

ACP ThinManager v2.4

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Introduction

ACP ThinManager

ThinManager 2.4 is a software program that allows ACP Enabled Thin Clients, called terminals in this, to boot, receive a configuration, and connect to a terminal server.

A thin client is a computer without a hard drive that connects to a server, logs onto a separate independent session, and runs its applications on the server and not locally on the terminal.

ACP Enabled thin clients first connect to a ThinManager Server where it receives its configuration. This configuration assigns the terminal to its terminal server. The terminal then connects to its assigned terminal server, logs in and starts its session. The keystrokes and mouse movements from the terminal are sent to the terminal server. The terminal server session calculates the response and sends the screen display back to the terminal.

This simplifies maintenance and management by eliminating the need to install and configure operating systems on the terminals. All configuration, management, installation and applications are on the server, not the thin client.

ACP Enabled Thin Clients are terminals containing ACP technology that:

- Allow for a network boot.
- Use the ICA protocol from Citrix.
- Have central configuration and management software.
- Allow easy replacement in case of terminal failure.
- Provide failover in case of terminal server failure.
- Provide touch screen support.
- Provide high-speed serial connections.
- Have multiple hardware vendors.
- Have Disk-On-Chip versions for low bandwidth applications. The disk-on-chip can be updated automatically, on location.

What's New in Version 2.4

There are many “behind the scenes” changes that make ACP ThinManager faster, stronger, and more reliable. The visible improvements in ThinManager 2.4 include:

- Wizards for creation and configuration. See “Configuration Wizards” on page 67.
- Improved Tree with greater details. See “Tree Pane” on page 28.
- Server List Management allowing the use of names instead of IP addresses, even if DNS is not used. See “Server List Management” on page 42.
- A Configuration Backup for keeping a copy of the ThinManager configuration. See “Backup Configuration” on page 51
- A Synchronization wizard for keeping multiple copies of ThinManager identical. See “Synchronize Configuration” on page 51

Terminology

The ACP ThinManager Technical Training Manual uses a number of terms to describe events in the Client/Server relationship between ACP Enabled thin clients and Microsoft Windows NT/2000 terminal servers. These are defined here:

Note: This manual uses “terminal” to mean an ACP Enabled thin client.

ACP - Automation Control Products.

ACP Enabled Thin Client – A terminal that uses ACP technology.

ACP Enabled Thin Client Network – A ThinManager server, a terminal server, and ACP enabled thin clients connected and configured on the same network.

Classic Mode – The method of configuring Groups and Terminals using property tabs that was introduced in ThinManager 1.0. See also Wizard Mode.

Client - A machine that requests data, resources, or services from a server. A software program that shares data with the server.

Client/Server - A relationship between two computers or programs where one, the client, requests data, resources, or services from the other, the server.

COM Port - A serial communication port on a PC.

Console - The administrative session that is run on the server.

DHCP - Dynamic Host Configuration Protocol. A protocol for assigning IP addresses and other boot information to computers on a network.

Disk-On-Chip - Storage device that contains firmware that allows an ACP Enabled thin client to boot locally.

DNS - Domain Name Service. An Internet service that converts domain names to IP addresses.

Enforce Primary - Setting *Enforce Primary* to *Yes* will return terminals logged into a secondary server back to the primary server, once the primary server has returned online.

Failover - The ability of a terminal to switch to a backup server when the primary server fails.

Fat Client – A computer with a hard drive and operating system that is acting as a client.

Firmware - The software that runs on the terminal.

Gateway – A device that connects two computer networks that use different protocols.

GUI - Graphical User Interface. The portion of an operating system or program that provides icons, symbols, or pictures for options and choices.

HMI - Human-Machine Interface. A software program that allows an operator to control a manufacturing process. Also known as MMI, Man-Machine Interface.

ICA - Independent Computing Architecture. A remote presentation services protocol from Citrix that allows thin clients to access the server.

ICA Connection – The communication channel between an ICA server and an ICA terminal.

IP - Internet Protocol. A widely used protocol for network communications.

IP Address - Four sets of numbers from 0 to 255 that represent an Internet address.

Load Balancing - The ability to connect a thin client to a group of servers and login to the server with the lightest load. Load balancing may include failover features.

Load Sharing - The ability to connect a thin client to one of a group of servers in a predetermined fashion to share the load among the servers available.

MAC - Media Access Control Layer. A protocol that controls access and communication on a network card.

Module – Modules are software components that can be added to the firmware to increase the functionality of the terminal. Modules include touch screen drivers, sound drivers, and special device drivers.

PLC – Programmable Logic Controller. A device, often using ladder logic programs, that controls processes and devices in an industrial plant.

Primary Up Delay - An interval of time given to a server to allow it to finish loading before terminals will connect to it.

Primary Server - The main terminal server that a terminal will log into. This is the first server of a series added to the *Server* field on the *ICA Session* tab to enable Failover.

Published Application - An application in a Citrix server farm that is shared equally among the servers.

RAM - Random Access Memory. The computer's primary memory space.

Redundancy - The use of duplicate equipment so that if one unit fails, another one takes its place without data loss.

RDP - Remote Desktop Protocol. The client/server communication protocol used between Windows NT/2000 servers and Windows clients.

Router – A device that manages data transmission between two networks.

SCADA - Systems Control And Data Acquisition. A software program that gathers and displays data, and allows for operator input, for control of a manufacturing process.

Secondary Server - Alternative terminal servers that a terminal may log into. These follow the first server of a series added to the *Server* field on the *ICA Session* tab to enable Failover.

Server - A computer that holds applications, files, or data for use by other computers.

Server Farm - A group of connected servers that share responsibilities and are usually configured to allow processing to continue if one or more server crashes.

Subnet - A group of TCP/IP addresses that communicate without going through a router and can be reached by broadcasts.

TCP/IP - Transmission Control Protocol/Internet Protocol. A layered application that allows shared applications and data on PCs.

Terminal – A client device that relies on a server for operations. A dumb terminal has no local processing. A smart terminal relies on a server, but can do local processing.

Terminal Server - A server with a multi-user operating system that processes data for terminals.

Thin Client - A terminal without a hard disk that is used to access a server.

ThinManager Server - A computer running both the ThinServer service and the ThinManager interface.

Note: ThinManager software does not need to run on a server. Since ThinManager will run on Windows NT 4.0 SP5, a ThinManager “server” can be a workstation.

ThinServer – A Windows NT service that does the real work within ThinManager.

TS CAL - Terminal Server Client Access License. A Microsoft license that is required for each client accessing a terminal server.

TSE - Terminal Server Edition or Terminal Services Enabled. An abbreviation representing the terminal server edition of the Windows NT operating system.

UPS - Uninterrupted Power Supply. A device that supplies power when the main power supply is stopped.

Wizard Mode – A method of configuring Groups and Terminals using a Wizard that was introduced in ThinManager 2.4. See Classic Mode.

Simple Setup Summary

	<p>Build a terminal server whose operating system is either:</p> <ul style="list-style-type: none"> • Microsoft Windows NT 4.0 Terminal Server Edition with Microsoft's Service Pack 5 installed • Microsoft Windows 2000 Server with Terminal Services enabled. <p>See "Windows 2000 Server Building Instructions" on page 203.</p>
	<p>Create a Licensing Server and add a TS CAL (T<u>er</u>minal S<u>er</u>ver C<u>li</u>ent A<u>cc</u>ess L<u>ic</u>ense) for each thin client.</p> <p>See "Microsoft Terminal Server Licensing Activation" on page 221.</p>
	<p>Install ACP ThinManager software onto a computer to create a ThinManager Server.</p> <p>The ThinManager Server can be a terminal server, but doesn't have to be. It can be a Windows NT 4.0 Workstation, SP5 or better. The clients will connect to the ThinManager Server and download the firmware and configuration.</p> <p>See "ThinManager Installation On Windows 2000 Server" on page 141.</p>
	<p>Install an ACP License for each ACP Enabled thin client.</p> <p>See "ThinManager Licensing" on page 158.</p>
	<p>Install the ICA protocol on each terminal server by using Citrix Device Services (included as part of the ThinManager installation) or Citrix MetaFrame (available separately).</p> <p>See "Citrix Device Services Installation On Windows 2000" on page 143</p>
	<p>Add the Citrix License. ThinManager has the Citrix Device Services License on the CD. If using Citrix MetaFrame, use the license that comes with that CD. Activate the license within 30 days of installation.</p> <p>"Citrix Device Services Licensing" on page 151</p>
	<p>Create a Microsoft user profile for each user on the terminal server.</p> <p>See "Creating User Profiles" on page 219</p>
	<p>Apply appropriate security to each user profile using the standard Microsoft techniques.</p>
	<p>Establish the IP addressing scheme for the thin clients, Static IP or DHCP</p> <p>If using DHCP, Configure Option 066 to list the IP address of the ThinManager Server and configure 067 to list "firmware.acp" as the bootfile name.</p> <p>See "DHCP Server Setup" on page 209</p>

	<p>Attach the terminals to ThinManager by either:</p> <ul style="list-style-type: none"> • Turning on the terminal and selecting the "Create New Terminal" option when the unit boots. • Pre-creating the terminals in ThinManager and selecting the proper terminal name when the terminal is turned on and offline terminals are listed. <p>See "Adding Thin Client" on page 59</p>
	<p>Make sure that the terminal servers you wish to connect and run on are defined. This is in the <i>Terminal Server Selection</i> list in the Wizard Mode or in the <i>server field of the Session tab</i> of the terminal properties in Classic Mode.</p> <p>See "Adding Thin Client" on page 59</p>

The ACP Thin Client Components and Networks

Terminal Services

In the early days of computing, mainframe computers provided centrally located resources. This allowed a central location for maintenance, security, backups and power management. The downside of mainframe computing was its reliance on text-based interfaces that made usage difficult for average users.

The PC revolution was fueled by the user-friendly Graphic User Interface (GUI) that made computing much more accessible to the average user. PCs became a fixture on every desk and in every factory. The proliferation of PCs caused a system management nightmare, with the high cost of managing so many individually configured and personalized machines.

The ACP thin client system returns to the concept of a centrally managed server for ease of management, with each client running a session of **Microsoft Windows NT/2000** to provide a familiar, user-friendly interface for the end user.

Unlike the traditional client/server environment that runs an application on the client hardware, thin clients run an application only on the server in the **Microsoft Windows NT Terminal Server/Windows 2000 Server** environment. The thin client does not perform any local processing of applications. Thin clients do not have, nor do they need, a hard drive. The client sends user inputs (mouse clicks and keystrokes) to the terminal server where they are processed. The resulting graphics are sent down to the client for display.

Each user logs on to the terminal server as if it was the only user on the machine. Other sessions are transparently managed by the server operating system and are independent and isolated from any other client session.

This provides stability and reliability. The application is not client-reliant. The client terminal can lose power, or even be destroyed, but the data is intact and running on the terminal server. Once the connection is restored or the terminal is replaced, the session will continue where it left off.

Additionally, ACP ThinManager (v2.3 and later) has failover capabilities. Each thin client can have a terminal server designated as its primary server, and then have other terminal servers designated as secondary servers. If the primary server becomes unavailable, the terminal will connect to a secondary server where it can run a session.

See "Windows 2000 Server Building Instructions" on page 203 for details on terminal services.

Three Main Components

The ACP Enabled thin client system requires three main components to operate properly.

Windows Terminal Server Operating System

The first component is the Terminal Server operating system. **Microsoft's Windows NT 4.0 Terminal Server Edition** and **Windows 2000 Server** are versions of Microsoft's Windows operating system that allow multiple sessions of an application to run on a server. The operating system controls the server, provides security, controls user access, and runs the applications.

Windows NT 4.0 Terminal Server Edition requires Microsoft's **Service Pack 5 for Terminal Server** (or later) and terminal server client access licenses (TS CAL) installed on the computer. Windows 2000 Server needs **Terminal Services** enabled and TS CALs added. .

Citrix ICA Communication Protocol

The second component is the **ICA (Independent Computer Architecture)** communications protocol from **Citrix**, which provides the communication between the server and thin client. ACP ThinManager software contains a licensed copy of **Citrix Device Services**, an abbreviated version of **Citrix MetaFrame** that provides the Citrix ICA communications protocol across a TCP/IP network. Citrix Device Services or Citrix MetaFrame needs to run on each terminal server.

The **ACP ThinManager CD** contains **Citrix Device Services** and **ACP ThinManager**. Citrix MetaFrame can be used instead of Citrix Device Services to provide advanced communication options and advanced server functionality such as joining servers into a server farm for advanced functionality. Citrix MetaFrame is available separately from Citrix (www.citrix.com).

ThinManager Administrative Software

The third component is **ACP ThinManager** software from Automation Control Products. ThinManager is used to configure, manage, and control the thin clients. Although ThinManager is treated as a single component, it really has two main components, the ThinManager interface and the ThinServer service.

- **ThinServer** is the NT service that does the main work of the program. It starts automatically and runs in the background and provides essential functions to control the thin clients. ThinServer is installed during ThinManager installation.
- **ThinManager** is the administrative software that facilitates the configuration and organization of the thin clients. This is the visible component of the ThinManager software. ThinManager displays information generated by ThinServer. ThinManager can be installed on any computer on the network (NT 4.0, SP5 or better), including the terminal server.

Note: ThinManager Server is used to describe a computer running ThinManager and ThinServer that provides control and configuration to ACP Enabled Thin Clients.

One instance of ThinManager can provide client connection to several terminal servers. The terminals would boot from the ThinManager server, but could be assigned to any of several terminal servers.

Sample Network Configurations

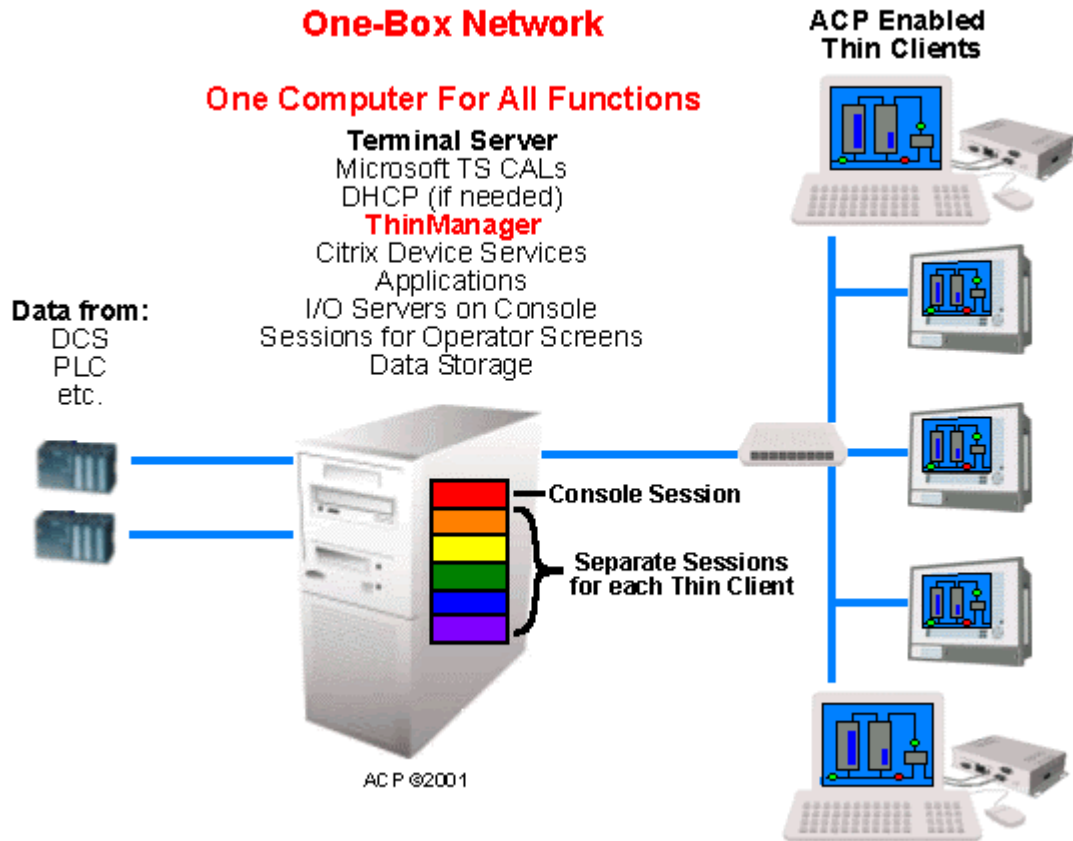
One of the strengths of ThinManager and ACP Enabled Thin Clients is their versatility in networking. They don't demand a rigid proprietary network configuration, but have the flexibility to run in almost any network configuration.

ACP Networks require:

- A ThinManager Server, that is, a computer running ThinManager. This doesn't have to be a "server", but can be a Windows NT 4.0 Workstation SP5 or better.
- A Microsoft Terminal Server with the Citrix ICA Protocol and any desired applications.
- A Microsoft Terminal Server Licensing Server for the Microsoft Terminal Server Client Access Licenses (TS CALs). This does not need to be a separate computer, but can run on a terminal server.
- A DHCP Server or Static IPs.
- ACP Enabled Thin Client hardware
- A standard Ethernet network.

The simplest network consists of a single computer, configured as a terminal server with the TS CALs, ThinManager, and the applications.

Note: ThinManager does not have to run on a terminal server.

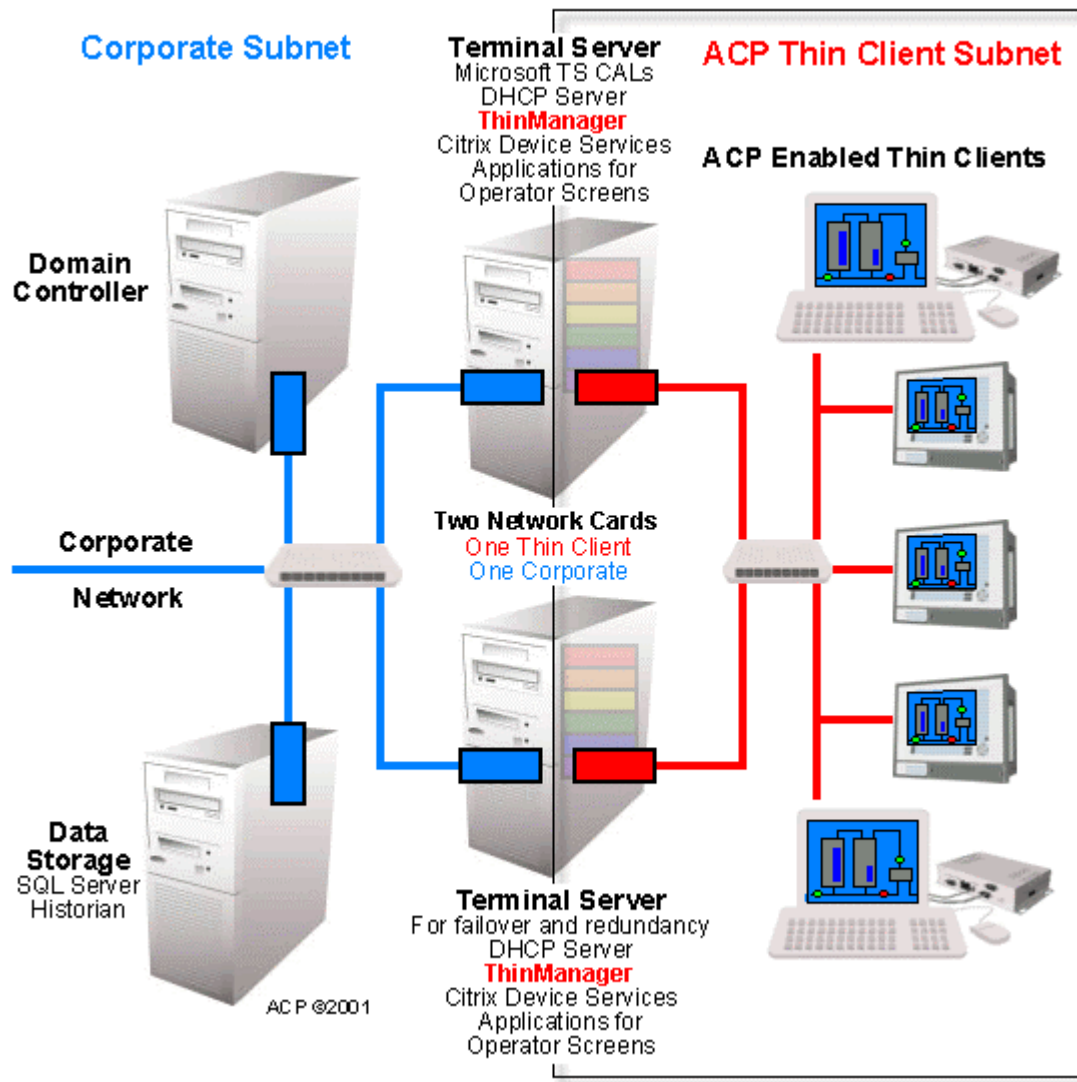


Sample ACP Thin Client Network – Single Computer

Note: One server is shown. The ACP Enabled thin client network functions can be combined into one server, or be spread to multiple servers.

Sample ACP Thin Client Network with Failover

Corporate Domain With Separate Thin Client Subnet



Sample ACP Thin Client Network – Multiple Computers

This is a representation of an ACP Enabled thin client network.

- When a terminal is powered on, an IP address is requested from a DHCP server by default. The DHCP server needs to have **Option 066** set to the ThinManager Server IP address and **Option 067** set to **firmware.acp** to specify a ThinManager Server IP address.
- Alternately, the terminal may be assigned a static IP address and the ThinManager Server address.
- The terminal connects to the ThinManager Server to download its configuration.
- The ThinManager configuration will tell the terminal which terminal server to log into.
- The terminal will connect to that terminal server and display the Windows login dialog box or will automatically login with help from the ThinManager configuration.

- The terminal will create a session on the terminal server, allowing applications to run.

Note: Three servers are shown to separate machines. These can be combined into one server, or be spread to multiple redundant servers.

Failover Overview

Server crashes of any kind in any network or system can have devastating effects on productivity and data management. In the distributed computing world users may still be able to work on local applications but lose access to data. In a terminal server installation, a terminal server crash stops the functions of all terminals logged into the failed terminal server.

In a thin client system all the terminals rely on the terminal server for processing power. Failure of the terminal server leads to the failure of all the thin clients.

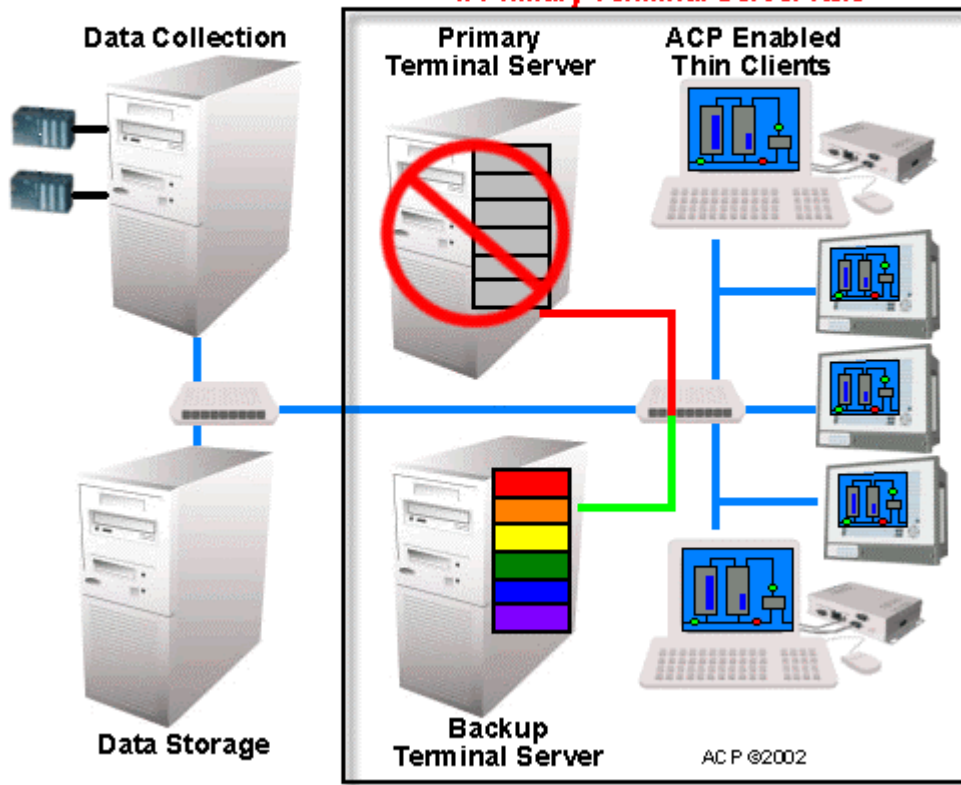
ACP ThinManager (version 2.3 and later) has a failover capability built into it that allows terminals to connect to a secondary terminal server if the terminal server that they are logged into fails. This will lessen the effect of server crashes on the terminal server network. The terminals can detect the server crash, drop the connection to it, and connect to a secondary server in seconds.

To initiate ACP ThinManager Failover protection, four steps are needed.

- **Multiple Servers:** The first step is to have multiple terminal servers, with Citrix Device Services and appropriate licenses added.
- **Sufficient Memory:** The second step is to have sufficient memory capacity on the servers to accommodate the addition of terminals during failover. If you do not plan for the extra capacity, the servers can overload with the addition of the new terminals.
- **User Permissions:** Each terminal server needs the appropriate Windows NT/2000 user profiles and permissions. The terminals will not log into a secondary session unless it has a user profile on that server.
- **IP Addressing In ThinManager:** When configuring the terminal, list the terminal servers, in the order of preferred connection, in ThinManager. Upon boot, each terminal will try to connect to the first server in the list (the primary server). If it is not available, it will try the next on the list (a secondary server) until a connection is made

ACP Failover "3-Box" Network

Backup Terminal Server allows
ACP Enabled Thin Clients to run
if Primary Terminal Server fails



ACP Thin Client Network with Failover

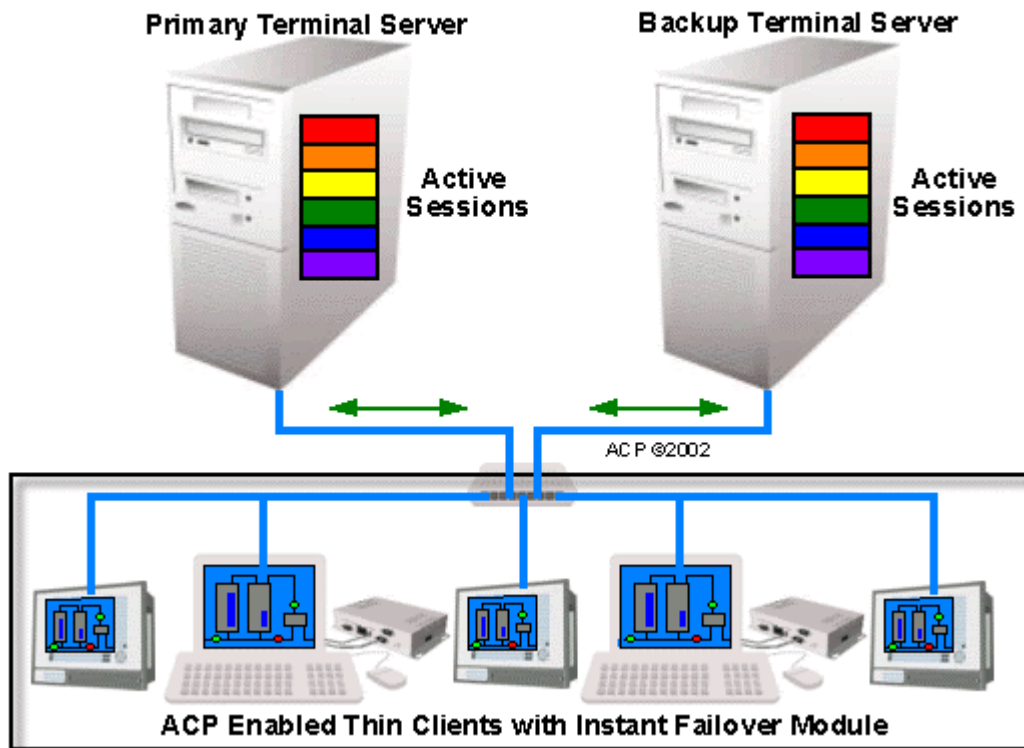
ACP ThinManager allows the use of several terminal servers, defined as the primary and as backups. If the primary terminal server fails, the ACP Enabled thin client will detect the server failure and will initiate a new session on a backup server. This allows the operator to continue their work and minimize the effect of a server failure.

Instant Failover

Instant Failover allows the terminal to login to two terminal servers at once. The sessions are cascaded on the terminal, with the primary session on top. If the primary terminal server fails, the pre-logged in secondary session is switched to the forefront.

Instant Failover - Part 1

Terminals with Instant Failover module login to two terminal servers at once



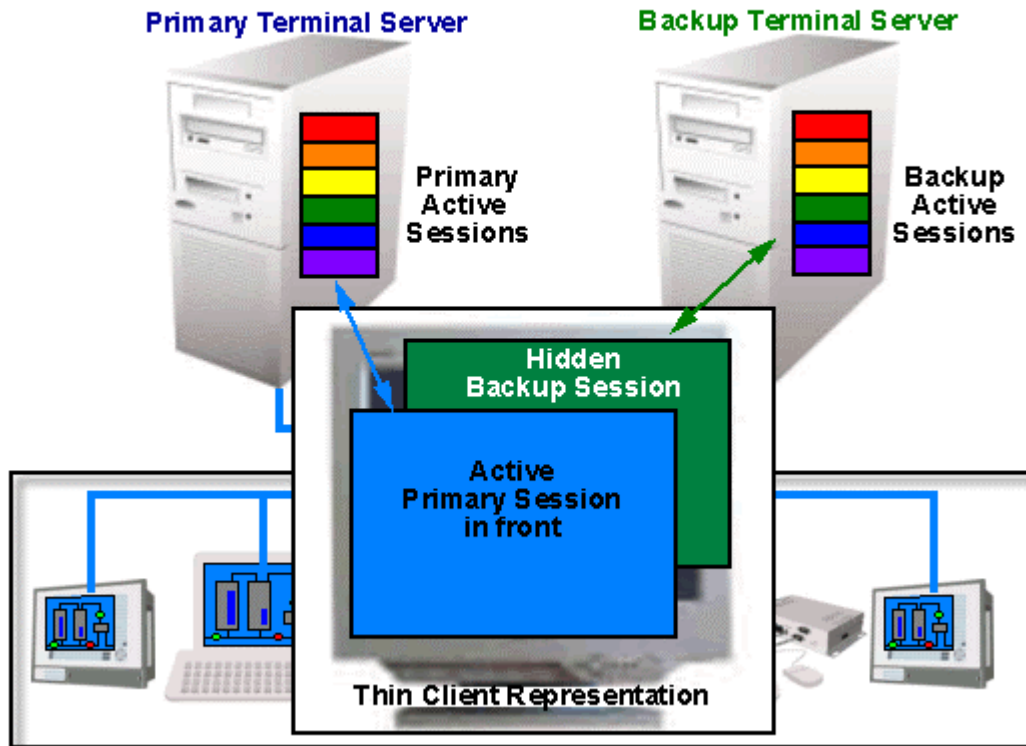
Instant Failover – Part 1

When the ACP Enabled thin clients with the Instant Failover module boot, they connect to both servers, login, and start sessions.

Instant Failover - Part 2

Terminals run both sessions

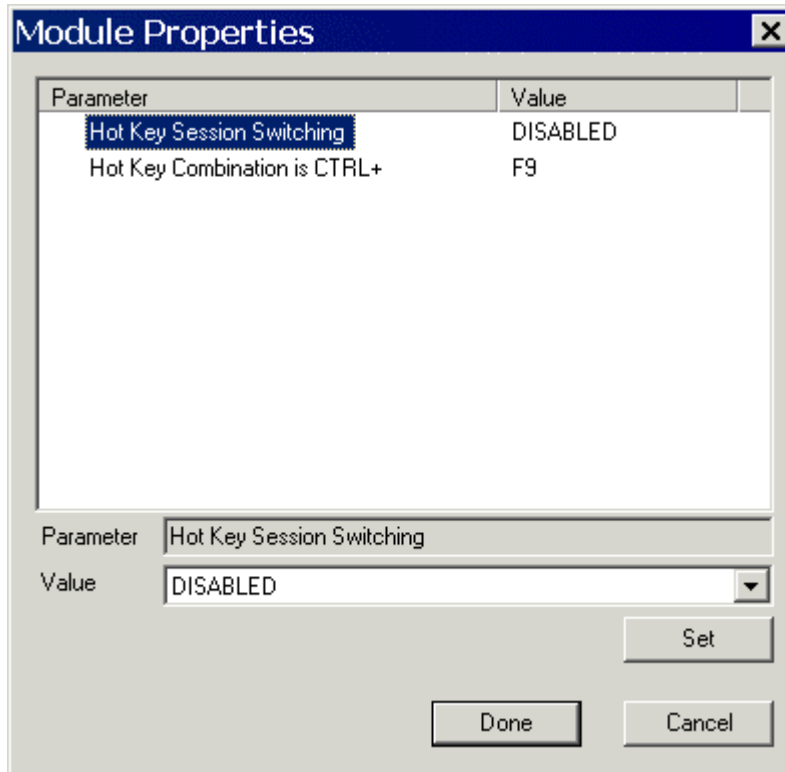
The active Primary session is cascaded to hide Backup session



Instant Failover – Part 2

The ACP Enabled thin client cascades both sessions, with the primary in front. You cannot see the secondary session as it is hidden in back.

There is a toggle option that allows one to switch between sessions with a hot key.

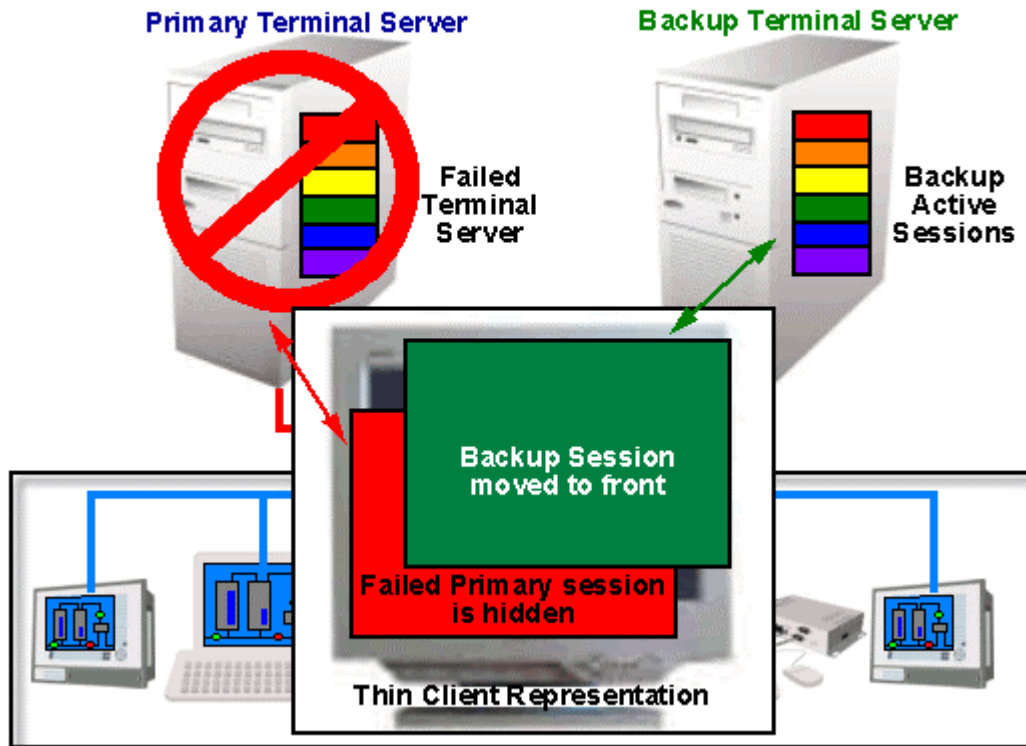


Instant Failover Module Properties

If the **Hot Key Session Switching** is set to **Enabled**, the hot key combination will allow the toggling between sessions.

Instant Failover - Part 3

If the Primary fails, the terminal will toggle the cascaded windows, displaying the Backup session in front



If the primary server fails, the thin client monitoring program will detect its failure. The thin client will then switch the focus of the window, showing the secondary session. This session is already initialized so the user is able to proceed at once.

If the **Enforce Primary** feature on the **Monitoring** tab is set to **Yes**, the thin client will switch back to the primary once it is back online.

ThinManager 2.4 Interface

Opening ThinManager

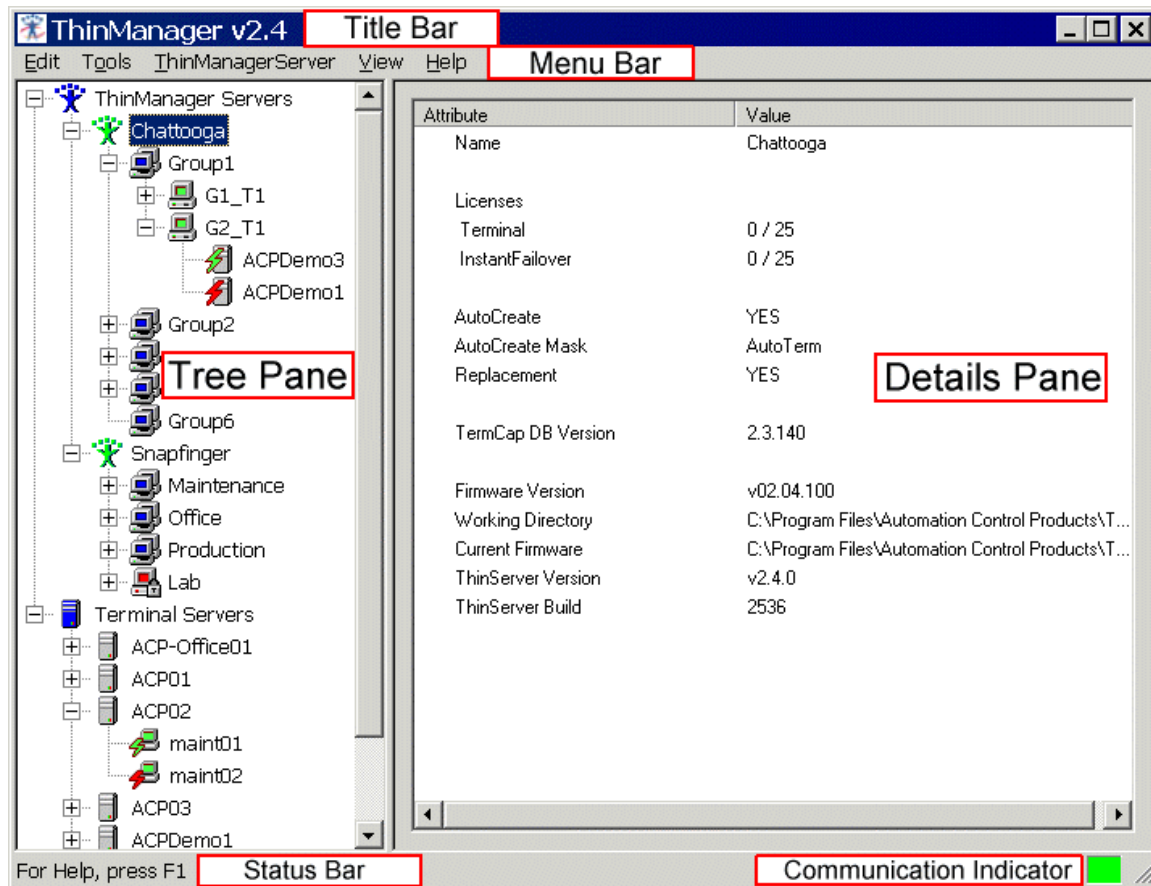
ThinManager is used for the configuration of ACP Enabled thin clients in the ACP thin client system.

ThinManager can be started using any of the traditional Windows methods, based on the administrator's preference:

- Run from the Start Menu, **Start>Programs>ACP>ThinManager**.
- Run from the Run line, **Start>Run> C:\Program Files\Automation Control Products\ThinManager\ThinManager.exe**.
- From a command prompt, **C:\Program Files\Automation Control Products\ThinManager\ThinManager.exe**.
- From a shortcut on the desktop.
- From a ThinManager icon in the system tray, if this option is selected in **View>Options** from the menu bar. See Options on page 57.
- From Windows Explorer.

Note: ThinManager can be run from a terminal if the user is an administrator.

ThinManager Graphic User Interface



ACP ThinManager 2.4 Graphic User Interface

The **ThinManager** administration interface provides "at-a-glance management". The groups and terminals are displayed in the tree pane. The configuration data is displayed in the detail panel. Color-coded icons in the tree pane show the on-line status of terminals.

The sections of the **ThinManager** interface include:

A **Title Bar** with the standard Windows Minimize/Maximize/Close shortcut icons.

A **Menu Bar** with commands. See Menu Items on page 33.

A **Tree Pane** with an expandable/collapsible tree showing the ThinManager Servers, Terminal Servers, groups and terminals in the ThinManager network. Terminals that are on-line have a green monitor icon, while stopped or rebooting terminals have a red monitor icon. More information is found at "Tree Pane" on page 28

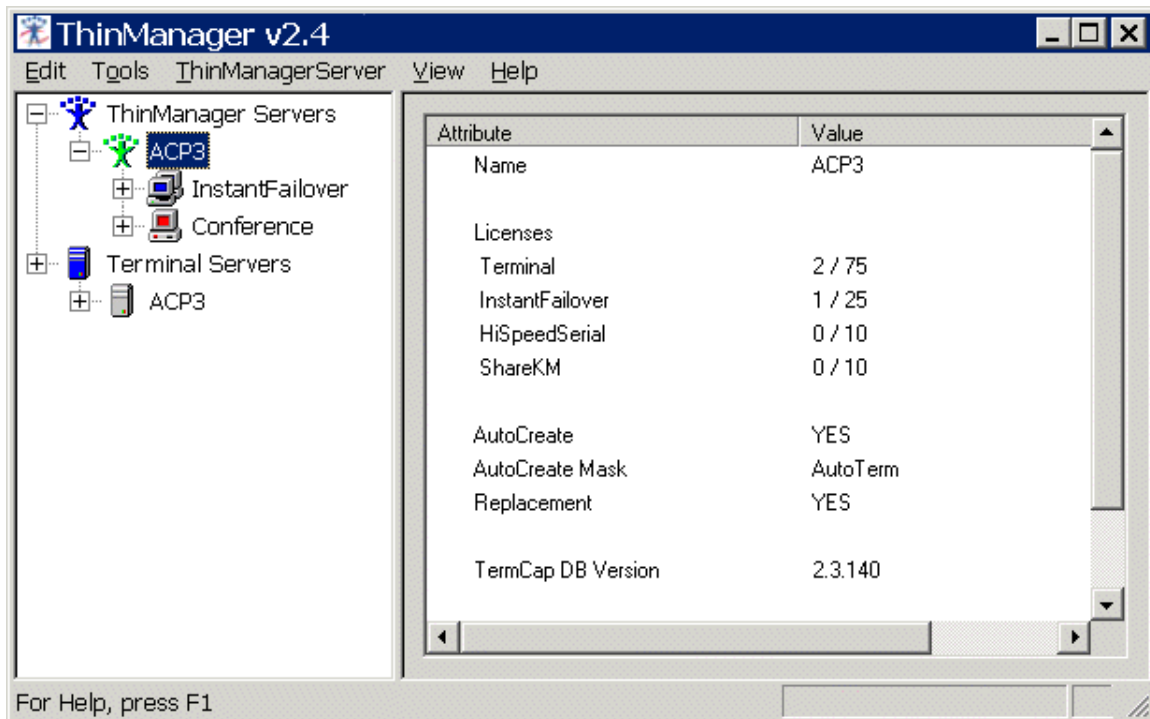
A **Detail-view pane** with information about settings and configurations. The blue group icon denotes a property that was obtained from the group.

A **Status Bar** that shows advice and tips.

The **Communication Indicator** shows green when ThinManager is talking to a ThinManager Server. ThinManager will wait until this communication is finished before processing additional requests.

Tree Pane

The tree pane shows the members of the ACP Thin Client Network in an expandable tree.

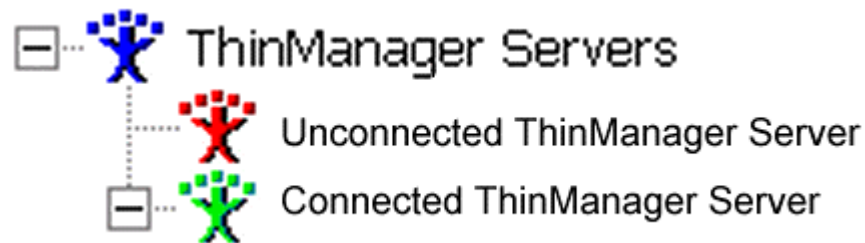


ACP ThinManager 2.4 With Tree

The current version of the Tree separates the ThinManager Servers from the Terminal Servers. Although a single computer can be both a ThinManager Server and a Terminal Server, as shown in the example, these are two distinct functions that are displayed in the tree.

Icons

Tree Icons

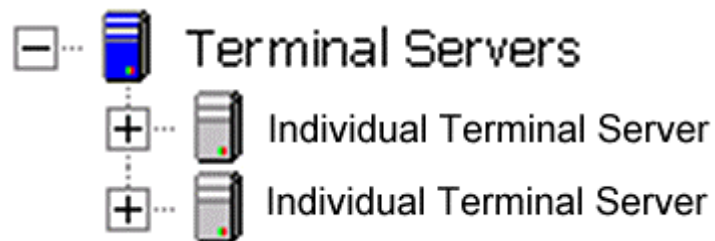


ThinManager Server Icons

A **Blue ThinManager Server** icon represents the top level of the tree and can be collapsed or expanded.

A **Red ThinManager Server** icon represents a ThinManager Server that is not communicating with the program.

A **Green ThinManager Server** icon represents a ThinManager Server that has an active communication with the program.



Terminal Server Icons

A **Blue Server** icon represents the top level of the Terminal Server tree and can be collapsed or expanded.

A **Gray Server** icon represents individual terminal server. These can be collapsed or expanded.



Group and Terminal Icons

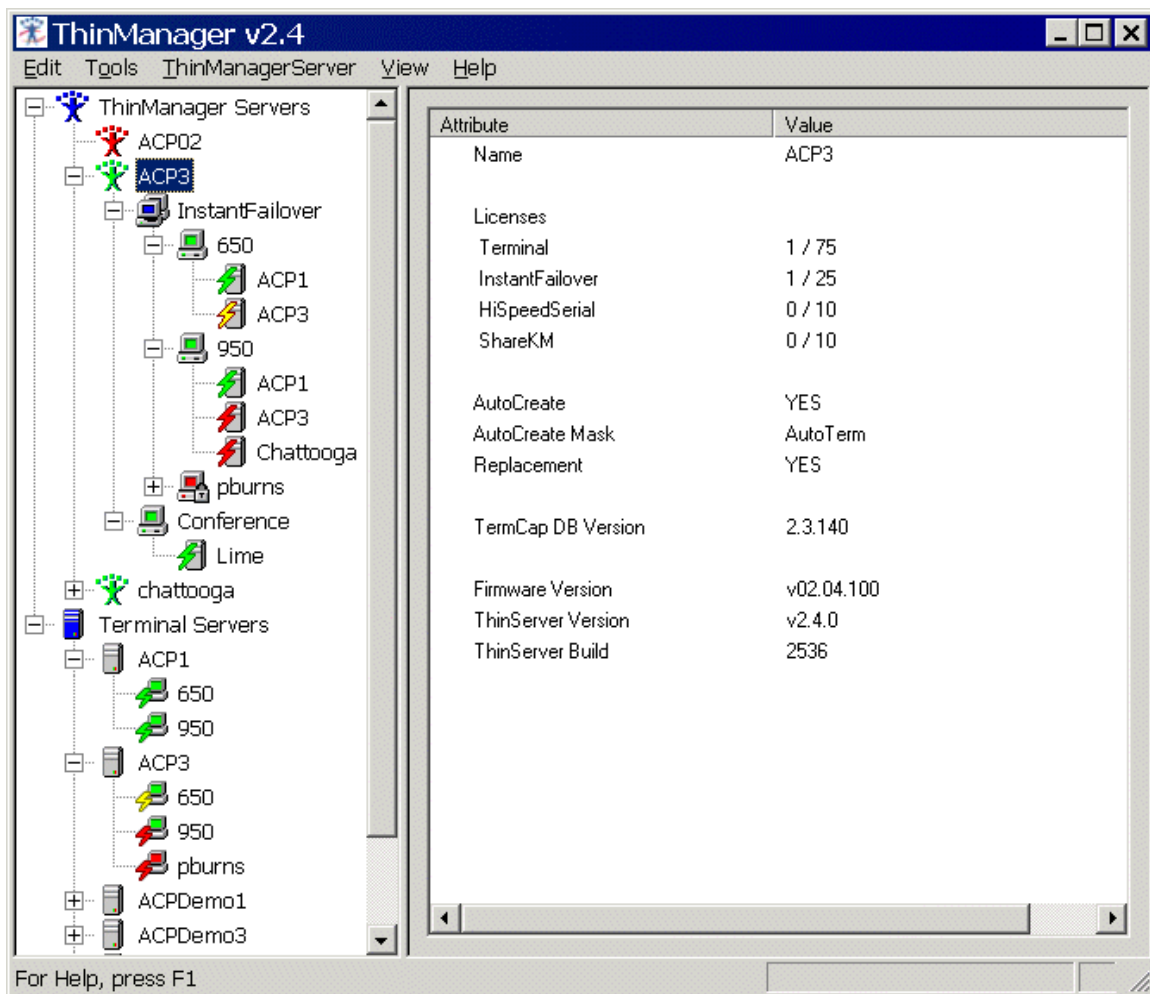
A **Group** is represented by an icon of two monitors with a blue screen.

A **Terminal** is represented by an icon of a single monitor.

A **Red terminal** screen indicates that the Terminal is off or not communicating with the ThinManager Server.

A **Green terminal** screen indicates that the Terminal is on and communicating with the ThinManager Server.

Each item of this tree level can be expanded.



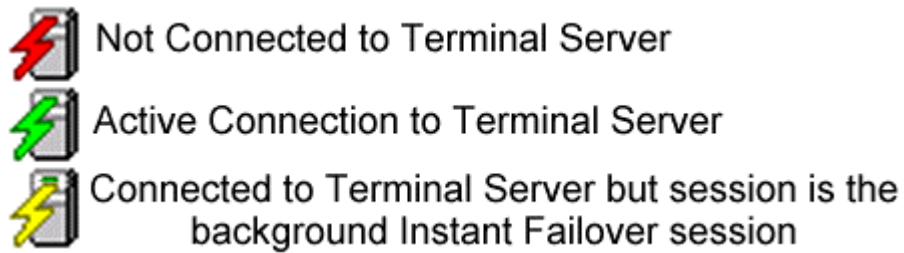
Expanded Tree Showing Icon Variety

The tree in ThinManager has been expanded to provide greater detail about the status of the terminals.



Group and Terminal Nesting

Each Group can be expanded to show the terminals that are members of the group.
 Each Terminal can be expanded to show the Terminal Servers that it is assigned to.
 Each color represents a status state.



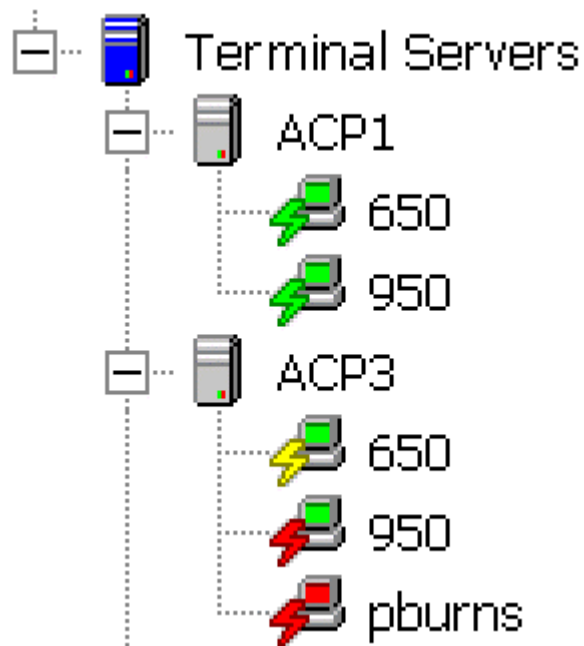
Terminal Server Connection Icons

Under each Terminal are icons representing the Terminal Servers that they are assigned to. The lightening bolt color indicated the connection status.

A **Red lightening bolt** represents a lack of connection to the terminal server.

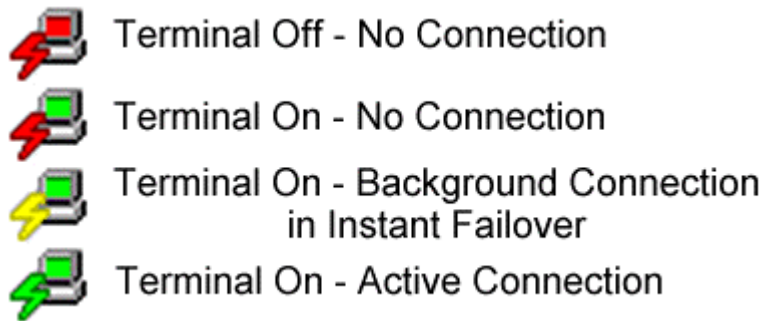
A **Green lightening bolt** represents a connection to the terminal server with an active session.

A **Yellow lightening bolt** represents a connection to the terminal server with an active session that is the backup in Instant Failover mode.



Terminal Server Nesting

The top level Terminal Server icon can be expanded to show the Terminal Servers that have terminals assigned to them. The Monitor Screen color and the Lightning Bolt color indicate the terminal's status on the Terminal Server.



Terminal Server Connection Icons

The monitor screen color indicates the ThinManager Server connection status.

- A **Red monitor screen** indicates that the terminal is off or unable to communicate.
- A **Green monitor screen** indicates that the terminal is on and able to communicate.

The lightening bolt color indicates the Terminal Server connection status.

- A **Red lightening bolt** represents a lack of active connection to the terminal server.
- A **Green lightening bolt** represents a connection to the terminal server with an active session.
- A **Yellow lightening bolt** represents a connection to the terminal server with a session that is the backup session in Instant Failover mode.



Locked Icons

Terminals and Groups that are undergoing modification will display a lock icon.

Menu Items

Edit

Edit contains commands for adding, deleting, and changing configurations.

Add Terminal

Add Terminal will launch the **Terminal Creation Wizard** in Wizard Mode or the **Create New Terminal** dialog box in Classic Mode to start the process of adding a new terminal. See “Terminal Configuration Wizard” on page 87

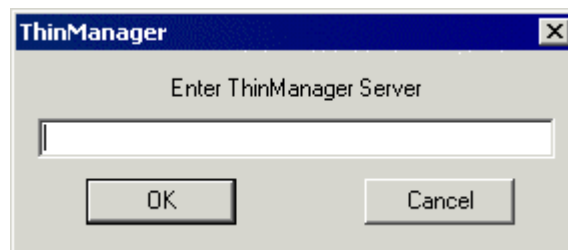
Add Group

Add Group will launch the **Group Creation Wizard** in Wizard Mode or **Create New Group** dialog box in Classic Mode to start the process of adding a new group. See “Group Configuration Wizard” on page 68

Add ThinManager Server

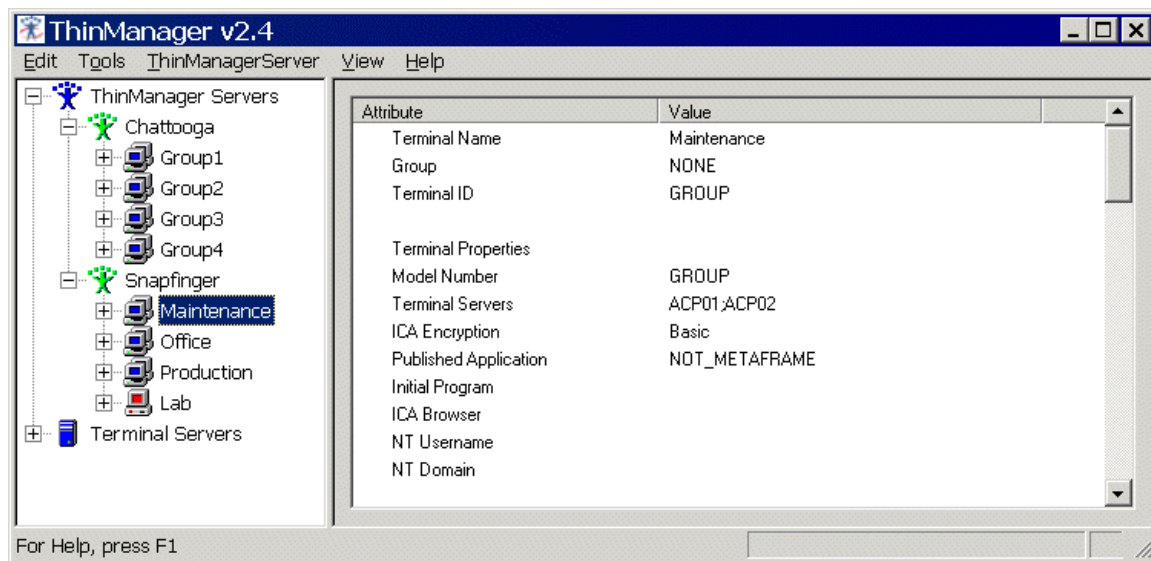
ThinManager allows the remote administration of multiple ThinManager Servers. A user logged in with administrative rights can connect to multiple ThinManager servers for management.

Selecting **Add ThinManager Server** will launch a dialog box.



Add ThinManager Server Dialog Box

Enter the IP address or computer name of a ThinManager server. This adds the ThinManager Server and its configuration to the tree pane of the local ThinManager.

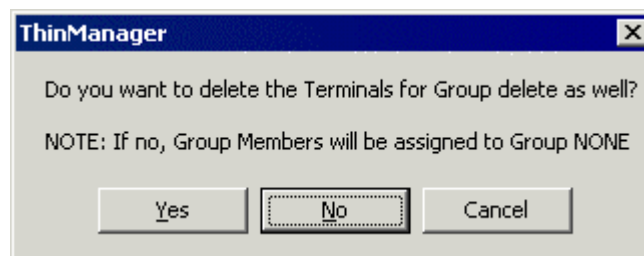


ThinManager with Second ThinManager Server Added

A user with administrative powers has full control of the remote ThinManager Server and can monitor status or make changes as needed.

Delete

Delete will launch a message box that will remove a highlighted ThinManager Server, group or terminal. Deleting a group will give the option of deleting the group terminals or moving them under the server without a group.



Delete Group Message Box

Modify

Modify will launch the **Server Properties** dialog box for a highlighted server. This allows the server to be configured as described in [Settings](#) on page 55.

Modify will launch the **Group Creation Wizard** in Wizard Mode or the Group Properties in Classic Mode for a highlighted group. Modifications can be made as described in Group Configuration Wizard

Modify will launch the **Terminal Creation Wizard** in Wizard Mode or the Terminal Properties in Classic Mode for a highlighted terminal. Modifications can be made as described in Terminal Configuration Wizard

Rename

Rename will allow a highlighted group or terminal to have its name changed in the tree of ThinManager.

Lock

When a group property or a terminal property is opened, the entry in the configuration is automatically locked to prevent two people from making changes at one time.

Lock will manually lock the configuration of a group or terminal to prevent it from being changed. A lock icon will designate a locked group or terminal.



Lock Icons

Unlock

Unlock will manually unlock a terminal or group that was locked while being modified. This is useful if the server was shut down while the terminal was locked, preventing the terminal from being unlocked automatically when the modifications are done.

Note: This tool is to be used only when a terminal remains locked due to an unexpected server shut down while a terminal is being configured. Using this tool while another is configuring that terminal can lead to corruption of the database.

Tools

Tools contain commands that affect the terminals.

Reboot Terminals

Selecting this command will restart the terminals, reload the firmware, and reconnect them to the terminal server.

Highlight a **terminal** in the ThinManager tree pane and select this command to reboot a terminal.

Highlight a **group** in the ThinManager tree pane and select this command to reboot all the terminals of the group.

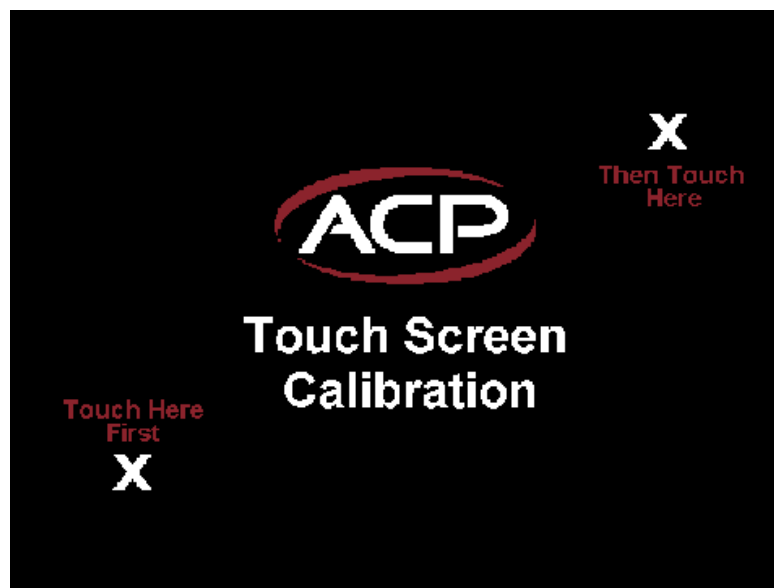
Highlight a **ThinManager Server** in the ThinManager tree pane and select this command to reboot all the terminals on the ThinManager Server.

Calibrate Touch Screen

ThinManager has a touch screen configuration utility that can calibrate a thin client touch screen. The utility can be started two ways:

On the thin client, select **Start>Program Files>Automation Control Products>Calibrate Touch Screen** (or **Start>Program Files>Acp>CalTouchScreen**). This is useful because it allows the operator to calibrate the touch screen without administrative support.

On the ThinManager Server, Highlight the desired terminal in ThinManager and select **Tools>Calibrate Touch Screen** from the menu bar. This will launch the calibration on the selected terminal.



Touch Screen Calibration Screen

When the calibration image appears, first touch the center of the lower left **X** and then touch the center of the upper right **X** to provide touch screen mapping to the system.

Note: The touch screen module must first be added through the ***Module*** tab in ***Terminal Properties***.

ThinManager Server

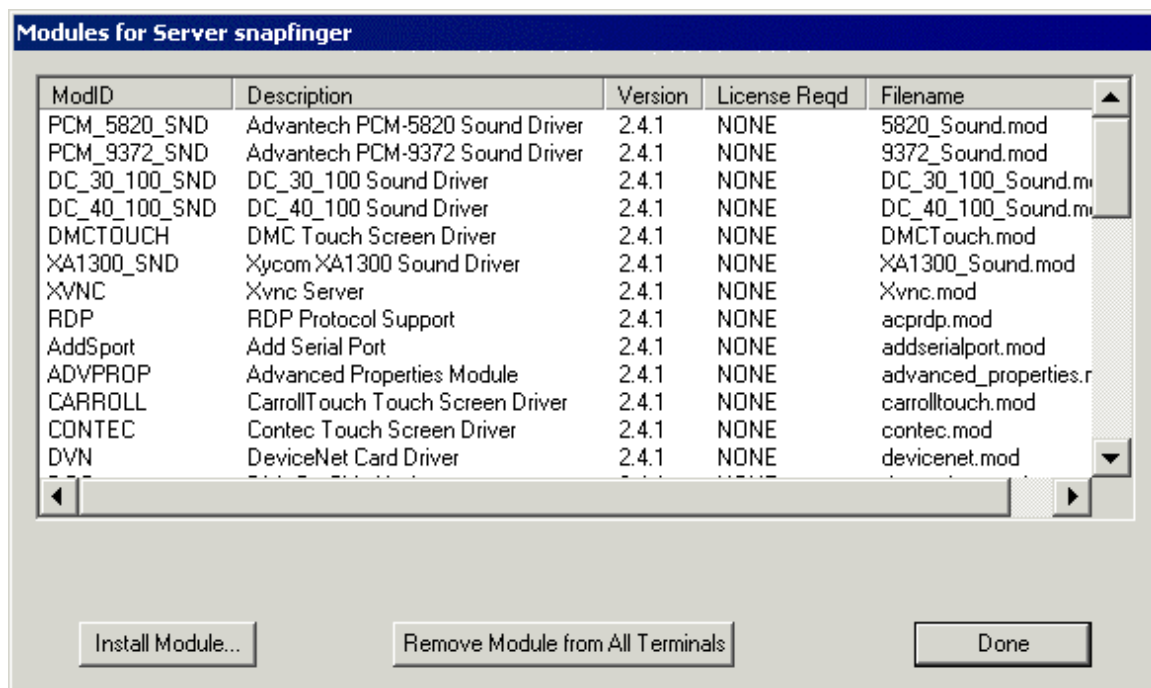
The **ThinManager Server** contains commands for configuring the ThinManager Server. These options will be grayed out unless the ThinManager Server is highlighted in the tree.

Licensing

Licensing opens up the **Licensing** dialog box. See ThinManager Licensing on page 158.

Modules

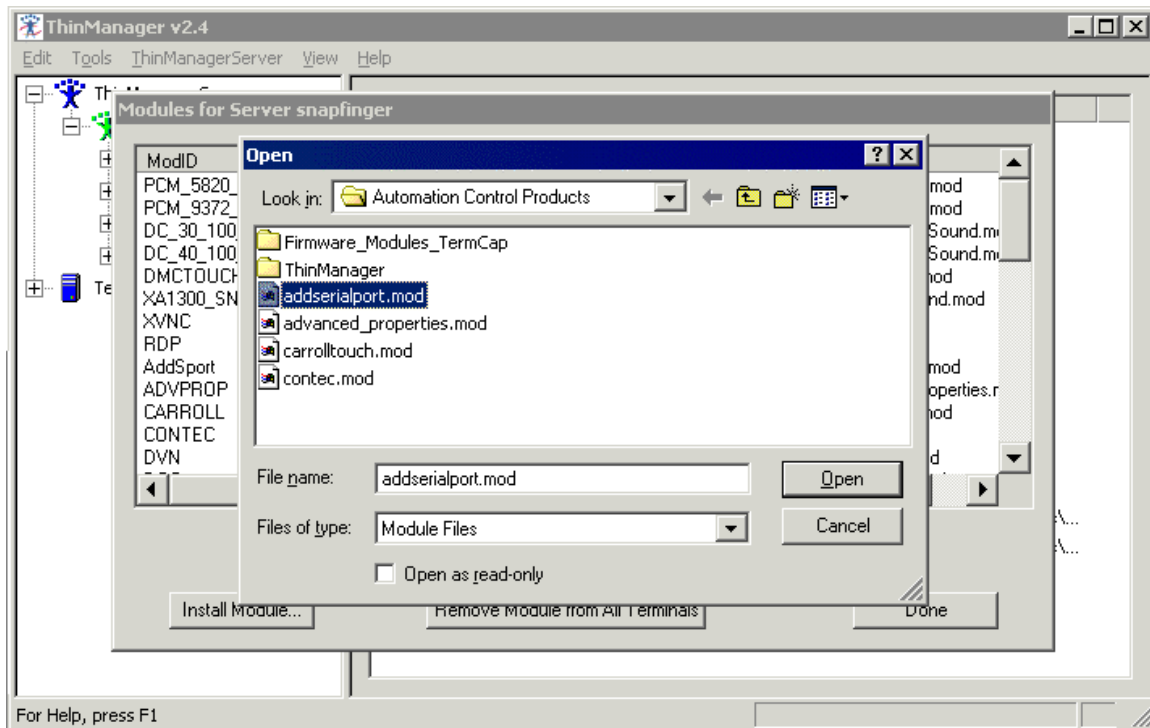
Modules open the **Modules** dialog box. This displays the modules that are available to the ACP Enabled thin clients. See “Modules in Depth” on page 130.



Installed Modules Windows

Selecting **Install Module...** will launch a dialog box that allows modules files to be selected.

A module can be added to the list of available modules by highlighting the desired module file and selecting **Open**.

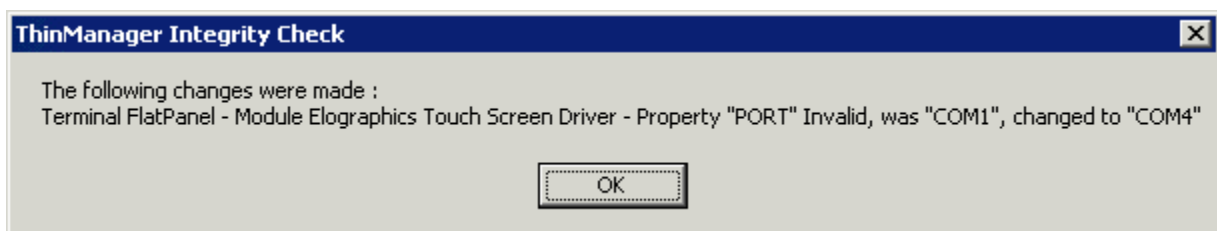


Open Module File

See “Modules in Depth” on page 130 for more details

Install New TermCap Database

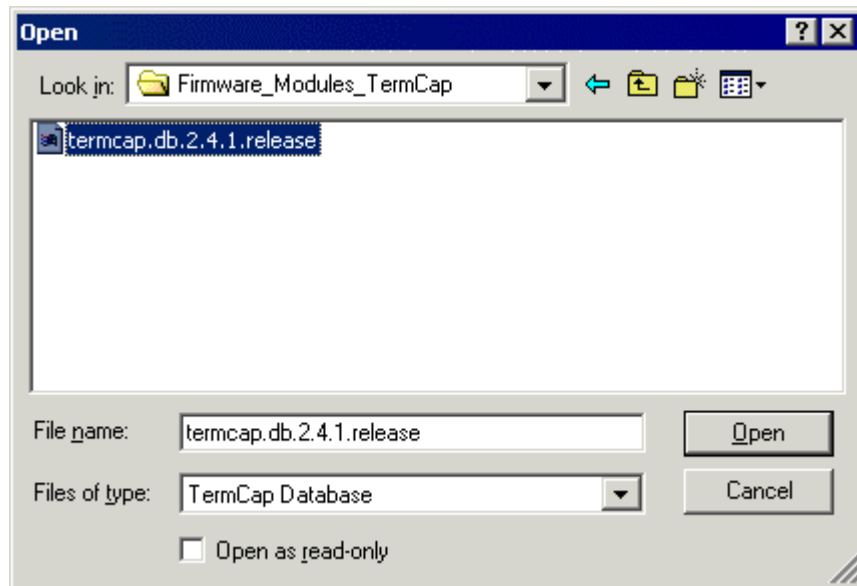
ThinManager has a **Terminal Capability Database** (termcap.db) that provides ThinManager with the configuration parameters for each thin client model. At each terminal connection, the TermCap database is checked and an integrity check is performed. If the configuration does not match the terminal specifications, ThinManager may reconfigure the terminal to acceptable parameters.



Terminal Capabilities Integrity Check

The Terminal Capability database can be updated with the current release from the ACP web site (www.acpthinclient.com).

To update the Terminal capabilities database, select **Tools>Install New TermCap Database**.



Install New TermCap Database

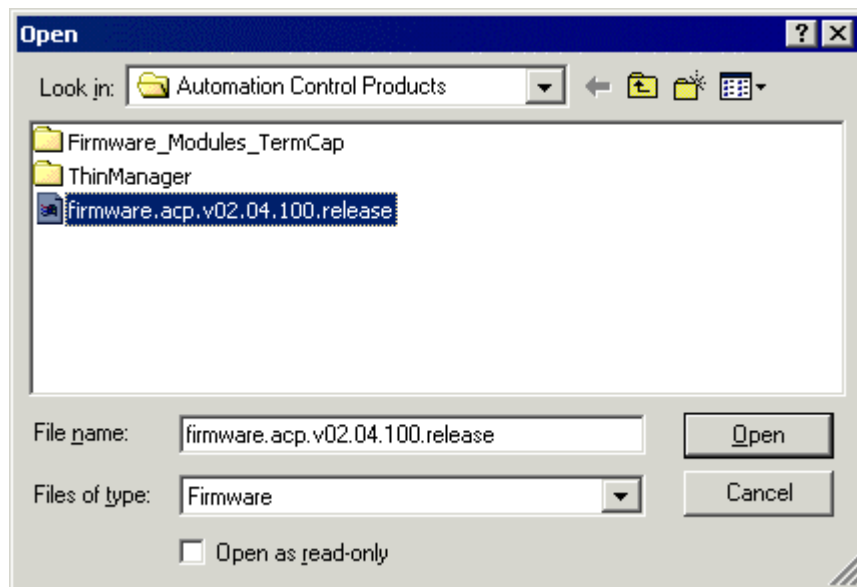
An **Open** dialog box will be launched.

Select the new version of the **termcap.db** and select the **Open** button. This will install the new version.

Install New Firmware

ThinManager allows the firmware for the ACP Enabled thin client to be upgraded with the latest version from the ACP web site (www.acpthinclient.com).

Select **Tools>Install New Firmware** to launch a file browser.



Install New Firmware

Select the new version of the **firmware.acp** and select **Open**. This will install the new version of the firmware.

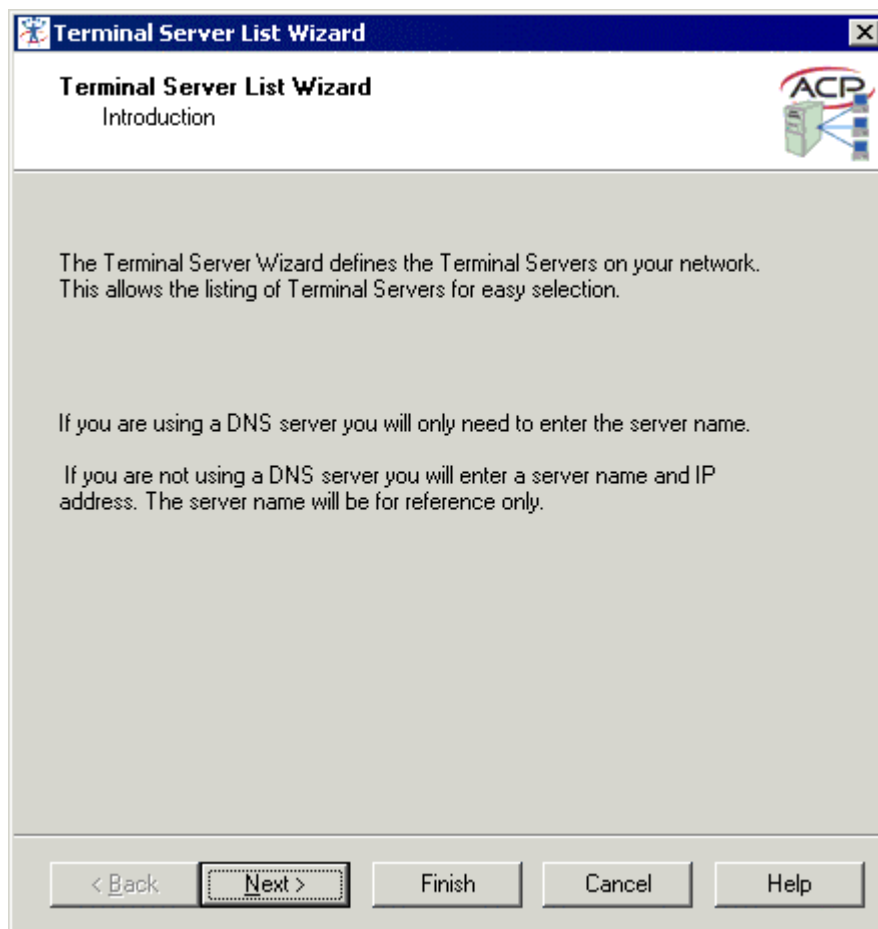
Server List Management

Server List Management is a launching point for the three server wizards. These allow the usage of names to identify the computers during configuration without the need of a DNS Server. The Server List Wizards are:

- The **Terminal Server List Wizard**
- The **ThinManager List Wizard**
- The **DNS List Wizard**

Terminal Server List

Selecting **Terminal Server List** will launch the Terminal Server List Wizard to allow terminal servers to be defined by name.



Terminal Server List Wizard Introduction

The Terminal Server List Wizard allows each Microsoft Terminal Server to be listed for easy selection by name during group and terminal configuration.

Select **Next** to continue.



Terminal Server List Wizard – Available Server List

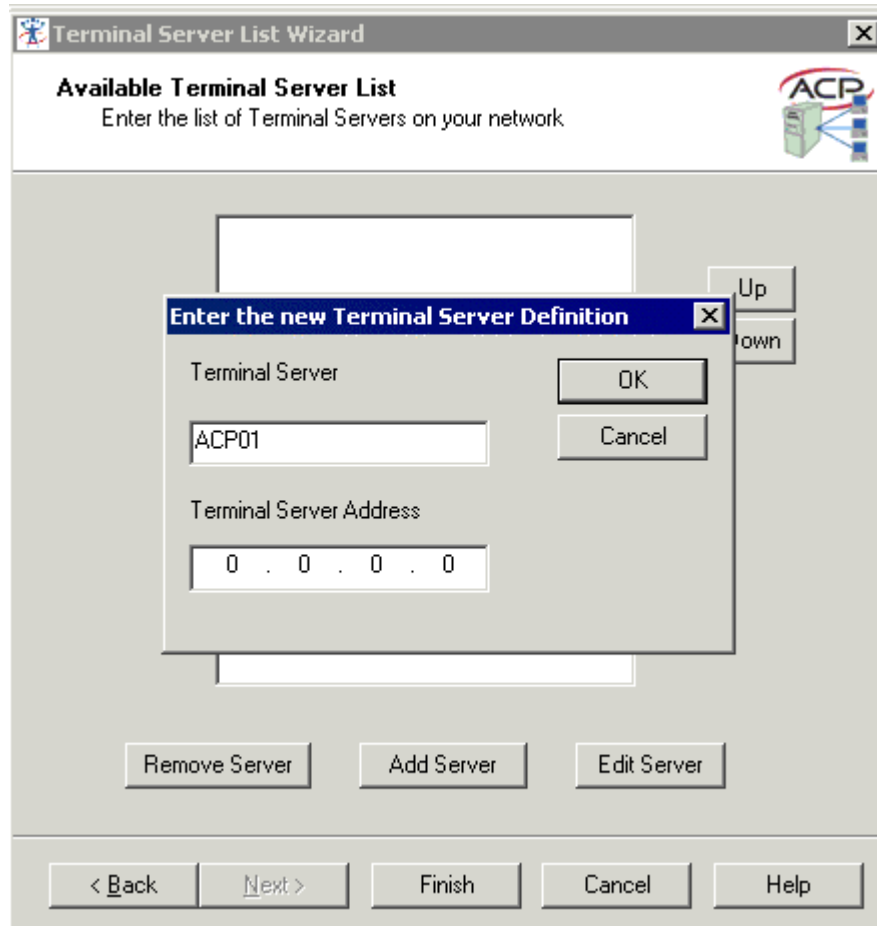
The **Available Terminal Server** List allows the identification all of the Terminal Servers on the network.

Remove Server clears a highlighted Terminal Server from the list.

Add Server will launch a window that allows the entry of the Terminal Server name and IP address.

Edit Server will launch a window that allows the change of the Terminal Server name and IP address.

Select the **Add Server** button to define the terminal servers.



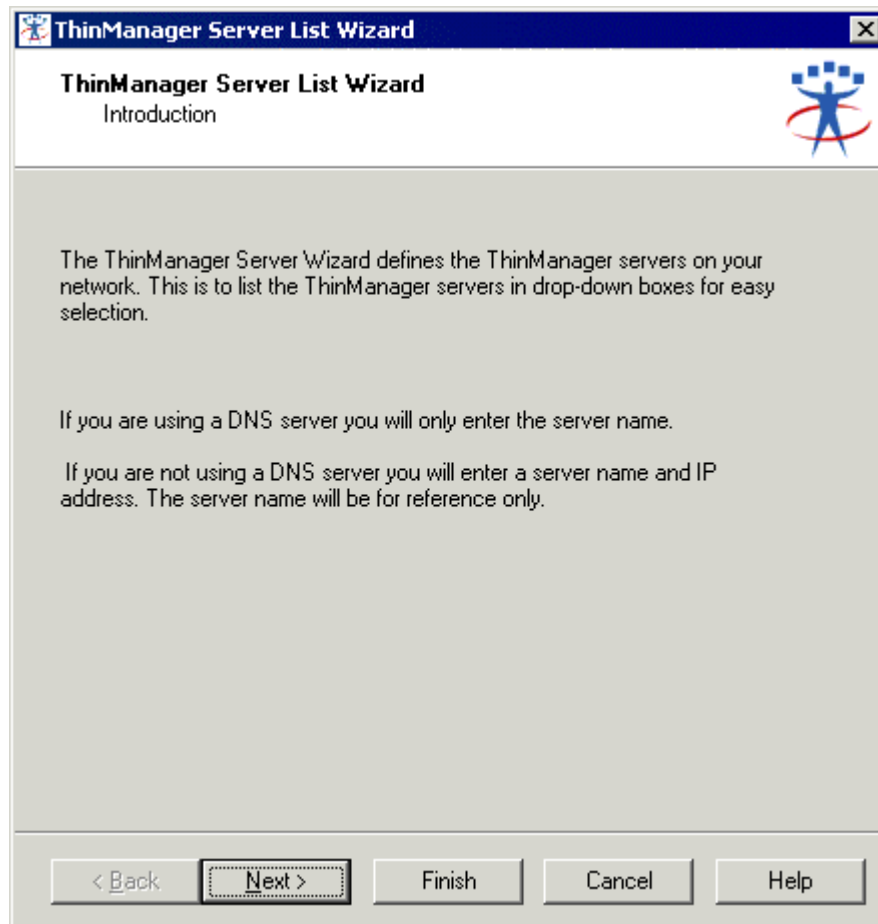
Terminal Server List Wizard – Enter a New Terminal Server Definition

Add Server will launch a window that allows the entry of a Terminal Server name and IP address. This allows the terminal servers to be tied to a convenient name without the need of a DNS server. Type the name associated with a terminal server in the **Terminal Server** field, add the IP address in the **Terminal Server Address** field, and select **OK**. This adds the terminal server to the Terminal Server list.

Select **Finish** to close the Terminal Server List wizard.

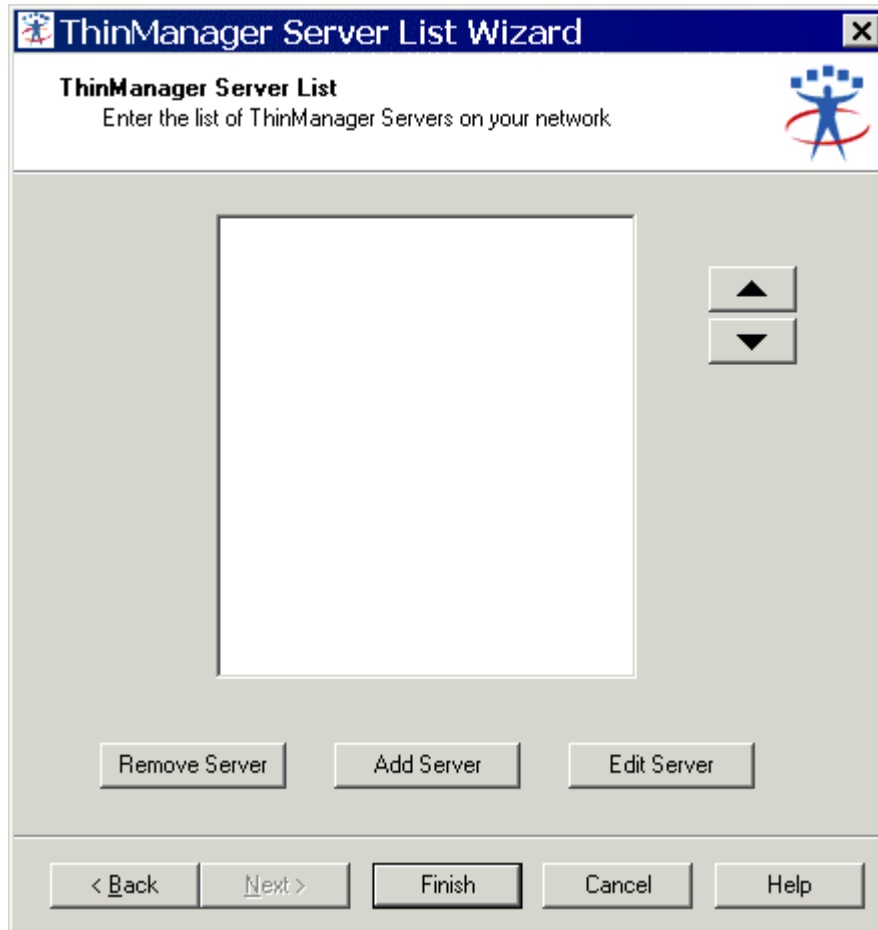
ThinManager Server List

Selecting **ThinManager Server List** will launch the ThinManager Server List Wizard to allow the definition of ThinManager Servers.



ThinManager Server List Wizard - Introduction

The **ThinManager Server List Wizard** begins with an introduction screen. Select **Next** to proceed or click **Finish** to close.



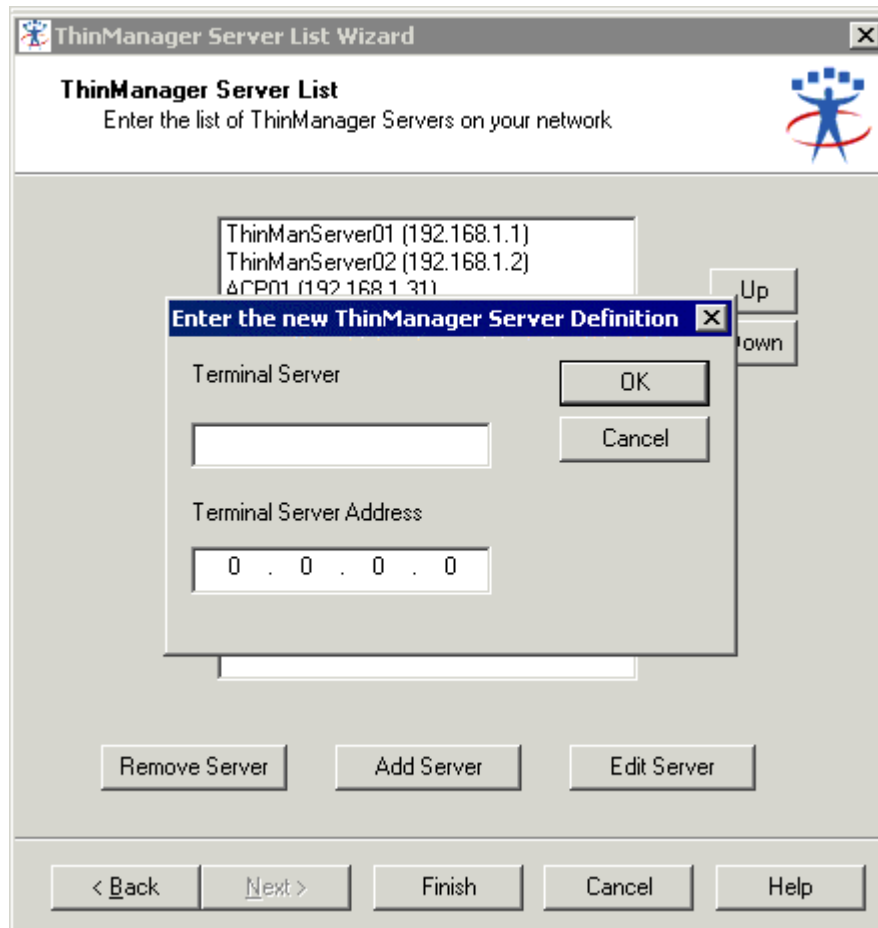
ThinManager Server List Wizard

The **ThinManager Server List** is the collection of ThinManager Servers that the terminal will communicate with to keep the connection status lights in the ThinManager tree updated. Adding ThinManager Servers allows network wide monitoring, control, and management.

Remove Server clears a ThinManager Server from the list.

Add Server will launch a window that allows the entry of the ThinManager Server name and IP address.

Edit Server will launch a window that allows the change of the ThinManager Server name and IP address.



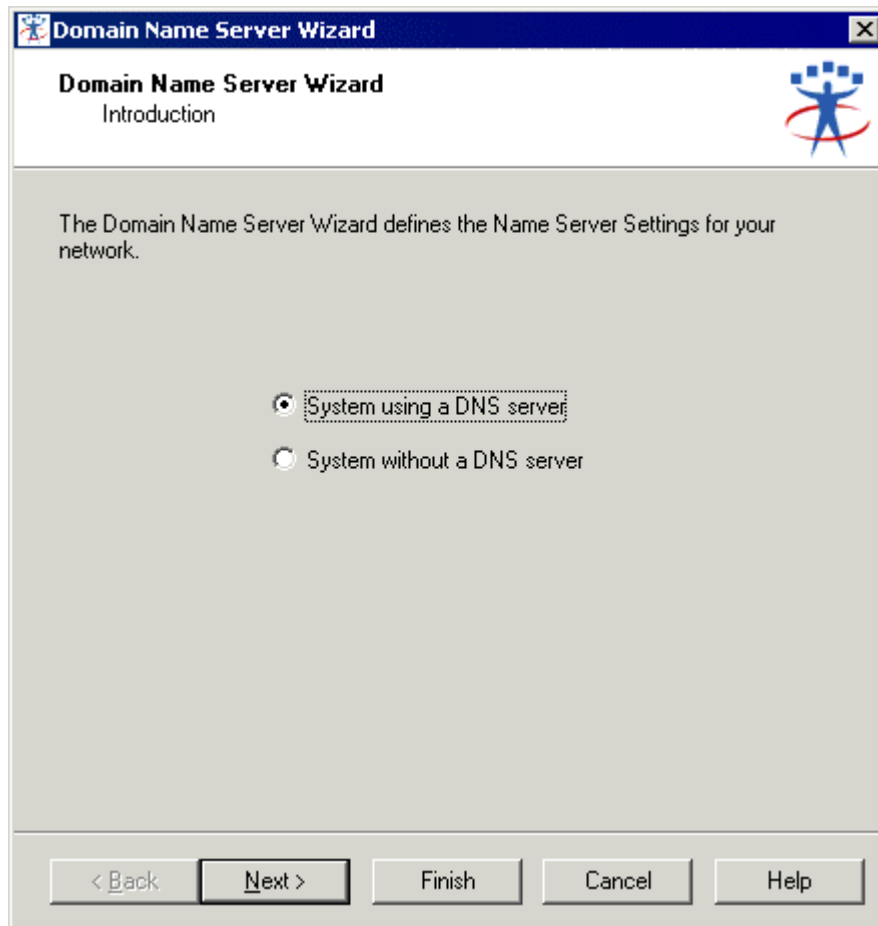
ThinManager Server List Wizard – Enter the New ThinManager Server

Add Server will launch a window that allows the entry of the ThinManager Server name and IP address. This allows the ThinManager servers to be tied to a convenient name without the need of a DNS server. Type the name associated with the ThinManager Server in the ThinManager Server field, add the IP address in the ThinManager Server Address field, and select **OK**. This adds the ThinManager server to the ThinManager Server list.

Select **Finish** to close the ThinManager Server List wizard.

DNS Configuration

Selecting **DNS Configuration** will launch the Domain Name Server Wizard to allow the definition of Domain Name Servers.



Domain Name Service Wizard – Introduction

The Domain Name Service Wizard Introduction screen will ask if a DNS server is being used.

If the **System without a DNS server** radio button is selected, no configuration is needed. Select the **Finish** button to close the wizard.

If the **System using a DNS server** radio button is selected, the **Next** button will launch the Domain Name Service Wizard Configuration screen.

Domain Name Server Wizard

Domain Name Server Configuration
Enter the list of DNS servers on your network and your domain information

DNS Servers

Up
Down

Add DNS Server Remove DNS Server

Domain

Search Domain

Read DNS Setting from this computer

< Back Next > Finish Cancel Help

Domain Name Server Configuration

The **Add DNS Server** button will launch a dialog box that allows a DNS Server to be added to the list.

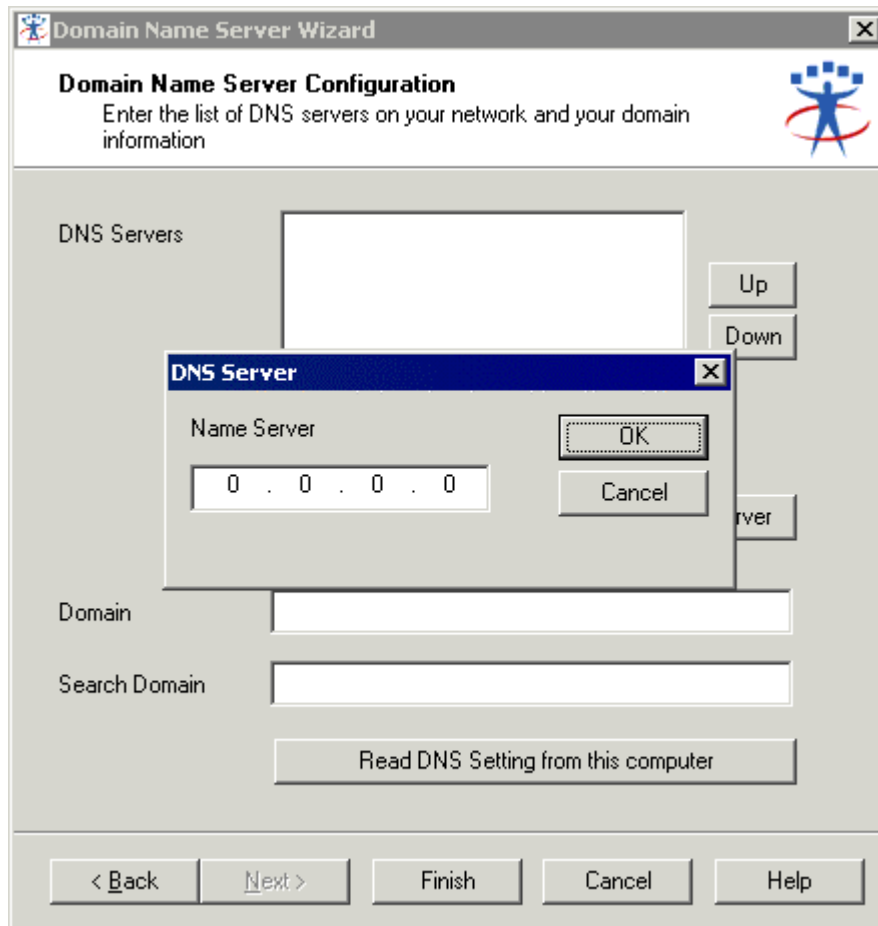
The **Remove DNS Server** button will remove a highlighted DNS server from the list.

The **Up** and **Down** arrow keys will change the order of DNS servers used. Highlight a DNS server in the list and select the appropriate arrow.

Selecting the **Read DNS Setting from this computer** will transfer the DNS settings from the current computer into ThinManager.

The **Domain** field and the **Search Domain** field can be filled manually.

Selecting the **Add DNS Server** will launch a dialog box that allows the IP address of the DNS server to be added.



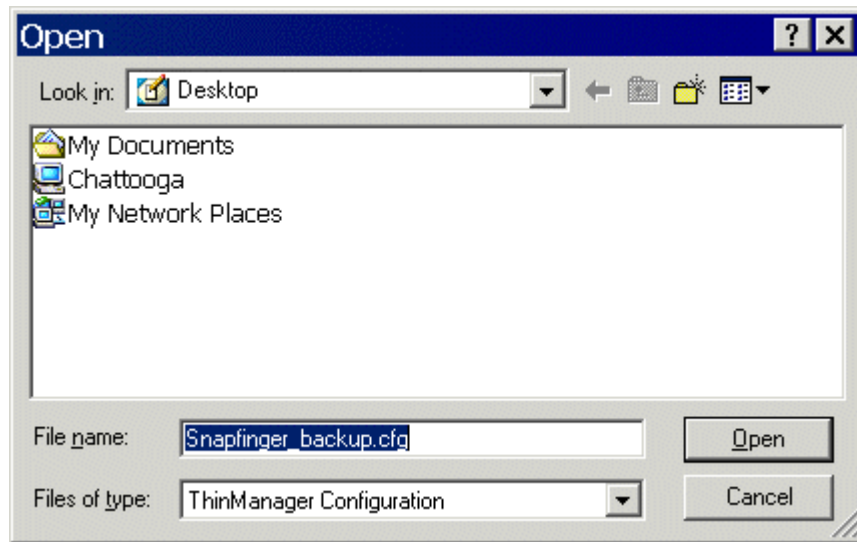
Domain Name Server Configuration – Add DNS Server

Add the IP address of the DNS server into the DNS Server dialog and select **OK**. Additional IP addresses can be listed by selecting the **Add DNS Server** button again.

Select the **Finished** button when the DNS configuration is done.

Restore Configuration

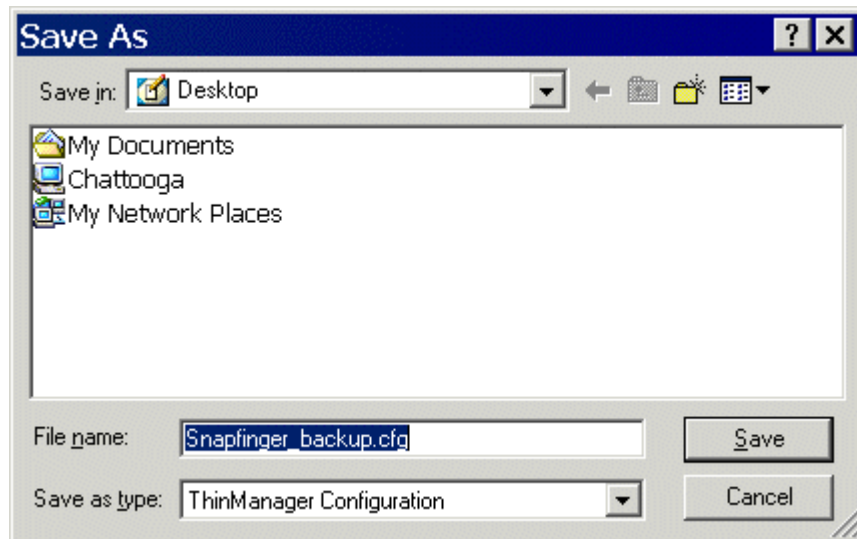
Restore Configuration will allow a backed up ThinManager configuration to be applied to the ThinManager Server. Select the desired ThinManager Configuration file in the browse window and select **Open**. The backup copy will overwrite the existing configuration.



Restore ThinManager Configuration

Backup Configuration

Backup Configuration allows the ThinManager Configuration to be saved. Select a location in the browse window and select the **Save** button to save a backup copy.

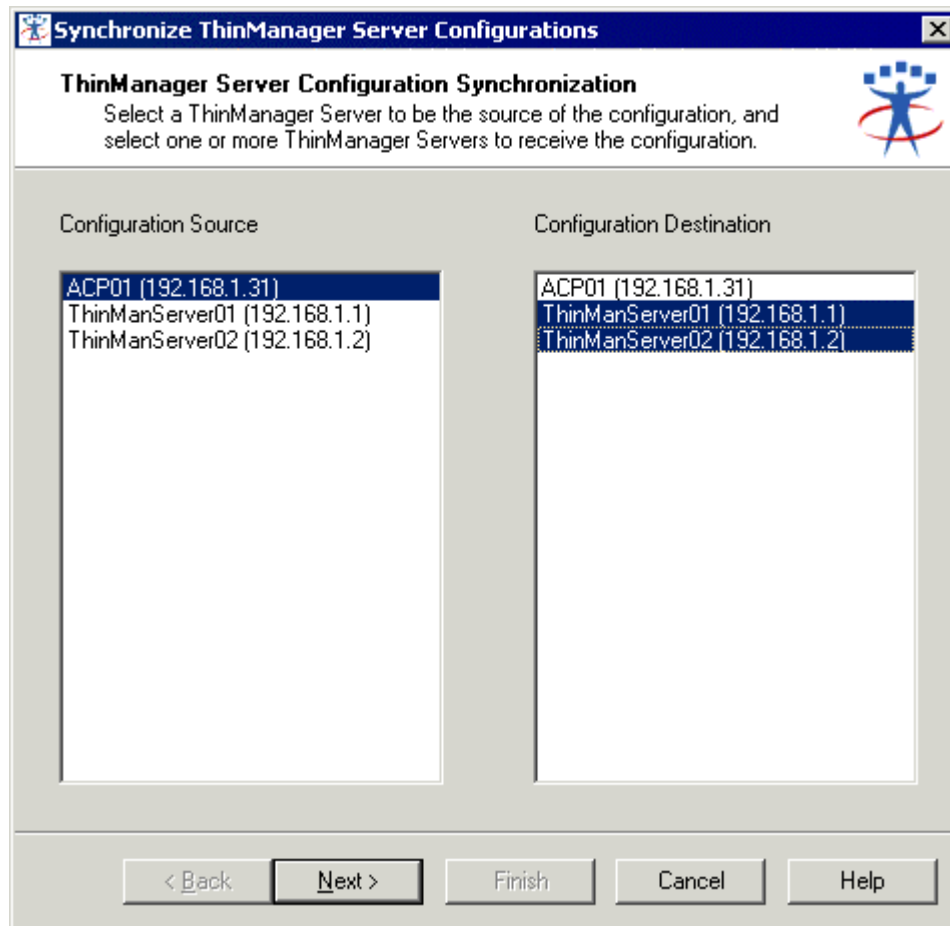


Backup ThinManager Configuration

Synchronize Configuration

Synchronized Configuration allows the configuration of multiple ThinManager Servers to be kept identical so that a terminal will have the same configuration regardless of what ThinManager Server the terminal boots from. This is useful for ThinManager Redundancy.

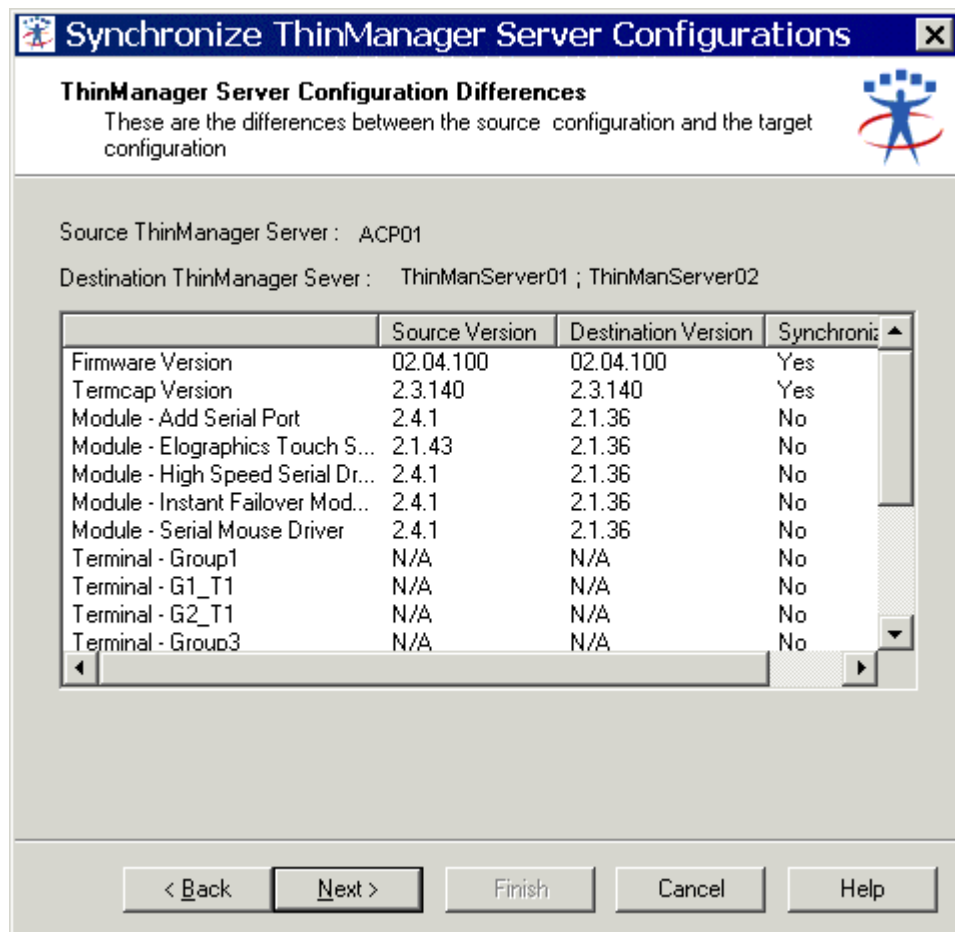
Selecting **Synchronized Configuration** will launch the ThinManager Server Configuration Synchronization Wizard.



Synchronize ThinManager Server Configuration Wizard

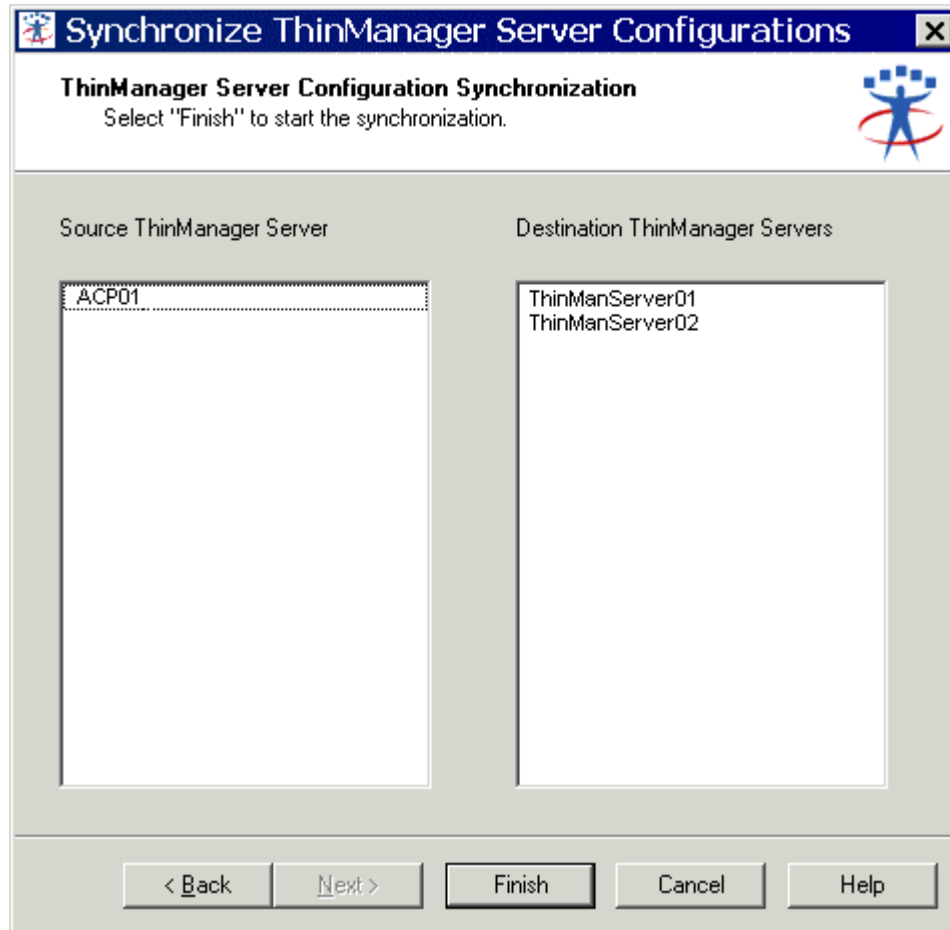
Highlight the configuration source and the configuration destination and select **Next**.

Note: You may highlight multiple destinations to synchronize multiple ThinManager Servers by holding down the **CTRL** key while you select them with a mouse.



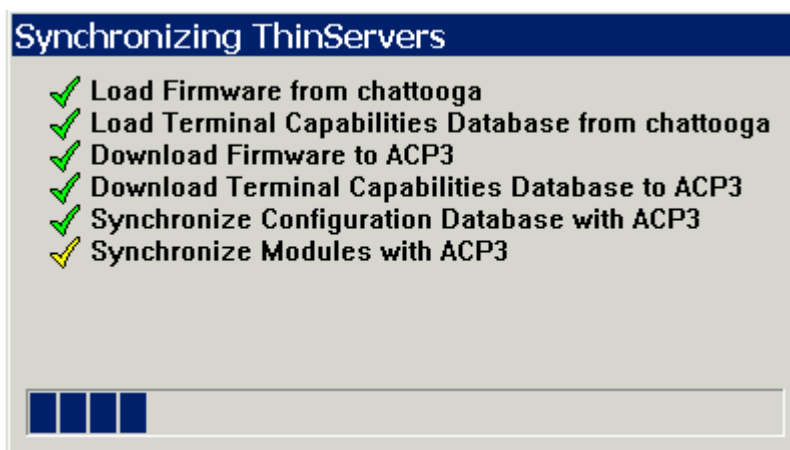
Synchronization Differences

The ThinManager Synchronization Wizard will list the files being updated, including the firmware, TermCap database, modules, and the configuration. Select **Next** to continue.



ThinManager Server Synchronization Confirmation

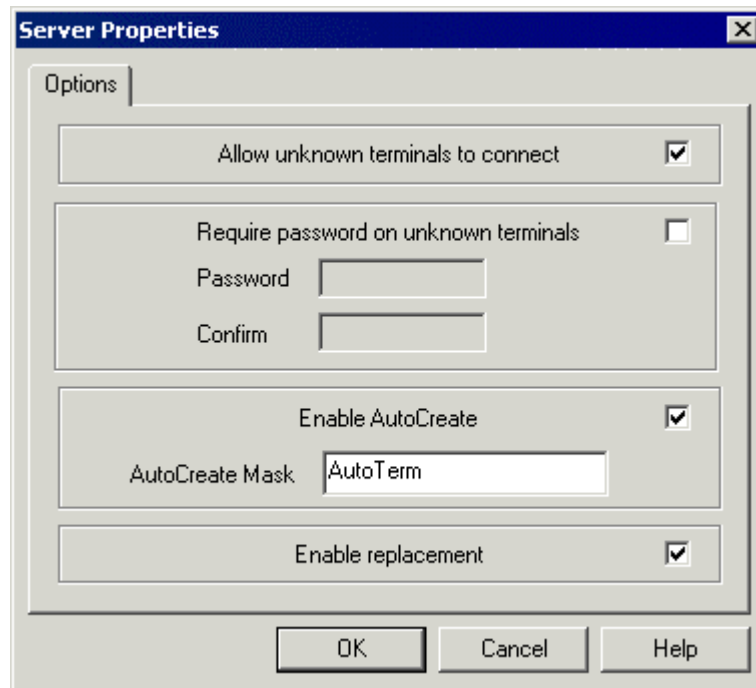
The ThinManager Server Configuration Wizard will prompt for a conformation of the synchronization before proceeding. Select **Finish** to finalize the changes.



Synchronization Progress Meter

ThinManager will display the progress of the synchronization as it updates the files.

Settings



The screenshot shows a Windows-style dialog box titled "Server Properties" with a close button (X) in the top right corner. The "Options" tab is selected. Inside the dialog, there are four main sections, each with a checkbox and associated text fields. The first section has a checkbox labeled "Allow unknown terminals to connect" which is checked. The second section has a checkbox labeled "Require password on unknown terminals" which is unchecked, followed by "Password" and "Confirm" text input fields. The third section has a checkbox labeled "Enable AutoCreate" which is checked, followed by an "AutoCreate Mask" text input field containing the text "AutoTerm". The fourth section has a checkbox labeled "Enable replacement" which is checked. At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Server Properties

The **Allow unknown terminals to connect** checkbox lets new terminals be added to the ThinManager Server. Replacements and new terminals are prevented if this box is un-selected.

The **Require password on unknown terminals** checkbox allows a password so that only authorized personnel can add terminals to the ThinManager Server. If checked, the password fields become active and allow the addition of a password.

The **Enable AutoCreate** checkbox allows the auto-creation of an array of terminals as described in Auto-Creation of Terminals. The AutoCreate Mask field is the base name used in the array.

The **Enable replacement** checkbox gives global permission for terminals to be replaced. Un-selecting this will prevent all terminals from showing up in the replacement list when a new terminal is added, making "Create New Terminal" the only option as shown in Replace or Create New Terminal Mode. This feature is also available on the Group and terminal level on the Other tab in classic mode and on the first page of the Wizard mode.

Configure Default Terminal

Selecting **Configure Default** will launch the Terminal Properties for a "Default" terminal. This default terminal is used as a template for terminals during Auto-Create. Use this terminal to configure the auto-create terminals. See "Auto-Creation of Terminals" on page 192 for details on Auto-Creation of terminals.

Reconnect to ThinManager Server

Selecting **Reconnect to ThinManager Server** will reinitialize the connection to the selected ThinManager Server.

Disconnect to ThinManager Server

Selecting ***Disconnect to ThinManager Server*** will stop the connection to the selected ThinManager Server.

View

Status Bar

The **Status Bar** shows advice and comments on the bottom of the **ThinManager** window. When the **Status Bar** command is checked, the Status Bar text is visible. When the **Status Bar** command is unchecked, the Status Bar text is invisible.

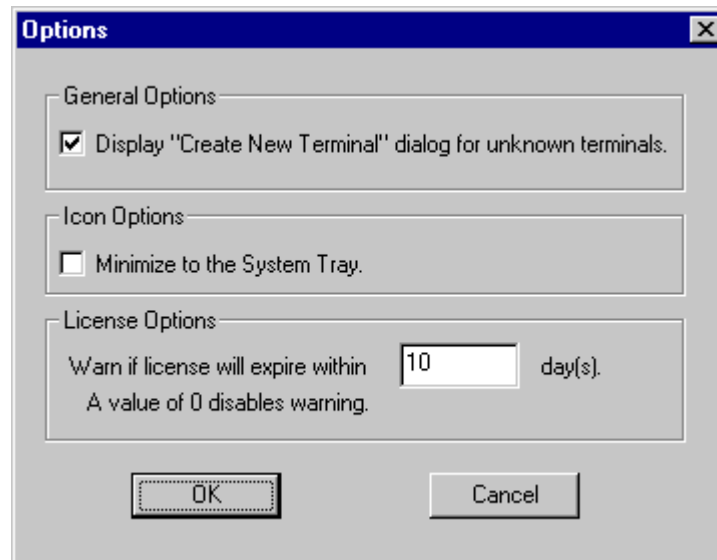
Use Wizards

Use Wizards allows group and terminal configuration in the Wizard Mode if checked.

If un-checked, the Group Properties and Terminal Properties will launch in Classic Mode.

Options

Selecting **Options** will launch the Options dialog box.



Options

The **Display “Create New Terminal” dialog for unknown terminals** check box, if selected, will display the Create New Terminal when new terminals are attached.

The **Minimize to the System Tray** checkbox will send the ThinManager icon in the system tray when ThinManager is minimized.

Warn if license will expire within __ day(s) will configure the warning period before license expiration. This is useful for time-limited demonstration licenses.

Help

Help Topics

ThinManager has an on-line help file. Selecting this will launch the ThinManager Help file.

About ThinManager

Selecting this command will display a dialog box with ThinManager version information, copyright information, and contact information for ThinManager.

Adding Thin Client Hardware

The Boot Process

Most ACP Enabled thin clients use a network or LAN boot to transfer the firmware to the terminal. This allows for an easy update of the firmware and ensures that all the terminals share the same firmware. The exceptions are disk-on-chip terminals that contain the firmware on a local storage device. They boot locally before connecting to a ThinManager Server. Disk-on-chip terminals will be discussed later at Disk-On-Chip.

An ACP Enabled thin client goes through a number of steps from the initial power on to the complete connection to a terminal server. Understanding this process will aid in terminal configuration and troubleshooting.

The steps are:

- **POST:** Once an ACP Enabled thin client is turned on it begins the Power On Self-Test to examine the hardware and to test the memory.
- **IP Address Assignment:** The terminal needs an IP address to connect to the network. By default, it receives an IP Address from a DHCP server, but this can be changed to use an assigned static IP. This will be discussed later in IP Address Assignment
- **ThinManager Server Connection:** After receiving an IP address the terminal will connect to the ThinManager Server. This is the Boot Server Host as defined in the DHCP scope Option 066 or the Primary ThinManager Server defined in the static IP address configuration.
- **Firmware Loading:** Next the terminal will download the firmware from the ThinManager Server.
- **Terminal Configuration Download:** Established terminals will receive their configuration and proceed. New terminals will need to be defined on the ThinManager server, either through the Terminal Configuration Wizard as described in Terminal Configuration Wizard or the Create New Terminal method as described in Create New Terminal in Classic Mode.
- **ACP Logo Screen:** After the terminal receives its configuration, it will display an ACP splash screen with the ACP logo.
- **Citrix Connection:** Next the terminal will display a Citrix splash screen while it makes an ICA connection to the terminal server.
- **NT Login:** Next the terminal will display the NT Login dialog box, prompting for a valid username and password. If these have been entered into the username and password fields on the Sessions tab of ThinManager, the terminal will login automatically and display the NT desktop or a defined initial program.
- **NT Session:** The terminal is logged onto a session on terminal server. The terminal will pass mouse clicks and keystrokes to the terminal server. The terminal server will process the data and send the graphics back to the terminal for display, giving a full Windows experience to the user.

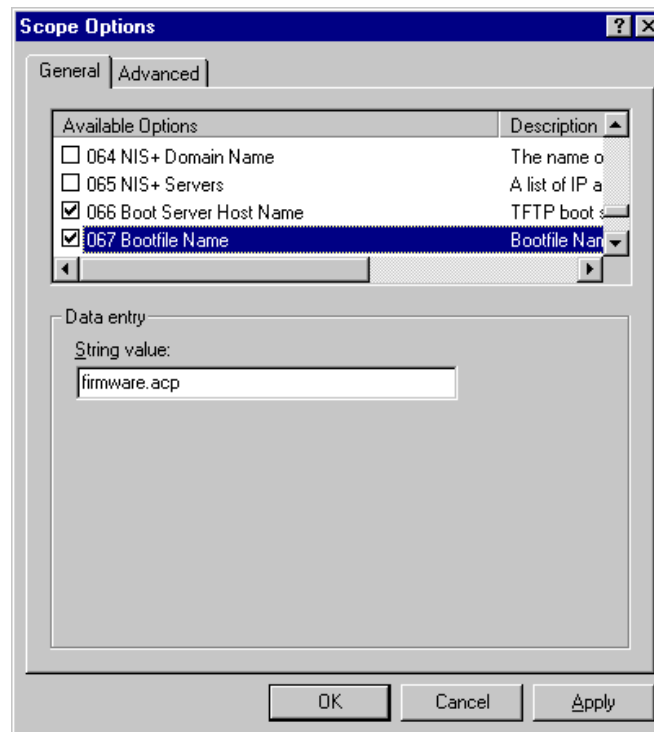
IP Address Assignment

ACP Enabled Thin Clients require an IP address to connect to the network. The terminals are set by default to use DHCP so that the units can be attached without any necessary configuration. The DHCP Server needs to have **Option 066** set to the IP address of the ThinManager Server and **Option 067** needs to set to "firmware.acp". Information on configuring these can be found at DHCP Server Setup.

A Static IP can be used to give the terminal is IP address. Doing this is the only configuration that needs to be done on the terminal. While entering the terminal's IP address one also enters the IP address of the ThinManager Server and subnet information. Information on configuring these can be found at Static IP.

DHCP

ACP Enabled thin clients use DHCP (Dynamic Host Configuration Protocol) by default. The DHCP Server needs two options configured for the terminals.



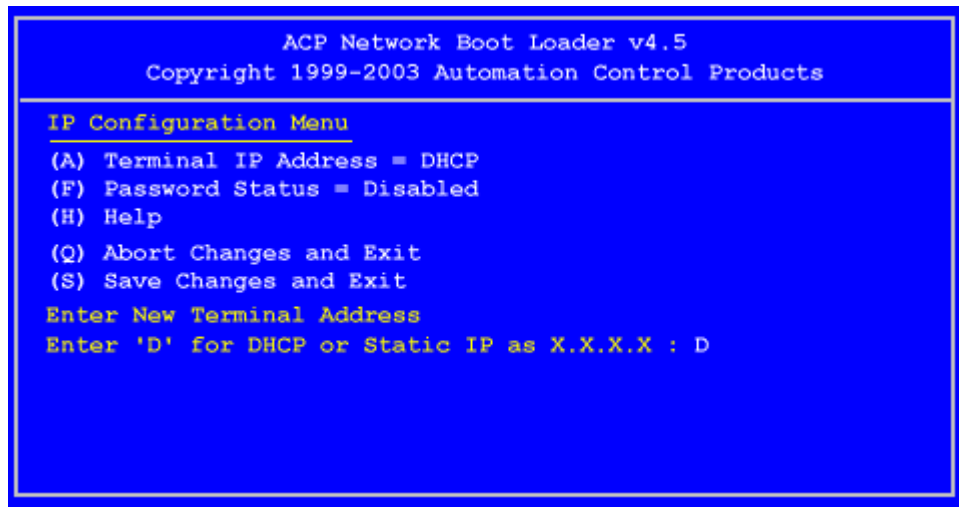
DHCP Options

Option 066 Boot Server Host Name must be set to the IP address of the ThinManager Server.

Option 067 Bootfile Name must be set to **firmware.acp**.

Details are at DHCP Server Setup on page 209.

ACP Enabled thin clients use DHCP (Dynamic Host Configuration Protocol) by default. If they have been set to a static IP they can be reset to DHCP from static IP by pressing any key when prompted during the boot sequence to open the IP Configuration Menu.

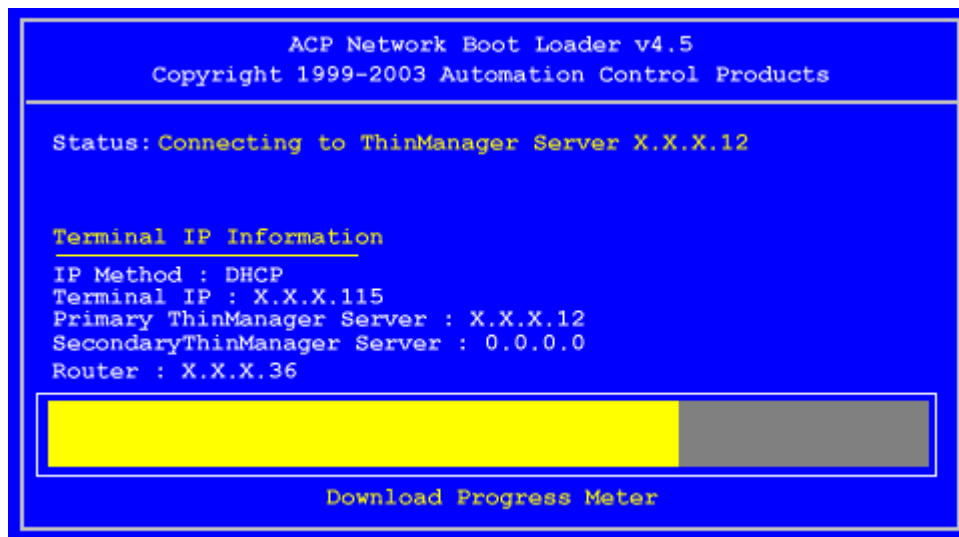


IP Configuration Menu - DHCP

Press the **A** key to allow a change to DHCP.

Press **D** key to set the configuration to DHCP.

Press **S** key to save the configuration and continue with the boot process.

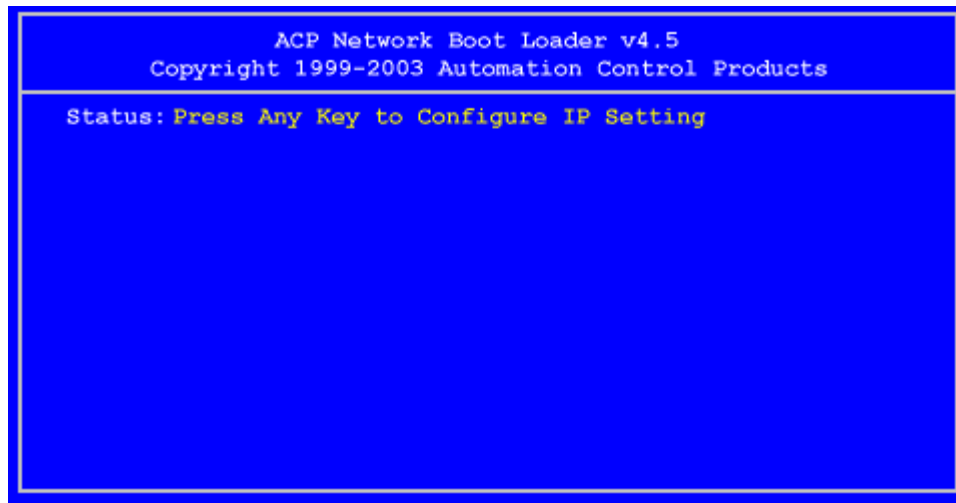


Boot Process - Firmware Download

The terminal will connect to the ThinManager Server and download the firmware.

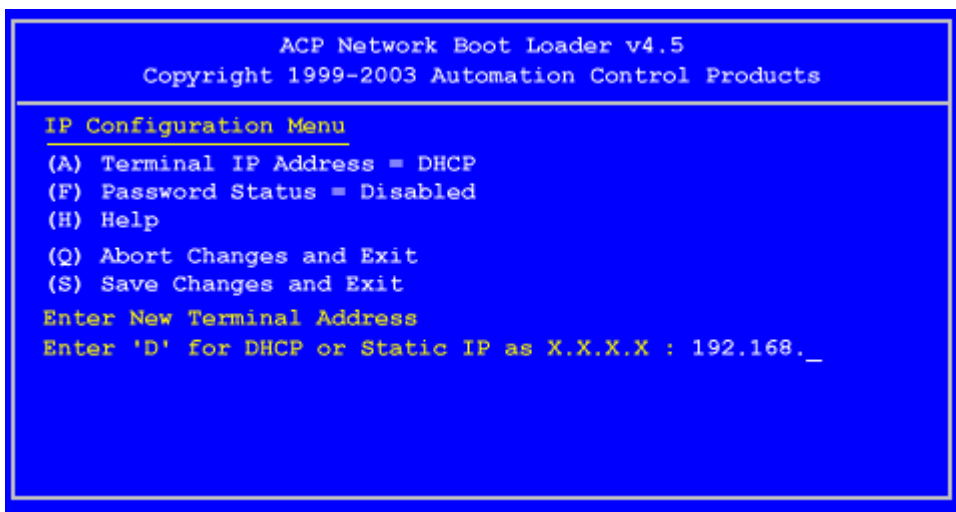
Static IP

Most models allow the usage of static IPs. These are set by interrupting the boot process to launch the IP Configuration Menu and adding the static IPs.



Boot Process - Press Any Key Prompt

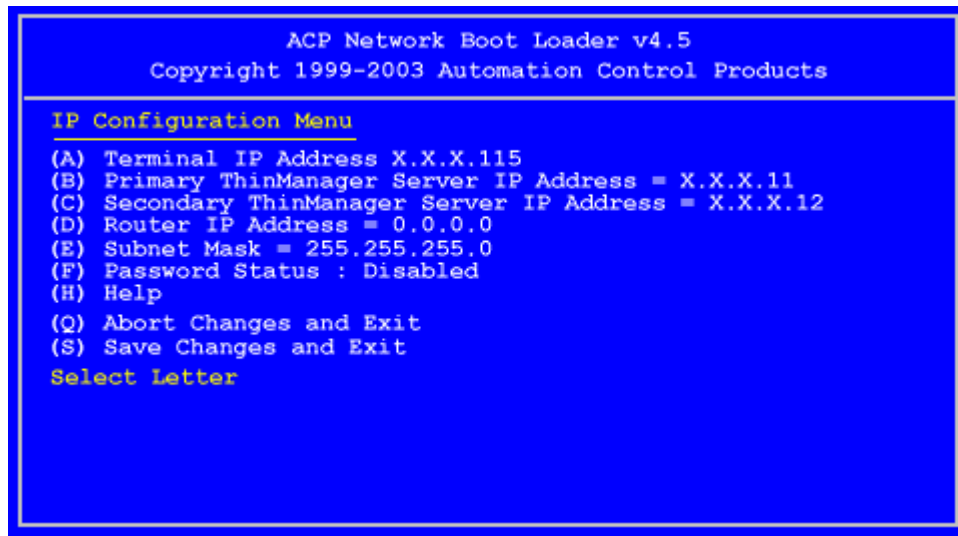
To set the terminal to use a static IP, press any key at the appropriate moment of the boot sequence.



IP Configuration Menu – Static IP

Press the **A** to allow the client IP to change from DHCP.

Type in the static IP address for the client, including the separating periods and press the **Enter** key.



IP Configuration Menu - Options

Once the Terminal has a static IP assigned, the IP Configuration Menu will be shown to allow the setting of other values.

- **(A) Terminal IP Address** – This should be a unique address for the terminal.
- **(B) Primary ThinManager Server IP Address** – This should be a unique address for your main ThinManager Server.
- **(C) Secondary ThinManager Server IP Address** - The Secondary ThinManager field allows the terminal to use two ThinManager Servers. If the terminal cannot connect to the Primary ThinManager Server, it will connect to the Secondary ThinManager Server to receive its configuration. If you are not using a Secondary ThinManager Server, set the IP address to 0.0.0.0.
- **(D) Router IP Address** – Fill in the IP address of the router or gateway, if one is being used. If not this should be set to 0.0.0.0.
- **(E) Subnet Mask** – Set this to your subnet mask. 255.255.255.0. is a standard setting.
- **(F) Password Status** – Allows a password to be set to prevent unauthorized people from changing the configuration.
- **(H) Help** – Will launch a Help to explain the IP Configuration Menu.
- **(Q) Abort Changes and Exit** – This will cancel any setting changes and let the terminal continue to boot with the old settings.
- **(S) Save Changes and Exit** – This will apply any changes and allow the terminal to continue to boot with the new settings.

Type the letter of the desired setting and type the IP address, with periods. Press the **Enter** key on the keyboard to accept each change.

Once configured the terminal will connect to the ThinManager Server and download the firmware and configuration.

Configuring New Hardware

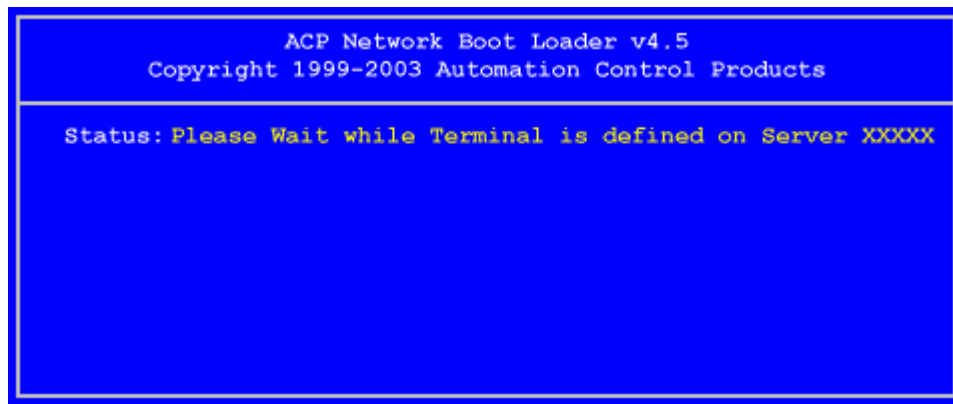
The configuration of terminals is done on the ThinManager Server, and is not done on each individual terminal. When a new, undefined ACP Enabled Thin Client is first connected to a ThinManager Server one of three things will happen.

- If the ThinManager Server has no terminals that are configured and offline, then the terminal will go into the **Create New Terminal Mode** and launch the **Terminal Configuration Wizard** on the ThinManager Server. Once the terminal is configured on the Terminal Server it will automatically download its configuration upon boot up.
- If the ThinManager Server has terminals that are created and offline, the terminal will go into **Replace or Create Mode** and list the offline terminals that are available for selection. Once a configuration is selected, the terminal will take that identity. During any following boot up the terminal will automatically download its configuration.
- A third scenario is to use the **Auto-Create Terminal Mode** to create an array of terminals. Details can be found at Auto-Creation of Terminals.

Create New Terminal Mode

Turning on a terminal for the first time will initiate the Create New Terminal mode if:

- No terminals are defined in ThinManager
- Or, all the defined terminals are currently connected
- Or, if all the defined terminals that are turned off have the **Allow This Terminal To Be Replaced If Off Line** check box unselected.



Create New Terminal Mode Screen

When a terminal enters the **Create New Terminal Mode**, the terminal will launch the Terminal Configuration Wizard on the ThinManager Server as shown in on page 67. The terminal will display a screen indicating that it will wait until the configuration is finished before progressing further.

Replace or Create New Terminal Mode

Turning on a terminal for the first time will initiate the **Replace or Create New Terminal Mode** if one or more of the defined terminals are offline and they have the **Allow This Terminal To Be Replaced If Off Line** check box selected.

This Terminal is undefined on Server XXXXX Choose the terminal to Replace or Action	
Terminal	Group
Annex1A	Annex
Annex1B	Annex
Annex2C	Annex
Boiler1	Boilers
Boiler3	Boilers
Parts1	Parts
Shipping2	Shipping
Create New Terminal	

Replace or Create Mode

The screen will display all the offline terminals that the terminal can replace. Highlight the desired terminal name and press the **Enter** button. The terminal will retrieve the selected configuration and assume its identity.

Auto-Create Mode

Turning on a terminal for the first time will initiate the Replace or Auto-Create Terminal mode if selecting the Auto-Create check box on the Server Property and having the "Default" terminal configured enables the Auto-Create mode.

This Terminal is undefined on Server XXXXX Choose the terminal to Replace or Action	
Terminal	Group
Annex1A	Annex
Annex1B	Annex
Annex2C	Annex
Boiler1	Boilers
Boiler3	Boilers
Parts1	Parts
AutoCreate Terminal	

AutoCreate Mode

If **Auto-Create Terminal** is selected from the Terminal list, the ThinManager Server will create the terminal as a member of the Auto-Create array as described in Auto-Creation of Terminals.

Configuration Wizards

ACP ThinManager version 2.4 introduces Configuration Wizards to simplify the creation and configuration of ACP Enabled Thin Clients.

The Wizard is the default method of configuration, but it can be turned off by going to the menu bar of ThinManager and un-checking the **View>Use Wizard** option.

The Wizard will automatically launch from ThinManager when:

- A new ACP Enabled Thin Client is connected to ThinManager and no terminals are configured, or
- A new ACP Enabled Thin Client is connected to ThinManager and no terminals are offline, or
- A new ACP Enabled Thin Client is connected to ThinManager and **Create New Terminal** is selected as the option on the terminal.

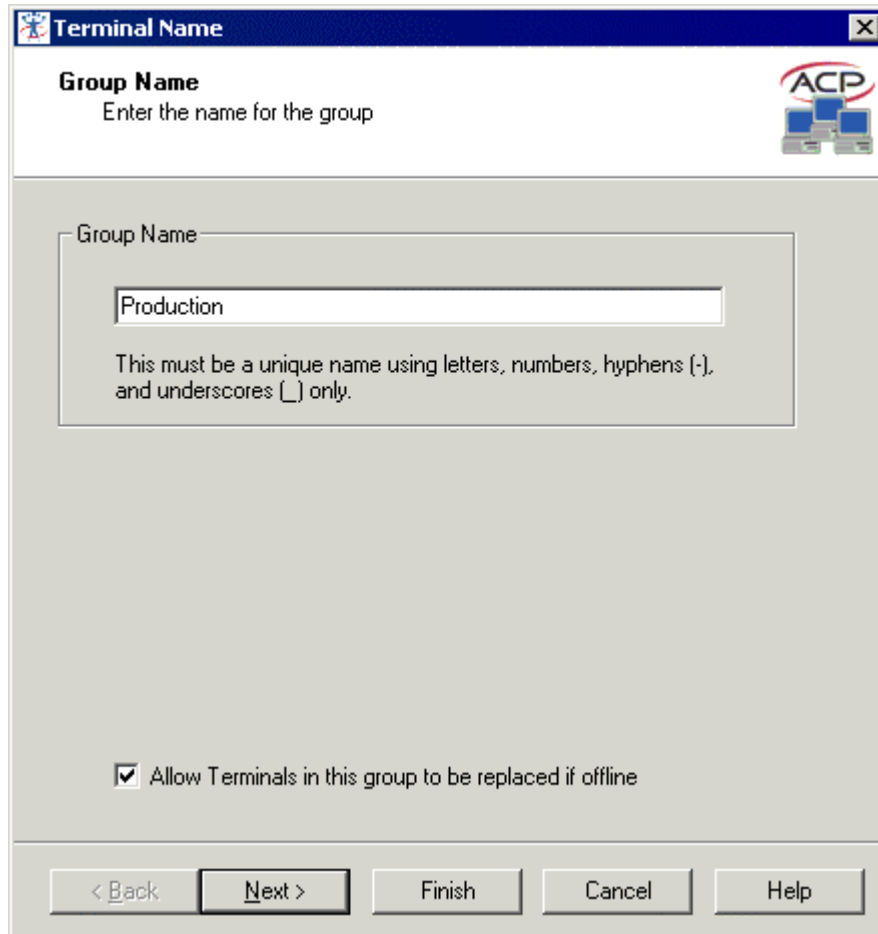
The Wizard can be launched by:

- Selecting a ThinManager Server in the ThinManager tree and selecting **Edit>Add Group** or **Edit>Add Terminal** from the menu bar, or
- Selecting a ThinManager Server in the ThinManager tree, right-clicking on the ThinManager Server icon, and selecting the **Add Group** or **Add Terminal** option.
- Selecting a Group in the ThinManager tree, right-clicking on the Group icon, and selecting the **Add Terminal** option. This puts the terminal in that group.

The wizards for the Terminal Server List, ThinManager Server List, and Domain Name Server List can be launched by selecting **ThinManager Server>Server List Management** from the menu bar.

Group Configuration Wizard

Group Name Configuration



Terminal Name

Group Name
Enter the name for the group

Group Name

Production

This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.

☒ Allow Terminals in this group to be replaced if offline

< Back Next > Finish Cancel Help

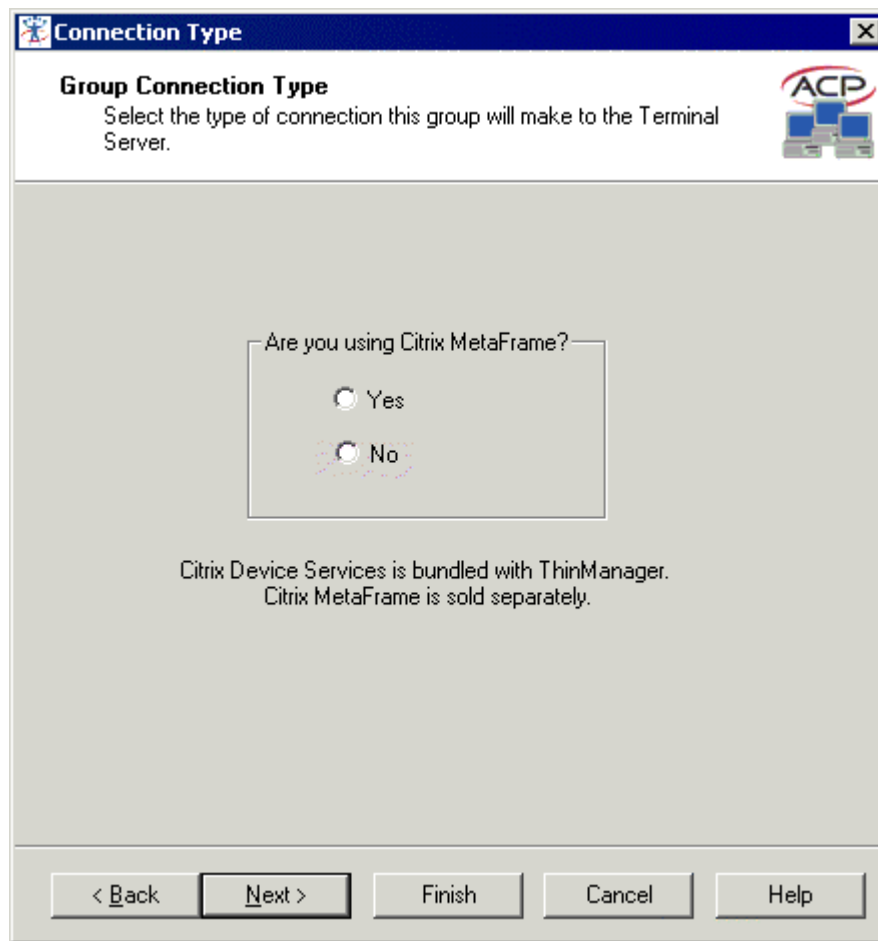
Group Configuration Wizard – Group Name

When a Group is first added, giving it a name is the first priority. Use numbers, letters, hyphens (-) and underscores (_), but don't use spaces or other characters.

Selecting the **Allow Terminals in this group to be replaced if offline** checkbox will allow all members of the group to show up in the replacement list during a new terminal connection.

Select **Next** to continue or **Cancel** to quit.

Group Connection Type Configuration



Group Configuration Wizard – Connection Type

Thin clients use a communication protocol to connect to the Terminal Servers. The Citrix ICA protocol can be provided by the Citrix Device Services that is included with ThinManager, or by Citrix MetaFrame that is sold as a separate product. Select whether you are using MetaFrame and select the **Next** button.

If you choose **No**, the next dialog will allow the selection of Terminal Servers as shown in Group.

If you choose **Yes**, for using the MetaFrame purchased separately, the next dialog will allow the configuration of Citrix MetaFrame properties.

Citrix MetaFrame Configuration

The screenshot shows a Windows-style dialog box titled "Citrix Metaframe Configuration". The title bar includes a standard Windows icon, the text "Citrix Metaframe Configuration", and a close button (X). The main area of the dialog has a light gray background. At the top left of the main area, the text "Citrix Metaframe Configuration" is repeated, followed by "Citrix Metaframe Configuration" on the next line. To the right of this text is a logo for "ACP" (Automation Control Products) featuring three computer monitors. Below the title area, there is a section labeled "Encryption" with a dropdown menu currently showing "Basic". Underneath this is another section labeled "Are you using Published Applications?" with two radio buttons: "Yes" and "No". At the bottom of the dialog, there is a row of five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

Group Configuration Wizard – Citrix MetaFrame Configuration

Citrix MetaFrame allows increased encryption in the ICA protocol. Select a level from the Encryption drop-down box.

Citrix MetaFrame has a feature called Published Applications. If you are using Published Applications, select the **Yes** radio button, then select the **Next** button to continue to the Citrix Published Application dialog.

If you are not using Published Applications, select the **No** radio button, then select the **Next** button to continue to the Terminal Server Selection dialog as shown in Group Terminal Server Selection.

Citrix Published Applications

Enter the published application this group should run. Enter the ICA browser if necessary to help terminals in this group find the published application.

Published Application Name

ICA Browser

< Back Next > Finish Cancel Help

Group Configuration Wizard – Citrix Published Applications

Enter the name of the desired Published Applications in the field. Do not use spaces in the name when creating a Published Application for Terminal Services.

Citrix MetaFrame uses ICA Browsers as part of the system. Because the ICA client may have problems detecting an ICA browser across a router or switch, a field is provided for entering the name of an ICA browser.

Select the **Finish** button to create the Group, or select the **Next** button to configure more options.

Group Terminal Server Selection

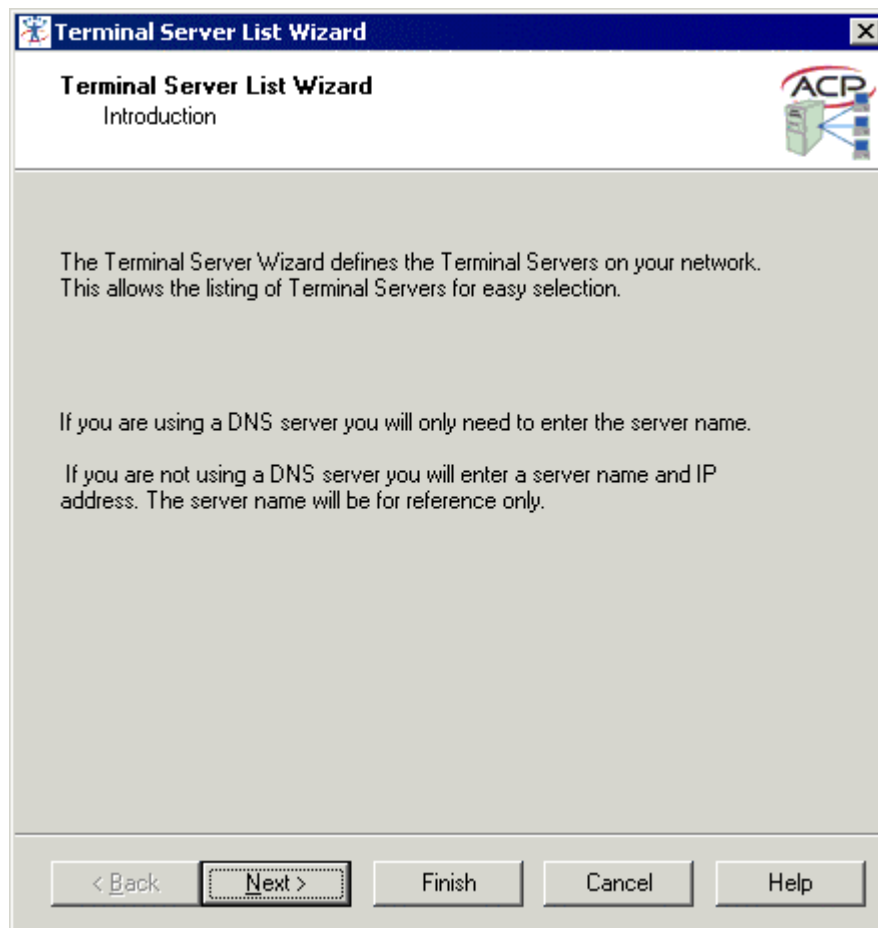
The screenshot shows a Windows-style dialog box titled "Terminal Server Selection". Inside, the main heading is "Group Terminal Server Selection" with a sub-instruction: "Select the Terminal Servers to which members of the group will connect." In the top right corner is the ACP logo. The dialog is divided into two main sections: "Available Terminal Servers" on the left and "Selected Terminal Servers" on the right. Between these sections are two small buttons with right and left arrow icons. To the right of the "Selected Terminal Servers" list are two larger buttons with up and down arrow icons. Below the "Available Terminal Servers" list is an "Edit Server List" button. A text block explains: "The thin clients will connect to the servers in the order that they are listed, with the top server as the Primary Terminal Server." Below this is a checkbox labeled "Enforce Primary Terminal Server Connection", which is currently unchecked. At the bottom of the dialog are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

Group Configuration Wizard – Group Terminal Server Selection

If Published Applications are not being used, the terminal will need to be assigned to a Terminal Server. The Terminal Server is a server that allows the terminals to logon and run the applications in independent sessions.

Select the **Edit Server List** button to launch the Terminal Server List Wizard.

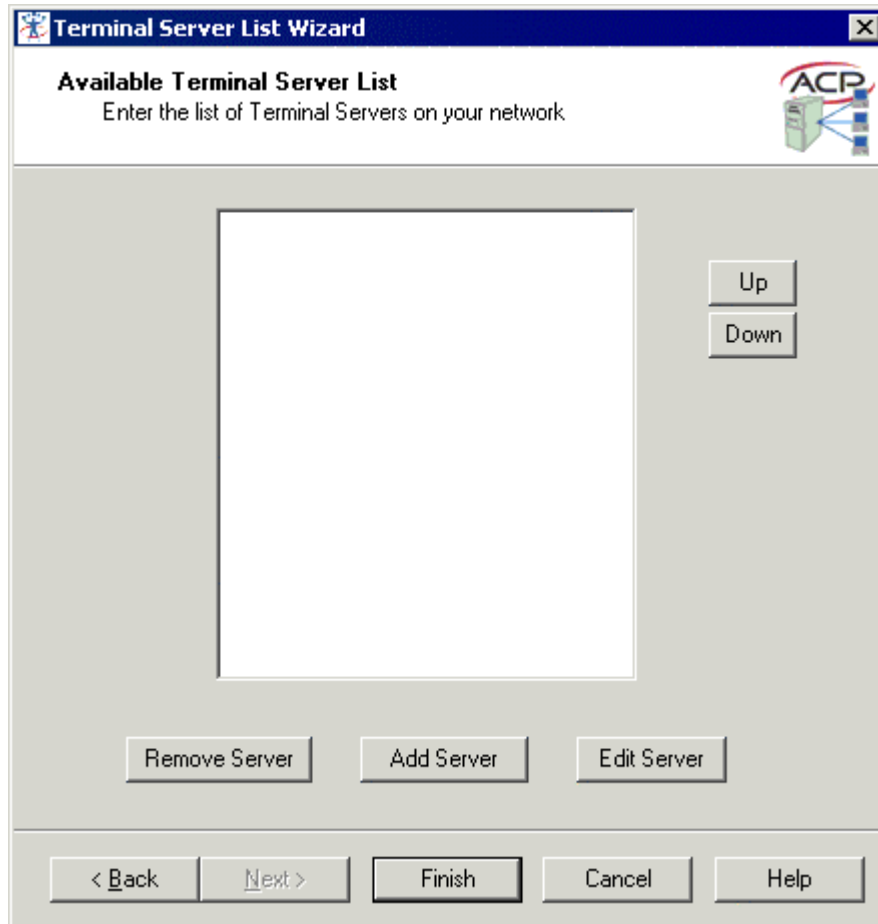
Terminal Server List Wizard



Terminal Server List Wizard

The Terminal Server List Wizard allows each Microsoft Terminal Server to be listed for easy selection during group and terminal configuration.

Select **Next** to continue.



Available Terminal Server List

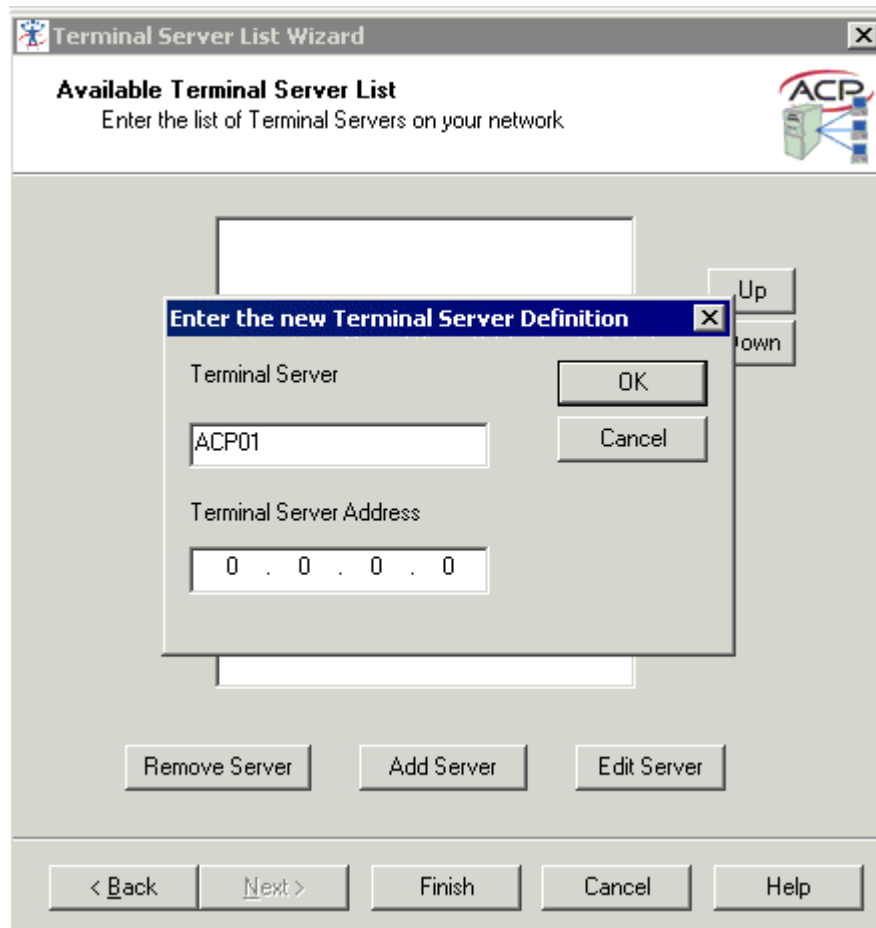
The Available Terminal Server List allows the identification all of the Terminal Servers on the network.

Remove Server clears a highlighted Terminal Server from the list.

Add Server will launch a window that allows the entry of the Terminal Server name and IP address as shown next.

Edit Server will launch a window that allows the change of the Terminal Server name and IP address.

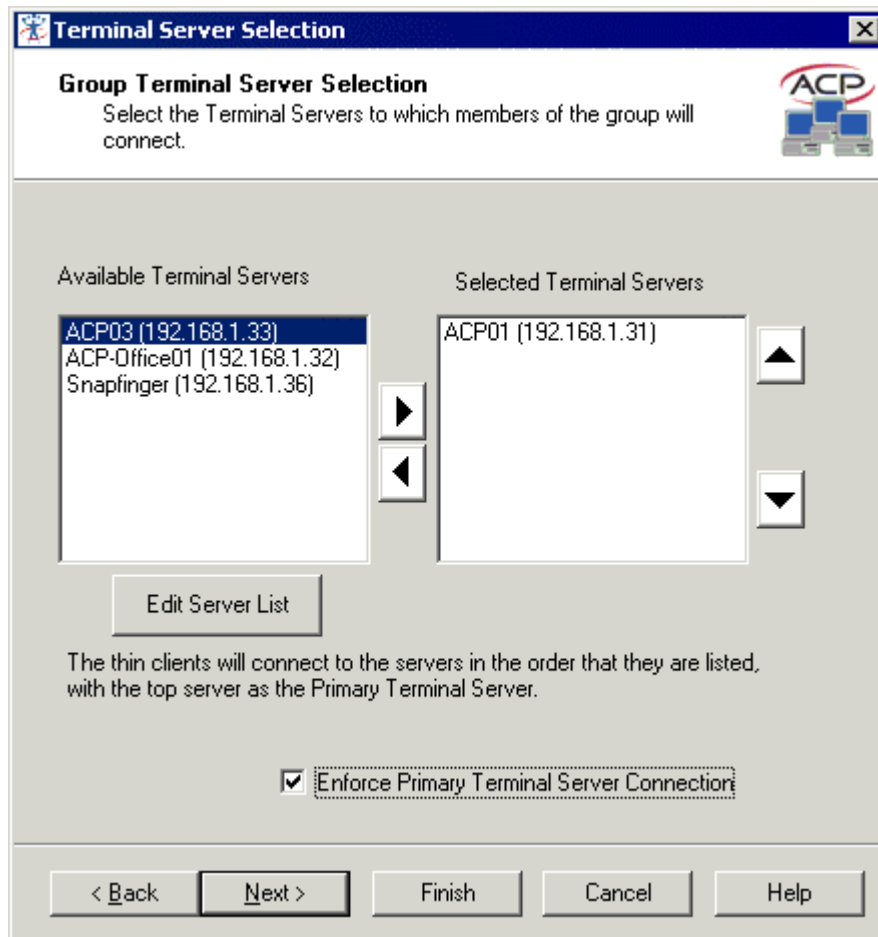
Select the **Add Server** button to define the terminal servers.



New Terminal Server Definition

Add Server will launch a window that allows the entry of the Terminal Server name and IP address. This allows the terminal servers to be tied to a convenient name without the need of a DNS server. Type the name associated with a terminal server in the Terminal Server field, add the IP address in the Terminal Server Address field, and select OK. This adds the terminal server to the Terminal Server list.

Select **Finish** to close the Terminal Server List wizard and return to the Group Wizard.



Group Configuration Wizard – Terminal Server Selection

Each Terminal Server that was identified in the Terminal Server List Wizard will initially appear in the **Available Terminal Server** box on the left.

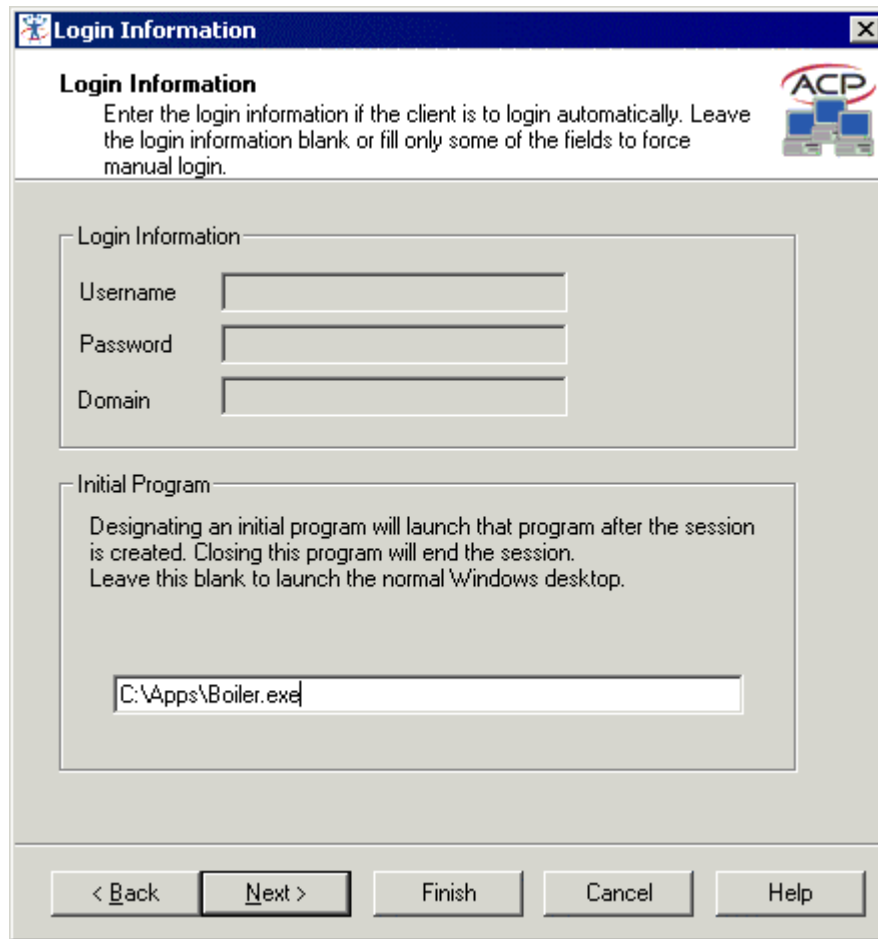
To have the Group use a Terminal Server, highlight it in the list on the left and click the **right arrow** button. This will put the Terminal Server into the **Selected Terminal Server** list on the right. The Group will use all the Selected Terminal Servers as Terminal Servers that it can login to.

The Terminal Server on the top of the Selected Terminal Server List will be the **Primary Terminal Server**, the first Terminal Server that the terminal will attempt to login to. To change the order of the Terminal Servers in the list, highlight a Terminal Server and use the **Up** arrow button and the **Down** arrow button to move it up or down in the list.

The **Enforce Primary Terminal Server Connection** will cause a terminal to return to the primary terminal server whenever that server is available.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Group configuration.

Group Login Configuration



The screenshot shows a Windows-style dialog box titled "Login Information" with a standard Windows icon in the top-left corner and a close button (X) in the top-right corner. The dialog has a blue title bar. Below the title bar, the text "Login Information" is followed by instructions: "Enter the login information if the client is to login automatically. Leave the login information blank or fill only some of the fields to force manual login." In the top-right corner of the dialog, there is an "ACP" logo featuring three computer monitors. The main area of the dialog is divided into two sections. The first section, titled "Login Information", contains three text input fields labeled "Username", "Password", and "Domain". The second section, titled "Initial Program", contains explanatory text: "Designating an initial program will launch that program after the session is created. Closing this program will end the session. Leave this blank to launch the normal Windows desktop." Below this text is a single text input field containing the example path "C:\Apps\Boiler.exe". At the bottom of the dialog, there are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

Group Configuration Wizard – Login Information

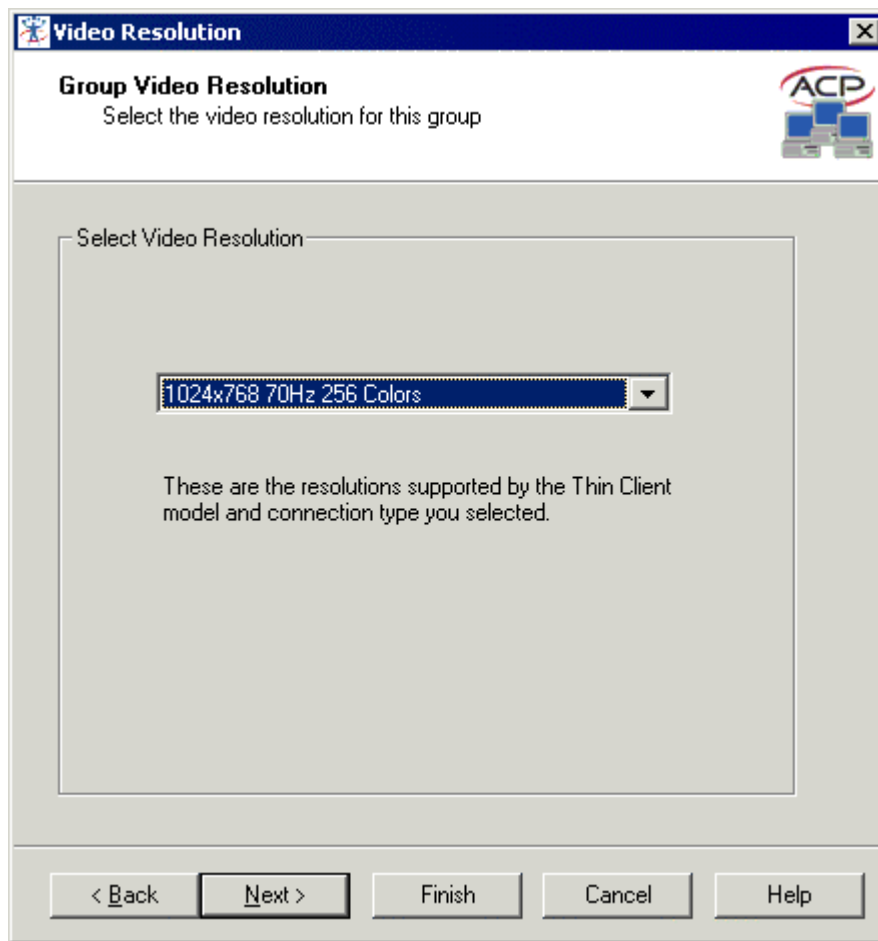
It is recommended that each terminal should login to a Terminal Server with a unique profile. For this reason, the Group Username, Password, and Domain are inactive. These need to be set individually during the Terminal Configuration as shown in Terminal Login Configuration.

The Initial Program loads the entered program instead of the Windows desktop when the terminal connects to the Terminal Server. If the Initial Program is closed on the terminal, the session on the Terminal Server will end and the ACP Enabled Thin Client will reconnect to the Terminal Server and re-launch the Initial Program. This effectively makes the Initial Program the only program.

To use the Initial Program, enter the path to the program in the Initial Program field as shown in the example.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Group configuration.

Group Video Configuration



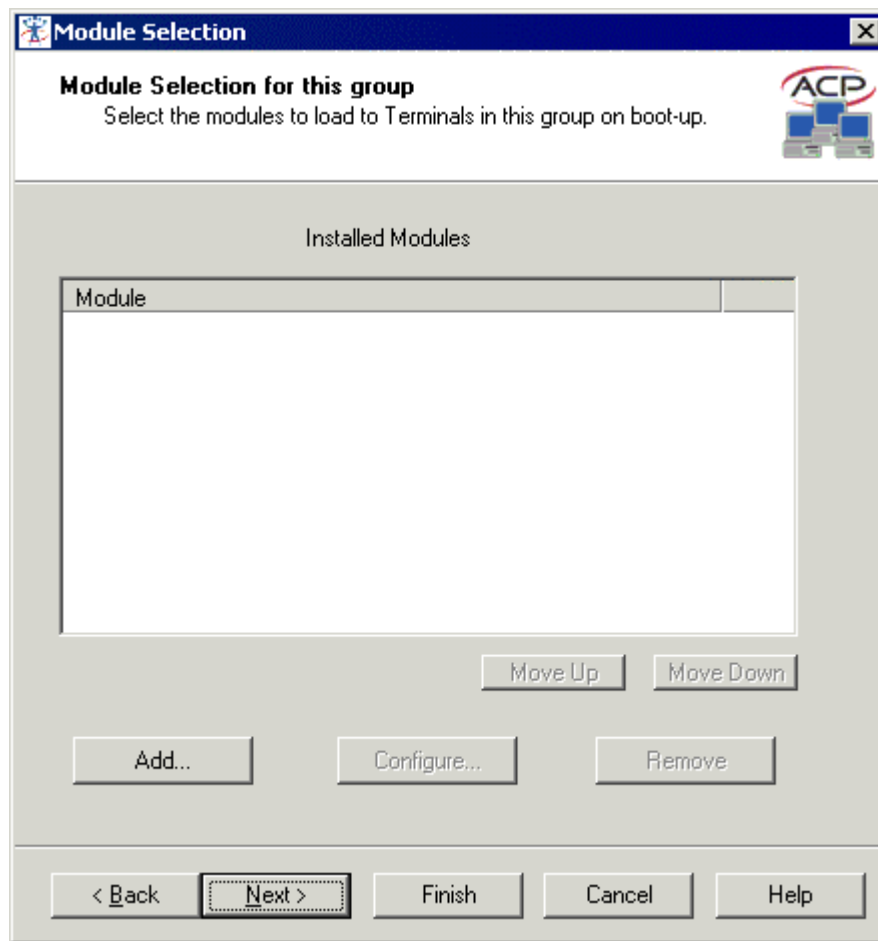
Group Configuration Wizard – Video Configuration

The Group Video Resolution Page has a drop-down box that allows the video resolution to be set for all members of the Group.

The standard terminal connection uses a 256-color depth. The 64K-color depth is available by using Citrix MetaFrame 1.8 FR1, or greater.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Group configuration.

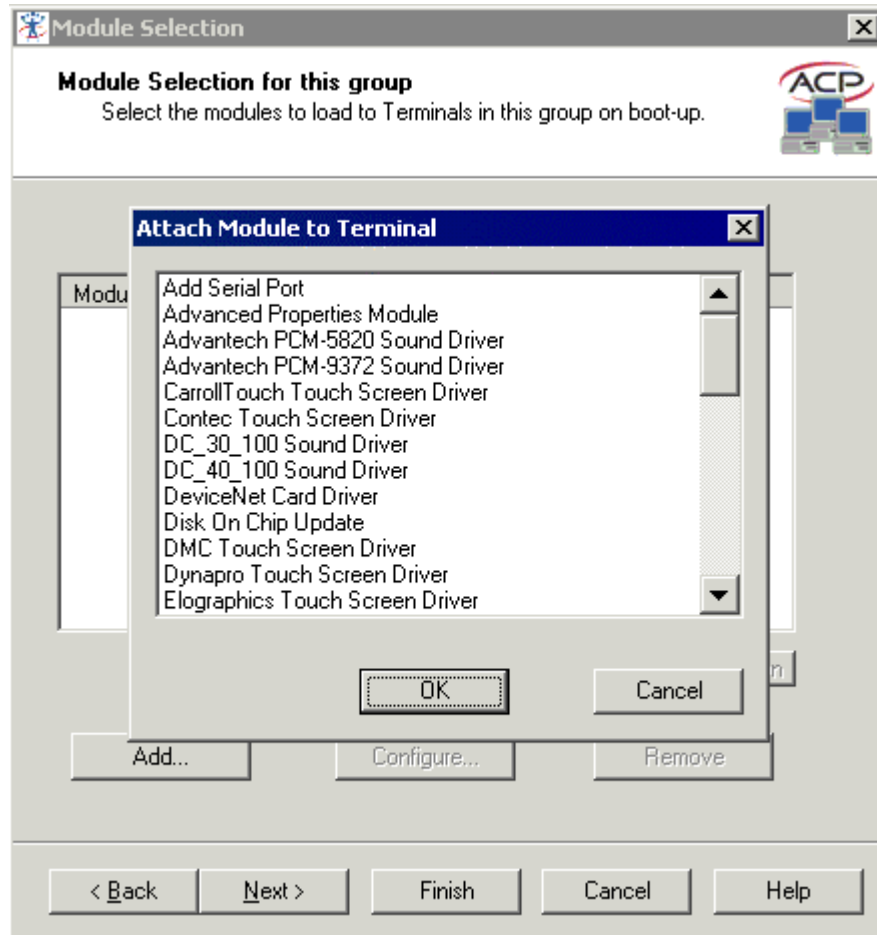
Group Module Configuration



Group Configuration Wizard – Module Selection

A **Module** is a component of the ACP Enabled Thin client operating system that is not needed for the basic functionality, but may be desired for advanced functionality. These features include Touch Screen drivers, serial mouse drivers, High Speed Serial drivers, Shared Keyboard and Mouse, and Instant Failover.

To add a Module to a Group, select the **Add...** button and select the Module from the list.



Group Configuration Wizard – Module List

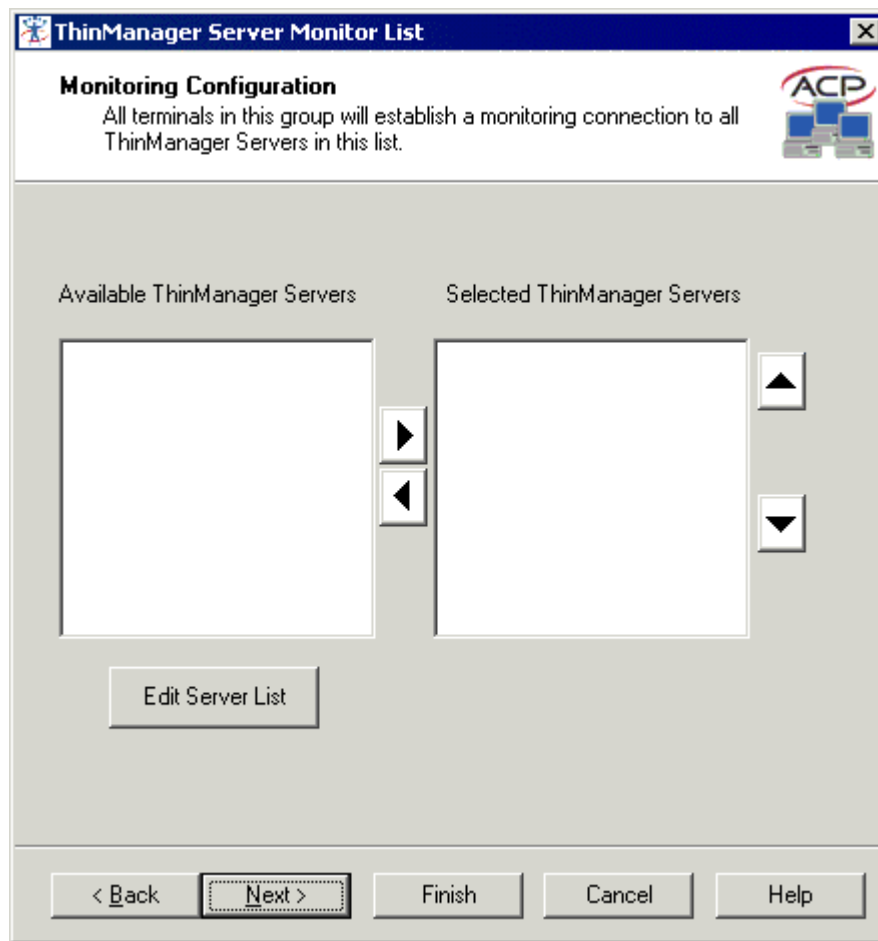
Selecting the **Add...** button will launch the list of available modules in the “Attach Module to Terminal” window.

Highlight the desired module and select **OK**.

Highlighting the module and selecting the Configure button can change some module parameters. Select the parameter to change, select the new value in the drop-down list and click the **Set** button. Details are found in Modules in Depth

Select the **Next** button to continue configuration or select the **Finish** button to complete the Group configuration.

Group ThinManager Server Monitoring



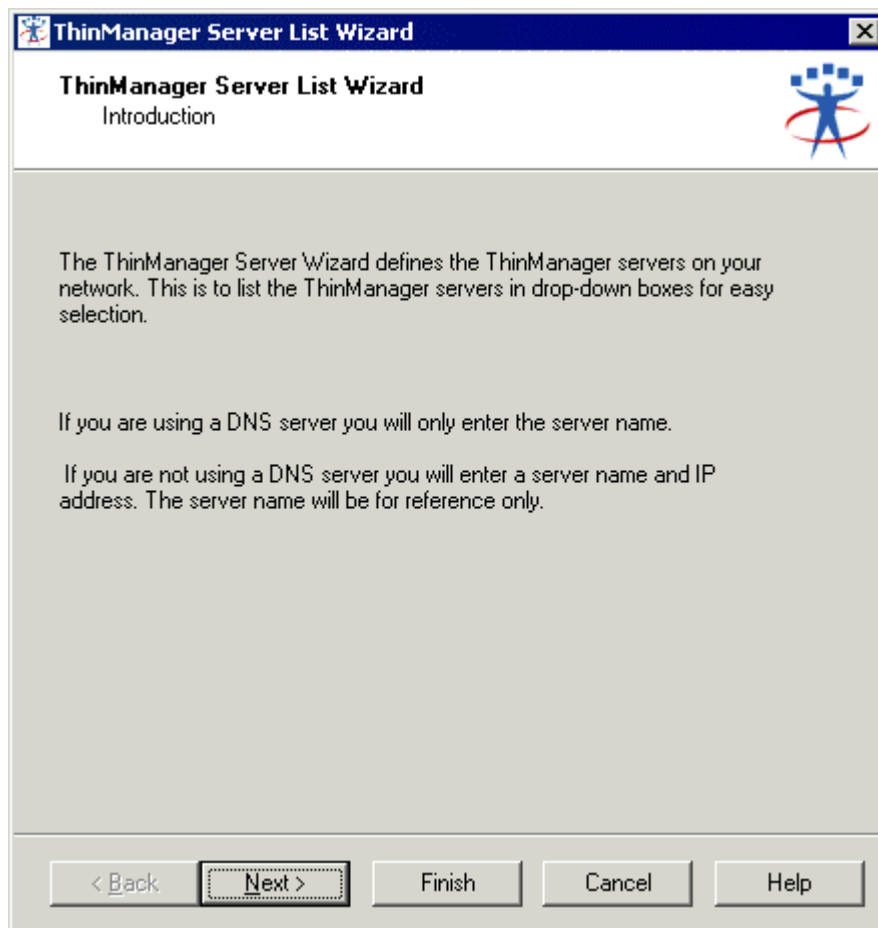
Group Configuration Wizard – Monitoring Configuration

The ThinManager Server Monitor List defines what Thin Manager Servers the terminal will communicate with to keep monitoring light status current.

Select the **Edit Server List** button to launch the **ThinManager Server List Wizard** as shown in ThinManager Server List Wizard.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Group configuration.

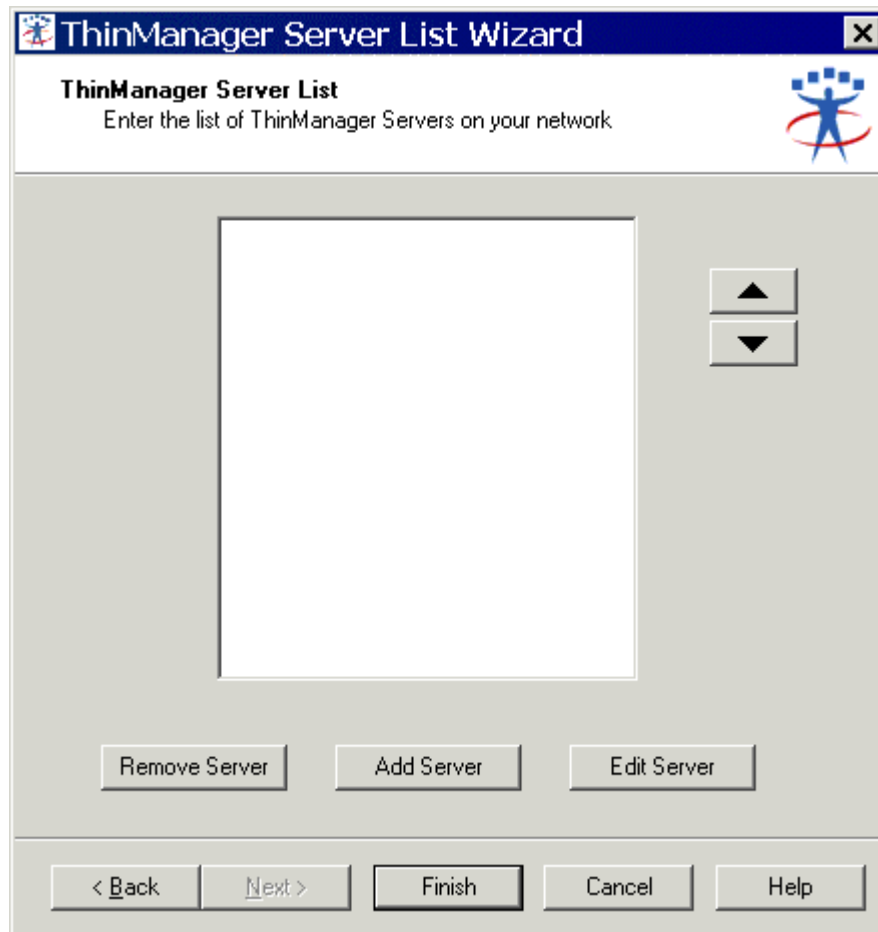
ThinManager Server List Wizard



ThinManager Server List Wizard Introduction

The ThinManager Server List Wizard begins with an introduction screen.

Select **Next** to proceed or click **Finish** to return to the Group Configuration Wizard.



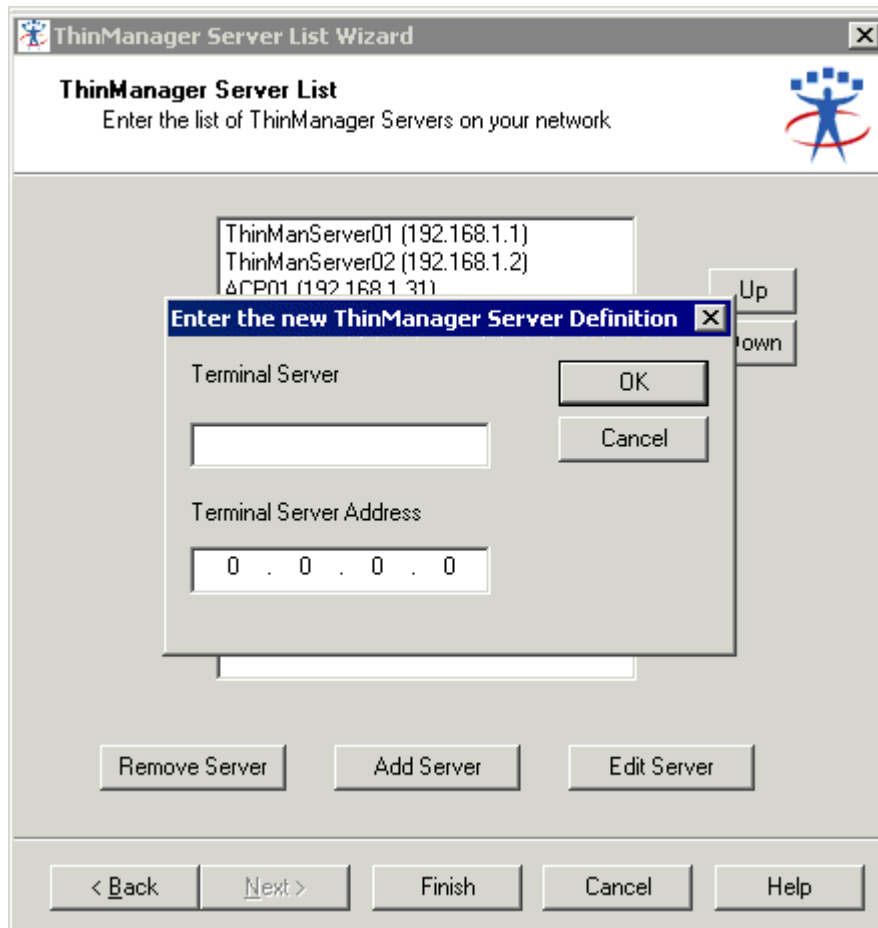
ThinManager Server List Wizard – ThinManager Server List

The ThinManager Server List is the collection of Thin Manager Servers the terminal will communicate with to keep monitoring light status current. These will appear in the ThinManager Server tree pane and show Terminal, Group, and Terminal Server connection status. Adding ThinManager Servers allows network wide control and management.

Remove Server clears a ThinManager Server from the list.

Add Server will launch a window that allows the entry of the ThinManager Server name and IP address.

Edit Server will launch a window that allows the change of the ThinManager Server name and IP address.

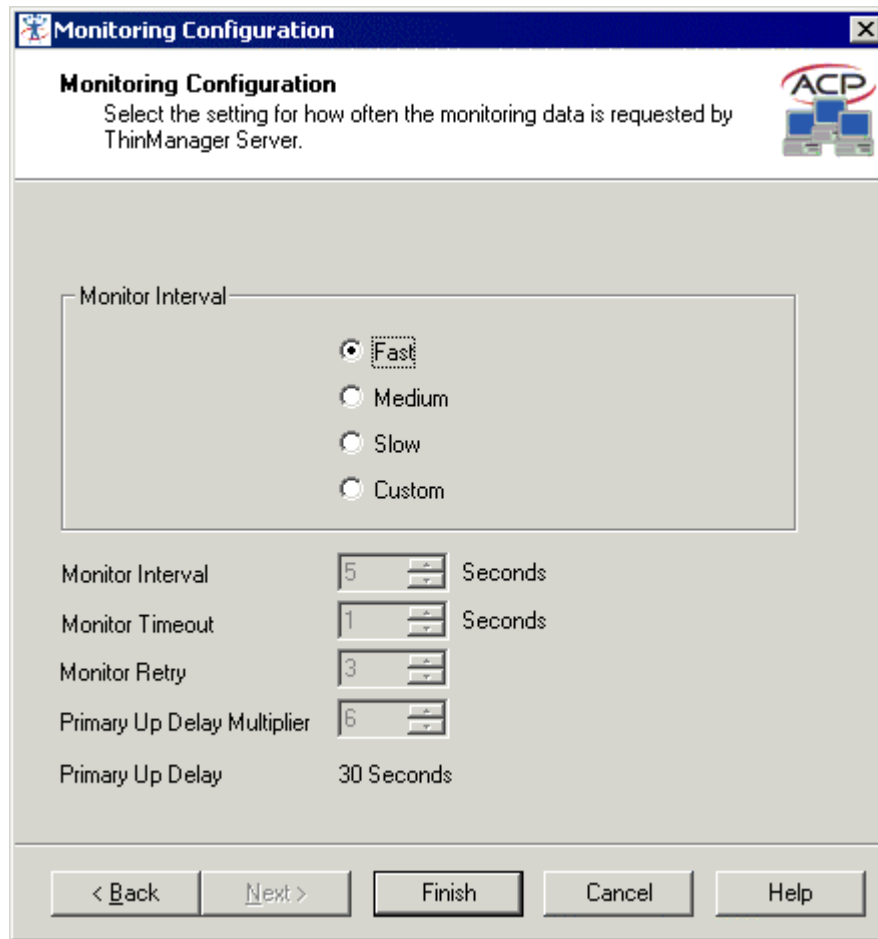


ThinManager Server List Wizard – Enter New ThinManager Server

Add Server will launch a window that allows the entry of the ThinManager Server name and IP address. This allows the ThinManager servers to be tied to a convenient name without the need of a DNS server. Type the name associated with the ThinManager Server in the ThinManager Server field, add the IP address in the ThinManager Server Address field, and select **OK**. This adds the ThinManager server to the ThinManager Server list.

Select **Finish** to close the ThinManager Server List wizard and return to the Group Wizard.

Group Monitoring Configuration

The image shows a Windows-style dialog box titled "Monitoring Configuration". At the top, it says "Monitoring Configuration" and "Select the setting for how often the monitoring data is requested by ThinManager Server." There is an ACP logo in the top right corner. The main area has a section labeled "Monitor Interval" with four radio buttons: "Fast" (selected), "Medium", "Slow", and "Custom". Below this, there are five settings with spinners: "Monitor Interval" set to 5, "Monitor Timeout" set to 1, "Monitor Retry" set to 3, "Primary Up Delay Multiplier" set to 6, and "Primary Up Delay" set to 30 Seconds. At the bottom, there are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

Monitoring Configuration

Select the setting for how often the monitoring data is requested by ThinManager Server.

Monitor Interval

☒ Fast
☐ Medium
☐ Slow
☐ Custom

Monitor Interval: 5 Seconds
Monitor Timeout: 1 Seconds
Monitor Retry: 3
Primary Up Delay Multiplier: 6
Primary Up Delay: 30 Seconds

< Back Next > Finish Cancel Help

Group Configuration Wizard – Monitoring Configuration

ACP Enabled Thin Clients continuously monitor the Terminal Server to make sure that it stays online. If the terminal server goes offline, the terminal will disconnect and connect to the next Terminal Server that it was assigned to in the Group Terminal Server Selection. The Monitoring Connection sets the frequency that the monitor occurs.

Use the **Monitor Interval** radio buttons to use a default frequency or select Custom and choose a setting of your own.

Monitor Interval is the interval that the monitor checks occur.

Monitor Timeout is the time the terminal will wait for a response from the terminal server.

Monitor Retry is the number of times the monitor check will be tried.

Primary Up Delay Multiplier is the number that generates the Primary Up Delay time.

Primary Up Delay is a delay added (usually 30 to 60 seconds) to allow a Terminal Server to get fully booted before the terminal will try to login. This time period is equal to the Monitoring Interval times the Primary Up Delay Multiplier.

A fast setting of the Monitor Connection will detect Terminal Server failure quickly. However, the faster the setting is, the more sensitive it is and it may drop the Terminal Server when it was busy and not offline. Setting the Monitoring Connection to a slower setting gives the Terminal Server more time to respond when it is busy.

Select the ***Finish*** button to complete the Group configuration.

Terminal Configuration Wizard

Configuring a terminal is just like configuring a Group.

If a terminal is created in a Group, or added to a group, it will have the option of using the group configuration. This is controlled with a **Use Group Property** checkbox on each wizard page. The following section shows the terminal with the **Use Group Property** checkbox selected and the options grayed out. To change the configuration from the Group, un-select the checkbox and use the setting of your choice. A terminal created outside a Group and not added to a Group, will not display the “Use Group Property” checkboxes.

The **Terminal Creation Wizard** can be launched by either:

- Selecting a ThinManager Server in the ThinManager tree and selecting **Edit>Add Terminal** from the menu bar, or
- Selecting a ThinManager Server in the ThinManager tree, right-clicking on the ThinManager Server icon, and selecting the **Add Terminal** option.
- Selecting a Group in the ThinManager tree, right-clicking on the Group icon, and selecting the **Add Terminal** option. This puts the terminal in that group.

Terminal Name Configuration

Terminal Name

Enter the name by which to refer to this terminal, and select the group to which this terminal belongs, or choose to copy the configuration settings from another terminal.

Terminal Name

Boiler

This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.

Group

Production

Use Group Replacement Setting ☒

☒ Allow terminal to be replaced if offline

< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Terminal Name

When a Terminal is first created, giving it a name is the first priority. Use numbers, letters, hyphens (-), and underscores (_), but don't use spaces or other characters.

It can be added to a Group by selecting the Group name in the Group drop-down box. Terminals added to a Group will be assigned the Group properties, but they can have the Group properties changed to individual settings by un-checking a use **Group Property** checkbox on each wizard page.

Select **Next** to continue or **Cancel** to quit.

Terminal Hardware Configuration

Terminal Hardware
Select the manufacturer and model of this client.

Use this to configure the type of hardware for this terminal.

Make / OEM: ACP
Model: DC-30-100

OEM Model: DC-30-100
Video Chipset: CyberPro2010

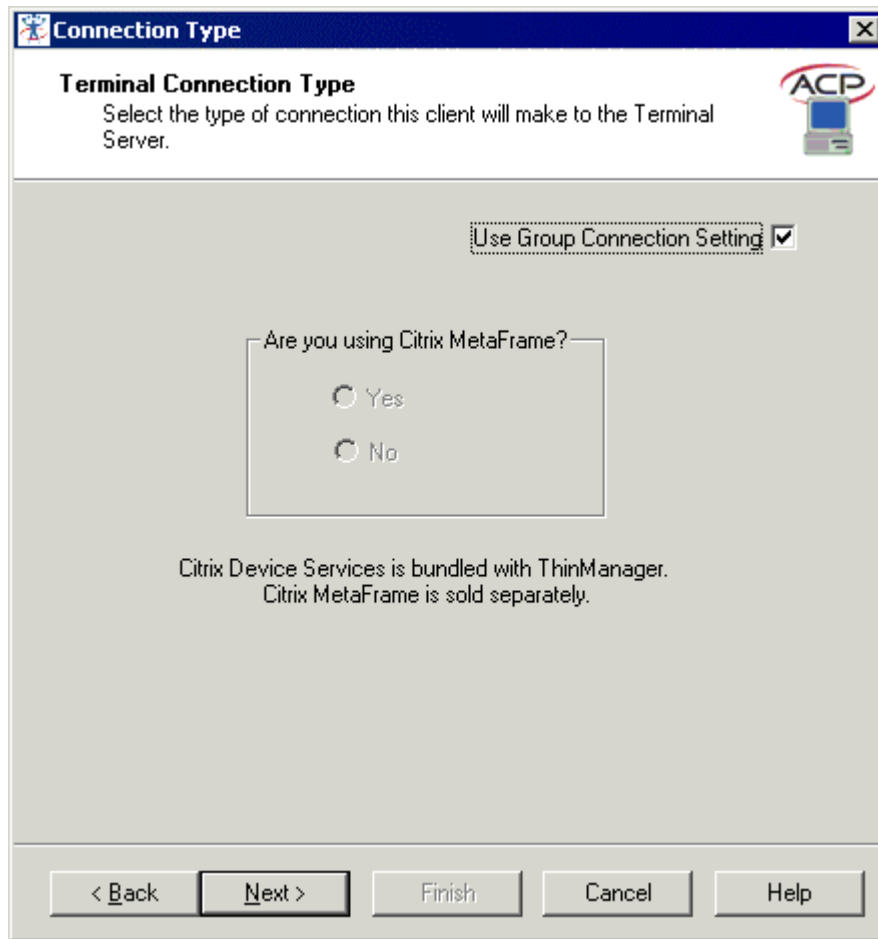
< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Hardware Configuration

Select the make and model of the ACP Enabled Thin Client from the drop-down boxes. These parameters are from the Terminal Capability database (TermCap data base) as described in [Install New TermCap Database](#).

If you do not know what model it will be, leave the default. When a terminal is connected and receives this configuration, ThinManager will update the configuration to match the actual settings.

Terminal Connection Type



Terminal Configuration Wizard – Connection Type

Thin clients use a communication protocol to connect to the Terminal Servers. The Citrix ICA protocol can be provided by the Citrix Device Services that is included with ThinManager, or by Citrix MetaFrame that is sold as a separate product. Select whether you are using MetaFrame and select the **Next** button.

If you choose **No**, the next dialog will allow the selection of Terminal Servers as shown in Terminal Server Selection

If you choose **Yes**, for using the MetaFrame purchased separately, the next dialog will allow the configuration of Citrix MetaFrame properties as shown in Citrix MetaFrame Configuration.

Citrix Metaframe Configuration
Choose the settings for Citrix Metaframe.

Use Group Encryption Setting ☒

Encryption

Basic

Are you using Published Applications?

☒ Yes

☐ No

< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Citrix MetaFrame Configuration

Citrix MetaFrame allows increased encryption in the ICA protocol. Select a level from the Encryption drop-down box.

Citrix MetaFrame has a feature called Published Applications. If you are using Published Applications, select the **Yes** radio button, then select the **Next** button to continue to the Citrix Published Application dialog.

If you are not using Published Applications, select the **No** radio button, then select the **Next** button to continue to the Terminal Server Selection dialog.

Citrix Published Applications

Enter the published application this terminal should run. Enter the ICA browser if necessary to help the terminal find the published application.

☒ Use Group Published Application Setting

Published Application Name

Desktop-Shipping

☒ Use Group ICA Browser Setting

ICA Browser

192.168.1.10

< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Citrix Published Applications

Enter the name of the desired Published Applications in the **Published Applications** field. Do not use spaces in the name when creating a Published Application for Terminal Services.

Citrix MetaFrame uses ICA Browsers as part of the system. Because the ICA client may have problems detecting an ICA browser across a router or switch, The **ICA Browser** field is provided for entering the name of an ICA browser.

Select the **Finish** button to create the Group, or select the **Next** button to configure more options.

Terminal Server Selection

The screenshot shows a Windows-style dialog box titled "Terminal Server Selection". The title bar includes a standard Windows icon, the text "Terminal Server Selection", and a close button (X). The main area of the window has a white background. At the top, the title "Terminal Server Selection" is repeated, followed by the instruction "Select the Terminal Servers to which this client can connect." In the top right corner, there is an "ACP" logo featuring a computer monitor and the letters "ACP". Below the instruction, there are two columns of server lists. The left column is titled "Available Terminal Servers" and contains two entries: "ACP-Office01 (192.168.1.32)" and "Snapfinger (192.168.1.36)". The right column is titled "Selected Terminal Servers" and contains two entries: "ACP01 (192.168.1.31)" and "ACP03 (192.168.1.33)". Between the two lists are two arrow buttons: a right-pointing arrow and a left-pointing arrow. To the right of the "Selected Terminal Servers" list are two more arrow buttons: an up-pointing arrow and a down-pointing arrow. Below the "Available Terminal Servers" list is a button labeled "Edit Server List". Below the server lists, there is a paragraph of text: "The thin clients will connect to the servers in the order that they are listed, with the top server as the Primary Terminal Server." Below this text are two checkboxes. The first is labeled "Use Group Terminal Servers" and is checked. The second is labeled "Use Group Setting for Enforce Primary" and is also checked. Below the second checkbox is a third checkbox labeled "Enforce Primary Terminal Server Connection", which is unchecked. At the bottom of the window, there is a row of five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

Terminal Server Selection
Select the Terminal Servers to which this client can connect.

Available Terminal Servers

- ACP-Office01 (192.168.1.32)
- Snapfinger (192.168.1.36)

Selected Terminal Servers

- ACP01 (192.168.1.31)
- ACP03 (192.168.1.33)

Edit Server List

The thin clients will connect to the servers in the order that they are listed, with the top server as the Primary Terminal Server.

☒ Use Group Terminal Servers

☒ Use Group Setting for Enforce Primary

☐ Enforce Primary Terminal Server Connection

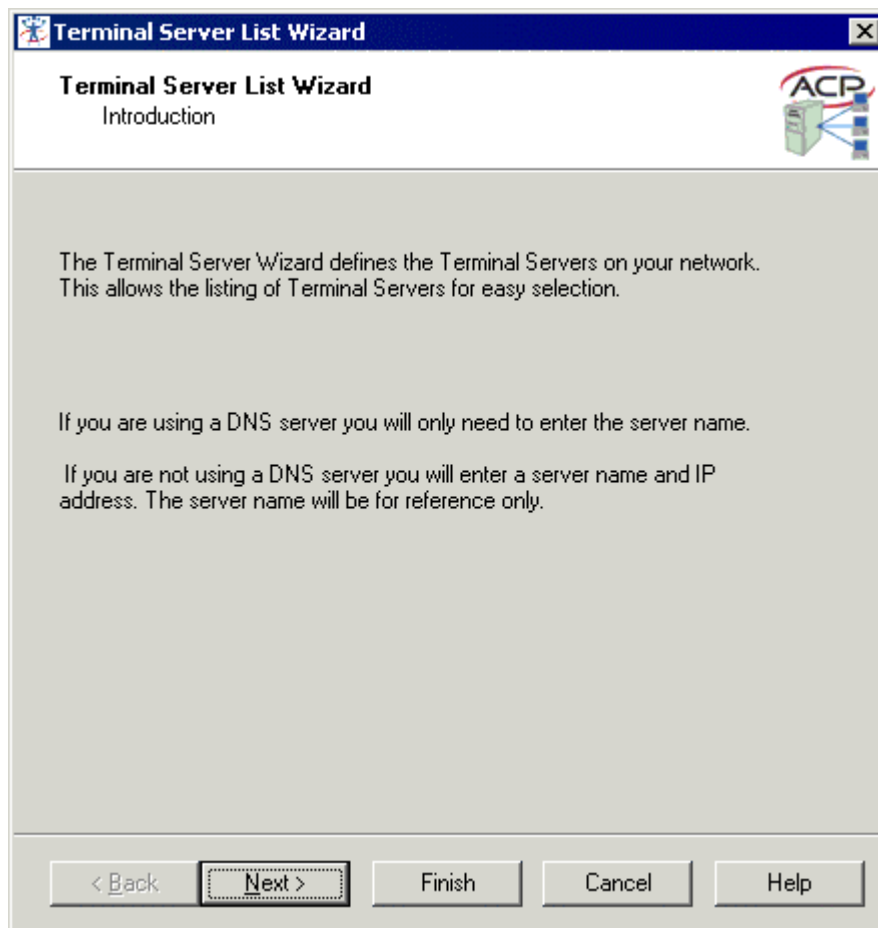
< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Terminal Server Selection

If Published Applications are not being used, the terminal will need to be assigned to a **Terminal Server**. The Terminal Server is a server that allows the terminals to logon and run the applications in independent sessions.

Select the **Edit Server List** button to launch the **Terminal Server List Wizard**.

Terminal Server List Wizard



Terminal Server List Wizard - Introduction

The Terminal Server List Wizard allows each Microsoft Terminal Server to be listed for easy selection during terminal configuration.

Select **Next** to continue.



Terminal Server List Wizard – Available Terminal Server List

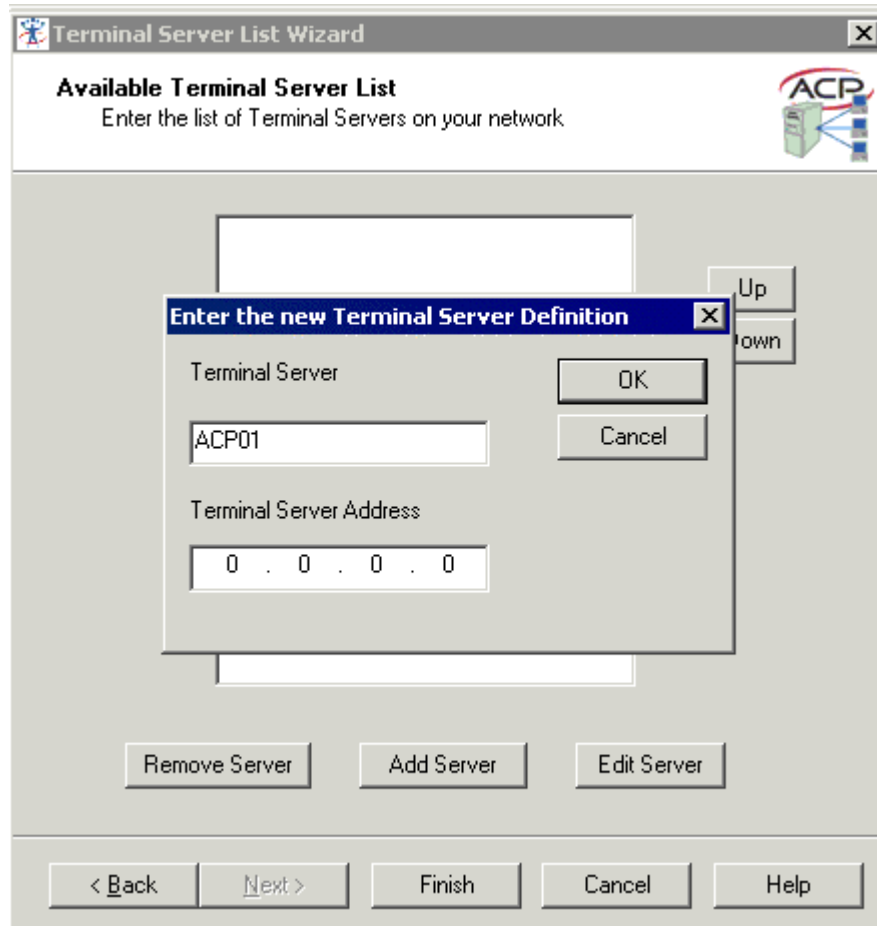
The **Available Terminal Server List** allows the identification all of the Terminal Servers on the network.

Remove Server clears a highlighted Terminal Server from the list.

Add Server will launch a window that allows the entry of the Terminal Server name and IP address as shown next.

Edit Server will launch a window that allows the change of the Terminal Server name and IP address.

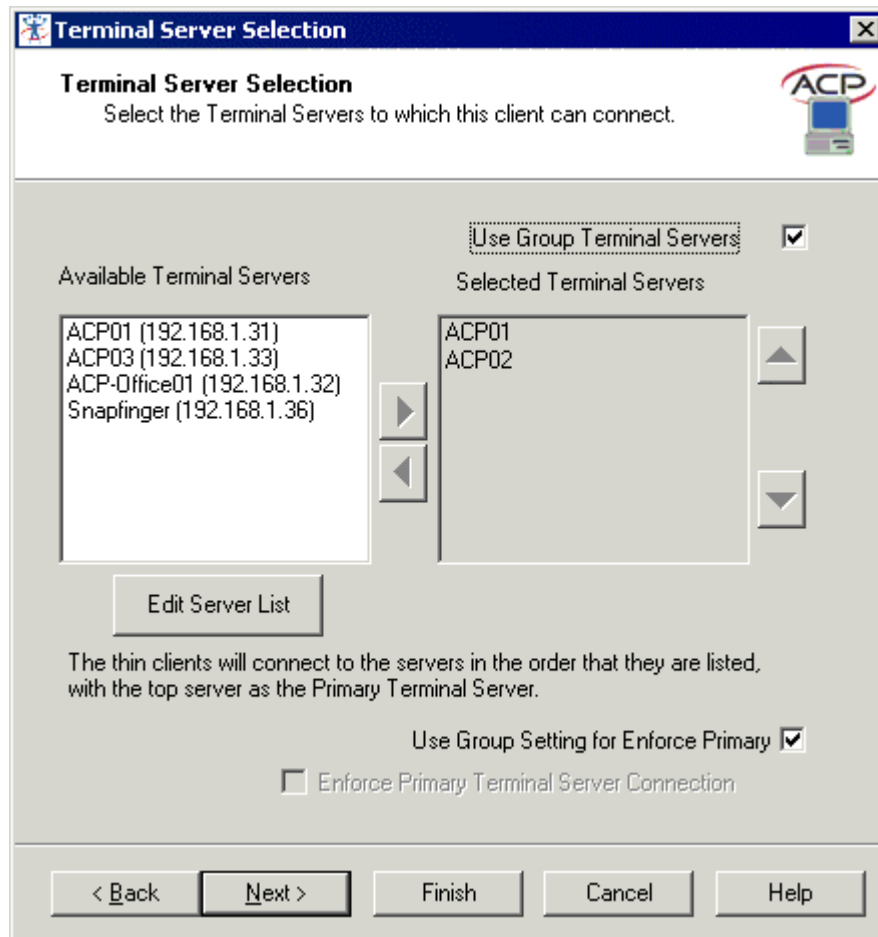
Select the **Add Server** button to define the terminal servers.



Terminal Server List Wizard – Add New Terminal Server

Add Server will launch a window that allows the entry of the Terminal Server name and IP address. This allows the terminal servers to be tied to a convenient name without the need of a DNS server. Type the name associated with the terminal server in the Terminal Server field, add the IP address in the Terminal Server Address field, and select **OK**. This adds the terminal server to the Terminal Server list.

Select **Finish** to close the Terminal Server List wizard and return to the Terminal Wizard.



Terminal Configuration Wizard – Terminal Server Selection

Each Terminal Server that was identified in the Terminal Server List Wizard will initially appear in the **Available Terminal Server** box on the left.

To have the terminal use a Terminal Server, highlight it in the list on the left and click the **right arrow button**. This will put the Terminal Server into the **Selected Terminal Server list** on the right. The terminal will use all the Selected Terminal Servers as Terminal Servers that it can login to.

The Terminal Server on the top of the Selected Terminal Server List will be the **Primary Terminal Server**, the first Terminal Server that the terminal will attempt to login to. To change the order of the Terminal Servers in the list, highlight a Terminal Server and use the **Up arrow** button and the **Down arrow** button to move it up or down in the list.

The **Enforce Primary Terminal Server Connection** will cause a terminal to return to the primary terminal server whenever that terminal server is available.

Select the **Next** button to continue configuration or select the **Finish** button to complete the terminal configuration.

Terminal Login Configuration

Login Information

Enter the login information if the client is to login automatically. Leave the login information blank or fill only some of the fields to force manual login.

Login Information

Username

Password

Domain

Initial Program

Designating an initial program will launch that program after the session is created. Closing this program will end the session. Leave this blank to launch the normal Windows desktop.

Use Group Initial Program ☒

< Back Next > Finish Cancel Help

Terminal Configuration Wizard –Terminal Login Configuration

Note: It is recommended that each terminal should login to a Terminal Server with a unique profile.

If the **Username**, **Password**, and **Domain** fields are filled with a valid Microsoft user account, ThinManager will pass this information to the Microsoft Terminal Server when the ACP Enabled Thin Client connects, letting the terminal login automatically.

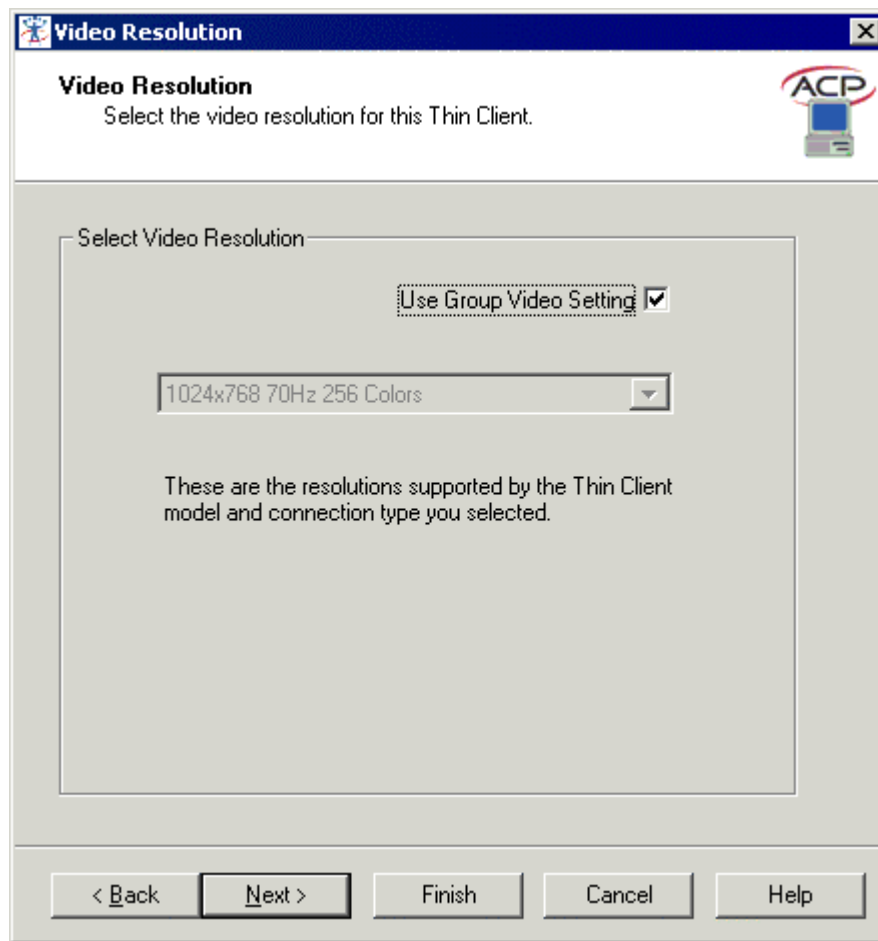
If the **Username**, **Password**, and **Domain** fields are left blank, or are filled with invalid data, the Microsoft Windows login window will be presented on the terminal and the user will need to login manually.

The **Initial Program** loads the entered program instead of the Windows desktop when the terminal connects to the Terminal Server. If the user closes the Initial Program on the terminal, the session on the Terminal Server will end and the ACP Enabled Thin Client will reconnect to the Terminal Server and re-launch the Initial Program. This effectively makes the Initial Program the only program.

To use the Initial Program, enter the path to the program in the Initial Program field.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Terminal configuration.

Terminal Video Configuration



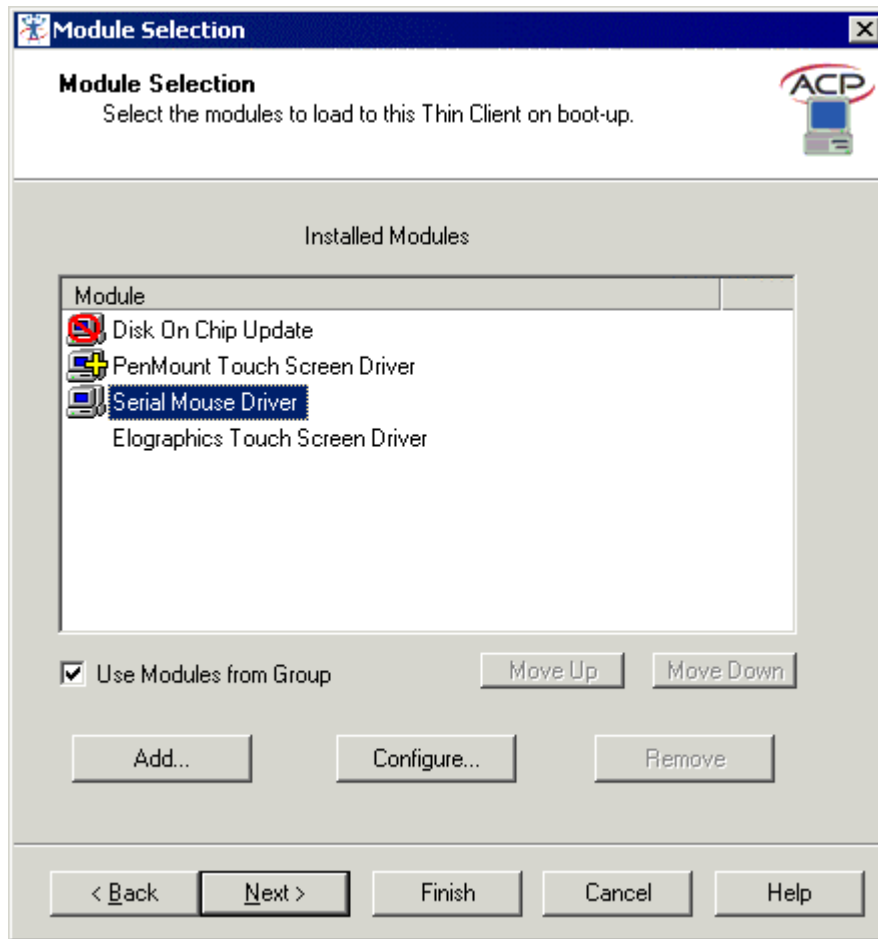
Terminal Configuration Wizard – Video Configuration

The **Video Resolution Configuration** has a drop-down box that allows the video resolution to be set for the terminal.

The standard terminal connection uses a 256-color depth. The 64K-color depth is available by using Citrix MetaFrame 1.8 FR1, or greater.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Terminal configuration.




Terminal Module Configuration



Terminal Configuration Wizard – Module Selection

A **Module** is a component of the ACP Enabled Thin client operating system that is not needed for the basic functionality, but may be desired for advanced functionality. These features include Touch Screen drivers, serial mouse drivers, High Speed Serial drivers, Shared Keyboard and Mouse, and Instant Failover.

There are four icons that can be used for modules in the Terminal Properties.

1.  represents properties assigned by the Group.
2.  represents properties that are changed on the terminal from the Group settings.
3.  represents a terminal that isn't using an assigned Group module. The "Use Modules from Group" checkbox was un-selected.
4. No icon indicates that the module was added to the terminal and not the group.

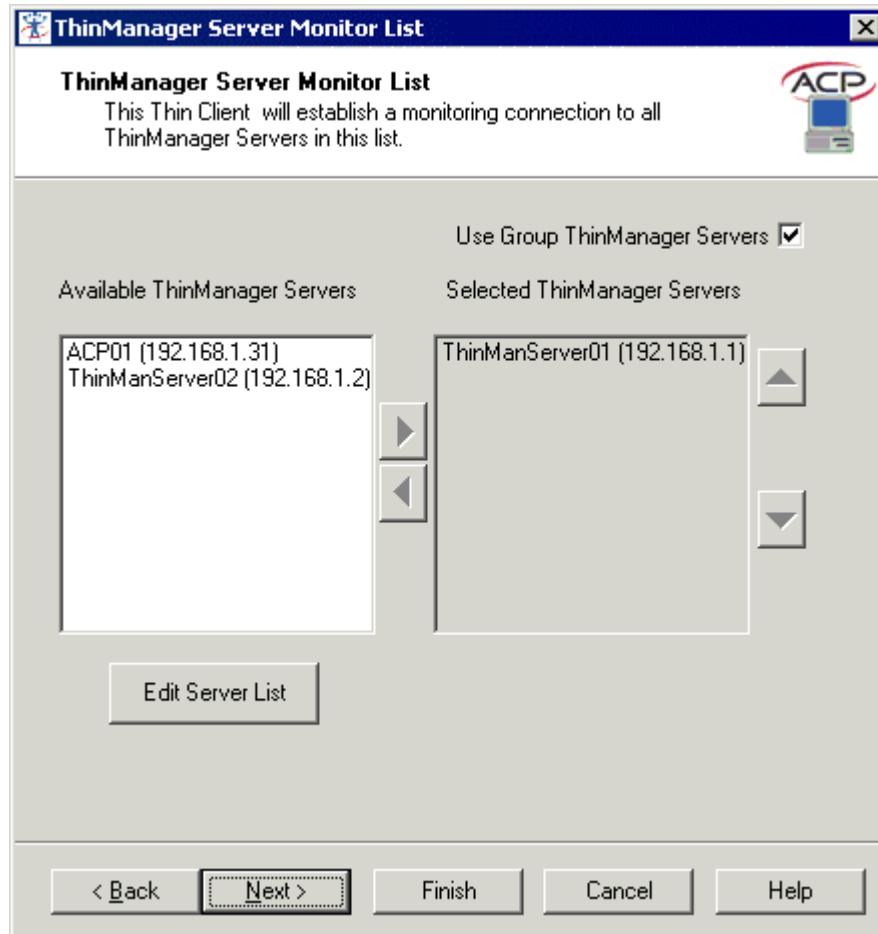
To add a Module to a Terminal, select the **Add...** button and select the Module from the list.

To remove a Group Module, uncheck the **Use Group Properties** checkbox. This will put the red circle on the icon as an indicator.

Highlighting the module and selecting the **Configure** button can change some module parameters. Select the parameter to change, select the new value in the drop-down list and click the **Set** button. A yellow plus sign will be displayed on the icon as an indicator.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Terminal configuration.

ThinManager Server Monitor List



Terminal Configuration Wizard – ThinManager Server Monitor List

The **ThinManager Server Monitor List** defines what Thin Manager Servers the terminal will communicate with to keep monitoring light status current.

Select the **Edit Server List** button to launch the ThinManager Server List Wizard as shown in Terminal.

Select the **Next** button to continue configuration or select the **Finish** button to complete the Terminal configuration.

Terminal Monitoring Configuration

Monitoring Configuration

Select the setting for how often the monitoring data is requested by ThinManager Server.

Use Group Monitoring Setting ☒

Monitor Interval

☒ Fast
☐ Medium
☐ Slow
☐ Custom

Monitor Interval: 5 Seconds
Monitor Timeout: 1 Seconds
Monitor Retry: 3
Primary Up Delay Multiplier: 6
Primary Up Delay: 30 Seconds

< Back Next > Finish Cancel Help

Terminal Configuration Wizard – Monitoring Configuration

ACP Enabled Thin Clients continuously monitor the Terminal Server to make sure that it stays online. If the terminal server goes offline, the terminal will disconnect and connect to the next Terminal Server that it was assigned to in the Terminal Server Selection as shown in Terminal Server Selection. The Monitoring Connection sets the frequency that the monitor occurs.

Use the **Monitor Interval** radio buttons to use a default frequency or select Custom and choose a setting of your own.

Monitor Interval is the interval that the monitor checks occur.

Monitor Timeout is the time the terminal will wait for a response from the terminal server.

Monitor Retry is the number of times the monitor check will be tried.

Primary Up Delay Multiplier is the number that generates the Primary Up Delay time.

Primary Up Delay is a delay added (usually 30 to 60 seconds) to allow a Terminal Server to get fully booted before the terminal will try to login. This time period is equal to the Monitoring Interval times the Primary Up Delay Multiplier.

A fast setting of the Monitor Connection will detect Terminal Server failure quickly. However, the faster the setting is, the more sensitive it is and it may drop the Terminal Server when it was busy and not offline. Setting the Monitoring Connection to a slower setting gives the Terminal Server more time to respond when it is busy.

Select the ***Finish*** button to complete the terminal configuration.

Classic Mode of Group Configuration

The Classic Mode is the method of creating and configuring Groups and Terminals that was introduced in ThinManager 1.0. This method uses Property Tabs instead of a Wizard. The two modes are interchangeable.

Note: ThinManager uses the Classic Mode when **View>Use Wizards** is unselected.

The use of Groups provides several advantages.

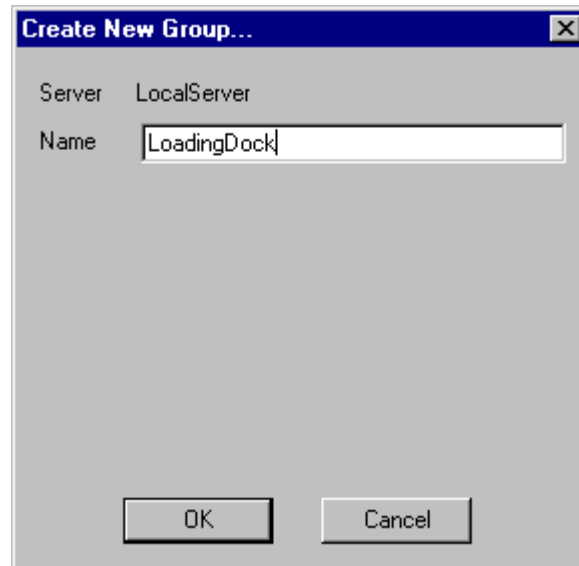
- Groups help organize the ThinManager Tree and allow the terminals to use less space when the Groups are collapsed.
- Terminals added to a Group receive the Group configuration, speeding up configuration and deployment.

Adding Groups

To add a new group either:

- Select **Edit>Add Group** from the **ThinManager** menu bar.
- Right-click a ThinManager Server icon in the **ThinManager** tree window and select **Add Group**.

This will launch the **Create New Group** dialog box.

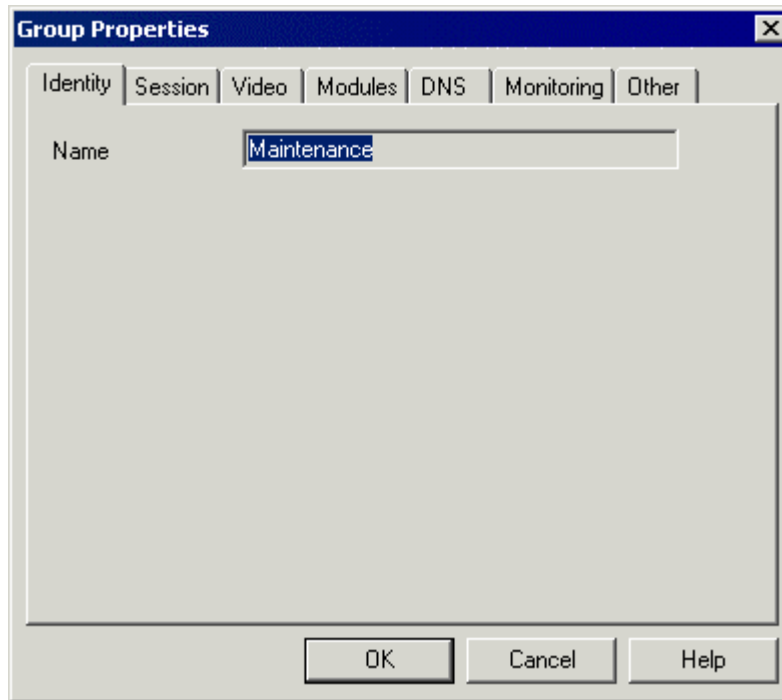


Classic Mode – Add New Group

Type the chosen name for the group in the **Name** field in the **Create New Group** dialog box. Select **OK** to continue. This will launch the **Group Properties** dialog box.

Group Identity

When a new group is created, the **Identity** tab of the **Group Properties** dialog box will be displayed.



Classic Mode – Group Identity Tab

The **Identity** tab of the **Group Properties** dialog box contains the name of the group.

The next step in defining a group is to assign it to a **Windows Terminal Server**. This is done on the **Session** tab.

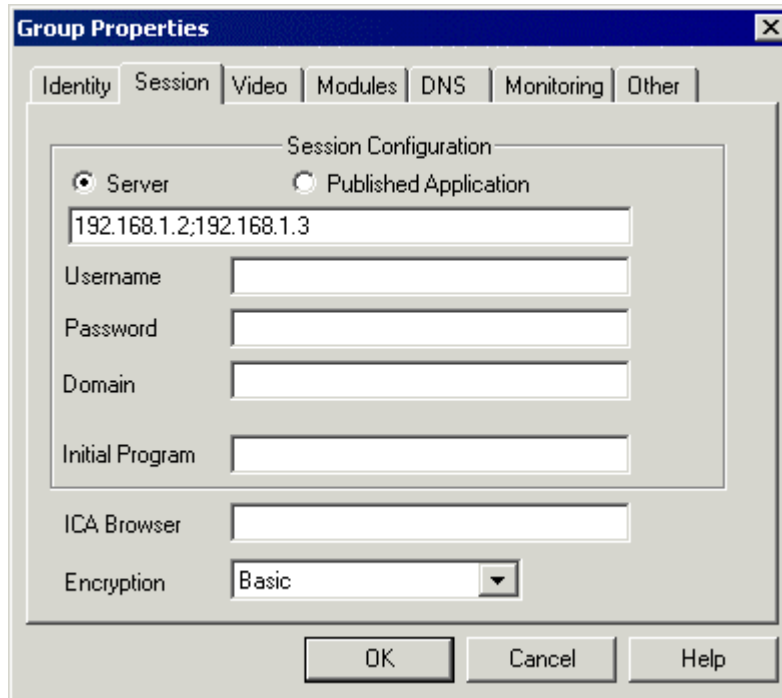
Select the **Session** tab to continue.

Note: A change or modification of group properties will affect terminals after they reboot.

Group Session

The **Session** tab of the **Group Properties** dialog box contains the field for the IP address for the Terminal Server. The Group can be assigned to multiple terminal servers to provide backup terminal servers for failover by listing several terminal server IP addresses, separated by a semi-colon (;).

Note: The Classic Mode requires the use of IP Addresses, not names, unless one is using a DNS server.



Classic Mode – Group Session Tab

Select the **Server** radio button and enter the IP address (or DNS names if using DNS) of the desired **Windows NT/2000 Terminal Server** that the terminal is to connect to. One instance of ThinManager Server can manage the connection of thin clients to a number of terminal servers by assigning different groups or terminals to different terminal servers.

Failover is enabled by listing the IP addresses of the terminal servers, in order of preference, separated by semi-colons (spaces are optional). See “Failover Overview” on page 20 for details.

- **Published Application** is an advanced function for Citrix MetaFrame users.
- Filling in the **Username** and **Password** fields will assign the same Windows NT User Profile to the entire group.

Note: It is recommended that the Username and Password be left blank in the Group Properties and assigned individually in the Terminal Properties so that each user will login with a unique username.

- The **Domain** field assigns the terminal to a Windows domain.
- The **Initial Program** field is a security feature. If the path to an executable file is entered into the **Initial Program** field, only the specific program will launch upon boot. If the initial program is closed, the ICA connection will close and reconnect with the initial program running again. This tool is useful for enforcing an operation of a single program, such as an HMI or SCADA program.
- To start several initial programs that would allow closure or the running of other programs, use the Startup folder in Windows. Closing a program launched from Startup will not close and reconnect the session.
- The **ICA Browser** field is a back-up function for Citrix MetaFrame users. If the terminal is unable to browse the ICA network (find the server), the ICA Browser field can specify a server IP address. This might be used with server farms or published

applications are across a switch or a router. See your **Citrix** documentation for help with server farms and published applications.

- The **Encryption** drop-down box allows Citrix MetaFrame users to configure SecureICA encryption.

Note: Each of these settings can be changed for individual terminals in the Terminal Properties.

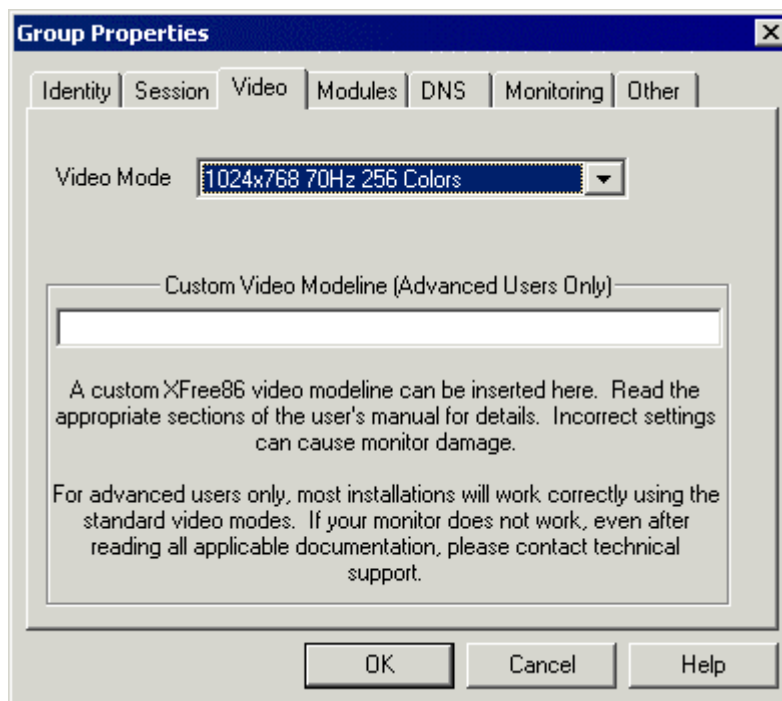
OK will accept the changes and close the dialog box when selected.

Cancel will cancel the addition or change of the group when selected.

Help will launch ThinManager Help when selected.

Group Video

The **Video** tab of the **Group Properties** dialog box contains the settings for the video properties.



Classic Mode – Group Video Tab

- **Video Mode** is a drop-down box that allows you to select a video resolution for the group. Standard thin client connections use the 256-color resolution. To use the 64K color depth one must use Citrix MetaFrame 1.8, Feature Release 1 or greater.
- **Custom Video Modelines** is a field for scripts that provide support for certain non-standard monitors. If the standard video modelines do not work, please contact your technical support for assistance with this feature.

Note: Each of these settings can be changed for individual terminals in the Terminal Properties.

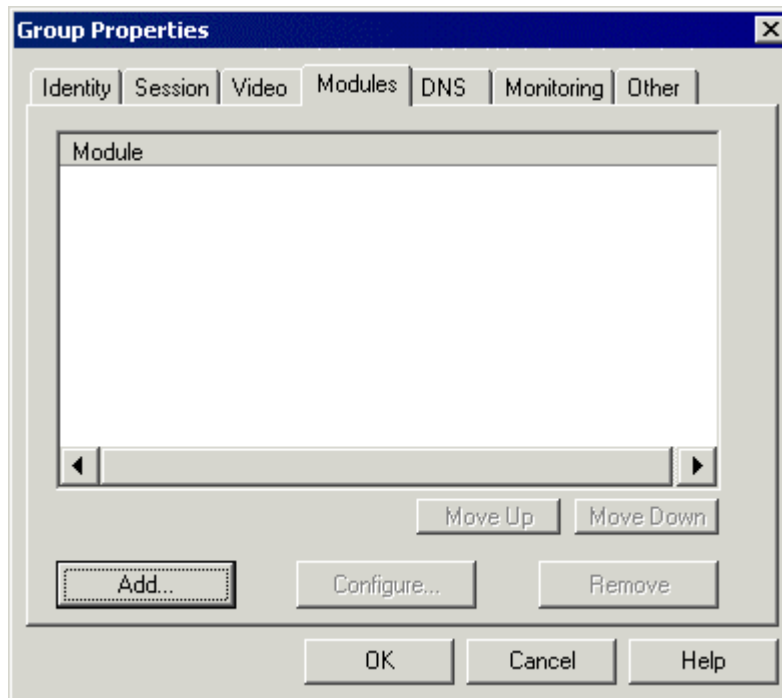
OK will accept the changes and close the dialog box when selected.

Cancel will cancel the addition or change of the group when selected.

Help will launch ThinManager Help when selected.

Group Modules

The **Modules** tab of the **Group Properties** dialog box contains the settings for adding modules. Modules are software components that can be added to the firmware to increase the functionality of the terminal. Modules include touch screen drivers, sound drivers, and special device drivers. Some modules are included with ThinManager and are registered automatically during ThinManager installation. Other modules are obtained separately from Automation Control Products and need to be installed.



Classic Mode – Group Modules Tab

Selecting the **Add...** button will launch an Attach Modules window.

Selecting **OK** will accept the changes and close the dialog box.

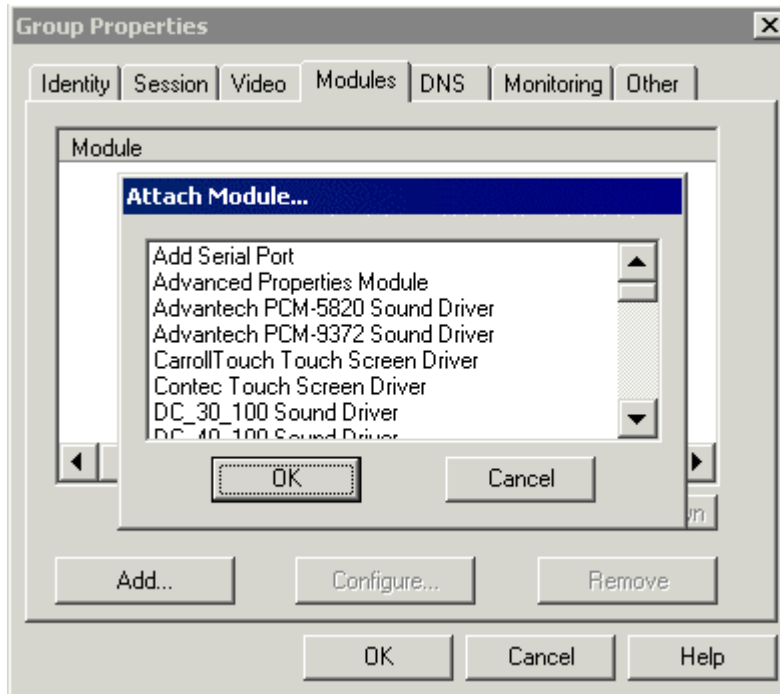
Selecting **Cancel** will cancel the addition or change of the group.

Selecting **Help** will launch ThinManager Help.

See “**Error! Reference source not found.**” on page **Error! Bookmark not defined.** for more details on modules

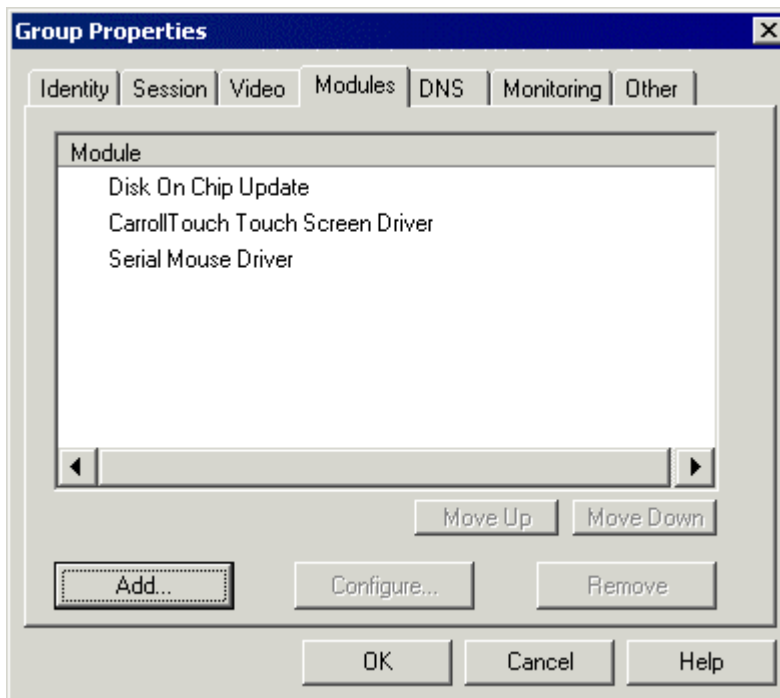
Attaching a Module

Modules are attached from the Modules tab of the Group Properties by selecting the **Add...** button. This will launch an **Attach Module** dialog box.



Attach Group Module

This shows all the registered modules. Highlight the desired module and select OK. This module will be added to the list on the Module tab and load on the next terminal reboot.

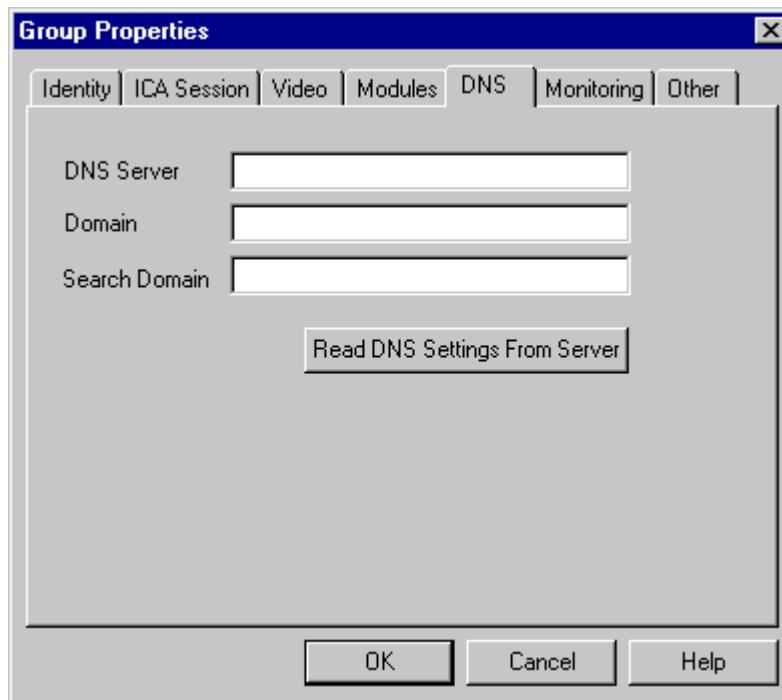


Group Modules

This shows a number of modules attached to members of the group. These modules will load when the terminal boots.

Group DNS

The **DNS** tab of the **Group Properties** dialog box contains settings for using a Domain Name System (DNS) server. This will allow the use of DNS names to identify computers.



Classic Mode – Group DNS Tab

- **DNS Server** is a field for the IP address of a DNS server.
- **Domain** is a field for the DNS domain name.
- **Search Domain** will add the contents of the field as a prefix to any DNS searches.
- The **Read DNS settings from server** button will load the DNS server settings from the ThinManager server into the **DNS Server** field.

Note: Each of these settings can be changed for individual terminals in the Terminal Properties.

OK will accept the changes and close the dialog box when selected.

Cancel will cancel the addition or change of the group when selected.

Help will launch ThinManager Help when selected.

Group Monitoring

The **Monitoring** tab of the **Group Properties** dialog box contains parameters related to Failover. An ACP Enabled thin client monitors the availability of its terminal server, and will disconnect the session if the server is down. These parameters are configurable.

Group Properties

Identity Session Video Modules DNS **Monitoring** Other

Monitor Interval: 5 secs

Monitor Timeout: 1 secs

Monitor Retry: 3

Enforce Primary: NO

Primary Up Delay: 6 30 secs

ThinServer: 192.168.1.2

OK Cancel Help

Classic Mode – Group Monitoring Tab

Note: The Wizard Mode allows custom settings as well as a Fast, Medium and Slow rate. The Classic Mode only uses custom settings.

- **Monitor Interval** sets the frequency that the terminal checks to see if the terminal server is connected.

Note: Setting this value low will provide a quick detection of server failure. Setting it too low may end the ICA connection due to high network traffic or a short network interruption instead of a server failure.

- **Monitor Timeout** sets the amount of time that the terminal will wait until retrying the server connection.
- **Monitor Retry** sets the number of times that the terminal will retry the server before disconnecting the server connection.
- The **Enforce Primary** field affects the return of a terminal back to its originally assigned terminal server. If **Yes** is selected, a terminal that has failed over to a secondary server will reconnect to the primary server once it returns online. If **No** is selected, a terminal that has failed over to a secondary server will remain connected to the secondary server, even when the primary server returns online.
- **Primary Up Delay** is the number of seconds the terminal will wait to reconnect to the primary after it has detected it. This is included because the terminal can detect the primary before the primary is available for session connections.
- The **# secs** field is the interval of time between when the primary terminal server returns online and when terminals will switch back to it with **Enforce Primary**. Its value equal to the **Monitor Interval** times the **Primary Up Delay**. This value should be at least 30 seconds

- The **ThinServer** field allows affects the monitoring lights on multiple ThinManager Servers. Any ThinManager Server in this field will monitor the status of the terminals to update the monitoring lights on the ThinManager tree.

Note: Each of these settings can be changed for individual terminals in the Terminal Properties.

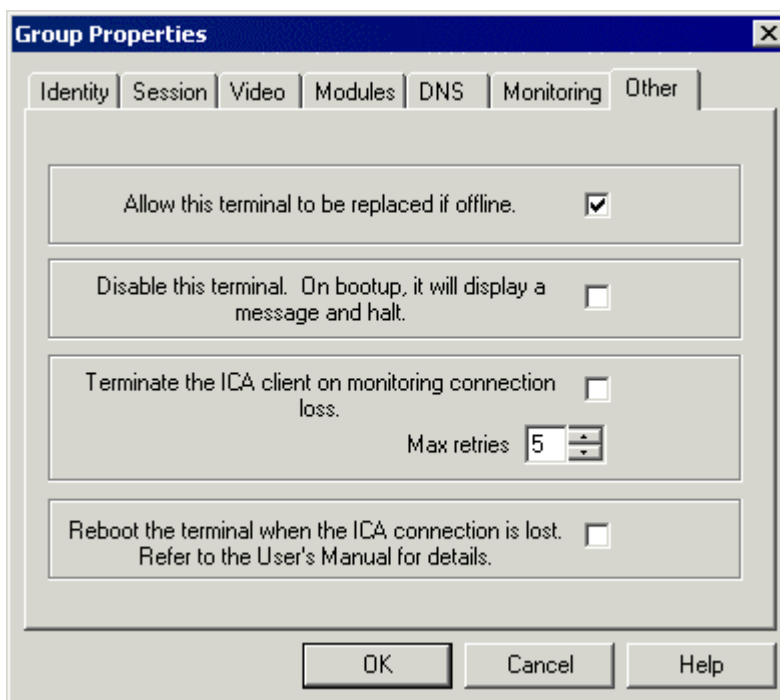
OK will accept the changes and close the dialog box when selected.

Cancel will cancel the addition or change of the group when selected.

Help will launch ThinManager Help when selected.

Other Group Properties

The **Other** tab of the **Group Properties** dialog box contains miscellaneous settings.



Classic Mode – Group Other Tab

- **Allow this terminal to be replaced if offline** allows a terminal to be replaced quickly in case of failure.

Note: There is a global *Enable Replacement* on the Server Properties dialog box.

- **Disable this terminal. On bootup, it will display a message and halt** is a quick way to disable access to a terminal. To disable a group of terminals, select this box and reboot the group (see “Rebooting a Group” on page 114. This will disable the terminals and deny access to a session. It does not end the sessions; it just prevents access to them. Clearing the check box will allow a disabled boot to proceed.
- **Terminate the ICA client on monitoring connection loss:** is a legacy command. It will terminate the ICA connection if the connection to the ThinManager Server is lost.

This check box relates to the client/ThinManager Server connection and not the client/terminal server connection. It is not used with the current failover method.

- **Reboot the terminal when the ICA connection is lost** is a legacy command. When selected, the terminal will reboot each time the ICA connection is lost. This can interfere with failover because failover does not require a reboot. Some network configurations may use this when the DHCP Server is the same machine as the terminal server.

Note: Each of these settings can be changed for individual terminals in the Terminal Properties.

OK will accept the changes and close the dialog box when selected.

Cancel will cancel the addition or change of the group when selected.

Help will launch ThinManager Help when selected.

Modifying Groups

Modifying makes changes to group configuration such as touch screen usage, video resolution, or to designated servers.

To modify a group either:

- Highlight the group in the **ThinManager** tree by clicking on the group name or icon and select Edit...Modify from the **ThinManager** menu bar.
- Right-click on the group icon in the **ThinManager** tree and select Modify.
- Double-click on a group icon in the **ThinManager** tree.

The **Group Properties** window will launch.

You can modify the group by:

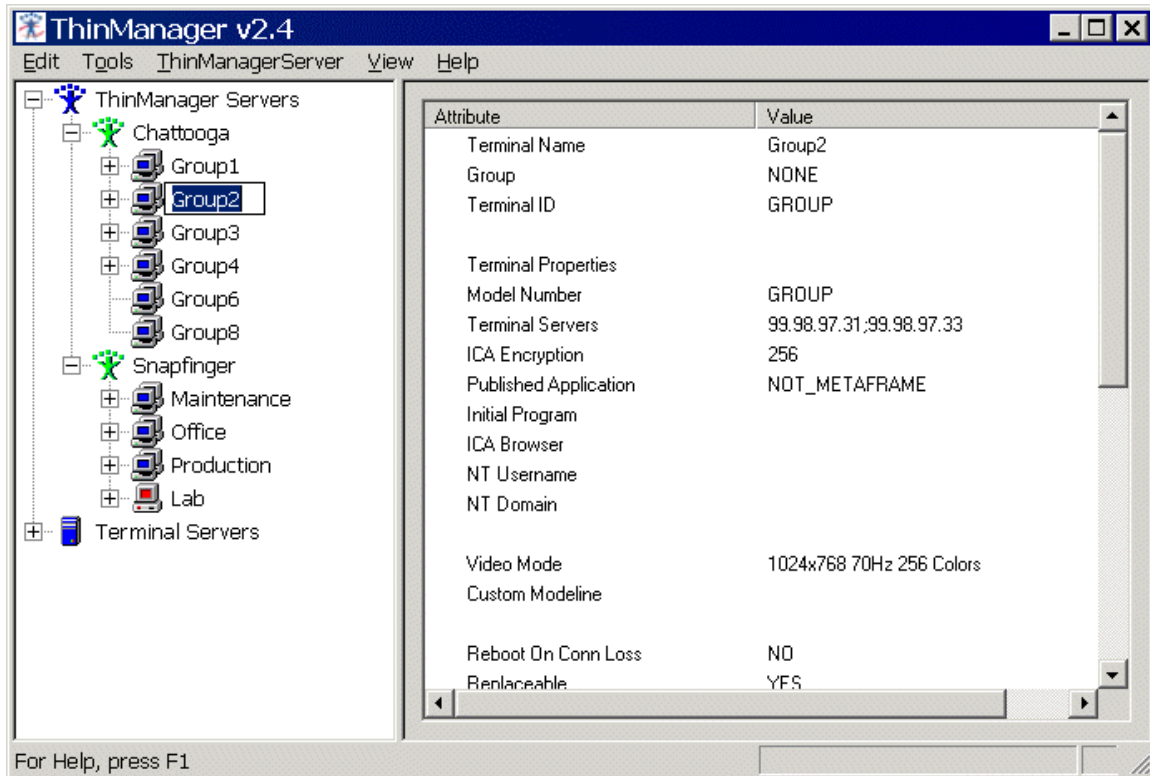
- Changing the server on the **Sessions** tab.
- Changing a group username and password on the **Sessions** tab
- Changing the terminal video configuration on the **Video** tab.
- Adding or removing modules on the **Module** tab.
- Changing the DNS and domain settings on the **DNS** tab.
- Changing the monitoring frequencies on the **Monitoring** tab.
- Changing the reboot options on the **Other** tab.

Make the modifications desired and select **OK** to close the Group Properties box.

Renaming a Group

Renaming groups is accomplished by either :

- Highlighting the Group and selecting **Edit>Rename**
- Right-clicking the Group and selecting **Rename**
- The same way that files or directories are renamed in **Windows Explorer**. Single-click twice on the group name. This will draw a box around the name and highlight it. Type in the new group name.



Renaming a Group

Tip on single clicking twice: Click once to highlight the name, move the mouse slightly and click again. This will prevent Windows from confusing the two single clicks with a double click.

Deleting a Group

A group can be deleted from the **ThinManager Server** by:

- Highlighting the group in the **ThinManager** tree pane and selecting **Edit...Delete** from the ThinManager menu bar.
- Highlighting the group in the **ThinManager** tree pane pressing the **Delete** key.
- Right-clicking a group icon in the tree pane of **ThinManager** and selecting **Delete Group**.

When a group is deleted, the option is given to delete all the group's terminals or to move the terminals under the server without a group.

Rebooting a Group

A group can be rebooted by:

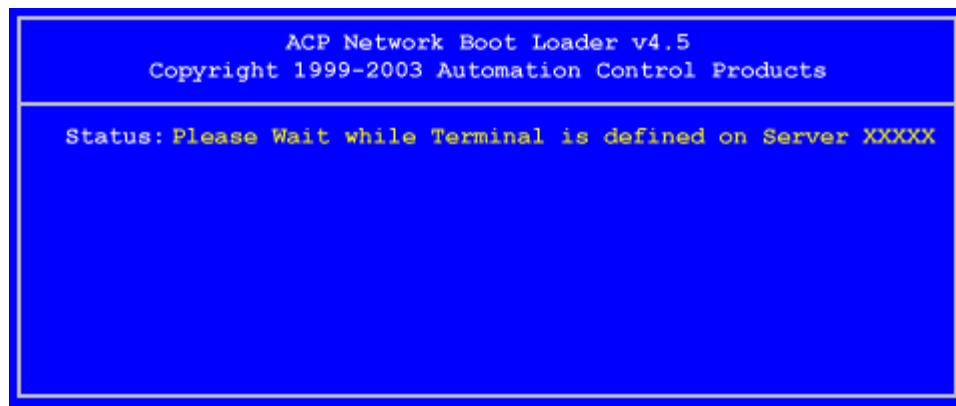
- Highlight a group in the tree pane of ThinManager. Select **Tools>Reboot Terminals** from the **ThinManager** menu bar. This will reboot all the terminals in the highlighted group. This will reboot all the terminals in all the groups on the server if the server is highlighted when you selected **Tools>Reboot Terminals**.
- Right-clicking a group icon in the tree pane of ThinManager and selecting **Reboot Terminals**. This will reboot all the terminals in the group.

Create New Terminal in Classic Mode

A new terminal can be created with the **Create New Terminal** Dialog Box. This can be opened by:

- Selecting **Edit>Add Terminal** from the ThinManager menu bar
- Or right-clicking a ThinManager Server or Group in the tree of the ThinManager Server and selecting **Add Terminal**.
- Turning on a terminal for the first time when no terminals defined in ThinManager
- Selecting Create New Terminal from the terminal selection list as shown in Replace or Create New Terminal Mode.

The thin client monitor will display the text "Please Wait While Terminal is Defined on Server". This server is the ThinManager server specified by the DHCP Boot Server Host Name or Static IP.



ACP Network Boot Screen – Wait for Definition

The Create New Terminal dialog box will be launched on the ThinManager server.

Create New Terminal...

Server: snapfinger

Name: TypeName

Term ID: AddUniqueID_LikeTheName

OEM: ACP

Model: DC-30-100

☐ Replace Terminal : B_White

☐ Copy Settings from Terminal : B_White

OK Cancel

Classic Mode – Create New Terminal

The terminal configurations include:

- The **Server** field This is automatically filled with the name of the ThinManager Server one is creating a terminal on.
- The **Name** field has a space for the name for the terminal. Type the desired name in this field, using letters, numbers, hyphens (-), and underscores (_) only.
- The **Term ID** or **Terminal Identifier** is a unique number, the MAC address of the network card of the terminal, that ThinManager inserts into the Term ID field uses to identify the terminal.
- If a terminal is being pre-created in Classic mode, any unique combination numbers can be used as a temporary placeholder if the MAC address is not known. Type the desired name in this field, using letters, numbers, hyphens (-), and underscores (_) only.

Note: The Terminal name is a good temporary Terminal ID. The Wizard mode automatically inserts a Terminal ID and does not require the manual entry of the Term ID.

- The **OEM** field has a drop down list of manufacturers who produce ACP Enabled thin clients. Select the manufacturer if you know it. If not, this will automatically fill with the appropriate model number from the TermCap database when the terminal is connected to the ThinManager Server. See “Install New TermCap Database” on page 40 for details on updating the TermCap database.
- The **Model** field has a drop-down list of model numbers for ACP Enabled thin clients. Select the model if you know it. If not, this will automatically fill with the appropriate model number from the TermCap database when the terminal is connected to the ThinManager Server. See “Install New TermCap Database” on page 40 for details on updating the TermCap database.

If a terminal is added after another terminal is defined, two additional fields will be shown.

- The **Replace Terminal** check box allows the terminal to replace an existing off-line terminal by inheriting its configuration.

Note: If this terminal is a replacement for a terminal that is already defined, see “Replace or Create New Terminal Mode” on page 65

- The **Copy Settings from Terminal** check box allows the new terminal to copy its settings from the terminal in the drop down list.

Fill in the fields and select **OK** to launch the Terminal Properties to continue with the terminal configuration.

Terminal Identity

The **Identity** tab of the **Terminal Properties** dialog box displays identifying parameters of the thin client.

The screenshot shows the 'Terminal Properties' dialog box with the 'Identity' tab selected. The fields are as follows:

Field	Value
Name	Boiler02
Terminal ID	Boiler02
Group	Production
OEM	Advantech
Model	IPPC-950
OEM Model	IPPC-950-ACP
Video Chipset	CT65555
Touch Type	PenMount

Classic Mode – Terminal Identity Tab

- The **Name** field contains the name that was assigned to the terminal in the creation step.
- **Terminal ID** is the Terminal Identifier. This field is the MAC address of the ACP Enabled terminal network card on terminals that have been or is a placeholder if the configuration hasn't been applied to a terminal.
- The **Group** field has a drop down box that allows the terminal to be added to a group. This will apply the group configuration to the terminal.

Note: It is recommended that groups be configured before adding individual terminals. See “Adding Groups” on page 104.

- The **OEM** field has a drop down list of manufacturers who produce ACP Enabled thin clients. Select the manufacturer if you know it. If not, this will automatically fill with the appropriate model number from the TermCap database when the terminal is connected to the ThinManager Server.
- The **Model** field has a drop-down list of model numbers for ACP Enabled thin clients. Select the model if you know it. If not, this will automatically fill with the appropriate model number from the TermCap database when the terminal is connected to the ThinManager Server.
- The **OEM Model** field shows the model number of the terminal, as detected by the ThinManager server.
- The **Video Chipset** field shows the type of the processor chipset of the terminal, as detected by the ThinManager server.
- The **Touch Type** field shows the type of touch screen if the terminal is an ACP Enabled thin client with an integrated touch screen,

Select the **Session** tab to continue configuration.

Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Terminal Session

The **Session** tab of the **Terminal Properties** dialog box is where a terminal is assigned to a **Windows NT/2000 Terminal Server** using the IP address of the Windows NT/2000 Terminal Server.

Note: The Wizard mode uses computer names, but the Classic mode only uses IP addresses unless a DNS is used.

When a terminal is assigned to a group, it is assigned the group settings. Any of these can be changed or modified by unselecting the **Use Group** check box and making a change to the desired value.

Terminal Properties

Identity Session Video Modules DNS Monitoring Other

Use Group

Session Configuration

☒ Server ☐ Published Application

192.168.1.2;192.168.1.3 ☒

Username Operator3 ☐

Password xxxxxxxxxxxx

Domain

Initial Program ☒

ICA Browser ☒

Encryption Basic ☒

OK Cancel Help

Classic Mode – Terminal Session Tab

Terminals that are not members of a group will not have the **Use Group** check boxes on the tabs and must have all of its parameters configured.

Terminal Properties

Identity Session Video Modules DNS Monitoring Other

Session Configuration

☒ Server ☐ Published Application

192.168.1.2;192.168.1.3

Username Operator3

Password xxxxxxxxxxxx

Domain

Initial Program

ICA Browser

Encryption Basic

OK Cancel Help

Classic Mode – Terminal Session Tab, Non-Group Member

Select the **Server** radio button and enter the IP address (or DNS names if DNS is used) of the desired **Windows NT/2000 Terminal Server** that the terminal is to connect to. One instance of

ThinManager can manage the connection of thin clients to a number of terminal servers by assigning different groups or terminals to different terminal servers.

Failover is enabled by listing the IP addresses of multiple Terminal Servers, in order of preference, separated by semi-colons (spaces are optional). See “Failover Overview” on page 20 for details.

Note: The Server field on the Session tab is the most important field in the Classic mode. Without correct data the terminal will not connect to the Terminal Server.

Published Application is an advanced function for Citrix MetaFrame users. Selecting the Published Application radio button and entering the name of a published application will allow the terminal to use Citrix Published Applications.

Note: The Published Application name must be continuous. It cannot have a space in its name.

The **Username** field allows a Windows NT/2000 User Profile to be assigned to provide an automatic logon at startup. Leaving this field blank will force a user to logon at each start.

The **Password** field submits the password for the User Profile in the Username field to allow automatic login at startup.

The **Domain** field assigns the terminal to a Windows domain.

The **Initial Program** field is a security enhancement. If the path to an executable file is entered into the **Initial Program** field, only the specific program will launch upon boot. If the initial program is closed, the terminal will end the connection to the terminal server and reconnect, with the initial program running. This tool is useful for enforcing an operation of a single program, such as an HMI or SCADA program.

To start an initial program that would allow closure and or the running of other programs, use the Startup folder in Windows.

The **ICA Browser** field is a back-up function for Citrix MetaFrame users. If the terminal is unable to browse the ICA network (find the server), the ICA Browser field can specify a server IP address. This might be used with server farms or published applications (which require Citrix MetaFrame). See your **Citrix** documentation for help with server farms and published applications.

The **Encryption** drop-down box allows Citrix MetaFrame users to configure SecureICA encryption.

Select the **Video** tab to continue configuration.

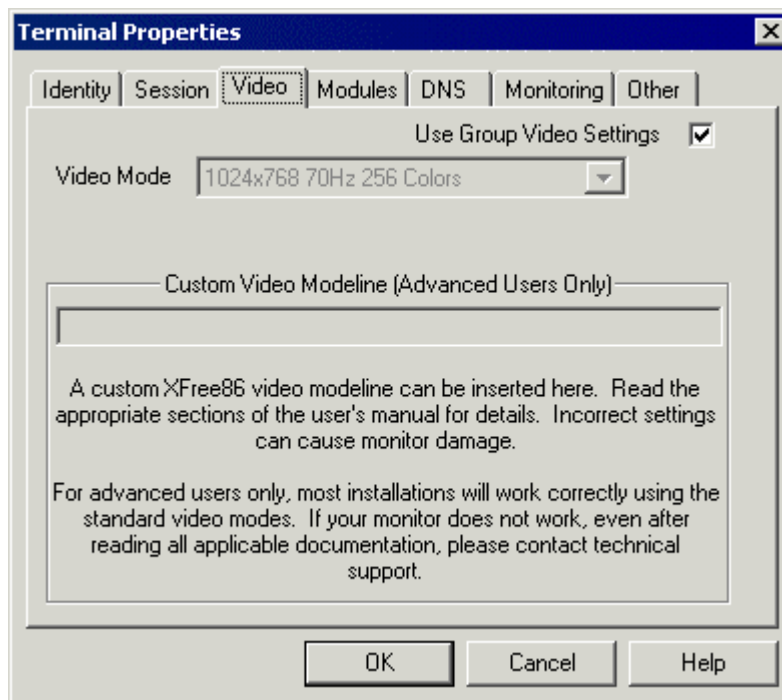
Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Terminal Video

The **Video** tab of the **Terminal Properties** dialog box contains the settings for the video properties. The **Use Group Video Settings** check box assigns the group properties to the terminal. Terminals that are not members of a group will not have this check box.



Classic Mode – Terminal Video Tab

- **Video Mode** is a drop-down box that allows you to select a video resolution for the group. Terminals use the 256-color depth by default. To use a higher color depth use Citrix MetaFrame 1.8 Feature Release 1, or greater.
- **Custom Video Modelines** is a field for scripts that provide support for certain non-standard monitors. If the standard video modelines do not work, please contact your technical support for assistance with this feature.

Note: A terminal that “blacks out” upon connection to the terminal server usually needs the refresh rate lowered.

Select the **Modules** tab to continue configuration.

Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

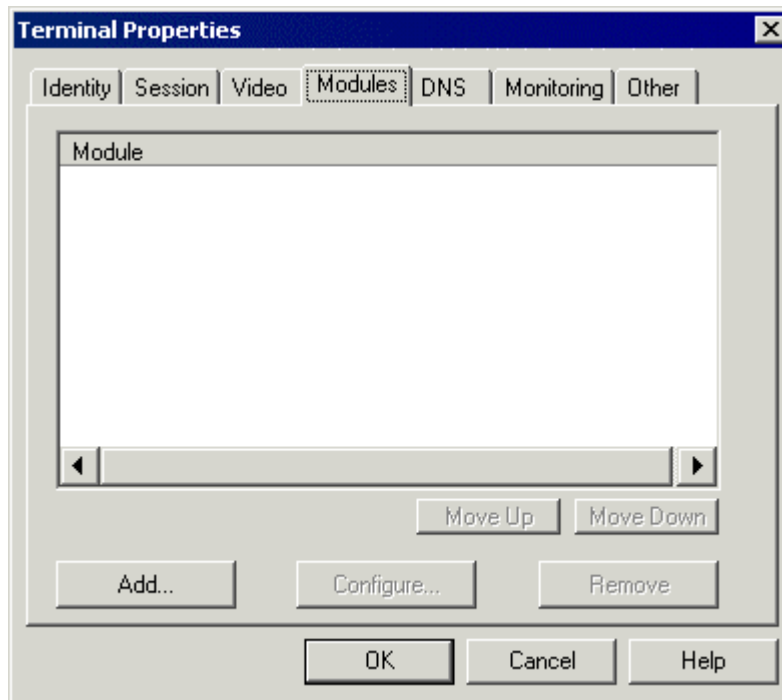
Select **Help** to launch ThinManager Help.

Terminal Modules

The **Modules** tab of the **Terminal Properties** dialog box contains the settings for adding modules. Modules are software components that can be added to the firmware to increase the functionality of the terminal. Modules include touch screen drivers, sound drivers, and special device drivers. Some modules are included with ThinManager and are registered automatically during ThinManager installation. Other modules are obtained separately from Automation Control Products and need to be installed.

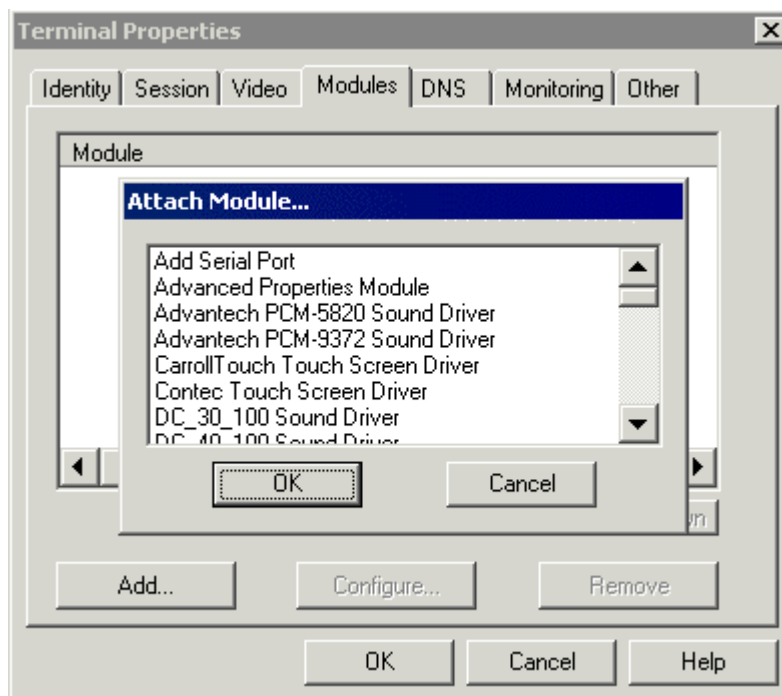
Attaching a Module

Modules are added from the **Modules** tab of the Terminal Properties.



Classic Mode – Terminal Module Tab

To attach a module, select the **Add** button on the **Module** tab. This will launch an **Attach Module** dialog box.

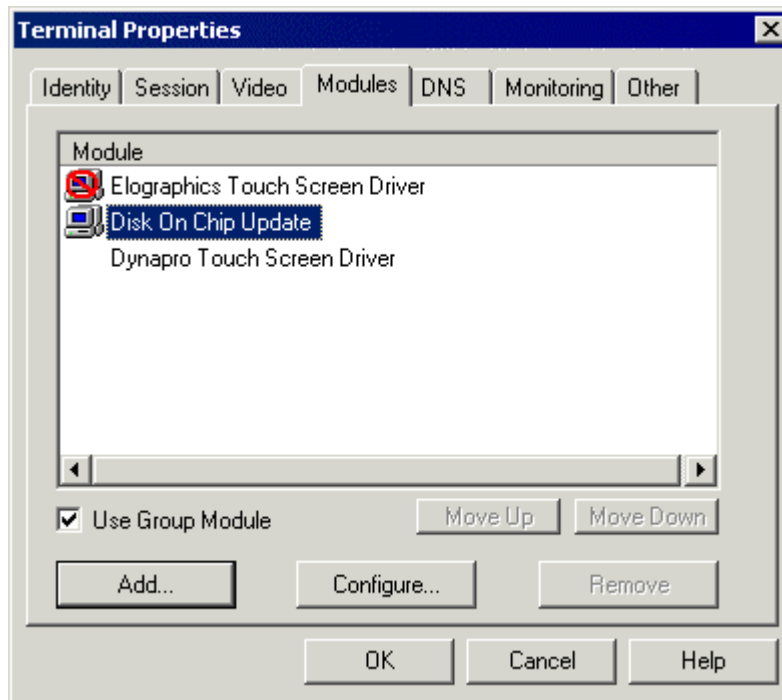


Classic Mode – Terminal Modules Tab, Attach Module

The **Attach Module** dialog box shows all the installed modules. Highlight the desired module and select **OK**. The module will be added to the list on the module tab and will load on the next terminal reboot.

Group Module Deactivation

A terminal that is assigned to a group with modules will display a **Use Group Module** check box selected by default and will load the group modules. To stop the terminal from using the group modules, uncheck the **Use Group Module** check box. This will put a red icon over the group icon to show that the group setting is no longer used.



Classic Mode – Group Module Deactivation

This figure shows a Group module that is deactivated, a group module in use, and an individual terminal module. More detail can be found in **Error! Reference source not found.**

Select the **DNS** tab to continue configuration.

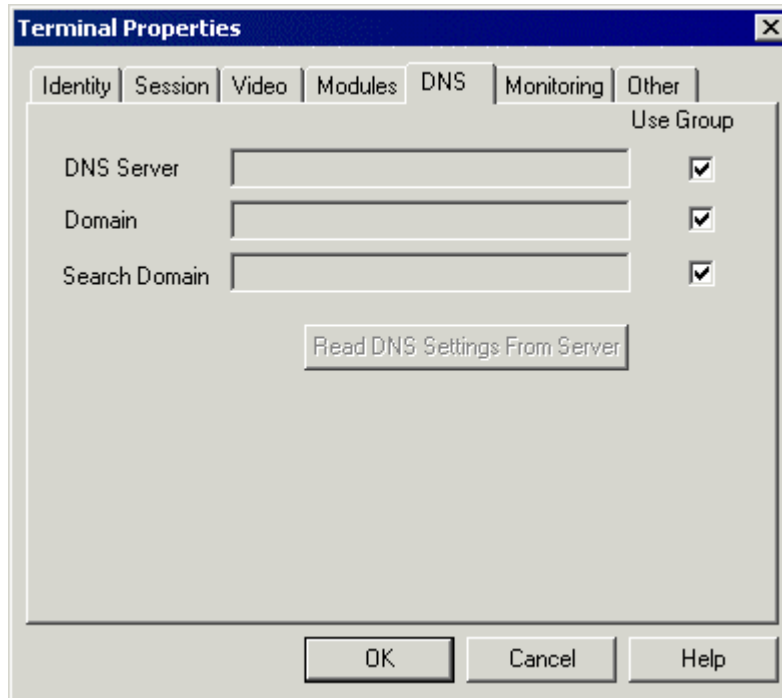
Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Terminal DNS Properties

The **DNS** tab of the **Terminal Properties** dialog box contains settings for using a Domain Name System (DNS) server. This will allow the use of DNS names to identify computers.



Classic Mode – Terminal DNS Tab

DNS Server is a field for the IP address of a DNS server.

Domain is a field for the DNS domain name.

Search Domain will add the contents of the field as a prefix to any DNS searches.

The **Read DNS settings from server** button will load the DNS server settings from the ThinManager server into the **DNS Server** field.

Select the **Monitoring** tab to continue configuration.

Select **OK** to accept the changes and close the dialog box.

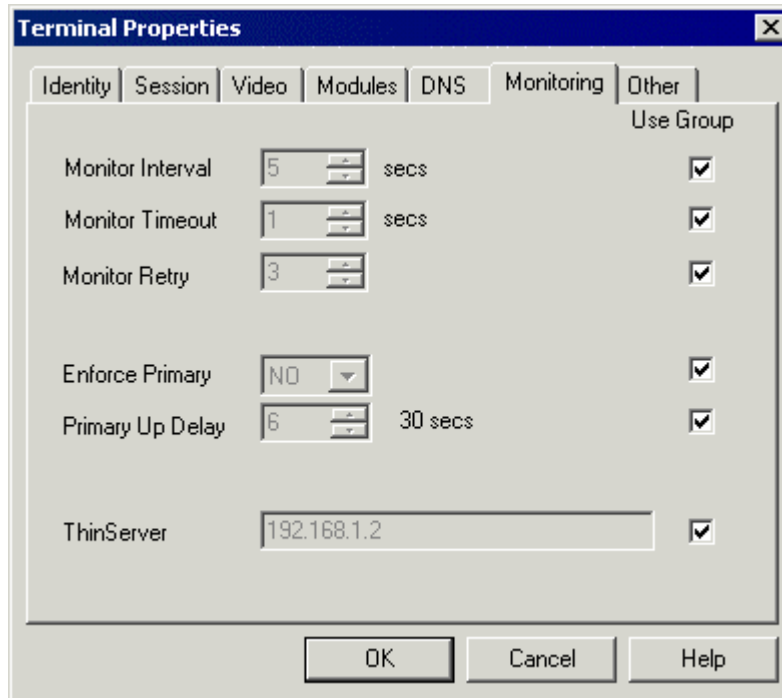
Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Terminal Monitoring

The **Monitoring** tab of the **Terminal Properties** dialog box contains parameters related to Failover. A ThinManager terminal monitors the availability of its terminal server, and will disconnect the session if the server is down. The terminal will then connect to the next terminal server in the Server field of the Session tab.

These parameters are configurable.



Classic Mode – Terminal Monitoring Tab

- **Monitor Interval** sets the frequency that the terminal checks to see if the terminal server is connected.

Note: Setting this value low will provide a quick detection of server failure. Setting it too low may end the connection due to high network traffic or a short network interruption instead of a server failure. The Wizard mode provides a **Fast**, **Medium**, and **Slow** settings in addition to the Custom mode provided in the Classic mode.

- **Monitor Timeout** sets the amount of time that the terminal will wait until retrying the terminal server connection.
- **Monitor Retry** sets the number of times that the terminal will retry the terminal server before disconnecting the connection.
- The **Enforce Primary** field affects the return of a terminal back to its originally assigned terminal server. If **Yes** is selected, a terminal that has failed over to a secondary server will reconnect to the primary server once it returns online. If **No** is selected, a terminal that has failed over to a secondary server will remain connected to the secondary server until a terminal reboot, even when the primary server returns online.
- **Primary Up Delay** is the number of seconds the terminal will wait to reconnect to the primary after it has detected it. This is included because the terminal can contact the primary terminal server and detect it before the primary is available for session connections.
- The **# secs** field is the interval of time between when the primary terminal server returns online and when terminals will switch back to it with Enforce Primary. Its value equal to the **Monitor Interval** times the **Primary Up Delay**.

- The **ThinServer** field allows affects the monitoring lights on multiple ThinManager Servers. Any ThinManager Server in this field will monitor the status of the terminals to update the monitoring lights on the ThinManager tree. Enter the IP addresses (or DNS names if DNS is used) of the ThinManager Servers in this field, in order of preference, and separated by semi-colons.

Select the **Other** tab to continue configuration.

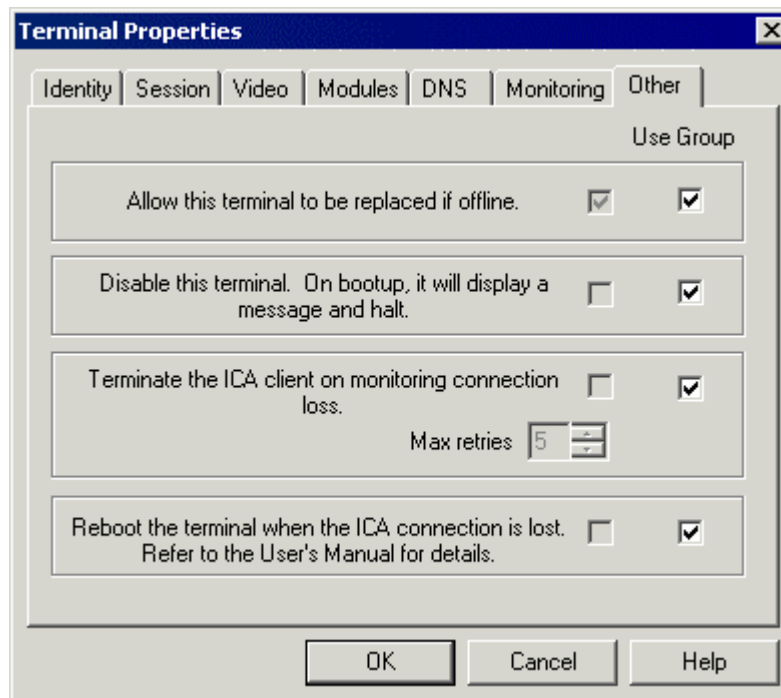
Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Other Terminal Properties

The **Other** tab of the **Terminal Properties** dialog box contains the settings for miscellaneous settings. The **Use Group** check boxes assign the group properties to the terminal if the terminal is the member of a group. They are checked by default. To change a setting, unselect a check box and make your changes. Terminals that are not a member of a group will not have the **Use Group** check box.



Classic Mode – Terminal Other Tab

- **Allow this terminal to be replaced if offline** allows a terminal to be replaced. Unselecting this will prevent a terminal from appearing in the terminal selection list during new terminal addition.

Note: There is a global *Enable Replacement* on the Server Properties dialog box

- **Disable this terminal. On bootup, it will display a message and halt** will disable a terminal if selected. This is a quick way to disable access to a terminal. Select this check box, and then reboot the terminal (see “Rebooting a Terminal” on page 128).

This will deny access to the terminal session. It does not end the session on the terminal server; it just prevents access to it. Clearing the check box will allow a disabled boot to proceed.

- **Terminate the ICA client on monitoring connection loss:** is a legacy command. It will terminate the ICA connection if the connection to ThinServer is lost. This check box relates to the client/ThinServer connection and not the client/terminal server connection. It is not used with the current failover method.
- **Reboot the terminal when the ICA connection is lost** is a legacy command. When selected, the terminal will reboot each time the ICA connection is lost. This can interfere with failover because failover does not require a reboot. Some network configurations may use this when the DHCP Server is the same machine as the terminal server.

Select **OK** to accept the changes and close the dialog box.

Select **Cancel** to cancel the addition or change of the terminal.

Select **Help** to launch ThinManager Help.

Changing a Terminal's Group

Group membership can be changed on the **Identity** tab of the **Terminal Properties** dialog box. Launch the **Terminal Property** dialog box by either:

- Selecting a terminal by highlighting it. Select **Edit...Modify** from the **ThinManager** menu bar
- Right-clicking the terminal icon in the **ThinManager** tree pane and selecting **Modify Terminal**.
- Double-clicking the terminal icon in the **ThinManager** tree pane.

On the **Identity** tab of the **Terminal Properties** dialog box, use the **Group** drop-down box to select the new group that the terminal is to be placed in. This will apply the new group configuration to the terminal. If "None" is selected, the terminal will keep its configuration, but will be removed from the group and is treated as an independent terminal.

Note: The terminal will need to be rebooted for the changes to take effect.

Modifying a Terminal

Modifying a terminal allows you to reconfigure the terminal or change group settings such as touch screen usage, video resolution, or to designate servers.

To modify a terminal open the Terminal Configuration Wizard or the Terminal Properties by either:

- Highlight the terminal in the **ThinManager** tree pane by clicking on the terminal name or icon and select **Edit>Modify** from the **ThinManager** menu bar.
- Right-click on the terminal icon in the **ThinManager** tree pane and select **Modify**.
- Double-click on a terminal icon in the **ThinManager** tree pane.

This will launch the Terminal Configuration Wizard in Wizard mode or the **Terminal Properties** in Classic mode.

Deleting a Terminal

A terminal can be deleted from the **ThinManager** by:

- Highlighting the terminal in the **ThinManager** tree pane and selecting **Edit>Delete** from the **ThinManager** menu bar
- Right-clicking a terminal icon in the tree pane of **ThinManager** and selecting **Delete Terminal**.
- Highlighting the terminal in the **ThinManager** tree pane and selecting the **Delete** key.

Rebooting a Terminal

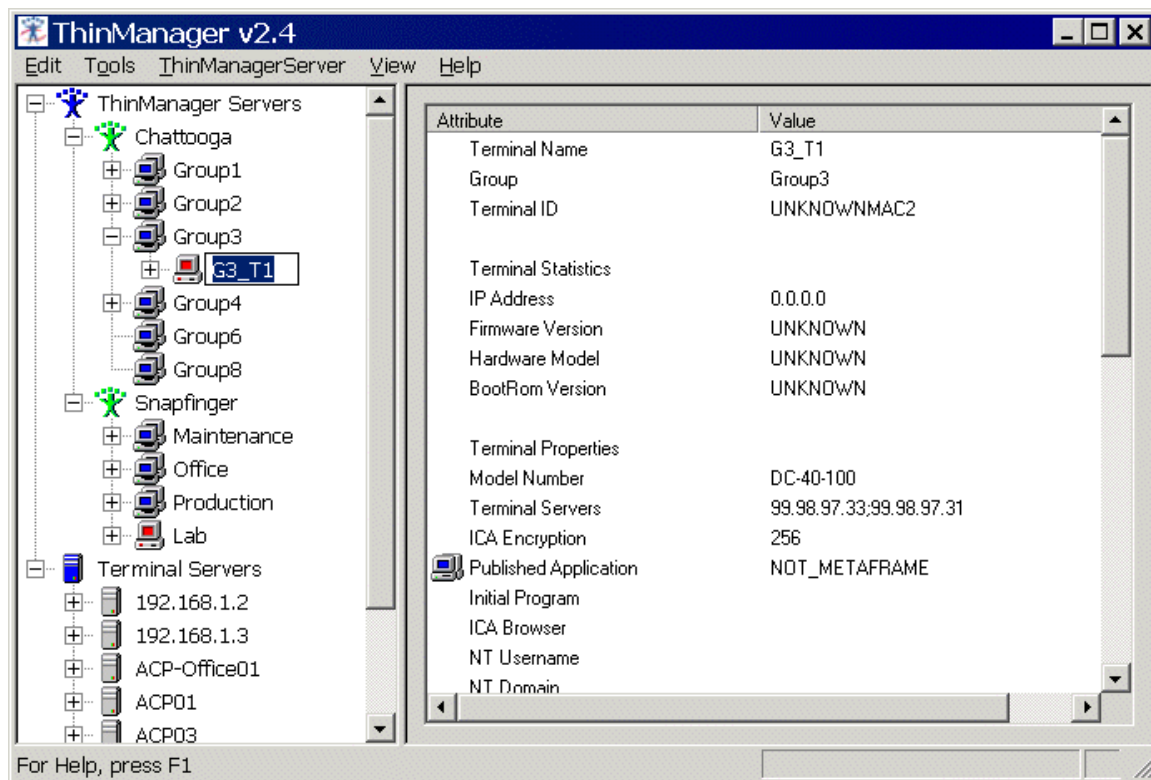
A terminal or group can be rebooted by:

- Selecting **Tools>Reboot Terminals** from the ThinManager menu bar. This will reboot all the terminals on the server if the server is highlighted. If a group is highlighted, all members of the group will be highlighted. If a terminal is highlighted, the terminal is rebooted.
- Right-clicking a group icon in the tree pane of ThinManager and selecting **Reboot Terminals**. This will reboot all the terminals in the group.
- Right-clicking a terminal icon in the tree pane of ThinManager and selecting **Reboot Terminal**. This will reboot only the highlighted terminal.

Renaming a Terminal

Terminals can be renamed by:

- Highlighting the Terminal and selecting **Edit>Rename**.
- Right-clicking the Terminal and selecting **Rename**.
- Renaming terminals is accomplished the same way that files or directories are renamed in **Windows Explorer**. Single click twice on the terminal name; this will draw a box around the name and highlight it. Type the new terminal name.



Renaming a Terminal

Tip on single clicking twice: Click once to highlight the name, move the mouse slightly and click again. This will prevent Windows from confusing the two single clicks with a double click.

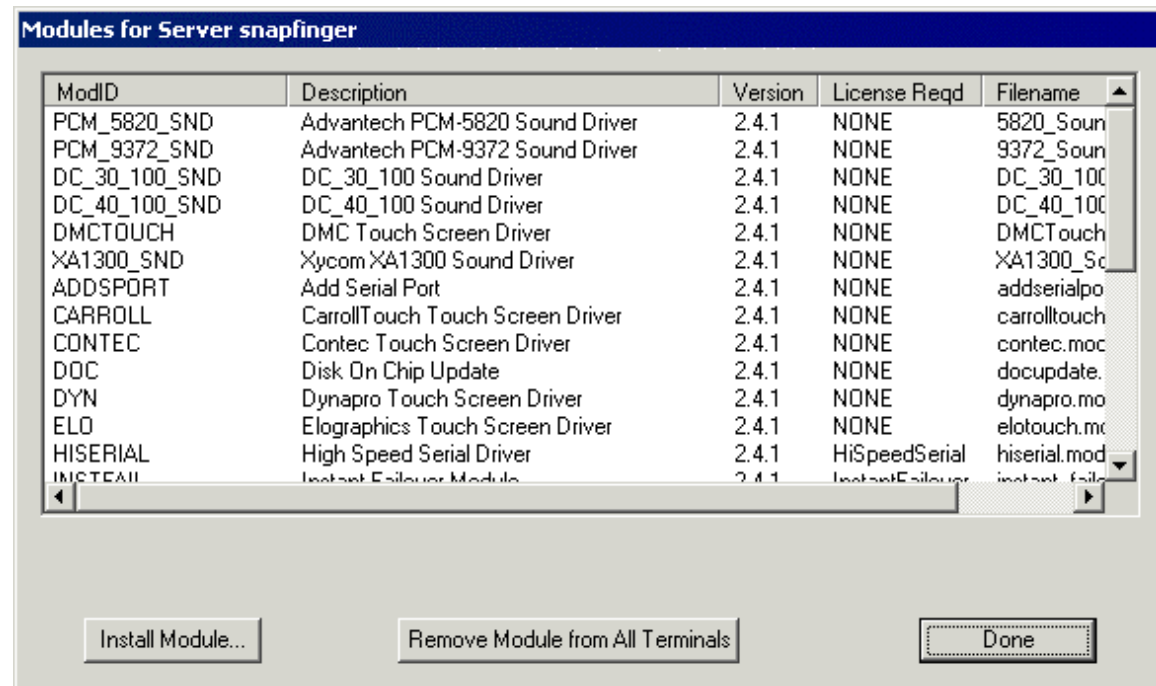
Modules in Depth

Modules are software components that can be loaded to increase the functionality of the firmware. Modules include touch screen drivers, sound drivers, and special device drivers. Some modules are included with ThinManager and are registered automatically during ThinManager installation. Other modules are obtained separately from Automation Control Products and need to be installed.

“Installing a module” refers to the registration of the module with the ThinManager Server, while “Adding a module” refers to attaching the module to a group or terminal.

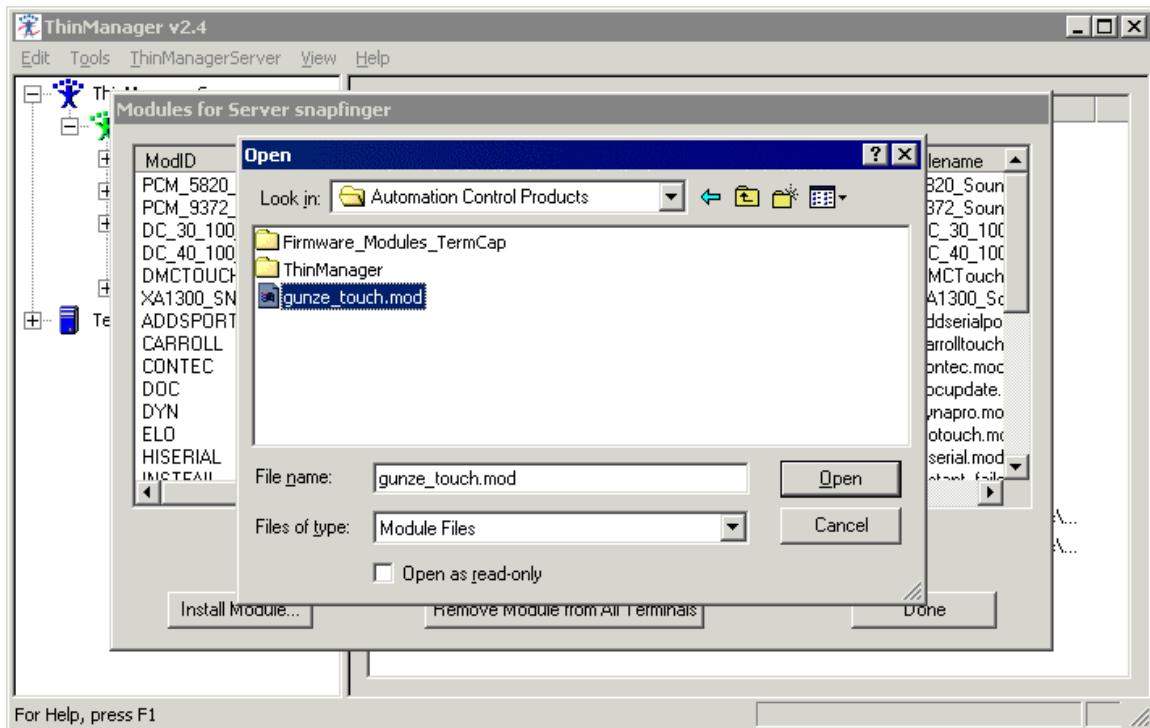
Installing a Module

Open the Modules window by selecting **Tools>Modules** from the ThinManager menu bar.



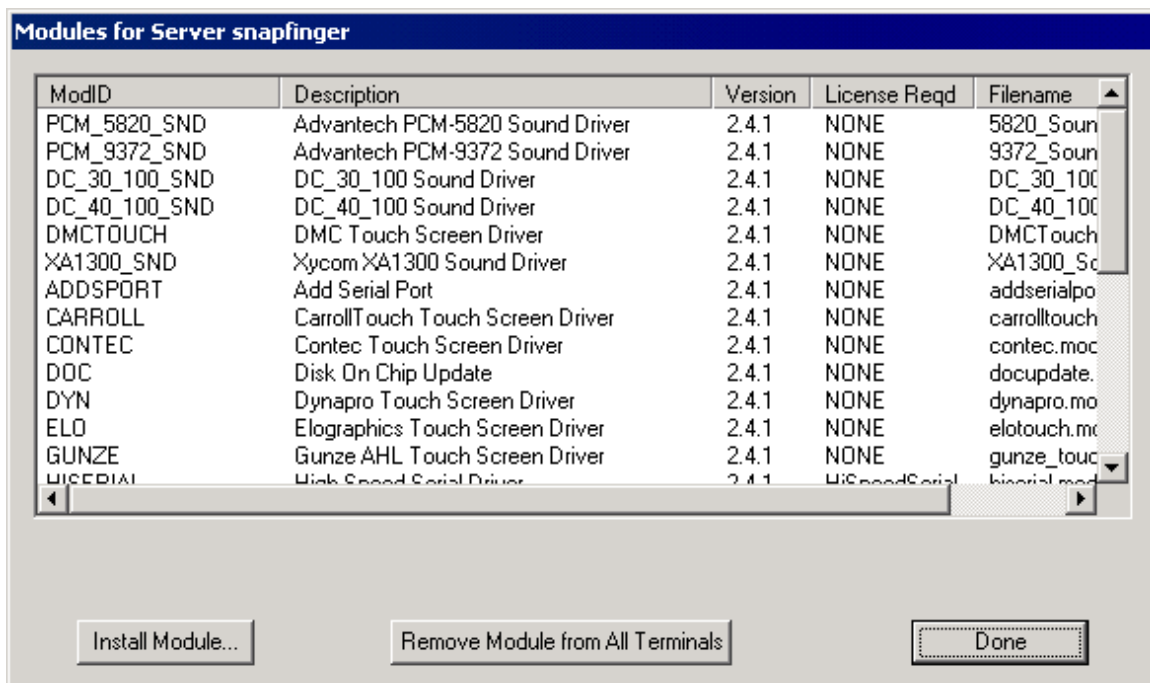
Install Module Window

Select the **Install Module** button. This will launch a file browser window.



Module File Browser Window

Select the new module file and select **Open**. This will install the module.



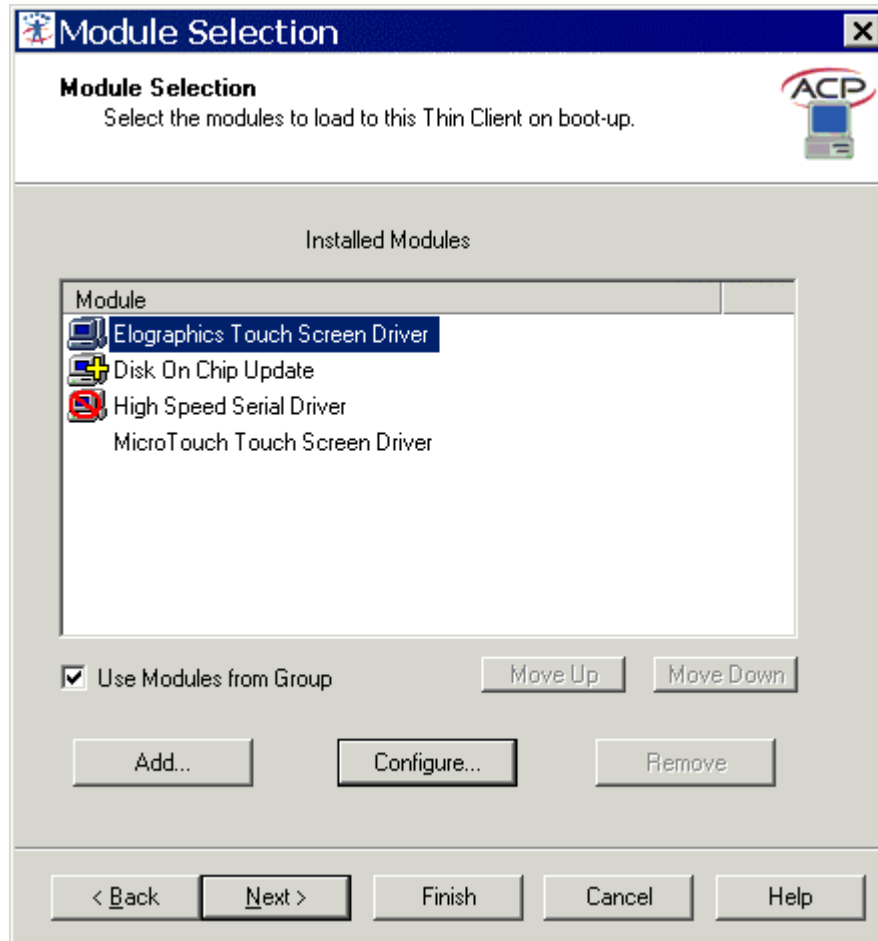
Install Module Window

Selecting the **Remove Module from All Terminals** button will remove the highlighted module from all terminals. It does not uninstall the module.

Changing Module Parameters

The parameters of a module can be individually configured. Open the Terminal Property by double-clicking the desired terminal in the ThinManager tree. In Wizard mode click the **Next** button until the Module Selection window is displayed. In Classic mode select the Module tab.




Highlight the desired module and select the **Configure...** button.



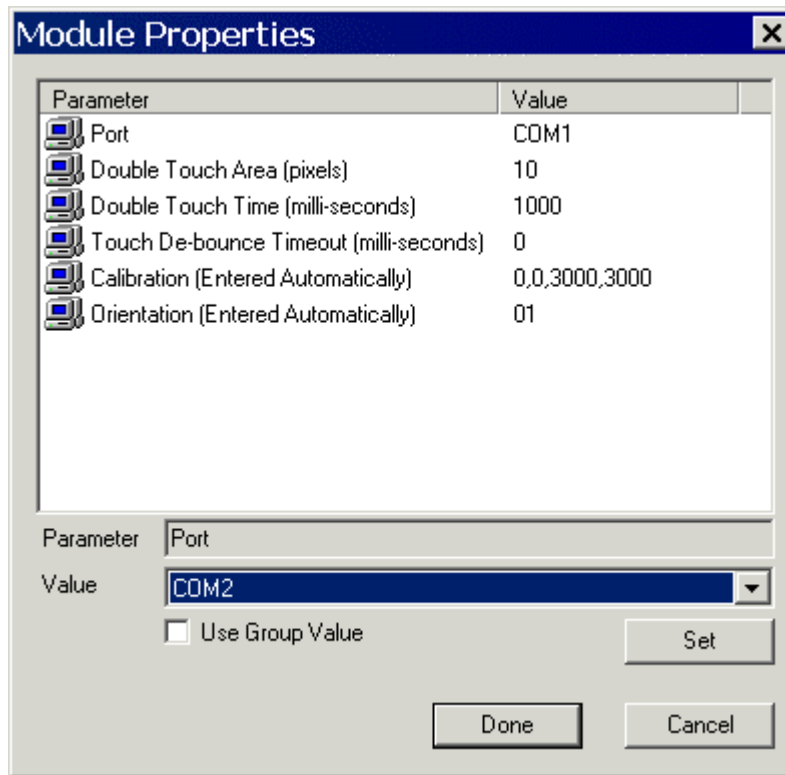
Terminal Module Selection – Wizard Mode

A **Module Properties** dialog box will be displayed.

There are four icons that can be used for modules in the Terminal Properties.

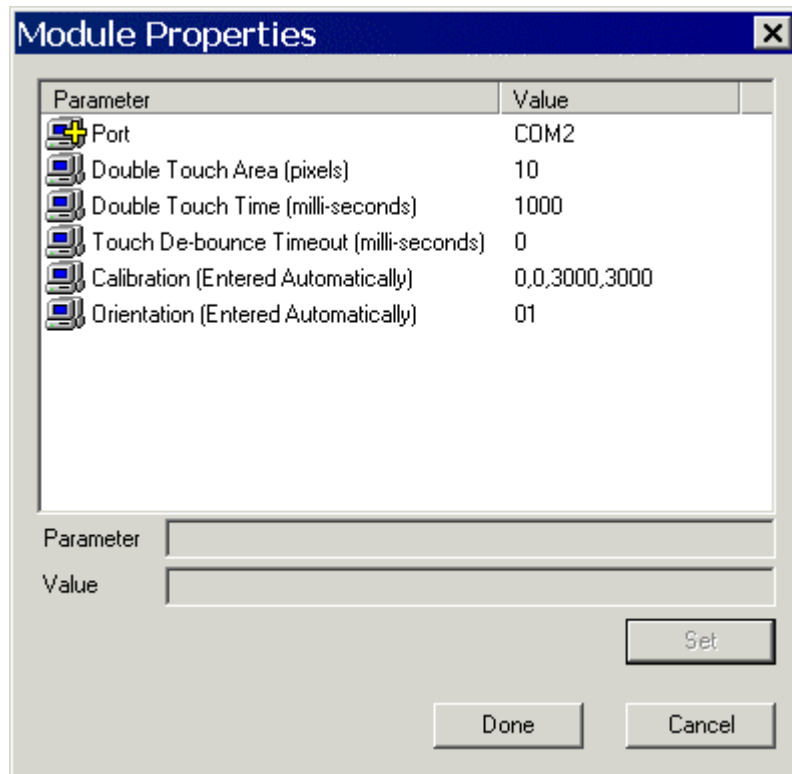
1.  represents properties assigned by the Group.
2.  represents properties that are changed on the terminal from the Group settings.
3.  represents a terminal that isn't using an assigned Group module. The "Use Modules from Group" checkbox was un-selected.

4. No icon indicates that the module was added to the terminal and not the group.
Select the Module to change and select the **Configure** button.



Module Properties Window

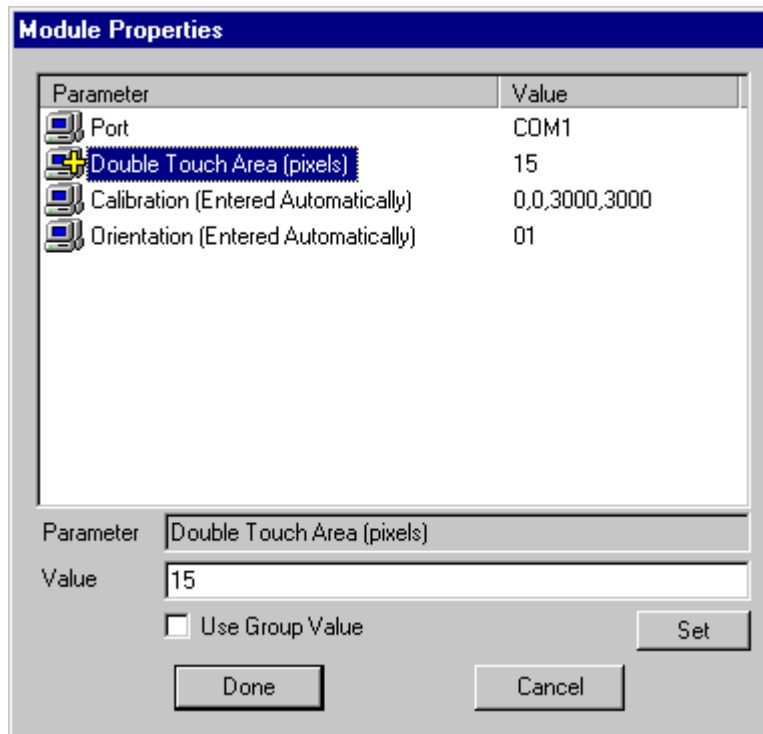
Select the parameter to configure. If configuring a Group Module, uncheck the **Use Group Value** check box.



Module Properties Window

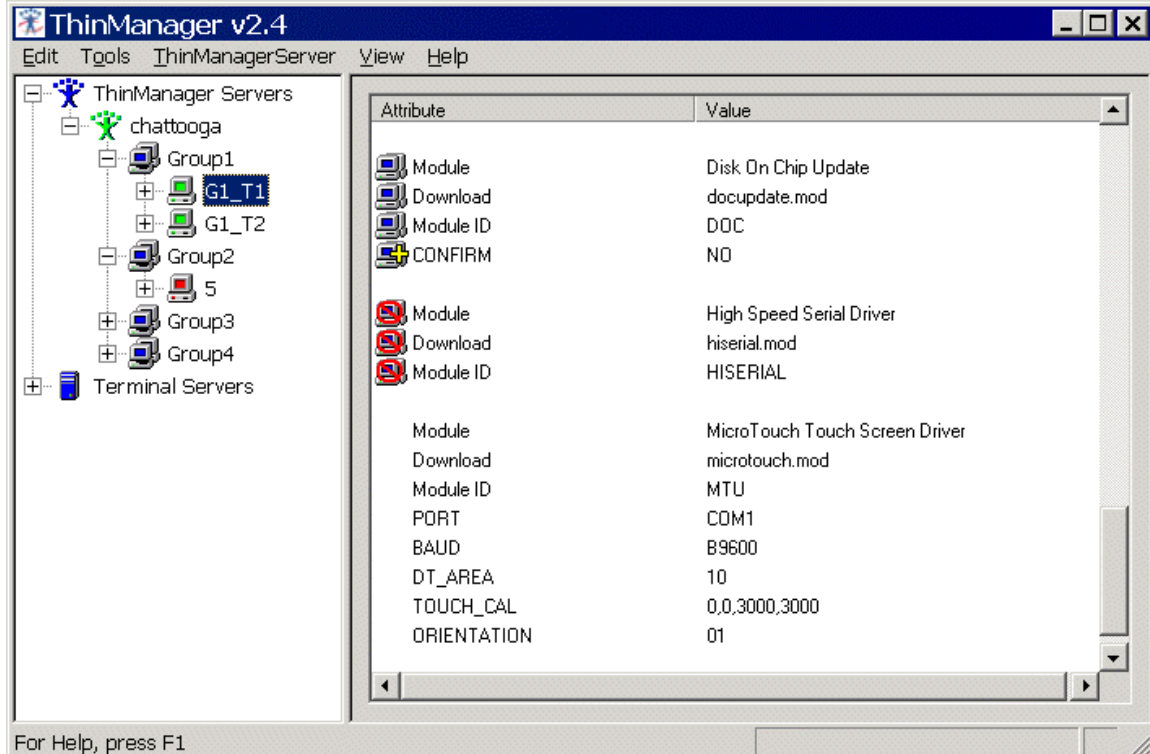
The **Value** field will become active to allow a new value to be added, or a drop-down box will appear with values to choose from. Change the value and select the **Set** button to apply the parameter change.

Select the **Done** button to close the window.



Module Properties Window – Group Parameter Changed

An icon with a yellow plus sign will be displayed to show that a module parameter was changed.

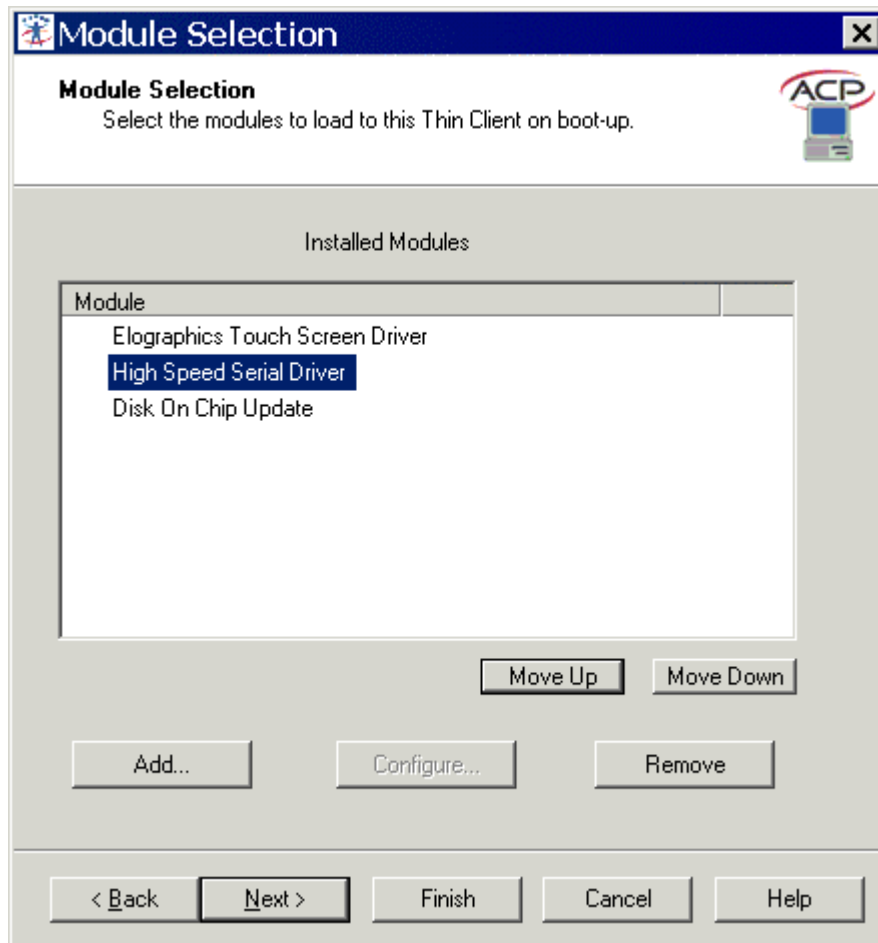


Module Icons in ThinManager

The status of the modules are displayed in the detail pane of ThinManager.

Module Loading Order

The order that the modules load can be changed by highlighting a module and selecting the **Move Up** or **Move Down** button.



Module Loading Order

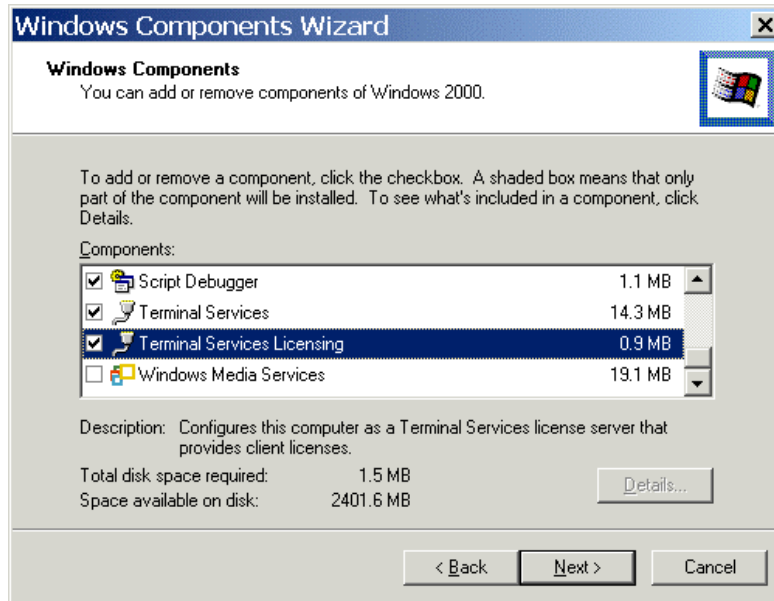
The loading order of modules rarely needs to be adjusted.

Installation

Windows 2000 Terminal Server

Microsoft Windows 2000 Servers can be easily converted to Terminal Servers. See the Microsoft web site at www.microsoft.com for official information.

Open the Windows Components Wizard by selecting **Start>Settings>Control Panel>Add/Remove Programs>Add/Remove Windows Components**.



Windows Components Wizard

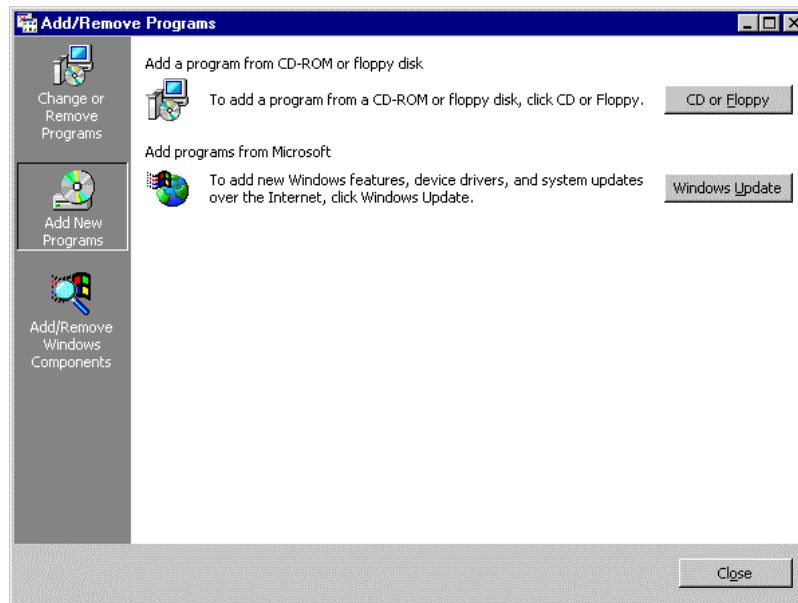
Checking the **Terminal Services** checkbox and selecting **Next** will install the components for terminal services on the server. It is recommended that the terminal server gets a clean install of the operation system instead of adding the feature to an established server. See “Windows 2000 Server Building Instructions” on page 203 for more details.

The Microsoft component requires a **Terminal Services Licensing Server**. See “Microsoft CALs and TS CALs” on page 208 for details.

ThinManager Installation On Windows 2000 Server

In Microsoft Windows NT Terminal Server Edition and Windows 2000 with Terminal Services enabled, software needs to be added in the **Install Mode** through the **Control Panel... Add/Remove Programs**. Failure to use the Install Mode can prevent an application from working properly.

Select **Start...Settings...Control Panel...Add/Remove Programs** to open the **Add/Remove Programs** dialog box.

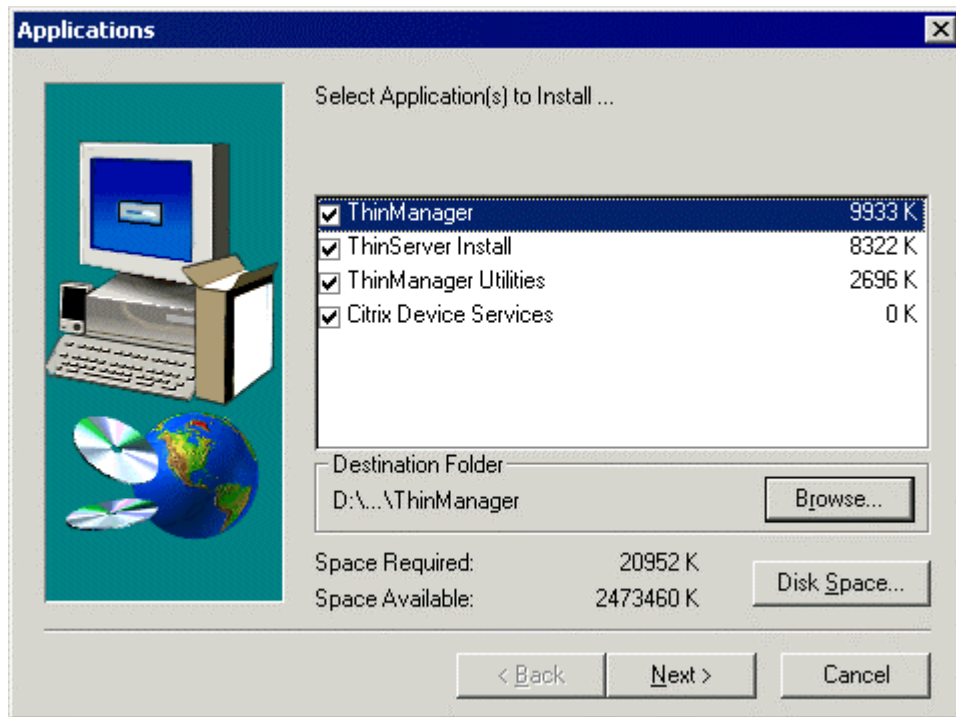


Add/Remove Programs

Select the **CD or Floppy** button on the **Add/Remove Programs Properties** dialog box to open the Installation wizard. The wizard will prompt for the insertion of the ThinManager CD. When the CD is inserted, the wizard will ask for the path to the setup program. The setup program path is **X:\SETUP.EXE**, where "**X**" is the CD-ROM drive letter containing ThinManager.

Enter the path, or select the **Browse** button and select **setup.exe** through Explorer, and continue with the wizard.

Note: ThinManager does not need to be reinstalled to add more licenses. Add additional licenses as described in ThinManager Licensing on page 158



ThinManager Installation – Application Selection

An Application dialog box will open that displays the available software programs on the ThinManager CD. Check the desired components and select **Next**.

Note: ThinServer is a vital component that needs to be installed with ThinManager to allow ACP Enabled thin clients to operate. It is separated from ThinManager in the installation to allow additional instances of ThinManager to be installed for remote administration.

Note: Citrix Device Services should not be installed if Citrix MetaFrame is installed.

Citrix Device Services Installation On Windows 2000

Citrix Device Services is an important component of the ACP Enabled thin client system. It needs to be installed on each terminal server. It installs as an option during the ThinManager installation.

Note: Citrix Device Services should not be installed if **Citrix MetaFrame** is installed.

If Citrix Device Services is selected during the ThinManager installation, a Citrix Device Services for Windows 2000 Server Setup dialog box will be displayed



Citrix Device Services – Installation Introduction

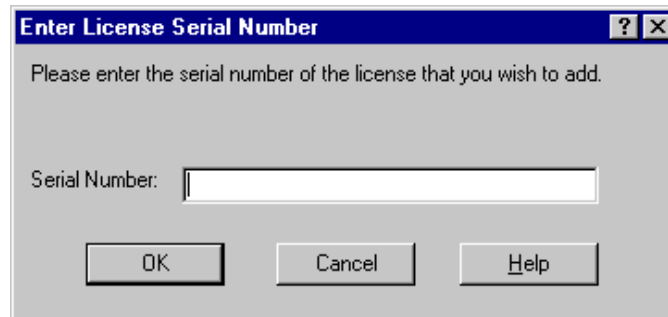
Select the **Next** button to continue the installation.



Citrix Device Services Licensing

Citrix Device Services requires a license. It can be installed now by selecting the **Add Citrix Device License** button, or later after the installation is finished.

If the **Add Citrix Device License** button is selected, an **Enter License Number** dialog box will be displayed. The Citrix License Number from the inside of the ThinManager CD case is entered into the **Serial Number** field.

A screenshot of a Windows-style dialog box titled "Enter License Serial Number". The title bar is blue with a question mark icon and a close button (X). The main area is light gray and contains the text "Please enter the serial number of the license that you wish to add." Below this text is a label "Serial Number:" followed by a white text input field. At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Citrix License Entry Box

Select **Next** to continue. Reboot the server if prompted.

Additional Software Installation On Windows 2000

Microsoft Windows 2000 Server requires that software be added in the “**Install Mode**” through the *Control Panel, Add/Remove Programs*.

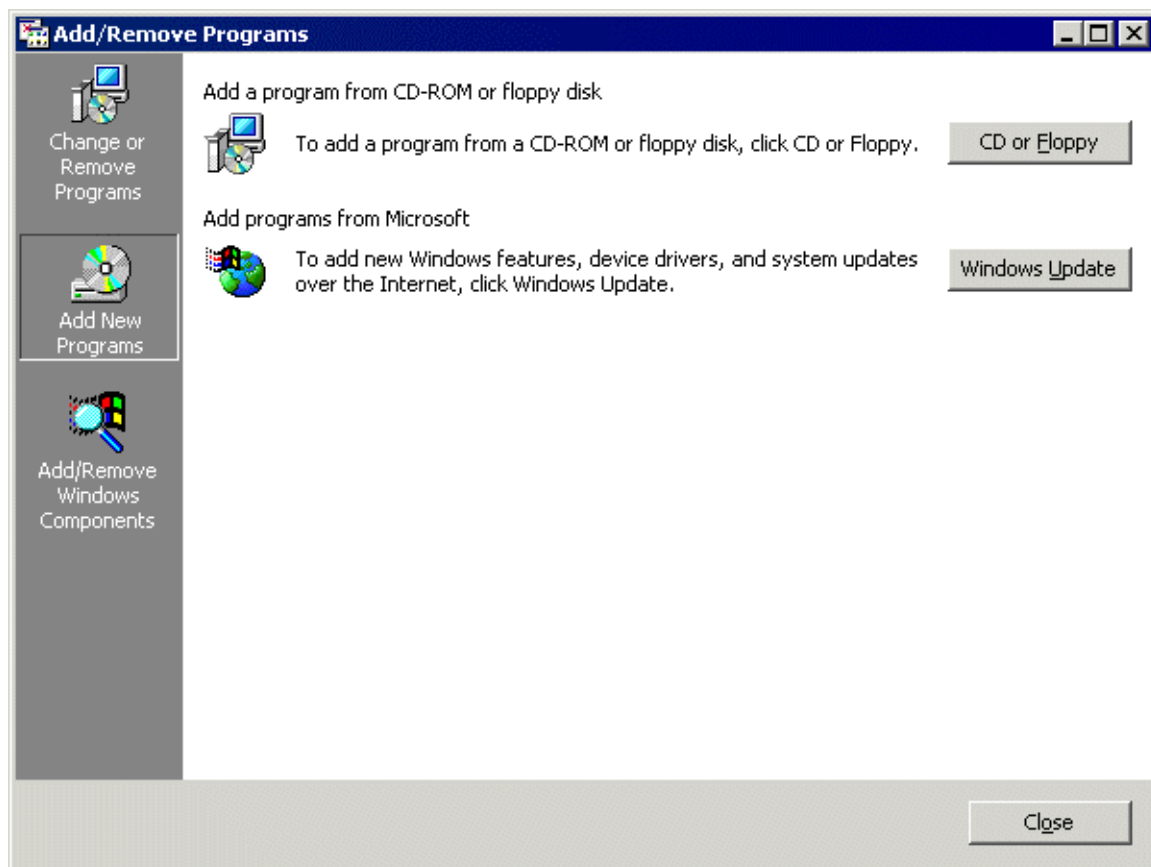
Select **Start>Settings>Control Panel>Add/Remove Programs** to launch the **Add/Remove Programs** dialog box.

Note: Some software, especially downloaded software, doesn’t allow the installer to install it through the Add/Remove Programs tools. To manually put the machine into the install mode open a command prompt and type:

`change user /install`

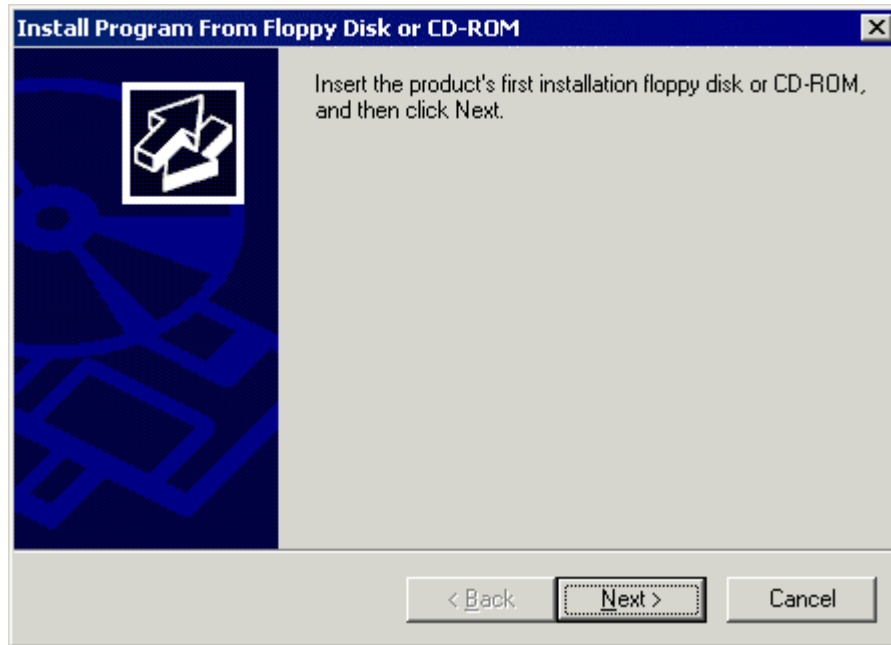
This sets the machine to install mode. When finished, type:

`change user /execute`



Add/Remove Programs

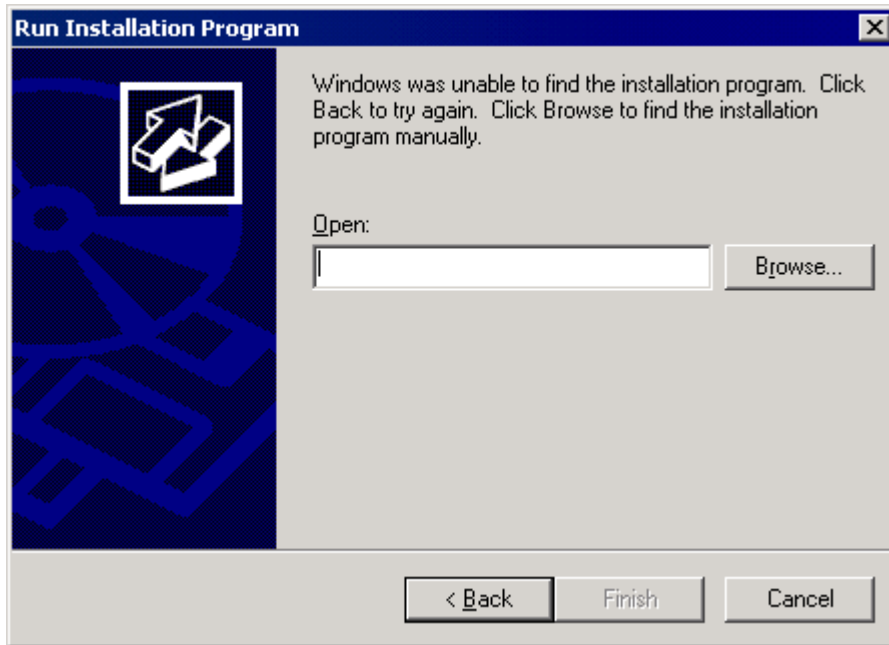
Select the **CD or Floppy** button on the **Add/Remove Programs** dialog box to open the Installation wizard.



Install Program Window

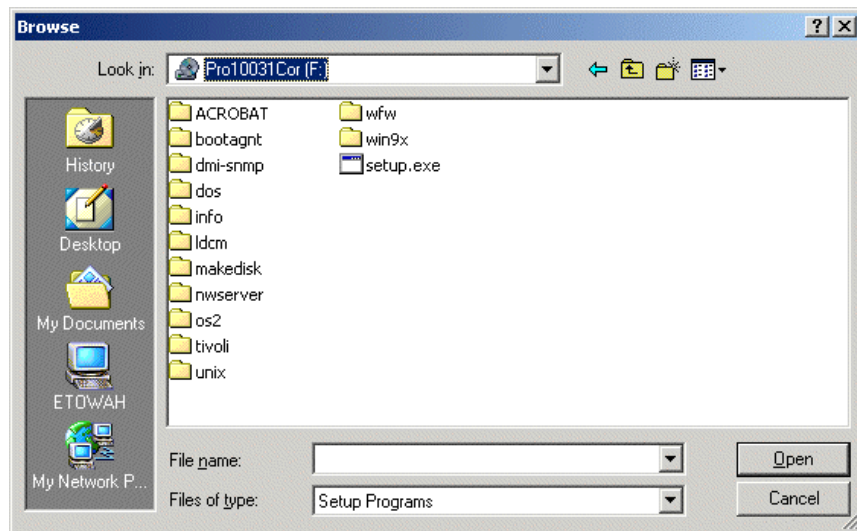
The wizard will prompt for the installation of the software disk. Select **Next** to display the **Run Installation Program** dialog box.

Note: If the new program starts in “autorun” and proceeds without going through the following procedures, either stop the autorun and use the wizard to initiate the installation, or use the `change user /install` command to place the machine in the install mode.



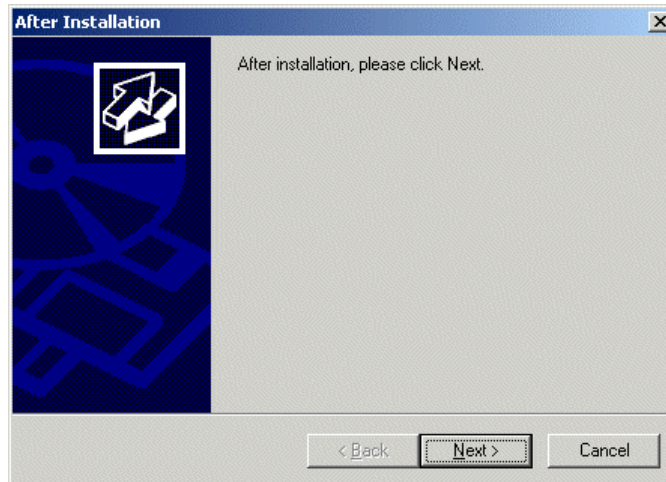
Run Installation Program

Enter the command line of the installation program and select **Finish**, or select the **Browse** button to select the installation file.



Browse File Window

Selecting the **Browse** button on the **Run Installation** dialog box will launch a **Browse File** window. Highlight the installation file and select **Open**. This will begin the application setup.



After Installation Window

As the installation begins, an **After Installation** dialog box is displayed. It requests that the **Next** button be selected when the installation is finished. When this button is selected a second confirmation window is displayed.



Finish Install Window

Select the **Finish** button when the installation is finished.

Note: If a choice is given to **Reboot Now** or **Reboot Later**, choose to reboot later once the entire setup is completed and the dialog boxes are cleared.

Licensing

ACP Enabled thin clients rely on three programs: Microsoft Terminal Server, the Citrix ICA Protocol, and ACP ThinManager. Each of these programs requires installation and licensing.

Each program is sold with one serial number or license number. Each program generates a second serial number or license number during installation. The installer needs to take both numbers to the respective company's web site for license registration. When this is completed an activation number or file will be generated that will activate the component's license.

Microsoft CALs and TS CALs

ACP Enabled thin clients require a terminal server running **Microsoft's Windows NT 4.0 Terminal Server Edition** or **Windows 2000 Server** with **Terminal Services** enabled as an operating system. ..

Each of these operating systems requires a standard Microsoft Client Access License (CAL) for each connection to the server. These are based on concurrent use; a 5-pack would allow more than five users to access server resources, but only five users at a time.

Terminals require an additional **Microsoft Terminal Server Client Access License** (TS CAL) to connect to the server using either RDP or ICA. This licensing is per seat; ten terminals would require ten TS CALs, even if only two were connected at a time.

Windows NT 4.0 Terminal Server Edition is sold with TS CALs. These are installed on the NT 4.0 Terminal Server. Additional TS CALs are available from Microsoft.

Windows 2000 has an improved method of license management. All TS CALs are installed on a Terminal Services Licensing Server. This acts as a repository for all TS CALs. The terminal servers request TS CAL authentication from the Terminal Services Licensing Server as terminals attach to terminal servers.

Note: The Terminal Server Licensing Server does not need to be a separate computer, but can be run on any Windows 2000 server, including Windows 2000 Terminal Servers.

Microsoft requires that the Terminal Server Licensing Server be installed on the Primary Domain Controller in a domain.

The Terminal Services Licensing server is activated through the Internet by connecting to the Microsoft Certificate Authority and License Clearinghouse.

Windows 2000 Server with Terminal Services enabled will issue 90-day temporary licenses while the Terminal Services Licensing server is being setup and activated. If this period has elapsed, the terminal will not connect to the terminal server and will display an "Error Number 50" message box.

Windows 2000 Server is not normally sold with TS CALs. These need to be purchased separately and installed on the Terminal Services License server.

Citrix Device Services Licensing

The second component is the **ICA** (Independent Computer Architecture) communications protocol from **Citrix** that provides the communication between the server and the thin client. ACP ThinManager software contains a licensed copy of Citrix Device Services on the ACP ThinManager CD to provide the ICA protocol. Citrix Device Services needs to be installed on each terminal server.

Citrix Device Services needs a license added immediately to allow terminal-to-server communication. The license can be added during the installation process or it can be added when the installation is finished. A license number that is located on the ThinManager CD label is used for licensing. Instructions are provided with ThinManager.

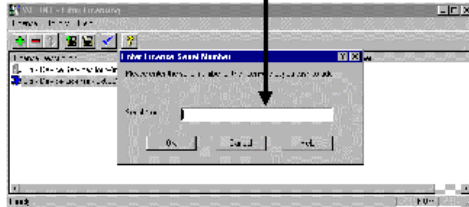
The Citrix Device Services License will need to be activated within a 35-day grace period to continue functionality. The activation is done within the Citrix web site at <http://www.citrix.com/activate>. Instructions are provided with ThinManager.

Note: A license is needed immediately for the ICA connection. The license will need to be activated within a 35-day grace period.

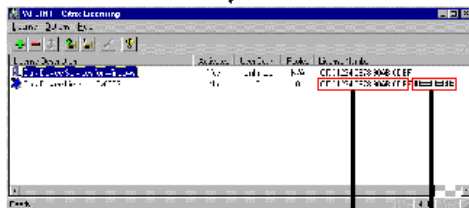
Note: MetaFrame is licensed in a similar manner. Please see the documentation that comes with MetaFrame for details.



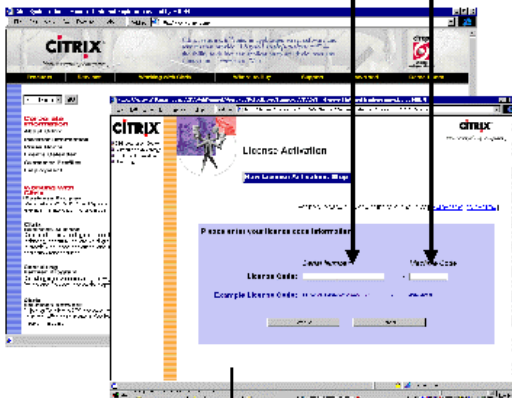
1. Install Citrix Device Services from the ThinManager CD-ROM.



2. Open Citrix Licensing at *Start...Programs...Citrix Device Services Tools...Citrix Licensing* and add the License (Serial) Number that is on the ThinManager CD-ROM case.



3. Citrix Licensing will add a Machine Code to the end of the License (Serial) Number.



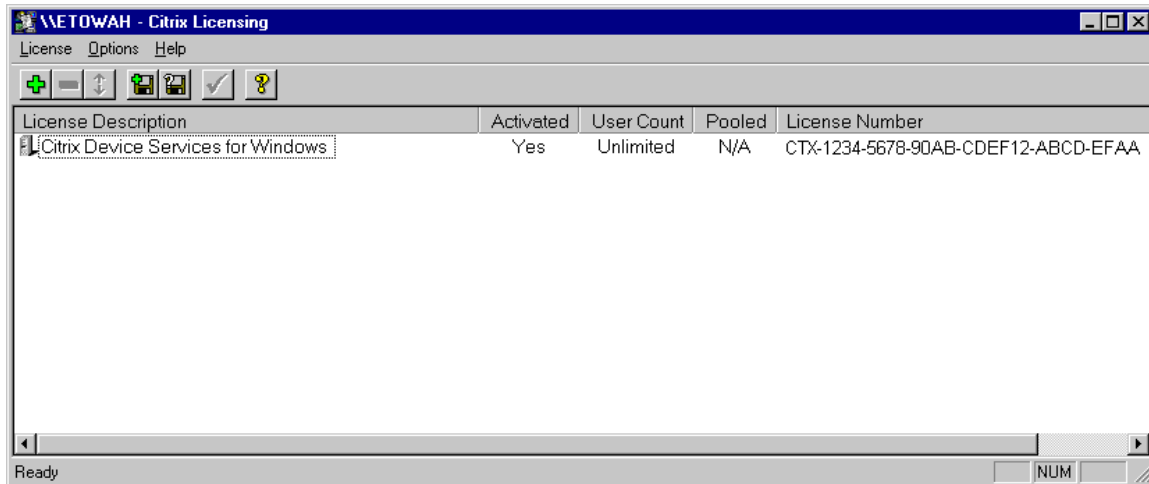
4. Open the Citrix web site at <http://www.citrix.com> and follow links to the Product Activation section. Use the License (Serial) Number from Step 2 and the Machine Code from Step 3 to obtain the Activation Number.



5. Select the license to activate in Citrix Licensing and select *License...Activate License...* Add the Activation Number from Step 4.

Citrix Device Services Licensing Flow Chart

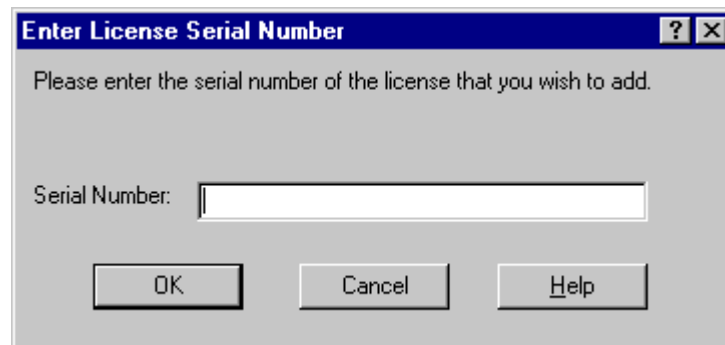
Open the **Citrix Licensing** dialog box by selecting **Start>Programs>Citrix Device Services Tools (Common)>Citrix Licensing**.



Citrix Licensing Dialog Box

Note: The Citrix Device Services for Windows license is installed during setup. It is not enough to provide functionality. A Citrix Device license is needed.

Select **License>Add** from the menu bar to launch the **Enter Licensing Serial Number** dialog box

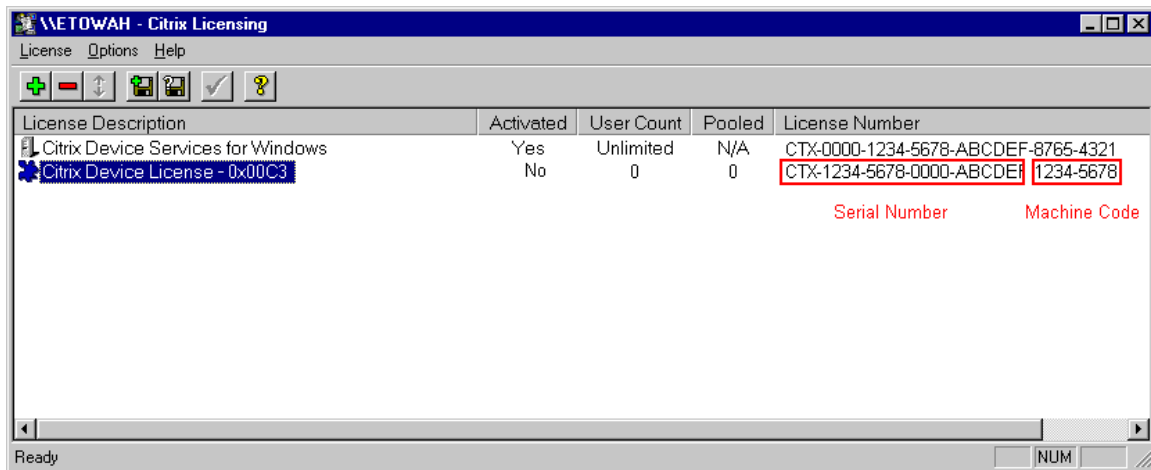


Enter License Serial Number

Enter the Citrix License number found inside the ACP ThinManager CD Case.

Note: This number may be called the License Code, Serial Number, or License Serial Number.

Select **OK** to continue.



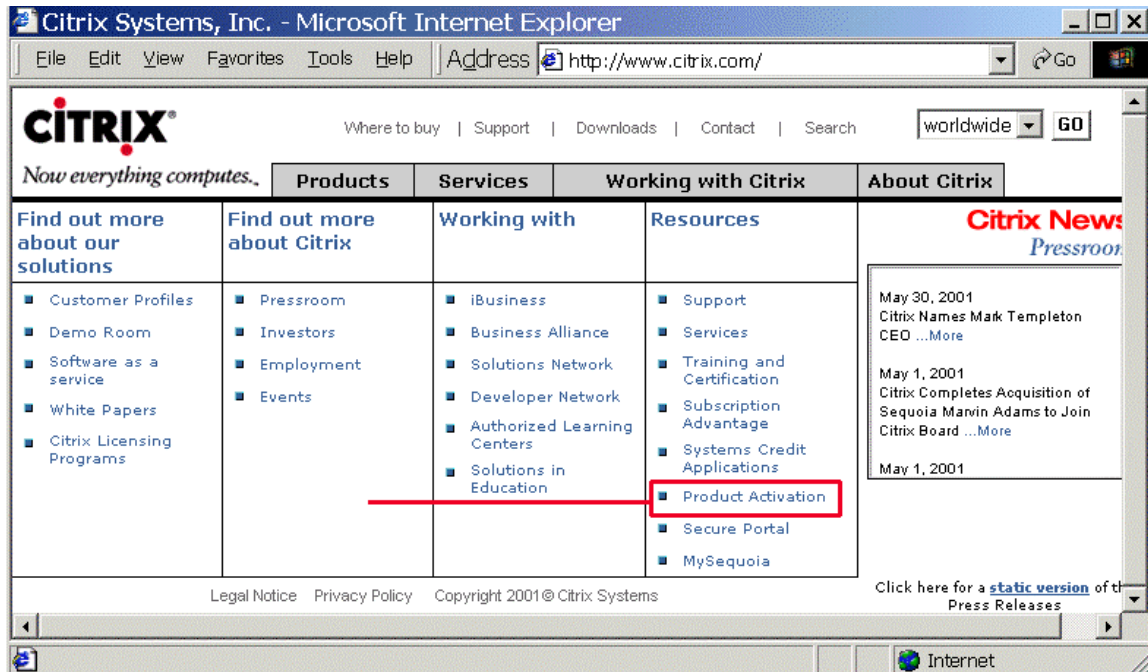
License Serial Number and License Code

The **License Serial Number** will have a **Machine Code** of eight numbers added to it and will be displayed in the Citrix Licensing window as the **License Number**. Although the license is now installed, it needs to be activated within 35 days to keep it functional.

Citrix License Activation

The **Citrix Device Services** has a 35-day grace period, after which it is not fully functional until it has been activated. Adding an Activation Code activates the license. This Activation Code is obtained from the Internet at the Citrix web site at <http://www.citrix.com> or through the Activation Wizard. The Activation Code can be obtained from Citrix with any machine that has an Internet connection.

Note: Since web sites are dynamic, the exact layout of the web screens may change, but the functionality should remain the same. If you have problems, please contact Citrix or e-mail support@acphthinclient.com for help.



www.citrix.com

Select the **Product Activation** hyperlink on the Citrix home page. It will link to <http://www.citrix.com/activate>.

Citrix requires the creation of a user account to access the licensing area.

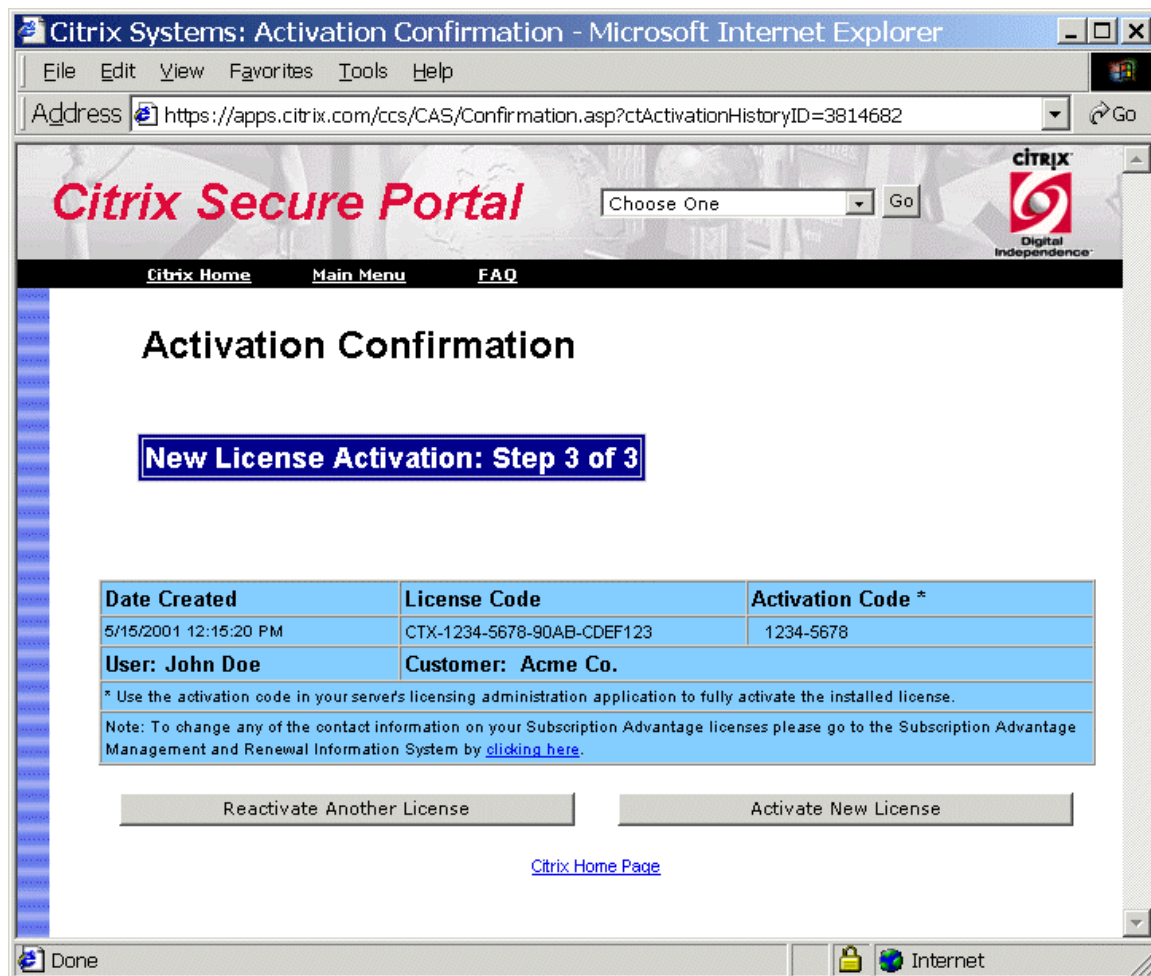


Citrix License Activation Screen

After entering the Citrix site and navigating through the site as described in Citrix Device Services Licensing, the License Activation screen will be displayed.

Enter the **License Code** that was generated during installation. This is the License Serial Number that is on the ThinManager CD, with the 8 digit Machine Code added.

Select the **Continue** button to proceed.



Citrix License Activation

A new screen will appear that displays the Activation Code for the installation.

Write this Activation Code down for use in activating the license.

Print a copy of this page for a record, and then exit the Citrix web site.

ThinManager Licensing

The third component is ACP ThinManager software from Automation Control Products. ThinManager is used to configure, manage, and control the thin clients. ThinManager will allow a single client to connect without a license, but will require a ThinManager license for more terminals. This license is included with the ThinManager software. Activation is done within the ACP web site at <http://www.acpthinclient.com>. Details of licensing are provided with ThinManager

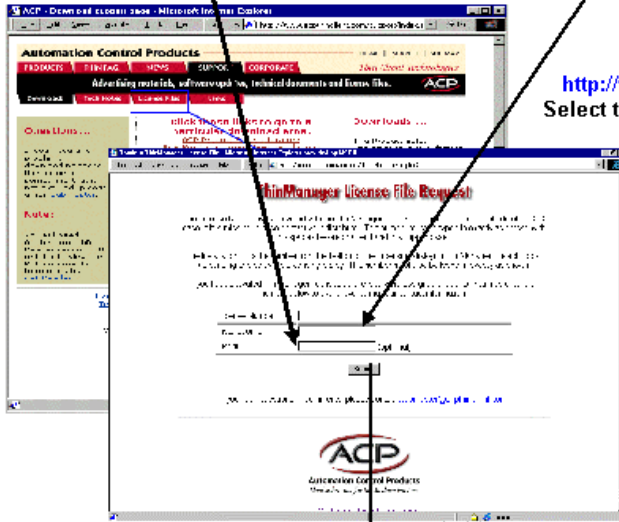
ThinManager will only allow one connection until it is licensed.

1. Install ThinManager.

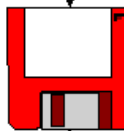


3. Obtain License Number from ThinManager CD-ROM.

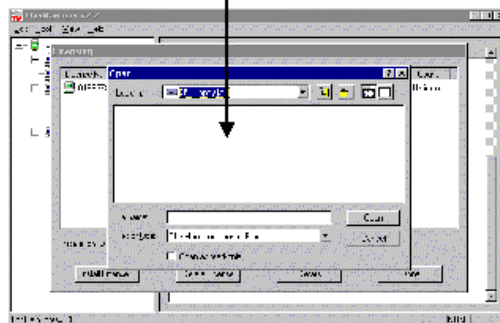
4. Open <http://www.acpthinclient.com>.
Select the License Files hyperlink.



5. Fill out License Request Forms, supplying the Installation ID from Step 2 and the License Number from Step 3.



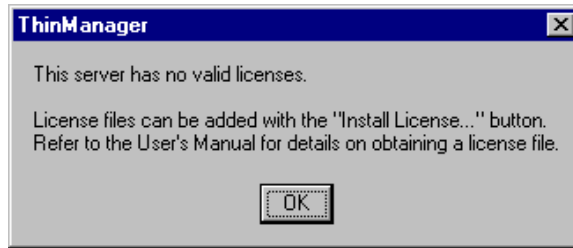
6. Download the License File.



7. Install the License File by selecting *Tools...Licensing...Install License* from the ThinManager menu bar.

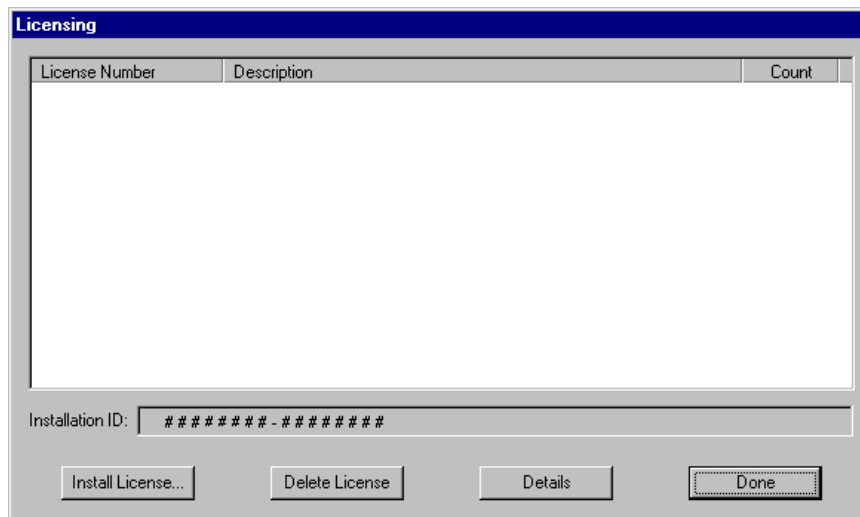
ThinManager Licensing Flow Chart

When an unlicensed copy of ThinManager is run, a message box will appear with notification that a license needs to be installed.



No Valid License Message Box

ThinManager licensing begins with the **Licensing** dialog box. Open this by selecting **Tools>Licensing** from the ThinManager menu bar.



Licensing Dialog box

The **Installation ID** at the bottom left-hand corner of the screen is used to obtain the **License File** from ACP.

Note: The **Installation ID** is important for obtaining a **License File**.

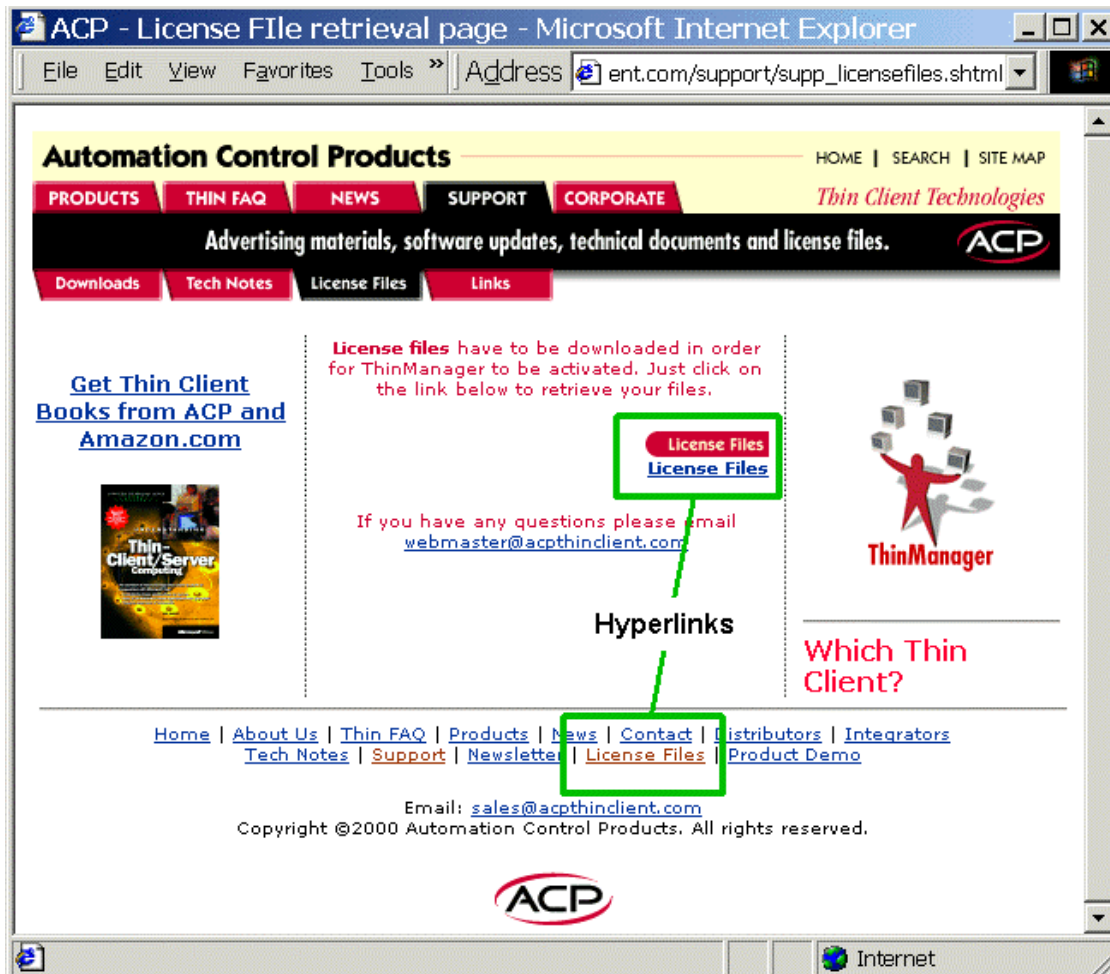
ThinManager License File Download

To obtain a license file you need two numbers:

- The **Installation ID** that is generated by ThinManager during installation.
- The **License Number** that is provided on the ACP ThinManager CD.

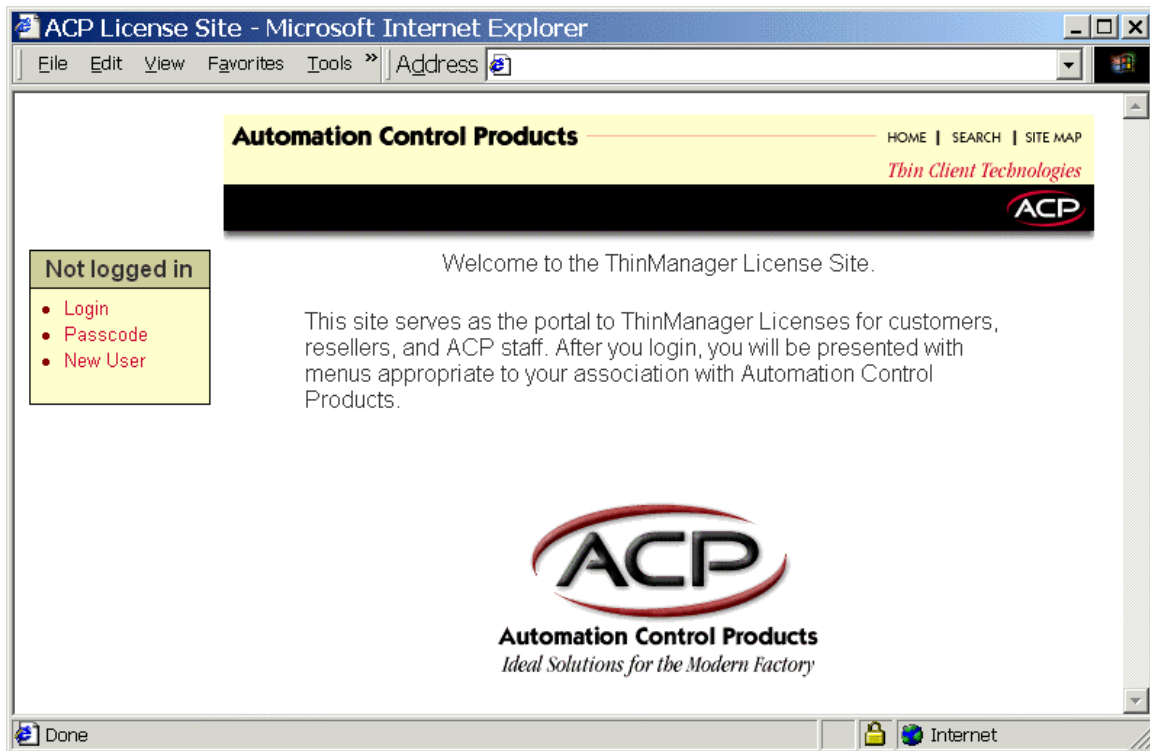
The **License File** needed to activate ThinManager is obtained from the ACP web site at <http://www.acpthinclient.com>.

Note: Since web sites are dynamic, the exact layout of the web screens may change, but the functionality should remain the same. If you have problems, please contact your distributor or e-mail support@acpthinclient.com for help.



www.acpthinclient.com

Select a **License Files** link. This will launch the **ThinManager License Site**.



ThinManager License Site

There are three links at the ACP Licensing Site:

- **Login** – This link allows previously registered users to enter the site.
- **Passcode** – This link allows previously registered users who have forgotten their username and password to receive an entrance code through an e-mail.
- **New User** – This link allows a person to become a registered user of the site so that they can activate a license.

If you are a new user, select the **New User** link. Previously registered users should login by selecting the **Login** link.

New User Registration - Microsoft Internet Explorer

File Edit View Favorites Tools » Address

Automation Control Products HOME | SEARCH | SITE MAP
Thin Client Technologies

ACP

Not logged in

- Login
- Passcode
- New User

Please enter a User Name for this site.

User Name

Submit Reset

ACP

Automation Control Products
Ideal Solutions for the Modern Factory

Done Internet

New User Login

Enter a name to be your ACP User Name. Select **Submit** to continue.

New User Registration - Microsoft Internet Explorer

File Edit View Favorites Tools » Address

Automation Control Products HOME | SEARCH | SITE MAP
Tbin Client Technologies
ACP

Not logged in

- Login
- Passcode
- New User

Please enter User Information

User Name John Doe

Name John Doe

Company Acme Co.

Title Network Administrator

Address 1 123 Main St.

Address 2

City Anytown

State GA

Zip 34567

Country USA

Phone (123) 456-7890

Fax

Email johndoe@acmecoco.com

Submit Reset

All fields in red are required.

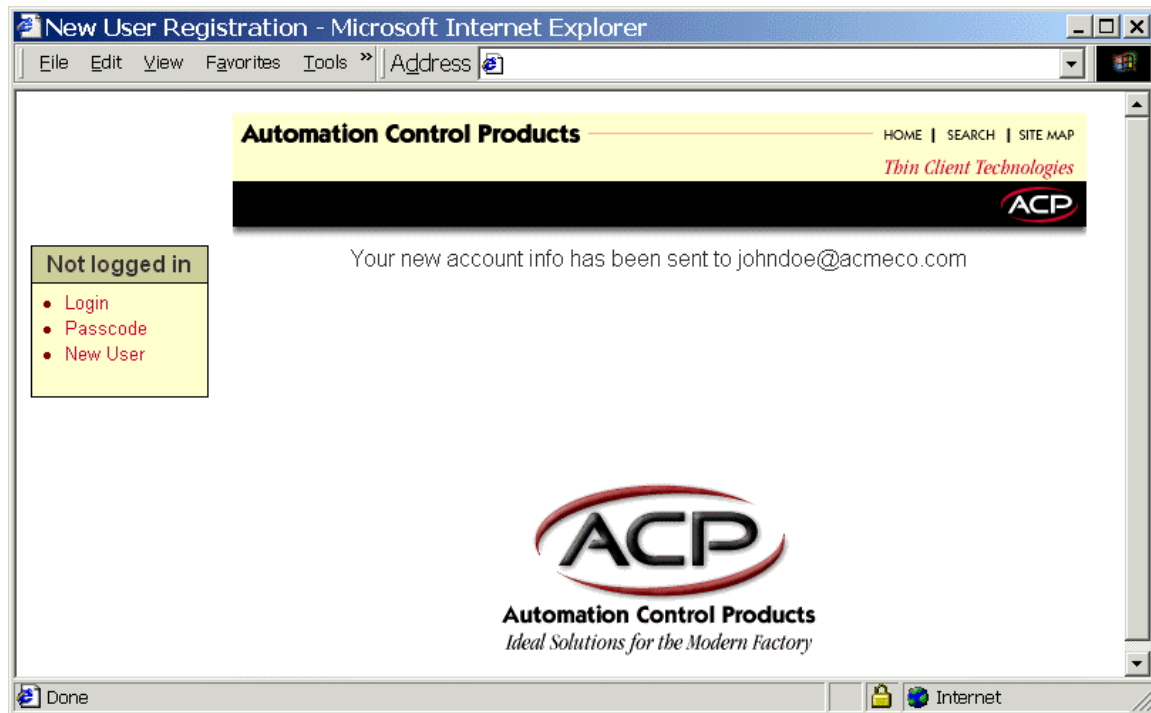
Done Internet

User Information Form

Fill in the User Information form.

Note: The e-mail address is very important because all correspondence, including your password will be sent to that address.

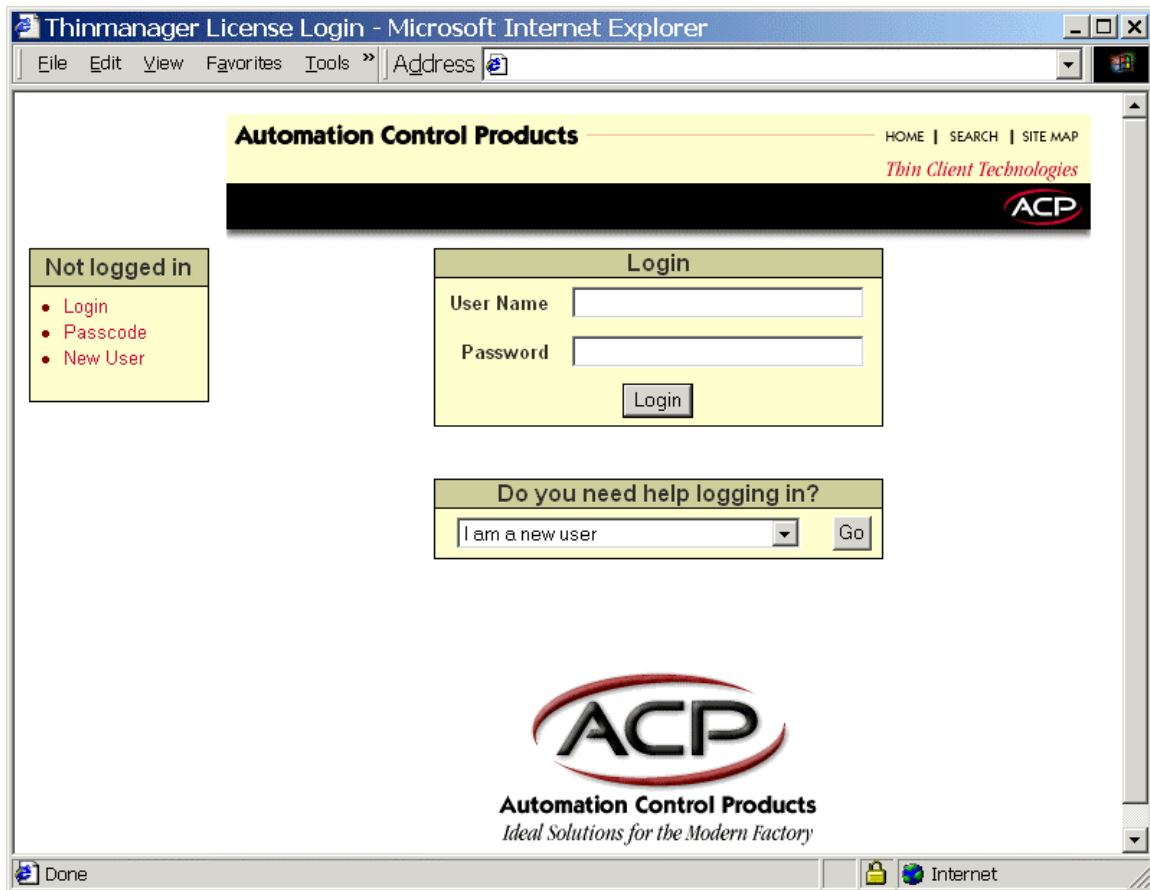
Select **Submit** when finished.



New Account Completion

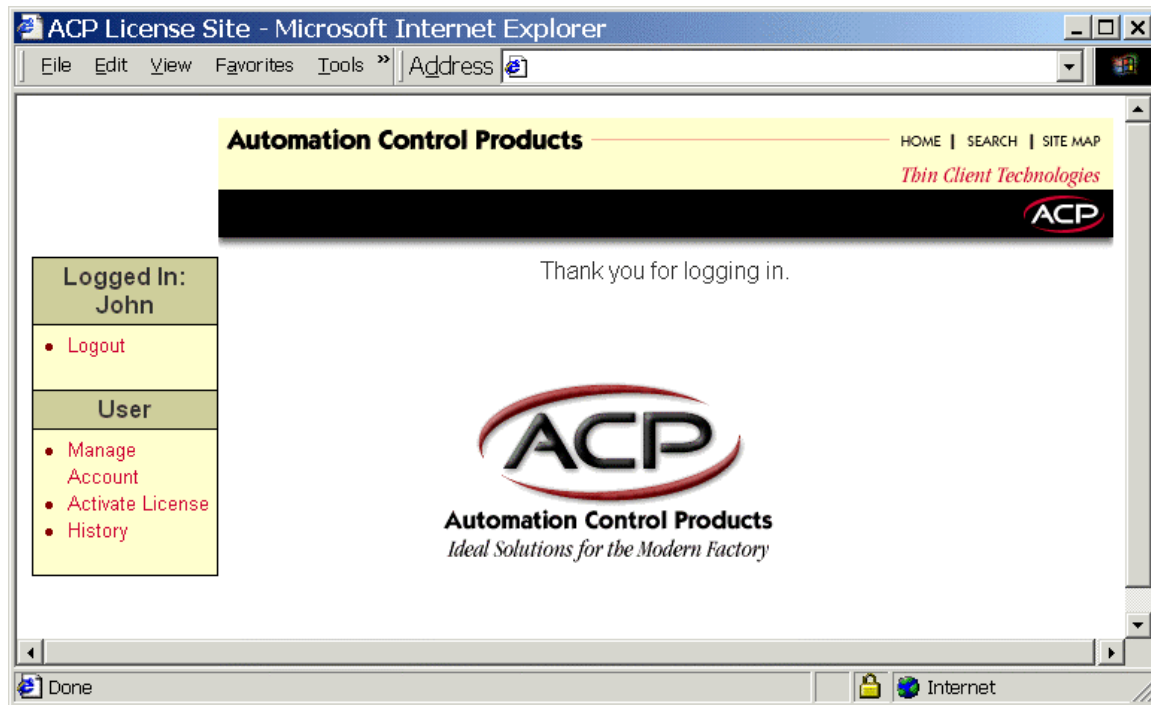
Your user name and password will be promptly sent to your e-mail address.

Select the **Login** link to continue.



Licensing Site Login

Enter the user name and password that you received in your e-mail into the appropriate fields. Select the **Login** button to continue.



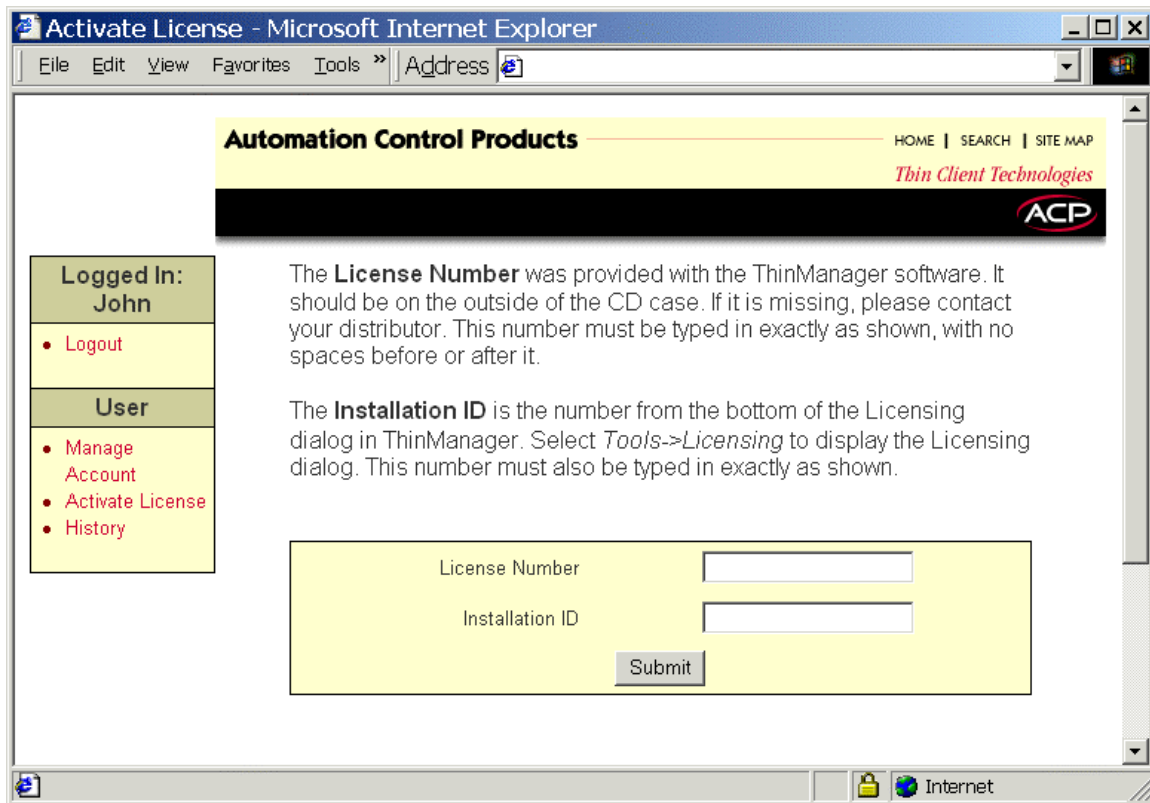
ACP Licensing Site

Inside of the ACP Licensing Site are four functions for the registered user.

- **Logout** – This link will allow exiting from the secure site.
- **Manage Account** – This link allows user information to be changed or updated. Passwords are changed here.
- **Activate License** – This link allows the activation of a license and the retrieval of a license file.
- **History** – This link displays past actions for the user account.

Select the **Activate License** link to activate a license and retrieve a license file.

Note: The initial password that is sent is complex and hard to remember. Going to Manage Account will allow the password to be changed.

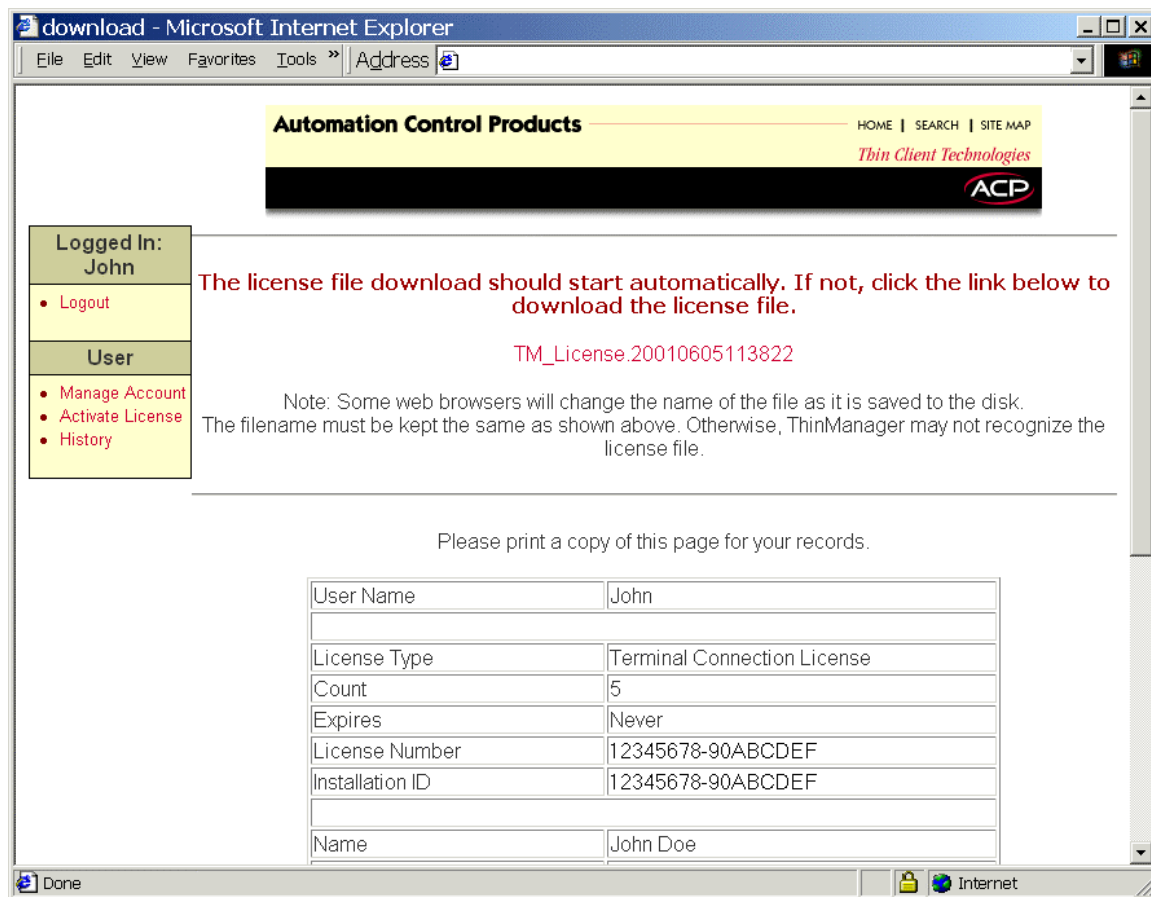


License Request Page

The new web page will have a field for the **License Number** and a field for the **Installation ID**.

Note: The **License Number** is located on a label inside of the ThinManager CD case. The **Installation ID** is on the ThinManager Licensing dialog box that is launched by selecting **Tools>Licensing** from the ThinManager menu bar and is shown in ThinManager License File Installation

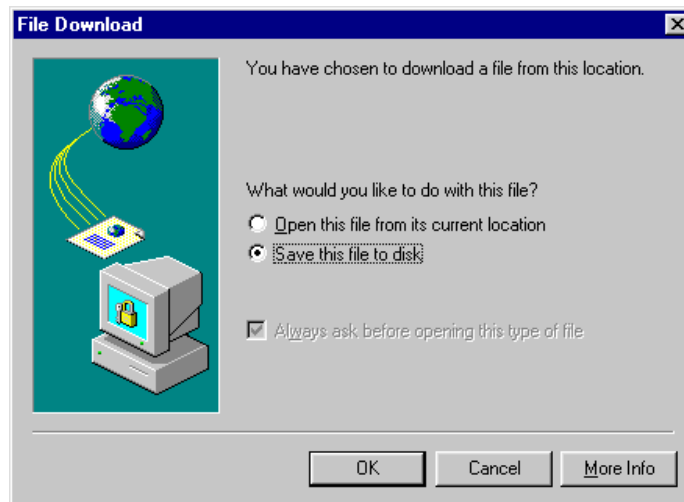
Fill in both fields. These numbers are case sensitive and cannot have extra spaces added.
Select the **Submit** button to continue.



Download License File

The **License File** will begin to download. A dialog box will appear that allows the option of opening the file from its current location or saving the file to disk. Saving the file to disk is recommended.

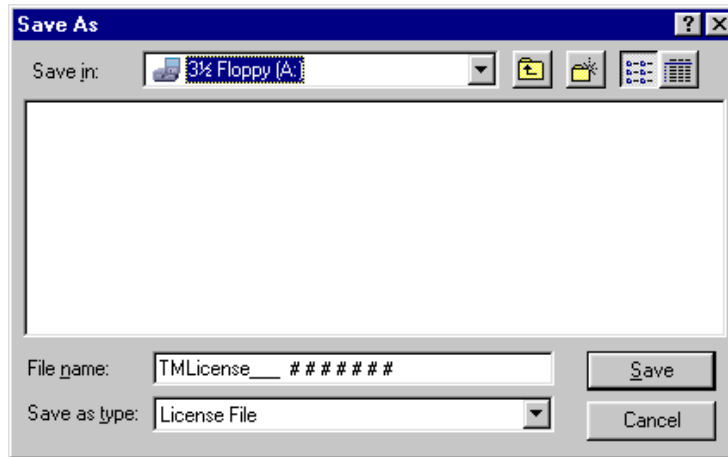
Print a copy of this page for your records.



Saving File to Disk

Select **OK** to continue.

A dialog box will appear that allows the selection of the download directory.



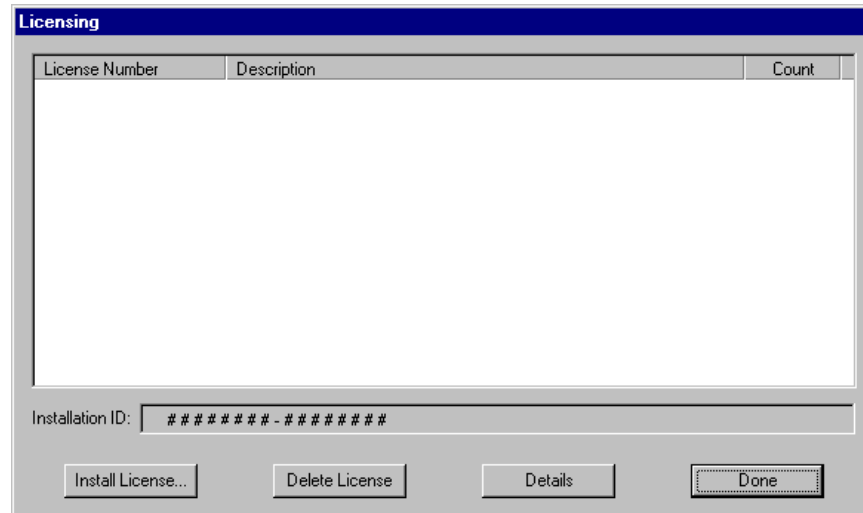
Save As Window

Select a directory or drive to copy the file to, and select **Save**.

The license file is now ready for installation.

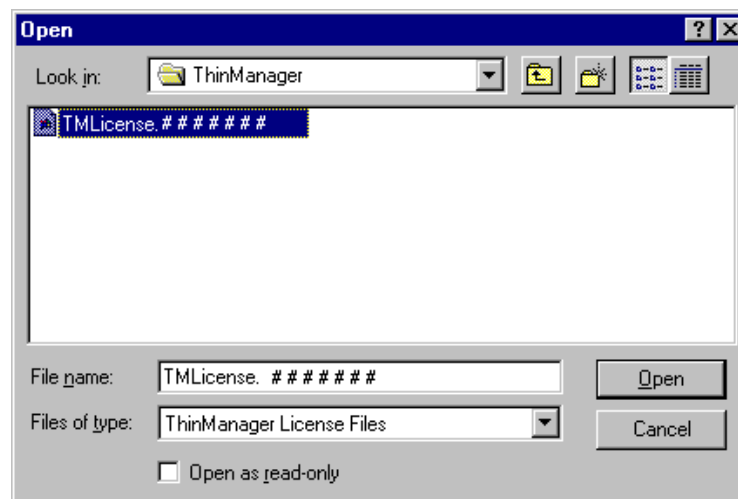
ThinManager License File Installation

Open the Licensing dialog box by selecting **Tools>Licensing** from the ThinManager menu bar.



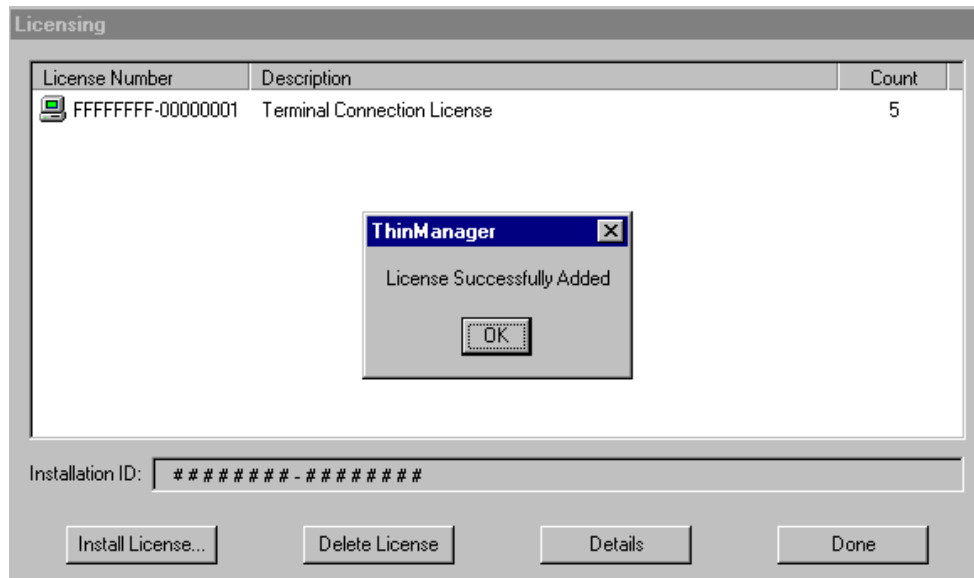
Licensing Dialog Box

Select the **Install License** button on the **Licensing** dialog box. An **Open File** dialog box will be displayed.



Open License File

Select the **License File** that was downloaded from the ACP web site and select **Open**. This will install the License File.



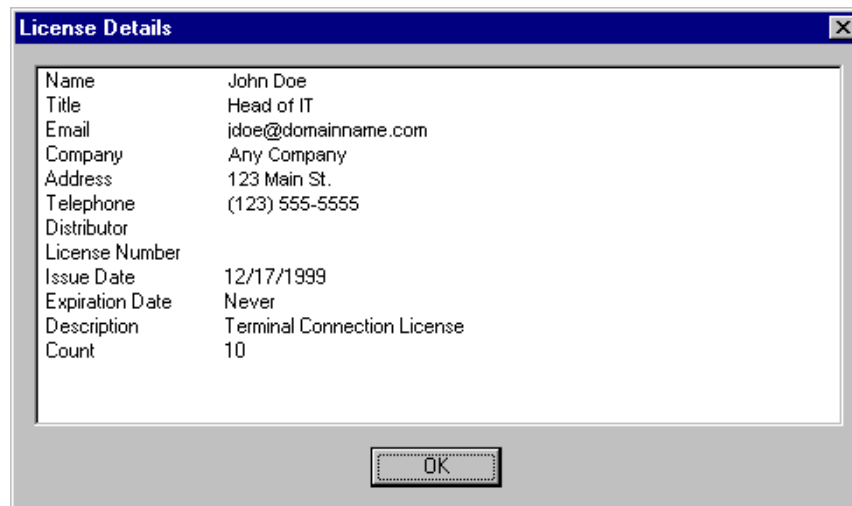
Add License

When the **License File** has been successfully installed, a message box will appear to confirm it. The **License Number** and properties will appear in the Licensing dialog box.

Select **OK** to close the message box.

Selecting the **Delete License** button on the Licensing dialog box will open a message box that will allow the deletion of a selected license.

Selecting the **Details** button on the Licensing dialog box when a license is selected will display a window with the details of the selected license.



License Details

Double-clicking a license in the Licensing dialog box can also open this window. Selecting **OK** will close the License Details window.

Selecting the **Done** button on the Licensing dialog box will close the Licensing dialog box.

ThinManager Module Licensing

Certain modules, like the High Speed Serial Driver, Instant Failover, and the Shared Keyboard and Mouse module require an ACP license to activate. These are activated through the ACP web site using the same procedures as the ThinManager license.

Additional Software Licensing

Additionally, software on the terminal server may need licensing based on the number of users. Each software company determines the details of licensing. Contact your software vendor for details

Additional ThinManager Features and Functions

Best Practices for Graphics and Design

ACP Enabled thin clients pass keyboard and mouse commands over the network to a terminal server for processing. The resulting GDI call (Graphics Display Interface) is sent over the network to the terminal processor for display. Proper design of graphics for thin clients screens, especially those used by HMIs (Human Machine Interface) and SCADAs (System Control and Data Acquisition) can keep performance equal to PCs. Poor graphic design and utilization can saturate the network or overload the terminal processor, hindering performance.

The World Wide Web provides many examples of the relationship between intelligent design and speedy graphic display. Some web sites are attractive, well designed, full of visual treats and information, and yet load quickly onto a computer. This is because text loads quickly, the colors are standardized colors, and the graphics are optimized to provide the best appearance in the smallest size.

Other sites may look similar, or even less intense; yet take much longer to load. This might be due to excessive, redundant code or scripts, using non-standard colors that require dithering, and the use of large-file graphics like bitmaps.

Here are some guidelines for good graphic design with HMIs and SCADAs:

- Design The Project In The Color Resolution That The Thin Clients Will Display The Project In.

The ICA protocol supports 256 colors. Designing the project in 256 colors will keep the project color consistent. If the project is designed in a higher color resolution, the terminal may be forced to substitute, approximate, or dither the colors, causing inconsistencies.

Note: MetaFrame 1.8, Feature Release 1, supports greater color depth.

- Close Unneeded Windows to Free Colors.

ICA has a 256-color table that it populates with colors as they are requested. Once this table is full, no additional colors will display, and dithering and substitution will occur. Keeping a window open, but in the background, will keep the colors reserved in the table. Closing unneeded windows may free colors that can be used to display needed colors.

- Use a Black Background on Client Desktops.

Using a black background for client desktops will eliminate the need to send the information to paint the background with a color or pattern, saving bandwidth.

- Limit Bitmap Usage.

Bitmaps, which store images pixel by pixel, are much larger, and require more processing resources than other graphic file formats. Files that use compression or vector graphics are much smaller, are easier to pass across the network, and are easier to display on the terminal screen. Many of these file formats can have the color depth reduced, decreasing the size and improving its display on a 256-color palette.

- Avoid Moving Bitmaps

Although bitmaps are large, they can be used effectively if they are constant, and not redrawn often. An effective HMI screen could consist of a photograph of the equipment or a portion of the plant, with the HMI graphics overlaying the photo. The photo would draw once when the screen is loaded, then changes would occur to the smaller, more efficient vector-based HMI graphics.

Moving bitmaps or screen savers, however, will require large amounts of the server's processing resources and may overload the terminal processor with a constant stream of processing demands.

- Continue to Use Traditional Blinking Graphics, Varied Text, and Buttons.

The traditional HMI display elements like text, blinking lights, numeric displays, and color blocks work well on terminals. These graphics are not as resource intensive as the pixel-by-pixel display of the bitmap.

- Disable Smooth Scrolling on Microsoft Internet Explorer.

Microsoft Internet Explorer displays better on thin clients if the "Use smooth scrolling" option is unselected on the **Internet Options>Advanced** tab of Internet Explorer

- Use a Small, Dynamic Feature Like a Clock on the Screens.

When a terminal is turned off (powered off, not logged off), the session will continue to run on the terminal server. If the server session sends a graphic update to the terminal, it will detect the change in the terminal status and will mark the session as disconnected. When the terminal is powered back on, it will boot and reconnect to the disconnected session, continuing the session where it left off.

However, if a terminal screen is static, the server session will have no need to send a graphic update to the terminal. A terminal may be powered off and the server may not realize that a terminal has been powered off. If the terminal is turned back on, the server may not realize that the terminal belongs to the still active session when it connects to the server. The terminal will create a new connection, causing a duplicate session on the terminal server.

The easiest way to prevent the creation of duplicate sessions is to have something change on the screen at least every minute to keep the communication between the server and the terminal active. If the terminal server sends an update to the terminal and can't communicate, it will mark the session as disconnected. Showing the clock in the desktop taskbar will provide the regular screen updates. Most HMI designers will display a navigational bar/status bar/function key bar with a clock on it that will serve the same purpose.

If duplicate sessions are created, Microsoft provides Terminal Services Manager, a session administration tool to manage this. This is described in Duplicate Sessions on page 200.

Installing a Local Printer in Windows 2000

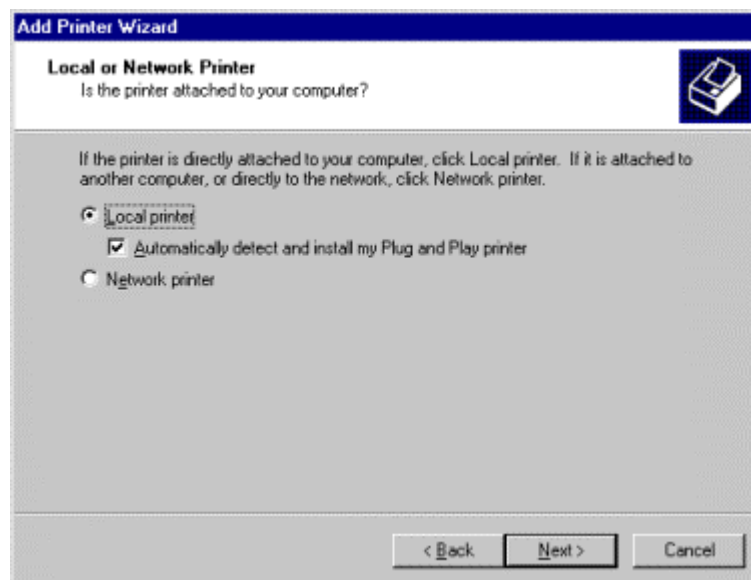
Begin the printer installation by attaching the printer to a parallel port on an ACP Enabled thin client.

Select the **Start>Settings>Printers>Add Printer** to launch the **Add Printer Wizard**.



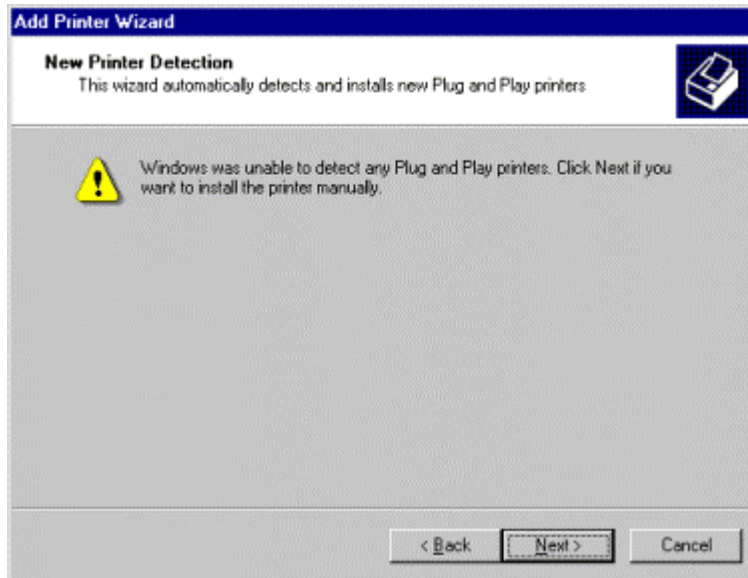
Add Printer – Windows 2000

Select **Next** to begin the printer installation.



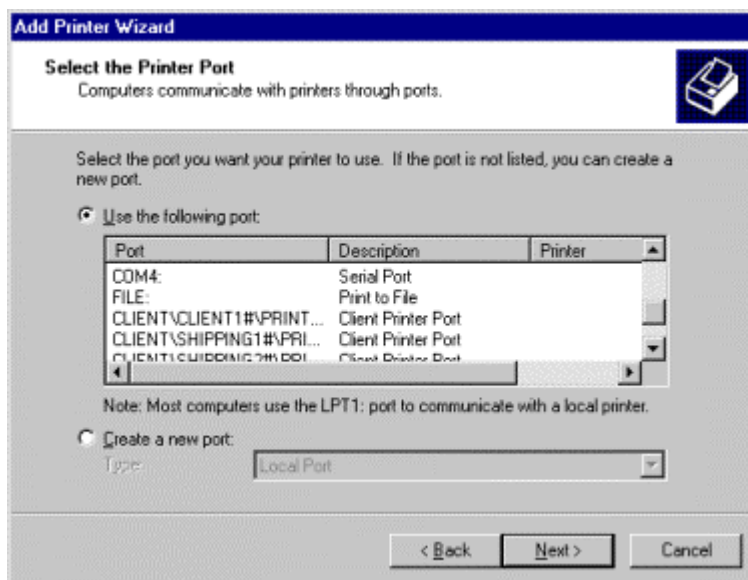
Local Printer Selection

Select a **Local Printer** or **Network Printer** and select **Next** to continue.



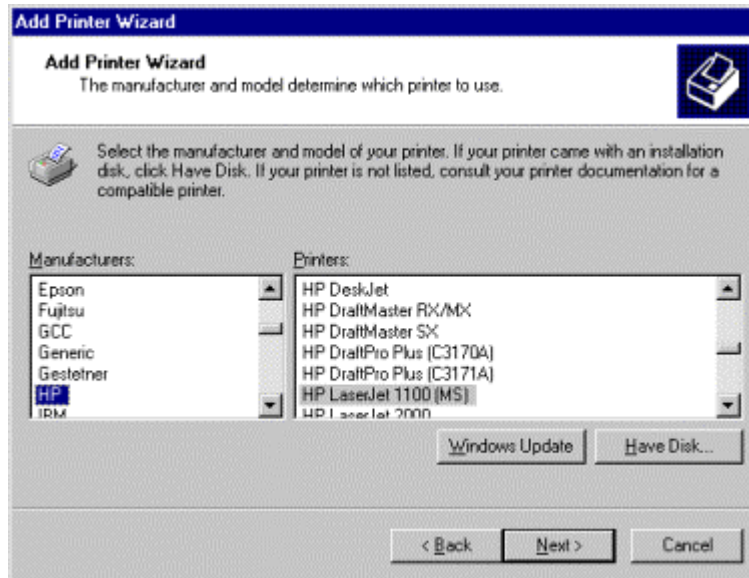
Plug and Play Printer Detection

The plug and play hardware detection system may not detect the printer on the terminal. Select **Next** to continue.



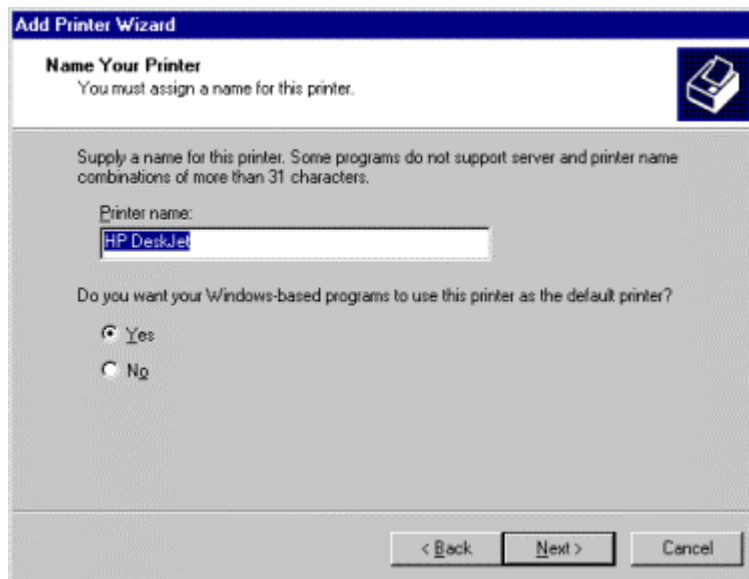
Printer Port Selection

Scroll through the ports and select a port attached to the proper terminal. Select **Next** to continue.



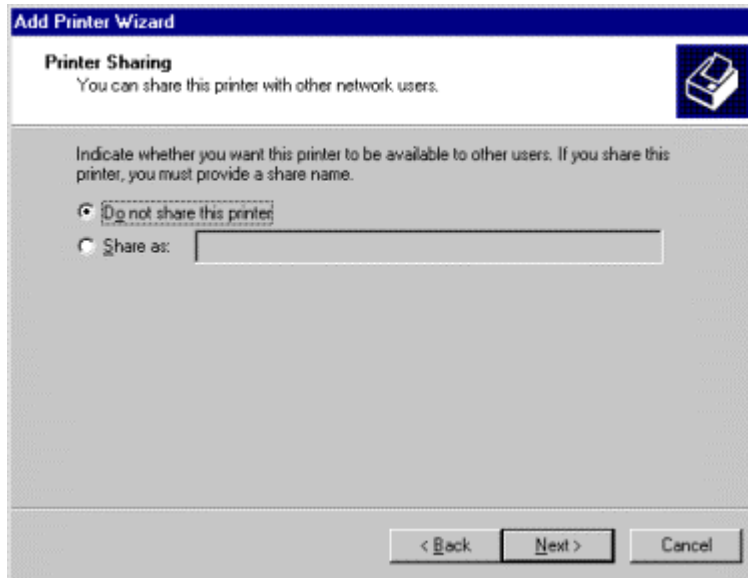
Printer Selection

Select the printer manufacturer and model from the lists. Select **Next** to continue.



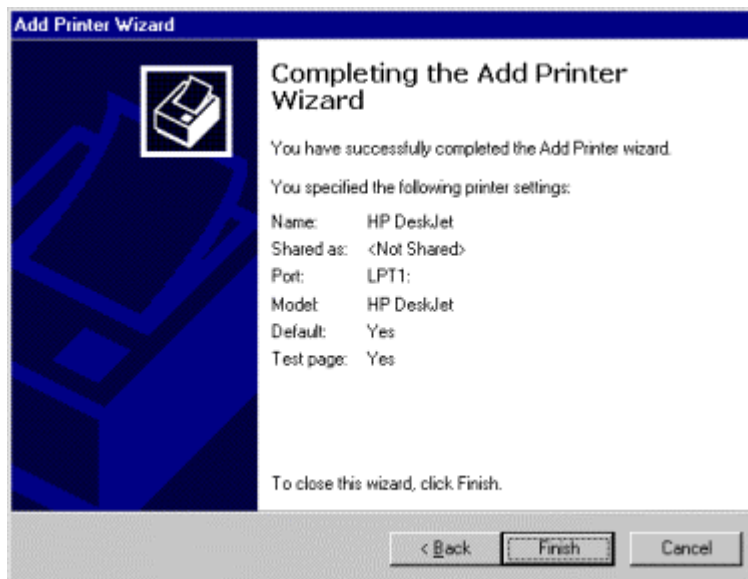
Printer Naming

Select a printer name. Select whether the printer is to be the default printer. Select **Next** to continue.



Printer Sharing

Select a whether sharing is desired. Select **Next** to continue.



Print Wizard Completion

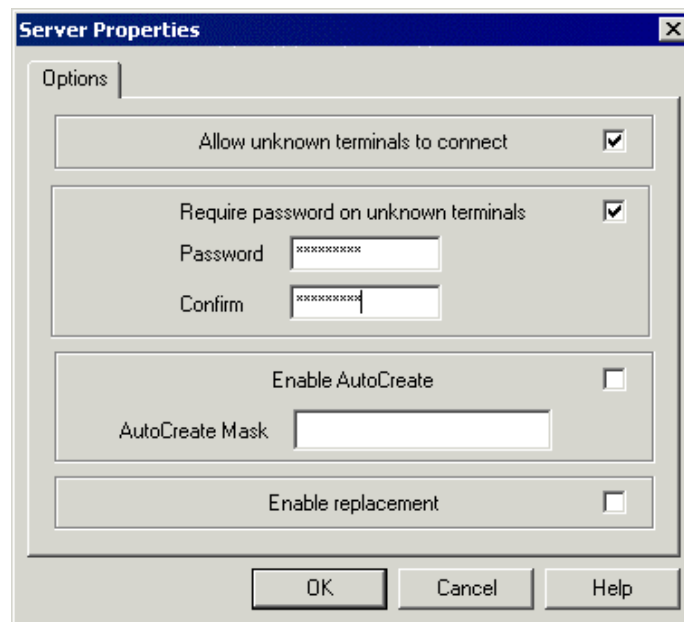
The Print Wizard will display the configuration of the printer. Select **Finish** to finish the printer installation.

Security

The ACP Enabled thin client system provides a Windows NT/2000 desktop on each thin client. Each thin client has full access to the server resources, as if it is the server. However, just because the thin client has the ability to have full access to the server resources doesn't mean that the user should be granted full access to the server. To prevent unauthorized changes to the server, it is recommended that each user profile have security policies applied through the System Policy Editor to limit access to the needed functions. Windows NT/2000 Security procedures are discussed in the Windows on-line help and in many books and articles.

In the industrial setting, administrators will often set the sessions to display the HMI/SCADA software as the initial application, and then let the HMI control access to administrative and supervisory screens.

Note: Task Manager has a feature that allows the launching of applications. If an initial application is defined on the *ICA Sessions* tab of the Terminal Properties, access to Task Manager should be denied in the security policy to prevent a user from launching unauthorized programs.



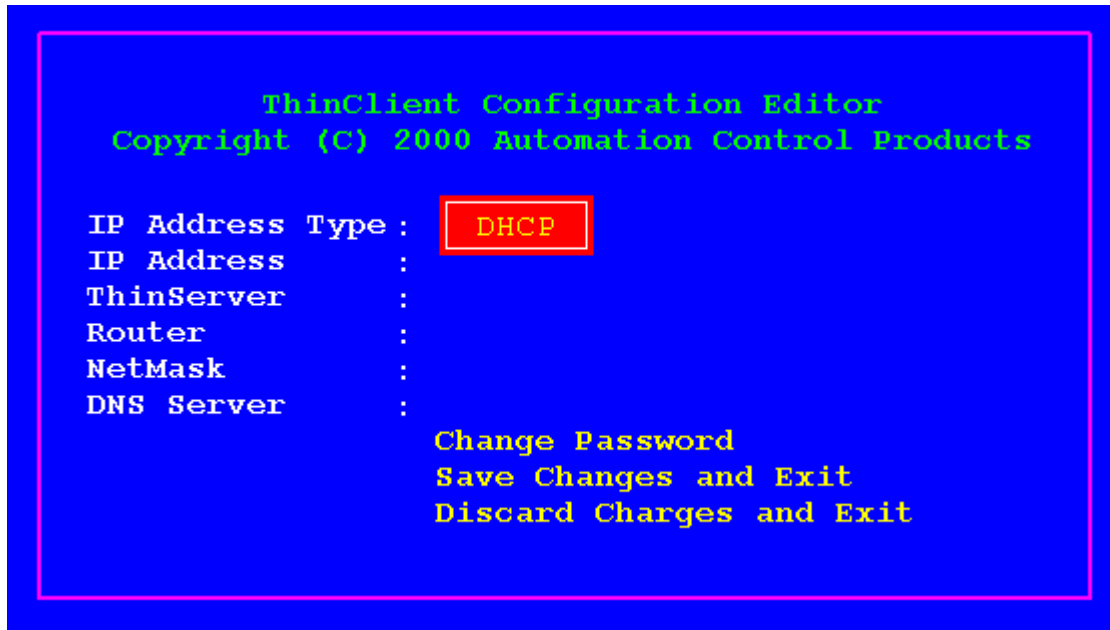
Server Properties

The *Require password on unknown terminals* field on the Server Properties dialog box increases security by requiring a password to add terminals to a network.

Disk-On-Chip

Disk-On-Chip Configuration

A disk-on-chip terminal loads the firmware locally before connecting to the ThinManager server. The disk-on-chip terminals have a setup program that allows configuration of the connection. Enter the program by selecting any key when **Select any key to configure** is displayed during the boot process. A setup screen will be displayed.



Disk-On-Chip Configuration Screen

The IP Addressing method is set to DHCP by default. To change a value, navigate with arrow keys to the desired property. Pressing the **Enter** key will allow the input and acceptance of new values. The changes may be saved or discarded before the boot process is resumed.

Updating Disk-On-Chip

ACP ThinManager has the ability to update the firmware on the disk-on-chip to keep the firmware current. Firmware updates for the disk-on-chip are done through the Disk-On-Chip Update module.

The disk-on-chip software module, when installed on an ACP Enabled thin client with disk-on-chip hardware, will compare the firmware on the disk-on-chip with the ThinManager server firmware when it connects to a ThinManager server. If the ThinManager firmware is different, it will download the ThinManager server firmware and update the disk-on-chip on the terminal.

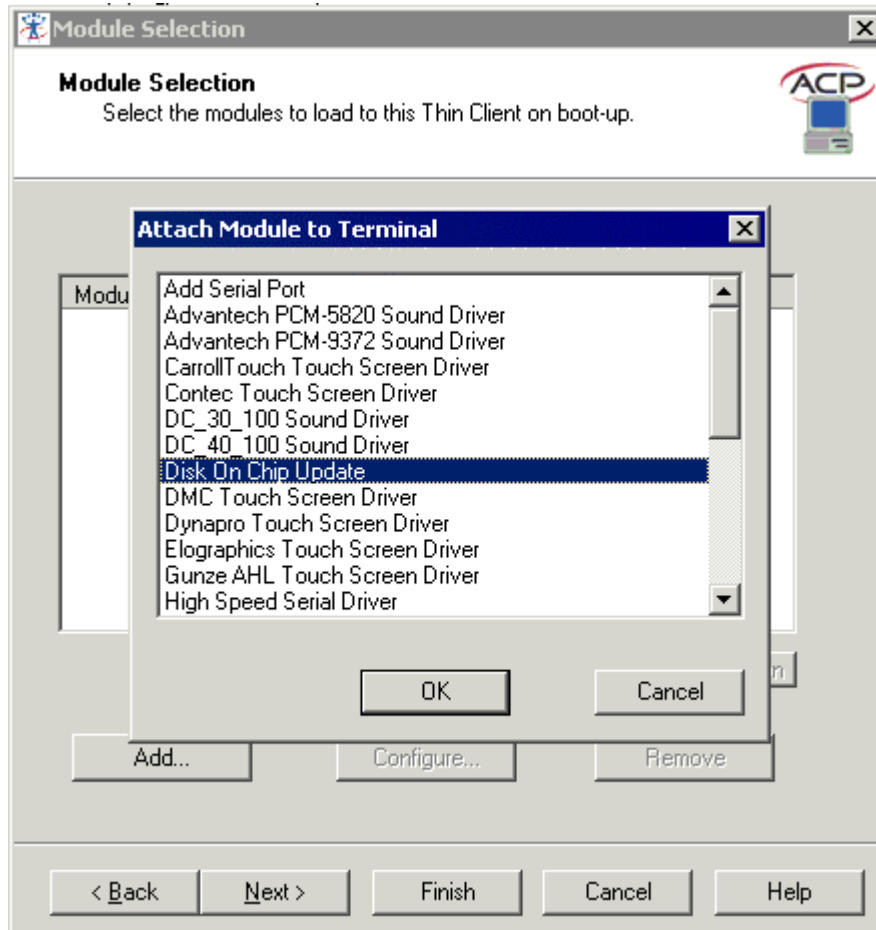
The ability to update disk-on-chip terminals eliminates the need to send the terminal back to the manufacturer to update the firmware.

Note: The firmware download can take from 5 seconds to 30 minutes, depending on the bandwidth of the connection, and the size of the firmware update.

Disk-On-Chip Module

The disk-on-chip module installs with ThinManager. To attach the module to a group or terminal, open the desired Group Property or Terminal Property as described in *Modifying a Terminal*

Select the **Add** button on the Modules tab. This will launch the **Attach Module** dialog box. Highlight the **Disk On Chip Update** module and select **OK**. This will attach the disk-on-chip update module to the terminal.



Disk-On-Chip Module

This module has one configurable parameter, **Confirm at Terminal**. If **Confirm at Terminal** is set to **Yes**, then the operator will be prompted to choose between an immediate firmware update updating later. If **Confirm at Terminal** is set to **No**, the firmware download will take place immediately.

Note: The module will download firmware when it detects a different firmware. Since this will only happen at the first reboot after updating the ThinManager firmware, it is safe to leave this module added to the disk-on-chip terminals permanently. It does not need to be added and removed each time the firmware is updated. However, since it will update when the firmware is different, it will try to update the firmware if you connect it to a ThinManager server with older firmware.

Note: It is recommended that instead of updating over a wireless connection, you connect terminals with Ethernet cable to update the disk-on-chip.

To set the **Confirm at Terminal** parameter, highlight the disk-on-chip update module and select the **Configure...** button. This will launch the **Module Properties** window.

Parameter	Value
Confirm at Terminal	YES

Parameter: Confirm at Terminal

Value: YES

Set

Done Cancel

Disk-On-Chip Module Properties

Highlight the **Confirm at Terminal** parameter. The *Value* field will change to a drop-down box containing **Yes** and **No**. Select the desired value and select **Done**.

Disk-On-Chip Update Program

Once the new firmware has downloaded, an update program will run on the disk-on-chip terminal to rewrite the new firmware to the disk-on-chip. The program will display a warning stating that the terminal must not be reset or powered off during the process, usually around 30 seconds. Ignoring the warning can corrupt the disk-on-chip, so it is important to leave the terminal alone for that period of time.

Note: Heed the warning. The terminal must not be reset or powered off during the brief period that the update program is writing the firmware on the disk-on-chip.

Serial Communications

Serial Port Mapping

Using a COM port on an ACP Enable thin client requires mapping the thin client COM port to a COM port in the session on the server. If the server does not have enough COM ports, "virtual" COM ports can be created and used.

To map a COM Port on the server to a COM Port on an ACP Enabled terminal, open a command prompt *on the client* and type:

```
net use comX: \\client\comY:
```

Where "X" is number of the server COM port and "Y" is the number of the thin client COM port. Use "*client*" for the name of the terminal.

For example: `net use com3: \\client\com2:`

The server COM port does not need to exist; it can be a virtual COM port. The example will map COM3 on the server to the COM2 Port on the client. Pointing to COM3 in the session on the server will display data from the client's COM2.

Note: The space after the colon in "comX" is important.

This is a local mapping. It must be mapped on the client, and the COM port data is only available to that session.

High Speed Serial Driver

Automation Control Products has a High-Speed Serial Driver (HSSD) module that offers more reliable serial communication at speeds to 115K per second. This is a global serial redirection; a COM port on a client becomes available to all users on that machine.

Installation Requirements

The high speed serial driver can be installed on any PC running Microsoft Windows NT 4.0 Service Pack 5 or higher, Microsoft Windows NT Terminal Server Edition Service Pack 5 or higher, or Microsoft Windows 2000.

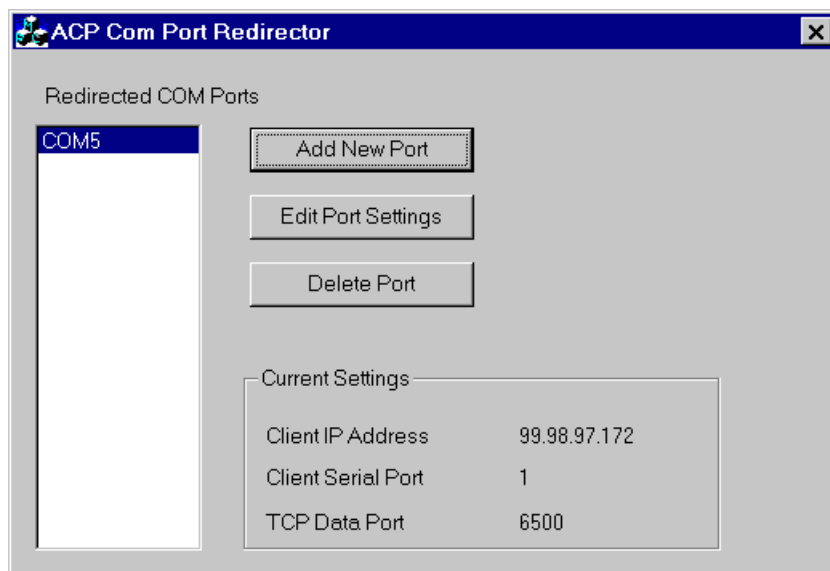
Note: The high-speed serial driver can be installed on a machine other than your Terminal Server machine. However to access the "serial ports" from your thin-clients, the high-speed serial driver must be installed on the server from which the thin-client session is running. If you install the software on another box you will be able to access the thin-clients serial ports from software on that machine.

HSSD Installation

Install the high-speed serial driver in the install mode using the **Add/Remove Programs** to point to the setup.exe file of the ACP High Speed Serial Driver Install. Follow the instructions to complete the installation.

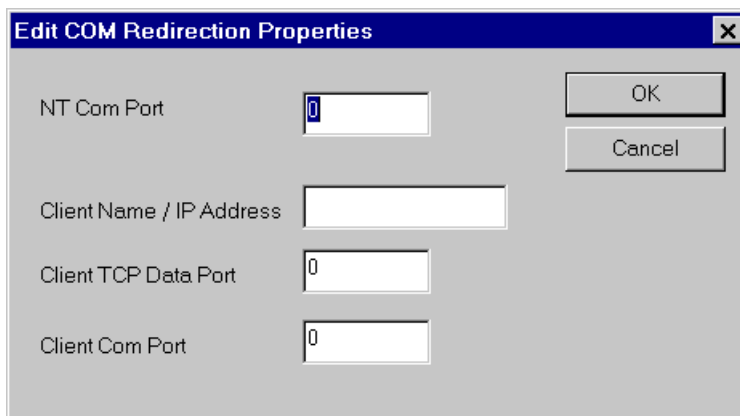
HSSD Configuration

Once the driver is installed, you will need to configure the serial ports you wish to access. The serial ports are configured on the computer the HSSD was installed on using the **acpcomredirector.exe** program. This program can be accessed from **Start>Programs>Acp>ACP Com Redirection**.



ACP Com Port Redirector

To configure a COM port click **Add New Port**, this will launch the **Edit Properties** dialog box.

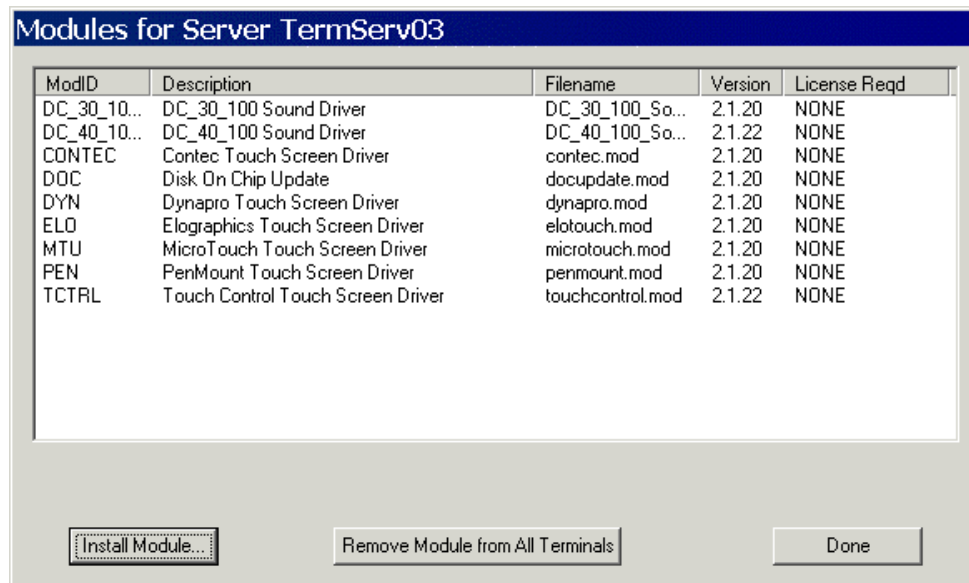


Com Redirection Port Properties

- Type in a COM port number to assign a number to a “virtual” port in the NT Com Port field. This number will identify the COM port on the NT system.
- Type in the thin client IP address for the client will the actual serial port in the Client Name/IP Address field.
- You can leave the Client TCP Data Port field empty. The program will fill this in with a unique port number for every serial port that is on the same thin-client, starting with 6550.
- Type in the actual serial port number of the thin client’s port that is being used into the Client Com Port field.

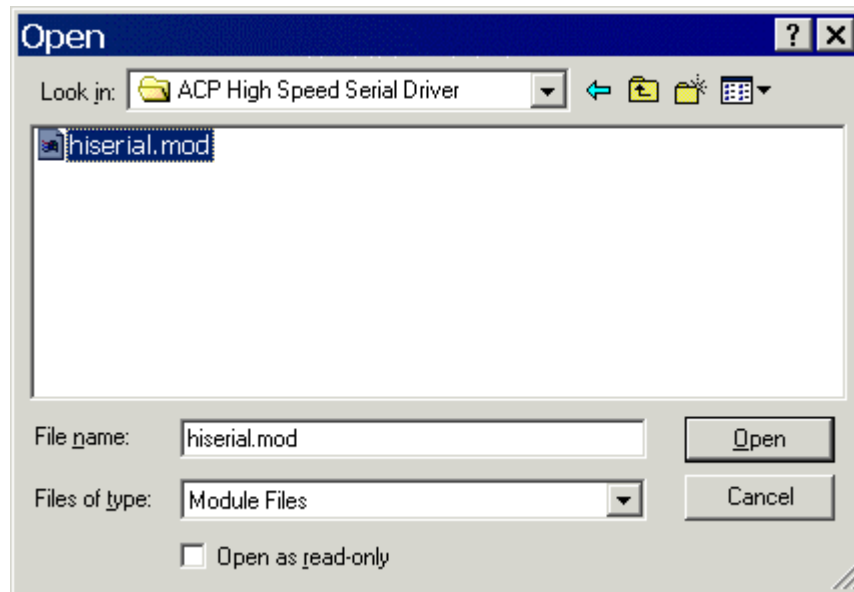
Module Installation

Before you can redirect a serial port from a thin client, you must install the High Speed serial module in ThinManager. From the ThinManager menu bar, select **Tools>Modules**. This will launch the Module dialog box.



Module Dialog Box

Select the **Install Module** button. This will launch a **Browse** dialog box.



Browse Dialog Box

The high-speed serial module is copied to the install directory of the high-speed serial driver. Use the **Browse** button to find the module in this directory. Highlight the module and select **Open**.

This will install the HSSD module and make it available to thin clients through Terminal Properties.

Module License Installation

Before using the high-speed serial module, you must install the license for the high-speed serial module. This license can be obtained from www.acpthinclient.com. The procedure is that same as for the ThinManager terminal licenses. Please refer to ThinManager Licensing on page 158 for details.

ThinAdapter and the ThinAdapter Plus

The ThinAdapter is a Network Interface Card with an ACP Boot ROM that allows a PC to boot as an ACP Enabled thin client. This allows outdated PCs to be converted to modern thin clients. A PC with the ThinAdapter card and its hard drive removed or unplugged becomes an ACP Enabled Thin Client.

The ThinAdapter Plus is the ThinAdapter network card with a video card. This eliminates video compatibility issues.

Note: It is recommended that the computer hard drive be unplugged or removed.

ThinAdapter

The requirements for using a ThinAdapter include:

- **Processor Requirement:** Pentium 133 or better is required for ThinAdapters
- **Memory Requirement:** 64 MBs of RAM is required for ThinAdapters
- **ThinManager Terminal Properties Configuration:** Set the OEM field to **Generic** and the Model field to **Other** on the Identity tab.
- **Video Card Requirements:** The following video chipsets are compatible. However, not all cards with these chipsets are guaranteed to work due to the variation in board components among vendors.

ThinAdapter Plus

ThinAdapter Plus Includes a video card to eliminate the need to try to match the ThinAdapter with a video chip set. The ThinAdapter Plus has the same requirements as the ThinAdapter.

- **Processor Requirement:** Pentium 133 or better is required for ThinAdapters
- **Memory Requirement:** 64 MBs of RAM is required for ThinAdapters
- **ThinManager Terminal Properties Configuration:** Set the OEM field to **Generic** and the Model field to **Other** on the Identity tab.
- **Video Card Requirements:** Use the included video card to provide the supported video chipset

Supported Video Chips for ThinAdapters

Chips & Technologies		Cirrus Logic		CyberPro	National Semiconductor	Silicon Motion
65520	69000	5420	5465	2010	GXLV (Media GX)	LynxEM
65525	64200	5222	5480	5000	SC1400A	
65530	64300	5424	6205		SC1200	
65535		5426	6215			

65540		5428	6225			
65545		5429	6235			
65546		5430	7541			
65548		5434	7542			
65550		5436	7543			
65554		5446	7548			
65555		5462	7555			
68554		5464	7556			

Auto-Creation of Terminals

Turning on a terminal for the first time will initiate the ***Replace or Auto-Create Terminal*** mode if:

The ***Auto-Create mode*** is enabled by the selection of the ***Enable AutoCreate*** check box on the Server Properties window.

And

The ***Default*** terminal is configured as a template for the new terminals

New terminals can be added to the system and configured without additional input from the server.

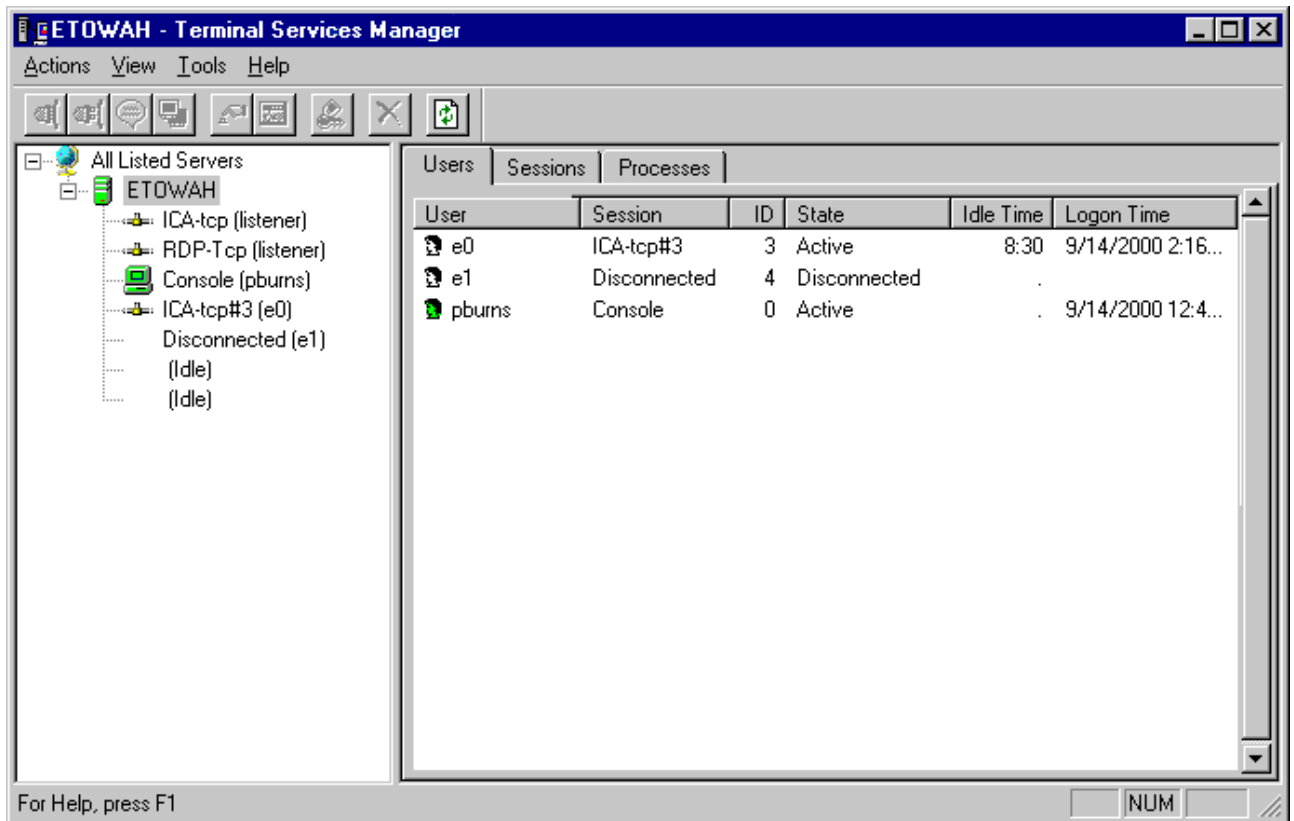
Help With Non-ACP Components

Terminal Services Management

Microsoft provides a utility for managing sessions on terminal servers. This program is called **Terminal Server Administrator** in **Windows NT 4.0 TSE**, and **Terminal Services Manager** in **Windows 2000**. This program:

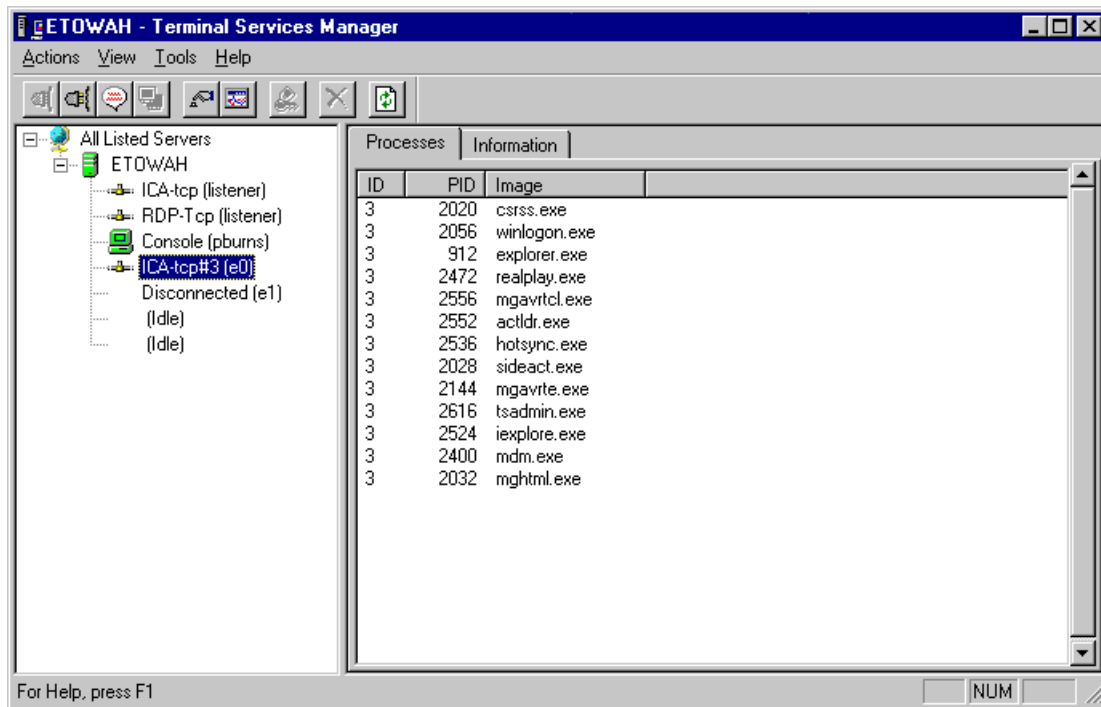
- Displays current users and connections
- Displays the status of terminal connections.
- Displays the processes running on each session.
- Allows messages to be sent to various sessions.
- Allows the shadowing or remote control of other sessions.

Select **Start>Programs>Administrative Tools> Terminal Services Manager** to launch this program.



Terminal Services Manager

If the server is highlighted in the tree pane, the program shows tabs that display the details of the **Users**, **Sessions**, and **Processes** of the server.



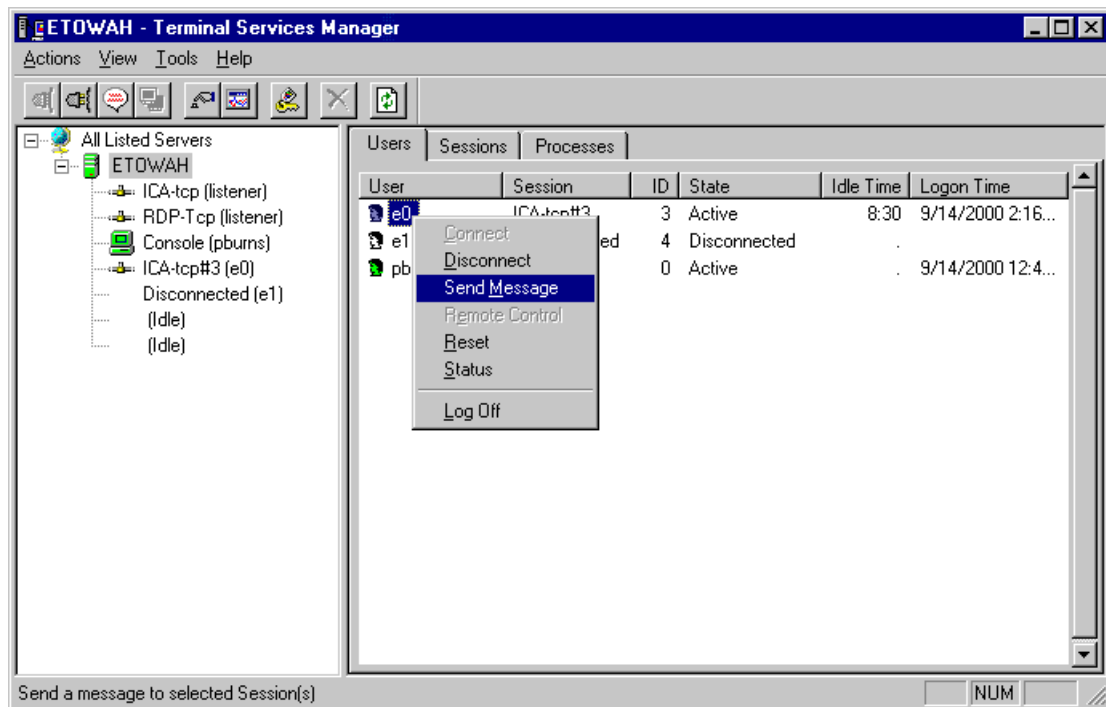
Terminal Services Manager – Session Processes

If a session is highlighted in the tree pane, the program displays **Processes** and **Information** tabs.

Send Message

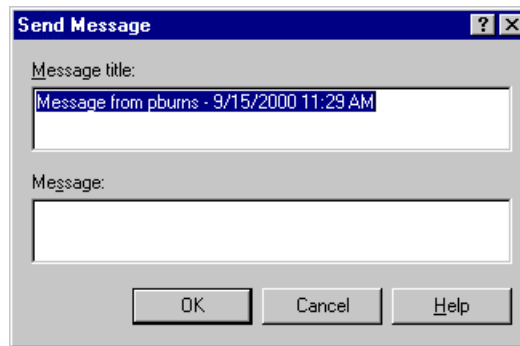
Terminal Service Manager can be used to send messages to terminals.

Right click on a connection in the tree pane or right click on a user in the detail-view panel will launch a menu.



Terminal Services Manager – Right-click Menu

Select **Send Message**. This will launch a message box.



Send Message Dialog Box

Fill in the desired message.

Select **OK** to send.

Note: Messages can be sent from the command line by using `C:\ net send username "message"`, where `username` is the recipient's login name and `message` is the desired message.

Shadowing and Remote Control

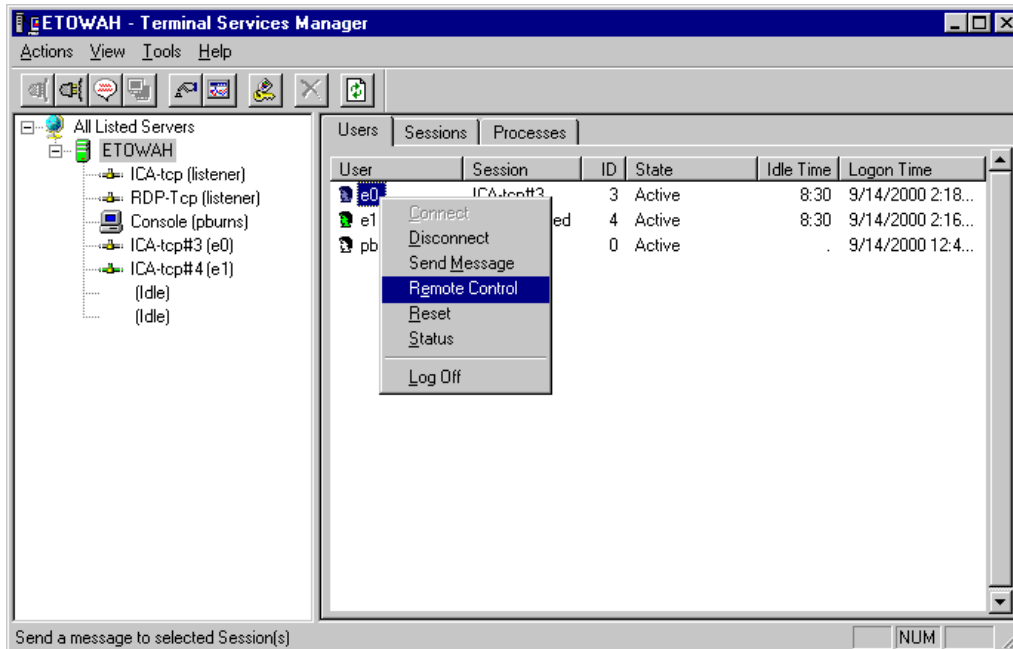
Shadowing is a Windows NT/2000 Terminal Server utility that allows a person logged in as an administrator to view a client session from another client. Additionally, the administrator's keystrokes and mouse movements can be configured to provide input to the shadowed client. This feature allows an administrator to do remote troubleshooting and support.

Note: This program is called **Shadowing** in Windows NT 4.0 TSE and **Remote Control** in Windows 2000.

Remote Control is initiated in the **Microsoft Windows 2000 Terminal Services Manager**.

Open this program by selecting **Start>Program Files>Administrative Tools>Terminal Services Manager**.

Either highlight a connection in the tree pane and select **Action>Shadow** from the menu bar, or right-click a client on the user tab of the detail-view pane and select Remote Control. This will initiate the Remote Control session.



Shadowing / Remote Control

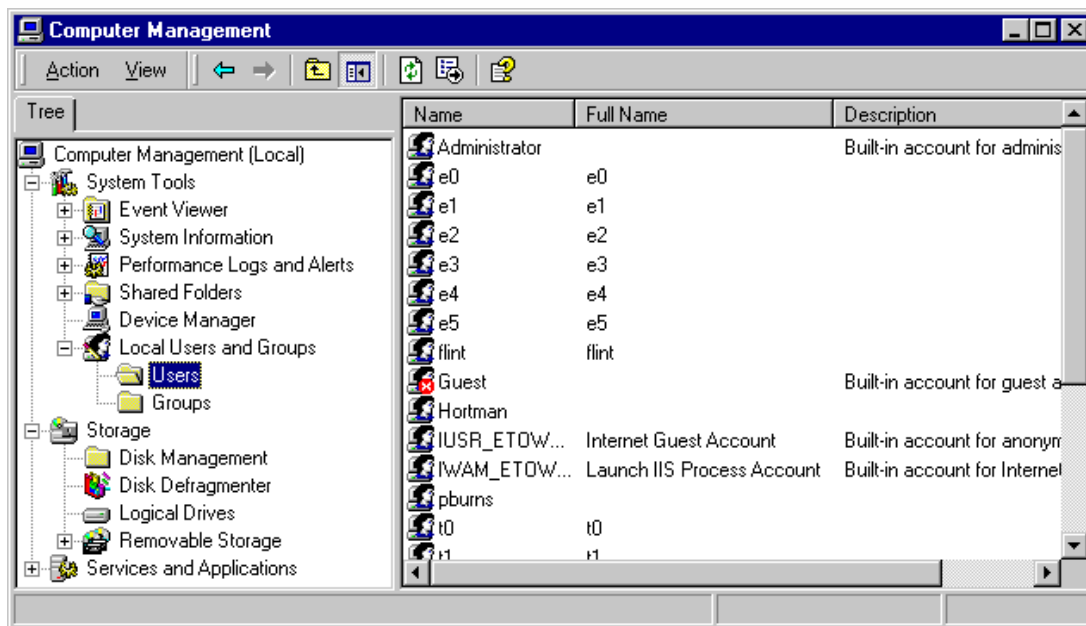
Note: The server console is not available for shadowing. Only administrators can shadow. An administrator can run the shadow session from one client to another client.

The default hot keys used to end a shadow session are **CTRL + *** (on the number keypad). Please remember this escape hot key.

Windows 2000 Remote Control Configuration

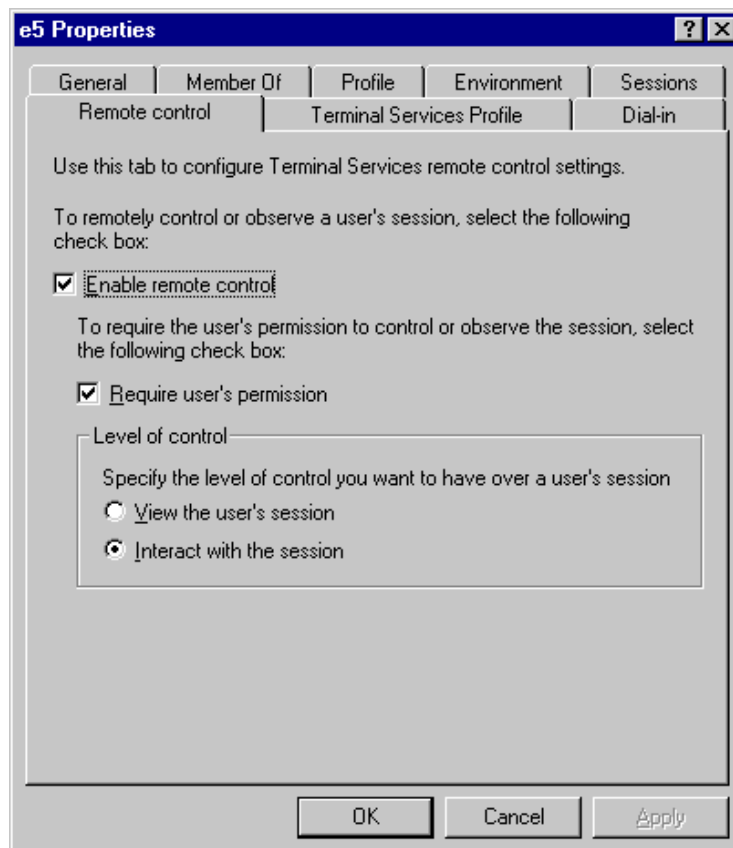
A Windows 2000 session must have its user profile configured to allow shadowing/remote control. This is done in the User Properties dialog box. The User Profile is accessed from the Computer Management Console.

Open this program by selecting **Start>Programs>Administrative Tools>Computer Management**.



Computer Management – User List

To launch a User Profile, select the **System Tools > Local Users and Groups > Users** folder in the **Computer Management** tree pane and double-click on the desired user. This will launch the **User Properties** for the selected user.



Windows 2000 User Properties

There are several parameters that allow shadowing/remote control to be configured.

- **Enable remote control**, if selected, will allow the user to be shadowed. Shadowing is not permitted if this is unchecked.
- **Require user's permission**, if selected, will launch a dialog box on the user's screen that needs accepted before shadowing can begin. The shadowing will take place without confirmation if this is unchecked.
- **View the user's session**, if selected, will disable the administrator's mouse and keyboard input, and make the administrator a passive viewer.
- **Interact with the session**, if selected, will allow the administrator to control the session with mouse and keyboard, becoming an active participant.

Note: The server console is not available for shadowing. Only administrators can shadow. An administrator can run the shadow session from one client to another client.

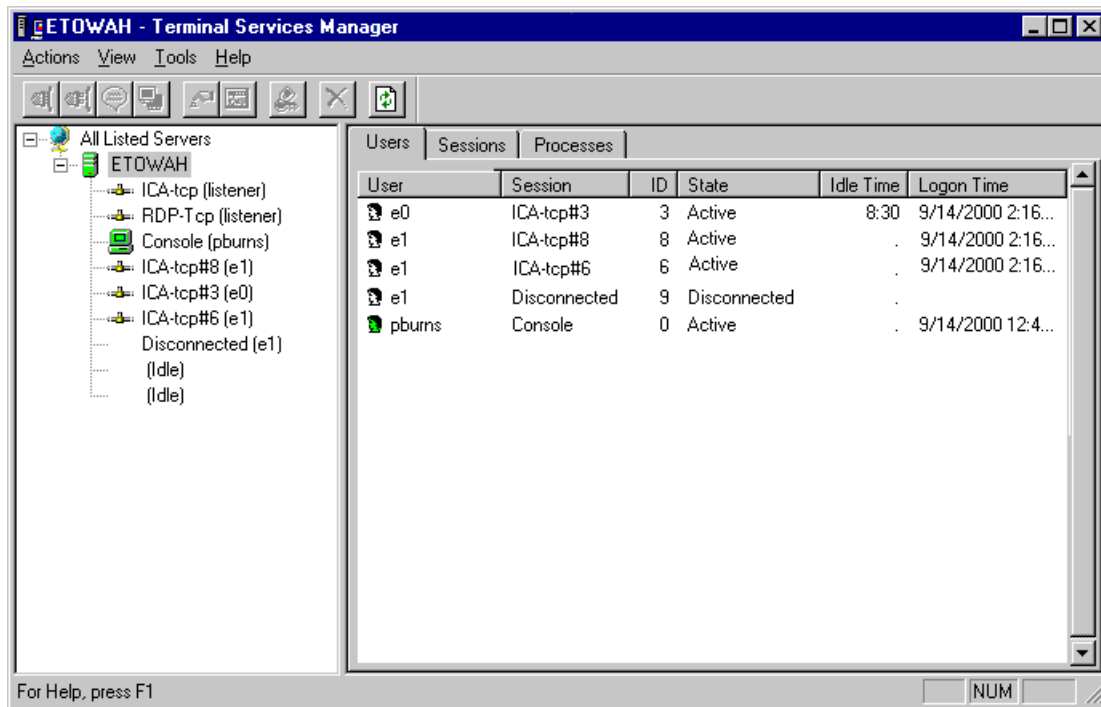
Note: A change to a profile requires that the session is logged off and re-established.

Duplicate Sessions

It is possible for a terminal to be turned off and its session stays active instead of being disconnected. This can occur if the terminal screen is static and the server has no need to update the screen while the terminal offline. When the terminal reconnects to the server it creates a new session, creating duplicate sessions. Terminal Services Manager can eliminate the duplicate sessions.

Best Practices for Graphics and Design on page 176 provides tips to preventing duplicate sessions.

To manage duplicate session, launch Terminal Server Administration/Manager by selecting **Start>Programs>Administrative Tools (Common)> Terminal Services Manager**.



Duplicate Sessions

Any duplicate sessions will show up in the Users tab when the server is highlighted. Three commands are available, **Disconnect**, **Reset**, and **Log Off**. These are activated by highlighting a session and right clicking, or by highlighting a session and selecting **A**ctions from the menu bar.

- **Disconnect** will disconnect an active session.
- **Reset** will end a disconnected session
- **Log Off** will end an active session

These tools allow an administrator to eliminate duplicate sessions.

Command Prompt

Windows 2000 has several commands that aid in managing the terminal server. Some useful ones are:

<i>Command</i>	<i>Action</i>
change logon	Temporarily disables logons to a Terminal server.
change port	Changes COM port mappings for MS-DOS program compatibility.
change user /install	Puts the server into "Install Mode"
change user /execute	Removes the server from "Install Mode"
ipconfig	Displays the IP addresses of the network card
Logoff	Logs off a user from a session and deletes the session from the server.
net send <i>username</i> " <i>message</i> "	Sends a message to a user. <i>username</i> is the NT/2000 user name that the person or terminal is logged in as. " <i>message</i> " is the text of the message. Quotation marks are needed for any messages containing a space.
query process	Displays information about processes running on a Terminal server.
query session	Displays information about sessions on a Terminal server.
query termserver	Displays a list of all Terminal servers on the network.
query user	Displays information about user sessions on a Terminal server.
reset session	Resets a session to known initial values.
shadow	Monitors another user's session.
tsdiscon	Disconnects a client from a terminal server session.
tsshutdown	Shuts down the terminal server in an orderly manner

See the Windows online help for additional commands and parameters.

Windows 2000 Server Building Instructions

Ingredients:

- A computer with the latest processor, and sufficient RAM for each session. We recommend at least 128 MB of RAM, plus 16 to 48 MB of RAM per client.
- Windows 2000 Server Installation Disk and Terminal Server Client Access Licenses
- ACP ThinManager **CD** Installation Disk

Installing Windows 2000

Reformatting the Hard Drive

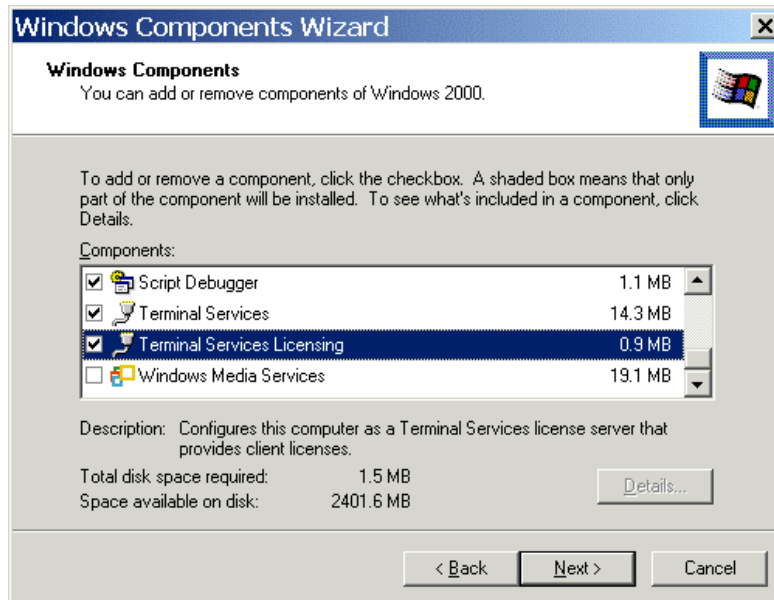
1. Set the computer (in CMOS) to boot from the CD-ROM drive. Insert the Windows 2000 Server Installation Disk into the CD-ROM drive and reboot the machine (Turn the power off and on). If the computer is not set to boot from the CD-ROM drive, you need the 3-disk boot setup from Microsoft.
2. Windows 2000 will auto-detect old copies of the OS (operating system) and analyze the hard drive. It will provide the option of setting up Windows 2000, repairing Windows 2000, or quitting. Select *Enter* to install Windows 2000. A number of files will be copied at this time.
3. Select *F8* to accept the licensing when prompted.
4. Delete the existing partitions and create a new one(s). This will take a number of steps and confirmations. Highlight an old partition, type “*D*” to delete, type “*L*” to confirm, then type “*C*” to create a new partition.
5. Decide if you want the FAT or NTFS file system. NTFS is recommended because it provides better security.
6. Reformat the hard drive. There will be a lot of confirmations at this step.
7. The setup files will be copied.
8. You will be prompted to remove the CD and restart.
9. Restart the computer. Re-insert the Windows 2000 Installation disk when prompted.

Windows 2000 Setup Wizard

A Windows 2000 Setup Wizard provides step-by-step configuration of the computer. Select the appropriate choices at each step, then select *Next* to continue. A *Back* button allows the retracing of steps.

1. **Installing Devices** - Detects and installs devices and drivers.
2. **Regional Settings** - Allows the location and keyboard settings to be changed from the USA default.
3. **Name & Organization** - Allows the user’s name and company to be listed.
4. **Licensing Mode** - Lets you list the “Per Server” or “Per Seat” licensing. If these are not selected now, use *Licensing* in *Administrative Tools* to record the number of Client Access Licenses (CAL) purchased.
5. **Computer Name and Administrative Password** - Allows the name and password to be set.

6. **Windows 2000 Components** - A list appears with options and components to add to the server. Several components need to be selected.



Windows Components

The Windows 2000 Setup Components are shown in the following list. Sub-categories are indented.

- ✓ The “Check” bullet indicates a default selection
 - The “Box” bullet indicates an optional selection
 - **The “Bold Box” indicates a feature that needs selection**
-

- ✓ Accessories & Utilities
 - ✓ Accessibility Wizard
 - ✓ Accessories
 - ✓ Communications
 - ✓ Games
 - ✓ Multimedia
- Certificate Services
 - Certificate Services CA
 - Certificate Services Web Enrollment Support
- ✓ Indexing service
- ✓ Internet Information Services (IIS)
 - ✓ Common Files
 - ✓ Documentation
 - ✓ File Transfer Protocol (FTP) Server
 - ✓ FrontPage 2000 Server Extensions
 - ✓ Internet information Services Snap-In
 - ✓ Internet Service Manager (HTML)
 - NNTP Services
 - ✓ SMTP Service

- ☐ Visual InterDev RAD Remote Deployment Support
- ✓ World Wide Web Server
- ☐ Management and Monitoring Tools
 - ☐ Connection Manager Components
 - ☐ Network Monitoring Tools
 - ☐ Simple Network Management Protocol
- ☐ Message Queuing Services
- ☐ Networking services
 - ☐ COM Internet Services Proxy
 - ☐ Domain Name System (DNS)
 - ☐ **Dynamic Host Configuration Protocol (DHCP)** (if desired)
 - ☐ Internet Authentication Service
 - ☐ QoS Admission Control Service
 - ☐ Simple TCP/IP Service
 - ☐ Site Server ILS Services
 - ☐ Windows Internet Name Service (WINS)
- ☐ Other Network File and Print Services
 - ☐ File Services for Macintosh
 - ☐ Print services for Macintosh
 - ☐ Print Services for Unix
- ☐ Remote Installation Services
- ☐ Remote Storage
- ✓ **Script Debugger**
- ☐ **Terminal Services**
 - ☐ **Client Creator Files**
 - ☐ **Enable Terminal Services**
- ☐ **Terminal Services Licensing** (One server on the network needs configuration as a Terminal Services Licensing Server)
- ☐ Windows Media Services
 - ☐ Windows Media Services
 - ☐ Windows Media Services Admin

7. **Windows 2000 Components** - Highlight **Networking Services**, select *Details*, check **Dynamic Host Configuration Protocol (DHCP)** if needed (One server per network needs this enabled if you plan to use DHCP).

8. **Windows 2000 Components** - Check **Terminal Services**.

Note: Terminal Services needs to be selected to make the server a terminal server.

9. **Windows 2000 Components** - Check **Terminal Services Licensing** if needed (one server on the network needs this enabled).

10. **Windows 2000 Components** - Check any other needed options.

11. **Date and Time Settings** - Set the Date and Time.

12. **Terminal Services Setup** - Change the default selection from "Remote Administration Mode" to "Application Server Mode". The Application Server Mode requires that a Terminal Server Licensing server be established on the network within 90 days.

13. **Permissions** - Select between “Permissions compatible with Windows 2000 Server” and the default “Permissions compatible with Terminal Server 4.0 Users”. The latter may be required for legacy applications.

If **Windows 2000 permission** is chosen, the user has no access to the registry. HMI software users may need administrative or power user membership to operate.

If **Windows NT 4.0 permission** is chosen, the user will have full access to registry. HMI users may function normally.

Networking Settings - Choose “Typical” or “Custom” depending on specific needs.

14. **Workgroup or Domain** - Choose the workgroup setting, if desired, and add the workgroup name, or choose the domain setting and add the domain name.
15. **Installing Components** - The computer will copy the files needed for configuration. This takes several minutes.
16. **Performing Final Tasks** - The computer registers components, saves settings, and removes temporary files.
17. **Finished** - The Windows 2000 Setup Wizard is complete. It will prompt for CD removal and system reboot. Select *Finish* to finish.

Note: The video may be set to 640x480. You may want to adjust the resolution when the install is complete.

Windows 2000 Start Up – Configuring the Server

1. **Windows 2000 Configuring Your Server** – A configuration screen is shown when the server boots for the first time with the new operating system. The Configure The Server dialog box is similar to an HTML page, with a sidebar with configuration categories and a main panel with instructions and configuration details. The main panel shows three choices at the initial boot:

- This is the only server on the network
- One or more servers will be used on the network
- Configure the server later

Each of these options opens a wizard to configure the installed components of the server. If you choose to configure the server later the Configuring The Server dialog box is access by selecting *Start...Programs...Administrative Tools...Configure Your Server*.

2. **Sidebar of Configure the Server** – The side bar lists categories for configuration. Selecting a category or sub-category will display a configuration wizard in the main panel that provides step-by-step configuration of server features.

- Home
- Register Now
- Active Directory – Used by Domain Controllers
- File Server
- Print Server
- Web/Media Server
 - Web Server (IIS)
 - Streaming Media Server
- Networking
 - **DHCP (If Desired)** Select this to configure the Dynamic Host Configuration Provider, or select *Start...Programs...Administration Tools...DHCP*
 - DNS
 - Remote Access
 - Router
 - Application Server
 - Component Server
 - **Terminal Services**
 - **Terminal Services Configuration -**
 - **Add/Remove Programs**
 - **Terminal Services Client Creator** – Makes disks for creating clients
 - **Terminal Services Manager**
 - **Terminal Services Licensing**
 - Database Server
 - E-mail Server
- Advanced
 - Message Queuing
 - Support Tools
 - Optional Components

Microsoft CALs and TS CALs

ACP Enabled thin clients require a terminal server running **Microsoft's Windows NT 4.0 Terminal Server Edition** or **Windows 2000 Server** with **Terminal Services** enabled as an operating system. ..

Each of these operating systems requires a standard Microsoft Client Access License (CAL) for each connection to the server. These are based on concurrent use; a 5-pack would allow more than five users to access server resources, but only five users at a time.

Terminals require an additional Microsoft Terminal Server Client Access License (TS CAL) to connect to the server using either RDP or ICA. This licensing is per seat; ten terminals would require ten TS CALs, even if only two were connected at a time.

Windows NT 4.0 Terminal Server Edition is sold with TS CALs. These are installed on the terminal server. Additional TS CALs are available from Microsoft.

Windows 2000 has a new method of license management. All TS CALs are installed on a Terminal Services Licensing Server. This acts as a repository for all TS CALs. The terminal servers request TS CAL authentication from the Terminal Services Licensing Server as terminals attach to terminal servers.

The Terminal Services Licensing server is activated through the Internet by connecting to the Microsoft Certificate Authority and License Clearinghouse.

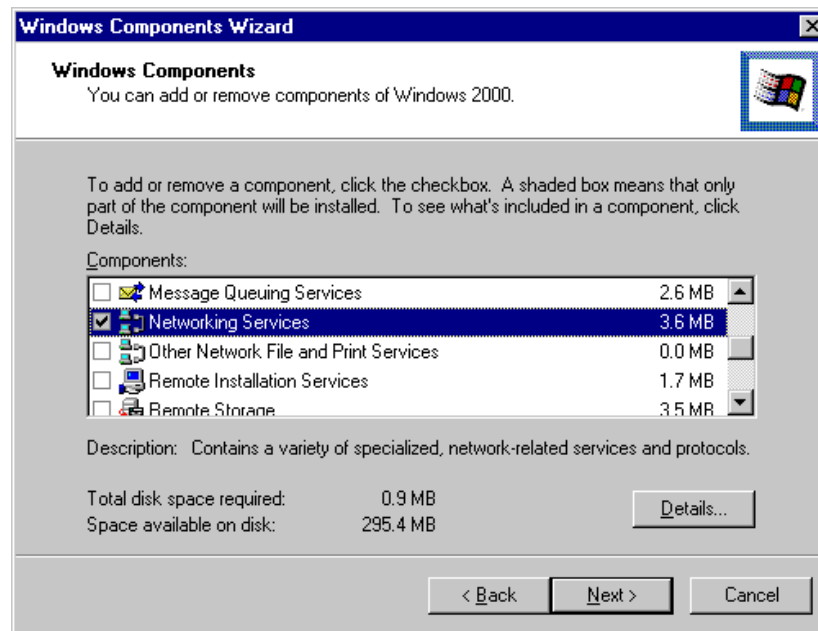
Windows 2000 Server with Terminal Services enabled will issue 90-day temporary licenses while the Terminal Services Licensing server is being setup and activated. If this period has elapsed, the terminal will not connect to the terminal server and will display an "Error Number 50" message box.

Windows 2000 Server is not normally sold with TS CALs. These need to be purchased separately and installed on the Terminal Services License server.

DHCP Server Setup

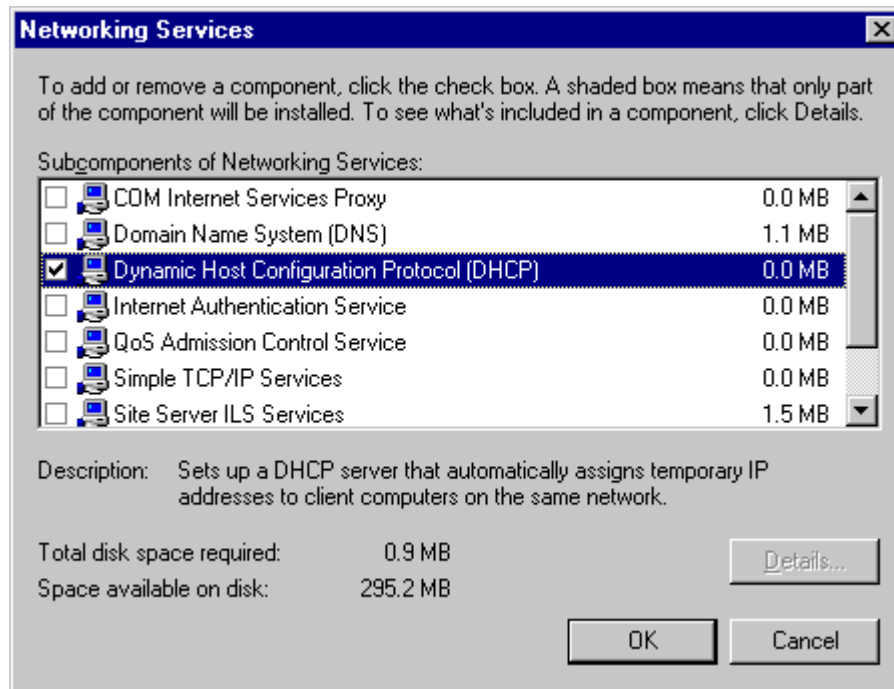
A DHCP server can be installed on a number of different platforms. In this class, we will be using the Windows 2000 DHCP Server. It can be installed during installation or added later.

To add DHCP to a Windows Server after installation select **Start>Settings>Control Panel>Add/Remove Programs>Add/Remove Windows Components**. A Windows Configuration Wizard will launch.



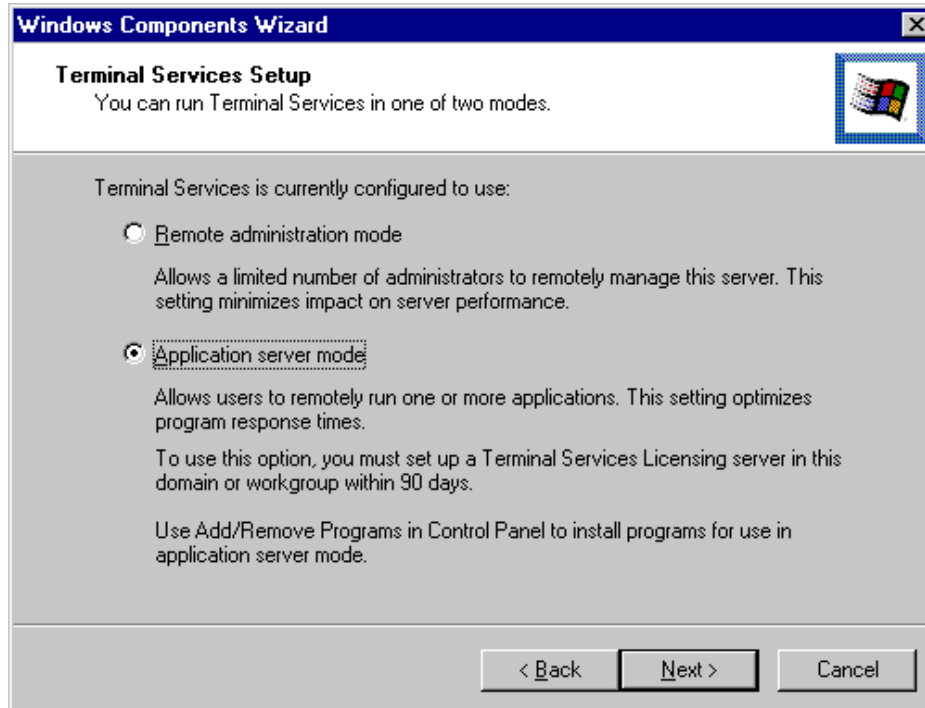
Windows Components Wizard

Highlight Networking Services in the list window and select the **Details** button.



Networking Services

Check the **Dynamic Host Configuration Protocol (DHCP)** check box and select the **OK** button. The wizard will install the DHCP server.



Application Server Mode

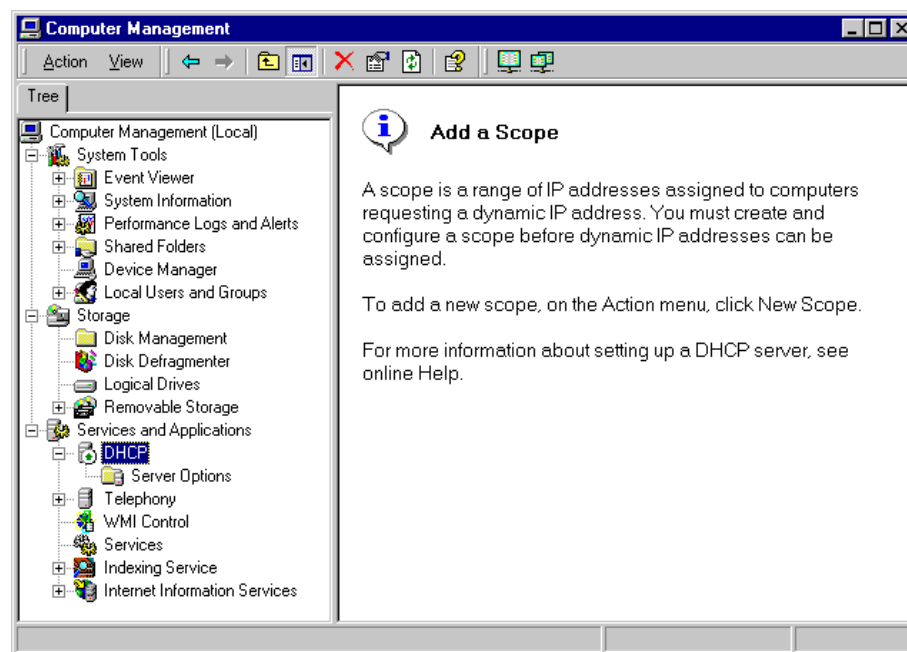
As part of the **Windows Components Wizard**, you may be asked to confirm the terminal service mode. The terminal server needs to run in application server mode to work with ACP Enabled thin clients.

DHCP Scope Configuration for Microsoft DHCP Server

A DHCP server, in its simplest form, will assign an IP address to a computer that joins a network and requests one. A DHCP scope is a range of IP addresses that are available for assignment.

ACP Enabled thin clients need more information from the DHCP server than just an IP address. They need the IP address of the ThinManager server and the name of the firmware to download. This information needs to be added to the DHCP scope in the form of options.

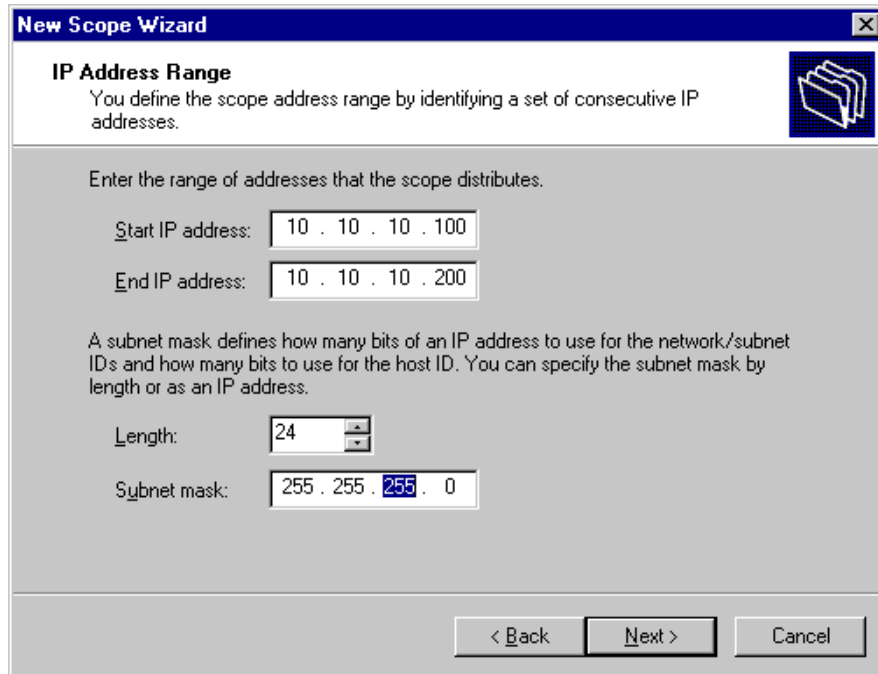
To establish a DHCP scope, open the Computer Management Console by selecting **Start>Programs>Administrative Tools>Computer Management**.



Create a DHCP Scope

Highlight DHCP in the Services and Applications folder of the tree pane and select **Action>New Scope**.

A **New Scope Wizard** will launch that will guide the process of creating the scope.



New Scope Wizard

IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.

Enter the range of addresses that the scope distributes.

Start IP address: 10 . 10 . 10 . 100

End IP address: 10 . 10 . 10 . 200

A subnet mask defines how many bits of an IP address to use for the network/subnet IDs and how many bits to use for the host ID. You can specify the subnet mask by length or as an IP address.

Length: 24

Subnet mask: 255 . 255 . 255 . 0

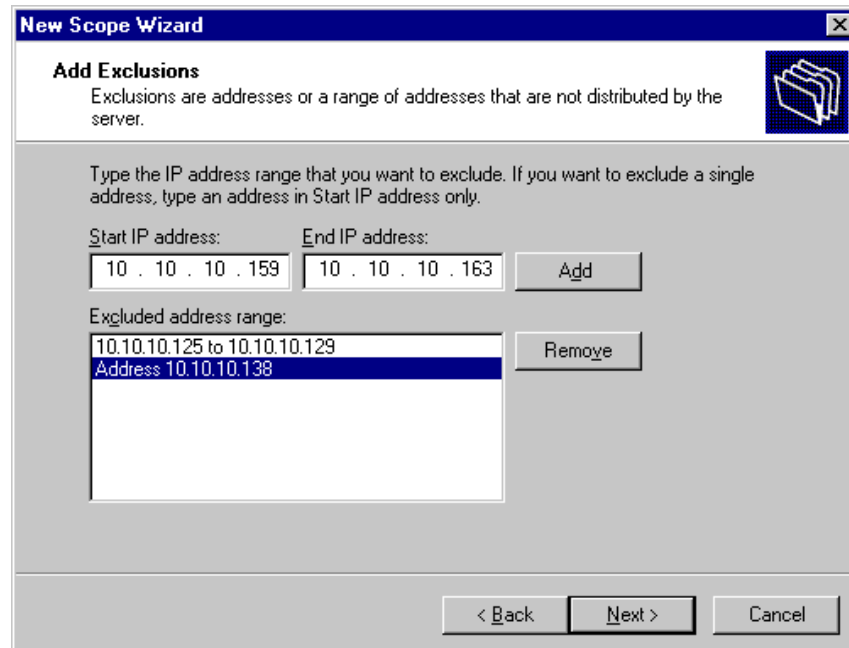
< Back Next > Cancel

Scope Range

Set the range of IP addresses by entering the starting IP address for the scope and the ending IP address of the scope.

Enter the desired subnet mask.

Select the **Next** button to continue.



New Scope Wizard

Add Exclusions
Exclusions are addresses or a range of addresses that are not distributed by the server.

Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address: 10 . 10 . 10 . 159 End IP address: 10 . 10 . 10 . 163 Add

Excluded address range:

10.10.10.125 to 10.10.10.129	Remove
Address 10.10.10.138	

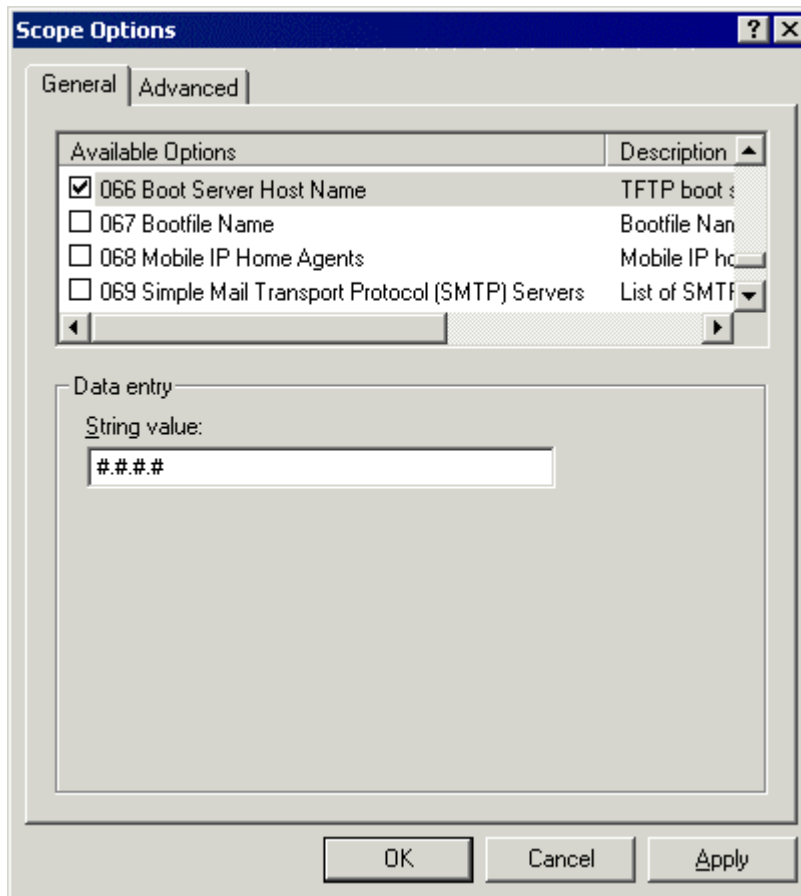
< Back Next > Cancel

Scope Exclusions

If computers are already assigned IP addresses in the scope range, they can be excluded from the range by adding the IP address(s) and selecting the **Add** button.

Scope Options

The DHCP Server needs two options configured before it will provide all the information that the terminal needs to boot. These options are **Option 066** and **Option 067**.



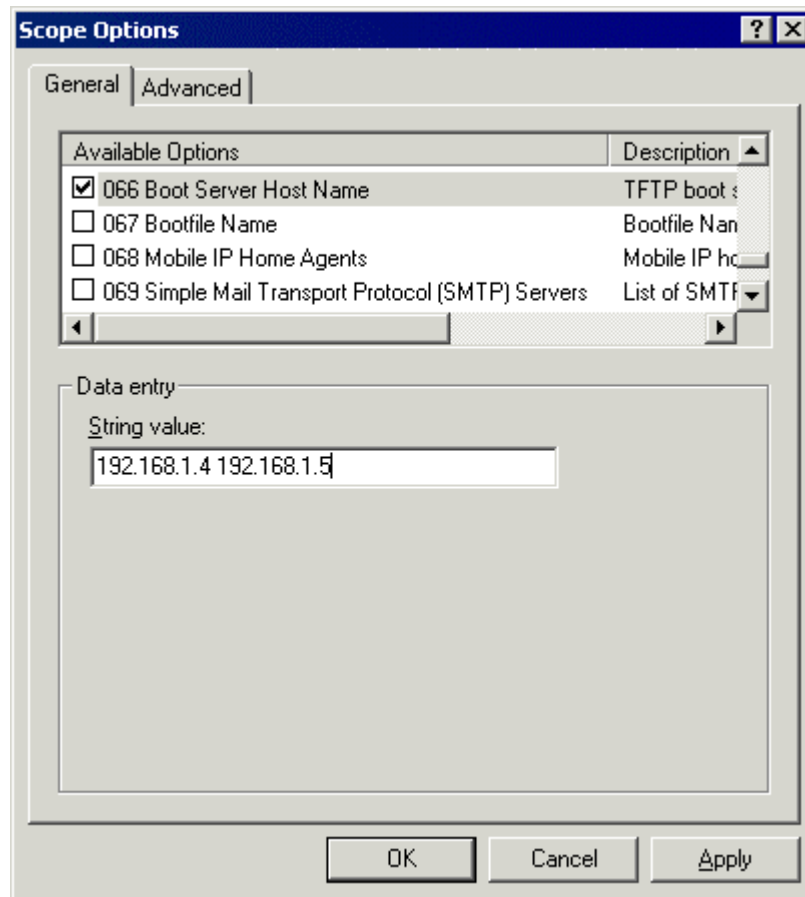
Boot Server Host Name

The **Boot Server Host Name**, **Option number 066**, assigns a ThinManager server to the terminal.

Open the **Scope Options** dialog box by highlighting the Scope Option folder in the tree pane of the Computer Management Console under the **Services and Application>DHCP** folder and selecting **Action>Configure Options**.

Scroll through the list window and check the **Option 066** check box.

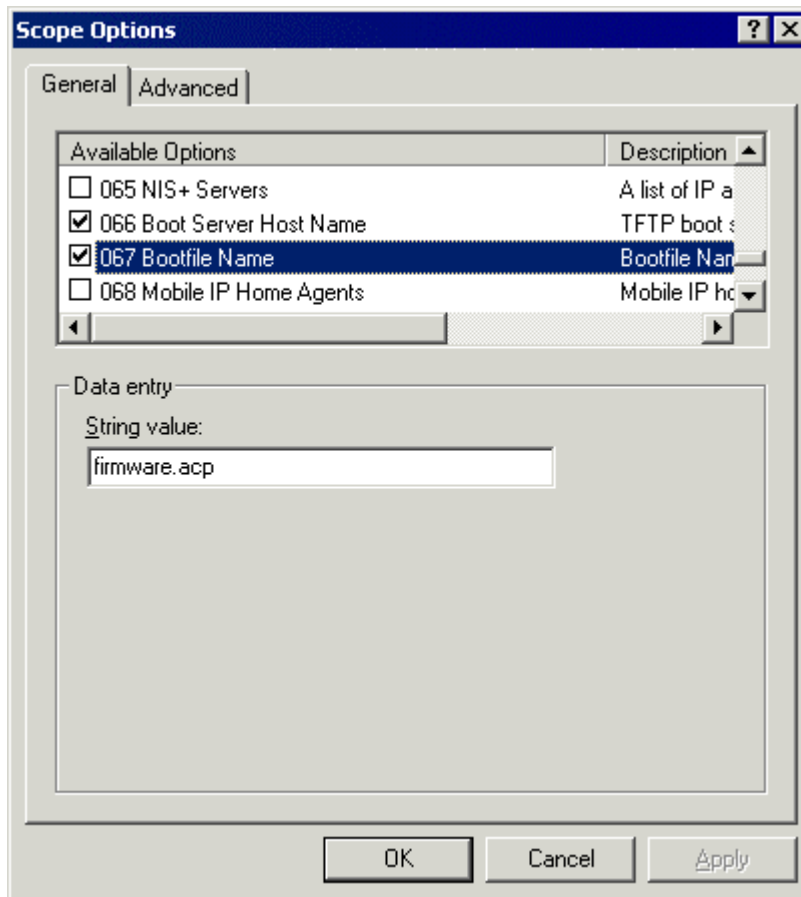
Enter the IP address of the desired ThinManager server in the String Value field.



Boot Server Host Name for Dual ThinManager Servers

The DHCP Server can issue the IP address for a Primary ThinManager Server and a Secondary ThinManager Server by listing the IP addresses of both, separated with a space.

Do not select the **OK** button yet.



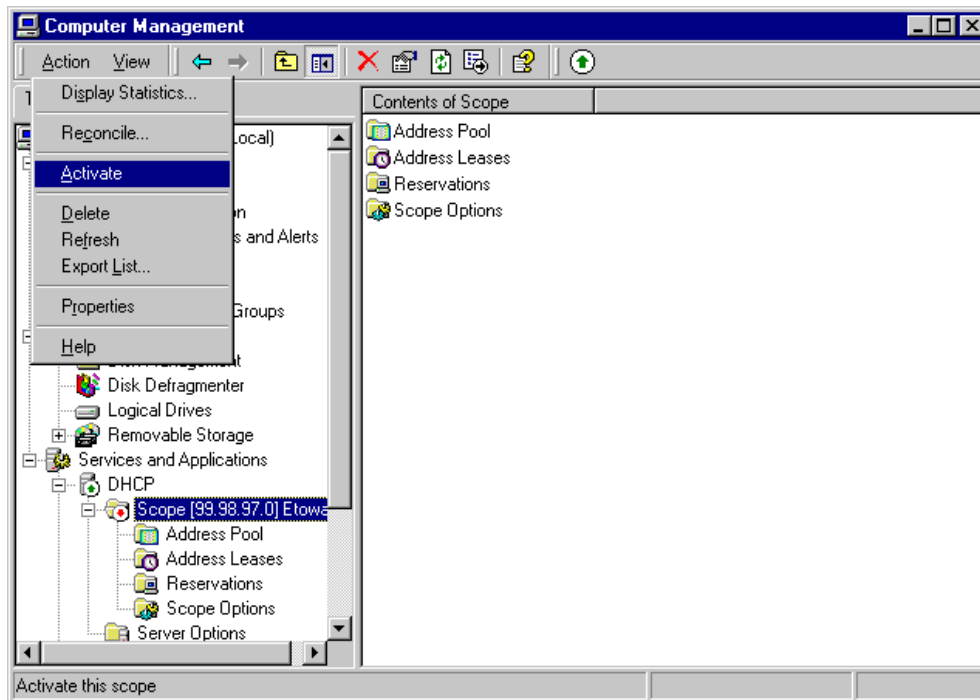
DHCP Options

The **Bootfile Name**, **Option number 067**, tells the terminal what file to download during the boot process.

Scroll through the list window and check the **Option 067** check box.

Enter **firmware.acp** in the String Value field.

Select the **OK** button to accept the configuration of options.

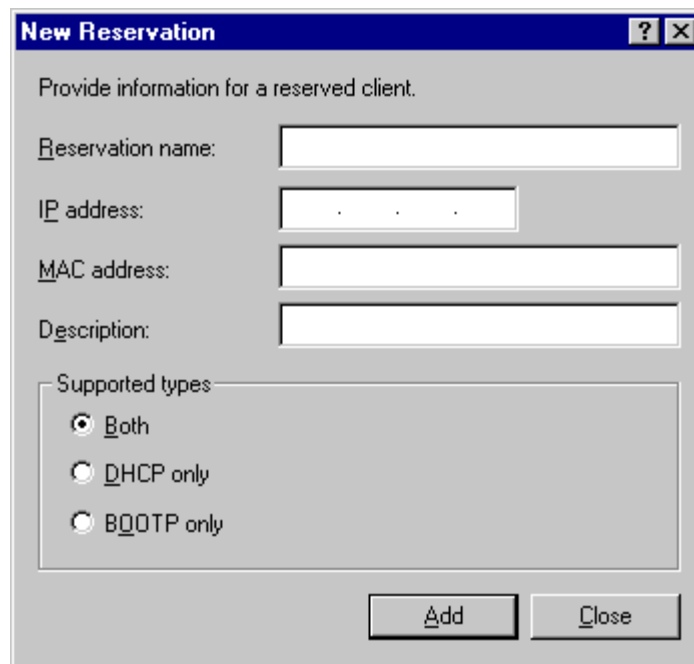


Completed Scope

Once the scope is added, the range is set, and the options are configured, it needs to be activated.

Highlight the scope in the tree pane of the Computer Management Console. Select **Action>Activate**. The scope is now active.

Scope Reservation

A screenshot of the 'New Reservation' dialog box. The title bar is blue with the text 'New Reservation' and standard window controls. The main area is light gray and contains the instruction 'Provide information for a reserved client.' Below this are four labeled text input fields: 'Reservation name:', 'IP address:', 'MAC address:', and 'Description:'. The 'IP address' field has a dotted pattern. Below these fields is a section titled 'Supported types' containing three radio button options: 'Both' (selected), 'DHCP only', and 'BOOTP only'. At the bottom right are two buttons: 'Add' and 'Close'.

Scope Reservation

Even though DHCP assigns IP addresses dynamically on a first come, first served basis, Reservations allows an IP address to be reserved for a specific terminal. An IP address can be matched with a MAC address to create a reservation. This allows DHCP to assign a “static” IP address.

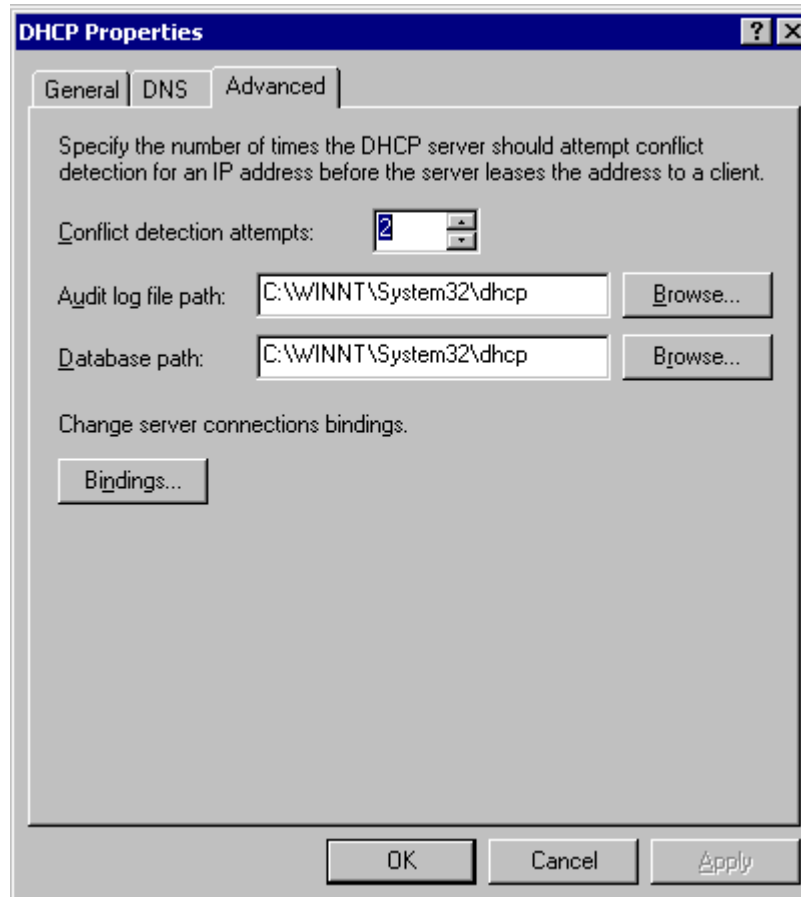
The New Reservation window is launched by selecting the Reservation folder in the tree pane of the Computer Management Console under the Services and Application / DHCP folder and selecting **Action...New Reservation**.

The MAC address of a terminal is displayed in the details-view pane of ThinManager.

DHCP Properties

The DHCP Server can be configured to check for duplicate IP addresses before issuing a new address. This is a good feature to use.

Highlight **DHCP** under **Services and Applications** in the Computer Management tree and select **Action>Properties**, or right-click on **DHCP** and select **Properties**. The DHCP Properties window will launch.



DHCP Properties – Advanced Tab

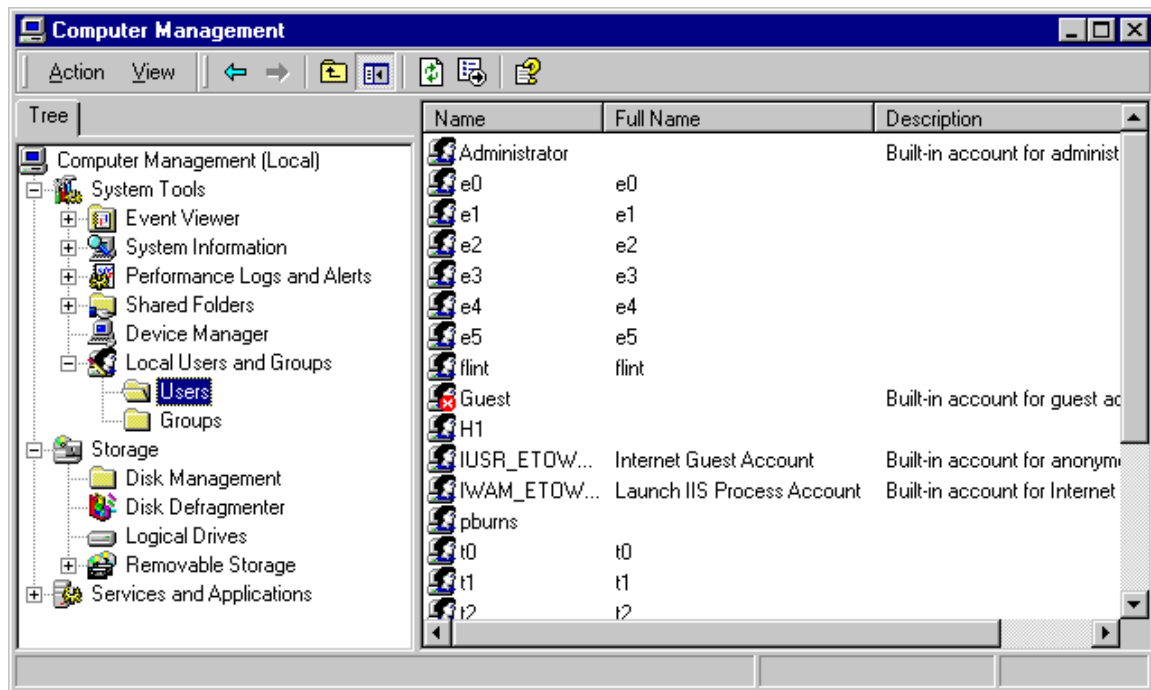
Select the **Advanced** tab. Replace the zero in the **Conflict detection attempts** field with an integer. This will prompt the DHCP Server to check for duplicate IP addresses before assigning an IP address.

Select **OK** when finished.

Creating User Profiles

A terminal needs a valid Windows NT/Windows 2000 User Profile to log onto a terminal server.

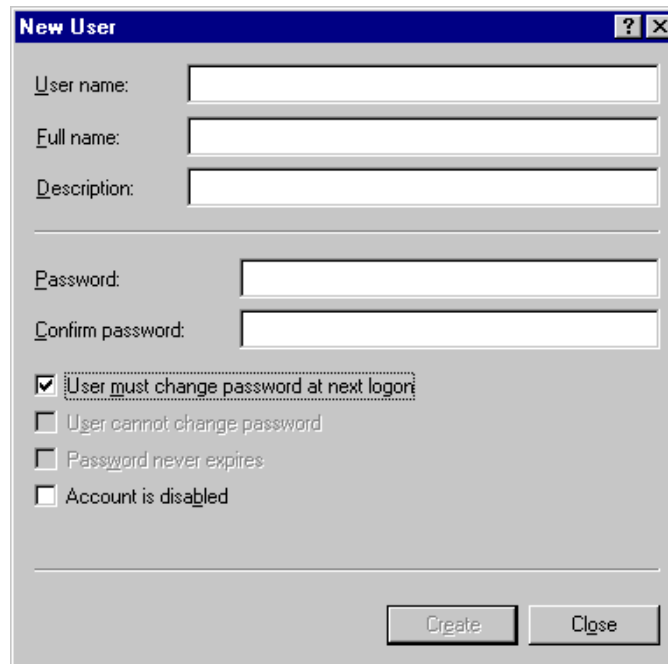
To create a user profile in Windows 2000 open the **Computer Management Console** by selecting **Start>Programs>Administrative Tools>Computer Management**.



Computer Management Console

Highlight the **User** sub-folder of **Local Users and Groups** in the Computer Management tree pane.

Select **Action>New User**. This will launch a **New User** dialog box.

A Windows-style dialog box titled "New User" with a blue header bar containing a question mark icon and a close button. The dialog has a light gray background. It contains several text input fields: "User name:", "Full name:", "Description:", "Password:", and "Confirm password:". Below these fields are four checkboxes: "User must change password at next logon" (checked), "User cannot change password", "Password never expires", and "Account is disabled". At the bottom right, there are two buttons: "Create" and "Close".

New User

User name:

Full name:

Description:

Password:

Confirm password:

☒ User must change password at next logon

☐ User cannot change password

☐ Password never expires

☐ Account is disabled

New User

Enter the user name for the non-administrative user in the **User name** field.

Enter a password in the **Password** field.

Re-enter the password in the **Confirm password** field.

Uncheck the **User must change password at next logon** check box. This allows auto-logon of the terminal.

Select the **Create** button to finish the profile.

Select the **Close** button to return to the Computer Management Console.

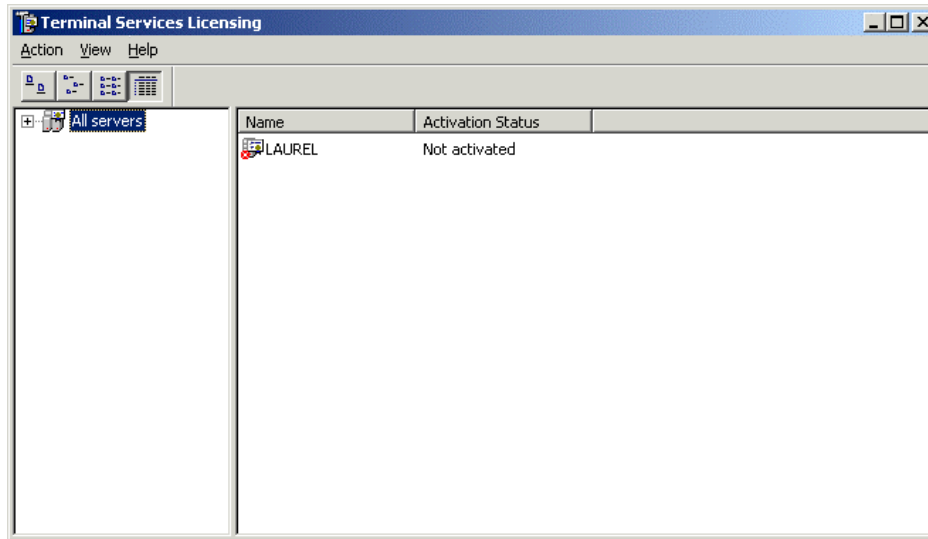
Microsoft Terminal Server Licensing Activation

In Windows 2000, all the TS CALs are installed on a single Terminal Server Licensing Server. This allows a single site for management and authentication of terminal server connections. A server becomes a Terminal Server Licensing Server by selection of the option during the installation phase or by selecting **Add/Remove Programs> Add/Remove Windows Components** from the Control Panel and selecting the **Terminal Services Licensing**.

The licensing of the Microsoft components of a Windows 2000 terminal server is a two-step process; one must first authorize the Terminal Server Licensing Server, then one must activate the licenses. The license activation will be repeated for each license pack.

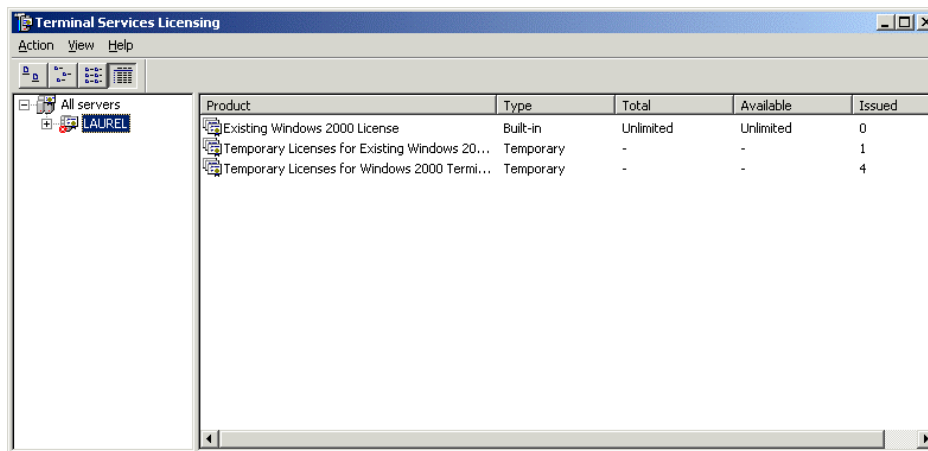
Note: The Terminal Server Licensing Server does not need to be a separate computer, but is usually installed on a Terminal Server. Microsoft requires that the Terminal Server Licensing Server be installed on the Primary Domain Controller in a domain.

To begin the process select **Start>Programs>Administrative Tools>Terminal Server Licensing** on the **Terminal Server Licensing Server**.



Terminal Services Licensing

Highlight desired server



Selected Terminal Server

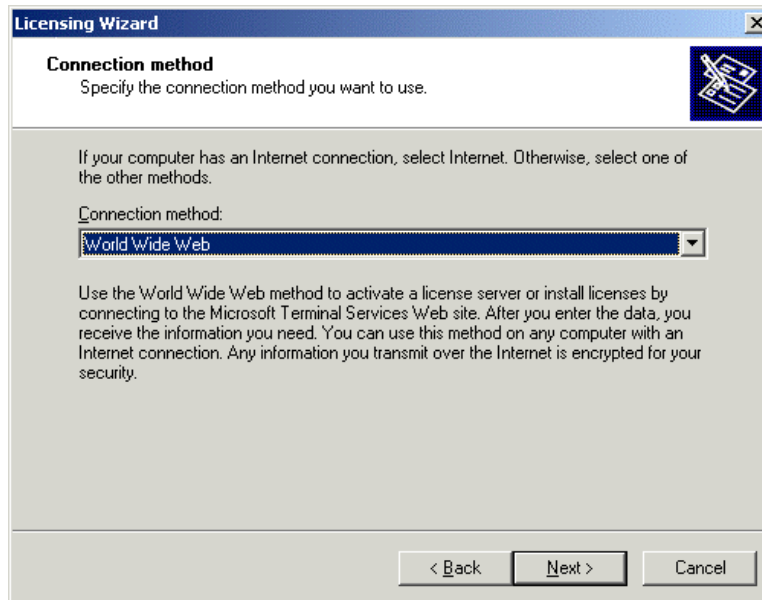
Select **Action>Activate Server** from the menu bar.



Licensing wizard

The Licensing Wizard will launch.
Follow the steps of the wizard.

Note: The ID numbers shown on screens have been changed to “1234”. Please use the appropriate numbers that apply to your server and licenses.



Connection Method

There are several methods for connecting to the Microsoft License Clearinghouse.

- **Internet** – Allows activation through a direct connection to Microsoft. The Licensing Server must have Internet access.
- **World Wide Web** – Allows activation at Microsoft's web site through a web browser.
- **Fax** – Allows activation through faxes to Microsoft.
- **Telephone** – Allows activation through the telephone.

Select the desired method from the drop-down box and select **Next**.

Note: This will detail the World Wide Web method.

Licensing Wizard

License Server Activation
Enter the license server ID.

To activate your license server, go to the Terminal Services Licensing Web site listed below.

<https://activate.microsoft.com>

You need your Product ID to complete this operation. Your Product ID is:

12345-123-1234567-12345

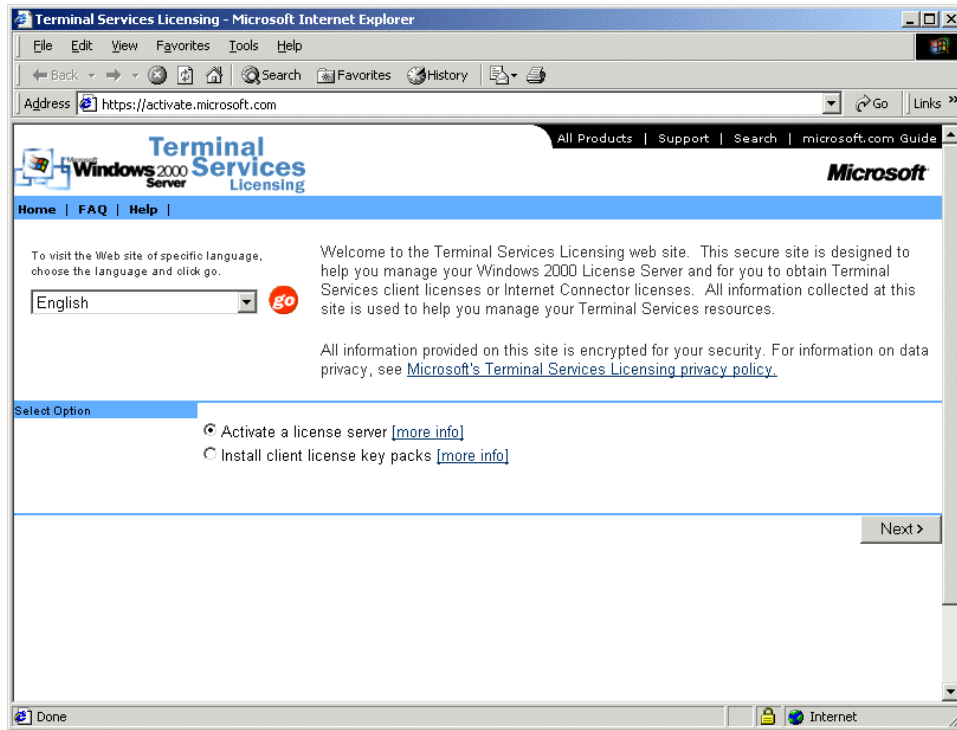
After you complete the transaction on the Terminal Services Licensing Web site, type the license server ID in the following boxes.

[][][][][][][]

< Back Next > Cancel

License Server Activation

The server needs a License Server ID for authorization. This is done on the Microsoft web site. Go to the <https://activate.microsoft.com> site mentioned in the dialog box.



Microsoft Terminal Services Licensing Web Site


Select **Activate a license server** and select **Next**.

Terminal Services Licensing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites History

Address <https://activate.microsoft.com/activate.asp> Go Links


Terminal Services Licensing
All Products | Support | Search | microsoft.com Guide

Home | FAQ | Help |

To activate your license server, you will need to provide the following information. Product ID can be found by selecting Activate Server in Terminal Services Licensing.

Required information is denoted by a red asterisk(*).

Product Information

Product ID:
 *

Licensing Information

Purchase Method:
 Select or Enterprise Agreement *

Company Information

Last / Surname: * First / Given Name: *

Company: * Organizational Unit:

eMail Address: Phone Number:

Company Address:

City: State/Province: Postal Code:

Country/Region: Afghanistan *

Internet

Customer Information Entry Form

Fill out the information forms and select **Next**. The Product ID is supplied by the Licensing Wizard.

Terminal Services Licensing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites History Print

Address <https://activate.microsoft.com/activateconfirm.asp> Go Links >>

Microsoft Windows 2000 Server Terminal Services Licensing

All Products | Support | Search | microsoft.com Guide

Home | FAQ | Help

Terminal Services Licensing is ready to process your request. Please confirm the information provided is correct and click Next. If you need to make corrections, click Back.

Product Information

Product ID:
12345-123-1234567-12345

Licensing Information

Purchase Method:
Other

Company Information

Last / Surname:
Doe

First / Given Name:
John

Company:
Acme Co.

Organizational Unit:

eMail Address:
john.doe@acme.com

Phone Number:
(123) 456-7890

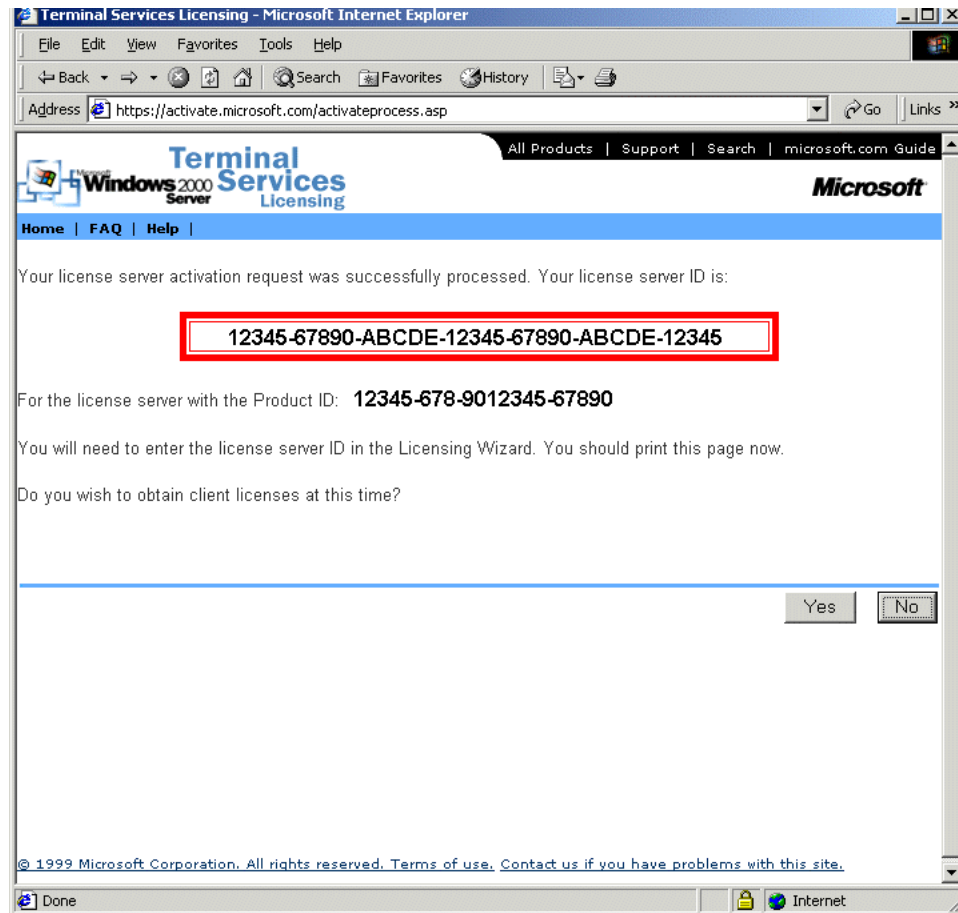
Company Address:
123 Main St.

City:
Anytown

State/Province:

Customer Information

Continue with web-based wizard. Verify the data and select **Next**.



Server Activation Number

The Microsoft will provide the License Server ID.
Add this number to the form in the Licensing Wizard.

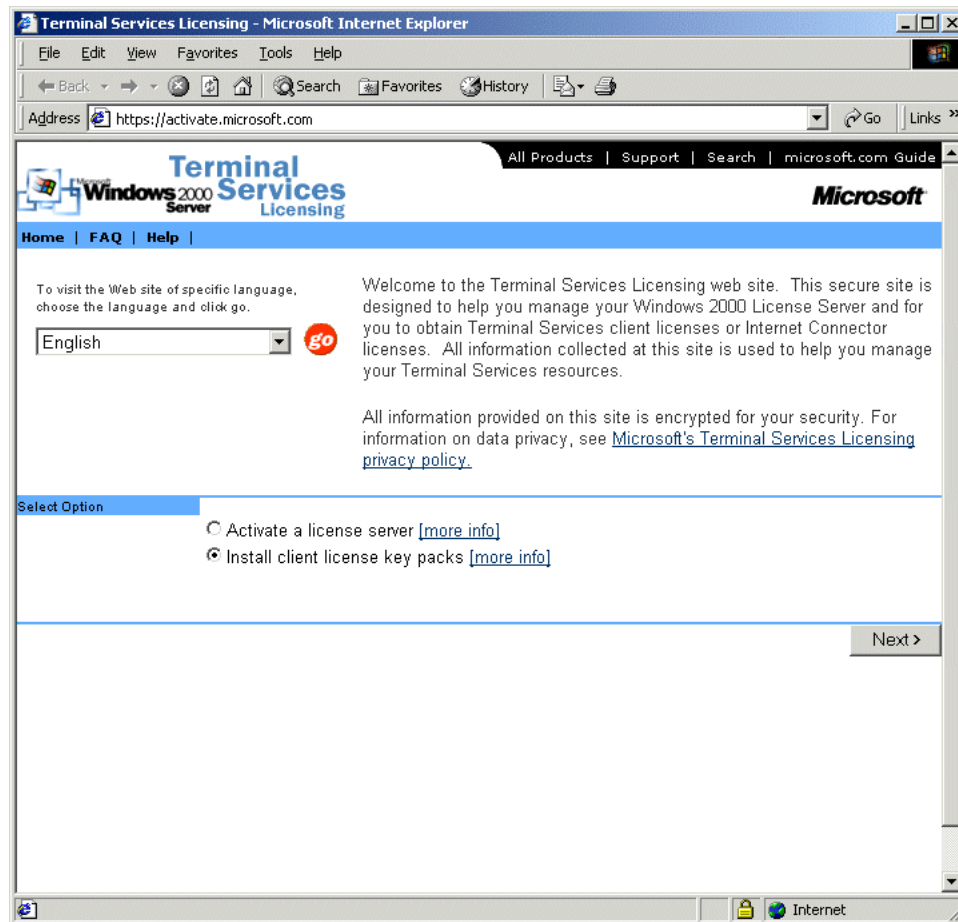


Wizard Completion

Once the License Server ID is placed in the appropriate fields on the Licensing Wizard, you will have a choice to continue and activate the license packs, or to stop with the server activation.

Microsoft TS CAL License Authorization

To continue adding license packs, return to the <https://activate.microsoft.com> web site.



Microsoft Terminal Services Licensing Web Site

Select the ***Install client license key packs*** and select ***Next***.

Terminal Services Licensing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites History Print

Address <https://activate.microsoft.com/gettlp.asp> Go Links

Microsoft Windows 2000 Server Terminal Services Licensing

All Products | Support | Search | microsoft.com Guide

Home | FAQ | Help

To obtain client licenses, you will need to provide the following information. License Server ID can be found by selecting Install Licenses in Terminal Services Licensing with any Connection method other than Internet (Connection method is set in Properties).

Required information is denoted by a red asterisk(*).

Product Information

License Server ID:

Licensing Information

Purchase Method:

Select or Enterprise Agreement *

Company Information

Last / Surname: *

First / Given Name: *

Company: *

Organizational Unit:

eMail Address:

Phone Number:

Company Address:

City: State/Province: Postal Code:

Country/Region:

Done Internet

Customer Information

Fill out the form and select **Next**.

TS CAL Information

Select the Product Type and fill in the fields with the **Quantity**, **Authorization Number**, and **License Number** from the Licensing Certificate that was included with the purchase of the licenses.

Select **Next** to continue.

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites History Print

Address <https://activate.microsoft.com/getlkpconfirm.asp> Go Links

Terminal Services
Windows 2000 Server Licensing

All Products | Support | Search | microsoft.com Guide

Home | FAQ | Help |

Terminal Services Licensing is ready to process your request. Please confirm the information provided is correct and click Next. If you need to make corrections, click Back.

Product Information

License Server ID:
12345-67890-ABCDE-12345-67890-ABCDE-12345

Product Type:
Windows 2000 Terminal Services Client Access License

Quantity:
5

Licensing Information

Purchase Method:
Microsoft Open License

Authorization Number:
1234567890ABCDE

License Number:
12345678

Company Information

Last / Surname:
Doe

First / Given Name:
John

Company:
Acme Co.

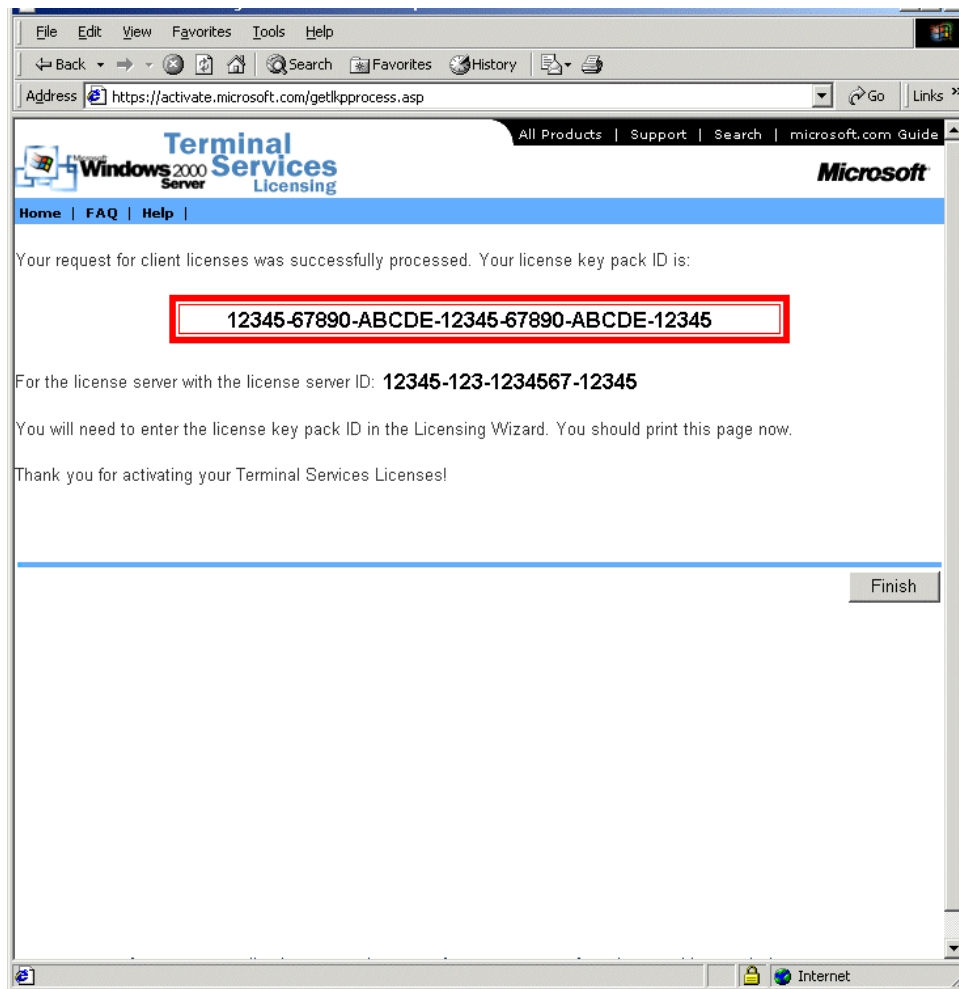
Organizational Unit:

eMail Address:

Done Internet

License Information

Verify that the information is correct and select **Next** to continue.



License Key Pack ID

The Microsoft site will provide the License Key Pack ID. This needs to be installed in the Licensing Wizard.

Licensing Wizard

Obtain Client License Key Pack
Provide the client license key pack ID.

To install Terminal Services licenses, you must obtain a client license key pack ID from the Terminal Services Licensing Web site listed below:

<https://activate.microsoft.com>

To obtain this ID, you will need your license server ID and either a license code from retail product packaging or Select, Enterprise Agreement or Open license contract information. Your license server ID is:

12345-67890-ABCDE-12345-67890-ABCDE-12345

Enter the license key pack ID in the boxes below. This ID is obtained from the Terminal Services Licensing Web site.

12345 67890 ABCDE 12345 67890 ABCDE 12345

< Back Next > Cancel

License Key Pack ID Fields

Fill in the fields of the Licensing Wizard with the License Key Pack ID from the Microsoft site and select **Next**.

Licensing Wizard

Completing the Licensing Wizard

You have successfully completed the Licensing wizard.

Status:

The new client license key pack has been successfully installed.

< Back Finish Cancel

Licensing Completion

The licenses will be added and will be displayed in the Terminal Services Licensing window.

Citrix Device Services

Citrix Device Services Licensing

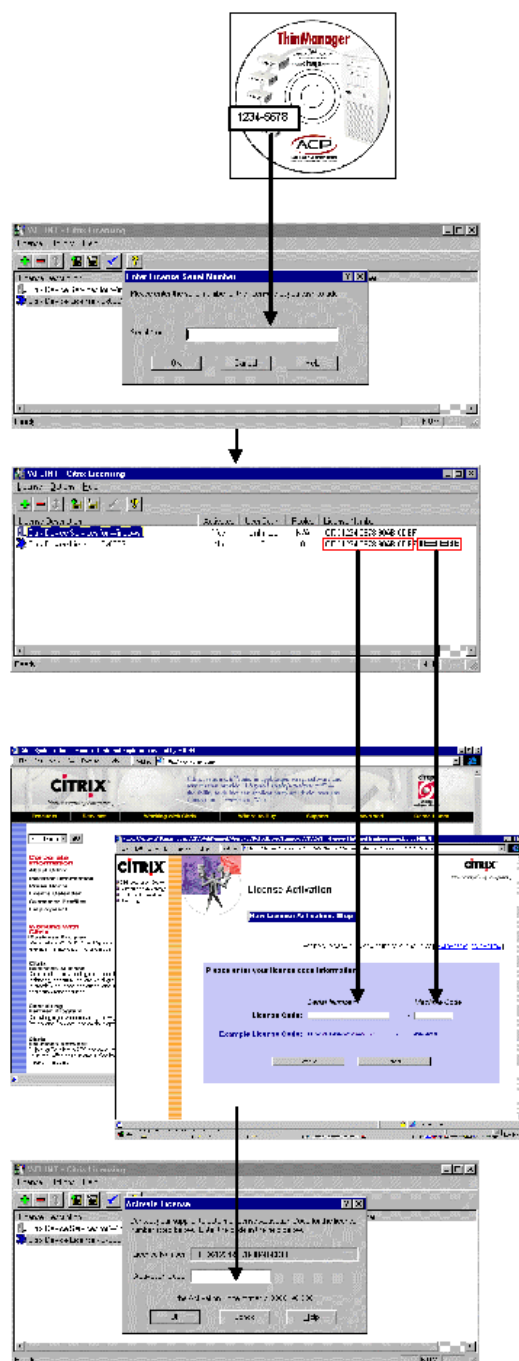
The second component is the **ICA** (Independent Computer Architecture) communications protocol from **Citrix** that provides the communication between the server and the thin client. ACP ThinManager software contains a licensed copy of Citrix Device Services on the ACP ThinManager CD to provide the ICA protocol. Citrix Device Services needs to be installed on each terminal server.

Citrix Device Services needs a license added immediately to allow terminal-to-server communication. The license can be added during the installation process or it can be added when the installation is finished. A license number that is located on the ThinManager CD label is used for licensing. Instructions are provided with ThinManager.

The Citrix Device Services License will need to be activated within a 35-day grace period to continue functionality. The activation is done within the Citrix web site at <http://www.citrix.com/activate>. Instructions are provided with ThinManager.

Note: A license is needed immediately for the ICA connection. The license will need to be activated within a 35-day grace period.

Note: MetaFrame is licensed in a similar manner. Please see the documentation that comes with MetaFrame for details.



1. Install Citrix Device Services from the ThinManager CD-ROM.

2. Open Citrix Licensing at **Start...Programs...Citrix Device Services Tools...Citrix Licensing** and add the License (Serial) Number that is on the ThinManager CD-ROM case.

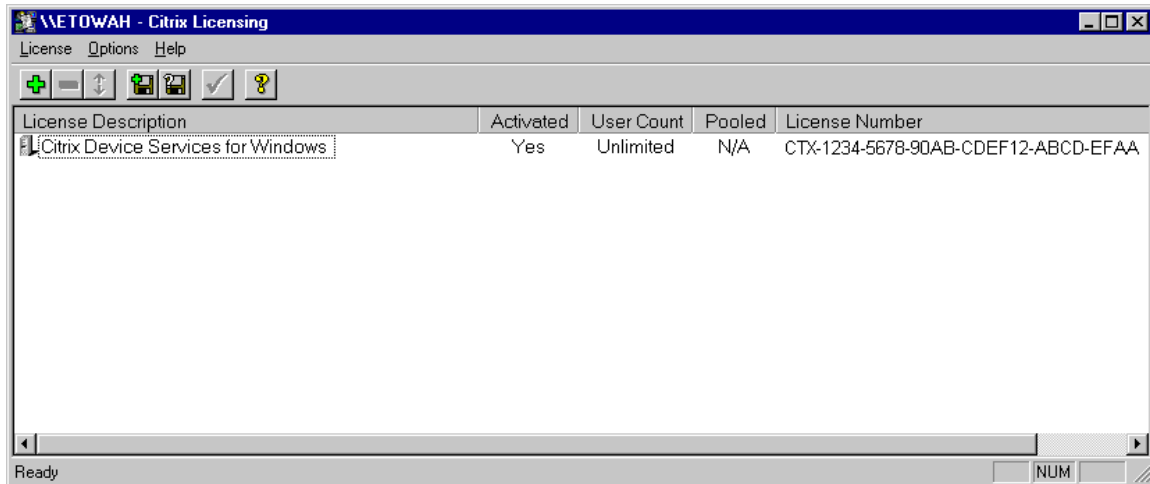
3. Citrix Licensing will add a Machine Code to the end of the License (Serial) Number.

4. Open the Citrix web site at <http://www.citrix.com> and follow links to the Product Activation section. Use the License (Serial) Number from Step 2 and the Machine Code from Step 3 to obtain the Activation Number.

5. Select the license to activate in Citrix Licensing and select **License...Activate License...** Add the Activation Number from Step 4.

Citrix Device Services Licensing Flow Chart

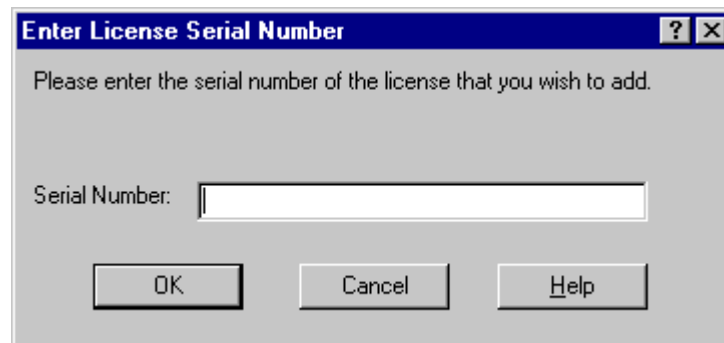
Open the Citrix Licensing dialog box by selecting **Start>Programs>Citrix Device Services Tools (Common)>Citrix Licensing**.



Citrix Licensing Dialog Box

Note: The Citrix Device Services for Windows license is installed during setup. It is not enough to provide functionality. A Citrix Device license is needed.

Select **License>Add** from the menu bar to launch the **Enter Licensing Serial Number** dialog box

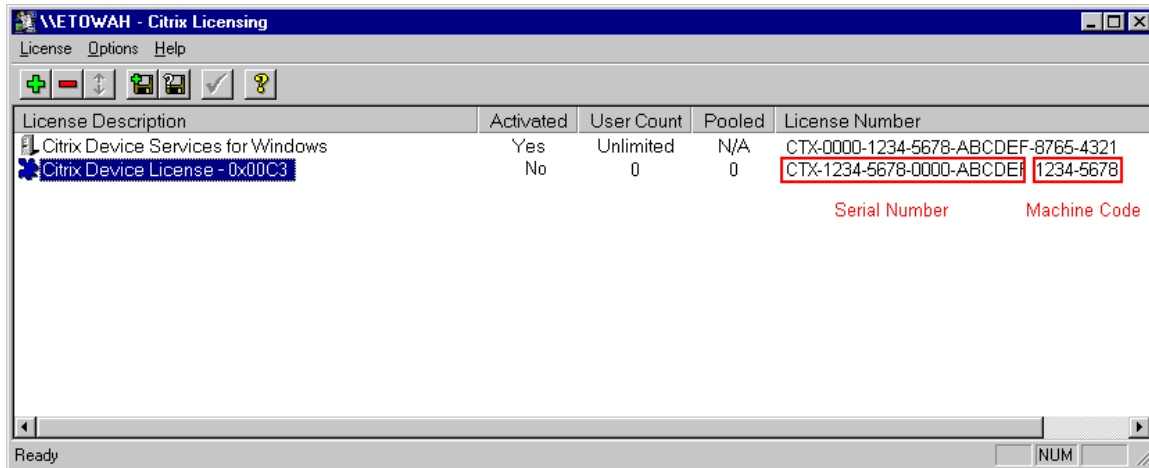


Enter License Serial Number

Enter the Citrix License number found on the inside of the ACP ThinManager CD case in the Serial Number field.

Note: This number may be called the License Code, Serial Number, or License Serial Number.

Select **OK** to continue.



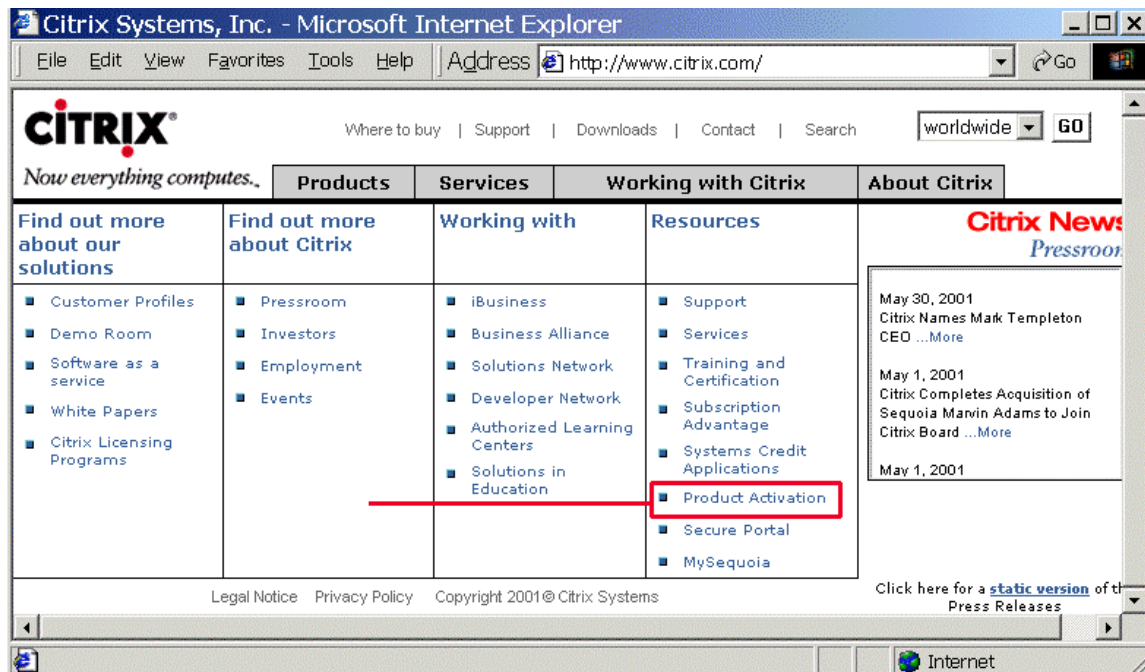
License Serial Number and License Code

The **License Serial Number** will have a **Machine Code** of eight numbers added to it and will be displayed in the Citrix Licensing window as the **License Number**. Although the license is now installed, it needs to be activated within 35 days to keep it functional.

Citrix License Activation

The **Citrix Device Services** has a 35-day grace period, after which it is not fully functional until it has been activated. Adding an Activation Code activates the license. This Activation Code is obtained from the Internet at the Citrix web site at <http://www.citrix.com> or through the Activation Wizard. The Activation Code can be obtained from Citrix with any machine that has an Internet connection.

Note: Since web sites are dynamic, the exact layout of the web screens may change, but the functionality should remain the same. If you have problems, please contact Citrix or e-mail support@acpthinclient.com for help.



Citrix Web Site at www.citrix.com

Select the **Product Activation** hyperlink on the Citrix home page. It will link to <http://www.citrix.com/activate>.



Citrix Product Activation System

Select the **Follow this link to activate any Citrix product** hyperlink. This launches the Citrix Activation System.





Citrix Login Page

Previously registered users can fill in the Login ID and Password fields to enter the Citrix Activation System.

New users need to select the **Register for a Login ID Password** link. This will launch the Company Search page.

Citrix Systems: Company Search Page - Microsoft Internet Explorer provided by MSDN

File Edit View Go Favorites Help Address <https://hqwww10.citrix.com/CCS/CompanySearch.asp>



Company Search

Please help us determine if we already have your company information in our system by using any of the three search options below.

If your searches are unsuccessful, please enter your company information into our system by clicking on the ["Enter Information for a New Company"](#) link at the bottom of this screen.

Please enter a previously activated Product Serial Number **and** previous Machine Code of a product registered to your company:

Product Serial Number:

Previous Machine Code:

Your Machine Code is the last 8 characters of your license number after it is installed. This search requires you to provide a license and machine code that you have activated with Citrix in the past.

OR

Enter your Company's Support Agreement Number **and** Postal Code:

Support Agreement Number:

Postal Code:

OR

Enter your current Subscription Renewal Organization ID **and** Password:

Organization ID:

Password:

If you have never activated a Citrix product or were unable to find your company name using the above searches, please click the below link to create a new company.

[Enter Information for a New Company](#)

If you are an Authorized Reseller of Citrix products, your Login ID and Password are already set up. Please click [here](#) to be reminded of them.


Citrix Employees should contact the System Administrator for information about registering for and using this system.

Company Search

Users can search for their company's registration on the Company Search page. Users whose company is not registered should select the ***Enter Information for a New Company*** hyperlink to begin the registration procedure.

Citrix Systems: New Company Page - Microsoft Internet Explorer provided by MSDN

File Edit View Go Favorites Help Address <https://hqwww10.citrix.com/CCS/NewCompany.asp>



New Company Page

Please enter appropriate information in all the fields below and proceed to the next section.
Required fields are in **red**.

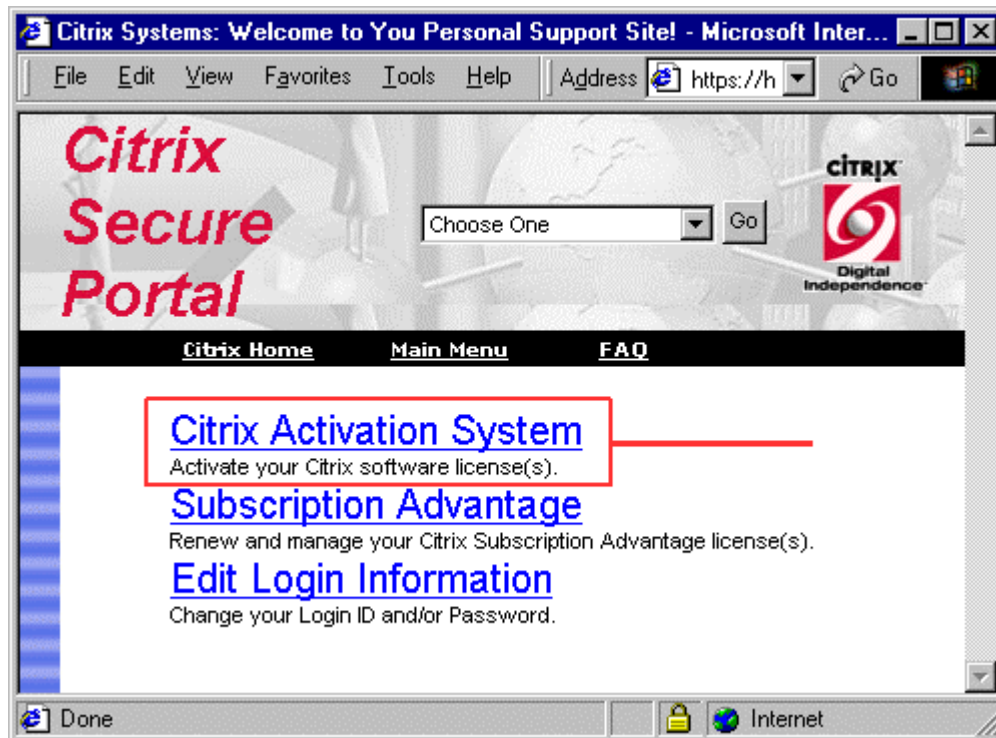
Company Name:

Physical Address:		Phone:	
Address 1:	<input type="text"/>	Country Code:	<input type="text"/>
Address 2:	<input type="text"/>	Area Code:	<input type="text"/>
Address 3:	<input type="text"/>	Number:	<input type="text"/>
Address 4:	<input type="text"/>	Fax:	
Address 5:	<input type="text"/>	Country Code:	<input type="text"/>
City:	<input type="text"/>	Area Code:	<input type="text"/>
State (USA only):	<input type="text"/>	OR	Number:
State/Province/USA:	<input type="text"/>		
Postal Code:	<input type="text"/>	Web Site:	
Country:	<input type="text"/>	URL:	<input type="text"/>

Done Internet zone

Company Search

An on-line form will be displayed with fields for information about registering the company. Fill these in to continue and select the **Continue** button.



Citrix Activation System

A page will be displayed that allows the choice of activating licenses, renewing subscriptions, or editing login information.

Select the **Citrix Activation System** hyperlink. This will launch the Activated License page.



Activated License Page

The Activated License Page will be displayed showing the activated licenses that the registered company holds. If this is a new company registration, no licenses will be displayed.

Select the **New License** button to continue.

Note: The ID numbers shown on screens have been changed to "1234". Please use the appropriate numbers that apply to your server and licenses.

Citrix Systems: License Activation - Microsoft Internet Explorer

File Edit View Favorites Tools Help Address <https://apps.citrix.com/ccs/cas/ProdA...> Go

Citrix Secure Portal Choose One Go

[Citrix Home](#) [Main Menu](#) [FAQ](#)

License Activation

New License Activation: Step 1

For help, please click one of the following links: | [MetaFrame XP](#) | [MetaFrame 1.X](#) | [WinFrame](#) | [MetaFrame for Unix](#) |

Please enter your license code information:

License Code:

Example License Code: ECS-12D3-4567-Z123-456123-4567-890E

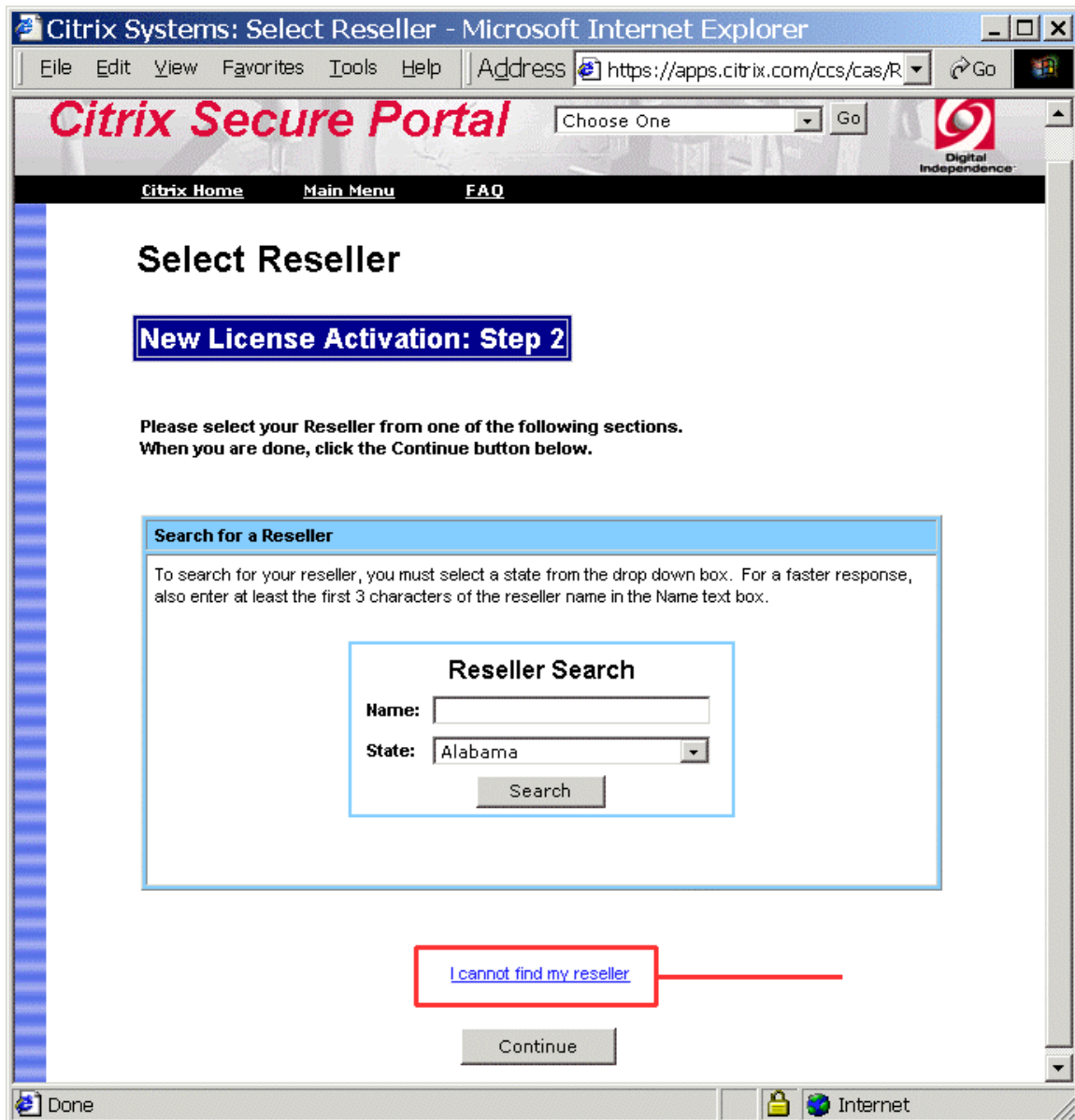
Done Internet

License Activation – Step 1

The License Activation screen will be displayed.

Enter the **License Code** that was generated during installation, as shown in Citrix Device Services Installation On Windows 2000. This is the License Serial Number that is in the ThinManager CD case, with the Machine Code added.

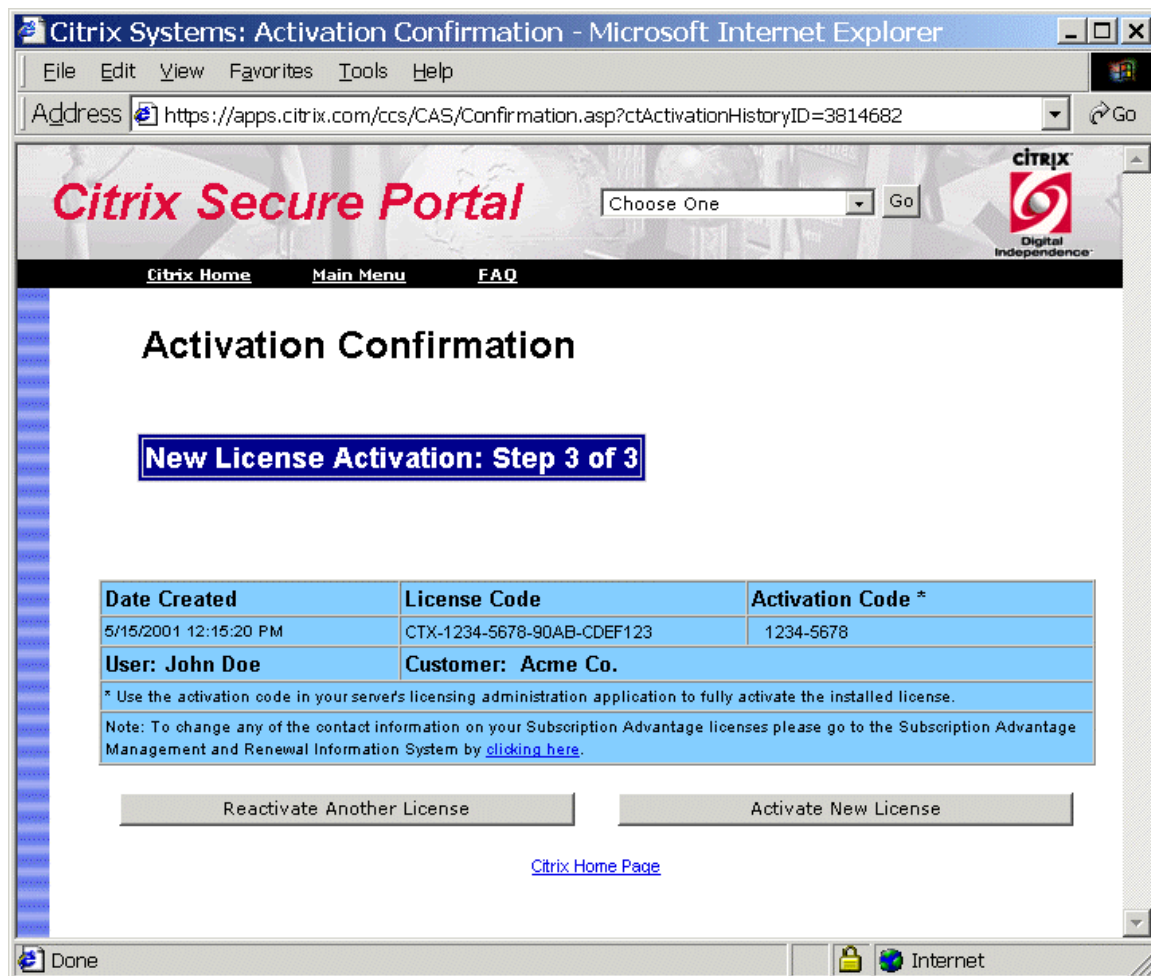
Select the **Continue** button to proceed.



License Activation – Step 2

The Select Reseller screen will be displayed.

Select the ***I cannot find my reseller*** link to continue.



License Activation – Step 3

A new screen will appear that displays the Activation Code for the installation.

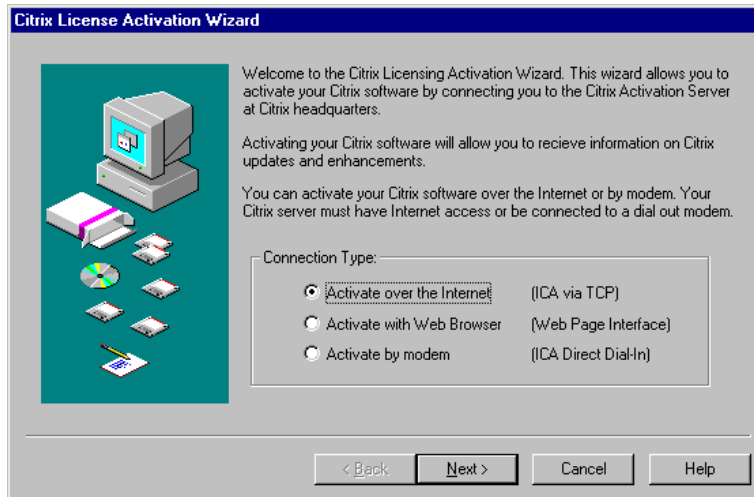
Write this Activation Code down for use in activating the license.

Print a copy of this page for a record, and then exit the Citrix web site.

Obtaining an Activation Code through the Activation Wizard

An alternative way to obtain an **Activation Code** from **Citrix** is through the Activation Wizard. This provides the option of using TCP/IP, a Web Browser (as explained in the previous section), or by dialing up with a modem.

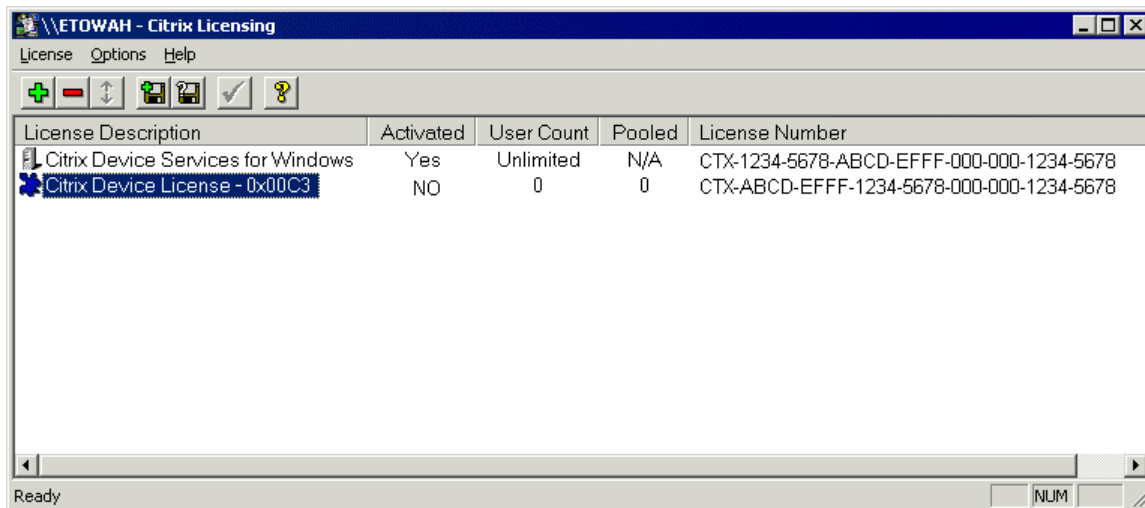
To use this method select **Start>Programs>Citrix Device Services Tools (Common)>Activation Wizard**. When the **Activation Wizard** is displayed, follow the instructions for contacting Citrix to obtain an **Activation Code**.



Citrix License Activation Wizard

Activation of a Citrix License

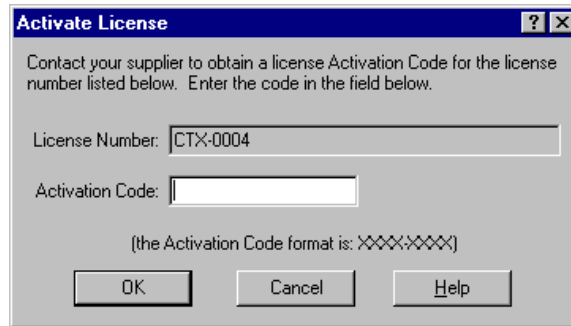
Once an **Activation Code** is received, open the **Citrix Licensing** window by selecting **Start>Programs...> Device Services Tools (Common)>Citrix Licensing**.



Citrix Licensing

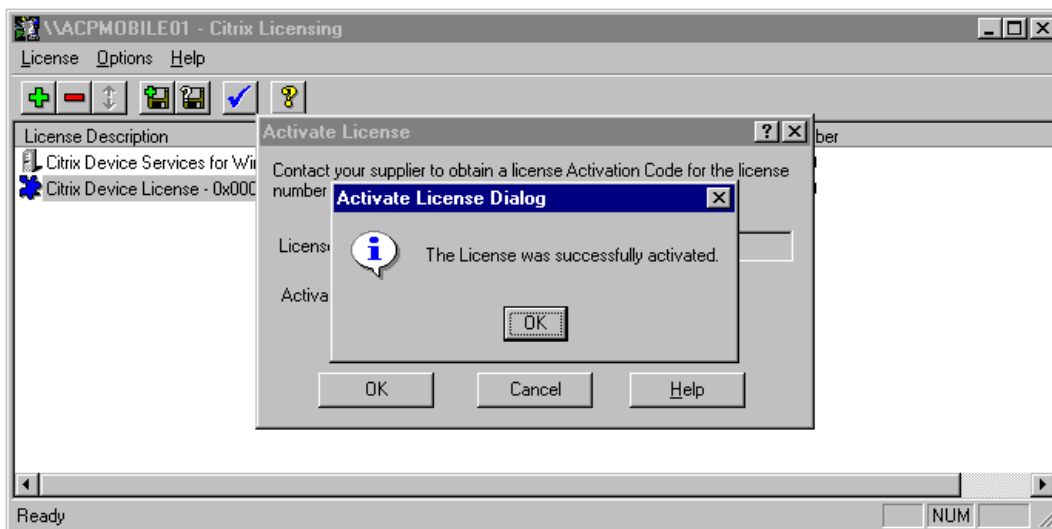
When the Citrix Licensing window is displayed, highlight the inactive license and select the blue check mark icon from the toolbar or select **License>Activate License...** from the menu bar.

This will display the **Activate License** dialog box.



Activate License Dialog Box

Enter the **Activation Code** from the Citrix web site in the **Activate License** dialog box.
Select **OK** to finish the license activation. A dialog box will confirm the license activation.



License Activation Confirmation

The Citrix Device Services is now active on the server.

Appendix

History

The Technology of Thin Clients

By David Hancock, 3/23/2000

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This article first appeared on Plant Automation.com in March 2000.

Thin client computing is getting ready to move onto the factory floor and its impact on plant automation promises to be substantial. While it is a new technology, the methodology comes from the earliest days of computing.

Most of us remember the days when a company or university had just one or two computers. They were always locked up in a special, limited access room, and tended to by specially trained people (sometimes even wearing lab coats). Our only access to this machine was through a computer terminal, which served only as an input/output and display device.

If you stop and think about it, this computing model was very easy to maintain. While users could run whatever software was loaded on the central computer (or "mainframe"), the programs and data files were protected in the same room with the expensive and delicate computer equipment.

With the advancement of computer technology it became possible to distribute the computing power around to individual users. The use of 'dumb' terminals began to fade and the era of the Personal Computer (PC) began.

While the PC allowed users to run programs with complex, windows-based controls, it also created a situation where the highly trained computer people had to get out of their central office more. Now rather than being able to support the computers for an entire company from a single room, the IT department had to spend more and more time scattered throughout an organization.

There was always a user that couldn't get the latest software update working, or had installed a game package that wiped out parts of his accounting package or, worse still, had loaded an unauthorized application that included some type of virus.

Back to Centralization

Several years ago, it was discovered that the capabilities of computer hardware and networking systems allowed for a movement back to the centralized computing model that was so easy to support.

A startup company called Citrix modified Microsoft's NT 3.51 product and produced an operating system that was capable of running multiple client sessions, while sending the video output to be displayed on another computer. Microsoft liked what they saw enough to team up with Citrix and produce a version of Windows NT 4.0 (called Windows NT 4.0 Terminal Server Edition, or TSE) that was able to support these remote terminals.

The original displays for the sessions running on the server were full PCs that had special software (loaded on top of their standard Windows OS) to receive and display the video images, and pack and send the user's keyboard and mouse commands back to the server.

Several hardware manufacturers quickly realized that in many applications a full PC was overkill, and started to make clients designed specifically to respond to the server sessions. They reduced cost and complexity by taking out some RAM, limiting the number of expansion slots and, most importantly, removing all of the disk drives, replacing them with a small, embedded operating system. Since these clients were created essentially by removing components from standard PCs, they became known as "thin clients".

The new thin client technology had some tangible advantages. Any software that needed to be run could now simply be loaded or updated on the server, and all of the clients had access. As

no software actually ran on the clients (it all runs on the server) any client can be powered down without having an effect on the user's program or data. Clients can be swapped with almost the same ease that ASCII terminals were replaced 15 years ago. And, because the new clients are diskless, users can no longer add their own programs or remove company data.

With thin clients, support can again shift back to a central server located in a secure area with limited access. New clients can be added anywhere a standard Ethernet network cable can be run.

We all know that the industrial market follows the commercial market by several years and, using that formula, now is the time for thin clients to start moving onto the factory floor.

As much sense as the thin client makes in the office environment, it makes even more sense in the factory. The last thing that the average plant manager wants is a full PC located at each line. His goal is simply to have the same HMI or SCADA displays that his operators have grown accustomed to without the maintenance nightmare of distributed computers. With a thin client system, he can have just that. All of the software that he has been running on his NT machines can now run on one or more servers located off of the floor in a protected environment.

User Driven

Unlike many of the advances in plant automation, the movement to a thin client architecture is not being driven by the software manufacturers. It is the users that are demanding that the major HMI and SCADA companies provide support for customers who want to run their software from clients rather than PCs.

Within the next several months, there will be announcements about products that are designed specifically with thin clients in mind. And, as Microsoft built support for thin clients into Windows 2000 Servers, new software designed for that operating system will start out thin client ready.

HMI and SCADA applications are not the only packages that can take advantage of thin clients. Almost anywhere that a full PC is currently running standard Windows software, it can be replaced with a thin client terminal.

This can be especially useful to companies that want to run software around the plant simply to record and display information about part production and inventory. Where previously a full Windows PC was required, the software can be moved back to the server and a thin client substituted for the PC. Plug in a hand scanner or barcode reader, and the display looks exactly the same to the operator. But the cost, both for the initial hardware and for the long-term support, looks decidedly different to management.

What does this mean to the typical PC based factory installation? It means that they can now install or upgrade their software one time, on the server, and have it immediately available to all of the clients. It also means that they can have their expensive software available in more locations than before. If they need, say, 50 clients running on the floor, they can now buy 60 licenses and have 10 licenses available for any manager who wants to take an occasional peak at how the machines are running. Since the server controls the number of sessions that are started, the 61st user will not be able to bring up a session until some other user goes offline.

The software companies are happy because they just sold an additional 10 licenses, and the end user is happy because he just got the ability for 25 managers to have occasional access to the software without buying 25 more licenses.

Right now there are very few companies making thin clients designed for the harsh environment of the factory floor. However, as the benefits of thin client computing become known, the number of vendors will rise dramatically. As that begins to happen, it won't be long before you or one of your competitors will have found that a thin client system is the preferred way to run Windows software in a manufacturing environment.

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