



Getting Started With ACP Thin Clients

Use the **F1** button on any page of a ThinManager wizard to launch Help for that page.

Visit www.thinmanager.com/technotes/ to download the manual, manual chapters, or the ThinManual.

Building and configuring an ACP thin client network requires three types of hardware and three types of software. This document will provide an overview of the process and provide links to more detailed articles.

The three hardware components are:

- Terminal Servers
- An Ethernet Network
- ThinManager Ready Thin Clients

The three software components are:

- Microsoft Terminal Servers
- ACP ThinManager
- Applications

The Hardware Components

The Server

Server Sizing

The most important component of the server hardware is memory (RAM). Each terminal user that logs into the server will have a self-contained session requiring enough RAM to run its applications. To determine the quantity needed, add the amount needed for each session to the 1024 MB needed for the operating system. While 32 MB may be enough for an office terminal running a word processor or an e-mail program, HMIs and SCADA programs require higher amounts. Plan on 128 MB for each HMI operator station.

For example, 2 GB provides 1024 MB for the server and 128 MB for 8 sessions. 3 GB provides for 16 sessions. 4 GB provides for 24 sessions.

Server speed is also important. A faster processor will provide better performance than a slower processor. Using a multi-processor or multi-core will also improve performance.

Hardware Configuration

We often think of servers as a specialty style of hardware: rack mounted, RAID hard drives, dual or quad processors, and redundant power supplies. This style of hardware is ideally suited to the demands of server computing, but is not the defining criteria. What creates a server is the operating system. Server software can effectively run on a variety of hardware configurations. While the modern rack-mounted server is ideally suited to the task, desktop workstation hardware can also be used to run server software.

The Network

ACP Enabled Thin Clients connect to the terminal server using TCP/IP. Most current models use 100-based-T Ethernet. Fiber optics can be used for the network backbone.

IP Addresses

The thin clients will each need an IP address to join the network. ThinManager Ready thin clients can use a static IP or be assigned addresses by a DHCP server. ThinManager Compatible thin clients need to use DHCP to receive their address.

Firewalls

Firewalls will block the in-bound traffic to the ThinManager Server. You can disable the firewall but it is a better practice to open the ports needed.



Ports

These are the ports needed to be opened in a ThinManager system.

- UDP/4900 - TFTP - Used for the TFTP download of the firmware.
- TCP/2031 - Configuration - Used to pass the configuration from the ThinManager Server to the thin client.
- TCP/2032 – ThinServer Proxy Service – used by iPad and iPhone apps.
- TCP/67 – DHCP – Used by the PXE Server (if using PXE boot).
- TCP/69 – TFTP – Used by the PXE Server (if using PXE boot).
- TCP/1494 - Citrix - Used by the ICA protocol (if using ICA instead of RDP).
- TCP/3389 - RDP - Used by the RDP protocol (if using RDP in v2.4.1 or later).
- TCP/5900 - Shadowing - Used to shadow terminals. This can be changed on the Shadow Configuration page of the ThinManager Server Configuration Wizard.
- TCP/ 1758 – Used if the default Multicast is used.
- ICMP Echo Packets (Ping) – Used by WinTMC and Enforce Primary.
- DHCP - This needs to be allowed if a DHCP server is assigning IP addresses.
- The network MTU packet size can be changed on the Multicast Configuration page of the ThinManager Server Configuration Wizard if the network uses a packet size different than 1432.

ThinManager Ready Thin Clients

Thin Clients are computing devices that run without a hard drive or a configurable operating system. This cuts down on the amount of maintenance required.

They connect to a terminal server, login, and start a session. The processing is on the terminal server but the input and video output are on the thin client.

ThinManager Ready Thin Clients

ThinManager Ready thin clients are thin clients that have an ACP BIOS on board that allows it to connect to ThinManager to receive its firmware and configuration. The ThinManager Ready label on the hardware shows that it is ready to connect to ThinManager.



ThinManager Ready Logo

ThinManager Ready thin clients use DHCP by default but can have static IP addresses assigned.

ThinManager Capable Thin Clients

ThinManager Compatible thin clients are common off the shelf thin clients that can use PXE boot to download the firmware and configuration. This expands the hardware options for a ThinManager system.

PXE boot and ThinManager Compatible thin clients require an XLI license.



The Software Components

Terminal Server Operating System

ACP Enabled Thin Clients require a server running Microsoft Windows 2000, 2003 Server, 2003 R2, Microsoft Windows 2008 Server, or 2008 R2, with Terminal Services enabled. These allow terminals to login to the terminal server and run a complete Windows session on the server that is distinct and separate from the other sessions.

Microsoft requires that each terminal session have a Microsoft Terminal Services/Remote Desktop Services Client Access License. It is called a TS CAL with 2000 and 2003 servers and an RDS CAL with 2008 servers.

ACP ThinManager has failover capabilities. If one or more terminal servers are used, ACP ThinManager can be configured so that if one server fails, the terminals will quickly connect to a server that is designated as a secondary server.

ThinManager

ThinManager is an administrative user interface that controls, configures, and organizes the ThinManager Ready and ThinManager Compatible thin client. ThinManager is the visible control panel that works in conjunction with a background service named ThinServer.

The ThinManager interface has a control panel with a tree-view pane and a details pane. The tree-view pane provides "at-a-glance" management by icon color to show the on/off status of the terminal. When the terminal is expanded it shows what terminal servers or display clients that it is assigned and connected.

Selecting a terminal icon or group icon in the tree-view pane will display the configuration parameters of the terminal or group in the details pane. This provides quick access to configuration information.

Installation Location

ThinManager can be installed on most computers, either servers (Server 2000 SP3 and later) or workstations (XP SP2 or later). It is easier to run on servers because it is easier to open ports and grant permissions. ThinManager doesn't need to be installed on a terminal server, although that is a common place to install it.

Redundancy

ThinManager has redundant licensing that allows you to synchronize two ThinManager Servers. You can point the thin clients to both and if the first ThinManager Server isn't available the thin client will connect to the secondary.

Full redundancy gives you two synchronized ThinManager Servers and an administrative console on both. Mirrored licensing gives you two synchronized ThinManager Servers and an administrative console just on the primary ThinManager Server.

Configuration

When a new thin client is added to the system, the ThinManager will prompt for the configuration of the new terminal. The terminal can be easily configured by either:

- Adding it to an existing Group and receiving the Group configuration
- Copying the configuration from an existing terminal
- Auto-Creation from the floor to match the configuration of a default terminal
- Individually configuring the terminal to meet individual needs

The configuration parameters include:

- Whether the terminal boots automatically or whether the user login is manually entered at each terminal boot



- Whether an initial application is run upon terminal booting
- The video resolution
- Which modules to load
- Specifying which server to connect to if multiple servers are used.

When a terminal is added to a Group, it will inherit the configuration of the group.

Use of modules speed the terminal boot process because the terminal will load only the code from the modules that are specified. The modules include:

- Touch screen drivers
- Instant Failover
- Sound drivers
- Serial Mouse drivers

Virtual Machines

ThinManager can be installed on a virtual machine. It will need to have its license re-activated whenever it is moved or copied as the install ID is tied to the SID.

ThinManager can use virtual terminal servers. They can be defined as if they are physical servers.

ThinManager can connect to a VMware ESXi server and control and manage the virtual machines from within ThinManager. Any virtual terminal servers can be defined as virtual terminal servers in ThinManager.

Applications

Applications need to be installed on the terminal servers that the thin clients will connect to. Each software vendor has its own licensing model but you will usually need a license for each active session.

Configuration Pre-planning

Before establishing the ACP thin client environment you need to decide the following:

- Determine how you want IP addresses assigned, using DHCP or Static IP addresses.
- Decide whether the thin clients will logon automatically at start, or whether the operator will be required to logon at startup and on reboots.
- Decide if you want the ACP Enabled thin client to be configured individually, organized into a single group with similar configurations, or divided into multiple groups, each with a different configuration.
- Define the naming convention for the groups.
- Define the initial startup session, deciding whether you want the Windows desktop or a specific application to run on startup.
- Decide what level of Windows security needs to be assigned to the users.
- Define the naming convention for the ACP Enabled thin clients