledgement sequence number (TCP only)
- win: — size of the receive window (TCP only)
- tcplen: — TCP payload length in bytes

2. *FTP protocol parser log records*

Example 1:

[17/Jul/2003 11:55:14] FTP: Bounce attack attempt:

client: 1.2.3.4, server: 5.6.7.8,

command: PORT 10,11,12,13,14,15

(attack attempt detected — a foreign IP address in the PORT command)

Příklad 2:

[17/Jul/2003 11:56:27] FTP: Malicious server reply:

client: 1.2.3.4, server: 5.6.7.8,

response: 227 Entering Passive Mode (10,11,12,13,14,15)

(suspicious server reply with a foreign IP address)

3. Failed user authentication log records

Formát zprávy:

Authentication: <service>: Client: <IP address>: <reason>

- <service> — The *WinRoute* service to which the user attempted to authenticate (Admin = administration using *Kerio Administration Console*, WebAdmin = web administration interface, WebAdmin SSL = secure web administration interface, Proxy = proxy server user authentication)
- <IP address> — IP address of the computer from which the user attempted to authenticate
- <reason> — reason of the authentication failure (nonexistent user / wrong password)

Note: For detailed information regarding user authentication see section [9.1](#) and [7.2](#).

4. Information about the start and shutdown of the WinRoute Firewall Engine

a) Engine Startup:

[17/Jul/2003 12:11:33] Engine: Startup.

b) Engine Shutdown:

[17/Jul/2003 12:22:43] Engine: Shutdown.

13.11 Warning Log

Warning reports are displayed in the *Warning* log. Reports included in this section represent serious errors and bugs. Warnings can display for example reports about

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invalid user login (invalid username or password), error in communication of the server and Web administration interface, etc.

Events recalling warning messages in this log do not seriously affect *WinRoute* functionality. However, they can point at current or possible problems. The *Warning* log can be used for example when a user has problems with functioning of some services.

Each warning message is identified by its numerical code (code xxx:). The following warning categories are defined:

- 1000–1999 — system warnings (e.g. an application found that is known as conflicting)
- 2000–2999 — *WinRoute* configuration problems (e.g. HTTP rules require user authentication, but the WWW interface is not enabled)
- 3000–3999 — warning from individual *WinRoute* modules (e.g. DHCP server, anti-virus check, etc.)
- 4000–4999 — license warnings (subscription expiration, forthcoming expiration of *WinRoute's* license, *Cobion* license, or the *McAfee* anti-virus license)

Note: License expiration is considered to be an error and it is logged into the *Error* log.

Examples of Warning logs:

```
[15/Apr/2003 15:00:51] (3004) Authentication subsystem warning:  
Kerberos 5 auth:
```

```
user james@company.com not authenticated
```

```
[15/Apr/2003 15:00:51] (3004) Authentication subsystem warning:  
Invalid password for user admin
```

```
[16/Apr/2003 10:53:20] (3004) Authentication subsystem warning:  
User johnblue doesn't exist
```

- The first log informs that authentication of user *jsmith* by the *Kerberos* system in the *company.com* domain failed
- The second log informs on a failed authentication attempt by user *admin* (invalid password)
- The third log informs on an authentication attempt by a user which does not exist (*johnblue*)

Note: With the above three examples, the relevant records will also appear in the *Security* log.

13.12 Web Log

This log displays HTTP requests processed either by HTTP protocol inspectors (see chapter 8.3) or by the embedded proxy server (see chapter 4.5). Unlike in the *HTTP* log, the *Web* log displays only the title of a page and the *WinRoute* user or the IP host viewing the page.

For administrators, the *Web* log is easy to read and it provides the possibility to monitor which Websites were opened by each user.

How to read the Web Log?

```
[24/Apr/2003 10:29:51] 192.168.44.128 james  
"Kerio Technologies | No Pasarán!" http://www.kerio.com/
```

- [24/Apr/2003 10:29:51] — date and time when the event was logged
- 192.168.44.128 — IP address of the client host
- james — name of authenticated user (if no user is authenticated through the client host, the name is substituted by a dash)
- "Kerio Technologies | No Pasarán!" — page title
(content of the <title> HTML tag)
Note: If the page title cannot be identified (i.e. for its content is compressed), the "Encoded content" will be reported
- http://www.kerio.com/ — URL pages

Chapter 14

Technical Support

Free email and telephone technical support is provided for *Kerio WinRoute Firewall*. For contacts see the final section of this chapter. Should any issue arise *Kerio Technologies* technical staff is ready to help you.

Before you contact our technical support, please take the following steps:

- Search through this guide to find an answer. Individual chapters describe features and parameters of *WinRoute* components in detail.
- If you have not found answers here, try to find it in the *Technical Support* section of the Kerio Technologies website.

If you have not find answers to all your questions and you still intend to contact our technical support, read through the following section which will provide you with a few guidelines.

14.1 Essential Information

To be able to help you solve your problems the best and in the shortest possible time our technical support will require your configuration data and as clear information on your problem as possible. The following information should be provided in your email message:

Description

Clearly describe your problem. Provide as much information on the problem as possible (i.e. whether the issue arose after you had installed a new product version, after an upgrade, etc.).

Informational File

You can use the *Kerio Administration Console* to create a text file including your *WinRoute* configuration data. Take the following steps to generate the file:

- Run *WinRoute Firewall Engine* and connect to it through the *Kerio Administration Console*.

Chapter 14 Technical Support

- If you use dial-up, connect to the Internet.
- In the *Kerio Administration Console* use the *Ctrl+S* keys.

The text file will be saved into the home directory of the particular user (i.e. C:\Documents and Settings\Administrator) and it will be called `kerio_support_info.txt`.

Note: The `kerio_support_info.txt` is generated by the *Kerio Administration Console*. This implies that in case you connect to the administration remotely, this file will be stored on the computer from which you connect to the *WinRoute* administration (not on the computer/server where the *WinRoute Firewall Engine* is running).

Error Log Files

The `logs` subdirectory will be created in the directory where *WinRoute* is installed (typically C:\Program Files\Kerio\WinRoute Firewall). This directory includes the `error.log` and `warning.log` files. Attach these two files to your email to our technical support.

14.2 Contacts

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Chapter 15

Glossary

DHCP DHCP (*Dynamic Host Configuration Protocol*) Serves automatic IP configuration of computers in the network. IP addresses are assigned from a scope. Parameters include a gateway or router, DNS servers, local domain etc.

DNS DNS (*Domain Name System*) A worldwide distributed database of Internet host-names and their associated IP address. Computers use Domain Name Servers to resolve host names to IP addresses. DNS allows internet servers to be more easily recognized (i.e. `www.kerio.com` is easier to remember than `207.235.5.183`).

Firewall Software application or hardware component used to protect hosts or networks from intrusion attempts (usually from the Internet).

In this guide, the word *firewall* represents the *WinRoute* host.

IP address Number consisting of 32 bits that is used to identify the host within the Internet. Each packet contains information about where it was sent from (source IP address) and to which address it is to be delivered (destination IP address).

Kerberos It is a standard protocol used for user authentication within Windows 2000. Users connect to central servers (KDC, Key Distribution Center, Windows 2000 domain controller) and the servers send them encrypted keys for connection to other servers within the network.

IPSec *IPsec (IP Security Protokol)* is an extended IP protocol which enables secure data transfer. It provides services similar to SSL/TLS, however, these services are provided on a network layer. IPSec can be used for creation of encrypted tunnels between networks (VPN) — so called tunnel mode, or for encryption of traffic between two hosts— so called transport mode.

Network mask Network masks divide IP addresses into two parts (network address and address of a particular host within the network). Mask have the same form as IP addresses (i.e. `255.255.255.0`), however, its value is needed to be understood as a 32-bit number with certain number of ones on the left end and zeros as the rest. The mask cannot have an arbitrary value. The primary function of a subnet mask is to define the number of IP hosts that participate in an IP subnet. Computers in the same IP subnet should not require a router for network communication.

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NAT *NAT (Network Address Translation)* stands for substitution of IP addresses in packets passing through the firewall:

- source address translation (*Source NAT, SNAT*) — in packets going from local networks to the Internet source (private) IP addresses are substituted with the external (public) firewall address. Each packet sent from the local network is recorded in the NAT table. If any packet incoming from the Internet matches with a record included in this table, its destination IP address will be substituted by the IP address of the appropriate host within the local network and the packet will be redirected to this host. Packets that do not match with any record in the NAT table will be dropped.
- destination address translation (*Destination NAT, DNAT*, it is also called port mapping) — is used to enable services in the local network from the Internet. If any packet incoming from the Internet meets certain requirements, its IP address will be substituted by the IP address of the local host where the service is running and the packet is sent to this host.

The NAT technology enables connection from local networks to the Internet using a single IP address. All hosts within the local network can access the Internet directly as if they were on a public network (certain limitations are applied). Services running on local hosts can be mapped to the public IP address.

Packet Basic data unit transmitted via computer networks. Packets consist of a header which include essential data (i.e. source and destination IP address, protocol type, etc.) and of the data body,. Data transmitted via networks is divided into small segments, or packets. If an error is detected in any packet or a packet is lost, it is not necessary to repeat the entire transmission process, only the particular packet will be re-sent.

Port 16-bit number (1–65535) used by TCP and UDP protocols to identify applications (services) at the host. More than one application can be run at a host simultaneously (i.e. WWW server, mail client, FTP client, etc.) Each application is identified by a port number. Ports from 1 to 1023 are determined and they are used by standard (e.g. system) services (i.e. 80 = WWW). Ports greater than 1024 are free for use by any application (usually by clients as source ports or by nonstandard server applications).

Proxy server Common Internet connection type. Proxy servers connect clients and destination servers.

A proxy server works as an application and it is adapted for several application protocols (i.e. HTTP, FTP, Gopher, etc.). It is primarily used to facilitate Internet communication for private networks and to monitor and control Web traffic.

Network adapter The equipment that connects hosts to a traffic medium. It can be represented by an Ethernet adapter, TokenRing adapter, by a modem, etc. Network adapters are used by hosts to send and receive packets. They are also referred to throughout this document as a network interface.

Routing table The information used by routers when making packet forwarding decisions. Packets are routed according to the packet's destination IP address. The routing table can be viewed in Windows operating systems using the `route print` command.

SSL SSL is a protocol used to secure and encrypt network communication. SSL was originally designed by Netscape in order to ensure secure transfer of Web pages over HTTP protocol. Nowadays, it is used by most standard Internet protocols (SMTP, POP3, IMAP, LDAP, etc.).

Communication between the client and server operates as follows: the client generates a symmetric key and encrypts it with the public server key (obtained from the server certificate). The server decrypts it with its private key (kept solely by the server). Thus the symmetric key is known only to the server and client.

TCP *Transmission Control Protocol* is a transmission protocol which ensures reliable and sequential data delivery. It establishes so called virtual connections and provides tools for error correction and data stream control. It is used by most of applications protocols which require reliable transmission of all data, such as *HTTP*, *FTP*, *SMTP*, *IMAP*, etc.

TCP protocol uses the following special control information — so called *flags*:

- *SYN* (Synchronize) — connection initiation (first packet in each connection)
- *ACK* (Acknowledgement) — acknowledgement of received data
- *RST* (Reset) — request on termination of a current connection and on initiation of a new one
- *URG* (Urgent) — urgent packet
- *PSH* (Push) — request on immediate transmission of the data to upper TCP/IP layers
- *FIN* (Finalize) — connection finalization

TCP/IP Name used for all traffic protocols used in the Internet (i.e. for IP, ICMP, TCP, UDP, etc.). *TCP/IP* does not stand for any particular protocol!

Chapter 15 Glossary

TLS Transport Layer Security. New version of SSL protocol. TLS is standardized by IETF and accepted by all significant software providers (i.e. Microsoft Corporation).

UDP *User Datagram Protokol* is a transmission protocol which transfers data through individual messages (so called datagrams). It does not establish new connections nor it provides reliable and sequential data delivery, nor it enables error correction or data stream control. It is used for transfer of small-sized data (i.e. DNS queries) or for transmissions where speed is preferred from reliability (i.e. realtime audio and video files transmission).

VPN *Virtual Private Network*, VPN represents secure interconnection of private networks (i.e. of individual offices of an organization) via the Internet. Traffic between both networks (so called tunnel) is encrypted. This protects networks from tapping. VPN incorporates special tunneling protocols, such as *Microsoft's IPSec* and *PPTP (Point-to-Point Tunnelling Protocol)*.

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