11 PXE Server Configuration

11.1 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.

11.2 Thin Client Hardware Requirements

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.

11.3 Methods of Operation

11.3.1 ThinManager Only Method

Using this method, the Thin Client will acquire an IP address and PXE boot options from the ThinManager PXE Server. No standard DHCP Server is required. You must have the ThinManager PXE Server enabled and the desired network interfaces enabled. Select the "Not using standard DHCP Server" server mode.

11.3.2 ThinManager Proxy Method

Using this method, the Thin Client will acquire an IP address from a standard DHCP server. There is no need to set any PXE related boot options in the DHCP server configuration. These options will be sent to the Thin Client by the ThinManager PXE Server. You must have the ThinManager PXE Server enabled in ThinManager and you must select the "Using standard DHCP server with Boot Options" server mode.

11.3.3 Stand-Alone DHCP Server Method

Using this method, the Thin Client will acquire an IP address from a standard DHCP server including the specified PXE boot options. This method is required if your DHCP server is installed on the same machine as ThinManager. You must set **Option 66 (Boot Server Host Name)** to the IP address of your ThinManager Server and **Option 67 (Boot File Name)** to "`acpboot.bin`". You must have the ThinManager PXE Server enabled and you must select the "Using standard DHCP server" server mode.

See Network Interface Configuration for details.

11.4 PXE Server Configuration Wizard

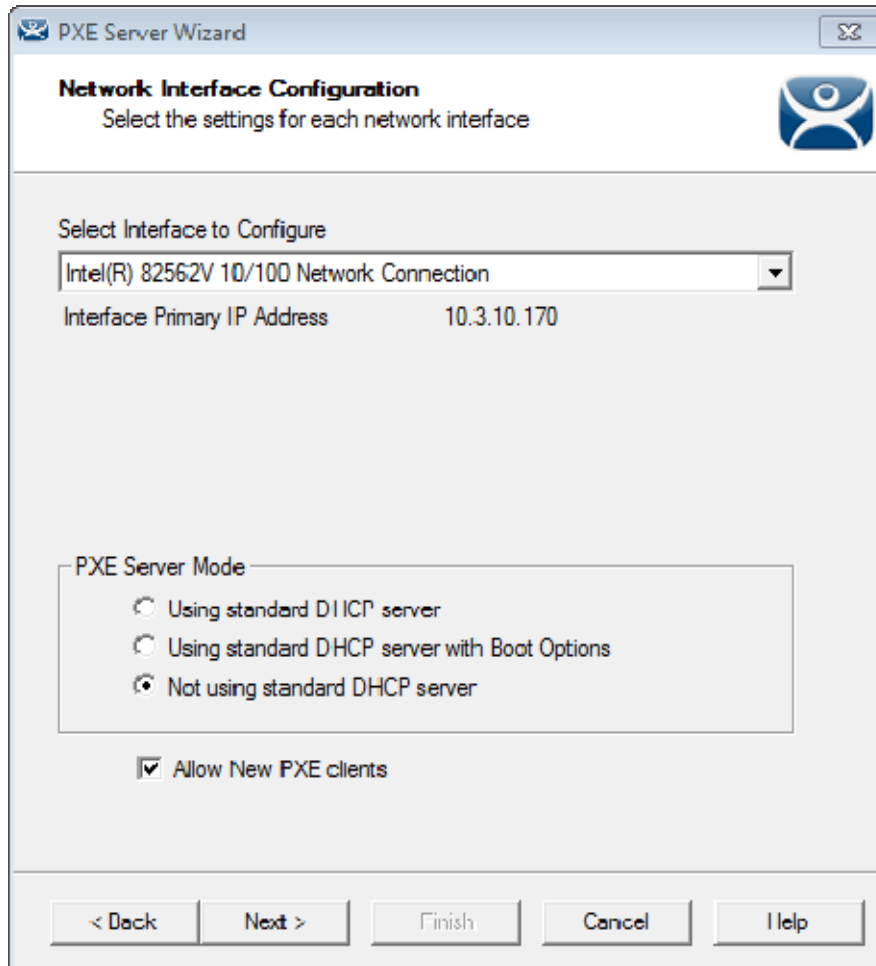## 11.4.1 Enabling the ThinManager PXE Server

Open the **ThinManager PXE Server Configuration Wizard** by selecting *__Manage__ > PXE Server* from the menu.
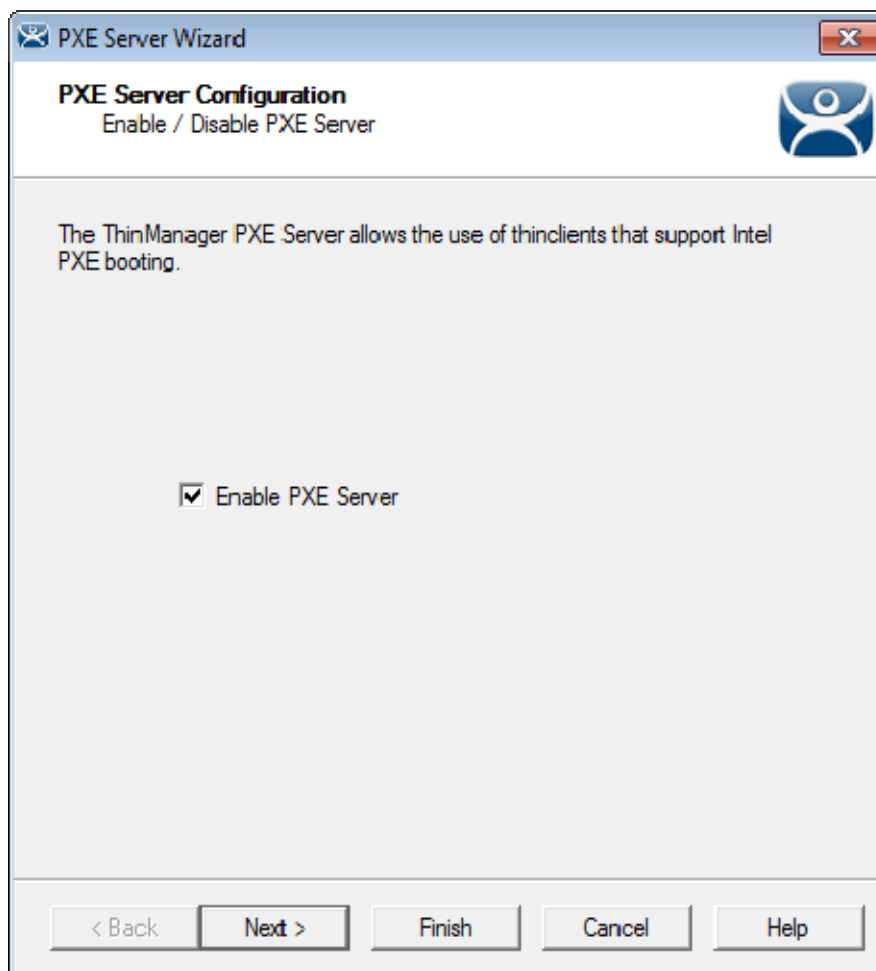
PXE Server Configuration

Enable PXE Server must be selected to boot PXE thin clients from ThinManager.

11.4.2 Network Interface Configuration

Network Interface Configuration

Select a network interface from the drop down list to configure from the **Select Interface to Configure** dropdown. This allows each network adapter to be configured individually. The primary IP Address reflects the current IP address for the selected adapter.

PXE Server Mode

- Select ***Using Standard DHCP server*** if you want to have a standard DHCP server assign IP addresses to thin clients on the same network as the selected network adapter. The PXE Boot options will be provided by ThinManager automatically. This selection will require no changes to your DHCP server configuration.

- Select ***Standard DHCP server with Boot Options*** if you want a standard DHCP server to assign IP addresses and PXE boot options to thin clients on the same network as the selected network adapter. Set **Option 66 (Boot Server Host Name)** to the IP address of your ThinManager Server and **Option 67 (Boot File Name)** to "`acpboot.bin`". The PXE boot options will not be provided by ThinManager. You must use this mode if your DHCP server is installed on your ThinManager Server.

- Select ***Not using standard DHCP server*** if you want ThinManager to assign IP addresses to thin clients without the need for a DHCP server. Using this mode requires that you set up IP address ranges. Use this mode if you want to use static IP assignments (reservations). ThinManager will not assign IP addresses to non-PXE booting devices.

Allow New PXE clients allows unknown PXE thin clients to connect to ThinManager through the selected network interface. Uncheck this option if you only want known clients to connect.

Note: Uncheck this setting if you are planning to have more than one non-synchronized ThinManager Server on your network. You will need to temporarily enable this option to add a new thin client. For proper operation, you can only have this option enabled on one ThinManager Server at a time.

11.4.3 Network Interface Configuration for Synchronized ThinManager Servers
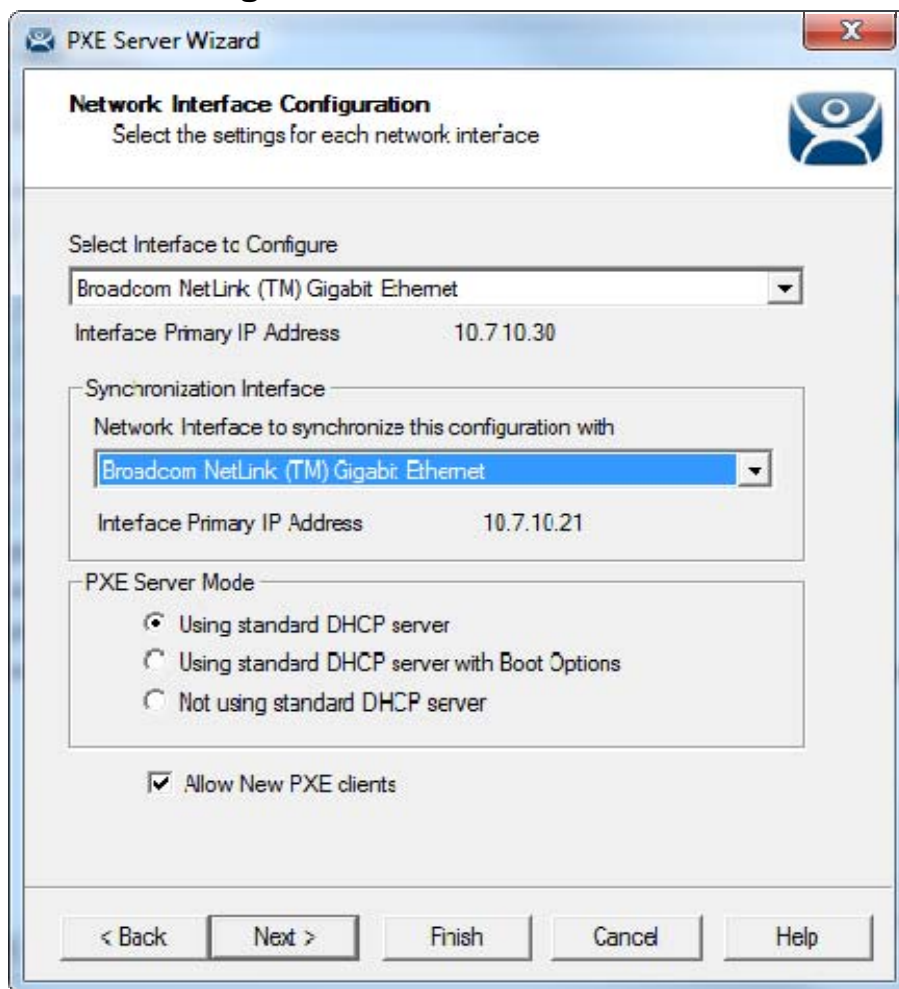
Network Interface Configuration for Synchronized ThinManager Servers

The **Network Interface Configuration** page will display a network interface dropdown for each ThinManager Server if you are using auto-synchronization.

Select a network interface from the ***Select Interface to Configure*** to configure the primary ThinManager and select a network interface from the ***Synchronization Interface*** to configure the secondary ThinManager dropdown. This allows a network adapter on each ThinManager Server to be configured individually.

11.4.4 IP Address Range Configuration

The **IP Address Range Configuration page** displays the current ranges of IP Address being used by ThinManager to assign to thin clients. It also gives the ability to edit the IP ranges.
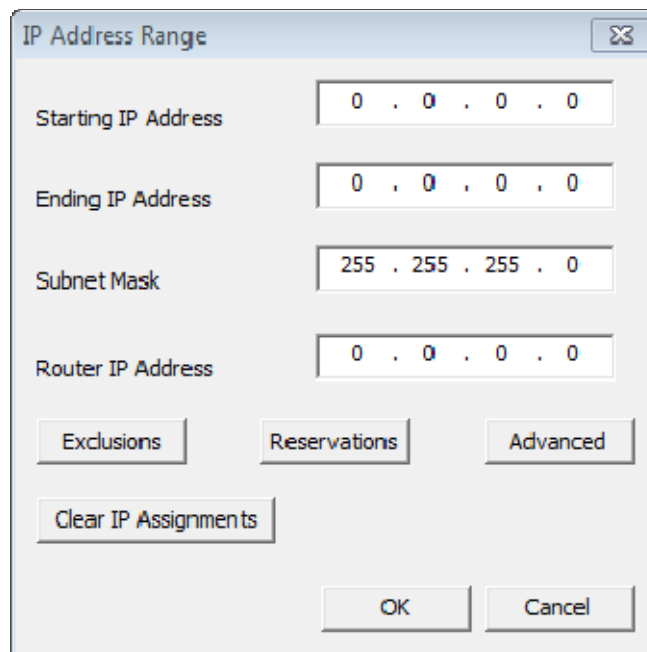
Note: This section of the PXE Server Wizard is only used when the ***Not using standard DHCP server*** option is selected in the **Network Interface Configuration**.
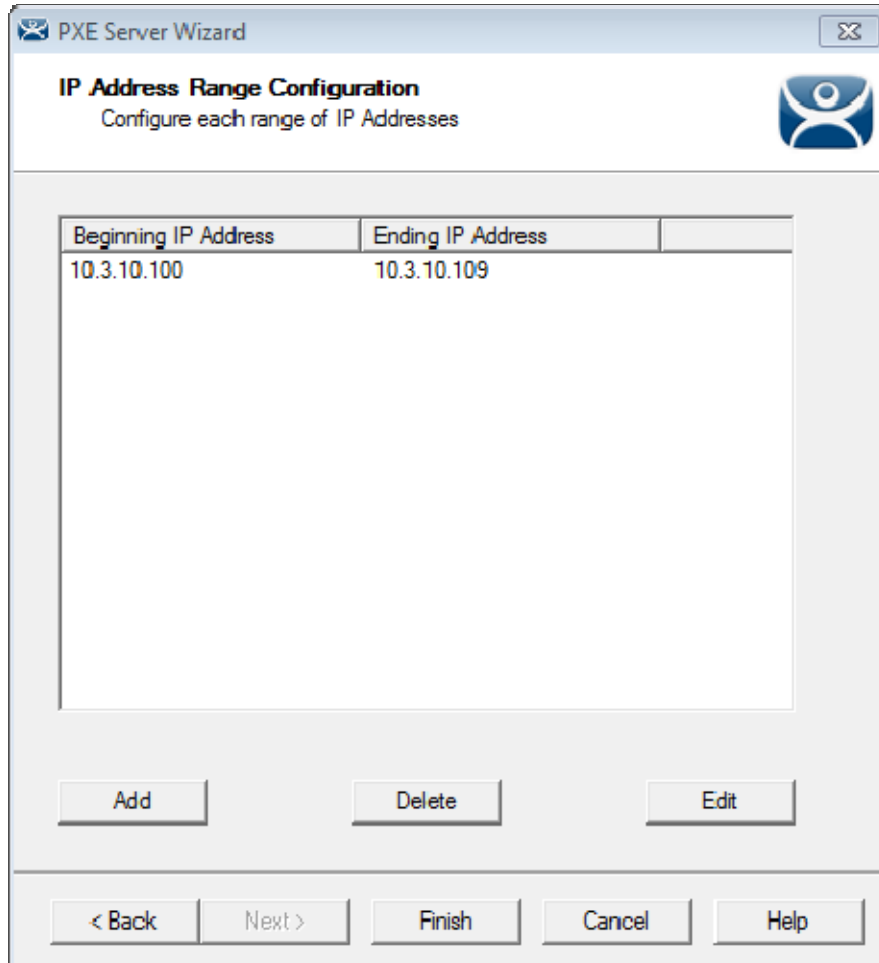
IP Address Range Configuration

Select the ***Add*** button to launch the **IP Address Range** window to add a range of IP addresses for the PXE Server.

11.4.4.1 Adding or Editing an IP Address Range

IP Address Range

The IP Address Range window has fields for the IP addresses to be assigned.

Fields:

- **Starting IP Address:** This is first IP address you want the PXE Server to pass out.

- **Ending IP Address:** This is last IP address you want the PXE Server to pass out.

- **Subnet Mask:** This is the subnet mask of the network.

- **Router IP Address:** This is the IP address of your router, if needed. Leave as 0.0.0.0 if not needed.

Buttons:

- **Exclusions** launches the **Exclusion** window to exclude a specific IP addresses from the available range.

- **Reservations** launched the **Reservation** window that allows reserve a specific IP address to be assigned to a thin client based on the thin client MAC address.

- **Advanced** launches the **Advanced IP Range Settings** window that allows DHCP options to be added.

- **Clear IP Assignments** will clear the setting from the IP Address Range window.

11.4.5 Exclusions
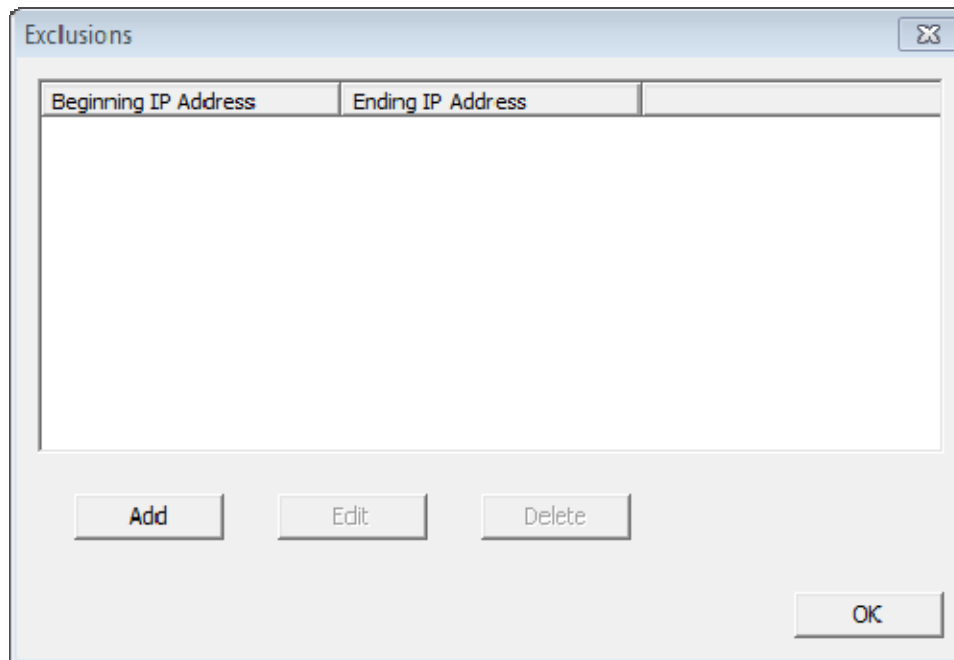
Exclusion Window

Selecting the *Add* button will launch the Exclusion Range window that allows you to remove one or more IP addresses from the range of IP addresses passed out by the PXE server.
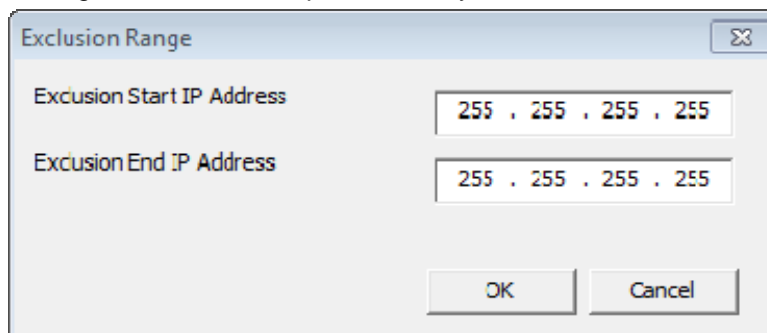
Exclusion Range Window

Enter the first and last IP addresses of the range you want to exclude in the *Exclusion Start IP Address* and the *Exclusion End IP Address.* If you have a single IP address you want to exclude then enter it in both the *Exclusion Start IP Address* and the *Exclusion End IP Address* fields.

11.4.6 Reservations
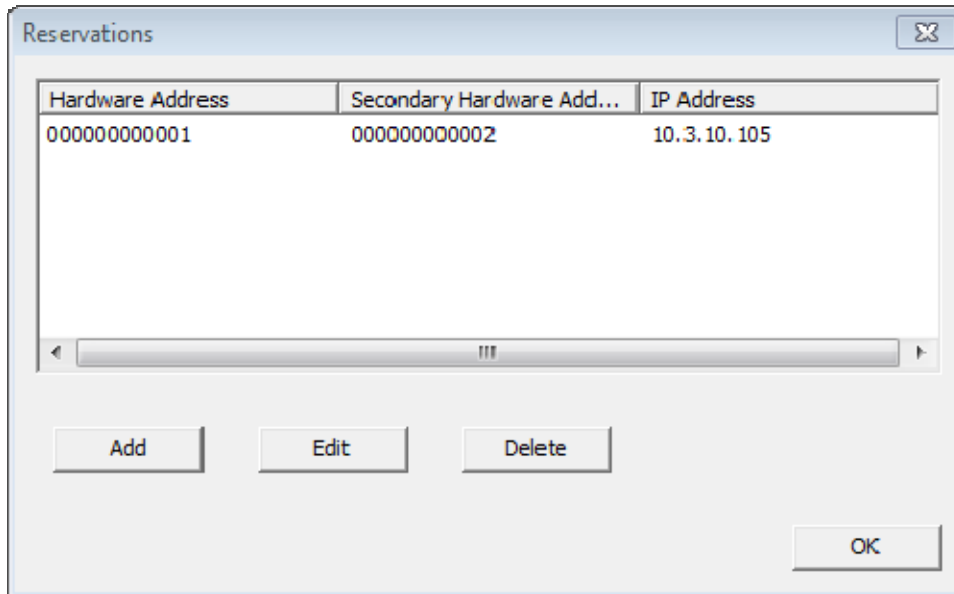
Reservation Window

Reservations allow you to associate a specific IP address to a specific thin client by associating the IP address with the MAC address of the thin client.

Select the **Add** button to add a reservation.
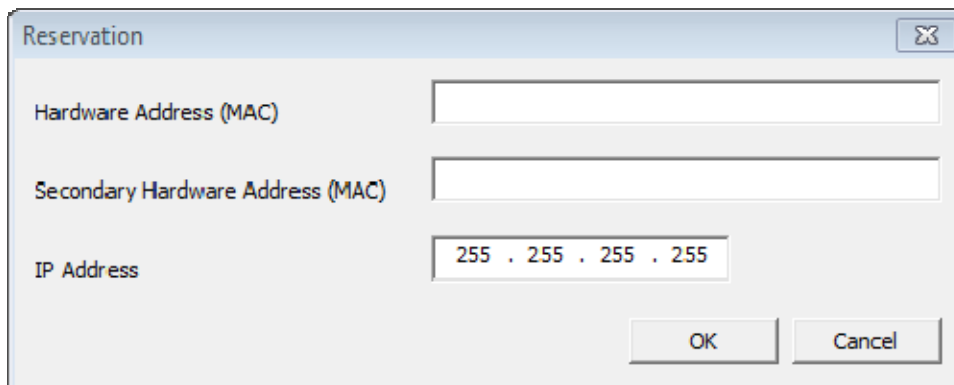
Reservation Window

Hardware Address is the primary MAC address of the thin client.

Secondary Hardware Address is the MAC address of the second network interface of the thin client (if present).

IP Address sets the IP address to be reserved for the desired thin client. This will be the address assigned to the thin client when connected through either the primary or the secondary thin client network interface.

11.5 Terminal Group Configuration Wizard

Using **Terminal Groups** allows a configuration to be defined for a group of terminals. Terminals added to a group will inherit the group properties to speed the configuration process. Using Groups can also aid in management because many tasks can be done on the group level instead of repeating them for multiple terminals.

- Groups can be nested within groups, providing deeper levels of organization.

- All Group Settings use a forced inheritance because of the use of nested Groups. Once a setting has been selected as a group property, every terminal group and terminal beneath it will use that setting.

- Group Settings will be designated on the Configuration and Modules tabs with the Group icon of two blue monitors.

11.5.1.1   Group Settings Checkbox

The Terminal Group Configuration Wizard establishes the terminal settings for a group of terminals, while the Terminal Configuration Wizard establishes the terminal settings for the individual terminal. The Terminal Configuration Wizard and the Group Configuration Wizard use the same forms so they are very similar, with a few different settings.

Note: This Help document will only show the differences between the **Group Configuration Wizard** and the **Terminal Configuration Wizard**. See Terminal Configuration Wizard for configuration details.

The Group wizard will have **Group Setting** checkboxes for each setting. Selecting this checkbox will force that setting to be inherited by nested sub-groups and member terminals. The Group Settings of any sub-group or terminal will be grayed out to prevent changes if the group setting is selected on the parent. Changes need to be made at the Group level.
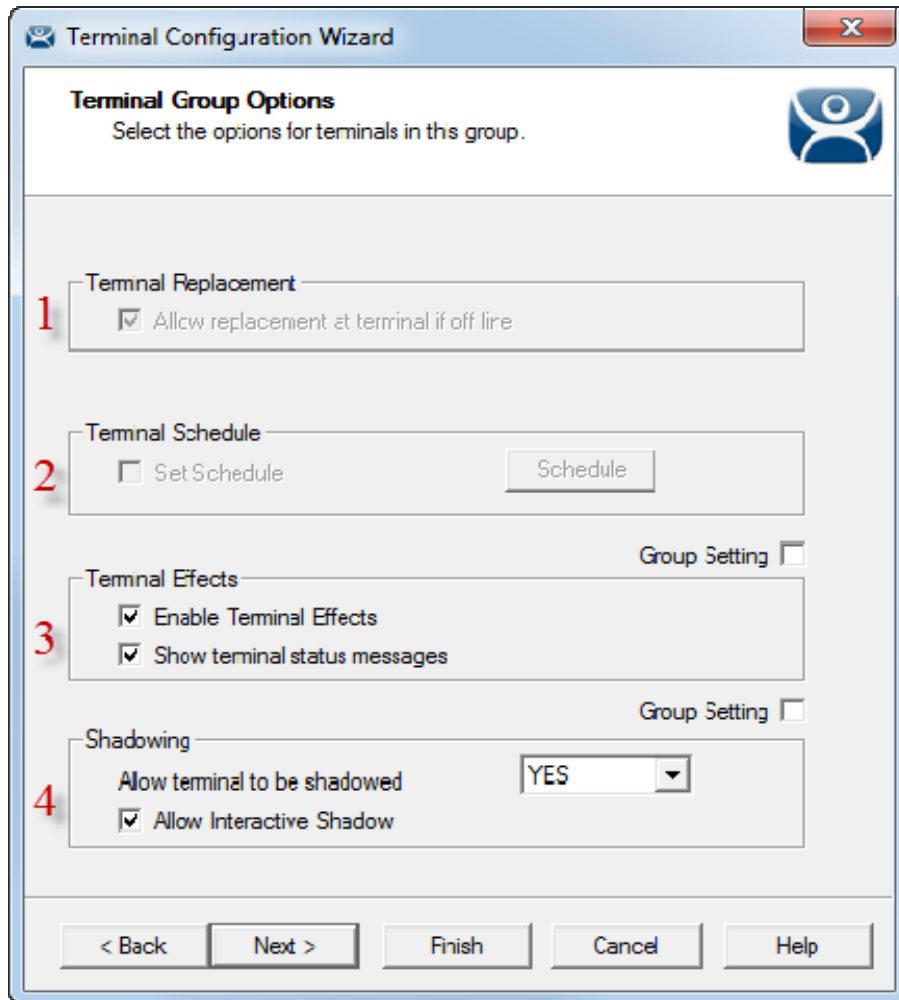
Group Setting Example

This example shows variations in the use of four *Group Settings* on the **Terminal Group Options** page of a nested group.

Note: The **Group Configuration Wizard** shows **"Terminal Configuration Wizard"** in the title because it uses the same framework as the **Terminal Configuration Wizard.**

Terminal Replacement (1) and *Terminal Schedule* (2) were configured in the parent group and cannot be changed in this child group. *Terminal Replacement* (1) was set as checked, while *Terminal Schedule* (2) was set as unchecked.

The *Terminal Effects* (3) Group Setting is selected for this Group. It will be grayed out in child groups and member terminals.

The *Shadowing* (4) Group Setting is unselected, making it available to be set for child groups and member terminals.

11.5.1.2   Group Name Page

The *Group Configuration Wizard* can be launched by selecting *Edit > Add Terminal Group* or by or right clicking on the Terminals branch in the tree and selecting *Add Group*.

Group Configuration Wizard – Terminal Group Name

Importance of Page: This page allows the Group to be named.

Fields:

- **Group Name –** This is the name given to the group. Keep it under 15 characters.

- **Terminal Group** – This is the name of a parent group if this group is a sub-group.

Buttons:

- **Change Group –** This launches a window that allows the group to be added as a sub-group to another group.

- **Permissions –** This allows the Terminal Group to be assigned Access Groups for security. This is a function of TermSecure. See Permissions for details.

Checkbox:

- **Group Setting –** This will make the Permission a group setting that is inherited by all members.

Why Change from Default Settings: A group needs a name at creation. The group can be added to another group using the **Change Group** button.
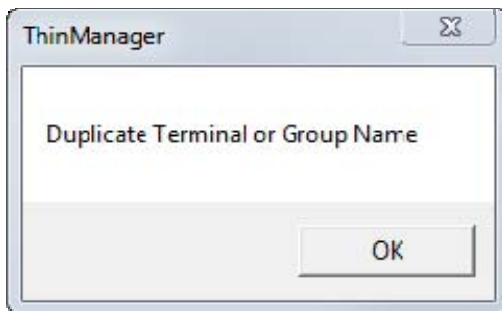

Duplicate Name Warning

If an existing name is selected, a **Duplicate Name Warning** popup will be displayed when the **Next** button is selected.

Terminal Groups can be added to other Terminal Groups, creating a multi-level hierarchy. This is done with the **Change Group** button that launches the **Select Group** window.
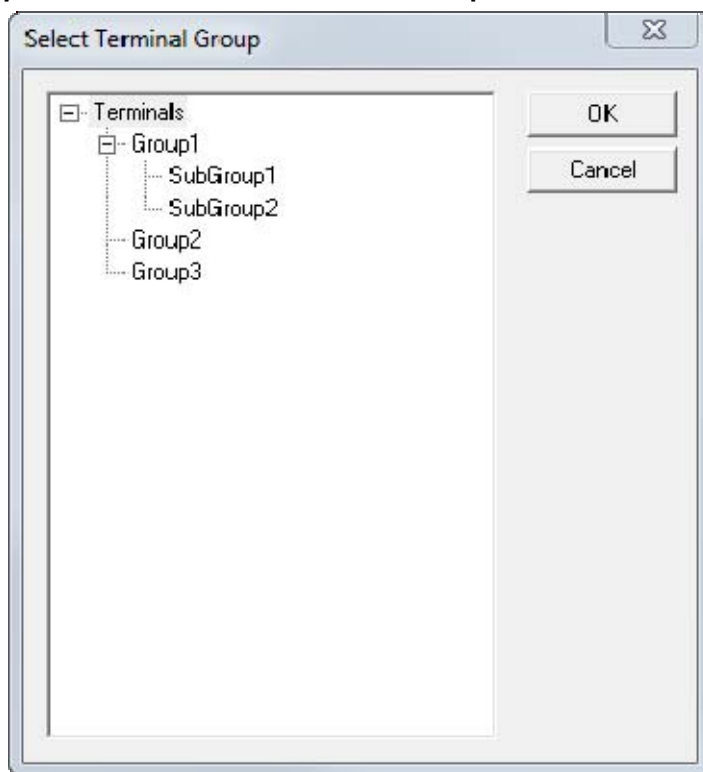
Select Terminal Group Window

The **Select Group** window will show a tree displaying the group hierarchy. Highlight the Terminal Group that you want to join and select the **OK** button to join or select the **Cancel** button to quit without joining.
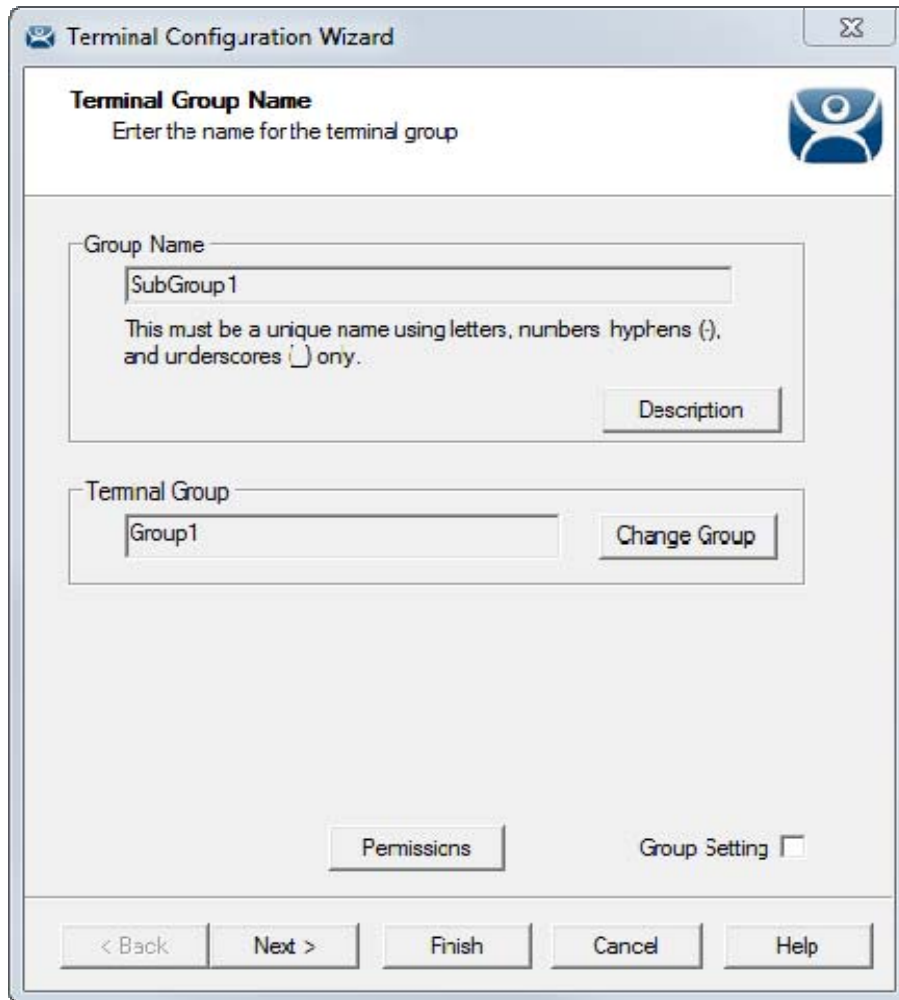
Terminal Group Configuration Wizard – Terminal Group Name Page

The parent Terminal Group you joined will be displayed in the **Group** field.

Select the Next **button** to continue or select the **Cancel** button to close the configuration wizard without saving.

11.5.2 Changing a Terminal's Group

A terminal is added to a group from the **Terminal Name** page of the **Terminal Configuration Wizard**.

Open the **Terminal Configuration Wizard** by either:

- Highlighting the terminal in the **ThinManager** tree pane by clicking on the terminal name or icon and select **Edi t >Modify** from the **ThinManager** menu bar.

- Right clicking on the terminal icon in the **ThinManager** tree pane and select **Modify**.

- Double clicking on a terminal icon in the **ThinManager** tree pane.

This will launch the **Terminal Configuration Wizard**.
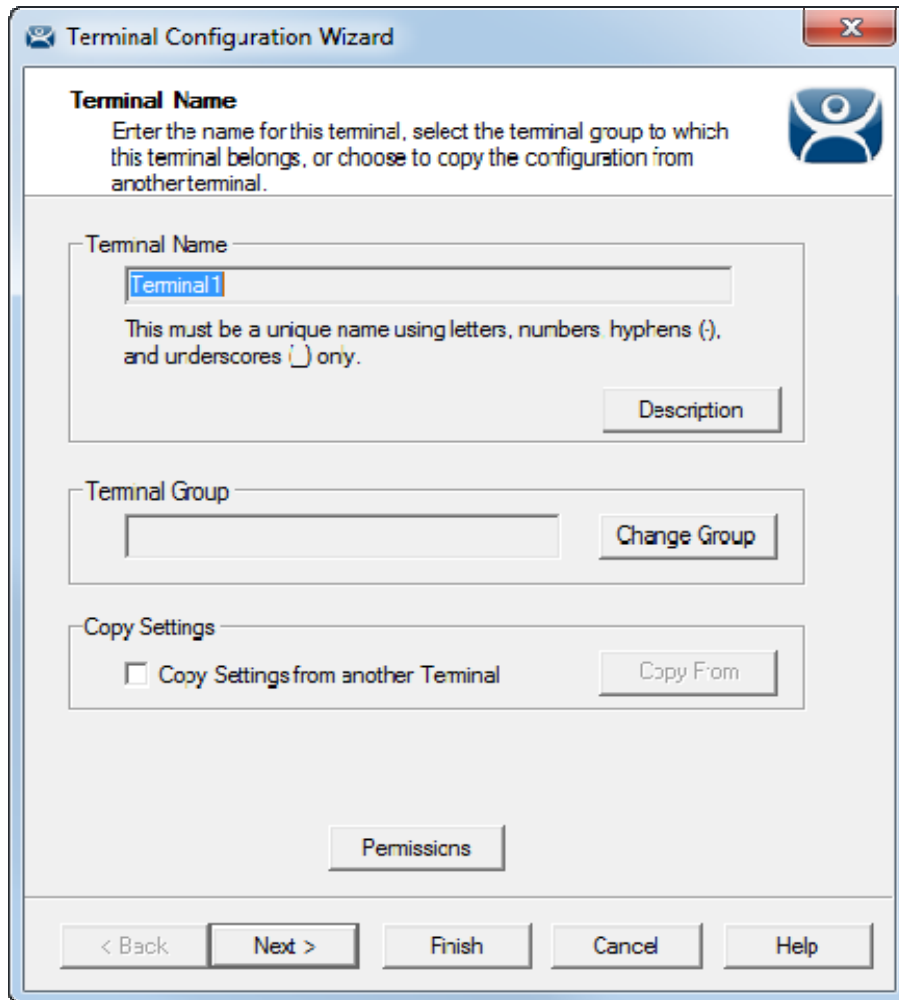
*Terminal Configuration Wizard - Terminal Name Page*

The first page of the wizard, **Terminal Name**, has a *Change Group* button. Select the *Change Group* button to launch the **Select Terminal Group** window.
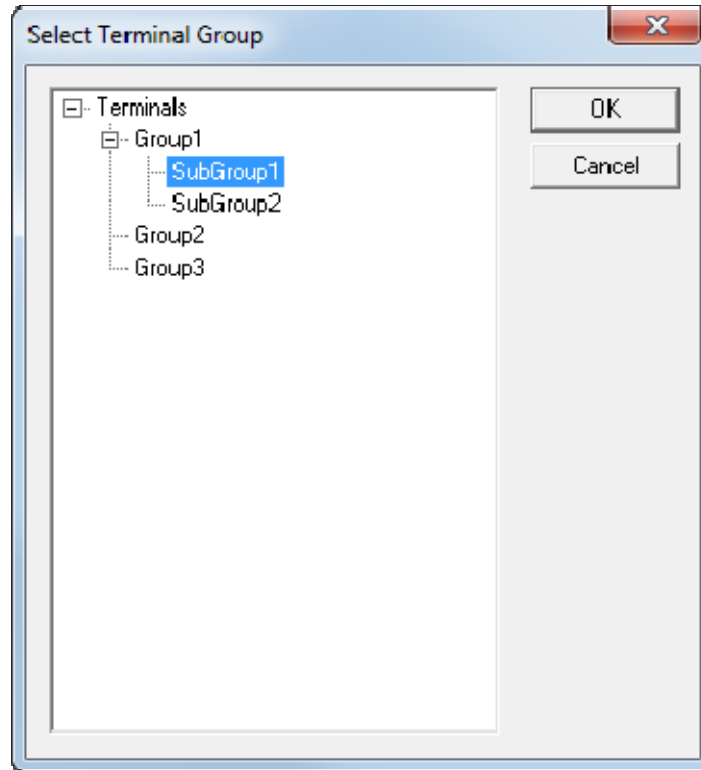
Select Group Window

The **Select Terminal Group** window has a tree of the Terminal Groups. Highlight the desired Terminal Group and select the *OK* button. Selecting *Terminals* will remove the terminal from group membership.

The *Cancel* button will close the **Select Group** window without making changes.
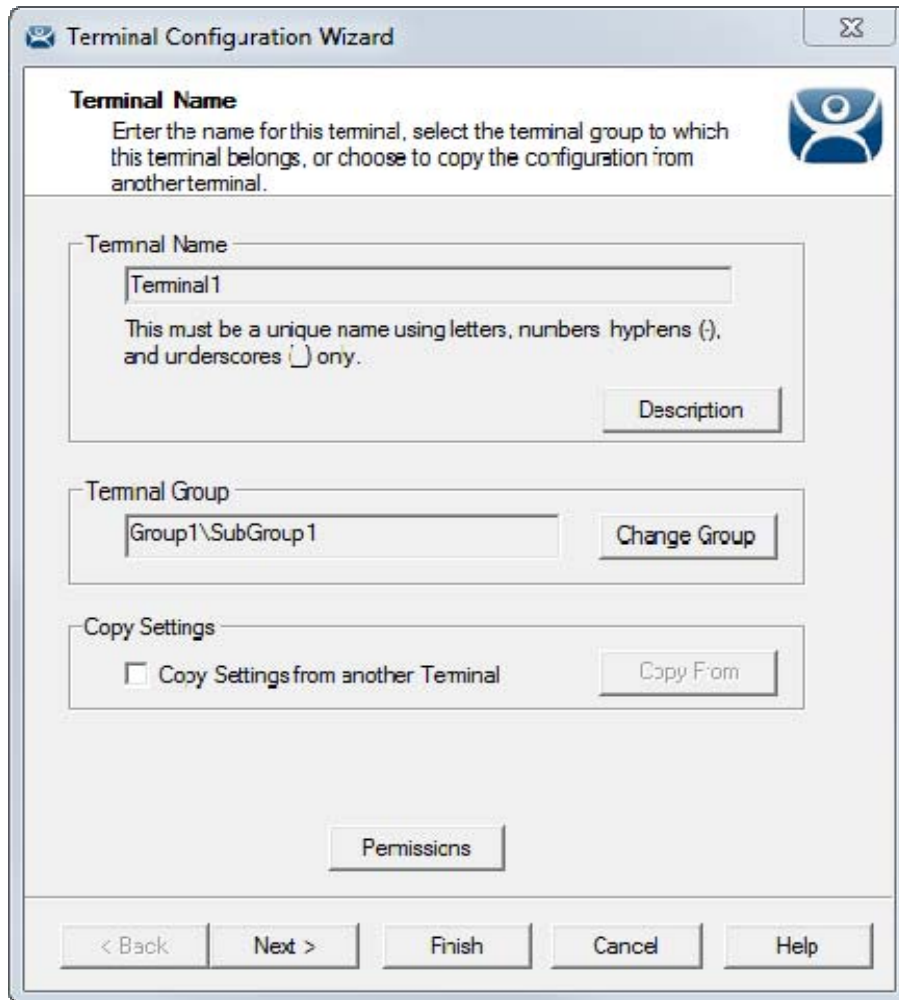
Terminal Group Display
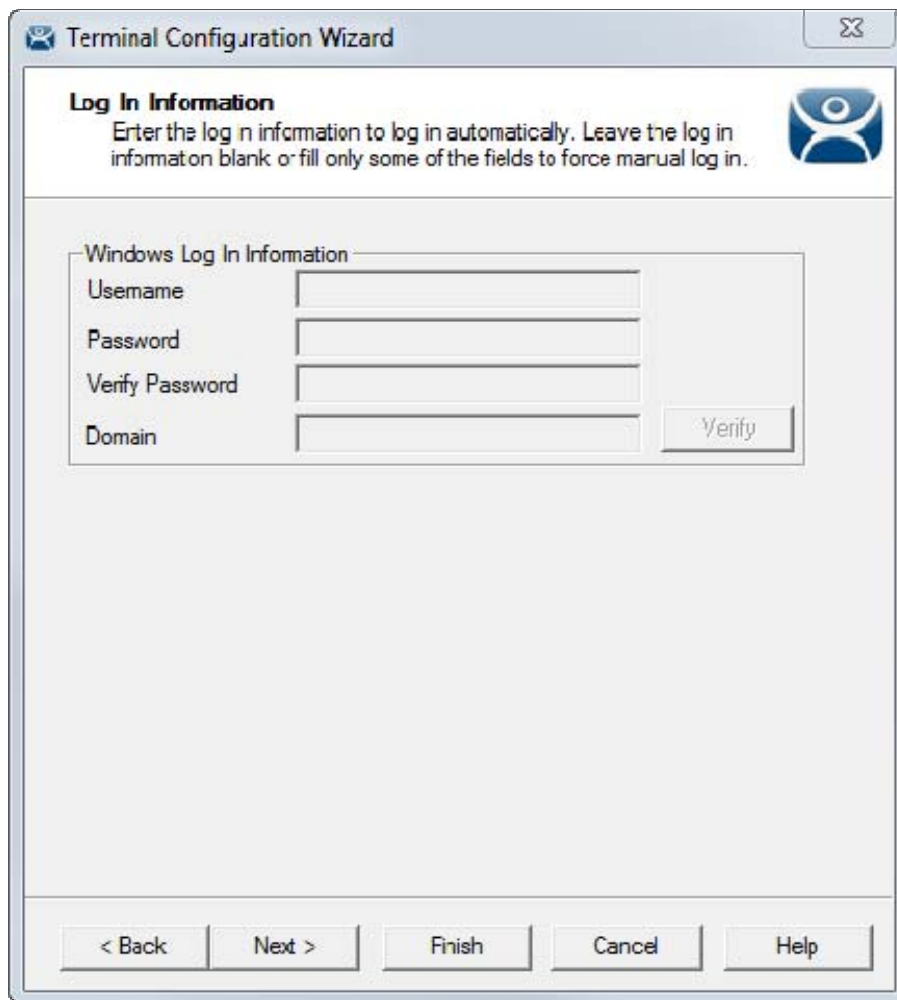
Once a group is selected for the terminal the group will be displayed in the *Terminal Group* field.

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

11.5.3 Unique Group Configurations

Several pages of the **Group Configuration Wizard** are different than the **Terminal Configuration Wizard**. These include the Log In Information page, the Group Video Resolution, and Module pages.

11.5.3.1 Group Login Information Page

Log In Information - Use Application Groups

The **Log In Information** page is different in the **Group Configuration Wizard** than the **Terminal Configuration Wizard**.

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

11.5.3.2   Group Video Resolution Page
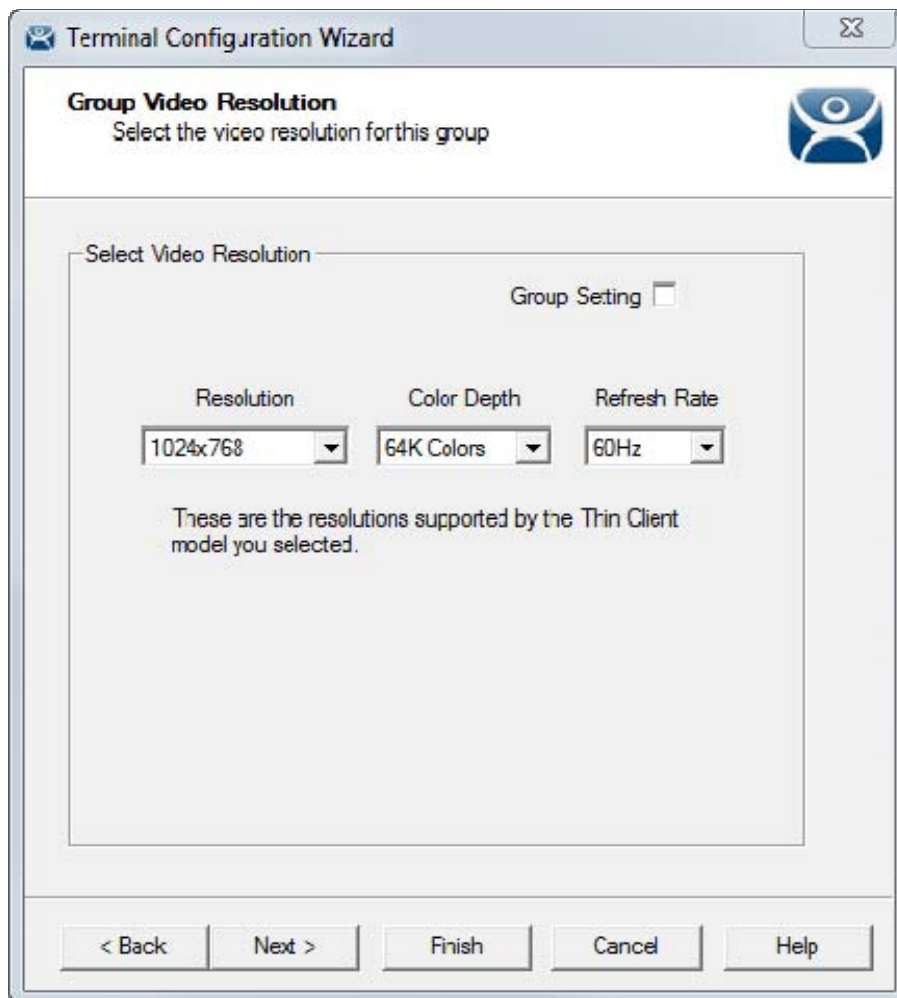
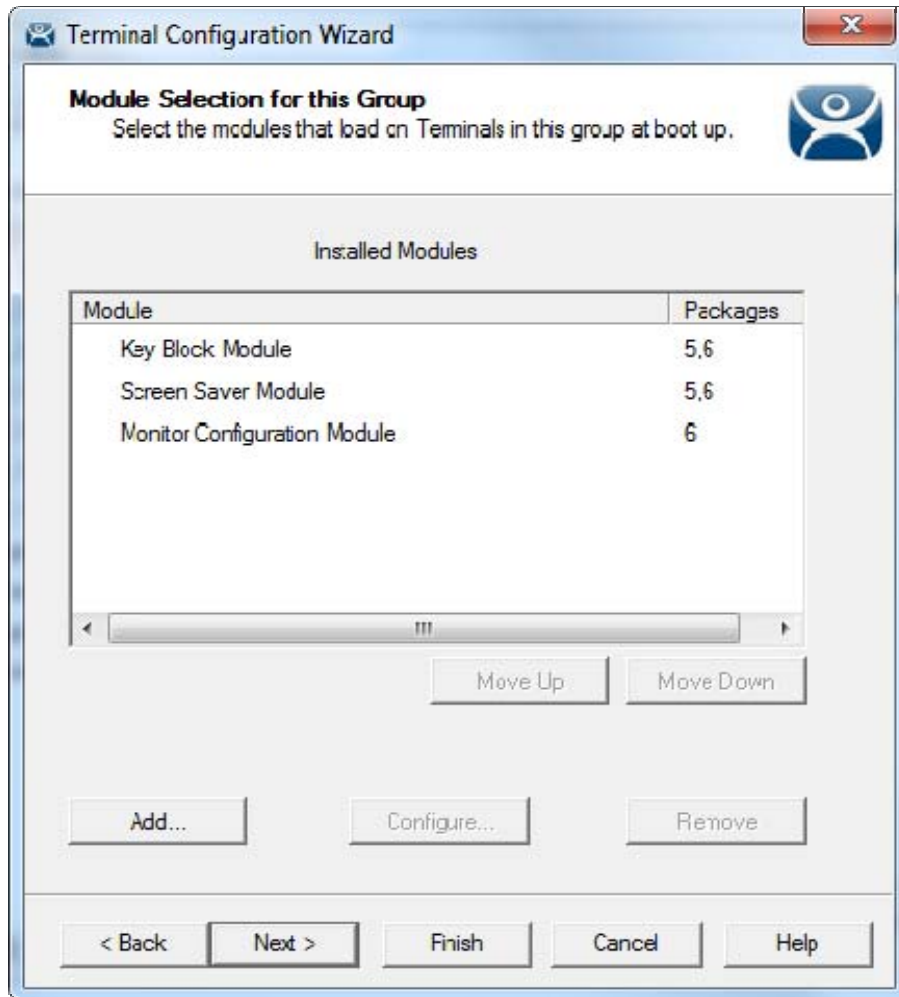*Group Configuration Wizard - Video Configuration*

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

The Windows 2000 terminal connection uses a 256-color depth. The 64K-color depth is available by using RDP connected to a Windows 2003 or 2008 Terminal Server.

The *Group Setting* checkbox will lock the settings for the group and all member terminals.

Note: It is not recommended to set the Video Resolution as a Group Setting because of the variety of monitor sizes and the ease at which they are changed. These settings are better set as an individual terminal setting to provide the flexibility to switch monitors.

11.5.3.3   Group Module Selection Page

Terminal Configuration Wizard - Module Selection

A **Module** is a component of the firmware that is not needed for the basic functionality but may be desired for advanced functionality. These features include Touch Screen drivers, serial mouse drivers, High Speed Serial drivers, Shared Keyboard and Mouse, USB Memory Card Reader, and Instant Failover. See Module Overview for details.
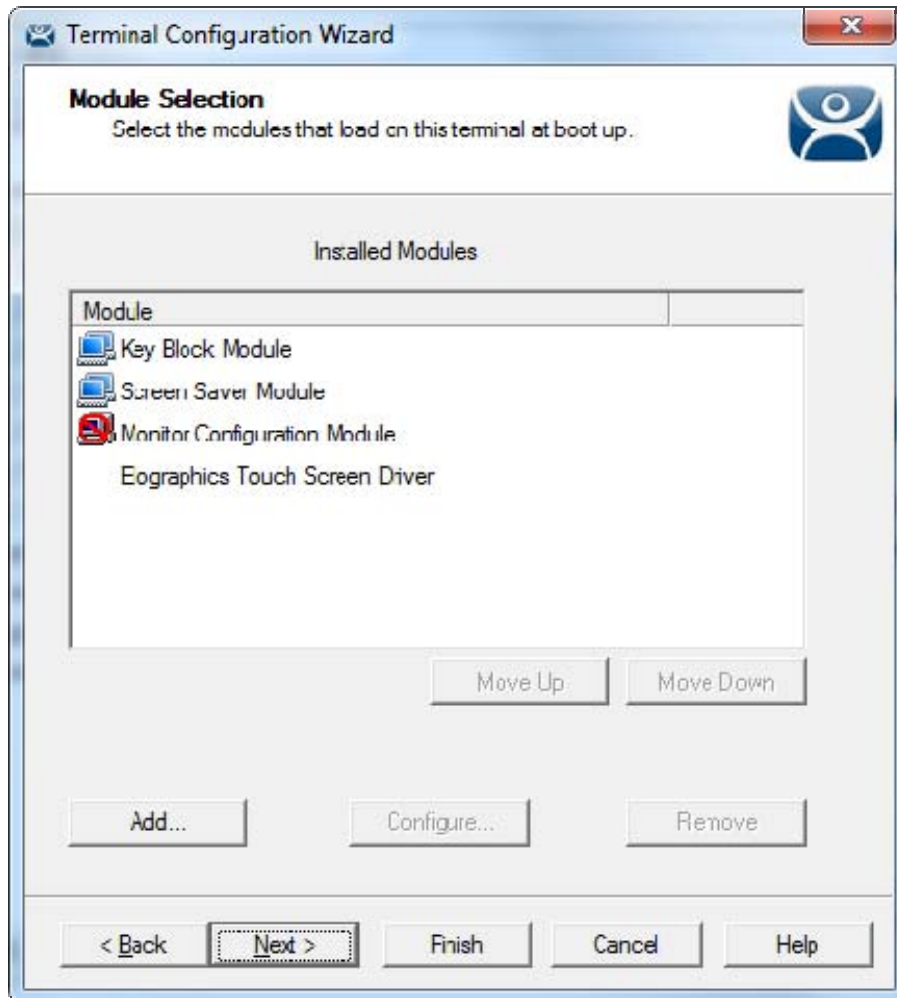
The Add button will allow Modules to be added to the Group.

The Installed Modules box will show the Module names and the Packages (firmware version) they are valid with.

See Modules for Details.

11.5.3.4   Group Modules on Terminals

Terminals that are members of a Group may show icons to represent the properties of added modules.

Terminal Module Selection Page

- The Group icon represents modules assigned to a parent Group.

- The Group icon with yellow plus sign represents properties that are changed on the terminal from the Group settings. This is limited to touch screen calibration.

- The Group icon with the No circle represents a module that isn't supported by the firmware package used by the terminal.

- No icon indicates that the module was added to that particular Group or Terminal and not a parent Group.

If you add a module to a group it will display the group icon and any configuration will need to be made at the group level.

The rest of the **Group Configuration Wizard** pages follow the **Terminal Configuration Wizard** pages.