Linux based Thin Client Manual

Version 3.0.1

Contents

Chapter 1 – Introduction 1-1
Overview 1-1
The File System 1-2
Embedded Linux Products 1-2

Chapter 2 - Startup and Configuration 2-1
The Linux Desktop 2-2
Task Bar 2-2
Linux Start Button 2-5
Shortcut Keys 2-9
System Configuration 2-10
Display 2-10
Network 2-11
Wireless LAN 2-11
Dial Up 2-12
Time/Date/Time-zone/NTP(synchronization) 2-12
Keyboard 2-13
Mouse & Touchscreen 2-13
Sound 2-13
Printer 2-14
Users (Configure User Profiles) 2-16
System Update 2-18
LDAP – Cross Platform Authentication Services 2-20
Reset to Default 2-21
Shutdown / Reboot 2-21
Additional Configuration Options 2-22
Taskbar 2-22
Maple SNMP Administrator 2-23

Chapter 3 - Applications 3-1
ICA – Citrix Terminal Server 3-1
Drive Support/Mapping ICA USB 3-3
RDP – Remote Desktop Connection 3-4
VNC Viewer 3-5
Internet Browser 3-6
X-Terminal Connection 3-7
TermPro Emulations 3-8
USB Device Support 3-8

Chapter 4 – TermPro Emulations 4-1
Configure/Edit Sessions 4-3
Display Sessions 4-6
Printer Sessions 4-10
Using Emulation Sessions 4-14
Display Sessions 4-14
Printer Sessions 4-26

Appendix A – DOM Crash Recovery Utility A-1

Chapter 1 – Introduction

An overview of the Linux Thin Client is presented along with a description of its file system.

Overview

The Linux thin client, with its high quality, versatility, and flexibility, is an expandable high-performance terminal that gives users the ability to access Windows, Internet, multimedia, and legacy applications, at a lower total cost of ownership than PCs or other computing products.

The Linux client software, based on Mandrake Linux, has built-in support for Microsoft RDP and Citrix ICA protocol, multiple terminal emulations (such as IBM 5250, 3270 and 3151, DEC VT-420, Wyse WY-60, among others), XDM Xclient/Xhost, Web Browser, E-Mail, and VNC client/server support. Users can access applications running on Microsoft Windows Server 2003 and Citrix MetaFrame, as well as mainframe, midrange, UNIX and other legacy applications, multimedia and the Web. This provides broad application compatibility and system integration, improving user productivity. And since it uses Linux, the client software supports Linux device drivers and development tools, and many third-party device drivers. This facilitates rapid integration and porting of local applications into the Linux terminal.

And like all Maple thin clients, Linux works seamlessly with Maple's SNMP Administrator software. This powerful tool gives administrators complete centralized control of all Maple desktops, dramatically reducing support costs. SNMPADM remote management software can be obtained (no charge) by sending a request to Maple technical support. Be sure to include the part number (ET4500T, MT35xxT, MT15xx, or MT1200) and serial number of the terminal as part of your email.

The Linux File System

The Linux memory system is composed of either 64-256MB of Flash memory (persistent storage); plus 256-512MB DRAM (temporary storage).

The Linux thin client contains a Flash memory-based file system where the operating system and local application files are stored. The Flash drive is generally protected at all times, except when the ROOT User is logged on.

Note: It is recommended that you save files on a server and not on the flash storage. A minimum of 10MB of unused space should be maintained on persistent storage for proper operation.

The Linux thin client uses a virtual disk, which utilizes a portion of the system memory. This storage is volatile and will be erased when the thin client is shut down or rebooted. Therefore, any files that you want to keep and use again should not be stored on the virtual disk.

Embedded Linux Products

This document covers multiple Maple Embedded Linux products. The table below shows the features and applications support for each product.

	MT1200L	MT1500L	MT1800L	ST5500L/ ST6500L
Client Software				
RDP (for Windows, IBM xSeries)	☑	☑	☑	☑
Citrix ICA (for MetaFrame, WinFrame, IBM xSeries)	☑	☑	☑	☑
Termpro Terminal Emulation Suite (includes emulations for DEC VT-100, VT-220, VT-320, VT-420, WYSE WY-50, WY-60, IBM-3151, TN3270e, TN5250e, ANSI-BBS, SCO console)		☑	☑	☑
Citrix NFuse		☑	☑	☑
Citrix Program Neighborhood	☑	☑	☑	☑
Firefox Web Browser (Java Enabled) w/KIOSK Mode and integrated PDF file viewer		☑	☑	☑
VNC Viewer	☑	☑	☑	☑
X11R6 X Windows		☑	☑	☑
Local Applications install facility		☑	☑	☑
LPD / LPR printing console		☑	☑	☑
Flash / RAM				
Flash MB (standard)	64	128	128	128
DRAM MB (standard)	128	128	128	256

Chapter 2 - Startup and Configuration

On initial startup, the user level will auto login as **root** and all system configuration parameters are available to be modified. If connected to a network with a DHCP server present, a network connection will be made. The Linux desktop will be displayed. The default hostname will be a three letter combination +<last 6 hex digits of the MAC address>.

If Ethernet is disconnected or DHCP is not active, a logon presented. Log in as **root** with no password

System configuration parameters can be set and application connections can be configured. Connections can be set to autostart on boot. User logins can be configured (new IDs and Passwords) and one can be set to auto logon at boot. If the auto login is not for **root** access, the user will essentially have access to the configured Connections.

A user with **root** access can load/delete application sessions, update firmware, change system configuration options, and all administrative tasks. A user level login will have restricted function. Creating and restricting a user level login will be discussed in **System Configuration**.

Press **Alt+Ctrl+Del** to display the special exit menu: Click **Shutdown** to Power off; click **Reboot** to Reboot; and click **Logout** to logout.

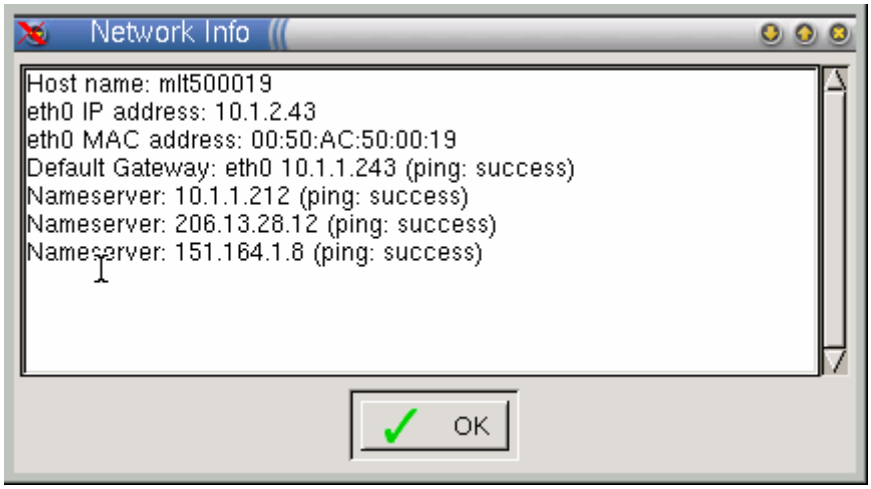
The Linux Desktop

The Task Bar (bottom line) icons are described below.

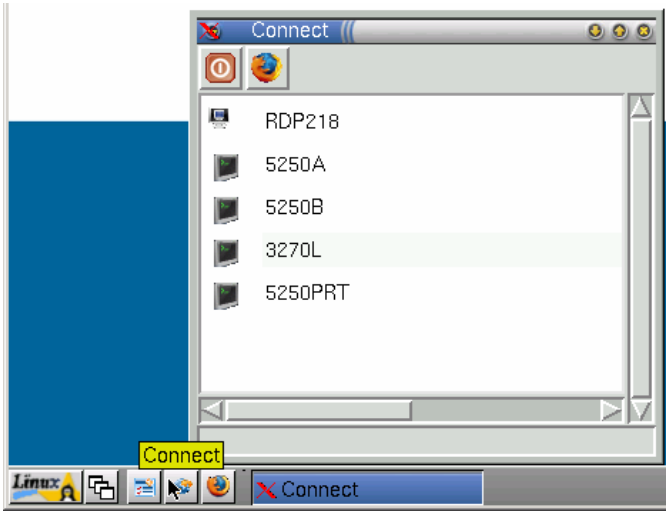
Time-of-Day: This icon shows the current time of day, Click to set date and/or time.

CPU Load: This icon shows a dynamic graph of the CPU load.

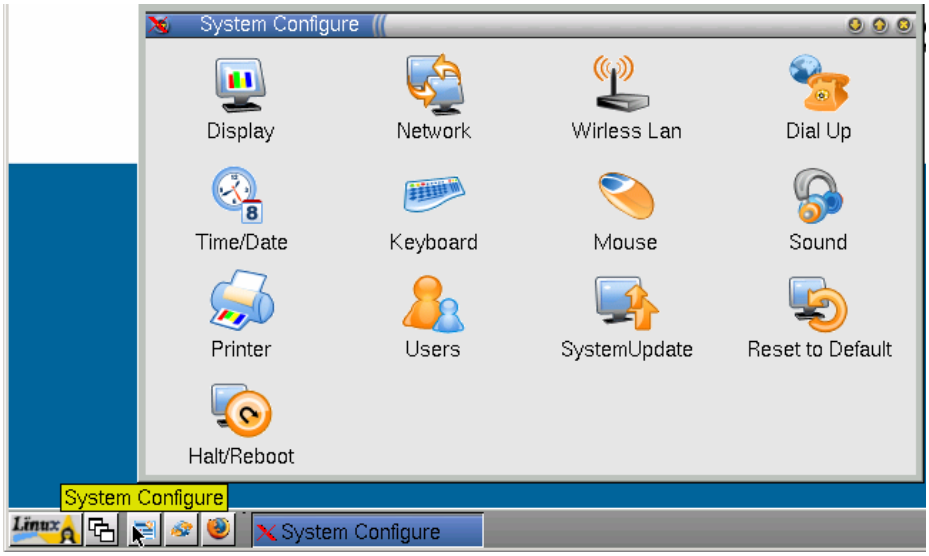
Network Interface Activity: Dynamic graph of interface (network) activity. Click it to show current Network Info



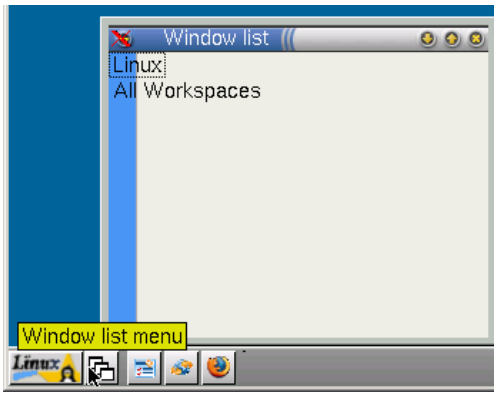
Connect Icon: Click to show list of configured connections. Highlighted connections can be started or ended.



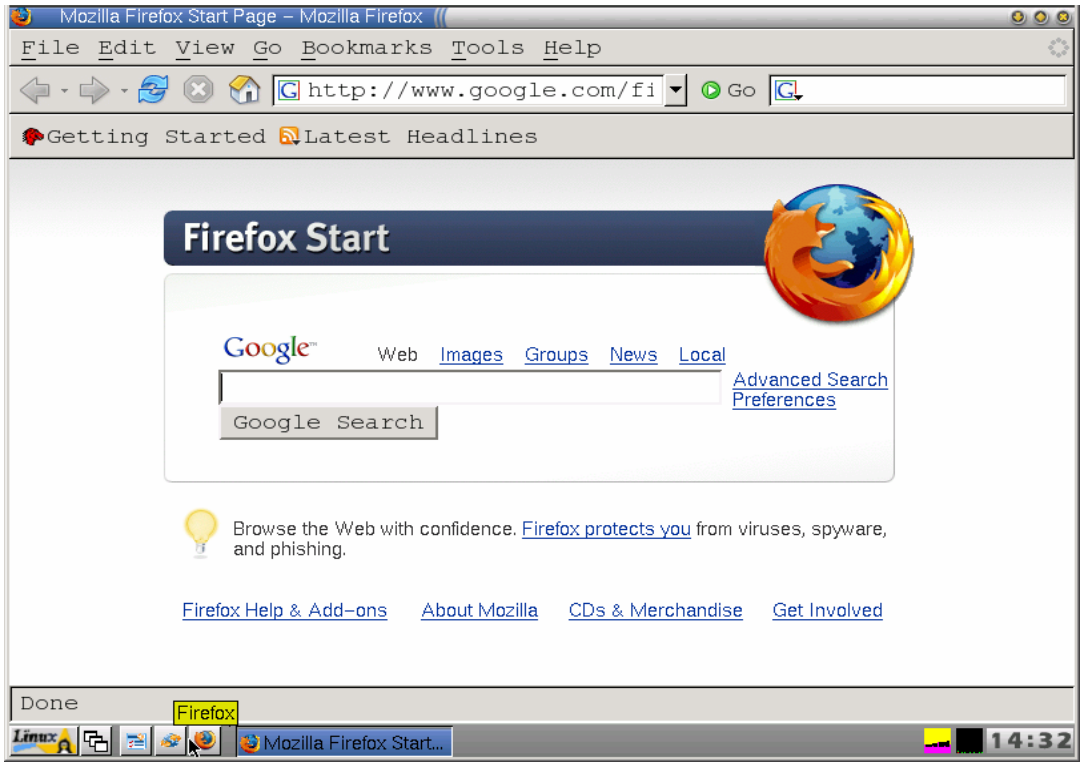
System Configure: Display System Configure options (described in following section)



Windows List Menu: Display Window list menu.



Browser: Start Browser (Firefox).

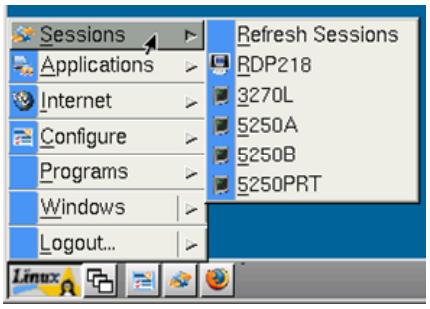


The browser can also be started from **Linux-Internet-Firefox**. The browser can be configured to auto-start using **Linux-Internet-Internet Startup**.

Linux Start Button: Click or press ***Ctrl+Esc***
This list can also be displayed by clicking on a blank area of the desktop

All types of client connections are accessible from the Applications (Linux) button. Sessions can be configured and started from their individual program menu items. Sessions can be set to autostart on boot. This item is not visible or useable when logged in as a user.

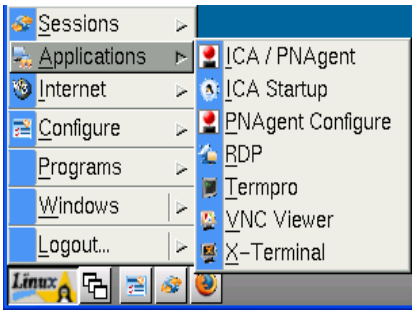
Sessions: All configured sessions are accessible from the **Sessions** menu item



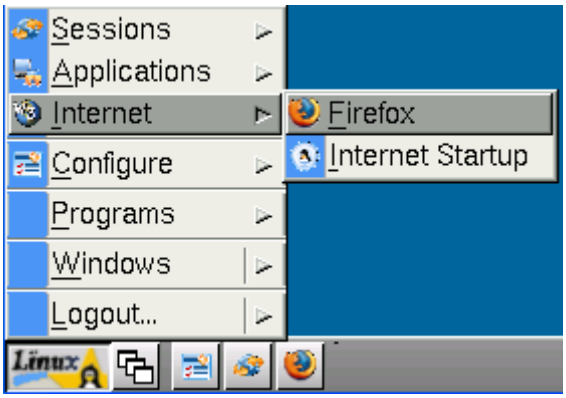
*Note: Click **Refresh Sessions** to refresh list.*

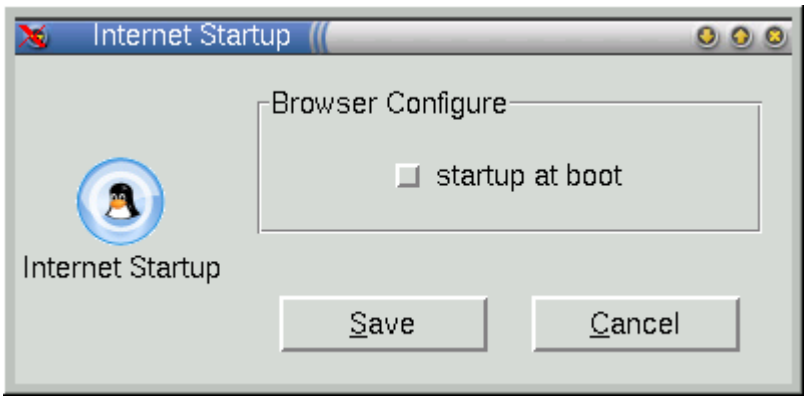
or the **Connect** icon. This is a convenient way to access all preconfigured sessions.

Applications: The basic applications are described in Chapter 3.



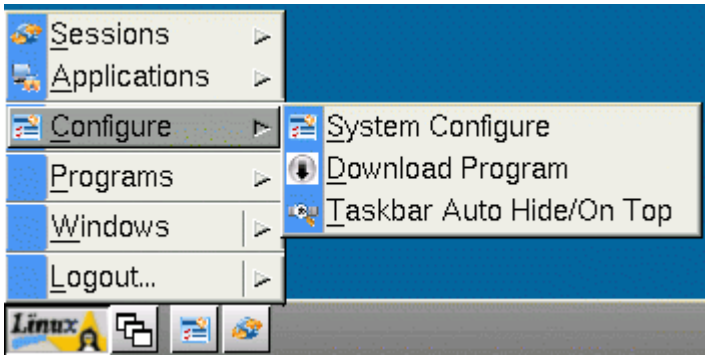
Internet: Can launch the Browser or configure the browser to autolaunch on power up





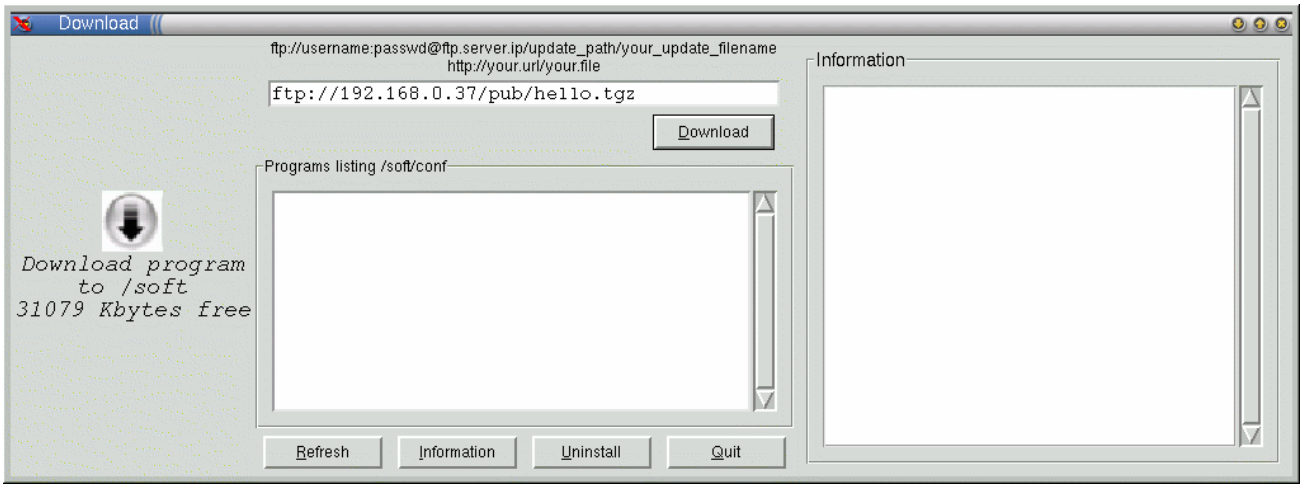
Configure – see System Configuration section.

Download Program – Only available on 'T' model Clients

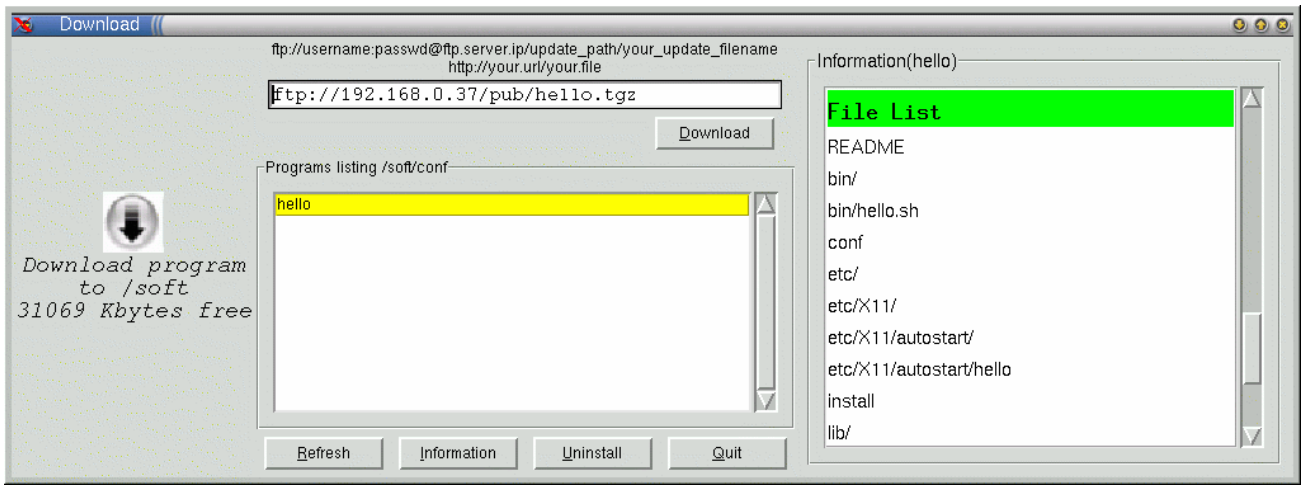


1. Click "Start Menu" -> "Configure" -> "Download Program"

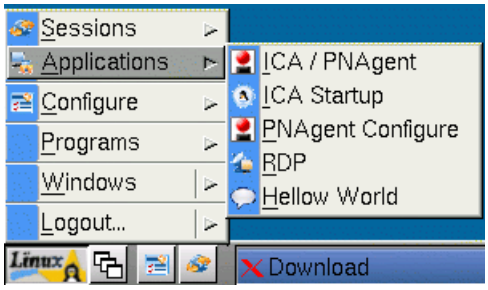
2. Type address of the location for your ‘tgz’ file and Click "Download"



3. Double Click the listed program to display information about that program.

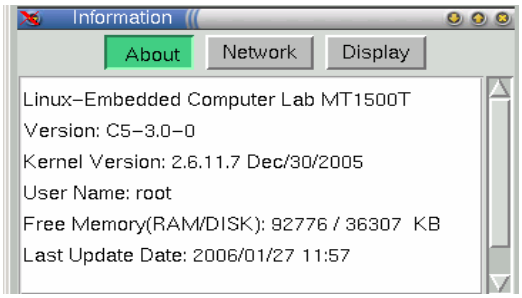


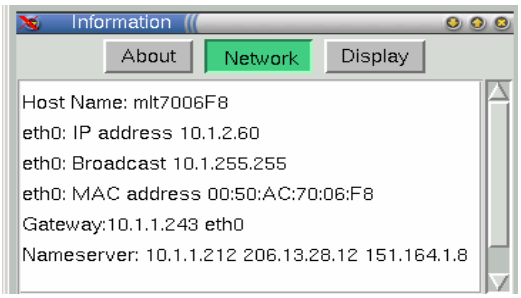
4. The system will add an icon under applications as is shown in the example below.

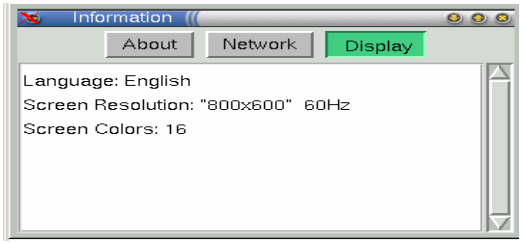


5. You can now launch your new program

Programs – Information: To view the current system setup.

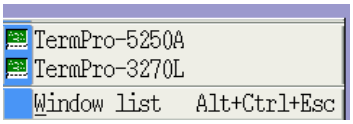




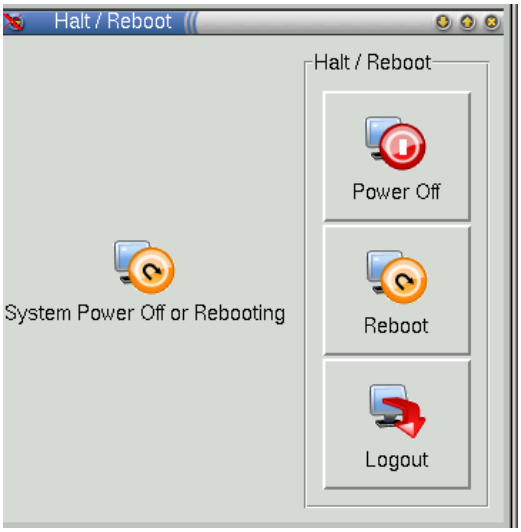


Windows List: Same as clicking Windows list menu icon described previously.

Right click on a blank area of the desktop to display the names of active connections; plus the Window list button.

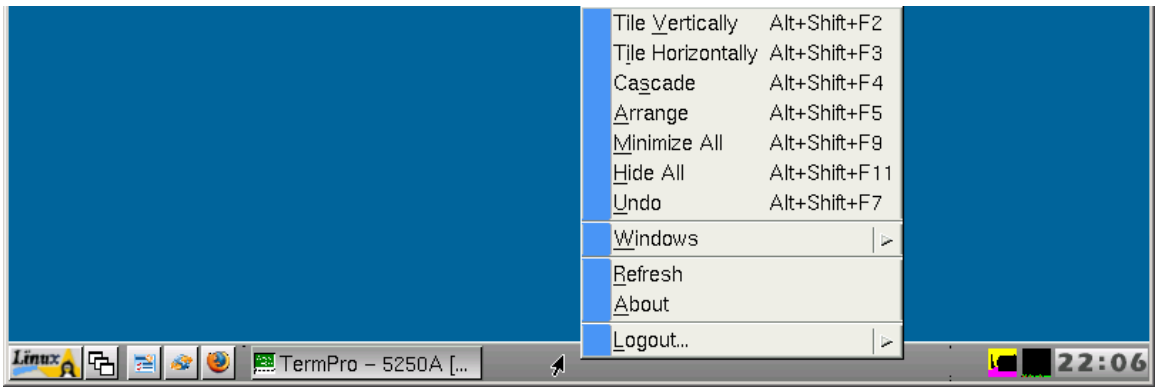


Logout Options:



Active tasks (Connections) are shown on the Task Bar. Click selected task to jump to that task. Right click task name to see list of applicable HotKey sequences.

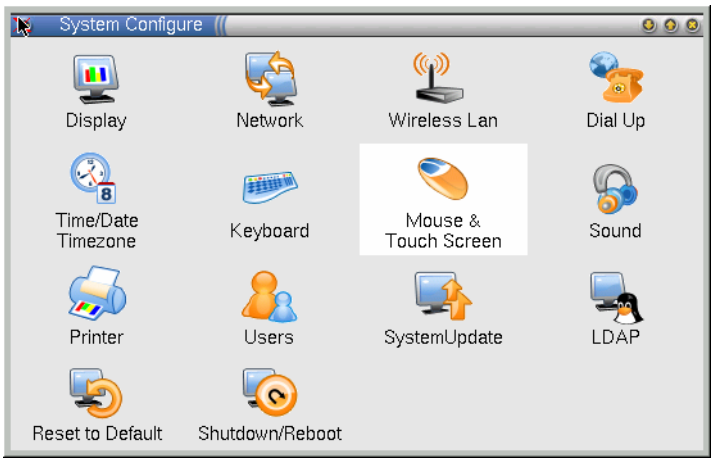
Right click on blank area on task bar to see applicable HotKey list.



Shortcut Keys (HotKeys) Summary

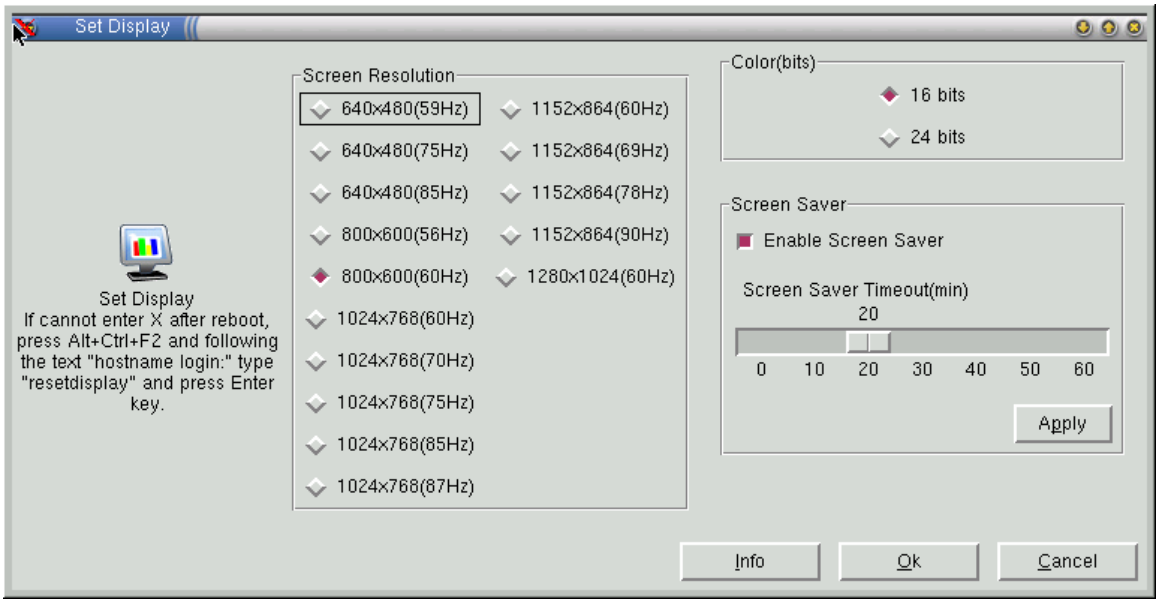
Window Switching:	Alt+Tab
Raise window:	Alt+F1
Occupy all:	Alt+F2
Lower window:	Alt+F3
Close window:	Alt+F4
Restore window:	Alt+F5
Previous window:	Alt+Ctrl+Up
Next window:	Alt+Ctrl+Down
Move window:	Alt+F7
Size window:	Alt+F8
Minimize window:	Alt+F9
Maximize window:	Alt+F10
Maximize window vertically:	Alt+Shift+F10
Hide window:	Alt+Shift+F12
Rollup window:	Alt+F12
Window menu:	Alt+Space
Next item:	Alt+Tab
Last item:	Alt+Shift+Tab
Next sys window:	Alt+Esc
Previous sys window:	Alt+Shift+Esc
Window menu:	Shift+Esc
Program menu:	Ctrl+Esc
Run:	Alt+Ctrl+r
Window list:	Alt+Ctrl+Esc
XDM window:	Alt+Ctrl+F5, F6, F7, F8, F2

System Configuration

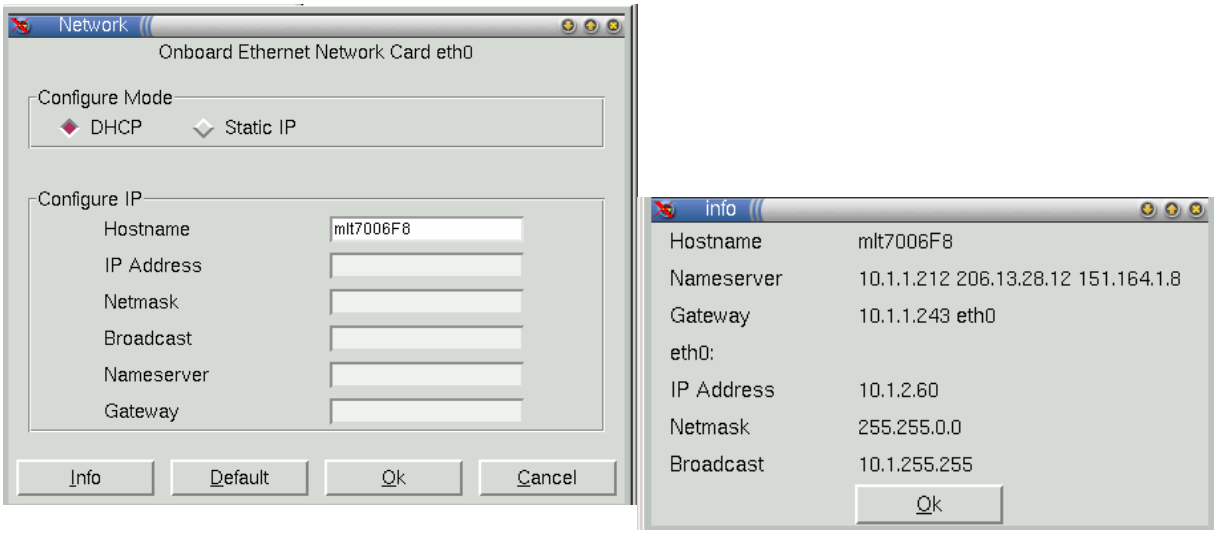


The System Configuration menu allows you to configure screen resolution, network settings and other basic configuration parameters. The local security configuration and flash update interface are also accessible from this menu.

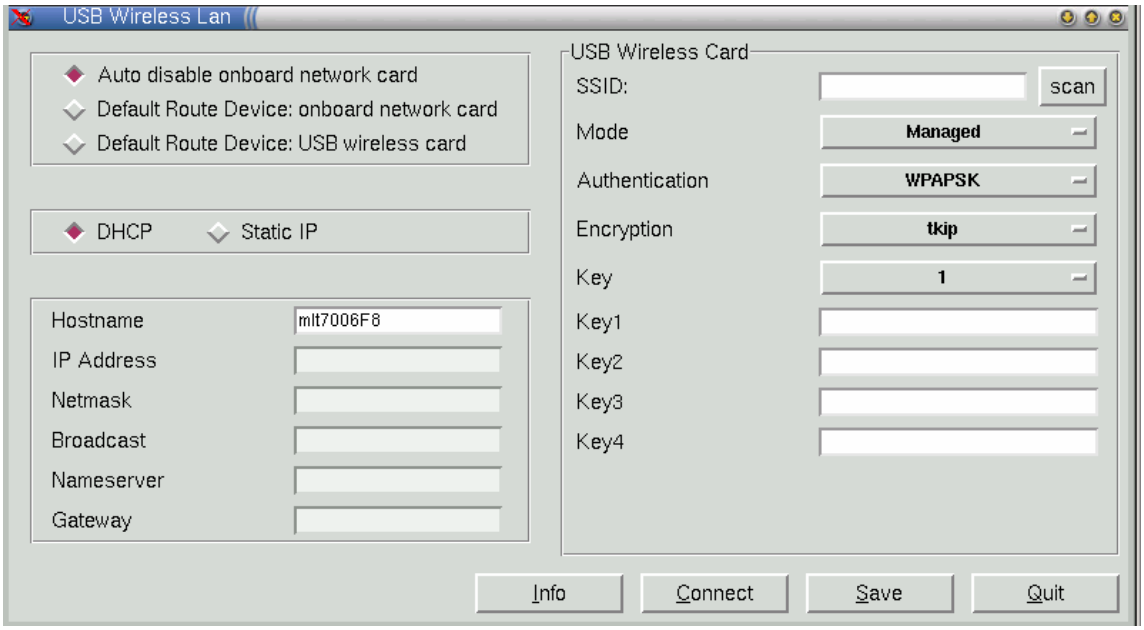
Display – Set Display characteristics. Select a video resolution that best matches your monitor's capabilities and application requirements. Set Screen



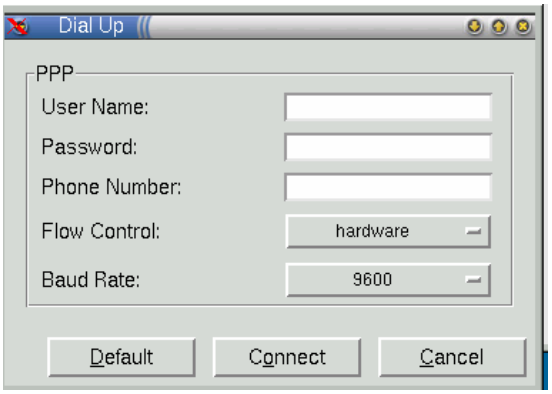
Network – Configure Network Connection. Select DHCP or assign static IP settings. Select the Info button to display the current configuration.



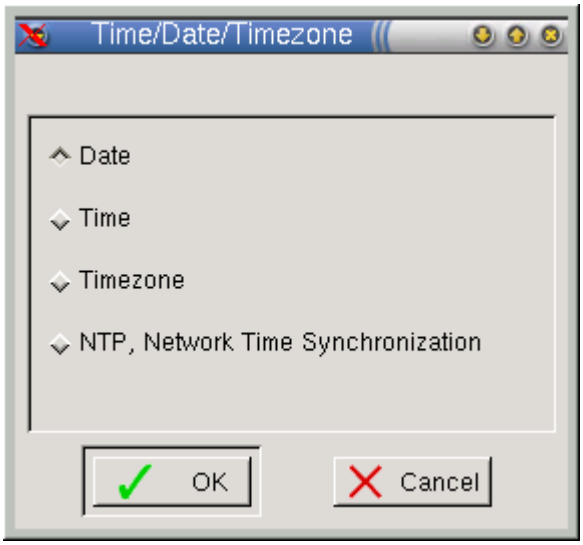
Wireless LAN – Setup a Wireless LAN (not available in all models)



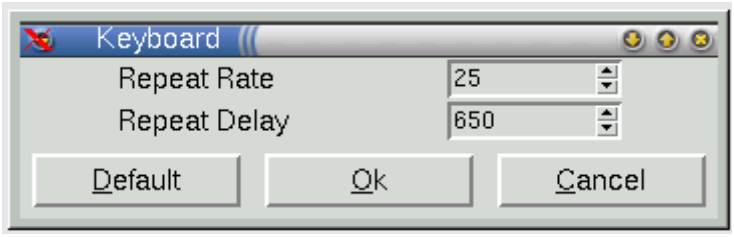
Dial Up – Configure Dial Up Connection. If the network connection is by Modem (not Ethernet), configure the dial-up user parameters and phone numbers using the dial-up PPP user interface.



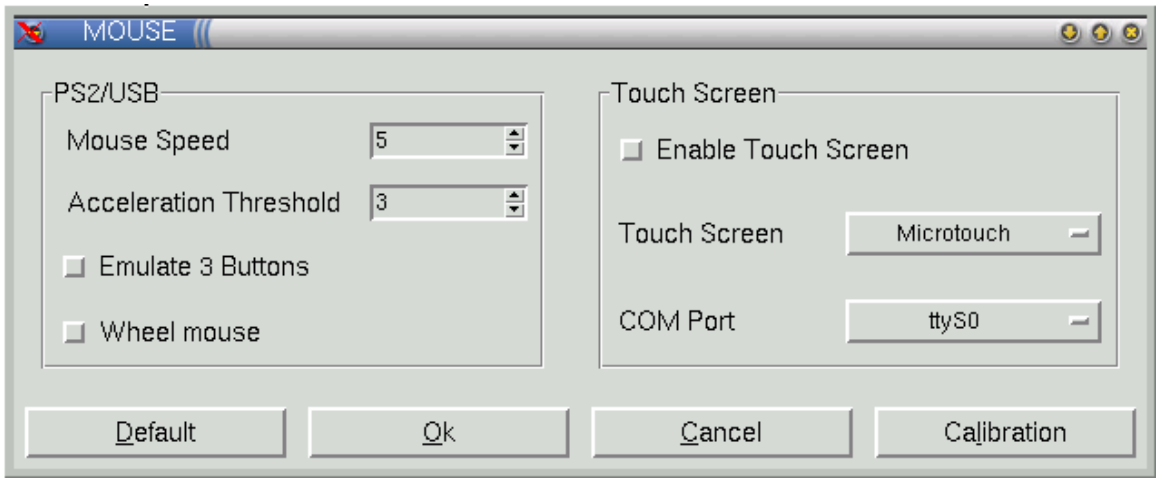
Time/Date Timezone NTP – Set Time and/or Date or Timezone and Time Syncrhonization(can also click Time-of-Day icon)



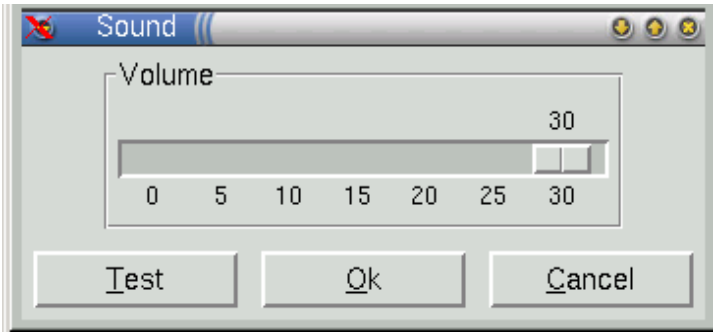
Keyboard – Set Keyboard Parameters: Repeat Rate and Repeat Delay



Mouse & Touch Screen – Set Mouse and Touch Screen Parameters



Sound – Set sound volume



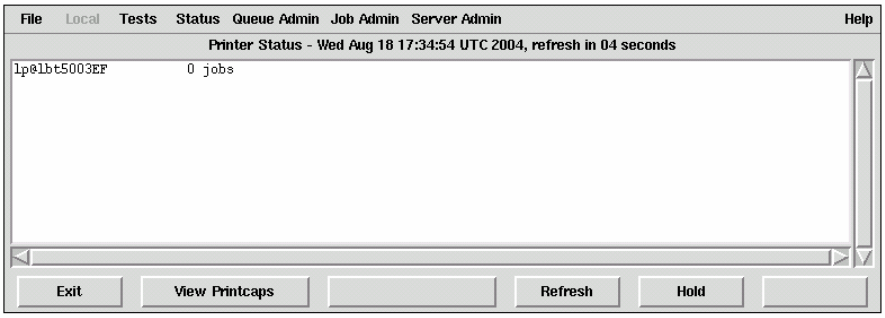
Printer – Configure Printer. The LPRng application is used for print management. The following protocols are supported in this implementation of LPRng: LPD, LPR, TCP(RAW), Local to LPT1, COM1, etc.

For details on the LPRng Printing Application refer to the following links:

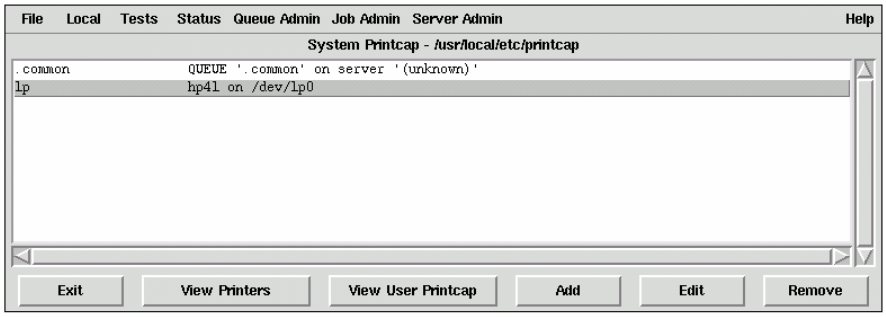
www.lprng.com LPRng Web Page. See LPRngTool

www.lprng.com/PrintingCookbook/index.html

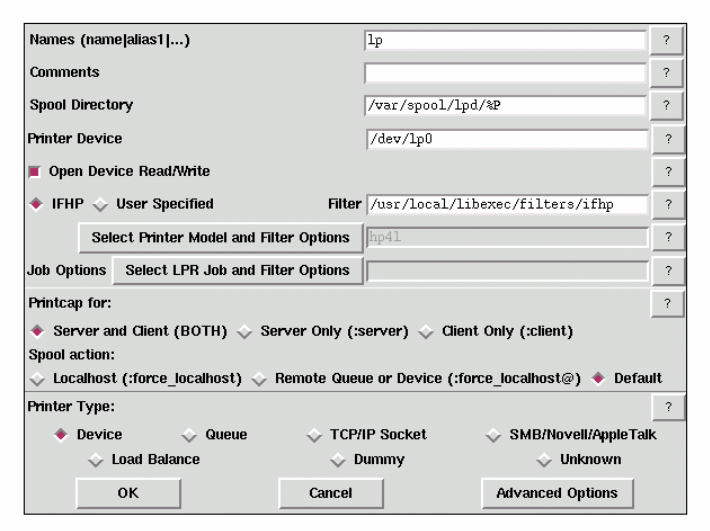
Use Help as a guide to system features.

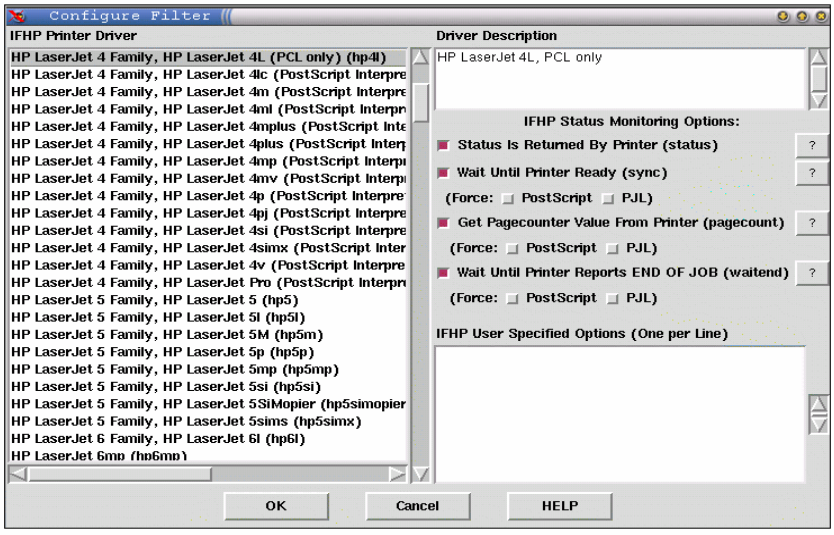


Click **View Printcaps** button.

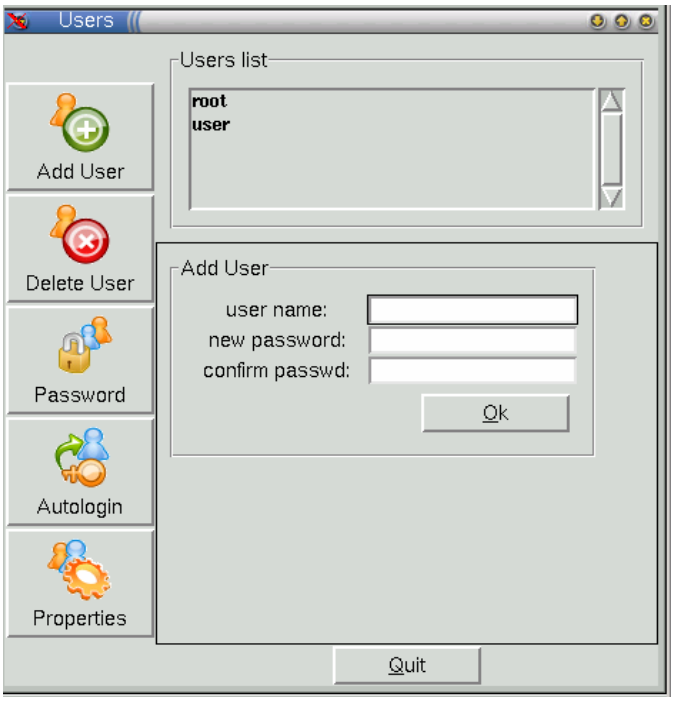


Click **Add**/**Edit** and then **Select Printer Model and Filter Options**, select printer and options, click OK to save.



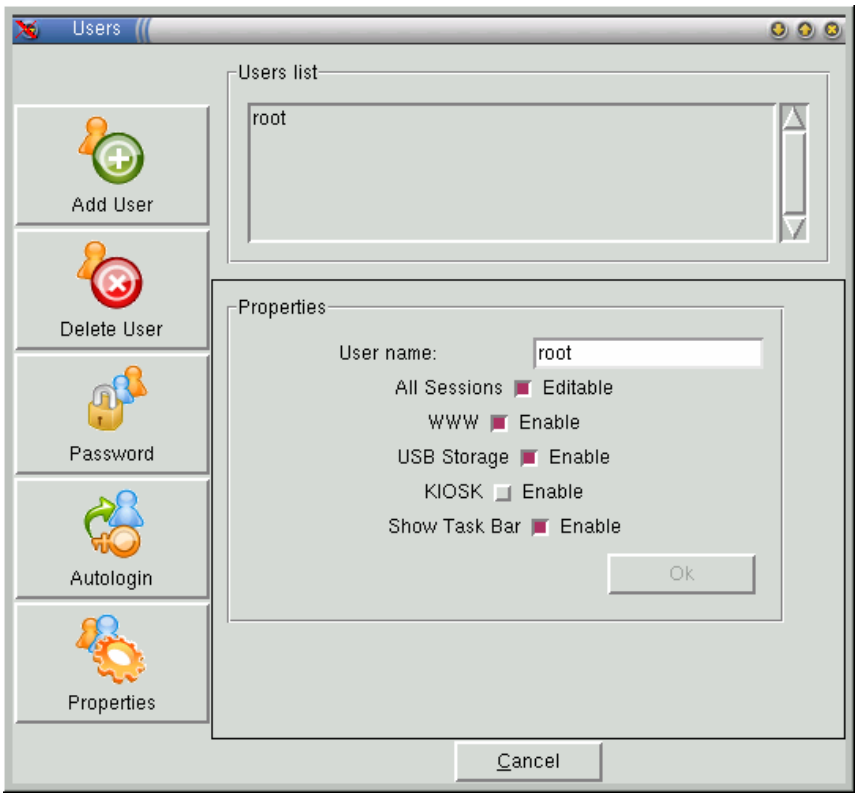


Users – Add/Delete/Change Password/Autologin/define Properties of User Profiles



Note: Passwords are case-sensitive

The thin client comes with one default logon account: **Root (blank password)**. A **Root** user has access to all Linux functions including System Configuration. For security reasons, consideration should be given to changing the **Root** password. Other profiles can be created to limit access, providing system security. These profiles do not have access to System Configuration.



Properties:

All Sessions – Applications can be edited only if Editable is checked (red).

WWW – Browser is enabled only if checked (red).

USB Storage – USB Storage (Flash, CD or HDD) is enabled only if checked (red) (for RDP and ICA ONLY!)

KIOSK – Browser Kiosk mode is enabled only if checked (Kiosk is a full screen browser that displays the home page and has no dynamic browsing capability. This locked down mode allows control of website access)
When in Kiosk mode the normal Logout functions are disabled. To logout while in Kiosk mode press ALT+F4. To shutdown press the power button. To reboot press the power button to shutdown, then press it again to boot the terminal, or use the reboot function in the Maple SNMP management software. To go forwards or back, press Alt+Left or Right Arrow keys.

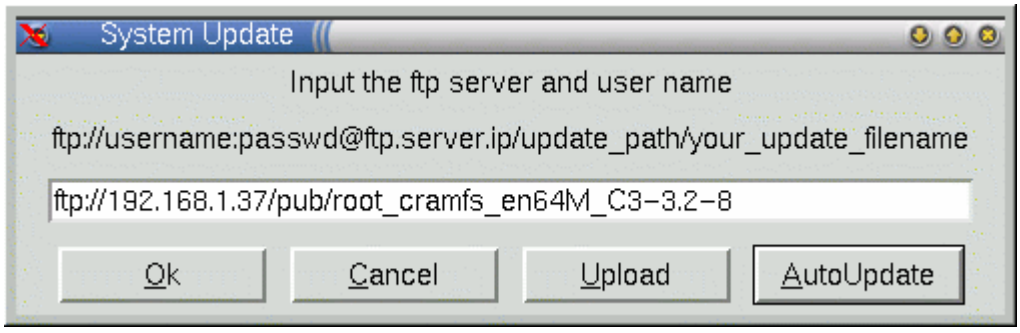
Show Task Bar – This allows for showing or removing the task bar to further lock down the user access. Task bar is present when enabled (red) and not present when disabled.

To Lock Down users to specific applications proceed as follows:

- Define User login and set for AutoLogin
- Login as this User
- Configure the applications / sessions to be available to this user and set these sessions to autostart on power up
- Logout as User and login as Root
- Edit the User properties, uncheck All Sessions (disable) and disable Browser and USB Storage (if applicable)
- Logout as Root and back in as User

The Linux Start Button would display as follows if no user profile properties are enabled.

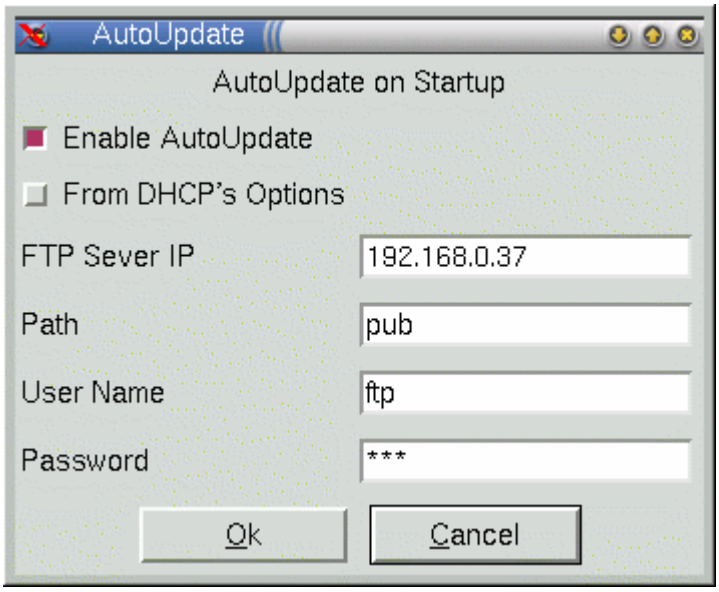
System Update – Update System from FTP Server



The System Update menu allows you to flash update your terminal. Put the update file to a local FTP server into known path.

At the System Update menu, type in the path to your FTP server that has the unzipped binary file (as shown in the example above) then click OK. The terminal will reboot and download the binary file. When the download is complete, the unit will automatically restart and show the version in a “System Update Log” window – click OK or Clear to continue.

AutoUpdate (Click the "AutoUpdate" button)



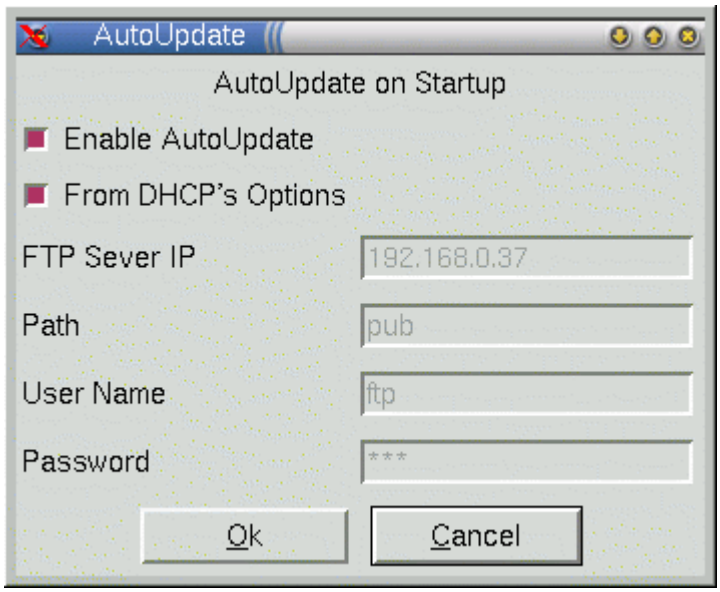
Input your ftp server name/IP address, path, username, and password if applicable.

You have to copy two files to your FTP server.
They are the image file--root_cramfs_XXXXX_XX-X.X-X and the data file linux_upgrade_XX.conf.

The image file is the same file used by "FTP Update."
This image file and data file can be used by SNMP UPDATE as well.

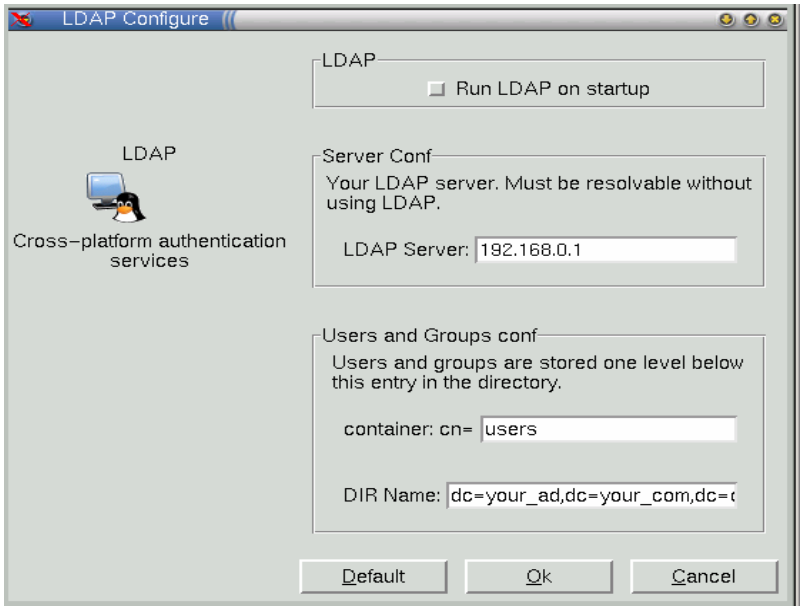
After re-booting the machine, it will check the version and auto update. The machine will reboot twice more before the update is complete.

AutoUpdate from DHCP's options



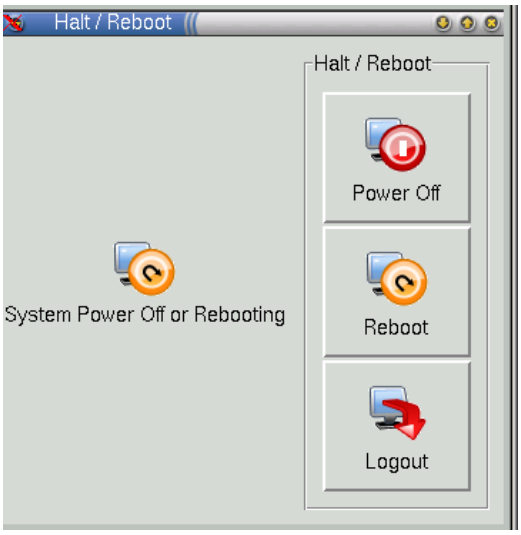
The settings come from DHCP server options:
Option 206: FTP Server ip
Option 207: File Root Path
Option 208: User Name
Option 209: Password
Option 216: Time Zone

LDAP – Cross Platform Authentication Services



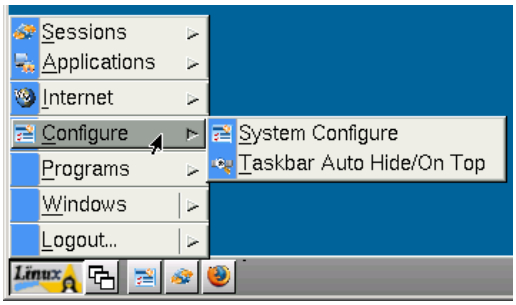
Reset to Default – Reset Configuration to Defaults. All sessions are deleted and all Network, User settings, and other configurable items are reset to the factory defaults.

Shutdown / Reboot – Reboot or Halt (Power Off) the System.



Also accessible by clicking **Linux-Logout**.

Additional Configuration Options



System Configure – See previously described System Configure screen

Taskbar Auto-Hide / On Top – Toggle Taskbar display mode

- **AutoHide** hides the Taskbar. To see the Taskbar, move the cursor over the bottom of the screen, or press ***Ctrl+Esc***
- **Always On Top** keeps the Taskbar visible at all times.

MAPLE SNMP Administrator – Remote Management

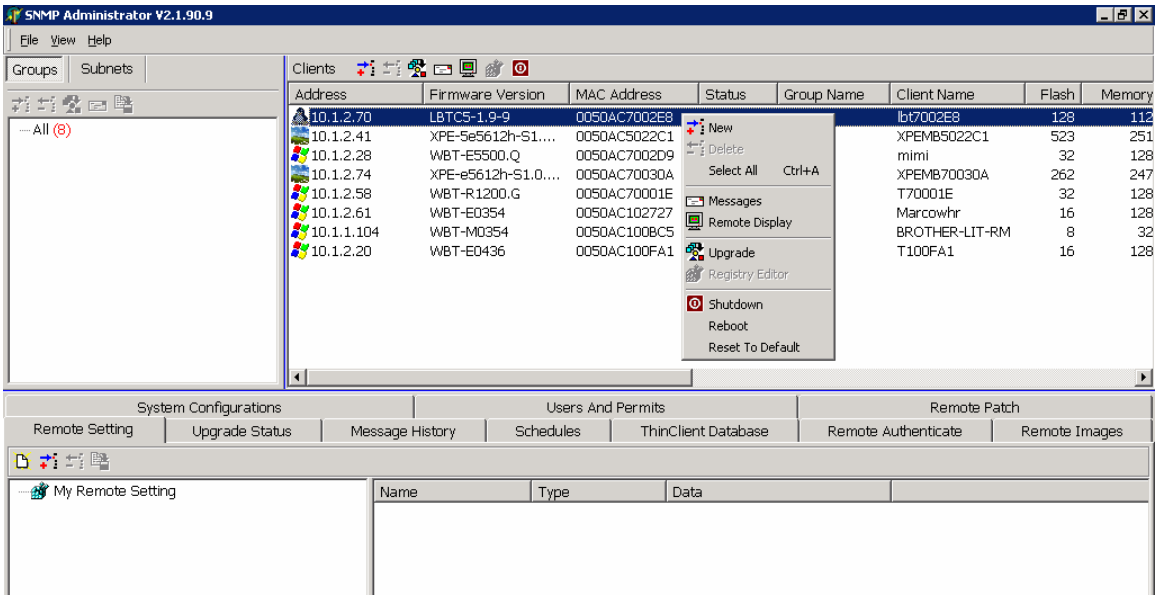
The MAPLE SNMP administrator remote management software is a PC-based application that provides sophisticated centralized administration capabilities for the full line of MAPLE thin clients. With SNMP administrator, you can:

- Locate and view the specifications of MAPLE Windows base thin clients on your network.
- Select, group, and export lists of your Windows thin clients for easy management.
- Centrally update or clone the system software of your thin clients.
- Shadow and control remote terminals.

The manual for this package can be downloaded from the MAPLE Web Page at www.maple5250.com : click Product, click the WBT SNMP Administrator and click Snmp User Manual.

The management software can be obtained by sending a request to mail.box@maple.com.tw. Be sure to include the serial number of the terminal as part of your email.

An example screen is shown below.



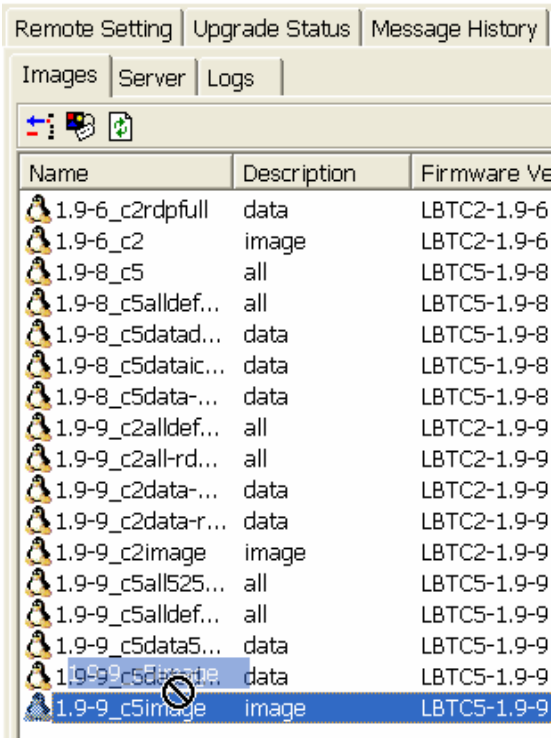
Note: When doing Remote Display (Shadow and Control) of a LBT terminal, the number pad on the PC keyboard may be inoperative (use the number keys above the letters).

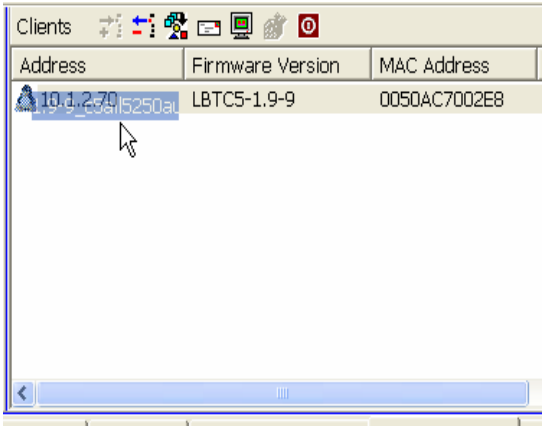
Backup/Restore firmware image and configuration using SNMPadm

Prerequisite: Use SNMP Administrator Management software (SNMP*Adm* build 189.1 or above).

From SNMP*Adm* Menu bar, click **File** – **Options** – **Remote Image** and set **Remote Image Path** to specify what is to be transferred: **all** = backup both binary image and configuration data; **data** = configuration data; and **image** = binary image.

Drag/drop client to/from **Remote Image** area.



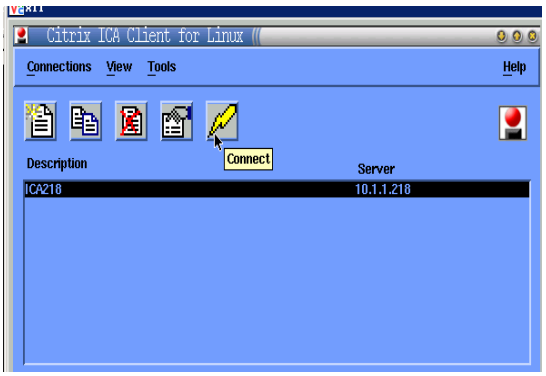


Chapter 3 – Applications

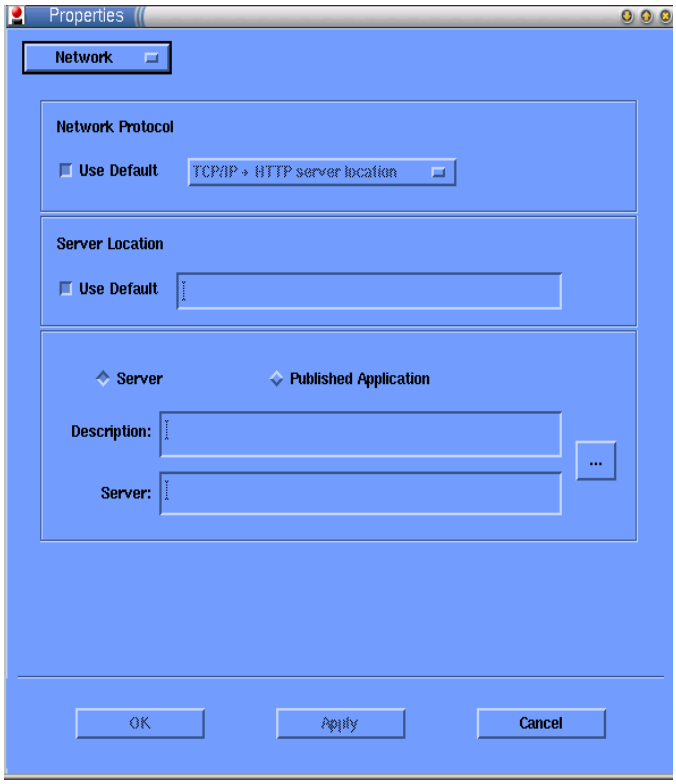
This chapter describes the software applications that are preinstalled and configured on your thin client.

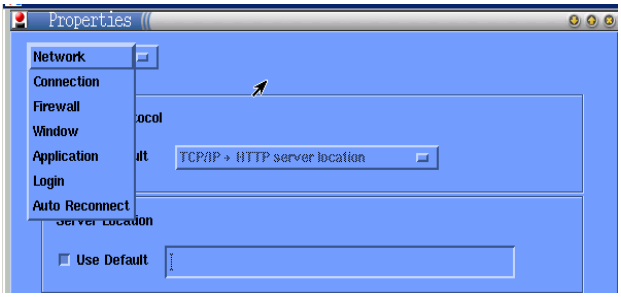
ICA - Citrix Terminal Server
ICA / PNAgent
PNAgent Configure

Create server connections using the Citrix ICA Client. Citrix Independent Computing Architecture (ICA®) is a network protocol that allows the remote display of, and interaction with applications running on Microsoft Windows Server 2003, Microsoft Windows 2000 Server (as well as Advanced Server and Datacenter Server versions), Microsoft Windows NT 4 Server, Terminal Server Edition (TSE), and to servers that are running Citrix MetaFrame®, or WinFrame®.

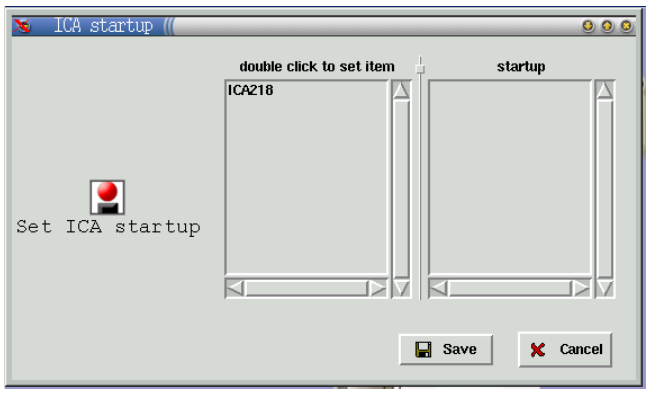


Click New to configure a new connection.





Select connection to auto-start on Boot.



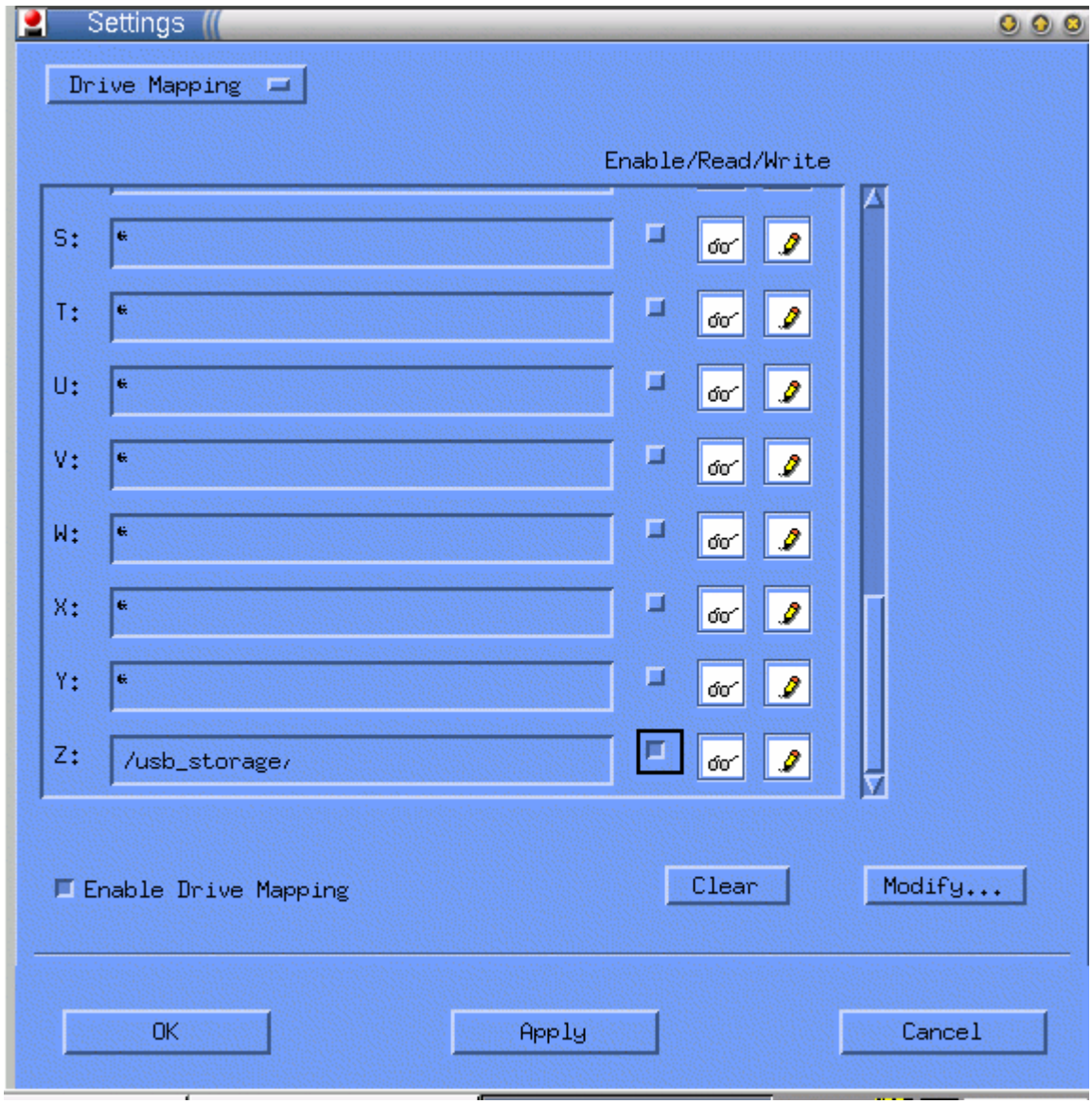
For details on Linux ICA configuration refer to the following links.

Citrix Unix/Linux Client Admin Guide (pdf):
http://support.citrix.com/servlet/KbServlet/download/180-102-12798/

Citrix Home page:
http://support.citrix.com

ICA USB Drive Support/Mapping

1. Click "Tools" -> "Settings" -> "Drive Mapping" -> "Enable"
-> Type "/usb_storage/" in the input box.



2. Click "OK" When you connect an ICA session, the drive will become available to it's sever.

RDP - Microsoft Remote Desktop Connection

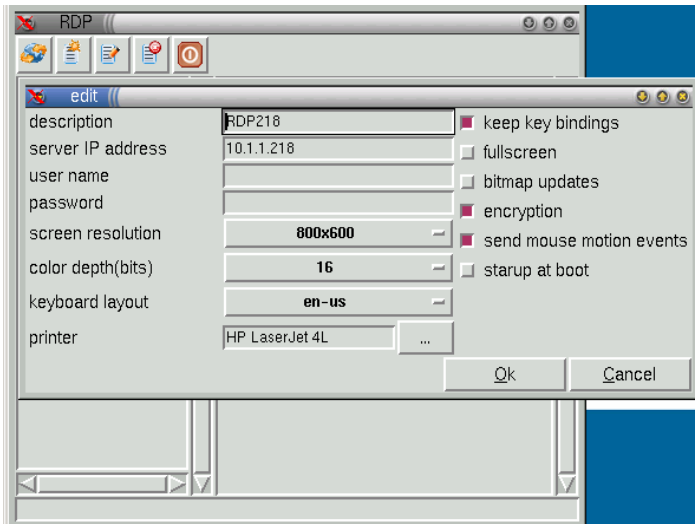
Microsoft's Remote Desktop Connection software is a utility that allows administrators and users to create server connections using Microsoft RDP (Terminal Services).

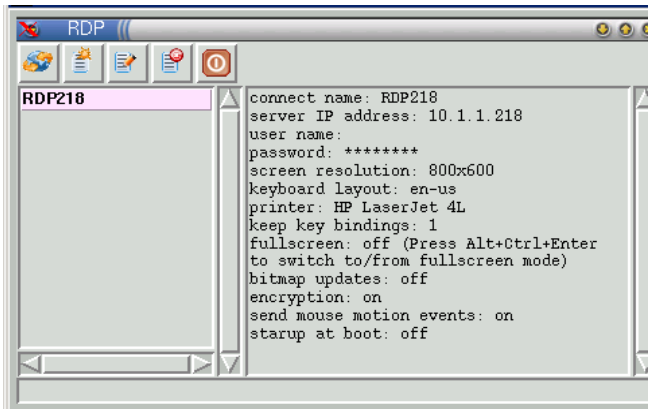
Microsoft's Remote Desktop Protocol (RDP) is a network protocol that allows the remote display of, and interaction with applications running on Microsoft Server 2003/2000, and Microsoft Windows NT Server, Terminal Server Edition (TSE).

When used with computers running Windows Server 2003 or Windows XP Professional, the Remote Desktop Connection / RDP 5.1 is capable of:

- High color display on the thin client
- Locally playing audio generated on the server
- Accessing devices connected to the serial port
- Accessing printers connected to the thin client
- Accessing USB external floppy/CD-ROM/Zip drives

New RDP session setup –





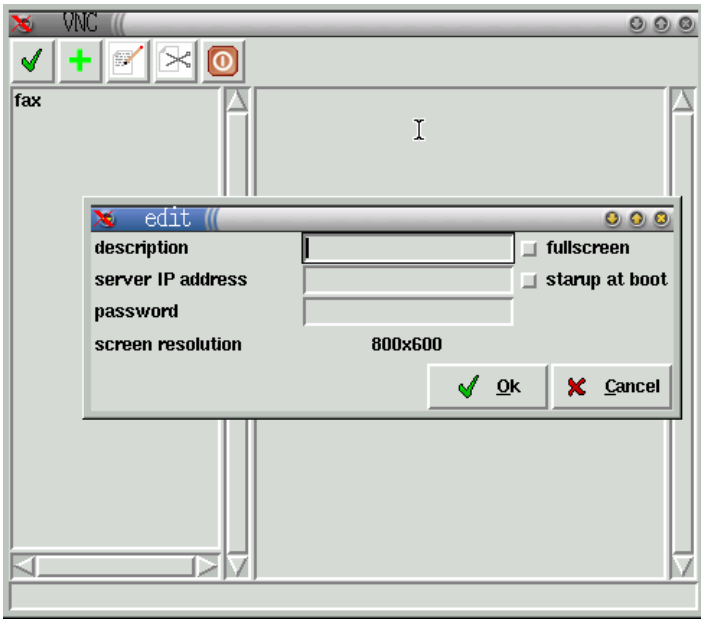
USB Drive Support

Simply connect a USB drive to a USB port on the terminal. A message will appear informing you of the new drive. The drive will then be available to the session or on the Terminal Server.

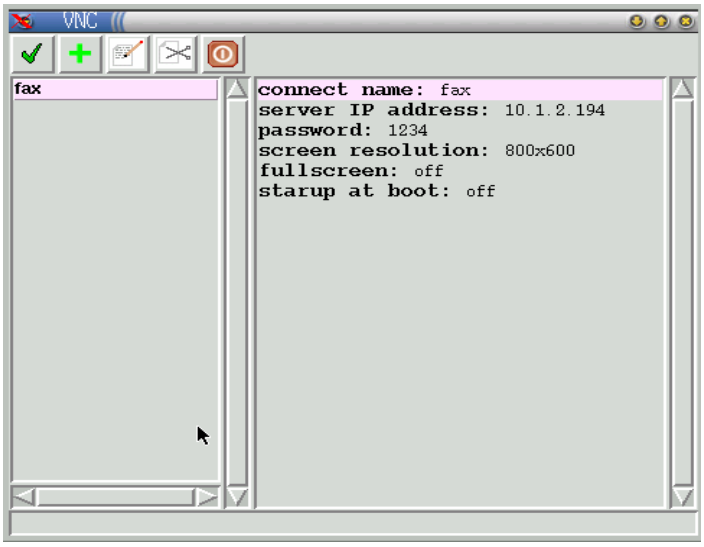
VNC Viewer – Assume Control of another Computer

VNC stands for Virtual Network Computing. The 'Viewer' allows one to assume control of another computer (the 'Server) across a network, as if they were sitting in front of the other computer/terminal. The Linux terminal itself has a running VNC server to support control from the SNMP Administrator program.

To create a VNC Viewer session, click new (+) and specify the target Server IP address.

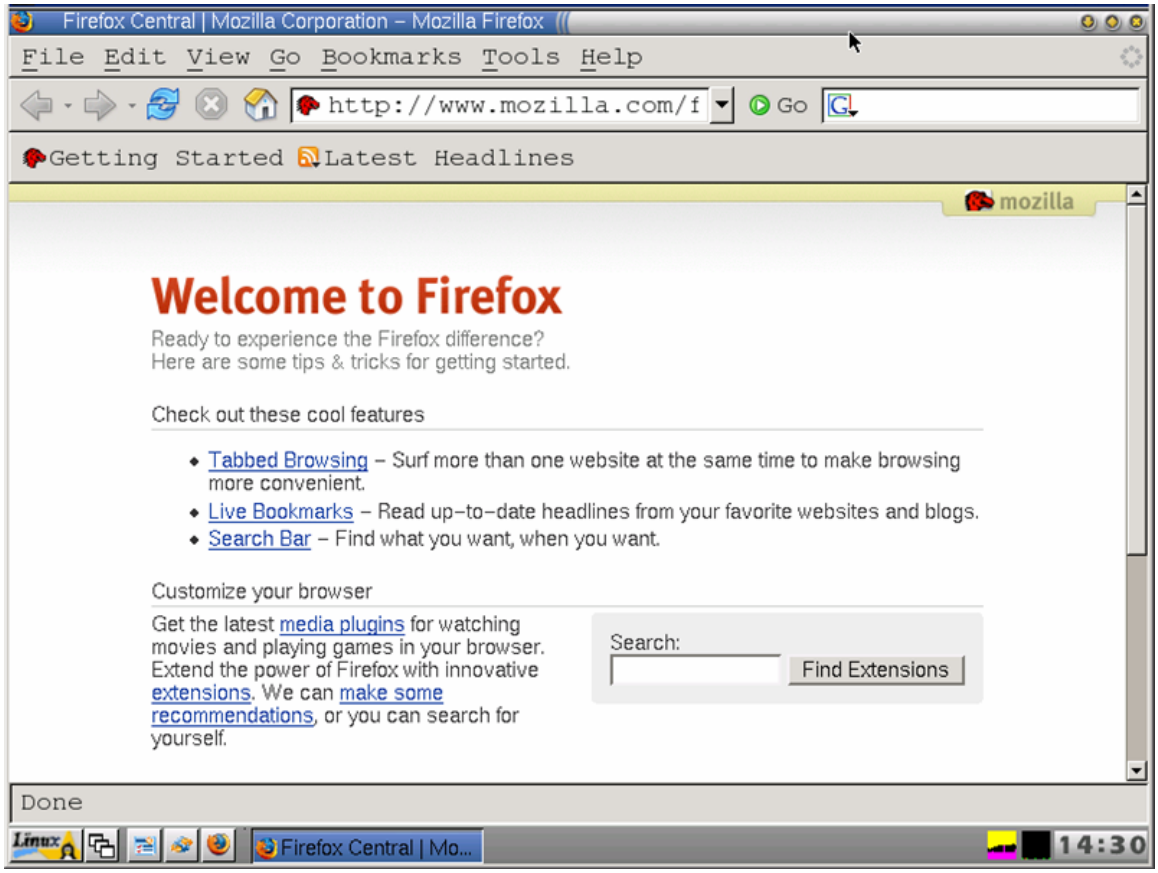


Example below shows session to control remote computer.



Firefox – Internet Browser

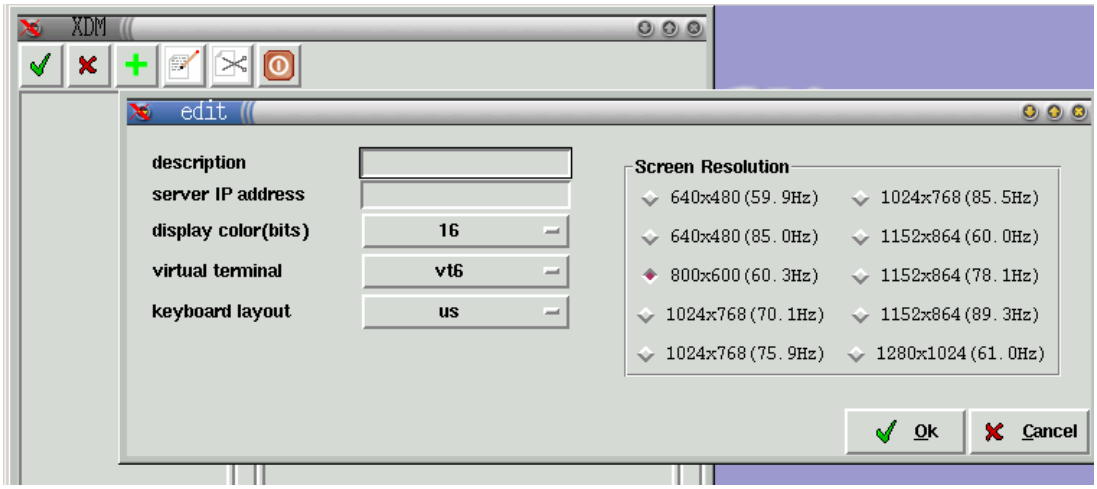
The **Help** menu provides a good description of the browser features.



To paste contents copied from TermPro/RDP/ICA sessions, use the middle mouse button.

X-Terminal

Configure client X-Terminal connection.



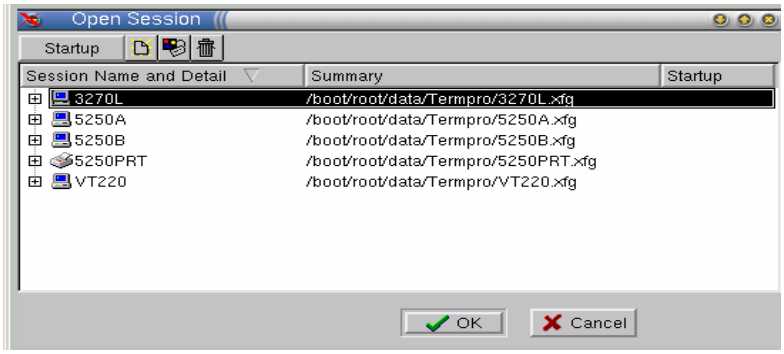
Virtual Terminal = vt6, vt7, or vt8.

Alt+Ctrl+F6/F7/F8 – switch to vt6/vt7/vt8 screen

Alt+Ctrl+F5 – switch to Local Xwindow

TERMPRO - TermPro Emulations

TermPro provides terminal emulation support for TN5250 (AS/400-iSeries), TN3270 (Main Frames) and ASCII (Unix/Linux systems). See Chapter 4 for details on configuring and using terminal emulation sessions.



USB device support

The Linux based thin client includes USB support for keyboards and mice.
It also has USB drive support for RDP and ICA sessions ONLY!

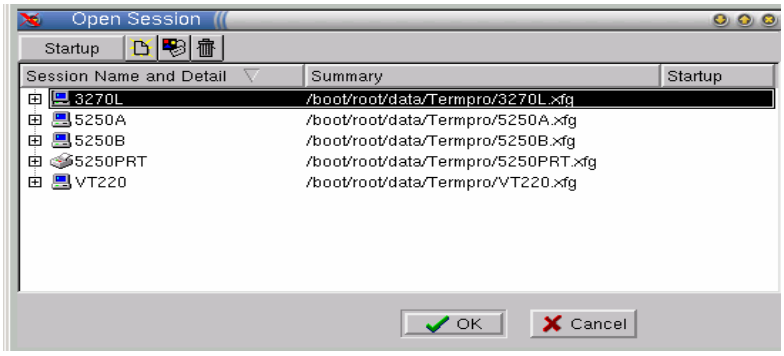
Chapter 4 - TermPro (Terminal Emulations)

TermPro allows you to Configure, Edit, and Start TN5250 (AS/400), TN3270 (Mainframe), or ASCII (Unix/Linux systems) emulation sessions with one or more Hosts.

Sessions are named and can be set to autostart when TermPro is started (click TermPro in application list).

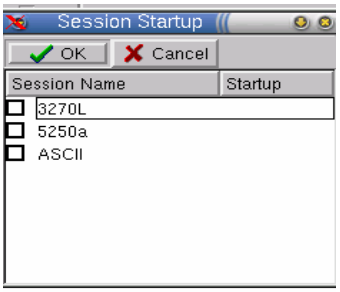
If there are no sessions to autostart, the Session Control screen shown below is displayed, If one or more sessions are set to autostart, those sessions are started. Entries are made on the Task Bar for all active sessions. The first named (alphabetical) session is displayed. The key sequences **Alt+PgUp** or **Ctrl+PaUp** can be used to jump between emulation sessions (next or previous). **Alt+Tab** can be used to jump between all active sessions. To go to the Session Control screen, from an active session from the menu bar click **File-New Session**.

TermPro Session Control (Five session are shown for example only)



The Session Name column shows the names of created sessions in alphabetical order. The Status column displays the word ***Active*** if the session is running (active). The Startup column displays the word ***Autostart*** if the check box before the Session Name is checked - these sessions will be automatically started when TermPro is activated or on bootup.

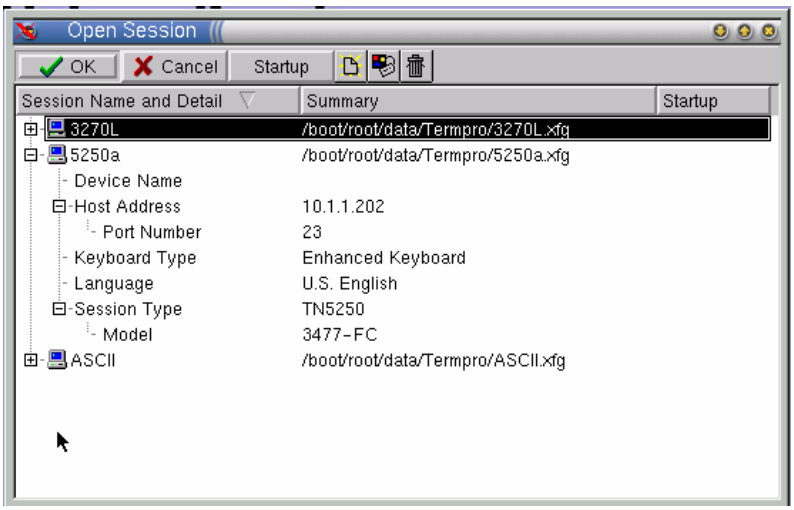
To set a session to Autostart, click **Startup** and check the sessions to autostart then **OK**.


Session Startup
OK
Cancel
Session Name
Startup
3270L
5250a
ASCII

To create a new session click  **(New).**

To edit or examine an existing (non-active) session, click that sessions name and then click  **(Properties)**. See following section 'Configure/Edit Session' that describes the configuration screens.

To view an outline of the session properties, click the **+** in front of a session.



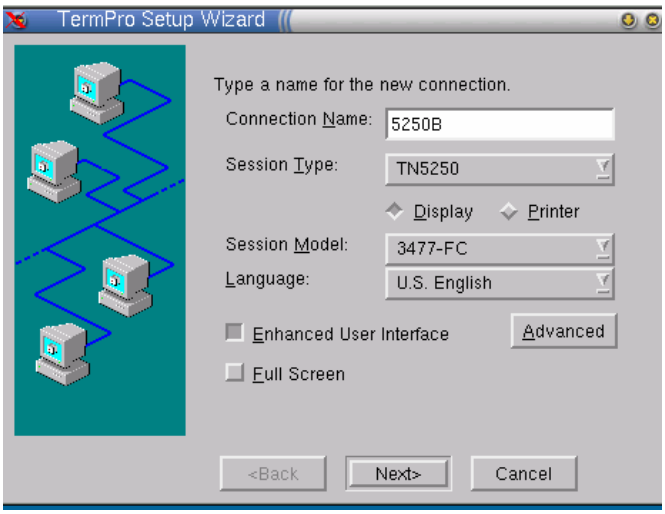
To delete a non-active session, click that sessions name and then  (**Delete)**.

To start a session, click its name and then click **OK**. That session will be started and displayed (name on Task Bar). Note: To Edit or Delete an active session set to AutoStart, first go to the Session Control screen, click **Startup** and un-check the box for that session.

Configure/Edit Session

The following screens are used to define an emulation session.

Connection Information



Connection Name:

Enter a Connection Name to identify the session. This name must be unique. It displays in the Session Name column in the TermPro Session Control Box.

Session Type:

Select one of the Session Types (TN5250, TN3270, ASCII).

Display or Printer:

Click to select either a Display or Printer session.

Session Model:

This item varies with Session Type and Display/Printer selected.
See the following Table.

Session Type	***Display Models***	***Printer Models***
TN5250	3477-FC 3477-FG 3180-2 3197-2 3196-A2 5292-2 5291-1 5251-11	3812-1
TN3270	3278-2-E 3278-3-E 3278-4-E 3278-5-E	3287-1
ASCII	VT100 VT220 VT320 VT420 7-Bit VT420 8-Bit ANSI-BBS SCO-ANSI IBM3135-31 WYSE-50/60	<NONE>

Language:

Select the desired language.

Full Screen (Display only): *<not supported>*

Check this box to cause the emulation screen to be displayed in ***Full Screen*** mode. In this mode, the screen appears as a 'green screen' dumb terminal with input only from the keyboard (no mouse cursor). A window Title Bar and Status Line are not shown.

To toggle between Full Screen and Windows Screen key Ctrl+Shift+F.

Enhanced User Interface (TN5250 Display only):

The default state is checked which indicates normal support for such user interface features as scroll bars, select fields, field progression, enter field attributes word wrap, etc. On older emulations such as 3196, the enhanced interface is not supported and the application

functions differently, which may be what the user desires. In this case uncheck this option.

The following two check boxes are also displayed for a TN3270 display session.

Associated printer:

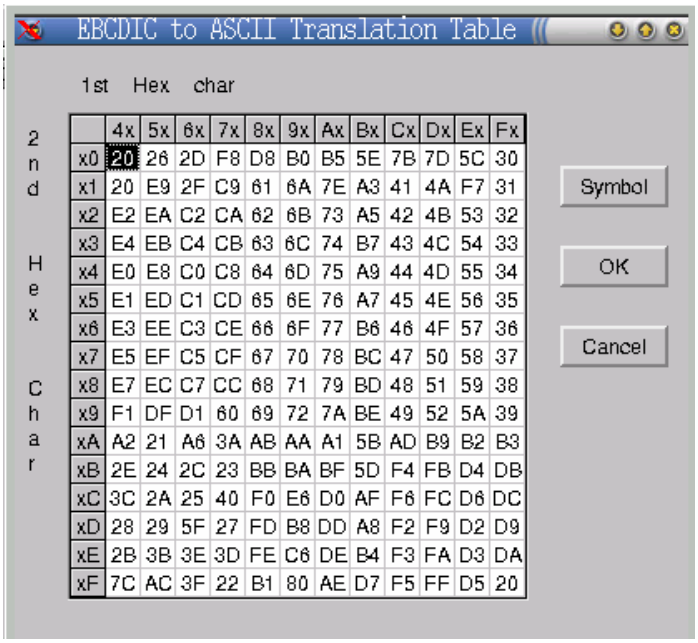
Check this box if a TN3270 associated printer is to be defined.

Number Lock in Numeric Fields:

Check this box if TN3270 numeric fields can accept alpha data.

Advanced:

Click to show the Display or Printer EBCDIC to ASCII Translation Table. The edit procedure is to overwrite new code over old code in the Table.



	4x	5x	6x	7x	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
x0	20	26	2D	F8	D8	B0	B5	5E	7B	7D	5C	30
x1	20	E9	2F	C9	61	6A	7E	A3	41	4A	F7	31
x2	E2	EA	C2	CA	62	6B	73	A5	42	4B	53	32
x3	E4	EB	C4	CB	63	6C	74	B7	43	4C	54	33
x4	E0	E8	C0	C8	64	6D	75	A9	44	4D	55	34
x5	E1	ED	C1	CD	65	6E	76	A7	45	4E	56	35
x6	E3	EE	C3	CE	66	6F	77	B6	46	4F	57	36
x7	E5	EF	C5	CF	67	70	78	BC	47	50	58	37
x8	E7	EC	C7	CC	68	71	79	BD	48	51	59	38
x9	F1	DF	D1	60	69	72	7A	BE	49	52	5A	39
xA	A2	21	A6	3A	AB	AA	A1	5B	AD	B9	B2	B3
xB	2E	24	2C	23	BB	BA	BF	5D	F4	FB	D4	DB
xC	3C	2A	25	40	F0	E6	D0	AF	F6	FC	D6	DC
xD	28	29	5F	27	FD	B8	DD	A8	F2	F9	D2	D9
xE	2B	3B	3E	3D	FE	C6	DE	B4	F3	FA	D3	DA
xF	7C	AC	3F	22	B1	80	AE	D7	F5	FF	D5	20

EBCDIC to ASCII Translation Table for Display

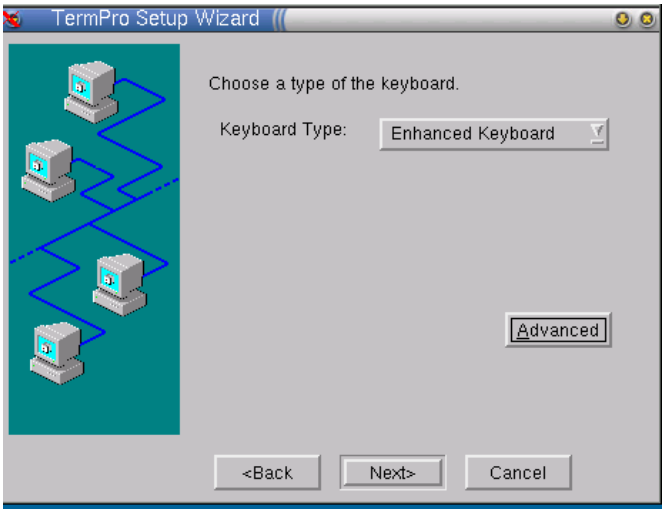
This table controls the EBCDIC to ASCII conversion shown on the display session. You normally do not need to modify this table. To modify the table, click on the ASCII value you want to change. You overwrite the default value by typing the new value.

Click the **Symbol** button to display the character symbols instead of Hex values. The button name changes to **Code**. Click **Symbol** to display the hex code values.

To exit this screen, click on **OK**.

Display Session Screens

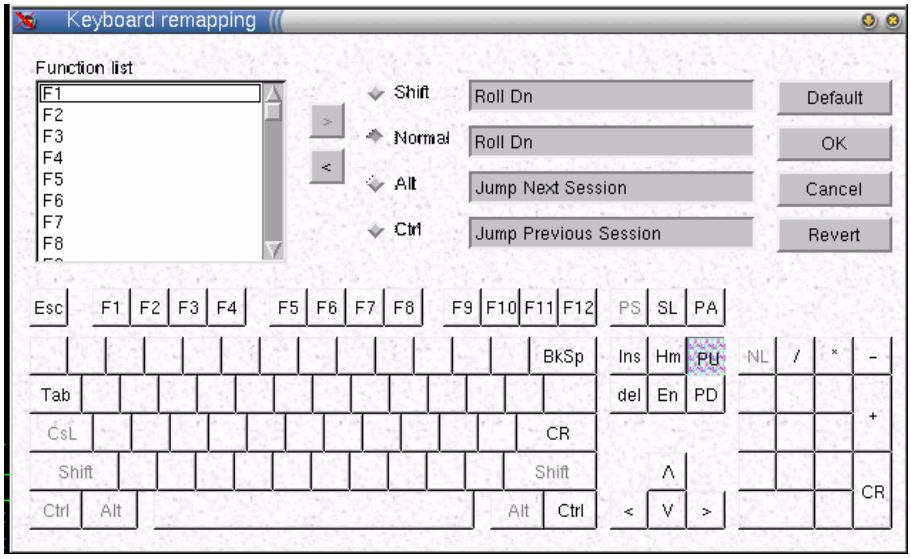
Keyboard Type Dialog Box



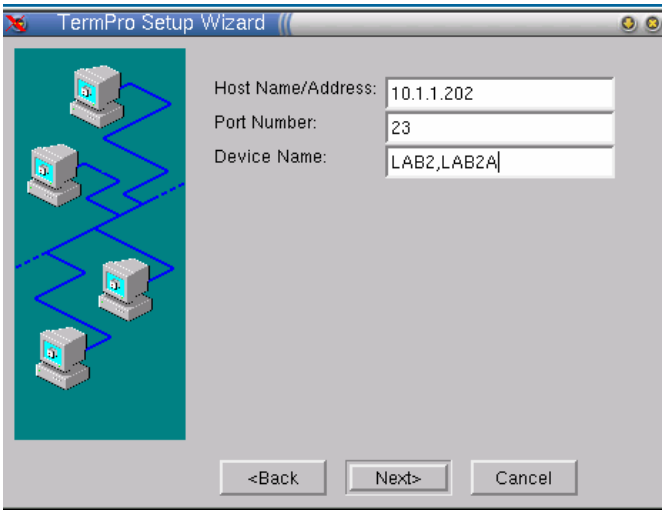
Select the Keyboard Type: Enhanced (PC style keyboard) or 122Key.

Click **Advanced** to map the keyboards as shown in the example below. On these maps, click the key to be mapped and select/enter the desired definition. Note that these maps can also be invoked from an Emulation display screen (File-Keyboard Remapping).

Enhanced Keyboard Mapping for TN5250


Keyboard remapping
Function list
F1
F2
F3
F4
F5
F6
F7
F8
Shift
Normal
Alt
Ctrl
Roll Dn
Roll Dn
Jump Next Session
Jump Previous Session
Default
OK
Cancel
Revert
Esc
F1 F2 F3 F4
F5 F6 F7 F8
F9 F10 F11 F12
PS SL PA
BkSp
Ins Hm PU
NL / * -
Tab
del En PD
+
CsL
CR
Shift
Shift
CR
Ctrl Alt
Alt Ctrl
< V >

Host Settings Dialog Box (Display Sessions)



Host Name/Address:

Enter the fully qualified Domain name or static IP address.

Port Number:

Enter TCP/IP port for Telnet on your host. The default value is port **23**.

Device Name:

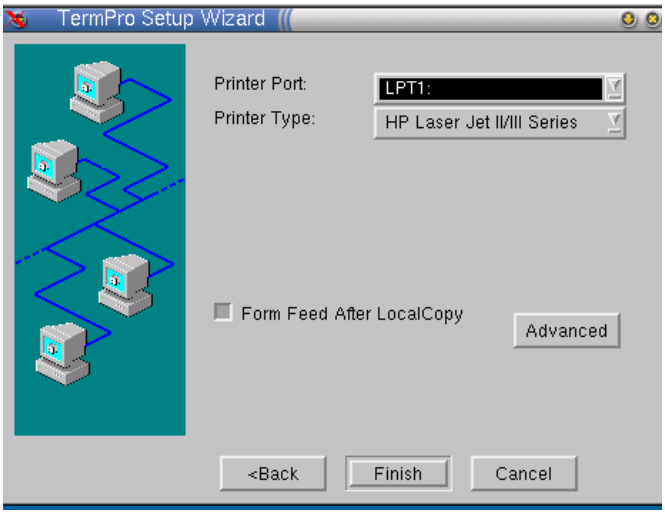
The host device name. A blank entry will cause the host to create a virtual device name. This name must be unique.

Multiple names may be entered using comma separators. During connection, if a name is already in use, connection is attempted using the next name in sequence. Up to five names may be specified.

Local Echo (ASCII session only)

Check to enable Local keystroke Echo.

Printer Setting Dialog Box



If a printer is attached, it can be used to print the current display screen: Press PRINT (Print Scrn) for TN3270 or ASCII sessions; or Shift+PRINT for TN5250 sessions.

Printer Port:

Select port to which printer is attached: **LPT1** or **LPR (network printer)**.

Printer Type:

Select the desired printer from the scroll list**.**

Form Feed After Local Copy:

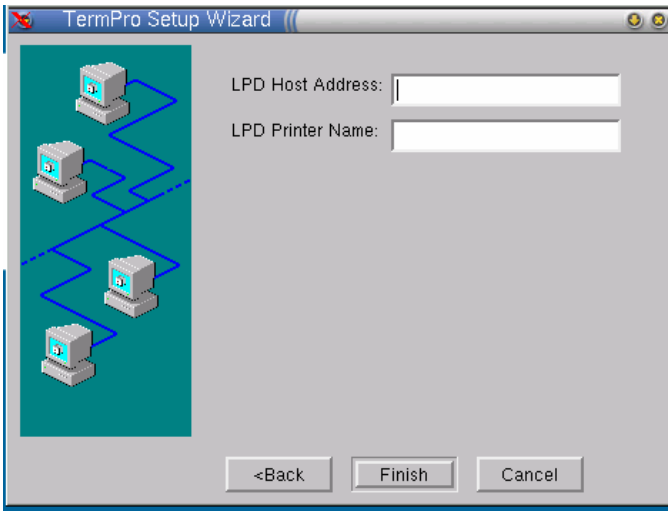
Check to put each screen-print on a separate page.

Advanced:

View/Edit EBCDIC-ASCII table (see Printer Session printer settings).

A screen print can be directed to a LPD network printer. For such sessions the FINISH button is deferred to the next screen for specifying the network printer.

LPD Settings Dialog Box



To enable this feature, enter LPD (Line Printer Daemon) Host IP address and queue name of the LPD printer in required fields.

LPD Host

This field is for the IP address of an existing printer server.

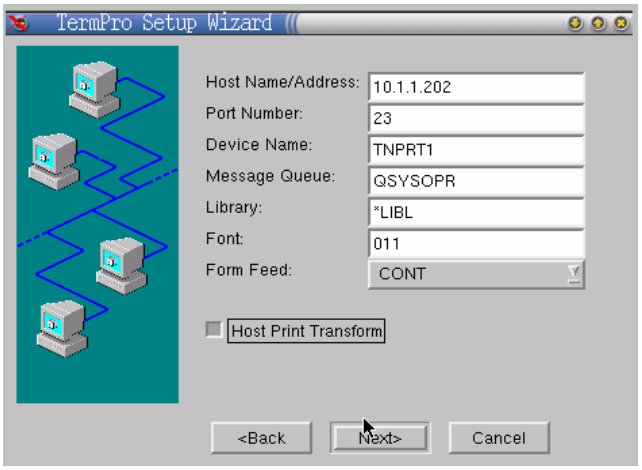
LPD Printer

This field is for the queue name of the LPD. The name is case sensitive.

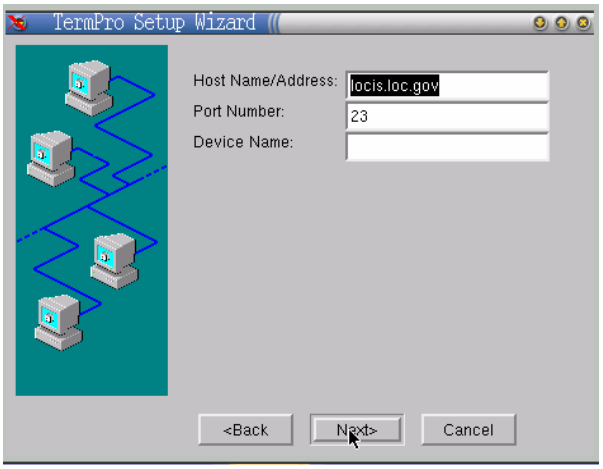
Note: If either of “LPD Host” and “LPD Printer” field is null, the screen copy to the attached printer (if any).

Printer Session Screens

Host Settings Dialog Box (TN5250)



Host Settings Dialog Box (TN3270)



Host Name/Address:

Enter the fully qualified Domain name or static IP address.

Port Number:

Enter TCP/IP port for Telnet on your host. The default value is port **23**.

Device Name:

The host device name. A blank entry will cause the host to create a virtual device name. This name must be unique.

Message Queue:

The default value for this required field is **QSYSOPR**.

(Active only in TN5250 Printer mode)

Library:

The default value for this required field is ***LIBL**.

(Active only in TN5250 Printer mode)

Font:

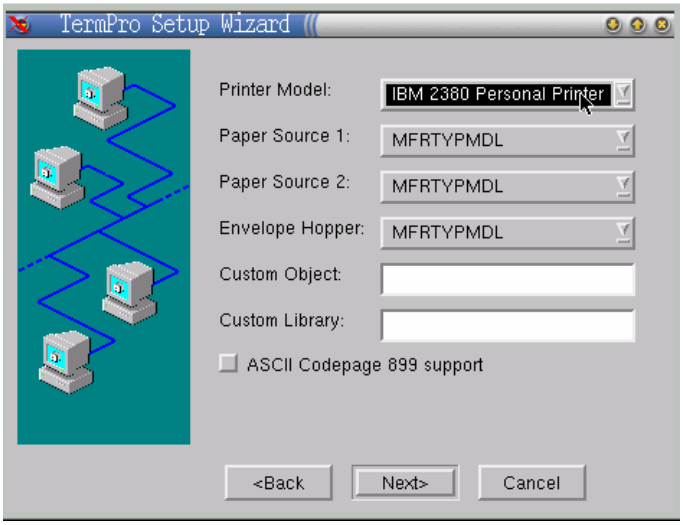
The default value is **011**.

Form Feed:

The default value is **CONT**.

Host Print Transform:

Click this check box to use the Host Print Transform dialog box (See below). This function is activated only when TN5250 Printer mode is selected.



Host Print Transform Dialog Box (TN5250)

Printer Model:

Select your printer model. For a Customized printer object, select Other Printer and specify Custom Object name and Library below.

Paper Source 1:

Select paper type in paper source 1. The default setting is **MFRTYPMDL**.

Paper Source 2:

Select paper type in paper source 2. The default setting is **MFRTYPMDL**.

Envelope Hopper:

Select Envelope size. The default setting is **MFRTYPMDL**.

ASCII Codepage 899 support:

Click to enable this function (not recommended).

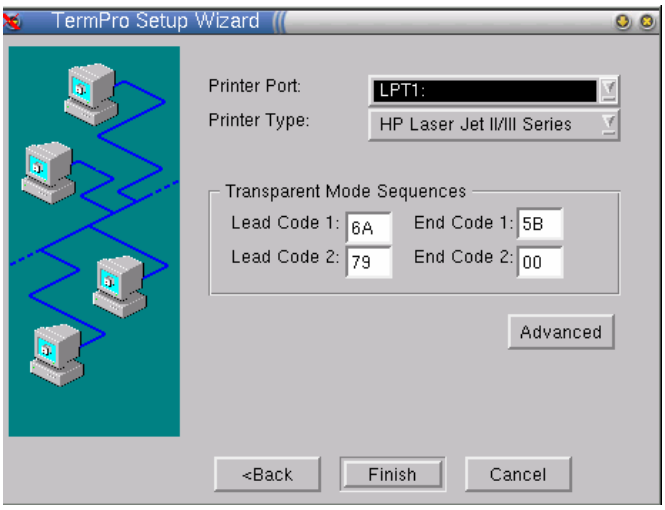
Custom Object:

The default setting is blank.

Custom Library:

The default setting is blank.

Printer Settings Dialog Box



Printer Port:

Select port to which printer is attached: **LPT1** or **LPR** (network printer).

Printer Type:

Select the desired printer from the scroll list (the default is **IBM Graphics Printer)**.

Transparent Mode Sequences: (TN5250)

Enter the specific value or the default will be used as followed.

Lead Code1:	**6A**	End Code1:	**5B**
Lead Code2:	**79**	End Code2:	**00**

If the values of lead and end codes are '00', this feature will be disabled.

Below is an example illustrating the transparent mode feature; '|¬' are the lead codes and '$' is the end code:

Given the character string

|¬1B410C$ (Hex 6A 5F F1H C2H F4H F1H F0H C3H 5BH)

The printer emulation program will automatically remove the

Lead codes |¬ and End code $

And pack every two bytes of the remaining characters into one byte

Remaining characters 1B410C (Hex F1 C2 F4 F1 F0 C3)

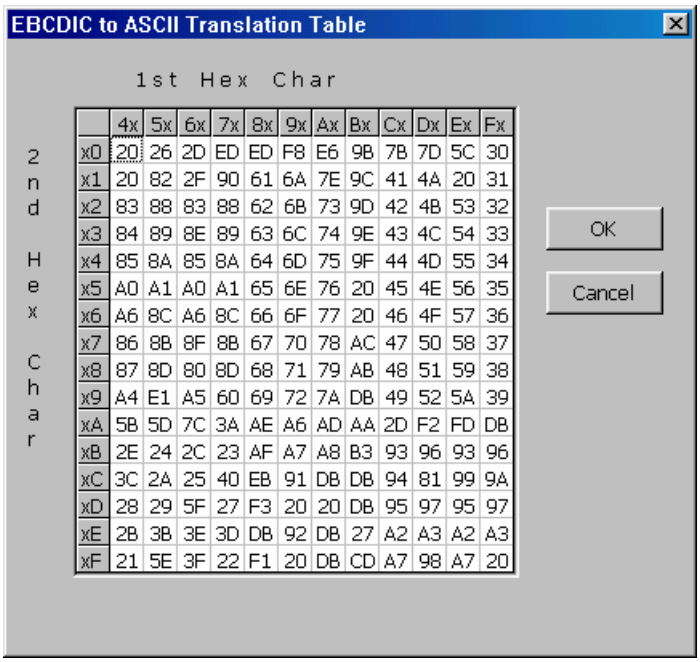
Packed Hex 1B 41 0C

And then send those bytes (Hex 1B 41 0C) to the printer.

Advanced:

Click Advanced to display/Edit the printer EDCDIC-ASCII table.

EBCDIC to ASCII Translation Table for Printer



	4x	5x	6x	7x	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
x0	20	26	2D	ED	ED	F8	E6	9B	7B	7D	5C	30
x1	20	82	2F	90	61	6A	7E	9C	41	4A	20	31
x2	83	88	83	88	62	6B	73	9D	42	4B	53	32
x3	84	89	8E	89	63	6C	74	9E	43	4C	54	33
x4	85	8A	85	8A	64	6D	75	9F	44	4D	55	34
x5	A0	A1	A0	A1	65	6E	76	20	45	4E	56	35
x6	A6	8C	A6	8C	66	6F	77	20	46	4F	57	36
x7	86	8B	8F	8B	67	70	78	AC	47	50	58	37
x8	87	8D	80	8D	68	71	79	AB	48	51	59	38
x9	A4	E1	A5	60	69	72	7A	DB	49	52	5A	39
xA	5B	5D	7C	3A	AE	A6	AD	AA	2D	F2	FD	DB
xB	2E	24	2C	23	AF	A7	A8	B3	93	96	93	96
xC	3C	2A	25	40	EB	91	DB	DB	94	81	99	9A
xD	28	29	5F	27	F3	20	20	DB	95	97	95	97
xE	2B	3B	3E	3D	DB	92	DB	27	A2	A3	A2	A3
xF	21	5E	3F	22	F1	20	DB	CD	A7	98	A7	20

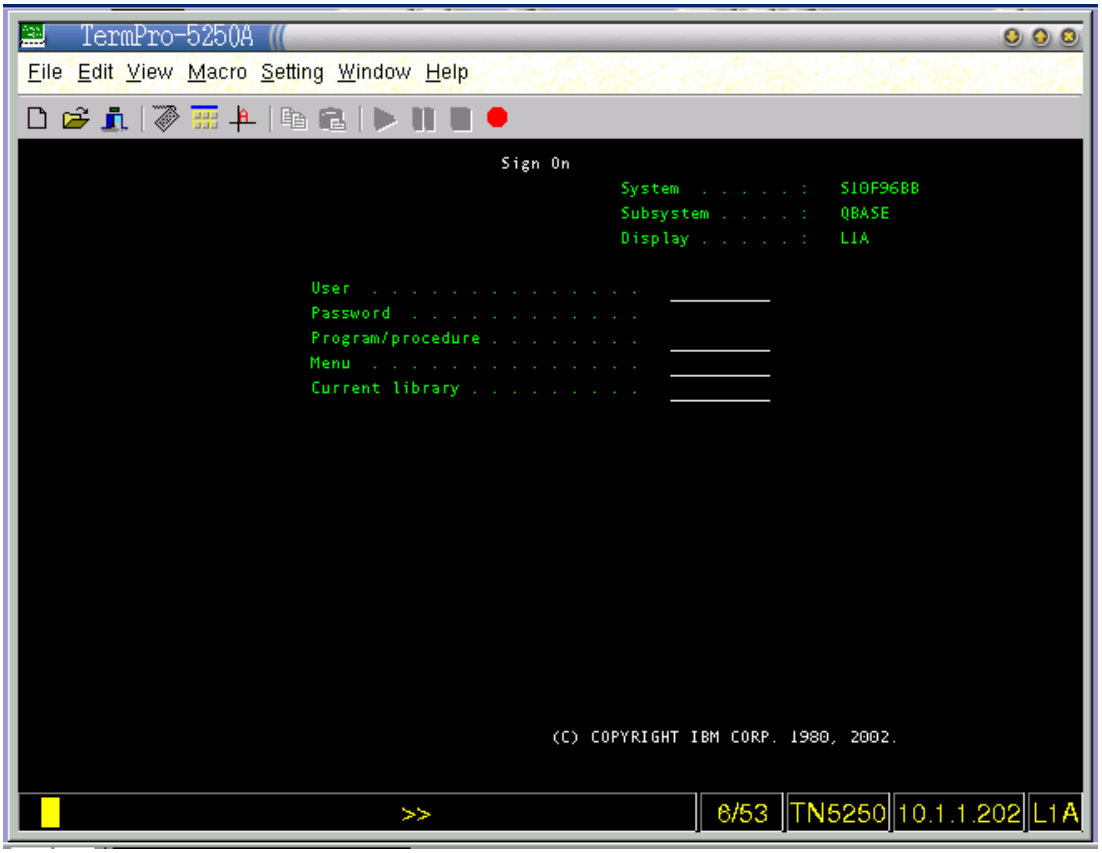
This table controls the EBCDIC to ASCII conversion for your printer session. You normally do not need to modify this table. If a character is printing on your printer with the wrong ASCII value, use the printer manual to determine the ASCII HEX value of this character and that of the value you want in its place. Find the incorrect value in the table, click on the value and type in the correct value. To exit this screen, click **OK**.

Using Emulation Sessions

This section describes the Display and Printer session screens and user entry options.

Display Sessions

Display Screen (TN5250 example)



Control bar:

The bar at the top of each display session consists of two sections:

- **Menu bar** has six options: File, Edit, View, Macro, Setting and Help.

  The menu options are described in the following sections.

- **Tool bar** has Icons for (left to right): Ruler, Print, Copy, Paste, Keypad, Color Map, Keyboard Map, Macro Play/Pause/Stop/Record, and Help.

A description of the icons follows.

	New Session	
	Open Session	
	Exit Session	
	Keyboard Remapping	See keyboard maps shown following Keyboard Type Dialog Box.
	Key Pad	Display Key Pad. See File Menu for use and Setting Menu for Key Pad configuration.
	Ruler	Click to toggle ruler On/Off. See Setting Menu for choice of ruler types.
	Copy	Copy selected area. See Edit Menu for use.
	Paste	Paste copied area. See Edit Menu for use.
	Play	Play Macro - See Macro Menu for use.
	Pause	Pause Macro - See Macro Menu for use.
	Stop	Stop Macro recording - See Macro Menu for use.
	Record	Record Macro - See Macro Menu for use.

Tool Bar Icons:

Status bar:

There are two status bars displaying at the bottom of each display session.

- **First status bar:**

  The right area identifies the cursor position, row (R) and column (C) in the format R/C. The left area consists of status indicators and special indicators (not always displayed). Each of them shows information about your current session and status of the host system.

Status Indicators:

	The host system is available.
	Keyboard input is inhibited. For TN3270, see TN3270 Input Inhibit
	The keyboard is in insert mode.
	The SHIFT key is down.
	A message is waiting on the host system for the session. (TN5250)

Special Indicators:

d	Diacritic Mode	The terminal is in diacritic mode. Hit the space bar to see the character.
>>	Type Ahead	You can continue to key even if the keyboard is input inhibited. (TN5250 only)
Num	Numeric	Numeric field (TN3270 only)

TN3270 Input Inhibit Status

X-system	System lock. The application program locked the keyboard.
X 🕐	Time(Terminal wait). The host needs more time to response to your request.
X 웃 NUM	Numeric data only
X-f	Minus function
X-s	Minus symbol
X 웃 >	Too much entered
X ←웃→	Go elsewhere
X웃+?	An invalid diacritical-mark key error
XPROG nnn	Program check. The symbol may appear because the data received is not correct. Please refer to 'IBM 3174 Establishment controller customer problem Determination' for the definition of nnn.

- **The second status line:**

  The left side shows Ready or Macros function status. The right side includes five status areas:

  1. Cursor position: Row/Column
  2. The session type – TN5250 or TN3270
  3. Host Address

  The display of this line can be disabled via a View menu option.

Cursors and Cursor Functions:

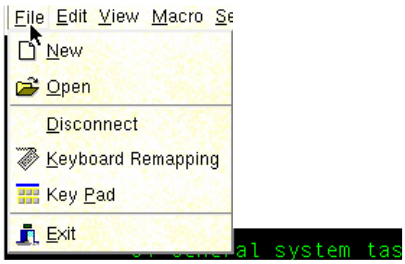
There are generally two cursors - Emulation cursor (Caret) and the Windows mouse cursor. By default, the **right mouse button** can be used to click on various '**Hot Spots**' to select and execute menu number options, execute system function keys listed on the screen, or type a selected word at the Emulation cursor position.

Local Screen Print:

TN5250: Key ***Shift+Print*** to print to local attached printer.

TN3270: Key ***Print*** to print to local attached printer.
ASCII: Key ***Print*** to print to local attached printer.

File Menu



New Session:

Click to display TermPro Session Control screen.

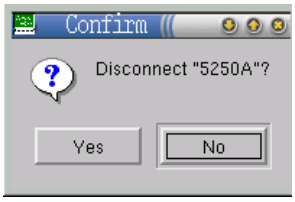
Open Session:

Click to display TermPro Session Control screen.

If another session is opened, the current session is first closed.

Disconnect / Connect:

Choose ***Disconnect*** to disconnect the session from the host. The connection remains active and ***Connect*** replaces ***Disconnect***.



Disconnect Confirm Dialog Box

Keyboard Remapping:

See prior section for the **Keyboard Remapping** screens.

Key Pad:

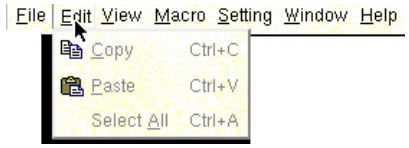
Key Pad Dialog Box

The **Key PAD** allows you to access frequently used keyboard functions or macros from a convenient pop-up KeyPAD. You can position and size the display. Click top left X to remove this display. To edit the KeyPad, see Settings Menu (Key Pad).

Exit:

Click **Exit** to end the connection.

Edit Menu



Copy:

You can use this function to copy data from one session or screen into another.
First select the area to be copied.

To select the area to be copied using the mouse, press the left mouse button at a corner of the area to be copied and drag the mouse cursor to highlight the area.

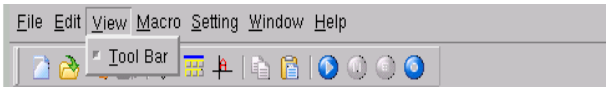
Paste:

This option can place the data that has been copied to the current cursor position.

Select All:

This option is used to select all data so you can copy the entire screen. The second status bar will not be selected.

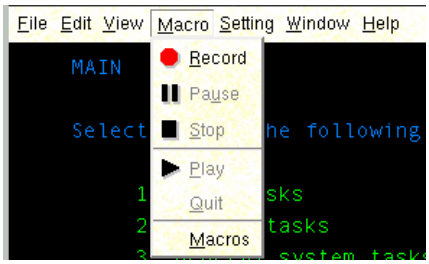
View Menu



Tool Bar:

Use this option to toggle (on/off) the Tool Bar display. The Tool Bar is shown in the graphic above.

Macro Menu



Macros are used to record and play back frequently used keystrokes.
A macro can also be specified to automatically run after the connection is started.

Record:

To record a macro, place the cursor in the desired position on the screen, then click the **Record** button, start typing the characters, command keys, action keys, etc, when finished, click the **Stop** button.

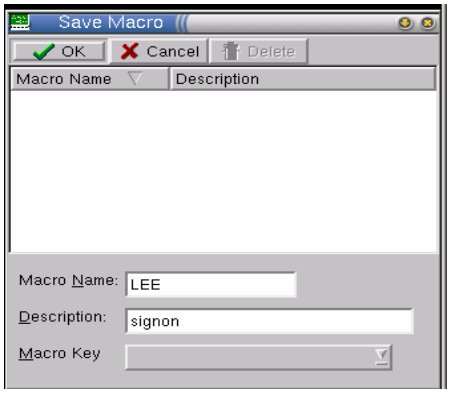
Pause:

Pause is used to allow user input during a playback sequence. While recording a macro, select **Pause** to allow non-recorded user input. The name **Pause** changes to **Continue**. Select **Continue** to resume recording the macro.

When Pause is active, you may specify a 1 to 9 second delay by typing ***CTRL+ALT number pad +[1-9 on].*** Pause is then set inactive. This is useful primarily in TN3270 and ASCII emulation to allow for screen transition (unbind state). If keystrokes are lost during screen transition, then a delay must be used.

Stop:

Stop ends the Record sequence. After selecting Stop, you will be prompted to enter a file name or cancel the record process.



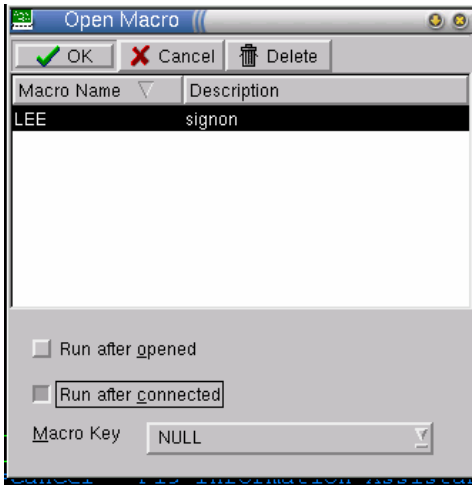
Save Macro Dialog Box

Enter the file name you want the macro saved as. Type the description of the macro for future reference.

Macros:

Click ***Macros*** to display a list of all macros and their description. This option allows you to open a pre-recorded macro for use when you click **PLAY**. Note that the default is to run the macro after you open the file so be sure that you are ready to play the macro you are selecting. If you are not ready, uncheck **"Run after opened"** so the macro is ready to be played, but will not play immediately.

Open Macro Dialog Box



To automatically run a macro after the connection is started, select a macro from the list and check "**Run after connected"**.

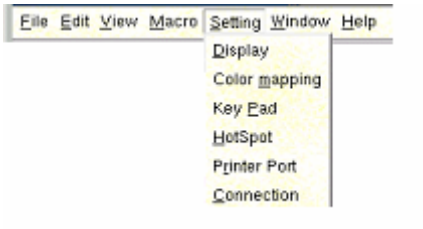
Play:

Play is only active after you have selected a macro from the Macro list. This option plays back the pre-recorded key sequences in the macro file previously selected.

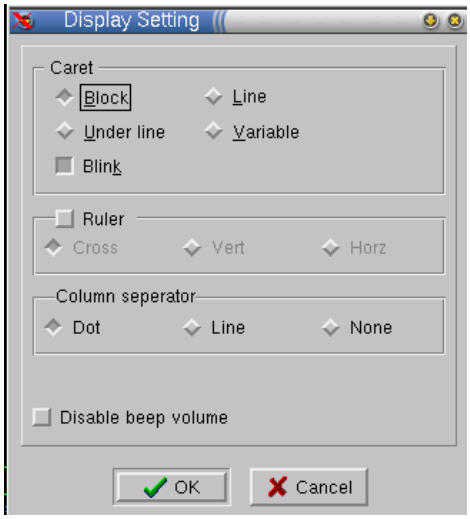
Quit:

This option is used to terminate a macro, which is playing. This option is only available if a macro is currently being played back.

Setting Menu



Display:



Display controls the cursor type and whether there is a ruler line on the caret.

Caret:

Caret (Cursor) type defaults to Block. The other two selections are Line and Under Line. Caret blinking can be enabled (default) or disabled.

Ruler:

If you select Ruler you can select one of three ruler lines: Cross, Vertical and Horizontal

Note: To toggle ruler on/off key ALT+PageDown (Enhanced keyboard).

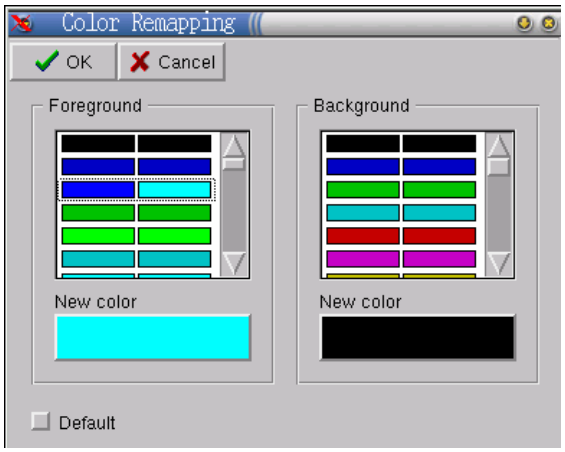
Column separator:

This option defaults to Dot; the other type is Line or None (no separator).

Disable Beep Volume:

Select (check) to disable Beep.

Color Mapping:



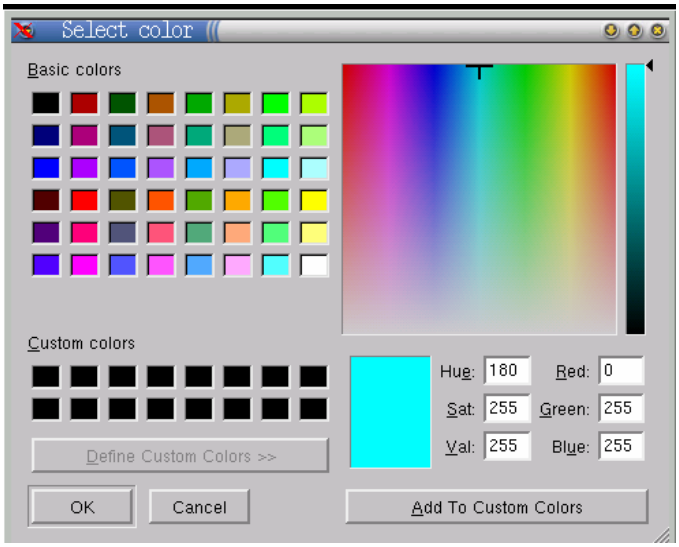
Foreground:

This box allows you to modify the foreground color.

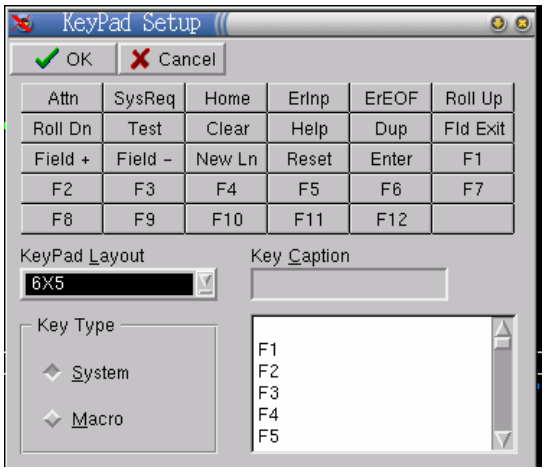
1. Select the old color in the left color list.
2. Click **New color** button to select desired color in the Color Panel shown below.
3. If you need different color from the basic colors, click **Define Custom Colors** to create a new color.
4. Click OK. The new color will display on the screen.

Background: Follow the Foreground procedure to modify the Background color.

Select Color Dialog Box



Key Pad:



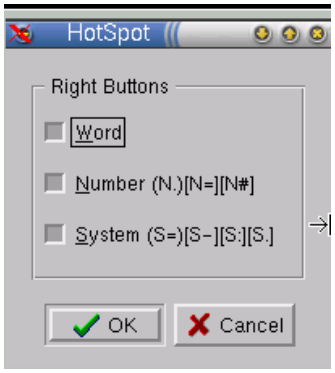
This option allows you to access frequently used keyboard functions or macros from a convenient pop-up Key Pad.

Select the **KeyPad Size** in terms of the number of Columns x Rows. Values range from 1x1 to 9x4.

Click on a cell in the matrix displayed. The Name, if any, will display in the **KeyPad** field.

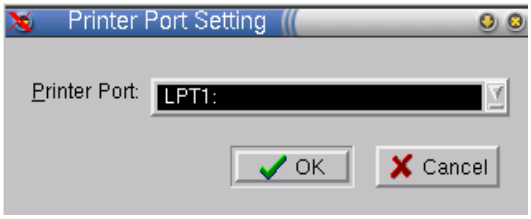
Select the **Key Type**; either **System** key or **Macro** name. The list of system keys or defined macro names will be displayed. Double click the desired entry for the specified cell.

Hot Spot:



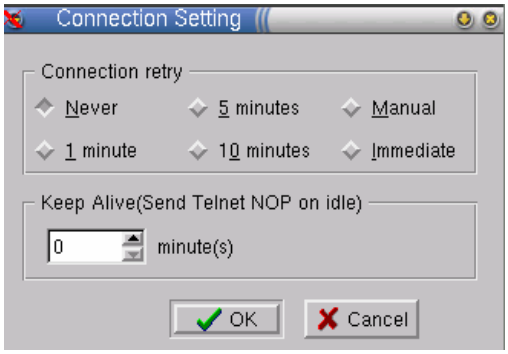
By default, the **right mouse button** can be used to click on various 'Hot Spots' to select and execute menu number options, execute system function keys listed on the screen, or type a selected word at the Emulation cursor position.

Printer Port:



The printer ports are listed. Select the desired port.

Connection:



Connect retry:

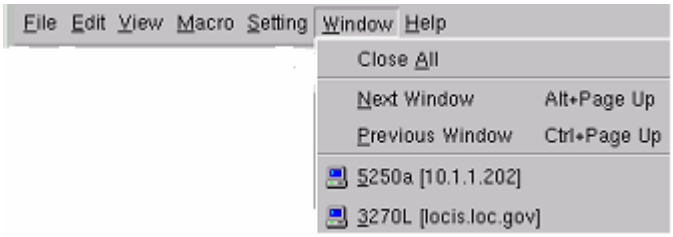
When the Host disconnects an emulation session, an attempt can be made to automatically reconnect that session after a specified period of time. The default setting is **Never** to disable this feature. Retry time periods of **1**, **5**, or**10** minutes can be set. If **Immediate** is selected, an attempt is made to immediately reconnect this session. If Manual is selected, the user is shown the following display on the disconnected session screen:

Keep Alive:

Set a non-zero value to cause the terminal to send a Keep Alive packet (Telnet NOP) to the

Host every so many minutes. This may be necessary where ‘Keep Alive’ packets sent to the terminal are filtered out by the network and never received.

Window Menu

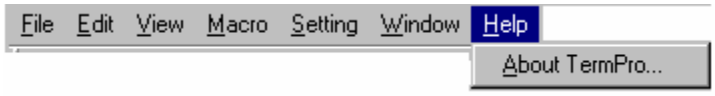


The bottom portion of the screen displays the active sessions. Click on another session to display it.

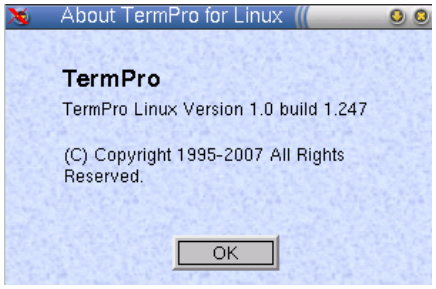
You can jump between active session by clicking **Next Window** or **Previous Window**.

Click **Close All** to close all active sessions and exit the TermPro control screen.

Help Menu

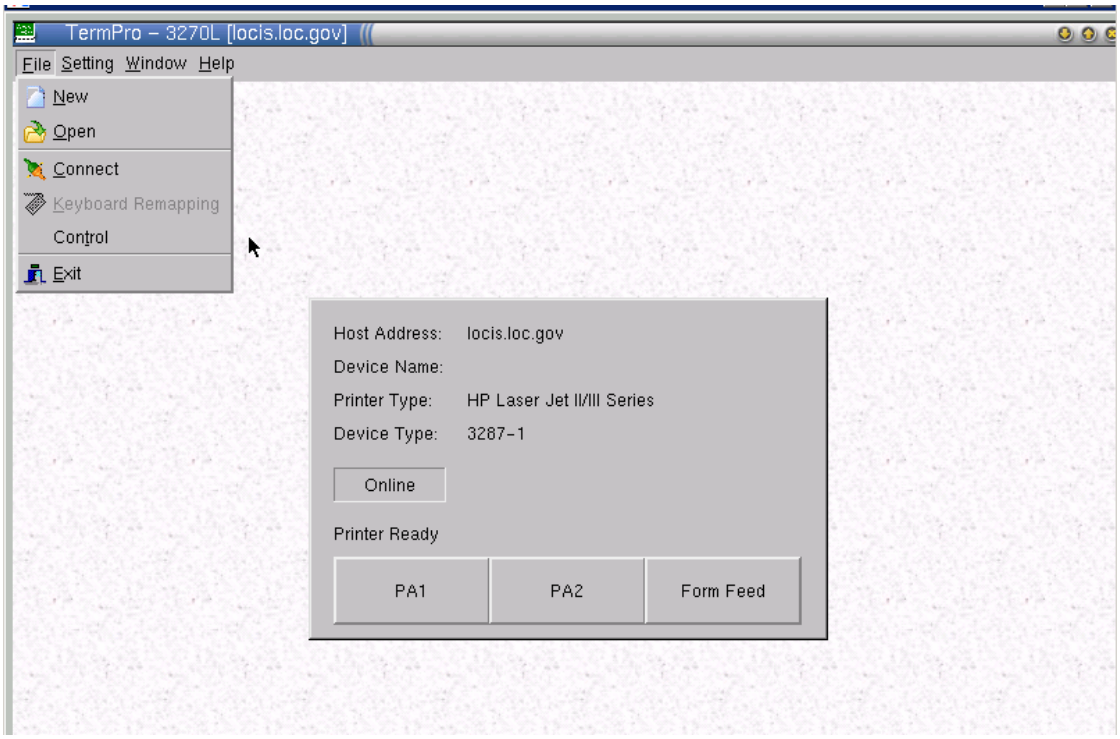


Click **Help** then **About** to display basic information about the terminal.



Click **OK** (or press ENTER) to continue.

Printer Sessions

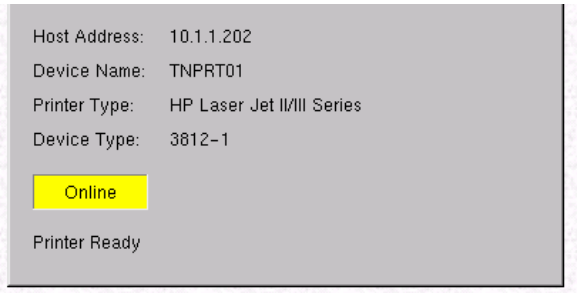


Printer Session Screen (TN3270 Printer example)

This dialog box means that the printer is in the ready status to connect to the host.

- **Online:**
  When the printer session is active, the ‘Online’ button will become yellow.

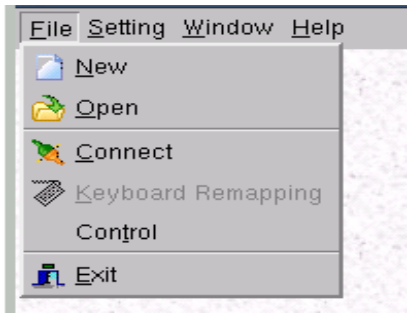
- **PA1/PA2/Form Feed: (TN3270 only)**
  Click the button to send the named code to the server.
  Using the keyboard, Tab to desired Button and press Enter.



TN5250 Printer Session Status Example

When printing, Red/Green boxes alternate to the right of **Online**.

File Menu



New Session:

Click to display TermPro Session Control screen.

Select New Session to start.

Open Session:

Click to display TermPro Session Control screen.

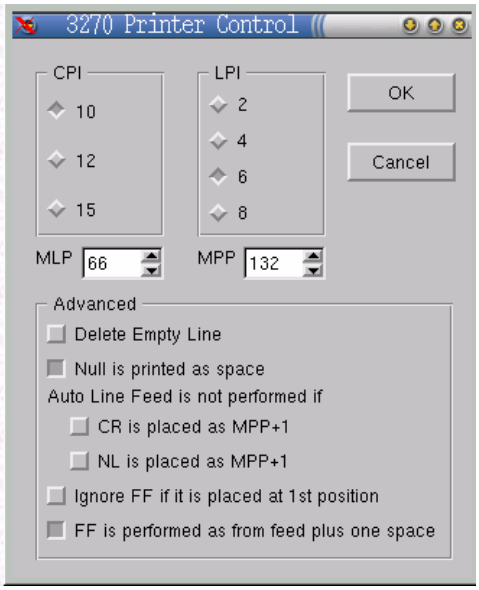
If another session is opened, the current session is first closed.

Disconnect/Connect:

Select ***Disconnect*** to disable the printer session from the host. The connection remains active and ***Connect*** replaces ***Disconnect***.

Exit:

Exit (end) session.



Control: (TN3270 only)

CPI:

Characters Per Inch. The default is 10 CPI.

LPI:

Lines Per Inch. The default is 6 LPI.

MPL:

Maximum Print Lines per page. The range is from 1 to 255. The default is 66.

MPP:

Maximum Print Position. The range is from 1 to 255. The default is 132.

Delete Empty Line:

Selecting this function will delete the whole line if it includes only unprintable characters. Unprintable characters include null, control codes. But space (X'40) is printable character. By default this function is disabled. This function is valid only for DSC (LU3 with 2 and 3 bit of WCC is not '00').

Null is printed as space:

This function is valid only for screen print DSC(LU3).

Auto Line Feed is not performed if

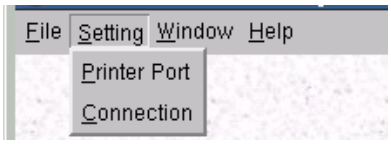
1. **CR is placed at MPP+1:**
   If this item is selected and MPP+1 has CR, the Auto Line Feed will not be performed. This function is valid only for DSC (LU3 with WCC's '00' in 2nd and 3rd bit).
2. **NL is placed at MPP+1:**
   Selecting this item will cause NL on MPP+1; the Auto Line Feed will not be performed. This function is valid only for DSC (LU3 with WCC's '00' in 2nd and 3rd bit).

Ignore FF if it is placed at 1st position:

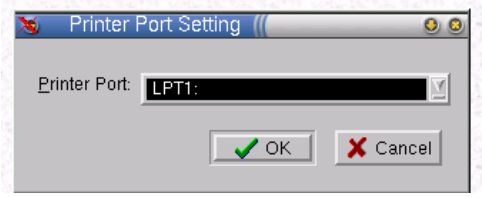
Selecting this item in LU3, the system will ignore FF at 1st position in first line.

FF is performed as form feed plus one space:

When this item is selected, a FF code will cause form feed to be performed. The 1st line of the next page will be a space and printing starts at the 2nd position of the 1st line. Clear this item and printing starts at the 1st position of the 1st line of the next page. This function is valid only for screen print and LU3. By default this function is enabled.



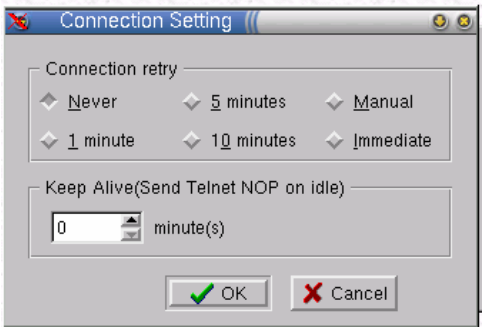
Setting Menu



Printer Port:

The printer ports are listed. Select desired port.

Connection:

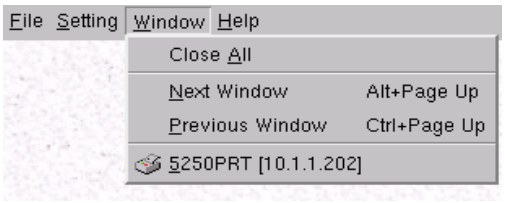


Connect retry:

When the Host disconnects an emulation session, an attempt can be made to automatically reconnect that session after a specified period of time. The default setting is **Never** to disable this feature. Retry time periods of **1**, **5**, or**10** minutes can be set. If **Immediate** is selected, an attempt is made to immediately reconnect this session. If Manual is selected, the user is shown the following display on the disconnected session:

Keep Alive:

Set a non-zero value to cause the terminal to send a Keep Alive packet (Telnet NOP) to the Host every so many minutes. This may be necessary where ‘Keep Alive’ packets sent to the terminal are filtered out by the network and never received.



Window Menu

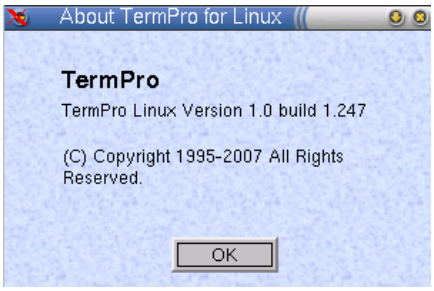
The bottom portion of the screen displays the active sessions. Click on another session to display it.

You can jump between active session by clicking **Next Window** or **Previous Window**.

Click **Close All** to close all active sessions and exit the TermPro control screen.

Help Menu

Click **Help** then **About** to display basic information about the terminal.



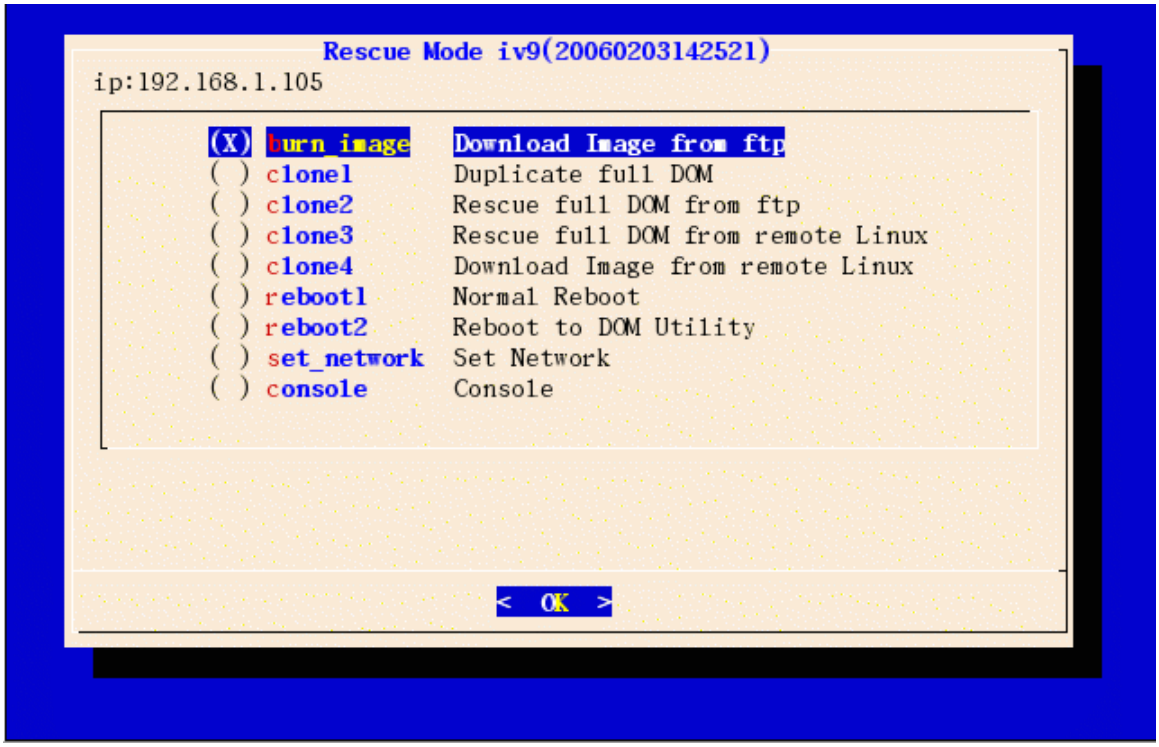
Click **OK** (or press ENTER) to continue.

Appendix A – DOM Crash Recovery Utility

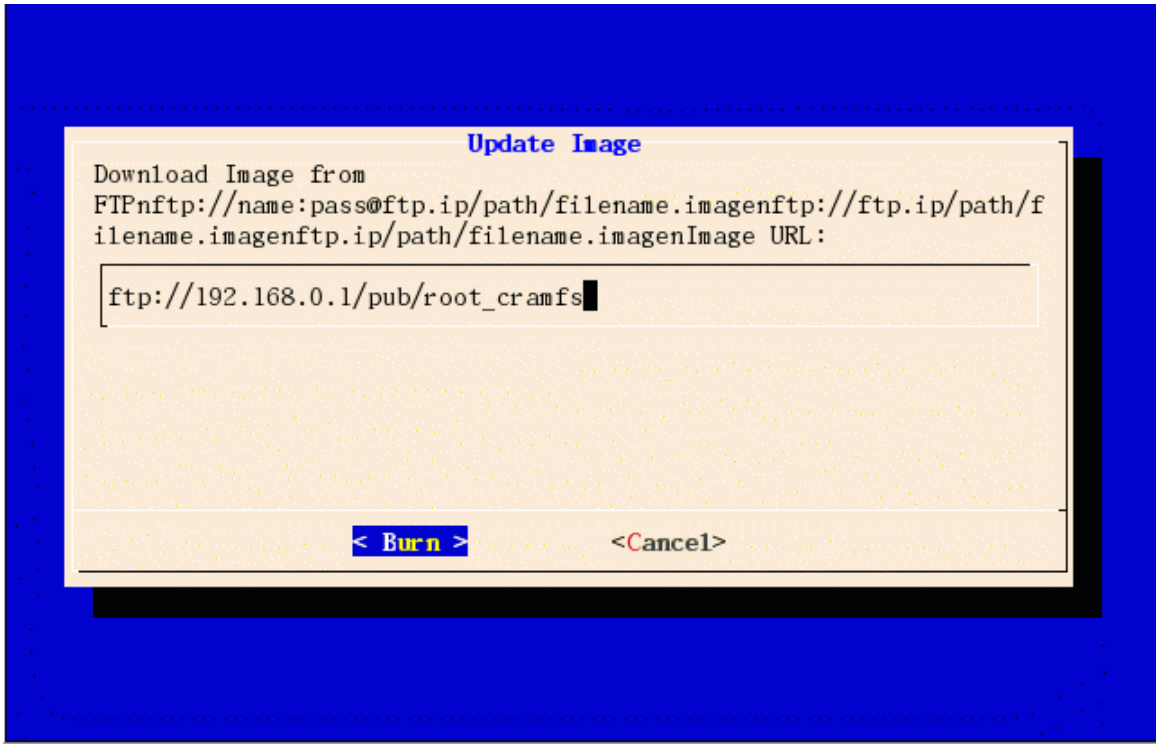
Should the internal flash fail after an update, the following procedure can be used for recovery.

With PS/2 Keyboard

Power on the unit and hold down the ESC key. The Rescue Mode menu will display.



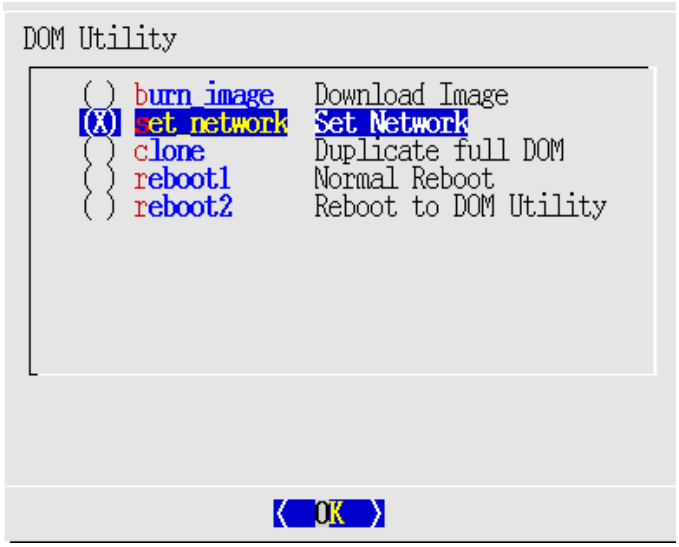
Press Up/Down keys to move the bar, press Space to select, and press Enter to run the selected function. If DHCP has set terminal network parameters, select **Download Image** and press Enter.

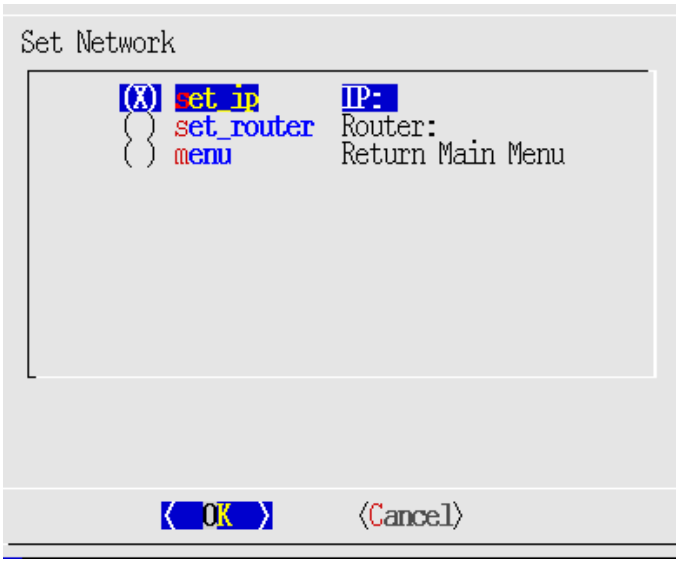


Type your FTP server's address and file name as shown above. Press Enter to download image.

Another screen will appear asking you to approve the download and update.

If no DHCP server is available manually set the Network IP and Router (Gateway) addresses.

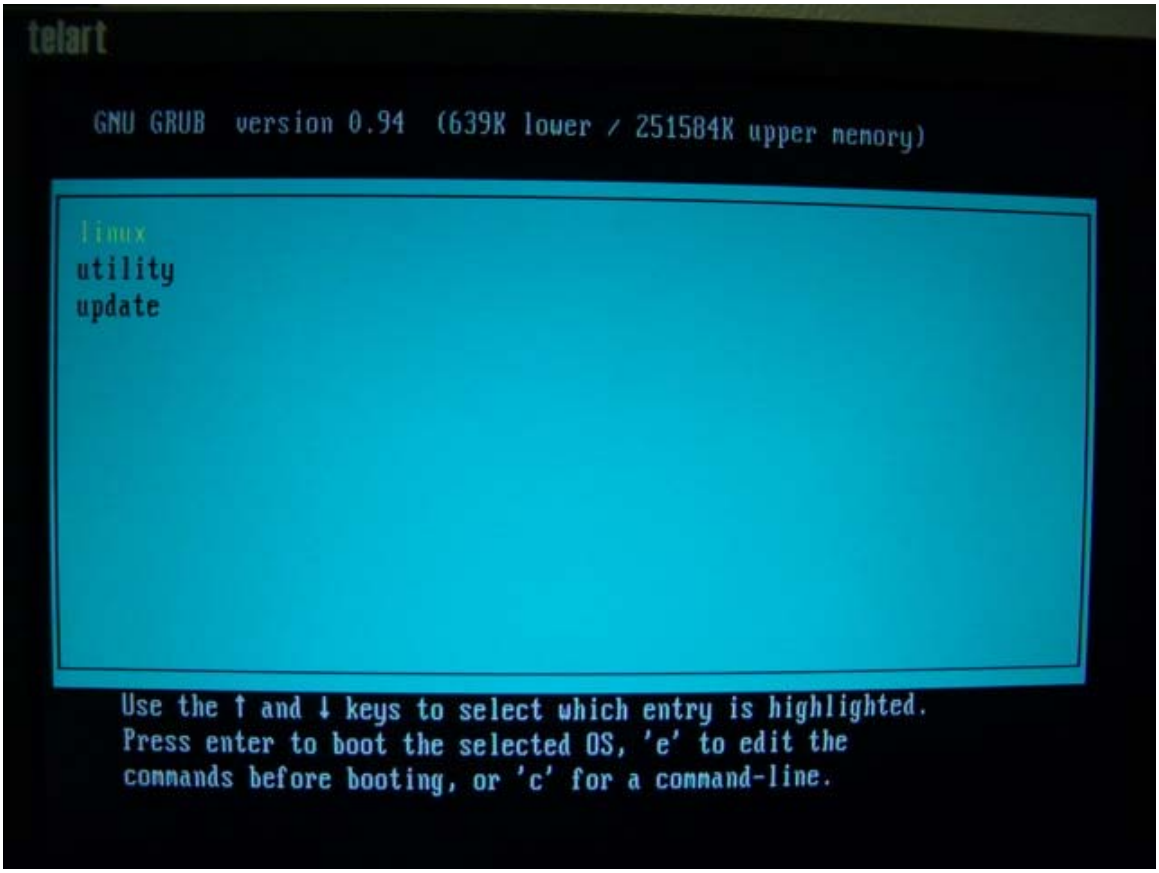




Return to Main Menu after setting network base parameters and Download Image.

With USB keybaord

Hold down the power button part way through the progress bar on the initial SPLASH screen. This will power off the unit. When you power on again it will go to the GNU GRUB screen.



Select Utility and press Enter. This will take you to the Rescue Mode screen as above.