

2 System Overview

2.1 Quick Start Checklist

Microsoft

- ❑ Build a terminal server with the Microsoft Windows 2003 or 2008 Server operating system. Add the Terminal Services/Remote Desktop Services Role. See Non-ThinManager Components.
- ❑ Create a Microsoft Licensing Server and add a TS/RDS CAL (Terminal Server/Remote Desktop Services Client Access License) for each thin client. They also require a normal CAL. See Microsoft Licenses.
- ❑ Create a Microsoft user profile for each terminal on the terminal server. Make sure that the user is a member of the Remote Desktop Users Windows group. See Creating Microsoft User Profiles.
- ❑ Apply appropriate security to each user profile using the standard Microsoft techniques.

ThinManager

- ❑ Install ACP ThinManager software onto a computer to create a ThinManager Server. See Installation of ThinManager.
- ❑ Create a Master ACP License and add enough Product Licenses for each thin client. Activate and apply to the TMS See Adding a Master License to ThinManager.

Hardware

- ❑ Establish the IP addressing scheme for the thin clients, Static IP or DHCP. See IP Address Assignment.
- ❑ If using DHCP, configure Option 066 to list the IP address of the ThinManager Server. See DHCP.
- ❑ Attach the terminals to ThinManager by either:
 - Turning on the terminal and selecting the "Create New Terminal" option when the offline terminals are listed.
 - Pre-creating the terminals in ThinManager and selecting the proper terminal name when the terminal is turned on and offline terminals are listed.

Results

- ❑ Step 1: The clients will connect to the ThinManager Server and download the firmware and configuration.
- ❑ Step 2: The configuration will send them to the terminal server to login and start a session.

Note: It is a good idea to schedule an automatic backup of your configuration. See Scheduling for details.

2.2 Required Components

Thin Clients require a number of components to function properly. These include:

- Terminal Services from Microsoft (renamed Remote Desktop Services in Windows 2008 R2)
- Client Communication Protocol, either Microsoft RDP or Citrix ICA
- ACP ThinManager software
- ThinManager Ready or PXE Compatible Thin Client Hardware
- Standard TCP/IP network infrastructure

2.2.1 Windows Terminal Server Operating System

The first component is the Terminal Server. This is a computer with a version of Microsoft's Windows 2003 or 2008 Server that has the Terminal Services functionality activated. The operating system allows multiple users to log into the server and run independent, isolated sessions. The operating system controls the server, provides security, controls user access, and runs the applications.

The terminal servers need a Microsoft Terminal Services Licensing Server with Terminal Services/Remote Desktop Services Client Access Licenses (TS/RDS CALs) added.

See Microsoft Licenses for details.

2.2.2 Client Communication Protocol

The second component is the **Client Communication Protocol**. The Client Communication Protocol is the protocol used for client-to-server communications in the Terminal Services Environment. The protocol handles all video, information, and user input such as keyboard and mouse input. This can be either the default RDP protocol that is installed by default with any Windows Terminal Server operating systems or an ICA protocol available separately from Citrix.

The **RDP (Remote Desktop Protocol)** is the Client-Communication Protocol that is included with Microsoft Terminal Services and can be used by Thin Clients to connect to Windows 2000/2003/2008 Terminal Servers. The RDP connection to a Windows 2000 Terminal Server is limited to a 256-color depth (8-bit) while the Windows 2003/2008 Server connection can be made at a higher color depth.

The **ICA (Independent Computer Architecture) Protocol** is available by installing and licensing a **Citrix** component on the Terminal Servers.

2.2.3 ThinManager Administrative Software

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

- **ThinServer** is a service that is the engine of the program. It starts automatically, runs in the background, and provides essential functions to control the thin clients. ThinServer is installed during ThinManager installation if selected.
- **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, including the terminal server.

Note: ThinManager Server is used to describe a computer running ThinManager and ThinServer that provides control and configuration to Thin Clients, even if the computer is a workstation.

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

2.2.4 ThinManager Ready Thin Client Hardware

ACP ThinManager is designed to control and configure ACP Enabled Thin clients. These are ThinManager Ready thin clients produced by a variety of manufacturing partners and displaying the ThinManager Ready sticker. These devices have a ThinManager BIOS on board that allow them to connect to a ThinManager Server and operate as thin clients without a hard drive or embedded operating system.



ThinManager Ready Logos

ThinManager Enabled thin clients should display a ThinManager Ready Logo. The ACP website (www.thinmanager.com) has links to the ACP Partners.

2.2.5 ThinManager Compatible Thin Client Hardware

ThinManager 5.0 introduced a PXE Server (Preboot Execution Environment) to the ThinManager System. The PXE server has the ability to take generic off-the-shelf devices and have them boot the ThinManager firmware to become full functioning ThinManager thin clients. These are called ThinManager Compatible thin clients.

ThinManager Compatible thin clients do not have a distinguishing logo. See the list of tested and compatible thin clients at <http://www.thinmanager.com/complist/index.php>.

2.3 Connection Overview

When a terminal is powered on:

- For ThinManager Ready thin clients:
 - 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. Units with the ACP BootLoader 5.01 and later can use DHCP and have the ThinManager Server statically assigned on the unit.
See DHCP Server Setup and Boot Process for details.
 - Alternately, the terminal may be assigned a static IP address and the ThinManager Server IP address.
- For ThinManager Compatible PXE thin clients:
 - PXE clients must use DHCP.
ThinManager Compatible thin clients make a DHCP request for an IP address and make a PXE request for a PXE server and boot file. These can come from a DHCP server or ThinManager depending on system configuration.
See PXE Server Configuration Wizard for details.
- The terminal connects to the ThinManager Server to download its configuration.
- The ThinManager configuration will tell the terminal which terminal server to connect and login to.
- 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.

The Thin client can be assigned to a single terminal server, or it can be assigned to multiple terminal servers in case of terminal server failure. Display Clients are groups of terminal servers that have added functionality for the thin client.

2.4 Failover Overview

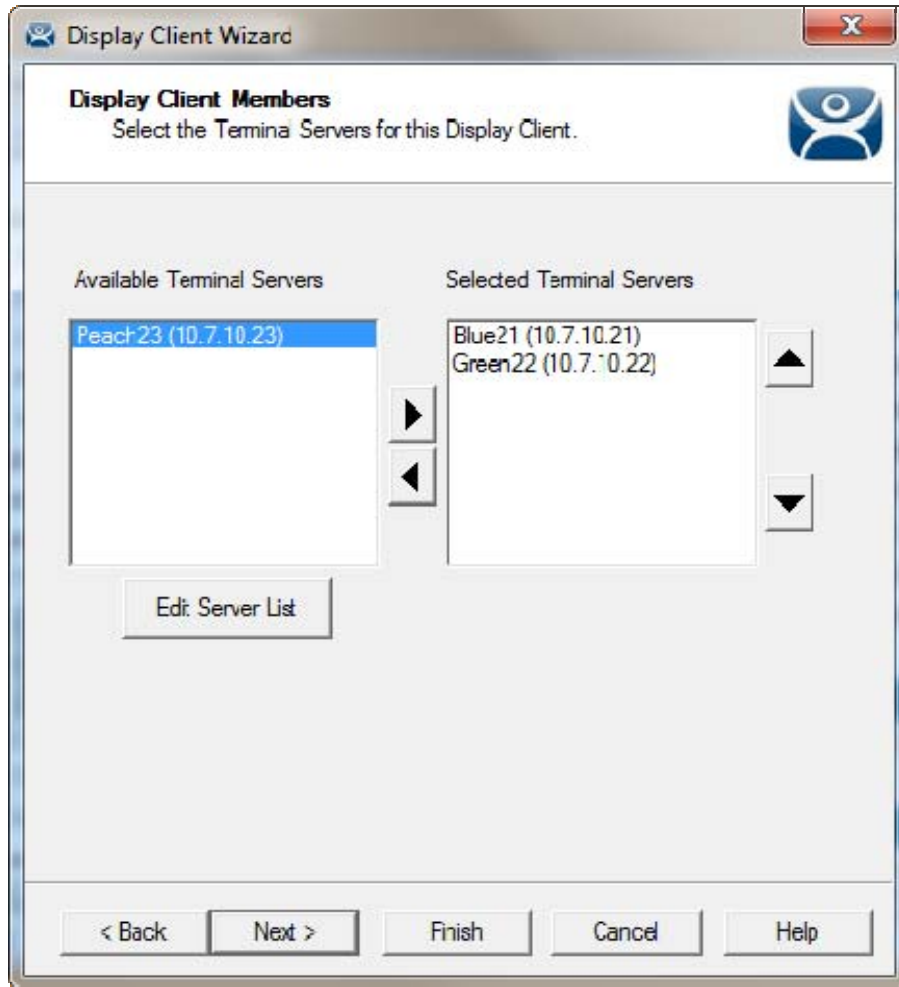
Server failures in any network or system can disrupt productivity and data management. ACP ThinManager, version 2.3 and later, has a failover capability built into it that allows terminals to connect to a secondary terminal server if the terminal server that they are logged into fails. This will lessen the effect of server failures 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 appropriate applications and licenses installed.
- **Terminal Server Addressing In ThinManager:** When configuring the display clients to use individual terminal servers, 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.
When using a SmartSession Display Client the terminal will connect to the terminal server with the lightest load.

- **Sufficient Memory:** The third 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 be taxed with the addition of the new terminals.
- **User Permissions:** Each terminal server needs the appropriate Windows 2003/2008 user profiles and permissions. The terminals will not log into a secondary session unless it has a user profile on that server.

ACP ThinManager allows the use of several terminal servers, defined as the primary and as backups. If the primary terminal server fails, the 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.



Failover Configured for Display Clients in the Display Client Wizard

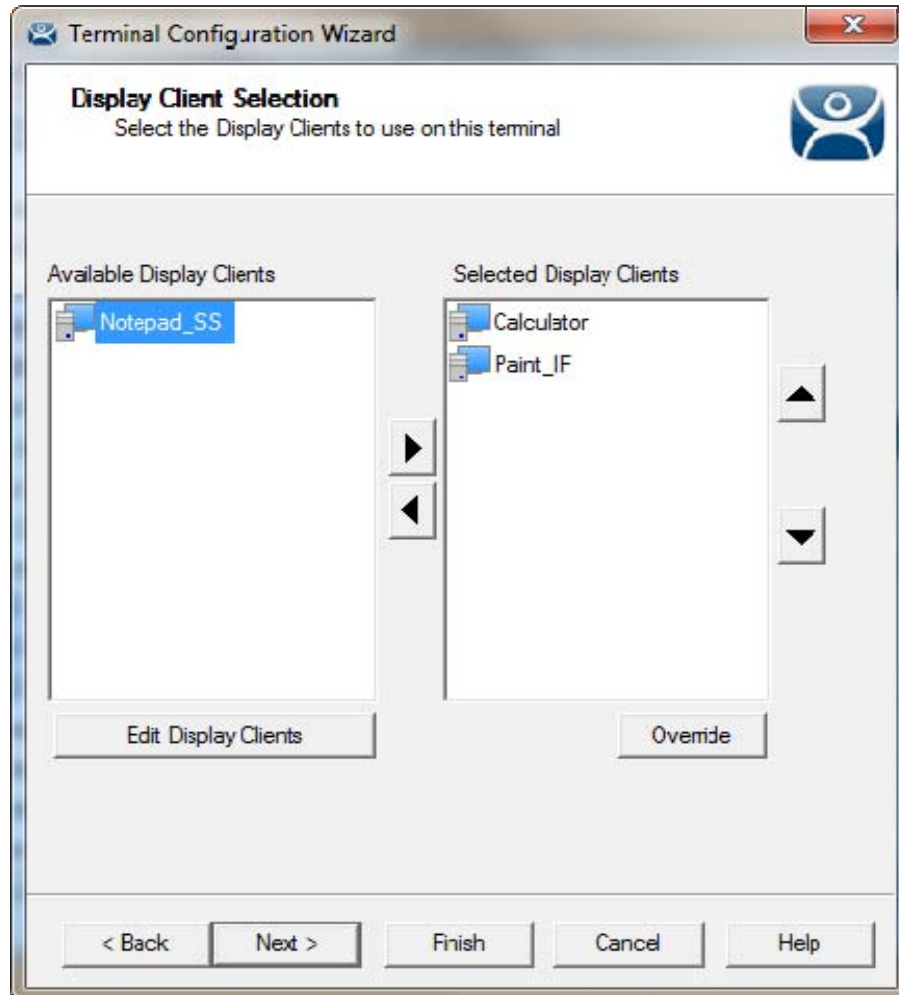
Failover when using Display Clients is configured in the Display Client Wizard by adding multiple terminal servers to the Display Client. See Display Client List for details.

Instant Failover is an advanced configuration of failover. The terminal will log into two terminal servers and start a session on each one. The primary session will be displayed, with the secondary session cascaded behind it. If the primary terminal server fails, the terminal will switch focus to the already initiated secondary session and display the secondary session, saving the time needed to switch terminal servers and load applications.

See Instant Failover for further details.

2.5 MultiSession Overview

MultiSession is the ability for a Terminal to display several Display Clients at one time. Normally the Display Clients are cascaded with only one active at a time. Tiling allows a thumbnail of each Display Client to be displayed at the same time.



Display Client Selection Page of Terminal Configuration Wizard

MultiSession is initiated by adding multiple Display Clients on the Display Client Selection page of the Terminal Configuration Wizard.

See SessionTiling Options for details.

2.6 MultiMonitor Overview

MultiMonitor is the ability of some thin clients to use up to five monitors on the thin client. These monitors can be used to display single screen Display Clients or the monitors can be merged to form spanned windows of two or more monitors.

The MultiMonitor function can be applied to the WinTMC client running on a Windows PC with multiple monitors.

Note: MultiMonitor requires the usage of Display Clients instead of using individual terminal servers.

See MultiMonitor for more details.

2.7 TermSecure Overview

TermSecure is a new ThinManager feature that allows users to logon to a thin client and access user-specific or terminal-specific Display Client. This does not replace the Windows logon but adds an additional layer of security and control.

Terminals and Display Clients can be assigned Access Group permissions. A TermSecure User can use those terminals and Display Clients only if the TermSecure User has been assigned to the same Access Group Display Clients

TermSecure has two main attributes:

- **SecureAccess:** Manages user access to terminal servers and sessions through ThinManager authentication and group permissions.
- **SmartContext:** Allows the movement of the display of a TermSecure User's terminal server sessions between multiple thin clients; initiated by either manual login or the use of an authentication device. This allows a user to leave one terminal, logon to a different terminal, and reconnect to their session, essentially having the session follow him from terminal to terminal.

TermSecure logins can be initiated by a manual login or by the use of an ID device like USB drives or ProxCards for login.

See TermSecure User Configuration Wizard for details.

Note: TermSecure requires the usage of Display Clients instead of using individual terminal servers.

2.8 PXE Boot Overview

PXE (Preboot Execution Environment; sometimes pronounced "pixie") is an environment that allows a computer to boot over a network. ThinManager provides a complete PXE boot environment that does not require any additional software components. The ThinManager PXE Server conforms to version 2.1 of the Intel PXE boot specification.

The Thin Client computer must be capable of PXE Booting. Most standard BIOS ROMS include a PXE Option ROM. In order to PXE boot, the PXE Option ROM must be enabled in the BIOS. The PXE boot method (boot from network) should be set to first in the boot order. Disabling the other boot devices in the BIOS will ensure that the unit will only boot via PXE.

See PXE Server Configuration for more details.