



The ThinManual

An Abridged Guide to ThinManager

Version 3.3



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1. *Setup Overview*

(All you need to know about ThinManager in 100* words or less)

- Build a terminal server with the Microsoft Windows 2003 or 2008 Server operating system. Enable Terminal Services. See Section 2.2.
- Create a Microsoft Licensing Server and add a TS CAL (Terminal Server Client Access License) for each thin client. They also require a normal CAL. See Section 2.3.
- 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 Section 2.4.
- Apply appropriate security to each user profile using the standard Microsoft techniques.
- Install ACP ThinManager software onto a computer to create a ThinManager Server. See Section 5.2.
- Install an ACP License for each ThinManager Ready thin client. See Section 6.5.
- Establish the IP addressing scheme for the thin clients, Static IP or DHCP. See Section 7.1.
- If using DHCP, configure Option 066 to list the IP address of the ThinManager Server. See Section 7.1.1.
- 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.
- The clients will connect to the ThinManager Server and download the firmware and configuration. The configuration will send them to the terminal server to login and start a session.

* Closer to 200

2. Microsoft Terminal Services

2.1. Role of Terminal Server

A terminal server is a Windows 2003 or 2008 server that has terminal services enabled. This configures the server to use a mainframe style client/server architecture. A client logs into the terminal server and starts a session. Keystrokes and mouse movements are sent from the client to the session on the terminal server. All processing takes place on the terminal server and the resulting graphics are sent to the client for display.

The ThinManager configuration sends the ThinManager Ready thin client to the terminal server(s) to start a session(s).

2.2. Terminal Server Configuration

ThinManager Ready thin clients rely on Microsoft terminal servers.

- Build a Windows 2003/2008 Server. A clean install is better than converting an existing server.
- Enable Terminal Services in the Windows Components Wizard by selecting *Start > Control Panel > Add/Remove Programs > Add/Remove Windows Components* and checking the *Terminal Services* checkbox.
- Select the *Permission Compatibility* during the Terminal Services installation. Most HMIs require the default *Relaxed Security* because the *Full Security* setting requires users to have administrative rights. This can be changed in the *Server Settings* of the *Terminal Services Configuration Console* (Section 2.5.2).

2.2.1. Virtual Memory

- Set the Virtual Memory page file to 2.5 times the size of the physical memory to increase performance.
- Go to *Control Panel > System > the Advanced tab > Performance Settings* to launch the Performance Options.
- Select the Virtual Memory *Change* button on the *Advanced* tab.
- Set the *Initial size* and *Maximum size* to the same value to speed performance.
- Changing the virtual memory requires a computer reboot.

2.3. Microsoft Licensing

Each terminal or user will require a CAL (Client Access License) and TSCAL (Terminal Services Client Access License) to access the terminal servers. The TSCALs are not pooled but allow connection to an unlimited number of terminal servers.

- Add a Terminal Services Licensing Server (TSLs) to the network by checking the Terminal Server Licensing checkbox on the Windows Components page. (*Start > Control Panel > Add/Remove Programs >*

Add/Remove Windows Components). This is not a separate piece of hardware but an application to install and run on an existing server.

- ❑ Microsoft normally recommends a single TSLS per network. They recommend that it be installed on the Domain Controller, if available. Windows 2003 SP1 and later have a *License Server* setting in the *Server Settings* of the *Terminal Services Configuration Console* that allows multiple TSLSs. See *Server Settings* in section 2.5.2 for details.
- ❑ Activate the TSLS by selecting *Start>Programs>Administrative Tools>Terminal Server Licensing* on the Terminal Server Licensing Server and selecting *Action>Activate Server* from the menu to launch the licensing wizard. Follow Microsoft's instructions.
- ❑ Activate the TSCALs on the TSLS through the licensing wizard following Microsoft's instructions.

Terminals will connect without a TSLS and receive a 90-day temporary TSCAL. When this expires the terminal will display an "Unable to connect to terminal server" error message in the top left corner of its monitor. The cause of the error, lack of a TSLS and TSCALs, can be found in the terminal server event log where it will show a "Client license is unable to be issued" error message. Add TSCALs to an activated TSLS to solve this issue.

2.4. Microsoft Users

Terminals require a valid Windows user account to start a session on the terminal servers. These can be domain accounts or local accounts on each terminal server.

- ❑ Create a unique user account for each terminal or user in the Computer Management console (*Start> Program Files> Administrative Tools> Computer Management*). Highlight the *Users* folder in *System Tools/Local Users and Groups* and select *Action> New User* from the menu.
- ❑ Add the users to either the *Remote Desktop Users* group or the *Administrators* group to allow access to the terminal server.
- ❑ Some HMIs also require that users be a member of the *Power User* group to run successfully.
- ❑ Apply any group policies as needed.
- ❑ Windows 2003 activates a secure screen saver for each user by default requiring *CTL+ALT+TAB* to unlock. Users of touch screens will want to deactivate this, either in each user account or in the Group Policy Editor (*gpedit.msc*) at *User Configuration>Administrative Templates>Control Panel>Display*.

2.5. Terminal Services Configuration

The Terminal Services Configuration console provides tools for configuring the connection between terminals and the terminal server. These are a few of note:

2.5.1. Connections – RDP-tcp Properties

- Open the Terminal Services Configuration (*Start > Program Files > Administrative Tools > Terminal Services Configuration*), highlight *Connections* on the left and double-click on *RDP-tcp* on the right to launch the *RDP-tcp Properties* page.

Allow Audio Mapping for Terminal Sound

- Sound redirection to terminals is turned off by default.
- Select the *Client Settings* tab and unselect *Audio Mapping* to allow sound to be redirected to the terminal.
- Any users will need to log out and login to apply the change.

End Disconnected Sessions

Most users will want to keep disconnected sessions on the server to allow a user to reconnect to an existing session.

Disconnected sessions can be deleted from the terminal server to reduce the resource and to have terminals start fresh sessions when they reconnect.

- Select the *Sessions* tab, select the *Override user settings* and set the *End a disconnected session* parameter.
- Any users will need to log out and login to apply the change.

2.5.2. Server Settings

- Open the Terminal Services Configuration (*Start > Program Files > Administrative Tools > Terminal Services Configuration*), highlight *Server Settings* on the left.

License Server Discovery

Microsoft recommends a single Terminal Services License Server (TSLs) on a network. Having multiple TSLs can cause the terminals connection problems. If multiple TSLs are used the terminal server can have its TSLs specified to ease licensing issues.

- Double-click on *License server discovery mode* on the right.
- Select the *Use these license servers* radio button and enter the name of the license server.

2.6. Microsoft Commands

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

Command	Action
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. username is the NT/2000 user name that the person or terminal is logged in as. " message " 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
Tsshutdn	Shuts down the terminal server in an orderly manner

Commands to launch useful Microsoft programs include:

Command	Action
gpedit.msc	Launches the Group Policy Editor
tsc.c.msc	Launches the Terminal Services Configuration Console
tsadmin	Launches the Terminal Services Manager

2.7. Alternative Terminal Keystrokes

Certain keystrokes are not available in a terminal session. Microsoft has provided these alternatives.

Keystroke	Function
ALT+PAGE UP	Switches between programs from left to right.
ALT+PAGE DOWN	Switches between programs from right to left.
ALT+INSERT	Cycles through the programs in the order they were started.
ALT+HOME	Displays the Start menu.
CTRL+ALT+BREAK	Switches the client between a window and full screen.
CTRL+ALT+END	Brings up the Windows 2000 Security dialog box.
ALT+DELETE	Displays the Windows menu.
CTRL+ALT+Minus (-) symbol on the numeric keypad	Places a snapshot of the active window, within the client, on the Terminal server clipboard (provides the same functionality as pressing PrintScr on a local computer.)
CTRL+ALT+Plus (+) symbol on the numeric keypad	Places a snapshot of the entire client window area on the Terminal server clipboard (provides the same functionality as pressing ALT+PrintScr on a local computer.)

3. Network

Thin clients and terminal servers need a reliable network.

Make sure that the following network ports are unblocked:

- TCP/2031 - Configuration - Used to pass the configuration from the ThinManager Server to the thin client.
- 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 need configured as needed.

4. **The Thin Client Boot Process**

- The terminal is turned on and connects to the network.
- The terminal receives an IP address either through the default DHCP or by being configured with static IP.
- The terminal connects to a ThinManager Server (defined in Option 066 of DHCP or by static IP) and downloads its configuration.
- This configuration sends the terminal to the terminal server(s).

5. **ThinManager**

5.1. **Role of ThinManager**

- ThinManager allows the configuration of ThinManager Ready thin clients.
- A ThinManager Ready thin client needs to connect to a ThinManager Server and receive its configuration.
- This configuration sends the ThinManager Ready thin client to a terminal server(s) to start a session and run.
- ThinManager allows an administrator to monitor and manage the thin client system.
- ThinManager provides security to the thin client system.

5.2. **ThinManager Installation**

- Install on a server or a workstation.
- It is not required to be on the terminal server.
- Installation through *Add/Remove Programs* is required for a terminal server installation and is recommended on other computers.
- ThinManager gives three checkboxes for installation. Normally all three are selected.
 - *ThinServer* is the engine that runs the program.
 - *ThinManager* is the interface that allows control of the ThinServer engine.
 - *ThinManager Tools* are additional tools like touch screen calibration.

5.2.1. **ThinManager versus ThinServer**

- The ThinManager program is composed of two parts, a ThinServer engine and a ThinManager interface.
- ThinServer is the engine that does the work. It supplies the firmware, controls SmartSession, and holds the licenses and configuration.

- ThinManager is the interface used to control and configure the ThinServer.

5.3. Redundant ThinManagers

Because each ThinManager Ready thin client needs to contact ThinManager to retrieve its configuration the use of a second redundant ThinManager Server can be useful to prevent downtime due to the loss of the primary ThinManager Server. Redundant ThinManager Servers should be synchronized so that it doesn't matter which ThinManager Server the thin client boots from.

5.3.1. Failover versus Redundancy

- A ThinManager Ready thin client needs to connect to a ThinManager Server and receive its configuration.
- This configuration sends the ThinManager Ready thin client to a terminal server(s) to start a session and run.
- Redundancy** describes having two ThinManager Servers so that a ThinManager Ready thin client can always find a ThinManager Server to boot from and receive its configuration.
- Failover** describes having multiple terminal servers that the thin client is assigned to so that it always has a terminal server it can connect and start a session.

5.3.2. Single ThinManager

- Install ThinManager on a single computer.
- Install all needed licenses on this computer.

5.3.3. Full Redundancy

Full Redundancy uses two synchronized ThinServer engines and has two ThinManager interfaces for control on either computer.

- Install ThinManager on two computers.
- Auto-synchronize the two ThinManager Servers as described in section 5.3.5 so that it doesn't matter which ThinManager Server the thin client boots from.
- Purchase and install identical sets of licenses on each computer.
- Configure each ThinManager Ready thin client to boot from both ThinManager Servers.

5.3.4. Mirrored Redundancy

Mirrored Redundancy uses two synchronized ThinServer engines but only allows the ThinManager interface to run on the designated primary ThinManager Server.

- Install ThinManager on two computers. Designate one as the Primary ThinManager Server and the other as the Secondary ThinManager Server.

- Purchase mirrored licenses.
- Auto-synchronize the ThinManager Servers so that the Install IDs of both ThinManager Servers are displayed in the Licensing Window (*Install>Licenses* on the ThinManager menu bar).
- Activate the Mirrored License using the Install IDs from the Primary and the Secondary ThinManager Servers.
A mirrored license can be installed with just the primary install ID and reactivated with the secondary if the secondary is built at a later time.
- Add the license on the Primary ThinManager Server. ThinManager will transfer the backup license to the Secondary ThinManager Server.
- Configure each ThinManager Ready thin client to boot from both ThinManager Servers.

5.3.5. Auto-Synchronization

- Open the ThinManager Server List Wizard by selecting *Manage>ThinManager Server List* from the ThinManager menu bar.
- Select the *Automatic Synchronization* checkbox on the Auto-synchronization Selection window.
- Define two ThinManager Servers on the ThinManager Server List page by selecting the *Add Server* button.
- Define the primary and secondary ThinManager Servers by selecting the *Edit* button and adding the server name and IP address.
- Select the *Finish* button to accept the change.

5.3.6. Manual Synchronization

- Open the ThinManager Server List Wizard by selecting *Manage>ThinManager Server List* from the ThinManager menu bar.
- Leave the *Automatic Synchronization* checkbox on the Auto-synchronization Selection window unchecked.
- Define the ThinManager Servers on the ThinManager Server List page by selecting the *Add Server* button.
- Close the ThinManager Server List Wizard by selecting the *Finish* button.
- Select *Manage>Synchronize Configuration* from the ThinManager menu bar.
- Highlight the primary ThinManager Server in the *Configuration Source* list.
- Highlight the secondary ThinManager Server in the *Configuration Destination* list.
- Select *Next* twice to confirm the synchronization choices.
- Select *Finish* to initiate the synchronization. The configuration from the primary ThinManager Server will overwrite the configuration on the secondary ThinManager Server.

6. *ThinManager Licensing*

ThinManager requires a license for each terminal that connects through ThinManager. These are assigned when the terminal retrieves its configuration.

- Licenses are activated through the ThinManager web site.
- The activation process requires two numbers, a License Number and an Installation ID.
- The License Number is the purchased "paper" license.
- The Install ID ties the license to the hardware and is found on the Licensing Window by selecting *Install>Licenses* from the ThinManager menu bar.
- The downloaded license file is installed through ThinManager.

6.1. License Types

ThinManager has two licensing models, the Enterprise with unlimited connections and the Standard with 5, 10, and 25-connection packs.

6.2. Enterprise Licenses

- Enterprise Licenses provide unlimited connections of terminals and full redundancy.
- They are available as Enterprise Server and Enterprise Site, with a Plus version of each.

6.2.1. Enterprise Server

- Enterprise Server provides licenses for two ThinManager Servers for full redundancy.
- The redundant ThinManager Servers are licensed like Mirrored Redundancy, with the Install IDs from both ThinManager Servers. Unlike Mirrored ThinManager Servers, each ThinManager Server can run the ThinManager interface for configuration and control.
- ThinManager Ready thin clients should be configured to boot from both ThinManager Servers
- The two ThinManager Servers should be auto-synchronized so that the configurations are the same. See section 5.3.5.

6.2.2. Enterprise Site

- Enterprise Site allows a customer to install as many ThinManager Servers as desired on one site.
- The Enterprise Site is a single license number that can be installed on many computers at that site.
- Redundant pairs of ThinManager Servers are recommended for full redundancy.

- Enterprise Site allows departmental control by having multiple redundant pairs of ThinManager Servers.

6.2.3. Enterprise Plus

- Enterprise Plus adds unlimited SmartSession and all licensed modules like MultiMonitor, Instant Failover, and MultiSession, to the Enterprise License.
- Enterprise Plus doesn't add WinTMC or TermSecure licenses.

6.3. Standard Licenses

- Standard Licenses provide licenses in packs of 5, 10, and 25 connections.
- Full Redundancy requires a matched set of licenses on each ThinManager Server.
- Standard Licenses include such licenses as:
 - Terminal Connections
 - WinTMC
 - TermSecure
 - Instant Failover
 - MultiMonitor
 - Share Keyboard and Mouse
 - SmartSession
 - MultiSession
 - Redundant Ethernet
 - Terminal Shadow

6.4. ACP License Account

- ThinManager licenses are activated at the ThinManager website at www.thinmanager.com. A License Activation link will be prominently displayed on the main page.
- Each user needs to register on the License Activation site by creating an account with contact information for the user. This user account allows the user to activate licenses.
- Licenses should be activated in the name of the end customer and not the name of a system integrator or consultant.
- Once the account is created the password of the account will be e-mailed to the e-mail address defined in the account.

6.5. License Activation

- ThinManager licenses are activated at the ThinManager website at www.thinmanager.com. A License Activation link will be prominently displayed on the main page.
- The licensee needs to login to the License Activation site with their created user account.
- The logged-in user should select the Activate License link to display the License Number and the Installation ID fields.
- The License Number is the purchased "paper" license.
- The Install ID ties the license to the hardware and is found on the Licensing Window by selecting *Install>Licenses* from the ThinManager menu bar.
- Once both fields are filled and the *Submit* button is selected, a license file will be downloaded.
- A link is provided on the download page to manually re-start the download if the browser pop-up blocker prevents the download.
- The license file should be saved where it is accessible to ThinManager. Do not save it into the ThinManager folder.
- The downloaded license file is installed through ThinManager. Do not manually move the license file into the ThinManager folder.

6.6. License Installation

- Licenses are installed through the Licensing Window of ThinManager that is launched by selecting *Install>Licenses* from the ThinManager menu bar.
- Select the *Install License* button.
- Browse to the downloaded file and select *Open*. This will install and register the license.

7. Hardware Configuration

ThinManager Ready thin clients need little configuration at the terminal except an IP address and the IP address of a ThinManager Server to connect on the network. Units are shipped using DHCP by default but can be configured to use static IPs.

7.1. IP Addressing

7.1.1. DHCP Only

- ThinManager Ready thin clients are set by default to use DHCP to receive their IP address.
- The DHCP server needs *Option 066 – Boot Server Host Name* configured to list the IP address of the ThinManager Server. Redundant ThinManager Servers can be listed, separated by a space. See Hybrid IP (DHCP & Static) in section 7.1.3 for another method.
- Launch the Scope Options page by opening the DHCP Server, highlighting the *Scope Options*, and selecting *Action>Configure Options*.
- Check the *066 Boot Server Host Name* checkbox, enter the ThinManager Server IP address in the *String value*, and select the *OK* button field.
- Redundant ThinManager Servers can be defined by listing the IP addresses of both, separated by a space.
- Set the *Conflict detection attempts* on the DHCP Properties, Advanced tab of the DHCP Server to one or more.

7.1.2. Static IP Only

- ThinManager Ready thin clients can be configured to use a static IP by pressing the space bar during the thin client boot when the “*Press Any Key to Configure IP Addresses*” message is displayed.
- Select “A” to define the terminal IP. Enter the desired IP and select the *Enter* key.
- Select “B” to define the primary ThinManager Server. Enter the desired IP and select the *Enter* key.
- Select “C” to define the secondary ThinManager Server if you have redundant ThinManager Servers. Enter the desired IP and select the *Enter* key.
- Select “S” to save the configuration and continue with the boot process.

7.1.3. Hybrid IP (DHCP & Static)

ThinManager Ready thin clients can be configured to use DHCP to assign the terminal IP address but use a static IP address for the ThinManager Server. This allows a DHCP server to be used without configuring Option 066.

- Enter the IP Configuration menu by pressing the space bar during the thin client boot when the “*Press Any Key to Configure IP Addresses*” message is displayed.
- Leave “A” alone to keep it using DHCP for the terminal IP address.

- Select "B" to define the primary ThinManager Server. Enter the desired IP and select the *Enter* key.
- Select "C" to define the secondary ThinManager Server if you have redundant ThinManager Servers. Enter the desired IP and select the *Enter* key.
- Select "S" to save the configuration and continue with the boot process.

8. *ThinManager Configuration*

ThinManager uses Wizards to aid in the configuration of the terminals.

The wizards can be run to pre-configure the terminals or the wizards can be launched automatically when the new terminal is connected to ThinManager for the first time.

Note: If in doubt, the default settings are your friends.

8.1. Terminal Configuration

- Launch the Terminal Configuration Wizard by selecting *Edit>Add Terminal* from the ThinManager menu or by right-clicking on the Terminals branch of the tree and selecting *Add Terminal*. If a terminal is connected to ThinManager without a configuration it will launch the wizard automatically.

Proceed through the pages of the wizard. The highlights are:

- Terminal Name - Enter the desired name of the terminal. This name should be 15 characters or less.
Add the terminal to a group, if desired, by selecting the *Change Group* button.
- Terminal Hardware - Select the hardware make and model. This is optional, as the terminal will correctly identify itself when it connects to ThinManager. WinTMC clients need to use *GENERIC/PersonalComputer* in the *Make/Model* drop-down.
- Terminal Options – Shadow access can be controlled in the *Shadowing* section.
- Terminal Server Specification – Choose whether the terminal will connect to individual terminal servers or will use Application Groups. Selecting *Use Application Groups* will allow the use of MultiSession, MultiMonitor, and TermSecure.
- Terminal Connection Type – Choose the default Remote Desktop Protocol unless Citrix is installed and being used.
- Terminal Server or Application Group Selection – Send the terminal to specific terminal servers or Application Groups by moving them to the *Selected Terminal Servers* or *Selected Application Groups* list on the right. If Terminal Servers/Application Groups haven't been defined then select the *Edit Server List/Edit Application Groups* button to launch the needed configuration wizard.
- Terminal Interface Options and Hotkey Configuration – A terminal using multiple Application Groups needs a method to switch between sessions. These are configured on these two pages (Not applicable when using individual terminal servers).
- Log In Information - Enter a valid Windows user name and password into the *Username* and *Password* fields if you want the terminal to automatically login when it connects to the terminal server.
If you want the terminal to automatically launch a program instead of the desktop when using individual terminal servers, add the path to the program in the *Initial Program* field.
- Video Resolution - Set the desired video resolution for the terminal.
- Module Selection - Add any modules that are needed by selecting the *Add* button. See *Modules* in section 11 for details.
- ThinManager Server Monitor List – You can have the terminal send the monitoring status to both ThinManager Servers when using redundancy by listing both ThinManager Servers in the *Selected ThinManager Server* list. Define your ThinManager Servers by selecting the *Edit Server List* button on the page.
This is done automatically when using Auto-synchronization.

- Monitoring Configuration – This sets the rate at which the terminal polls the terminal server to determine if the terminal server is available for connections.
- If the wizard was launched when the terminal connected to ThinManager it will continue to boot and login as defined once the *Finish* button is selected. If the wizard was run as a pre-configuration, this profile will be available for selection when new hardware is added.

8.2. Group Configuration

- Terminals can be organized by adding them to a Terminal Group.
- Groups can be nested into other Groups.
- A Terminal Group is created by selecting *Edit>Add Terminal Group* from the ThinManager menu. The Group Configuration Wizard resembles the Terminal Configuration Wizard with the addition of the *Group Setting* checkbox.
- A property that is set as *Group Settings* is applied to everybody in that group.
- Terminals can join a group by the selection of the *Change Group* button on the Terminal Name page of the Terminal Configuration Wizard.

8.3. Terminal Server Configuration

- Terminal servers are defined in the Terminal Server Wizard. This can be launched by right-clicking on the Terminal Server branch of the ThinManager tree and selecting *Add Terminal Server* or by selecting the *Edit Server List* button on the Terminal Server or Application Group Selection page.

Proceed through the pages of the wizard. The highlights are:

- Terminal Server Name - Enter the Microsoft computer name in the *Terminal Server Name* field.
- Terminal Server Name - Enter the IP address in the *Terminal Server IP* field or use the *Discover* button to automatically fill in the IP address.
- Terminal Server Name - Enter the user name and password for an administrative account on the terminal server into the *User Name* and *Password* field to allow ThinManager to import the Terminal Services Manager information into ThinManager. Select the *Next* button to continue.
- Terminal Server Capabilities - Select *Available for SmartSession Groups* if the terminal server has a SmartSession license and will be used for SmartSession. Select the *Next* button to continue.
- Data Gathering - Select a Data Gathering Interval. This is the frequency that ThinManager polls the terminal server for the Terminal Services Manager information. Select the *Next* button to continue.
- SmartSession Configuration - This allows the SmartSession parameters to be changed from the defaults.

Note: If in doubt, the default settings are your friends.

8.4. Application Group Configuration

Terminal Server Groups were renamed to Application Groups in ThinManager 3.2.

Application Groups can be configured as two types:

Terminal Services – This is the tradition Application Group that allows a terminal to start a session on a terminal server.

Terminal Shadow – This Application Group allows terminal-to-terminal shadowing. See Terminal Shadow Application Groups in section 13.2.

- Application Groups are defined in the Application Group Wizard. This can be launched by right-clicking on the Application Group branch of the ThinManager tree and selecting *Add Application Group* or by selecting the *Edit Application Groups* button on the Terminal Server or Application Group Selection page.
- Select the type of application group desired in the *Type of Application Group* drop-down.

8.4.1. Terminal Services Application Group

Proceed through the pages of the wizard. The highlights are:

- Group Name - Select Terminal Services in the *Type of Application Group* drop-down.
- Group Name - Enter the name of the *Application Group* in the *Group Name* field.
- Application Group Options – Select the *Allow group to be tiled* checkbox if you want to use SessionTiling. See section 14.6.
- Application Group Options – Select the *Allow group to be moved (MultiMonitor)* checkbox if you want be able to move the session from screen to screen on a MultiMonitor unit. See 14.1.
- Group Options - Select the *SmartSession Group* checkbox if you want to load balance the terminal servers in the *Application Group*.
- Group Options - Select the *Application Link Group* checkbox if you want the Application Group to run a specific program instead of a desktop.
- Group Options – Select the *Instant Failover* checkbox if you want to use Instant Failover within the terminal servers of the group.
- Application Group* Members - Select the terminal servers that should be used by the Application Group by moving the desired terminal servers into the *Selected Terminal Servers* list. Select the *Edit Server List* button to launch the Terminal Server Configuration Wizard if you need to define terminal servers.
- SmartSession Settings - If the *Application Group* is a SmartSession group you can change the SmartSession settings from the defaults, if needed.
- AppLink - Enter the path to a program in the *AppLink Path* field if you want the Application Group to run a specific program instead of a desktop.
- Select the *Finish* button to complete the Application Group configuration.

8.4.2. Terminal Shadow Application Group

Proceed through the pages of the wizard. The highlights are:

- Group Name - Select Terminal Shadow in the *Type of Application Group* drop-down.
- Group Name - Enter the name of the Application Group in the *Group Name* field.
- Application Group Options – Select the *Allow group to be tiled* checkbox if you want to use SessionTiling. See section 14.6.
- Application Group Options – Select the *Allow group to be moved (MultiMonitor)* checkbox if you want be able to move the session from screen to screen on a MultiMonitor unit. See 14.1.
- Terminal Shadow Application Group – Leave the *All Terminals Available* checkbox selected to allow any terminal to be shadowed or un-select it and use the *Add* button to add one or more terminal to the list or available terminals to shadow.
- Terminal Shadow Application Group – Leave the *Interactive Shadow* checkbox selected to allow the user to control the shadowed session or un-select it to limit a user to viewing the session.

9. MultiSession

MultiSession allows a user to run several Application Group sessions from one terminal. These will be cascaded on the terminal.

MultiSession, when used with AppLink, is an easy way to deploy desired applications while preventing access to unauthorized programs.

9.1. MultiSession Changes in ThinManager 3.2

- MultiSession is now licensed by the terminal and not by the terminal server.
- Terminal servers and Application Groups no longer need to be configured for MultiSession. Adding two or more Application Groups to a terminal enables MultiSession.

9.2. Configuring the Terminal for MultiSession

- MultiSession requires that terminals use Application Groups. Select *Use Application Groups* on the Terminal Server Specification page of the Terminal Configuration Wizard.
- Select two or more Application Groups on the Terminal Server or Application Group Selection page of the Terminal Configuration Wizard.
- The terminal will need an available MultiSession license.
- The terminal needs a method to switch between sessions. This is configured on the Terminal Interface Options and Hotkey Configuration pages of the Terminal Configuration Wizard. See section 9.3.
- If the terminal is set to auto-login then it will auto-login to the MultiSession sessions. An Application Group can be set to force manual logins for

authentication by unselecting the *Allow Auto-Login* checkbox on the Group Options page of the Application Group Wizard.

- ❑ An Application Group can use a different login than the terminal by using the *Override* button on the Terminal Server or Application Group Selection page of the Terminal Configuration Wizard.
- ❑ Instant Failover can be used within an Application Group. If the *Instant Failover* checkbox on the Group Options page of the Application Group Wizard is selected then the terminal will start two sessions of that application used by the group. If one server fails the terminal will instantly switch to the backup session. The Instant Failover module should not be used with Application Groups.

9.3. Switching Between Sessions

- ❑ Each terminal that uses MultiSession should be configured to switch between sessions on the Terminal Interface Options and the Hotkey Configuration pages of the Terminal Configuration Wizard. At least one method must be used.
- ❑ Terminal Interface Options - *Show Group Selector on Terminal* will display a drop-down menu on the terminal's screen. The default auto-hide mode can be removed by selecting the *Selector Options* button.
- ❑ Terminal Interface Options - *Enable Tiling* will tile the sessions to allow a visual selection of a session. See section 14.6.
- ❑ Terminal Interface Options - *Screen Edge Selection* will switch between sessions when the mouse is moved to the left or right edge.
- ❑ Hotkey Configuration - *Enable Group Hotkeys* will allow keystrokes to switch the session displayed. The default CTL+Page Up/Down can be changed by selecting the *Change Hotkeys* button.

10. SmartSession

SmartSession provides load balancing among designated terminal servers.

10.1. Configuring the Terminal Server

- Terminal servers are configured to use SmartSession by selecting the *Available for SmartSession Groups* checkbox on the Terminal Server Capabilities page of the Terminal Server Wizard.
- SmartSession requires that ThinManager be able to pull memory, CPU, and session data from the terminal server. This requires the username and password from a valid Windows administrator account to be entered in the *Username* and *Password* fields of the Terminal Server Name page of the Terminal Server Wizard.
- The frequency of the data polling is set on the Data Gathering page of the Terminal Server Wizard.
- The SmartSession Configuration page allows the ranges of the CPU, Memory, and Session count to be adjusted. (The defaults are your friends).
- Each terminal server configured will require a SmartSession license in ThinManager. The SmartSession license applies to the terminal server and not the terminal. The license is assigned when the *Available for SmartSession Groups* checkbox is selected.

10.2. Configuring the SmartSession Application Group

- SmartSession load balancing uses Application Groups.
- An Application Group becomes load balanced when the *SmartSession Group* checkbox on the Group Options page of the Application Group Wizard is selected.
- Only terminal servers that have been configured to use SmartSession will be available for selection on the Application Group Members page of the Application Group Wizard.
- ThinManager polls the SmartSession terminal servers and calculates a Server Rank number based on the CPU, Memory, and Session resources used. A terminal connecting to a SmartSession Application Group will be sent by ThinManager to the terminal server with the most available resources as defined by the lowest server rank number.
- The weight of the SmartSession values can be adjusted on the SmartSession Settings page of the Application Group Wizard.
- The Server Rank number for the SmartSession servers can be displayed by highlighting a SmartSession Application Group in the ThinManager tree and selecting the Server Rank tab in the Details pane.

10.2.1. SmartSession Queuing

- SmartSession Queuing allows ThinManager to control the rate that terminals connect to the terminal servers to prevent the server CPU from becoming overloaded and slowing down the session connection process.

- ❑ When a CPU reaches the maximum CPU Utilization, as defined on the SmartSession Configuration page of the Terminal Server Wizard, ThinManager will delay other terminals from connecting until the CPU utilization returns to a normal level or the maximum *Queuing Time* on the SmartSession Settings page of the Application Group Wizard is reached.

11. Modules

Modules are features or programs that aren't needed to run a basic thin client but can be added to expand the functions.

These include screen savers, touch screen drivers, sound modules, and others. Most are free to use but a few require a license to use.

- ❑ Modules are installed on the Module Selection page of the Terminal Configuration Wizard.
- ❑ Select the *Add* button to add a module.
- ❑ Select the desired module from the list and select the *OK* button. The modules can be sorted by module type to filter the selections.
- ❑ Some modules have configurable parameters. To change them highlight the added module in the Installed Module window of the Module Selection page and select the *Configure* button to launch the Module Properties window.
- ❑ Highlight the desired parameter to activate the *Value* field. Use the drop-down to change the setting then select the *Set* button to apply the parameter change. Select the *Done* button when all the parameters are set.
- ❑ Select the *Finish* button to apply the changes and restart the thin client to send the configuration change to the thin client.

11.1. Updating Modules

- ❑ New modules can be downloaded from the ThinManager web site at www.thinmanager.com/support/downloads.shtml#modules.
- ❑ Register the new module by selecting *Install>Modules* from the ThinManager menu bar and selecting the *Install Module* button. Browse to the downloaded module and select the *Open* button. This will add the module to the list of available modules.

12. WinTMC

WinTMC is a Windows client that can be installed on PCs but is controlled through ThinManager.

12.1. WinTMC Advantages

- WinTMC can convert PC to a terminal services client reducing local maintenance of applications.
- PC becomes managed by ThinManager, allowing failover, Instant Failover, MultiSession, and SmartSession functions.
- Applications that aren't terminal services compliant like AutoCAD can be run locally while gaining management benefits from running other applications on terminal servers.

12.2. WinTMC Disadvantages

- The PC that WinTMC is installed on still requires installation and maintenance of its operating system.
- Most modules don't work because ThinManager doesn't control the operating system. These functions must be setup and controlled using the PC operating system. These include:
 - o Touch screen drivers
 - o Sound drivers
 - o Local storage
 - o Mouse
 - o Screen savers

Instant Failover is supported by WinTMC. TermSecure is supported by WinTMC v2.0.

12.3. WinTMC Installation

Note: WinTMC should not be installed on the ThinManager Server due to a conflict over port 2031. It is meant to be installed on PCs.

- Install the WinTMC application on the desired PC.
- Using the *Add/Remove Programs* tool is recommended for installations.
- WinTMC allows two options during installation:
 - o WinTMC is the WinTMC client needed to turn the PC into a terminal.
 - o WinTMC Shadow Service is needed to shadow a WinTMC client. If this program is installed, the PC can be shadowed from ThinManager even if the WinTMC client is inactive.

12.4. WinTMC Configuration on the Client

- Once installed, launch the WinTMC program from the Windows Start menu or from a desktop icon.
- Select the *Configure* button on the splash screen.
- Enter the IP address of the ThinManager Server(s) in the *Enter new ThinManager Server Name or IP Address* field and select the *Add* button.
- Select the *OK* button to connect to the ThinManager Server.
- The Terminal Replacement Dialog window will display any off-line terminals and a *Create a new terminal* button. Select a pre-created terminal to assume an established configuration or select the *Create a new terminal* button to launch the Terminal Configuration Wizard for that WinTMC client on the ThinManager Server.

12.5. WinTMC Configuration in ThinManager

- Pre-create a WinTMC client by launching the Terminal Configuration Wizard by selecting *Edit>Add Terminal* from the ThinManager menu bar. The configuration is similar to thin clients with a few exceptions.
- Add the computer name for the terminal name in the Terminal Name page of the wizard.
- Select *GENERIC* for the Make/OEM and *PersonalComputer* for the Model on the Terminal Hardware page of the wizard.
- Select the video resolution on the Video Resolution page. The default is *FullScreen*.
- Select the *Finish* button when the configuration is complete.

13. Shadowing

Shadowing allows a user to view a terminal. It is available in two forms:

Terminal Shadowing through ThinManager.

Terminal-to-terminal shadowing through Terminal Shadow Application Groups.

13.1. ThinManager Shadowing

- Terminal Shadowing through ThinManager allows an administrator to see what is displayed on a terminal's screen.
- A terminal is shadowed by highlighting the terminal in the ThinManager tree and selecting the *Shadow* tab on the *Details* pane.
- To shadow a user must be either a member of the Administrators Windows user group or a member of a Windows user groups that was granted permission to shadow on the ThinManager Security Groups page of the ThinManager Server Configuration Wizard.
- Shadow settings are configured on the Terminal Options page of the Terminal Configuration Wizard. The terminal can be set to block shadowing (*NO*), ask

user permission first (*ASK*), warn the user first (*WARN*), or shadow immediately (*YES*)

- Interactive Shadow allows the administrator to control the shadowed session. This can be allowed/disallowed on the Terminal Options page of the Terminal Configuration Wizard. It can also be turned off/on by selecting *RemoteView>Interactive Shadow* on the ThinManager menu.
- WinTMC requires that the WinTMC Shadow Service be installed on the client PC. Once the PC has been connected to ThinManager the PC can be shadowed even if WinTMC is not running.

13.2. Terminal Shadow Application Groups

- Terminal-to-terminal shadowing through Terminal Shadow Application Groups allows any user on a terminal with the Terminal Shadow group to shadow a terminal that is in the Terminal Shadow group. See section 8.4.2 for configuration.
- The terminal that is configured to use a Terminal Shadow Application Group needs to have a Terminal Shadow license available when it boots.

14. Additional Topics

14.1. MultiMonitor

- MultiMonitor allows a single ThinManager Ready thin client to have up to 5 monitors attached at the same time.
- The monitors can be combined into larger "spanned" screens (double-wide/triple-wide/etc.) or run as individual single-monitor "screens".
- Each monitor can be of a different video resolution or use a different touch screen. However monitors that are combined to form a spanned screen must have the same resolution.
- MultiMonitor requires a MultiMonitor license or an Enterprise Plus license. One license covers the thin client. You don't need a license per monitor.
- MultiMonitor requires the use of Application Groups.
- MultiMonitor requires the use of MultiSession.

14.1.1. Configuring MultiMonitor

- MultiMonitor is configured in the Terminal Configuration Wizard.
- Terminal Hardware page– Select the *Make* and *Model* of the MultiMonitor ThinManager Ready thin client.
- Terminal Server Specification page – Select *Use Application Groups*.
- Terminal Server Specification page – Select *Enable MultiMonitor*.
- MultiMonitor Video Settings page – Select the *Number of Monitors* and the video resolution of each.

- Monitor Layout page – Select the physical layout of the monitors in the *Choose your monitor layout* window. The Main Monitor is the monitor that will display login and message windows.
- Monitor Layout page – Select how the monitors will be combined in the *Choose your screen layout* window. Choose whether the monitors are combined as “spanned” or kept individual as “screened”. The *TermSecure Initial Screen* is the monitor that will display TermSecure login and message windows if TermSecure is used.
- Application Group Selection page – Select which Application Group(s) will be displayed on which screen by highlighting the desired Application Group and selecting the appropriate arrow.
- Screen Options page – This configures options like the ability to move sessions, which monitor in a spanned group is the main monitor, and how MultiSession switching should take place.
- Hotkey Configuration page – This configures hotkey options for MultiSession and SessionTiling.

14.2. Reports

- ThinManager has reports that can be displayed to show events and configurations.
- Selecting *View>Reports* will allow the administrator to select what reports will be displayed.
- Reports are shown by highlighting an item in the ThinManager tree and selecting the Report tab in the Details pane.
- New reports can be added by selecting *Install>Reports>Install* in the ThinManager menu. Each report has a Report Template and a SQL Query component.
- Reports can be run automatically and saved as *.html files using the Scheduler on the System Schedule page of the ThinManager Server Configuration Wizard.
- The Report tab can be printed by selecting *View > Print* from the menu bar.

14.3. Touch Screens

- Touch screens are activated by adding the appropriate Touch Screen module on the Installed Modules page of the Terminal Configuration Wizard.
- The module needs to match the make of the touch screen controller. The make of the monitor is incidental.
- Touch screen parameters can be changed by highlighting the module on the Installed Modules page of the Terminal Configuration Wizard and selecting the *Configure* button.
- Touch screens can be configured so that a touch that is held will count as a right click or will initiate the calibration program.
- The terminal can be calibrated by highlighting the terminal in the ThinManager tree and selecting *Tools> Calibrate Touch Screen* on the menu.
- A different touch screen can be applied to each monitor in a MultiMonitor configuration, if needed.

14.4. Event Log

- ThinManager has an event log that can be displayed by highlighting an item in the ThinManager tree and selecting the Event Log tab in the Details pane.
- The Event Log is configured on the Historical Logging page of the ThinManager Server Configuration Wizard. The events to track and the duration of the event log are configurable.
- The Event Log can be backed up automatically using the Scheduler on the System Schedule page of the ThinManager Server Configuration Wizard.

14.5. Security

ThinManager is designed to increase security.

- ThinManager can be run only by administrators or members of Windows user groups that have been given permission on the ThinManager Security Groups page of the ThinManager Server Configuration Wizard.
- Terminals can be configured to login automatically. This obscures the username and password so that a user doesn't know the account credentials to try to access other resources.
- AppLink can limit a user to specific programs and block access to the desktop or unauthorized programs.
- The Key Block module can be set to trap undesired keystrokes.
- TermSecure can be used to provide addition access control and management.

14.6. Scheduling

- The *Schedule* button on the Terminal Options page of the Terminal Configuration Wizard allows a terminal to be disabled, enabled, or rebooted automatically on a schedule.

- The *Schedule* button on the System Schedule page of the ThinManager Server Configuration Wizard allows the configuration to be backed up or reports run automatically on a schedule.
- A weekly backup the configuration with System Schedule tool is recommended.

14.7. SessionTiling

- The sessions started using MultiSession can be tiled on a terminal to display all sessions at once.
- This might be to monitor all the sessions at once or as a visual selection aid on terminals with touch screens that lack a keyboard for hotkey switching.
- Selecting the *Enable Tiling* checkbox on the Terminal Interface Options page of the Terminal Configuration Wizard enables SessionTiling. The *Tiling Options* button allows the tiling parameters to be configured.

15. Failover and Instant Failover

15.1. Definitions

15.1.1. Failover versus Redundancy

- Redundancy** describes having two ThinManager Servers so that a ThinManager Ready thin client can always find a ThinManager Server to boot from and receive its configuration.
- Failover** describes having multiple terminal servers that the thin client is assigned to so that it always has a terminal server it can connect to and start a session.

15.1.2. Failover Explained

- In Failover a ThinManager Ready thin client is assigned to a list of terminal servers and will connect to the first one on the list.
- The ThinManager Ready thin client will detect if that terminal server fails and will connect to the next terminal server on the list. This normally takes 10-20 seconds.
- Once the thin client connects to the backup terminal server it will login and launch its application. The application launch can take 5 seconds to 3 minutes depending on the application and the terminal server load.
- All versions of ThinManager provide the failover function for free.

15.1.3. Instant Failover Explained

- Instant Failover configures the ThinManager Ready thin client to connect to two terminal servers and launch a session on each at the same time.
- The terminal should be configured to auto-login and launch an initial program to gain the full benefits of Instant Failover.
- The sessions are cascaded on the terminal monitor.

- A failure of the primary terminal server will cause the terminal to switch to the backup session. Since the session and application are already initialized this takes just a second.
- If the terminal is assigned to three or more terminal servers the terminal will then start a second session on the next available terminal server.
- Instant Failover can be configured so that the user can switch between active sessions.
- Instant Failover requires an Instant Failover license for each terminal.

15.2. Failover

Standard failover is configured by providing the ThinManager Ready thin client a list of terminal servers for connection.

The method of failover differs if the terminal is using individual terminal servers or Application Groups, as configured on the Terminal Server Specification page of the Terminal Configuration Wizard.

- Open the Terminal Configuration Wizard by double-clicking on the terminal icon in the ThinManager tree. Navigate to the Terminal Server Specification page and select *Use Application Groups* or *Select Individual Terminal Servers*.

15.2.1. Terminals using Individual Terminal Servers

- Add two or more terminal servers to the *Selected Terminal Servers* list on the Terminal Server or Application Group Selection page. The terminal will connect to the terminal servers in the order listed.
- The *Enforce Primary Terminal Server Connection* checkbox, if selected, will keep a terminal connected to the first terminal server on the list if possible. If the terminal switches to a backup terminal server it will reconnect to the first terminal server in the *Selected Terminal Servers* list when that terminal server becomes available again.
- The *Monitoring Interval* on the Monitoring Connection page regulates how fast failover takes place.
- The *Primary Uptime Delay* on the Monitoring Connection page delays the terminal from switching back to the primary terminal server to allow the terminal server to finish booting before terminals connect.

15.2.2. Terminals using Application Groups

- Failover is configured within an Application Group by adding two or more terminal servers to the *Selected Terminal Servers* list on the Application Group Members page of the Application Group Wizard.
- Open the Application Group Wizard by double-clicking on the Application Group icon in the ThinManager tree.
- Add two or more terminal servers to the *Selected Terminal Servers* list on the Application Group Members page.
- The terminal will connect to the terminal servers in the order listed unless the Application Group has been configured for SmartSession.

- Terminals will connect to the terminal servers in a SmartSession group based on their load, from the lightest to the heaviest load.
- Selecting the *Enforce Primary* checkbox on the Group Options page of the Application Group Wizard activates the Enforce Primary function. Enforce Primary is not available for SmartSession groups.

15.3. Instant Failover

Instant Failover enables a terminal to login and create a session on two terminal servers so that the backup session is initialized for a quick switch.

Instant Failover is configured differently if the terminal is using individual terminal servers or Application Groups. This is determined on the Terminal Server Specification page of the Terminal Configuration Wizard.

A terminal using individual terminal servers uses the Instant Failover Module.

A terminal using Application Groups has Instant Failover configured in the Application Group.

- Open the Terminal Configuration Wizard by double-clicking on the terminal icon in the ThinManager tree. Navigate to the Terminal Server Specification page and select *Use Application Groups* or *Select Individual Terminal Servers*.

15.3.1. Terminals using Individual Terminal Servers

- Navigate to the Module Selection page of the Terminal Configuration Wizard.
- Select the *Add* button and select the Instant Failover Module.
- Switching between sessions can be configured by highlighting the Instant Failover Module and selecting the *Configure* button, highlighting *Hot Key Session Switching*, changing the *Value* drop-down to *Enabled*, selecting the *Set* button, and selecting the *Done* button.
- Restart the terminal when the configuration is made. The terminal will start a session on two terminal servers.
- If the primary terminal server fails the terminal will immediately display the secondary session.

15.3.2. Instant Failover with Application Groups

- Instant Failover is configured within an Application Group for terminals that use Application Groups.
- The Instant Failover module should not be used with Application Groups.
- Open the Application Group wizard by double-clicking on the Application Group in the ThinManager tree.
- Navigate to the Group Options page of the Application Group Wizard and select the *Instant Failover* checkbox.
- Select two or more terminal servers for the Application Group by adding them to the *Selected Terminal Servers* list on the Application Group Members page of the Application Group Wizard. Select the *Finish* button to accept the changes.

- ❑ Add the Instant Failover Application Group to a terminal by opening the Terminal Configuration Wizard for the terminal by double-clicking on it in the ThinManager Tree.
- ❑ Navigate to the Terminal Server Specification page and select the *Use Application Groups* radio button.
- ❑ Navigate to the Terminal Server or Application Group Selection page and add the Instant Failover group to the *Selected Application Group* list.
- ❑ Select the *Finish* button and restart the terminal. The terminal will start two sessions of that application used by the group. If one server fails the terminal will instantly switch to the backup session.

16. ThinManager Troubleshooting Guide

This is a list of common configuration errors and a guide for fixing them.

Note: When any problem arises, check Downloads at www.thinmanager.com for the latest firmware. The problem you are experiencing may have already been fixed and released in a later version of firmware and using the latest version will cure the current problem. Try applying the latest firmware, and then reboot the thin client to see if the problem still exists. The current version is backwards compatible to earlier versions of ThinManager (2.3.1, 2.4, 2.5, 2.6, 3.0, etc.)

16.1. From Power on to Terminal Server Login

1) Powering on the Thin Client

A) No Power

- Check power cable, power supply, and power outlets.

B) No Video

- Check video cable and monitor.

Warning: Never go into the thin client BIOS and change the **Integrated Peripherals>Display Status** from CRT to LCD. This changes the video output of the motherboard from the VGA port to a socket on the motherboard used for integrated LCD panels. Changing this from CRT will prevent any video from being displayed on a monitor.

2) Booting - ACP Network Boot Loader

A) Cannot get IP address using DHCP

- Is the ThinManager Ready thin client set to DHCP? They are set to DHCP by default, but can be changed.
- Is the Thin Client on the same side of the router as the DHCP server?
- Does the DHCP server have addresses to give out?

B) Cannot get IP address using Static IP menu

- Certain models (ThinAdapters and older DC-40-100s with black PS/2 ports) cannot use static IP.
- Static IP hasn't been set. Use the spacebar when the "**Select any Key to Configure IP Settings**" is displayed and set the client IP address

3) Cannot Load Firmware

A) Is Thin Client connecting to ThinManager Server?

i) Using DHCP

- Has Option 066 been set to the ThinManager Server IP Address?
- Is there a link light on the network port?
- Check router address, IP Addresses, and Subnet Mask

ii) Using Static IP

- Has the ThinManager Server IP Address been entered in the IP Configuration Menu?
- Check router address, IP Addresses, and Subnet Mask

B) Is WinTMC Loaded on ThinManager Server?

Make sure that the WinTMC client is not installed on the ThinManager Server. The WinTMC client will try to open the 2031 port that ThinManager needs to communicate with thin clients, causing a port conflict. WinTMC is for PCs, not servers. Uninstall the WinTMC client if it is present.

C) Is the network blocked?

ThinManager Ready thin client that communicate through routers, gateways, or firewalls may need some ports opened to allow data flow through these devices. If the thin client communicates through one of these and it is having trouble, check to see if these ports are allowed.

The required ports are:

- 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/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/ 1758 – Multicast – Used for multicast download of firmware unless this feature is turned off in the ThinManager Server Configuration wizard.
- IGMP – Used with Multicast
- TCP/5900 - Shadowing - Used to shadow terminals. This port can be changed on the Shadow Configuration page of the ThinManager Server Configuration Wizard.
- ICMP Echo Packets (Ping) – Used by Enforce Primary and WinTMC.
- DHCP - This needs configured as needed.

D) Loads firmware intermittently/slowly

- Check for IP conflicts
- Check cable connections
- Make sure ThinManager Server CPU usage is below 100%

4) Thin Client Loads Firmware but shows blue message screen

A) "Please Define on Server"

- Enter ThinManager and define the terminal.

B) "License Not Available"

- Check your license usage in ThinManager. You are out of an ACP-supplied License.

C) "This Terminal Disabled"

- A ThinManager administrator has disabled this terminal. Re-enable it.

D) "Network Error - Check Network Connections"

- Check the network cable, link light, and network.

E) Was Disabled, but did not go on when Re-enabled.

- Reboot.

F) Terminal Selection menu is shown, but keyboard does not work

- Check keyboard and reboot
- Use PS/2 splitter if the unit has only one PS/2 port
- Switch the mouse and the keyboard if plugged into a PS/2 splitter.

5) Graphical ACP Logo is shown, but boot process stops

A) Does not attempt to connect to the terminal server

- Check Terminal Configuration Wizard to make sure a terminal server is specified

B) Cannot Connect to Server xxx (0.0.0.0)

- The terminal server doesn't have an IP address configured in the Terminal Server Configuration Wizard.
- If using DNS, check the terminal server's registration.
- If you are using a Citrix Published Application, you may need to specify the ICA browser.

C) Cannot Connect to Server xxx (w.x.y.z)

- Check the event viewer on the terminal server. If it says "Could not issue client license", you need a Microsoft Terminal Server Client Access License (MS TS CAL) and/or a Microsoft Terminal Server Licensing server.
- Check the Subnet Mask in the ACP Boot Loader on the thin client. If it is set to 255.255.255.255 instead of 255.255.255.0, it will fail to connect to the terminal server.
Reboot the thin client and use the spacebar when the "**Select any Key to Configure IP Settings**" is displayed. Change the subnet mask in the ACP Boot Loader menu.

D) Error 50 - Disconnected

- Check the event viewer on the terminal server. If it says "Could not issue client license", you need a MS TS Cal / MS TS Licensing server.

6) Attempts to connect to terminal server, but dies

- Some servers (Dell and its Dellwall.bmp, for example) load a complex bitmapped background that can interfere with loading. Find the offending wallpaper file on the console session and renamed it so that it doesn't load at login

7) Connects to connect to terminal server, but cannot login

- Is the user a valid user? Is the password correct?
- Does the user have permission to connect through Terminal Services (user properties in the User Manager)
- If logging in to a Windows 2003 or 2008 terminal server, is the user a member of the Administrators group or Remote Desktop Users group?
- Check the event viewer. If it says "Could not issue client license", you need a Microsoft TS Cal and or a Microsoft TS Licensing server.

8) Login to Terminal Server prompts for password even though the username and password are filled in ThinManager

- The password may be entered wrong in ThinManager.
- Windows 2000 Server is set to always prompt for password at login for RDP users. Select **Programs>Administrative Tools>Terminal Services Configuration** and double click on **RDP-tcp Properties** in the right-hand

window. Uncheck the **Always Prompt for Password** checkbox on the **Login Settings** tab.

16.2. Thin Client is Running a Session on the Terminal Server

9) Disconnects randomly

- Make sure each user is logging on with a unique user name. Windows 2003/2008 will only allow one session per name by default.
- Check the physical network connection.
- Check for a different computer (e.g. a laptop) with the same IP address.
- Slow down the Monitoring Interval on the Monitoring Connection page of the Terminal Configuration Wizard by increasing the timeout and retry values.

10) The session in Windows 2003 requires frequent logins

- Turn off the Windows screen saver. User accounts in Windows 2003 use a secure screen saver by default that requires this frequent login.

11) Mouse works but the application is unresponsive

- Application on terminal server is locked up - kill the application and let the thin client reconnect to terminal server and restart the application

12) Sound doesn't work

- Make sure that you are using a Windows 2003 or 2008 terminal server
- Make sure that Audio Mapping is allowed on the Client Settings of the RDP-tcp Properties in the Terminal Server Configuration Console.
- Make sure that you are using a ThinManager Ready thin client that has sound capability
- Use the Sound Module for that specific thin client
- Connect a powered speaker to the "Line Out" plug. Line Out isn't amplified so it requires a powered speaker.
- Properly working sound will play a drip sound at boot.

13) The touch screen doesn't work

- Make sure you are using the right Touch Screen Module for the touch screen controller.
- Make sure that the serial cable is plugged into the correct serial port
- Make sure that the Touch Screen Module is using the correct baud rate.

14) The touch screen mouse doesn't match the touches.

- Calibrate the touch screen by highlighting the unit in the ThinManager tree and select **Tools > Calibrate Touch Screen**.

15) Changes to the configuration in ThinManager don't show up on the thin client.

- Restart or Reboot the thin client. Changes are only sent to a thin client at bootup.

16) The configuration of the primary ThinManager Server and the secondary ThinManager Server are different.

- Synchronize the configurations by selecting **ThinManagerServer > Synchronize** in the ThinManager menu bar.

17) The terminals in the tree on the primary ThinManager Server show green while the terminals on the secondary are all red.

- Add both ThinManager Servers to the ThinManager Server Monitor List in the Terminal Configuration Wizard (then reboot the terminals and synchronize the ThinManagers as in Number 15) and Number 16).

18) The client is showing the time of the terminal server in a different time zone and not the local time.

- Use the Time Zone Redirection Module on the client with the local time zone selected.
- Make sure that the security policy of the terminal server or domain allows it. Look at **Computer Configuration > Administrative Templates > Windows Components > Terminal Services > Client/Server data redirection > Allow Time Zone Redirection** and set it to **Enabled**

19) When "Terminal Servers" is highlighted in the ThinManager tree, the Details pane doesn't show OK for the connections.

A) No login information supplied

- Run the Terminal Server List Wizard and add an administrative user name and password on the Terminal Server Name page of the Terminal Server List Wizard.

B) User specified does not have permission to connect

- This indicates that the Terminal Server had an invalid username and password added on the Terminal Server Name page of the Terminal Server List Wizard. Run the Terminal Server List Wizard and change to an administrative user name and password on the Terminal Server Name page of the Terminal Server List Wizard.
- Use the domain in the Domain field on the Terminal Server Name page of the Terminal Server List Wizard.
- If not in a domain, try using the terminal server name in the Domain field on the Terminal Server Name page of the Terminal Server List Wizard.

C) WTSAPI32.dll connection failed

- This occurs when the terminal server is off or unreachable. Try pinging the terminal server.

20) The Users, Sessions, and Processes tabs don't show data for a terminal server

A) No login information supplied

- Run the Terminal Server List Wizard and add an administrative user name and password on the Terminal Server Name page of the Terminal Server List Wizard.

B) User specified does not have permission to connect

- This indicates that the Terminal Server had an invalid username and password added on the Terminal Server Name page of the Terminal Server List Wizard. Run the Terminal Server List Wizard and change to an administrative user name and password on the Terminal Server Name page of the Terminal Server List Wizard.
- Use the domain in the Domain field on the Terminal Server Name page of the Terminal Server List Wizard.
- If not in a domain, try using the terminal server name in the Domain field on the Terminal Server Name page of the Terminal Server List Wizard.

21) The Users and Sessions tabs show data for a terminal server, but the Processes tabs shows no data.

- Shorten the name of the terminal.
Microsoft truncates the terminal names to 15 characters. The Process information won't display for terminals with a name longer than 15 characters.

22) When shadowing a client the mouse doesn't work in the shadowed session.

- The user must be logged into the shadowing computer as an administrator or as a ThinManager Administrator to use interactive shadowing.
- The interactive shadow must be checked in **RemoteView** on the ThinManager menu.
- A terminal using the Share Keyboard and Mouse module will only be interactive if the mouse is active in that session.