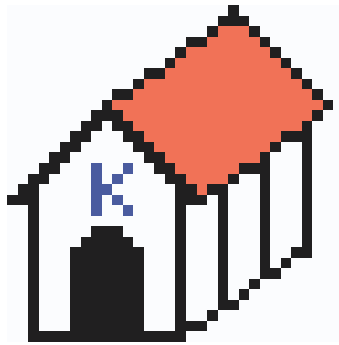


# KTELNET



**Version 3.00 Beta**  
**2004-04-03**

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# Introduction to KTelnet

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KTelnet is an implementation of Kerberos versions of Telnet and FTP running on Windows 95, Windows 98 and Windows NT. Kerberos is a security system featuring encrypted authentication and transmission of data. With Kerberos no password is ever sent clearly over a network connection session. Telnet is the basic remote terminal protocol used on Internet (based on TCP/IP). FTP is used for transferring file between computer system on Internet. Kerberos exists today in two different versions: version 4 and version 5, both versions are supported by KTelnet.

KTelnet also features a local daemon that will permit a standard mail reader (for example Netscape Communicator or Microsoft Outlook) to take advantage of Kerberos authentication for mail receiving via POP.

When KTelnet is installed on a computer system it consists of several application programs and Dynamic Link Libraries (DLL). Some of the DLL's can be used without KTelnet if the functionality of Kerberos is needed in some other application. The API and usage of these DLL's is not described in this document.

## Some words about Kerberos and Tickets

For authentication Kerberos is using a data block called 'Ticket'. When an authentication is to take place the client part of Kerberos asks the server for a granting ticket. The granting ticket is encrypted with a key based on the users password, this key is stored in a databases maintained by the Kerberos server. The client receives the encrypted ticket and tries to decrypt it with a key created from a password supplied by the user. After the decryption of the ticket the client verifies the contents of the ticket and if the ticket seems to be reasonable it accepts the ticket. If the ticket can't be decrypted the password is assumed to be wrong and the Kerberos client can give a diagnose message about this. The client can only validate parts of the ticket, one part of the ticket is still encrypted and can only be decrypted by the server. This first retrieved ticket is called a 'Ticket Granting Ticket'. This ticket is only valid for a limited time and only from a specific IP-address.

This 'Ticket Granting Ticket' is hereafter used when a specific ticket for a specific service is needed.

All computers that share the same Kerberos database is said to belong to the same REALM. The Kerberos client will automatically decide which realm a specific computer belongs to based on its full name, for example the machine 'sundance.stacken.kth.se' belongs to the realm 'STACKEN.KTH.SE'. A realm name is usually written with capital letters. A computer may belong to a realm with a name that differs from the name of the computer, for example 'foxglove.pdc.kth.se' belongs to the realm 'NADA.KTH.SE'. The Kerberos client maintains a list of computers or domains and which realm it should be associated with.

# Installation

---

KTelnet is installed on Windows 95, 98 or NT based systems by running its installation program. The installation program will copy several files to a directory (selectable by the user), no files are copied into the windows directories. The installation program will also install some defaults for the program in the registry (all can later be changed by the user in KTelnet).

## Instructions

Start the installation program (usually named 'KTW32.EXE').

Follow the instructions on the screen and KTelnet will be installed on you computer.

If you want to uninstall KTelnet it can be done by opening the control panel and starting the add/remove program utility. Select KTelnet from the list that is displayed and all files belonging to KTelnet and its registry entries will be removed.

# Quick guide to KTelnet

---

## Starting KTelnet

After KTelnet is installed on your computer you can start it in the Start menu-> Program-> Kerberos Telnet->Kerberos Telnet. This will bring you into an empty screen. If this is the first time you are running KTelnet it will be pretty small and centered on the display. If you enlarge the window or move it on the screen KTelnet will remember the size and placement of the window and the next time you are starting KTelnet it will open up its window with this size and placement. KTelnet will emulate a subset of a xterm window.

## Opening a session

To begin a session with KTelnet you will need to have an active connection to the network, either through remote connection by modem or by direct connection to a network (for example by Ethernet or Token Ring). Select 'Connection'-'>'Open' in the upper left menu. This will bring up a dialog box where you can select the type and destination of your session (see figure 1). The displayed dialog box have three pages: 'Telnet', 'Serial port' and 'FTP', the type of session is selected with these three pages.

In the first page (figure 1) a Telnet session is selected. You must supply the name of the host you want to connect to. Type in the name of the system or select one of the earlier systems you have connected (KTelnet remembers the last 10 system you have been connected to). Usually the

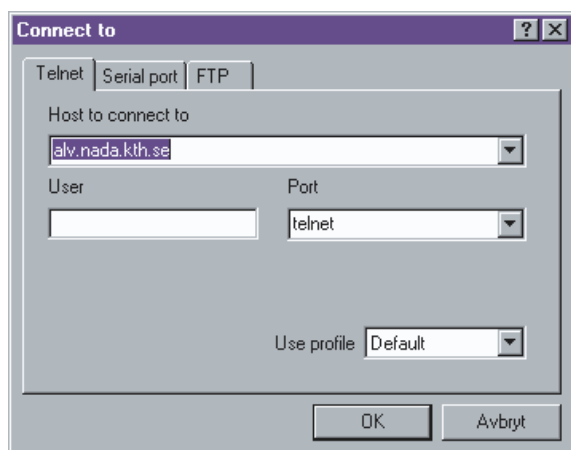


Figure 1: Connect to serial port.

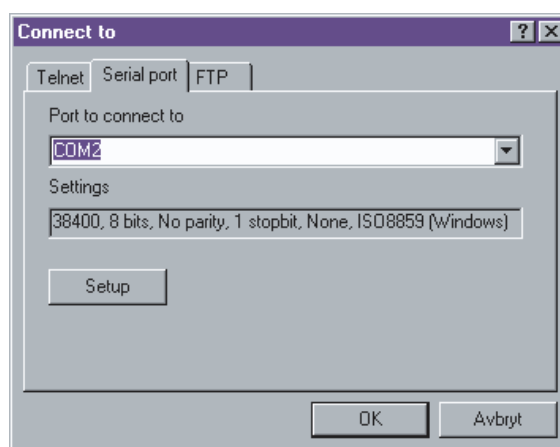


Figure 2: Connect to Telnet session.

fields 'User' and 'Port' can be left unaltered, they are used if you want to login as a different user from who you are authenticating as or if you want to connect to a specific port on the host. If KTelnet have been enabled for firewalls (see page 39) two more fields will be visible on the dialog ('Ticket to use' and 'Use HTTP-PROXY'). Normally 'Ticket to use' is left empty and 'Use HTTP-PROXY' should only be checked when you are connection through a firewall. If you have created several profiles then the field 'Use profile' is visible (see page 41 for usage of profiles).

The second page (figure 2) is used if you want to use KTelnet as a terminal talking with some system or unit that is directly connected to a serial port on your local computer. In this page you select the serial port and communication parameters for that port.

If you want to run FTP you bring up the third page (figure 3). You select the host to connect to and the user in same way as for Telnet (this page uses a different history for hosts). User can normally be left unaltered.

After you have selected the type of session, host and other parameters you click on OK and the session will start.

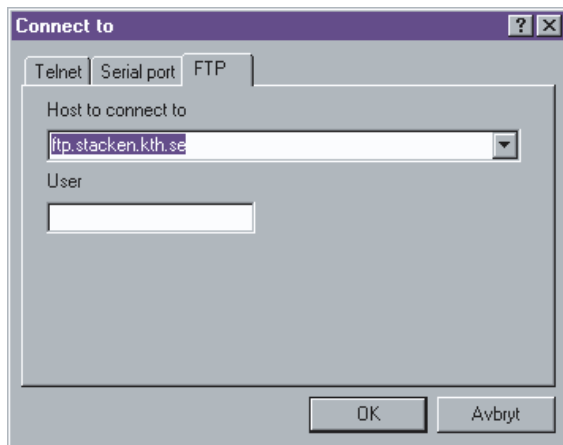


Figure 3: Connect to to FTP session.

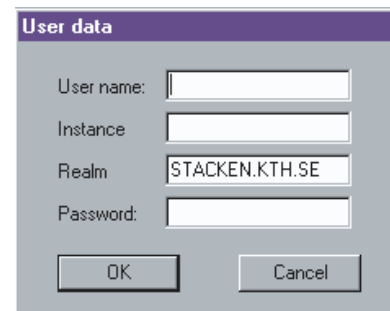


Figure 4: User data.

## Telnet session

KTelnet will now try to verify the name of the host and translate it into its generic name. The generic name of the host is needed by Kerberos. If the name could be verified a connection is opened to the host. If the host runs the Kerberos system it will automatically request Kerberos authentication to take place, KTelnet will automatically select if Kerberos 4 or 5 should be used.. If you don't have any tickets KTelnet will request your username, password and some other data (see figure 4). Fill in your user name and password. The fields 'Instance' and 'Realm' are normally not changed. When you type your password it will be shown as '\*' in the dialog box. After you have supplied the necessary information you click OK. The Kerberos client will now request the necessary tickets and send the needed tickets to the host. If the host accepts the ticket it will log you in to the host and you can use that computer. During this login sequence encryption will be turned on (you can see this in the status line in bottom of the KTelnet window).

## Authentication

If you already have tickets for the realm KTelnet will try to use these tickets during the authentication. If these tickets are not accepted KTelnet will give an error message. If the 'No warning box' flag (see page 24) is not set KTelnet will ask if it should delete the tickets for the required realm and request new tickets. If the flag is set KTelnet will destroy the tickets and ask for new user data (figure 4). The same procedure will be taken if wrong password is given. Because the Kerberos authentication only can be tried one time the connection will be closed and then reopened if new tickets are required. See page 41 for information about interrealm authentication.

If you for some reason wants to disable the Kerberos authentication sequence you can put a single '\ ' in front of the host name, this will disable Kerberos for this session. If you write the hostname as an IP-number (for example 130.237.234.41), this IP-number will be translated to the generic name of the host and Kerberos authentication will take place. If you precede an IP-number with a single '\ ' both the verification of the hostname and the Kerberos authentication is disabled.

## Serial port

This will connect you to the selected serial with the selected communication parameters.

## FTP session

This implementation of the FTP client uses a command line interface, this command line interface is running in a KTelnet window. After you have started the FTP session KTelnet will contact the selected server and tries to authenticate you by the Kerberos system. If the host doesn't support Kerberos KTelnet will prompt you for an ordinary user and password (both which will be sent clearly over the connection). If you don't have any tickets the Kerberos client will show the same dialog box as for Telnet (figure 4), supply you user name and password and click OK. The Kerberos client will request the necessary tickets for you and log you into the remote system. You have been logged into the system when you see the command prompt 'FTP>'. When Kerberos authentication has been done only the control channel is encrypted, not the data channel.

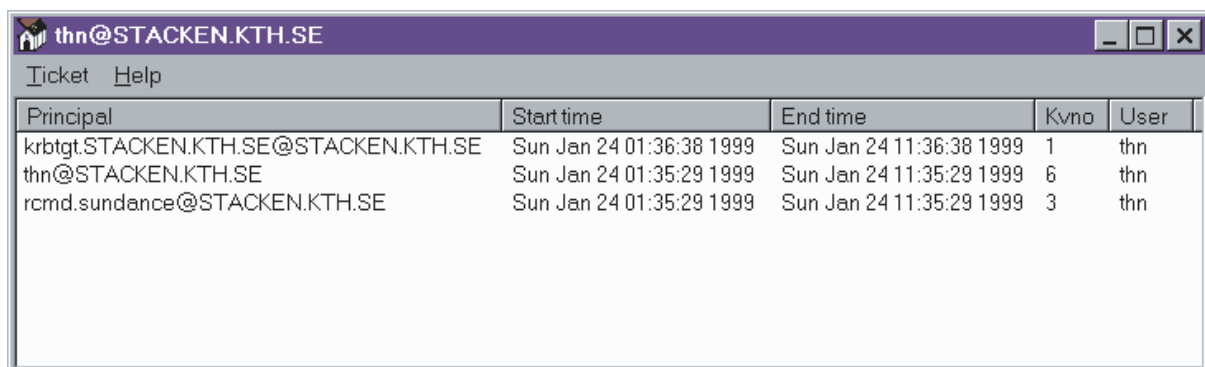
You can now start giving FTP commands to transfer files etc between you computer and the host. The supported FTP commands are described on page 33. Depending on your host you might have to give the command 'KAUTH' to get tickets locally on the FTP host, especially if you will access files on an AFS file system.

## Closing session

When you have finished the session you can close KTelnet in a normal Windows way, if the session is still active you will get a question if you really wants to close the session. An alternative to closing KTelnet is to select the menu choice 'Connection'-> 'Close'. This will close the connection but leave KTelnet running on you local computer.

## Showing tickets

You look into your tickets with the menu choice 'Connection'-> 'Show ticket'. This will start a new copy of KTelnet running the ticket manager. In the ticket manager you see each ticket as a single line showing the name of ticket and the time interval when the ticket is valid (see figure 5). If you are running multiple sessions you will see several tickets in the window.



The screenshot shows a window titled 'thn@STACKEN.KTH.SE' with a menu bar containing 'Ticket' and 'Help'. Below the menu bar is a table with the following data:

Principal	Start time	End time	Kvno	User
krbtgt.STACKEN.KTH.SE@STACKEN.KTH.SE	Sun Jan 24 01:36:38 1999	Sun Jan 24 11:36:38 1999	1	thn
thn@STACKEN.KTH.SE	Sun Jan 24 01:35:29 1999	Sun Jan 24 11:35:29 1999	6	thn
rcmd.sundance@STACKEN.KTH.SE	Sun Jan 24 01:35:29 1999	Sun Jan 24 11:35:29 1999	3	thn

Figure 5: Ticket manager.

## Mail support

The program KPopProxy is used when a standard mail reader (for example Netscape Communicator or Microsoft Outlook) is to be used for reading mail and receive mail through the POP3 protocol. It is possible to use a variant of POP3 which will take advantage of Kerberos authentication, this protocol is called KPOP. The program KPopProxy is started on you local computer and will listen for POP3 connections from the local computer. When such a connection is established KPopProxy will bridge the normal POP3 protocol into KPOP and connect to the desired KPOP host. KPopProxy supports both Kerberos 4 and 5 and GSSAPI, the selection between the different versions of the protocol is done with the supplied password to KPopProxy, see below.

KPopProxy is meant to be started automatically and will reside on the system tray. During installation you were asked if you wanted to use KPopProxy and if it should be automatically started, if you answered yes to this question a shortcut were created in you autostart folder on your start menu. After KPopProxy have been started you will need to make some changes in your mail reading program (the exact procedure for this change is not the topic of this manual). You will have to change the following settings:

### POP3 server

#### localhost

Here you shall give the name of the POP3 server, in this case it should be the word *localhost*, this will direct your mailreader to connect to your local machine.

### POP3 user name

#### user/host

Here you shall give your user name and the host where the KPOP server exists separated by a slash, for example *thn/pop.stacken.kth.se*. You can also use a percent sign ('%') or a commercial at sign ('@') as a separator between the username and the KPOP server host. *Note: some versions of Netscape will not accept the form *thn@pop.stacken.kth.se*, use one of the other forms instead.*

### POP3 password

#### kerberos or kerberos4

The single word *kerberos* or *kerberos4* (all lower or uppercase). Use Kerberos 4 for authentication.

#### kerberos5

The single word *kerberos5* (all lower or uppercase). Use Kerberos 5 for authentication.

**gssapi** The single word *gssapi* or *gss* (all lower or uppercase). Use GSSAPI with SASL  
**gss** for authentication.

When you are trying to fetch mail and you don't have any tickets for the realm where your mail account resides KPopProxy will bring up the dialog box (see figure 4) asking for user data for the realm. Fill in the required information and click OK, tickets will be created and the communication will proceed.

# Graphical FTP

---

## General

This is a FTP client with a graphical interface similar to the explorer interface. With this FTP client you can transfer files between you local system and a remote system. You can also perform some other tasks on the remote system (creating directories, deleting files etc.).

The current implementation of the graphical FTP client can only talk to UNIX, VMS and Windows 2000 system. Due to a lack of standardization of the FTP protocol there is no easy way to retrieve a directory listing from the remote system with time stamps etc.

# Operation

## Starting a session

When the FTP client (KFTP) is started it will show up its main window (figure 6), this windows is divided in four main areas: The navigation bar (on top of the main window), the tree window (to the right), the file window (to the left) and the log window (at the bottom).

To connect to a remote system use the menu 'Connection, Open' and fill in the name of the remote system to connect to and the user name on the remote system. A connection will be established to the selected remote system, if tickets needs to be created the normal dialog box for user data will appear (figure 4).

When connection have been established the FTP client will automatically issue a directory listing of the remote system and fill in the information in the tree and file window. You can now navigate in the directory tree on the remote system by expanding directories in the tree window. When do this navigation you will always see the name of the current directory in the navigation bar. If you wants to go to a specific directory it is possible to fill in the directory path in this field and press Enter. The default directory will then be changed to the given path.

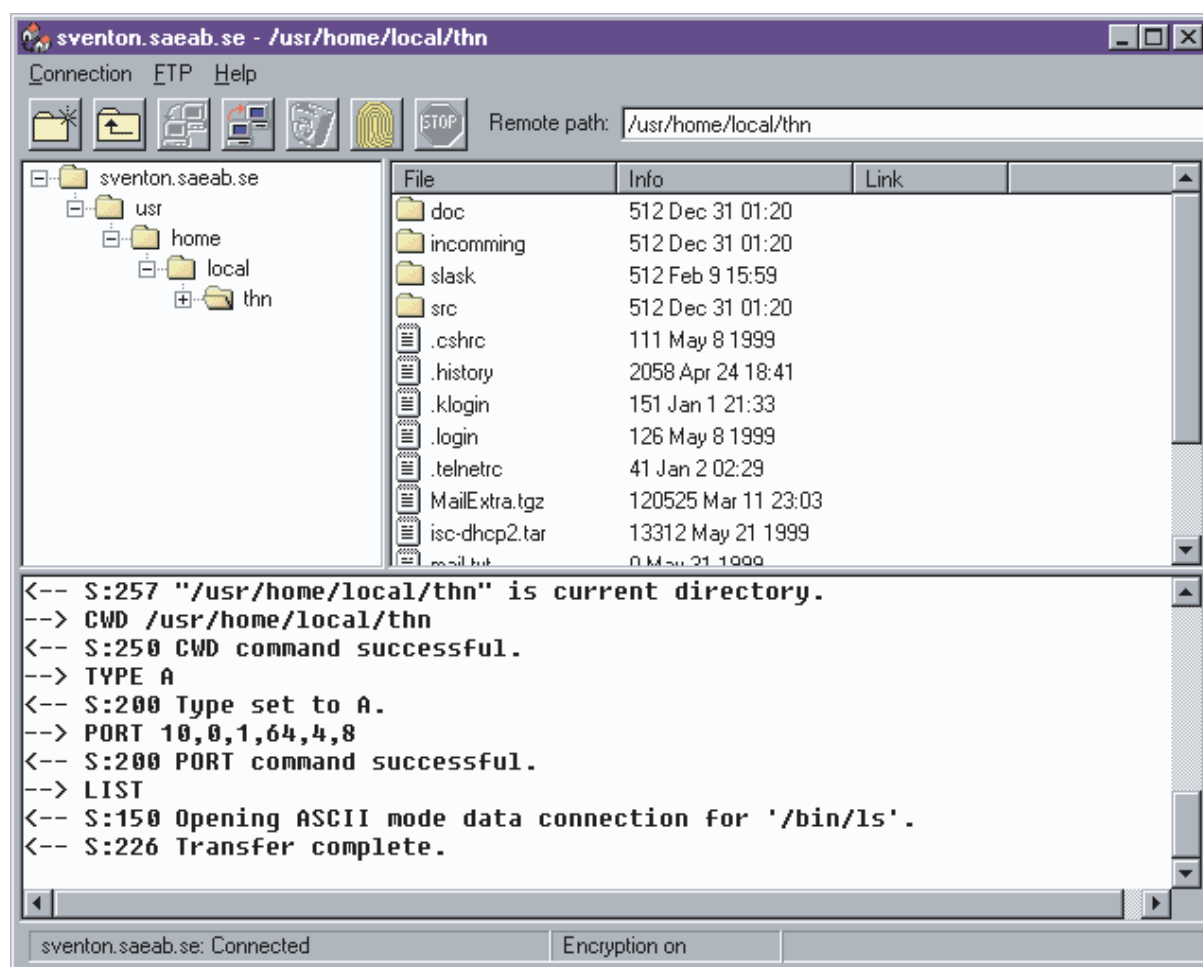


Figure 6: KFTP main window.

## Remote tickets with Kerberos 4

On some types of remote systems you will need to have kerberos tickets on the remote system. If you were using Kerberos 4 these tickets must be created manually. These tickets are created by choosing the 'FTP, Remote Tickets, Authenticate' menu choice.

There is also a possibility to have KFTP automatically create the Kerberos 4 tickets when you connects to a system: In the 'Connection, Properties' dialog box under the 'Main' tab there exists a flag 'Auto. authenticate'. By checking this flag KFTP will automatically create remote tickets for you (if the remote system supports Kerberos). If you were authenticated with Kerberos 5 the automatic creation of Kerberos 4 tickets will not be performed regardless of the settings of the 'Auto. authenticate' flag.

During the creation of remote tickets (manually or automatically) a dialog box (figure 4) will appear, fill in the data for the remote system and tickets will be created on the remote system.

## Remote tickets with Kerberos 5

If you are authenticated with Kerberos 5 remote tickets may be automatically placed on the server. This will only happend when you are authenticated directly to the realm (no cross authentication) and the following properties (in krb5.conf, see page 34) are set:

```
no-addresses (or win32_noaddresses) = true
forward = true
forwardable = true
proxiabile = true
```

## Download of files

To download one (or several files) mark the file(s) in the file window, and press the right mouse button to bring up a pop up menu and select 'Download' from this menu. If you were going to download a single file you will have a normal 'Save As' dialog box selecting the destination of the file on you local system. In the same dialog box you also have the option of selection the type of transfer to use (Binary, Ascii or Tenex). If you selected several files for download you will see another type of dialog box where you instead select the destination directory for the files, you also get the option of selecting the transfer type.

During the download of a file a progress bar (with percentage transferred) is shown in the bottom part of the window.

## Upload of files

To upload one (or several files) you mark the destination directory in the tree window and press the right mouse button. Select the 'Upload' menu choice. A standard 'Open file' dialog box appear and you can in this dialog box select one (or more) files for uploading. The transfer method for the files can also be set here.

During upload of a file a progress bar is shown in bottom part of the window.

## **Updating directory list**

If for some reason the directory list (the right part of the window) gets inaccurate it can be refreshed by pressing F5 (or selecting the 'FTP, Refresh' menu choice).

In the navigation bar there exist three buttons: Create directory, Go up one level and a Stop button. The Stop button is only available when an operation is in progress against the remote system. To the right of the buttons is a field showing which directory is selected on the remote system. The contents of the field can be edited and when Enter is pressed in this field the shown directory for the remote system is changed.

## **Links**

If the remote system supports links the links will have a special handling in the FTP client. All links will be shown with a chain against it in the file window. The FTP client can't know if a link points to a file or if it points to another directory.

If a link is double clicked a file transfer of the link will be attempted. If the link is not an ordinary file the attempted file transfer will fail. To open the link as a directory, mark it, press the right mouse button and select 'Open' from the menu choice. If it was a link to a directory this directory will be opened (and shown in the file window), the directory will also be added to the tree window.

# Common problems

---

## Error: 'Time is out of bounds'

This usually means that the time in your local computer differs more than five minutes from the system you try to connect to. During the creation of tickets the time is used to limit the time when the tickets are valid, this time is sent in GMT/UTC between your local computer and the remote system. If your timezone information or your daylight savings settings are wrong then the sequence of creating tickets may fail. The solution to this problem is to correct your settings in your computer. The accuracy of the clock in an ordinary PC-system is not good, therefore there might be necessary to set the time every time you turn on your computer. Kerberos has one work around for this problem: The client, KTelnet, might adjust the time it is using against the remote system automatically, this feature is turned on with the option *kdc\_timesync*. This option is set in the *krb.extra* properties page, see page 32.

## Problem: I can't use FTP but Telnet works fine.

You are probably having a firewall using NAT between your computer and the FTP-server. The IP-address is used in the crypto algorithm of Kerberos. If your local computer and the remote server have different ideas of your IP-address the FTP protocol will fail. The crypto algorithm of Telnet doesn't use the IP-address and therefore it works. The solution to this problem is to tell KTelnet that NAT is used, KTelnet will then figure out the IP-address that the server sees you from. The option is called *nat\_in\_use* and should be set in the *krb.extra* properties page, see page 32.

## Problem: KTelnet or KFTP doesn't work with MIT K5

Kerberos 5 support different types of encryption of keys and tickets. There might be a mismatch between KTelnet and MIT Kerberos 5. If this occurs go to the Kerberos 5 properties (see page 35) and add the parameters 'default\_etypes' and 'default\_des\_etypes', both with the value 'des-cbc-crc'. Make sure that your Kerberos 5 server and your Telnet/FTP server also supports and accepts this encryption type.

## **Problem: KFTP doesn't work when using GSSAPI**

You are probably using NAT. GSSAPI have problems with NAT depending on how the addresses of each side of the connection is verified. There exists a change to Heimdal that handles this. This changes is made on the server side. If you suspect you have this problem make sure that the server you are trying to use is running a Heimdal version later than 0.6 or a snapshot later then 2003-09-18.

## **Problem: KFTP can connect but files can't be accessed**

If the files you are trying to access on the remote server is placed on an AFS filesystem you need tokens (or tickets) on the remote system. If you have authenticated with Kerberos4 you can use the small fingerprint button to create such tokens (or tickets) with Kerberos 4 (see page 11). If you have authenticated with Kerberos 5 (or GSSAPI) these tokens (or tickets) should have been created automatically. Please see page 11 for a description.

# Reference guide

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## Commandline KTelnet

KTelnet may be started with arguments on the command line. This is used to start the Ticket manager of KTelnet or directly create a session to another host. For all variants below the switch ‘-i *profile*’ can also be given, where *profile* is a name of a defined profile (see page 41 about profile usage). KTelnet accepts the following variants on the command line:

### Ticket Manager

```
KTELNET -m
```

This will start KTelnet in Ticket Manager mode (see page 7).

### Bring up Connect to dialog box

```
KTELNET -o [-i profile]
```

This will bring up the ‘Connect to’ dialog box (see page 4) to open a new session.

### Start Telnet session

```
KTELNET [-l user -p user[.instance][@realm]] host [port]
        [-i profile]
```

This form is used to open a new telnet connection.

**-l user** Optional argument giving the user name to be logged in as.

**-p user.instance@realm**

Optional argument giving the user name, instance and realm to be used for authentication. If realm is left out it is taken from realm for connected host.

**host** Name of host to connect to. This parameter must be given.

**port** Optional argument giving the port name (or number) of the port to connect to.

### Start serial connection

```
KTELNET -s [port[:settings]]
```

**-s** Start a serial connection

**port** Argument specifying witch port to connect to. If this parameter is not given the 'Connect to' dialog box for serial port (see figure 2) will be shown.

#### settings

This optional argument can be used to give the settings for this session. The port name and the settings must be given as one argument: if it contains spaces the whole argument must be surrounded by quotes, for example: KTELNET -s "COM2: BAUD=9600 PARITY=NONE". The format of the strings is the same format used for the MS-DOS command 'mode'.

### Start FTP session

```
KTELNET -f [-l user -p user[.instance][@realm]] [host]
```

**-f** Start a FTP-session.

**-l user** Optional argument giving the user name to be logged in as.

**-p user.instance@realm**

Optional argument giving the user name, instance and realm to be used for authentication. If realm is left out it is taken from realm for connected host.

**host** Name of host to connect to. If this parameter is not given the 'Connect to' dialog box for FTP (see figure 3) will be shown.

### No options

```
KTELNET
```

Start KTELnet without opening any connections.

## Commandline KPopProxy

KPopProxy doesn't accept any arguments on the command line.

```
KPOPPROXY
```

This will start KPopProxy. If the normal window of KPopProxy is shown it will display a log of different activities during the operation of KPopProxy. This window is normally not used.

## Commandline KFTP

KFTP doesn't accept any arguments on the command line.

KFTP

This will start KFTP.

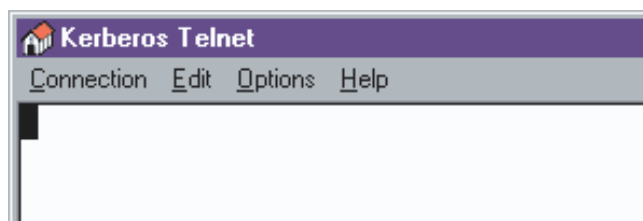


Figure 7: Menus in KTelnet.

## Commandline KINIT

KINIT is a commandline only program used to get Kerberos 5 tickets for a realm. It is a port of the Heimdal version of KINIT, please see Heimdal documentation for this program.

## Commandline KDESTROY

KDESTROY is a commandline only program used to destroy all tickets currently. It is a port of the Heimdal version of KDESTROY, please see Heimdal documentation for this program.

## Commandline KLIST

KLIST is a commandline only program used to list all tickets. It is a port of the Heimdal version of KLIST, please see Heimdal documentation for a complete description of this program. One flag could be mentioned here: '-v', this flag will show the Kerberos 5 tickets in verbose mode and some additional information about the tickets is shown.

## Commandline KPASSWORD

KPASSWORD is a commandline only program used to change the password for a user. It is a port of the Heimdal version of KPASSWORD, please see Heimdal documentation for a complete description of this program.

The program takes one argument and that is a name of a user to change the password for. The program will ask for the old password and the new password (twice). The password is not shown while it is typed in.

# Menus

## KTelnet menus

The menus in KTelnet is used to activate different types of functions. There are four main menus, each having different sub menus (see figure 7).

### Connection

- Show tickets** Start (or activate) the ticket manager.
- New** Start a new copy of KTelnet and bring up the 'Connect to' dialog.
- Open** Open a new connection in the current window. Only available if no connection is available in the current window.
- Close** Close the connection in the current window.
- Properties** Set properties for KTelnet and Kerberos.
- Exit** Exit KTelnet (and close session in current window).

### Edit

- Copy** Copy current text selection to the clipboard. Only available if some text is selected in current window.
- Paste** Paste text from clipboard into current window as if it had been typed on the keyboard.
- Print selected**  
Send to selected text to the defined printer in KTelnet (see page 28).
- Select all** Select all text in current window for copy.

### Options

- Terminal** Change parameters for terminal.
- Edit Profile**  
Edit profiles (see page 41).
- Set default profile**  
Clear current profile and load default settings.
- Import profile**  
Read in profile from a file. Asks if current profile shall be cleared before loading.
- Export profile**  
Exports profile to file. Exporting and importing profiles is not guaranteed to work between different versions of KTelnet.
- Reset terminal**  
Reset terminal emulator (no text is cleared).

### **Serial port settings**

Change settings for serial port. Only available when serial connection is active.

**Send** Sends several telnet specification codes. Only available when a telnet session is active.

### **Are you there**

### **Interrupt Process**

### **Abort Output**

### **Erase Character**

### **Erase Line**

### **Break**

**Text** Commands for sending and capturing text

#### **Capture text**

Capture all received characters to a local diskfile

#### **End capture**

Ends above capture function

#### **Send text**

Sends text from a local file as it was typed on the keyboard. Brings up a file browser to select the name of the file to be sent. In the same dialog the mode of character conversion can be selected.

**Printer** Functions to control printer.

#### **Eject page**

Eject page (or sends a Form Feed) to selected local printer.

### **Help**

**About** Shows the about box with copyright and version information

## Ticket manager menus

The menus in Ticket Manager is used to manage the tickets. There are two main menus (see figure 8) and a popup menu when the ticket manager is active on the system tray.

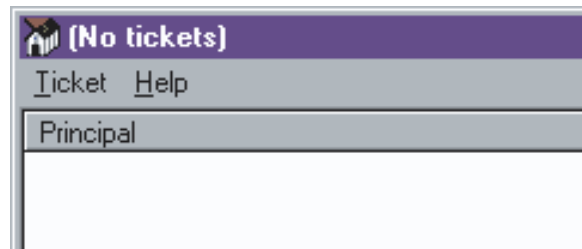


Figure 8: Menu in Ticket Manager.

### Ticket

#### **New connection**

Starts a KTelnet and opens a new connection.

#### **Refresh**

Redraw the contents of the ticket window.

#### **Properties**

Set properties for KTelnet and Kerberos

#### **Login**

Get tickets for realm.

#### **Kerberos 4**

Login into a new realm with Kerberos 4.

#### **Kerberos 5**

Login into a new realm with Kerberos 5.

#### **Change password**

Change password

#### **Kerberos 4**

Change password in a Kerberos 4 realm.

#### **Kerberos 5**

Change password in a Kerberos 5 realm.

#### **Destroy tickets**

Destroys all tickets (after confirmation).

#### **Close window**

Close down window (doesn't exit program if Ticket Manager exists on System Tray).

#### **Exit ticket manager**

Exit Ticket Manager.

### Help

#### **About**

Shows the about box with copyright and version information

### System Tray

#### **Left click**

Bring up the ticket window.

#### **Right click**

Bring up a menu.

## KPopProxy menus

The menus in KPopProxy is used to activate different types of functions. There are three main menus, each having different sub menus (see figure 9) and a popup menu when KPopProxy is active on the system tray.

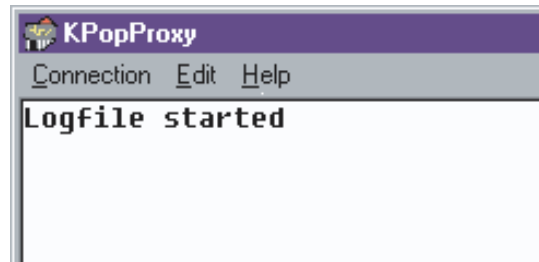


Figure 9: Menus in KPopProxy.

### Connection

**Show tickets** Start (or activate) the ticket manager.

**Properties** Set properties for KPopProxy and Kerberos.

### Close window

Close down window (doesn't exit program if KPopProxy exists on System Tray).

**Exit** Exit KPopProxy.

### Edit

**Select all** Select all text in current window for copy.

**Delete all** Delete all text in logwindow.

**Save as** Save text in logwindow into a file.

**Copy** Copy current text selection to the clipboard. Only available if some text is selected in current window.

### Help

**About** Shows the about box with copyright and version information

### System Tray

**Left click** Bring up the main (log) window.

**Right click** Bring up a menu.

## KFTP menus and navigation bar

The navigation bar (see figure 10) contains several buttons that can be used as shortcuts to different functions of the program. The 'Remote path' field could be changed directly to allow easy navigation on the remote system, after the field is changed, press Enter to go to the given path.

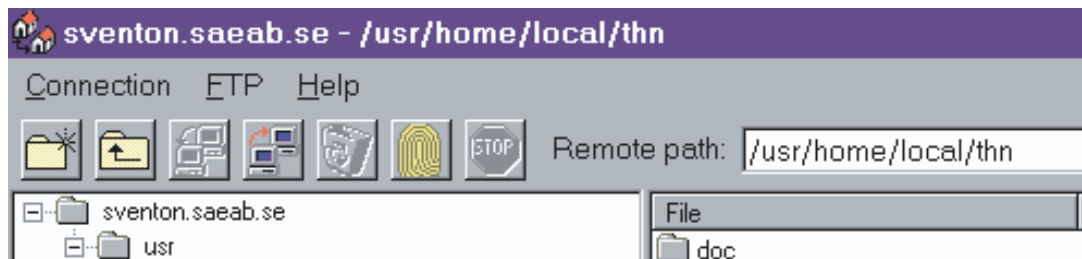


Figure 10: KFTP navigation bar and menu.

### Connection

- Show tickets** Start (or activate) the ticket manager.
- Open** Open a new connection in the current window. Only available if no connection is available in the current window.
- Close** Close the connection in the current window.
- Properties** Set properties for KFTP.
- Exit** Exit KFTP.

### FTP

#### Remote tickets

##### Authenticate

Create tickets on remote system (see page 10). *Only Kerberos 4 tickets are supported for retrieval.*

**Destroy** Destroy tickets on remote system.

**List** Show tickets on remote system.

**Afslog** Create AFS tokens on remote system. A dialog box appears where the name of desired AFS cell can be given.

**Download** Down selected file(s). See also note about links (page 11).

**Upload** Upload files to selected directory.

**Open** Open selected directory (or a link as a directory, see page 11).

**Rename** Rename remote file or directory.

**Delete** Delete remote file or directory.

**Make directory**

Create a new remote directory.

**Refresh**

Update the file list.

**Help****About**

Shows the about box with copyright and version information

**Buttons on navigation bar**

Create new directory.



Go up one level.



Download file.



Upload file.



Delete file or directory.



Authenticate.



Abort current operation.

# Program Properties

With the 'Properties' choice in 'Connection' menu or 'Ticket' menu different types of properties are set for KTelnet, Ticket Manager and Kerberos Client.

## Main properties

The main properties page (figure 11) contains several flags for KTelnet and FTP, font size for window, cursor style and size of scroll back buffer.

### Flags

**Auto wrap** Enables automatic wrap of long lines in terminal window.

### Paint if scroll needed

If checked the whole window is redrawn if a scroll is needed. When running a serial session with high speed (> 9600 bps) characters may be lost due to some behavior of video drivers. Checking this flag bypasses the problem but slows down screen updating.

### Enable notes

Show notes during establishing of connections.

### Use FTP passive

Default flag is passive mode shall be used for FTP transfers or not.

### Show # during FTP

Shows a number sign for every 1024 bytes that is transferred of a file.

### FTP Prompt mode

A confirmation is needed for every file to transfer in MPUT and MGET commands during FTP.

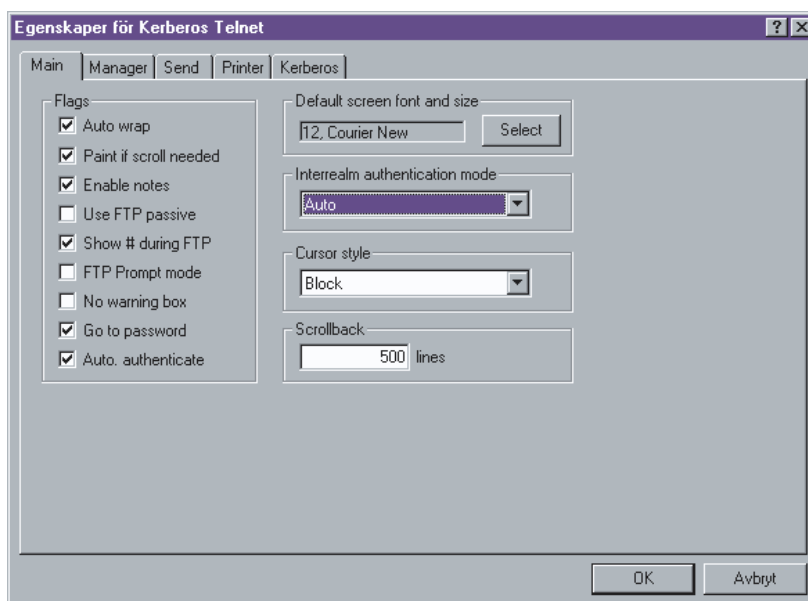


Figure 11: Main properties page

**No warning box**

Disables the warning box when closing KTelnet and a session is open. Also disables the dialog shown when bad tickets are encountered assuming that the tickets shall be destroyed and that new tickets shall be created (see page 6).

**Goto password**

Defines behavior of dialog box when asking for user name and password. If username and realm is given (or known) the password field is activated when dialog is shown.

**Auto. authenticate**

Used by graphical FTP client. Tells the client to automatically create tickets on the remote system (see page 10).

**Default screen font and size**

Shows the selected screen font and size in the default profile. The 'Select' button brings up a Windows Font Selection Dialog. Only fixed pitch fonts are shown in dialog.

**Interrealm authentication mode**

Selects if interrealm authentication should be used and how it should be used:

- Auto** Try to automatically interrealm authenticate. If it fails ask for data for new realm.
- Select** When a new realm is encountered ask which old realm should be used for interrealm authentication or get data for new realm.
- Never** Never use interrealm authentication, this is the old behavior of KTELNET.

**Cursor style**

Allows change of cursor style between 'Vertical bar' (Windows normal), 'Block' and 'Underline'.

**Scroll back**

Sets the size of scroll back buffer. Maximum size is 500 lines. KTelnet must be restarted for this option to take effect if it is changed.

## Pop Proxy properties

The Pop Proxy properties page (figure 12) contains several flags for KPOPPROXY.

### Flags

**Echo**            Echo commands back to POP3 channel. Only used during debug. If this flag is enabled during normal operation the communication with the local mail reader will fail.

### On startup

#### Normal Window

Start a normal window when KPOPPROXY is started.

#### Icon on system tray

Start KPOPPROXY as an icon on the system tray.

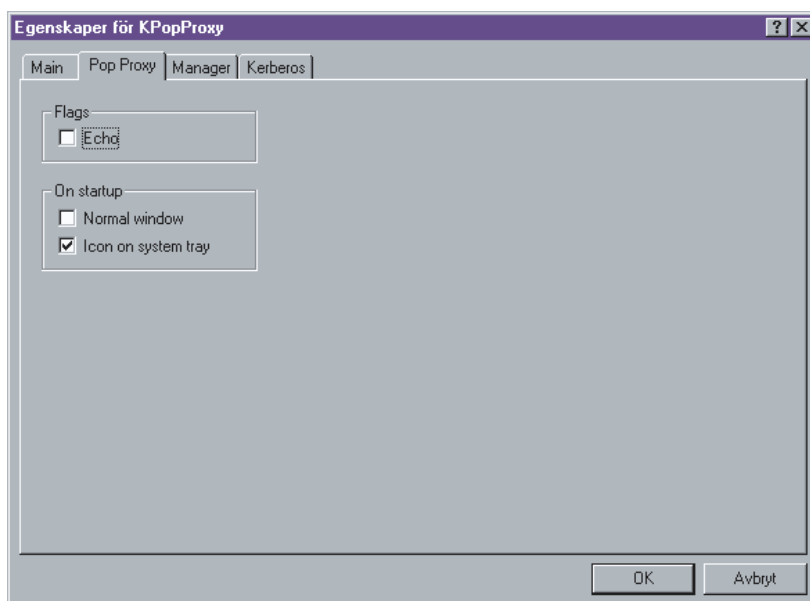


Figure 12: Pop Proxy properties page.

## Manager properties

The manager properties page defines the name and behavior of the Ticket manger.

### Ticket manager command line

This specifies the name of the Ticket Manager EXE-file and command line arguments. If KTelnet is used as ticket manager this fields shall contain the absolute path of the KTelnet EXE-file and the argument '-m' to start KTelnet as Ticket Manager (see page 12 for explanation of command line parameters).

### On startup

#### Normal window

Start Ticket manger with a normal window.

#### Icon on system tray

Start Ticket manager as an icon on the system tray.

#### Auto start ticket manager

Let Kerberos libraries start the ticket manager if someone is requesting use of the Kerberos Client.

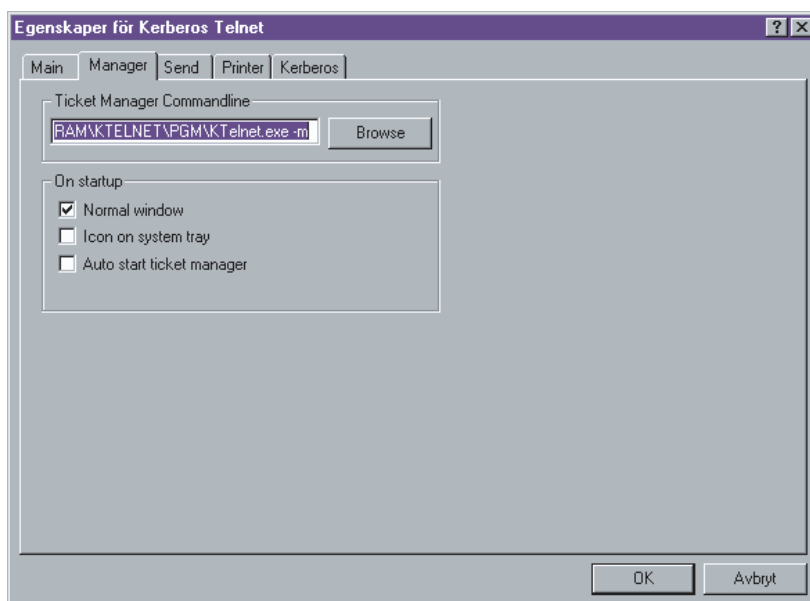


Figure 13: Ticket manager properties page.

## Send properties

The send properties defines properties for sending a file with the menu choice 'Option' -> 'Text' -> 'Send text' (see page 18).

### Default character conversion

Defines the default character conversion for sending a text file.

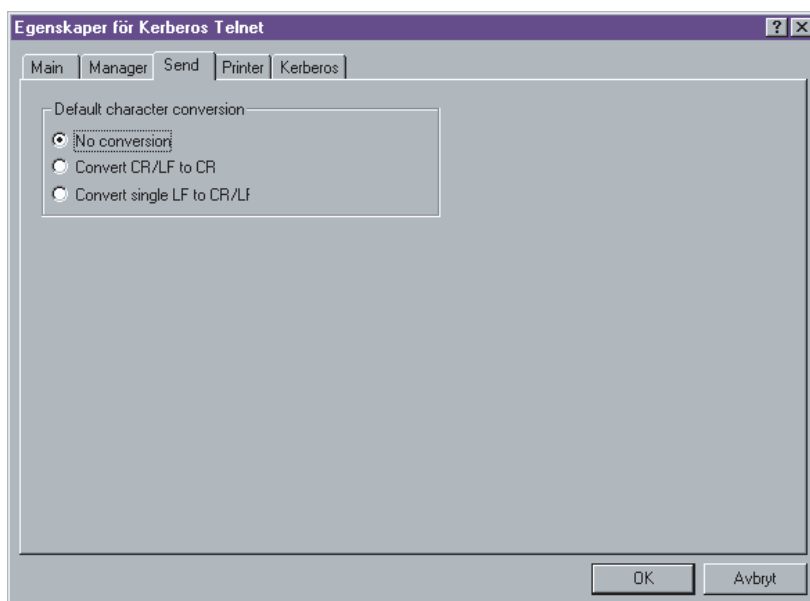


Figure 14: Send properties page.

## Printer properties

Defines the properties for local printer (see figure 15). The local printer (if defined) can be activated by host during a telnet session with special character sequences. This printer is also used when printing selected text.

### Output

Selects the printer type, setup for printer and font.

**Disk file** Received print data is written to a file. The 'Setup' button brings up a file browser for selection of file.

### Windows printer

Received data is sent to a windows printer. KTelnet simulates a dumb printer acting only on Carriage Return, Line Feed, Horizontal TAB and Formfeed. The 'Setup' button is used to select which Windows printer to use. 'Select Font' is used to select which font (and size) to be used during printing.

### Direct to COM1, COM2, COM3, COM4

Send data to serial printer attached to selected serial port. The 'Setup' button lets you select speed and other characteristics of the serial port.

### Direct to LPT1, LPT2, LPT3

Send data to printer attached to selected printer port.

### Options

#### Show text during print

If checked all characters sent to printer is shown on screen.

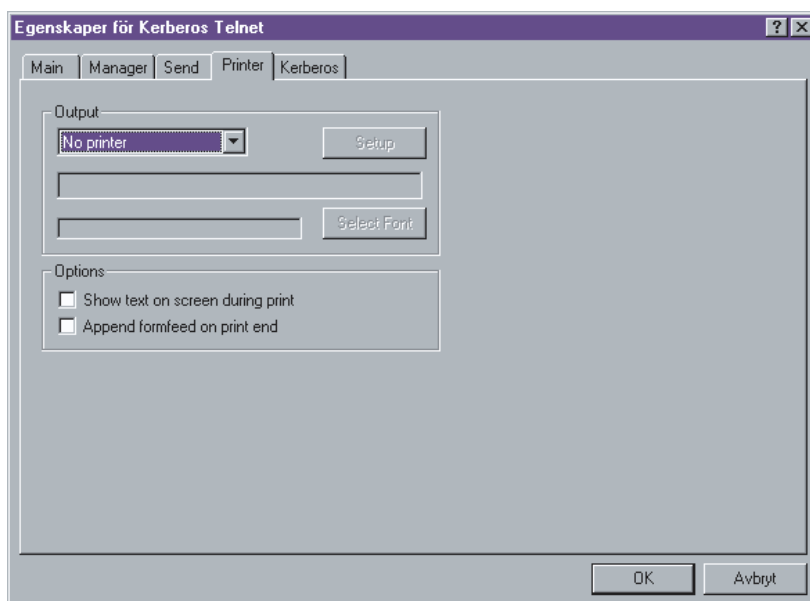


Figure 15: Printer properties page

**Append formfeed on print end**

If checked the current printed page is printed out when a print sequence is ended.

## Kerberos properties

All Kerberos specific settings now occurs on the same page. The left pane shows the different ‘configuration files’ that exists on a UNIX-system. In earlier versions of KTelnet the ‘files’ had their own tab in properties page but are now merged into one page. The left pane is a tree with the different information needed for Kerberos. All Kerberos 5 settings is put together under *krb5.conf* and the settings for Kerberos 4 is placed under the other names.

The tree shown in the left pane is handled in the usual Windows way. By selecting an entry in the tree and right-click a pop menu occurs. Not all choices are allowed on all places in the tree, if a choice is not valid it is grayed out. This menu have the following choices:

**Delete entry** Delete the selected tree.

**Change parameter name**

Change the name of selected tree.

**Add entry** Add a new tree entry under the selected entry.

**Import** Import a configuration file. The format of the file is compatible with the corresponding UNIX file format.

**Export** Export a configuration file. The format of the file is compatible with the corresponding UNIX file format.

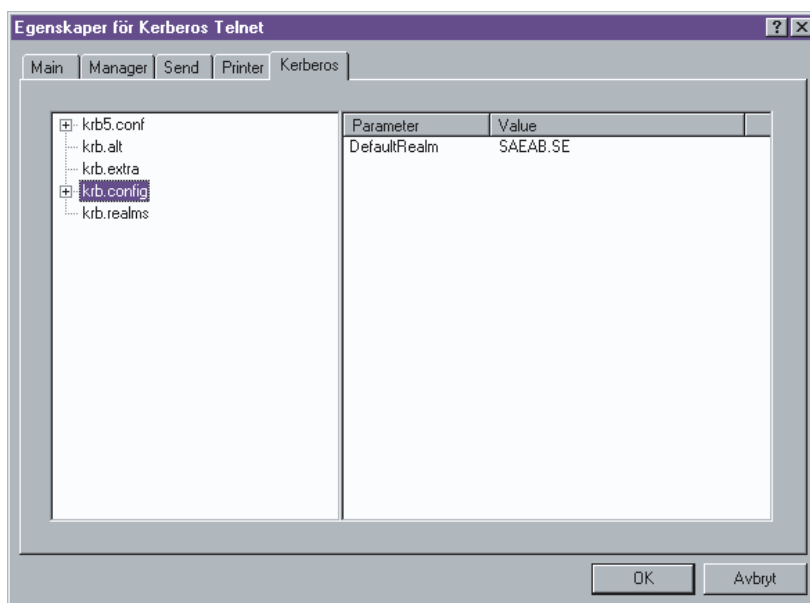


Figure 16: Kerberos settings.

When a tree entry is selected in the left pane a list (with values) may occur in the right pane. This list is handled in the same way as the tree: By right-clicking an entry a popup menu occurs:

**Delete Entry** Delete the selected parameter.

**Change parameter name**

Change the name of the selected parameter

**Change value** Change the value for the selected parameter.

**Add Entry** Add a new parameter and value.

The function for the different trees are described in the next two chapters

## Kerberos 4 properties

The kerberos 4 properties are divided into four trees:

### **Krb.realms tree**

This tree defines realm names for hosts and domains. The data shown to the right is used by the Kerberos Client. This is a list of host or domain names, for each entry a realm is assigned.

### **Krb.config tree**

This tree defines the default realm and servers for realms. This list is used by the Kerberos Client. Every entry consists of one realm, a server name and service properties for that server.

### **Krb.extra tree**

This tree defines extra properties for the Kerberos client. The data shown to the right is used by the Kerberos Client and KTelnet. This is a list of properties names and values.

This is a few variables used by the Kerberos Client and KTelnet:

#### **nat\_in\_use**

Defines if NAT is used between our local machine and some Kerberos server (see page 39). Value 'Yes' or 'No'.

#### **kdc\_timesync**

Defines if automatic compensation of time difference between local machine and Kerberos server shall be performed. Value 'Yes' or 'No'.

### **Krb.alt tree**

This tree defines alternate realms. Alternate realms is used when a ticket for a user is tried to get from a realm but the user doesn't exist in this realm (see page 41 for more info). The users ticket is then tried to get from the alternate realm. This is a list of realms with alternate realms.

## Kerberos 5 properties

The Kerberos 5 properties are all placed in one single tree, `krb5.conf`. This tree have four subtrees that are described below. (Other subtrees might exists on other system but only these four are used by KTelnet).

### Domain\_realm

This the the translation table between domain-names and realms. It works like the `krb.realms` settings for Kerberos 4.

### Logging

This list contains the settings for logging options.

### Libdefaults

This list contains general settings for Kerberos 5.

Parameter	Type	Default	Function
<code>clockskew</code>	Number	300	Maximum allowed time difference (in seconds) when comparing times.
<code>default_realm</code>	String	-	Name of default realm.
<code>extra_addresses</code>	Strings	-	List of extra addresses to obtains tickets for.
<code>http_proxy</code>	URL	-	Name of proxy server when talking to kerberos server.
<code>kdc_timeout</code>	Number	3	Timeout value (in seconds) when waiting for answer from kerberos server.
<code>kdc_timesync</code>	Boolean	False	Try to synchronize time with kerberos server.
<code>max_retries</code>	Number	??	The maximum numbers to retry a request to a server.
<code>ticket_lifetime</code>	Number	??	Default ticket lifetime.
<code>win32_noaddresses</code> <code>no-addresses</code>	Boolean	False	Put no addresses in tickets, useful when running through NAT and ‘outside’ address of NAT server is not known.

*Please note: The above parameter was incorrectly described in earlier versions of the manual.*

Parameter	Type	Default	Function
default_etypes default_des_etypes	String	??	The general default encryption type and the default encryption type when des is needed.  The currently recognized encryption types are ( <i>please note that all are not tested</i> ): des-cbc-crc, des-cbc-md4, des-cbc-md5, arcfour-hmac-md5, des3-cbc-md5, des3-cbc-sha1, old-des3-cbc-sha1, des-cbc-none, des-cfb64-none, des-pcbc-none, des3-cbc-none, des3-cbc-none-ivec
forwardable	Boolean	false	Get ticket that is forwardable to remote system
forward	Boolean	false	Forward ticket to remote system (during FTP authenticated with GSSAPI or during telnet session.)

## Realms

This is a tree with settings for different realms.

## Appdefaults

Used to set parameters for different applications. Divided into subgroups where the name of the group is the name of the application.

Application	Parameter	Type	Function
telnet	forward	Boolean	Forward tickets to remote system.

## FTP commands

When a FTP session is active the FTP client in KTelnet accepts the following commands:

**ASCII**        Select ASCII mode transfer of files.

**AFSLOG [cell]**  
              Create AFS tokens on FTP server (KAUTH command must first be given).

**BINARY**      Select BINARY mode for transfer of files.

**BYE**         Close down FTP session

**CD [directory]**  
              Change directory on FTP server.

**CWD [directory]**  
              Change director on FTP server.

**DELETE filename**  
              Delete file on FTP server.

**DIRECTORY [path [localfile]]**  
              List directory on FTP server. If 'localfile' is given output from directory listing is written to this file.

**EXIT**        Close down FTP session.

**GET remotefile [localfile]**  
              Get file from FTP server. If 'localfile' is given file is written to that name, otherwise 'remotefile' is used as local filename.

**HASH**        Toggle printing of a number sign ('#') for every 1024 transferred byte.

**HELP**        Show a list of available commands.

**KAUTH [principal]**  
              Start authentication sequence on FTP server to create tickets on FTP server.

**KDESTROY**    Destroy tickets on FTP server.

**KLIST**       List tickets on FTP server.

**LDIRECTORY [path]**  
              List directory on local machine.

**LCD [directory]**  
Change current directory on local machine.

**LCWD [directory]**  
Change current directory on local machine.

**LOCALDIRECTORY [path]**  
List directory on local machine.

**LOCALCD [directory]**  
Change current directory on local machine.

**LOCALCWD [directory]**  
Change current directory on local machine.

**LS [path [localfile]]**  
List directory on FTP server. If 'localfile' is given output from directory listing is written to this file.

**MGET wildcard**  
Get multiple files from FTP server in one operation. If prompting is on a confirmation is needed for every file.

**MKDIR path**  
Create directory on FTP server.

**MPUT wildcard**  
Send multiple files to FTP server in one operation. If prompting is on a confirmation is needed for every file.

**PASSIVE** Toggle passive mode. Note that if Kerberos authentication (and encryption) and NAT is used passive mode must be enabled to allow file transfer. KTelnet automatically detects this situation and enables passive mode.

**PROMPT** Toggle prompt mode during transfer of multiple files (MGET and MPUT).

**PUT localfile [remotefile]**  
Send local file to FTP server. If 'remotefile' is given file is written with this name on FTP server.

**PWD** Print name of current directory on FTP server.

**QUIT** Close down FTP session.

**RENAME oldname newname**  
Rename a file on FTP server.

**RM remotefile**

Delete file on FTP server.

**RMDIR path**

Delete a directory on FTP server.

**TENEX**

Enable BINARY and TENEX mode on FTP server.

## Supported XTERM commands

The ANSI emulator in KTELNET supports a subset of XTERM and ANSI control sequences. The following list is only shown as a reference of which control character and sequences KTELNET accepts.

### Definitions

c	The literal character c.
C	A single (required) character.
Ps	A single (usually optional) numeric parameter, composed of one or more digits.
Pm	A multiple numeric parameter composed of any number of single numeric parameters, separated by ; character(s).
Pt	A text parameter composed of printable characters.

### Supported sequences

BEL	Bell (Ctrl-G), makes a standard Windows beep.
BS	Backspace (Ctrl-H).
TAB	Horizontal Tab (HT, Ctrl-I).
LF	Line Feed or New Line (NL, Ctrl-J).
CR	Carriage Return (Ctrl-M).
ESC # 8	Fill screen with the character 'E'.
ESC 7	Save Cursor.
ESC 8	Restore Cursor.
ESC =	Application Keypad.
ESC >	Normal Keypad.
ESC <	ANSI mode.
ESC D	Index (Cursor down).
ESC E	Next Line.
ESC H	Tab Set at current column.

ESC M        Reverse Index (Cursor up).

ESC Z        Return Terminal ID: ESC [ ? 1 ; 2 c

ESC [ Ps @    Insert Ps Character(s) (default = 1).

ESC [ Ps A    Cursor Up Ps Times (default = 1).

ESC [ Ps B    Cursor Down Ps Times (default = 1).

ESC [ Ps C    Cursor Forward Ps Times (default = 1).

ESC [ Ps D    Cursor Backward Ps Times (default = 1).

ESC [ Ps ; Ps H  
              Cursor Position [row;column] (default = [1,1]).

ESC [ Ps J    Erase in Display (ED)  
              Ps = 0 -> Clear Below (default).  
              Ps = 1 -> Clear Above.  
              Ps = 2 -> Clear All.

ESC [ Ps K    Erase in Line (EL)  
              Ps = 0 -> Clear to Right (default).  
              Ps = 1 -> Clear to Left.  
              Ps = 2 -> Clear All.

ESC [ Ps L    Insert Ps Line(s) (default = 1).

ESC [ Ps M    Delete Ps Line(s) (default = 1).

ESC [ Ps P    Delete Ps Character(s) (default = 1).

ESC [ Ps c    Send Device Attributes  
              Ps is ignored, always answer ESC [ ? 1 ; 2 c

ESC [ Ps ; Ps f  
              Horizontal and Vertical Position [row;column] (default = [1,1]).

ESC [ Ps g    Tab Clear.  
              Ps = 0 -> Clear Current Column (default).  
              Ps = 3 -> Clear All.

ESC [ Ps h    Set Mode  
              Ps = 4 -> Insert Mode

ESC [ Ps i    Start/Stop Printer  
              Ps = 5 -> Print start.  
              Ps = 4 -> Print end.

ESC [ Pm l    Reset Mode  
Ps = 4 -> Replace Mode.

ESC [ Pm m    Character Attributes  
Ps = 0 -> Normal (default).  
Ps = 1 -> Bold.  
Ps = 4 -> Underscore.  
Ps = 5 -> Blink (appears as Reverse).  
Ps = 7 -> Inverse.  
Ps=22 -> Normal (default).  
Ps=24 -> No underscore.  
Ps=25 -> No blink.  
Ps=27 -> No inverse.

ESC [ Ps n    Ps ignored, always return cursor position as ESC [ r ; c R

ESC [ Ps ; Ps r  
Set Scrolling Region [top;bottom] (default = full size of window).

ESC [ ? Pm h  
DEC Private Mode Set  
Ps = 1 -> Application Cursor Keys.  
Ps = 6 -> Origin Mode.  
Ps = 7 -> Wraparound Mode.

ESC [ ? Pm l  
DEC Private Mode Reset  
Ps = 1 -> Normal Cursor Keys.  
Ps = 6 -> Normal Cursor Mode.  
Ps = 7 -> No Wraparound Mode.

ESC ] Ps ; Pt BEL  
Set Text Parameters  
Ps = 0 -> Change Icon Name and Window Title to Pt.  
Ps = 2 -> Change Window Title to Pt.

ESC c        Full Reset.

## Interrealm authentication

This is a technique used to allow you to inherit your authentication from one realm to another. Earlier versions of KTELNET didn't support this feature. With this version of KTELNET it is now possible to use this feature and also use the old way of being authenticated in several realms. There exists a new setting in the main properties page (see page 25) where this behavior is selected:

- |               |  |
|---------------|--|
| <b>Auto</b>   | Try to automatically interrealm authenticate. All realms for which the user has been authenticated will be tried (in the order they exist in the ticketfile). If it is not possible to get any interrealm authentication ticket from any realm data will be asked for the new realm. |
| <b>Select</b> | Let the user select which realm should be used for interrealm authentication or let the user authenticate in the new realm. If no tickets exist ask directly for new data.   |
| <b>Never</b>  | Never use interrealm authentication, this is the old behavior of KTELNET.  |

## Alternate realms

*Alternate realms are not supported for Kerberos 5.*

KTELNET is also capable of using an alternate realm together with interrealm authentication (this is selected in the `krb.alt` property page, see page 33). Assume that you are connecting to a machine called 'burken.sup.company.com' as the user `sune38` and the ticket needed for this machine is `rcmd.burken@SUP.COMPANY.COM`. Now, the user doesn't exist in the realm `SUP.COMPANY.COM`, instead all users have been centrally created in the realm `COMPANY.COM`. By saying that 'COMPANY.COM' is an alternate realm to `SUP.COMPANY.COM` (see page 33), KTELNET will first try to get the user from `SUP.COMPANY.COM` but if that fails it will also try the realm `COMPANY.COM`. Please note that this is only done once, you can't have several alternate realms for one realm.

## Running through NAT and firewalls

### NAT (Network Address Translation)

NAT is a technique to allow several local system share the same IP-address at the same time when they connect to Internet or an Intranet, for example when an ISDN connection is used to Internet from a small LAN. The ISP supplies only one IP-address for the connection and the local ISDN router rewrites all packets that is routed between the local network and Internet. The computers on local network usually uses addresses from the 10.0.0.0 net. This may also be called PAT (Port Address Translation) or 'Single User Account'.

The handling of NAT differs between Kerberos 4 and Kerberos 5.

### NAT with Kerberos 4

During a telnet session this is not a problem but for FTP and for password change KTelnet and the Kerberos Client must be aware of this, in some cases the Kerberos Client must supply its own IP-address to the server in a Kerberos packet, the address supplied must be the same address that the Kerberos Server sees the client as. The Kerberos Client supplied with KTelnet can handle this. For efficiency this must be enabled in the Kerberos Client, this is done with the 'nat\_in\_use' property. This property is set in the 'krb.extra' properties page (see page 32).

### NAT with Kerberos 5

A Kerberos 5 ticket usually contains an address for whom the ticket is valid for, this address is put there by the client that needs the ticket. With Kerberos 5 there is no automatic way to retrieve the address used for NAT. There exists two solutions for this problem: If the same address (or one of a few addresses) is used for NAT this address could be given to KTelnet (see page 34, 'extra\_addresses') or the address could be omitted from the ticket (see page 34, 'win32\_noaddresses'). The second alternative must be used when a connection is made through an ISP and the assigned address is taken out of a large address pool.

To have FTP work with Kerberos 5 and NAT the FTP server must be changed. This change exists in Heimdal versions later than 2003-09-18.

### Using Firewalls

#### *Firewalls are not supported for Kerberos 5.*

There exists many types of firewalls depending on how they filters out different types of traffic, even NAT can be seen as a simple firewall. A more rigorous firewall will not allow any kind of routing between the inside and the outside, all traffic must pass through some kind of proxy function. If this proxy function is a HTTP proxy supporting the CONNECT option it might be possible for KTelnet to pass out through this firewall. Even if the firewall supports the CONNECT option the setup of the firewall might only allow connections to some specific ports on the outside (typically port 443 used for Secure HTTP). The best way to see if KTelnet is possible to use it to try to use it through the firewall.

For KTelnet to be able to pass a firewall several settings must be done:

- 1 NAT should be turned on (the 'nat\_in\_use' property must be set to 'Yes', see above).
- 2 The name of the proxy server (the firewall) must be set to KTelnet. This is done by the property 'krb4\_proxy' in the krb.extra properties page (see page 32). The value of the property should be an URL (including port number) for the proxy server, for example: *http://fw-ext.some-company.com:80*.
- 3 The kerberos server for the realms must be defined with an URL. This is done in the krb.config page (see page 31). The URL must be given with portnumber, this portnumber is usually 750. For the kerberos server att Stacken the following values will be used:  

Realm	<i>STACKEN.KTH.SE</i>
Server	<i>http://kerberos.stacken.kth.se:750</i>
Service	<i>admin server</i>

When a telnet session is to be opened through a firewall the 'Use HTTP-PROXY' option must be enabled (this option is only available when the 'krb4\_proxy' property is present) in the 'Connect to' dialog box (see page 4) or by the '-h' flag on the command line (see page 12).

### **Problems with firewalls and NAT**

The connections through NAT or a firewall might fail sometimes and the system claims that the ticket is invalid (usually saying that the IP address is invalid), this could occur if the server sees you from two different address: One address when you are getting your tickets and another address when you are trying to use them. When you are using NAT or a firewall this system might have several IP addresses on the outside and you can't tell for sure which address you will have when you establish a connection. If this occurs to you the only thing you can do is to retry the connection (including getting new tickets) until you get your tickets issued for the same address that you are using for the telnet session.

## Using profiles

Profiles is a way to have different settings for different connections with KTelnet. In the profile the following settings is assigned:

- Terminal font and terminal ID
- Keymap
- Input Translation table
- Output Translation table

Profiles is handled by the Options -> Terminal sub menu:

### Edit Profile

Select, Edit, Create and Delete profiles (see below).

### Set default profile

Clear current profile and load default settings.

### Import profile

Read in profile from a file. Asks if current profile shall be cleared before loading.

### Export profile

Exports profile to file. Exporting and importing profiles is not guaranteed to work between different versions of KTelnet.

## Edit Profile

In the first page the current profile can be selected. The *Delete* and *New* buttons is used to delete the current profile or make a copy of the current profile and give it a new name. If the profile is changed and one or more changes have been made to the original profile a question is asked of the settings should be save before the profile is changed.

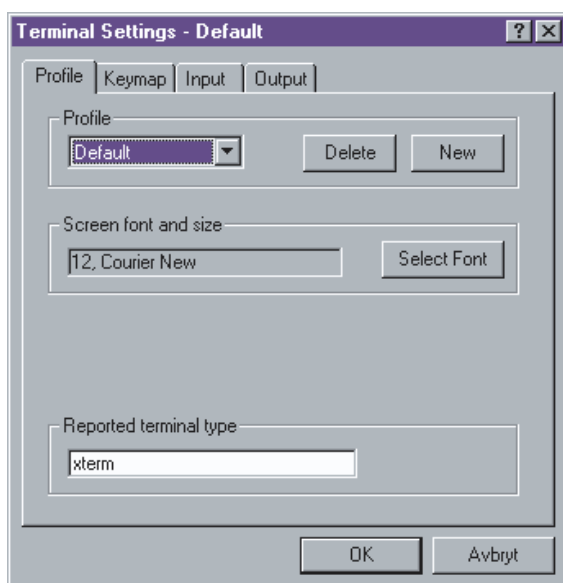


Figure 17: Edit profile.

The *Select font* button will allow you to select a specific font and character encoding for this profile. Which fonts and encodings you can select depends on what combinations you have available on you computer. If you select a character encoding other then the Western character set you might also have to add translation tables to get the characters right. In the 'Etc' directory where you installed KTelnet you can find several keymaps to help you to use different character encodes.

The field *Reported terminal type* is used to give the name of the reported terminal type. A change of this field will not affect the terminal emulator in any way, only the reported name.

## Keymap

During a session all keys (except for the Shift, Control and Alt) and the middle mouse button can be bound to send a arbitrary sequence of characters or to perform a command inside KTelnet. The exact action of every key is defined through the Keymap page of a profile (see figure 18).

The simplest way to edit the definition of a key is to click in the 'Press to Select Key' button and then press the desired key combination on the keyboard. This will update the 'Key' and 'Shift status' fields with the press key combination and show the current definition.

'Windows' means that the key combination is handled by windows and may generate a character to be sent to the remote system (this is the normal case for all 'normal' keys). 'Command' means that the key combination shall activate a given KTelnet command. 'Send string' means that the given characters shall be send to the remote system (the character is not translated by the translation tables). In the example shown the characters ESCAPE, 'O' and 'P' is sent to the remote system when function key F1 is pressed on the keyboard. If a non printable character shall be sent it could be written as an octal constant (three digits) be preceding them with an backslash ('\'). Some commonly used non printable characters has a shortcut:

- \a Send a BEL, ASCII 7.
- \b Send a Backspace, ASCII 8
- \t Send Horizontal TAB, ASCII 9
- \n Send a Line Feed, ASCII 10
- \r Send a Carriage Return, ASCII 13
- \e Send an ESCAPE, ASCII 27

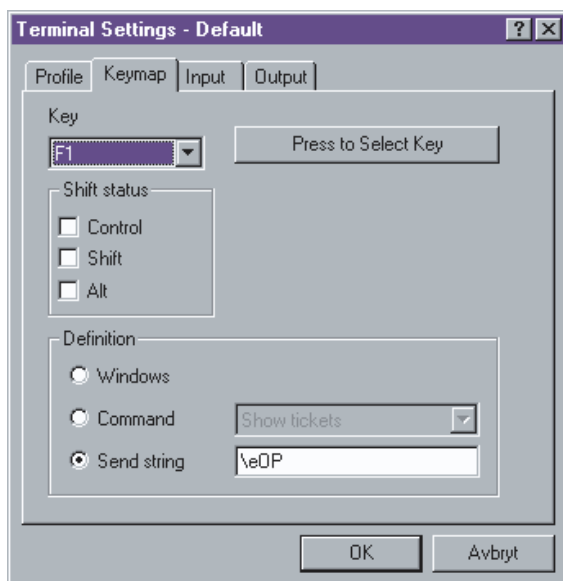


Figure 18: Edit keymap.

## Translation tables

When characters are received (input table) or sent (output table) they can be translated according to the translation tables. A character that is not listed in the table will not be translated. Only the character for a translation is made is shown in the table.

This page has the following buttons:

- Add** Used to add translation for a character. It will bring up a dialog where you give a pair of values, from and to. The values can be given in several ways: Decimal (65), Octal (0101), Hexadecimal (0x41) or as a character ('A').
- Delete** Deletes a the selected translation. A confirmation needs to be given before the character is deleted.
- Change** Changes the selected translation. A dialog appears (same as for add) and you can change the value.
- Clear** Clears the table. A confirmation is needed.

The flag 'Use windows translation' is use to let windows handle the translation depending on the current codepage selected by windows.

The contents of the table is always sorted on the 'Translate from' value. The format of the presented value in the table can be changed by clicking the column header in the table. Every click rotates one step between the available radices.

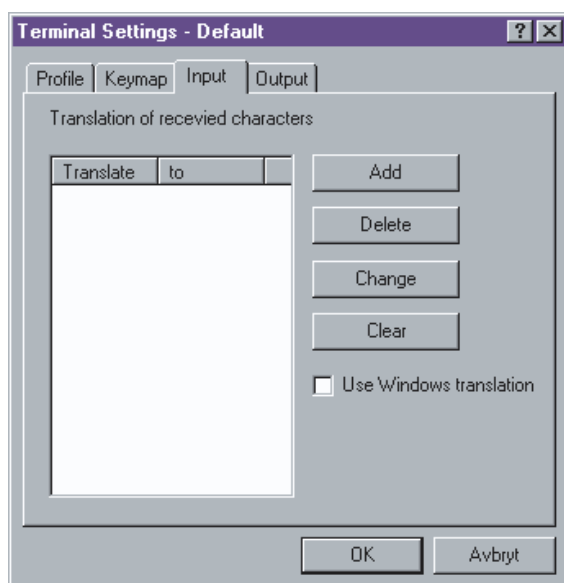
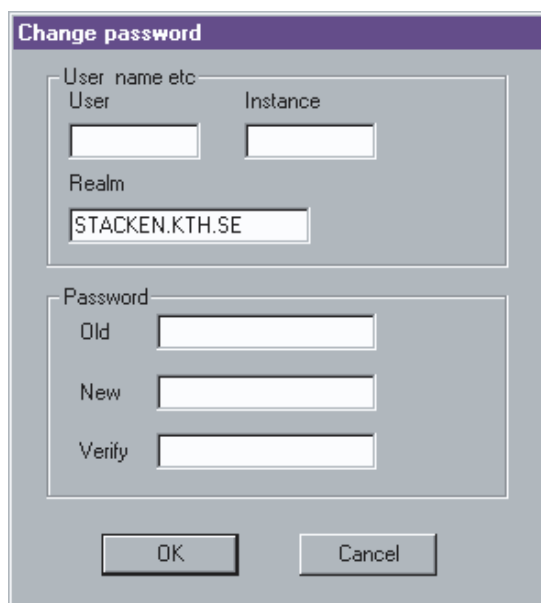


Figure 19: Editing of translation table.

## Changing password

It is possible to change the password in a realm from the Ticket Manager. There are two menu choices under 'Ticket' -> 'Change password' one to change the password in a Kerberos 4 realm and the other for a Kerberos 5 realm. The procedure for the password change is identical for both Kerberos 4 and Kerberos 5. When one of the choices are made it will bring up a dialog box (see figure 20). Fill in all data in this dialog box and press 'OK'. During the sequence of changing password the normal tickets will be replaced by some special tickets for password change. After the password change is completed or aborted the normal tickets is restored. It is only possible to change the password for yourself.



The dialog box titled "Change password" contains the following fields and controls:

- User name etc:**
  - User:
  - Instance:
  - Realm:
- Password:**
  - Old:
  - New:
  - Verify:
- Buttons:  and

Figure 20: Change of password.