

Alternative Desktop Computing

ThinManage v2.3

Administration Manual



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1.0 Installation

1.1 Download and Install VMware Server® or Player

<http://www.vmware.com/download/server>

-OR-

<http://www.vmware.com/download/player>

1.2 Download the ThinManage 2.3 Virtual Appliance Package

- If you haven't done so already, download the latest release for ThinManage 2.3 from Devon IT's FTP server.

FTP Server:	mx2.devonit.com	
Username:	Images	
Password:	nt@t3rminal5	
Directory:	./ThinManage/latest-release/	
Files:	thinmanage-2.3-<date>-DeTOS.zip	(includes latest DeTOS upgrade package)
	thinmanage-2.3-<date>.zip	(without any DeTOS upgrade packages)

- There are two different offerings of ThinManage. Both are exactly the same appliance with the only difference being that one includes a pre-installed DeTOS upgrade package while the other does not.
 - The “thinmanage-2.3-<date>-DeTOS.zip” zip file comes with the latest upgrade package already installed for you.
 - The “thinmanage-2.3-<date>.zip” version does not include any upgrade packages. This file is smaller in size and takes less time to download.

No matter which version you choose now, you always have the option of adding DeTOS packages later. See *Section 3.2* of this document for more information about adding new upgrade packages to ThinManage.

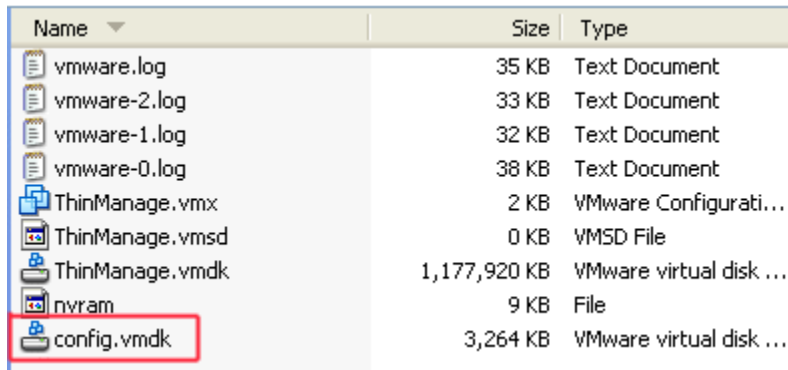
- Use an archiver utility, such as WinZip or 7-Zip, to extract the `thinmanage-2.3-<date>-<type>.zip` file.
- If this is the first time you are installing ThinManage 2.3 then you may skip ahead to **Section 1.4** now.

1.3 Transfer Your Current ThinManage Data to the new VM (optional)

If you have a previously installed ThinManage 2.3 virtual machine, you have the option to transfer your current inventory, clones, and logs over to the new virtual machine.

Here's how to do this:

- Shutdown your current ThinManage virtual machine.
- Make sure the new zip file has been extracted, as described in Section 1.2.
- Browse to the your **current** "ThinManage" folder that contains the VMware related files. Find the file named, **config.vmdk** and copy it over to the **new** "ThinManage" folder.



Name	Size	Type
vmware.log	35 KB	Text Document
vmware-2.log	33 KB	Text Document
vmware-1.log	32 KB	Text Document
vmware-0.log	38 KB	Text Document
ThinManage.vmx	2 KB	VMware Configurati...
ThinManage.vmsd	0 KB	VMSD File
ThinManage.vmdk	1,177,920 KB	VMware virtual disk ...
nvram	9 KB	File
config.vmdk	3,264 KB	VMware virtual disk ...

- You may now proceed to *Section 1.4* for the final setup instructions.

NOTE: The *config.vmdk* file is a new file added in ThinManage versions 2.3 and higher. You will not be able to carry over settings from version 2.2, as this file does not exist in older versions.

1.4 The Virtual Machine Setup

1. Start the VMware Server Console and select **Open Existing Virtual Machine**
2. **Browse** to the “ThinManage” folder that was created during the zip file extraction.
3. Select the file named **ThinManage.vmx** and click the **Open** button.

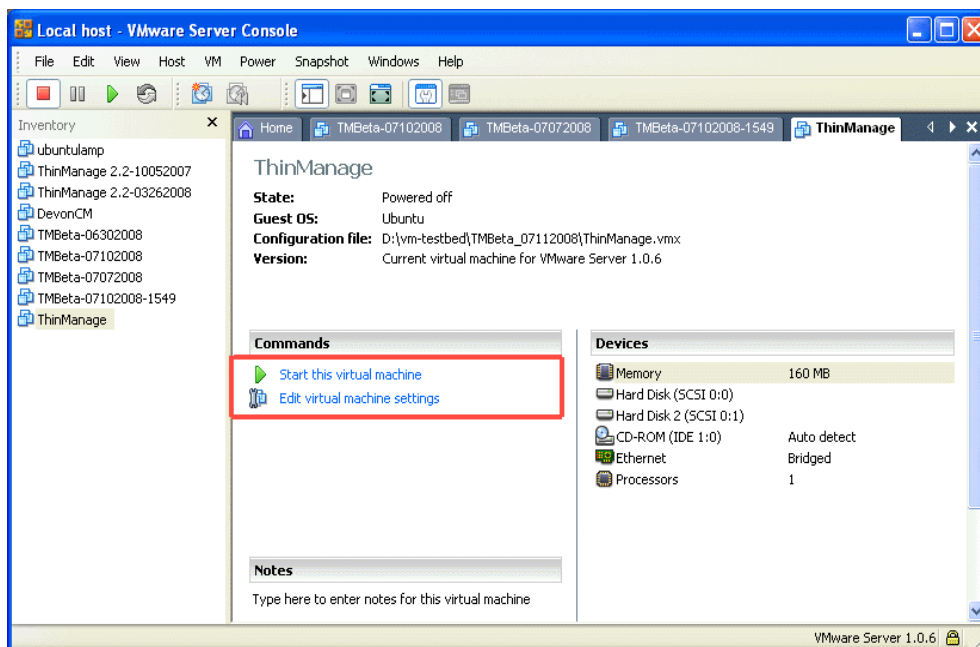


Figure 1-1 : Screenshot of the VMware Server Console

4. If needed, adjust the allocated Memory from **512MB** to an appropriate value for your host machine. To do this, click the command called **Edit virtual machine settings**, located on the VMware Server Console screen. This will open a new window allowing you to edit various hardware settings. Memory is the first option displayed.

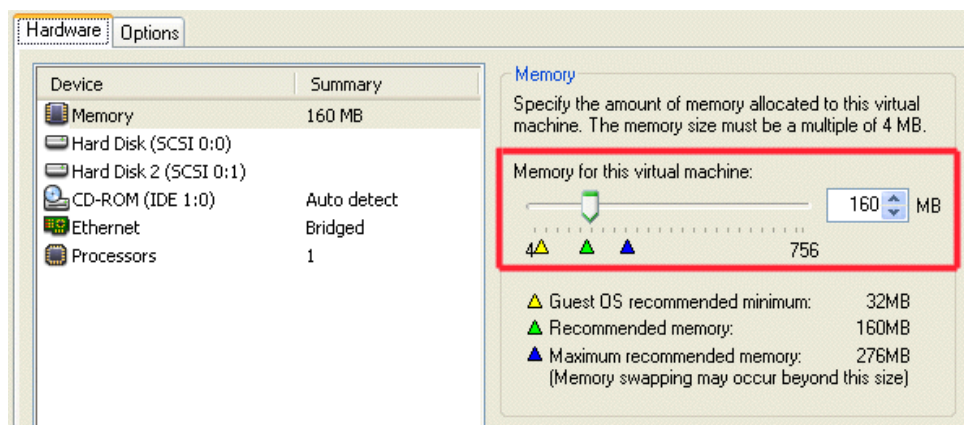


Figure 1-2 : Adjusting the memory allocated for the ThinManage virtual machine.

5. Click the command called **Start this virtual machine** to power on the ThinManage virtual appliance.

2.0 Getting Started

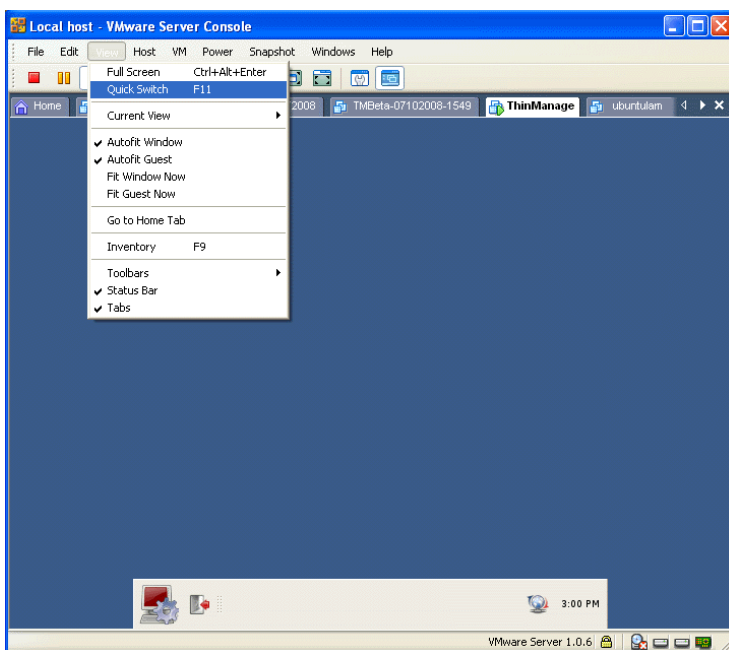
2.1 What's New in 2.3?

ThinManage now runs on a platform comprised of the Ubuntu Linux operating system, Xfce window environment, and QT4-based graphical user interfaces. Other changes and improvements you can expect in this release include:

- Improved response times when executing terminal discoveries, queries, and shadow requests.
- DHCP is the default network setting for the ThinManage server.
- The amount of time it takes for booting up the virtual image has been drastically reduced.
- A "Log" section is now available in the ThinManage console that captures and displays messages, events, and errors.
- Saving multiple cloned images is now possible.
- New "Package Updater" feature: A background process checks Devon IT's FTP server daily for new DeTOS images and will notify you when a new one is available. Simply choose which images you want and ThinManage will perform the FTP download and package extraction for you.
- Adjust font sizes and other interface settings by using the new QT Config Utility.

2.2 ThinManage Startup

Once you power on the ThinManage virtual appliance, the Ubuntu operating system will begin its boot process. All the necessary processes such as networking, database, X window, and other typical linux boot scripts are initiated. You are automatically logged into the linux desktop as the `tmadmin` user. Once the bootup stage has completed, you will see a blue desktop with a small gray taskbar, known as the Xfce Desktop Panel, sitting along the bottom of the screen.



***DISPLAY TIPS:** Select the **View** option in VMware's toolbar to change the way the virtual desktop is displayed. VMware Server also has shortcut keys for the following:*

- **Ctrl-Alt-Enter** : For a true fullscreen display.
- **F11** : To enlarge the window to full size.
- **F9** : Hide or display the vm inventory list.

Please refer to VMware's documentation for more information about all the viewing options.

2.3 About the Xfce Desktop Panel

The Xfce Desktop Panel is used to launch the ThinManage Console, execute the Package Updater, and exit out of the system.

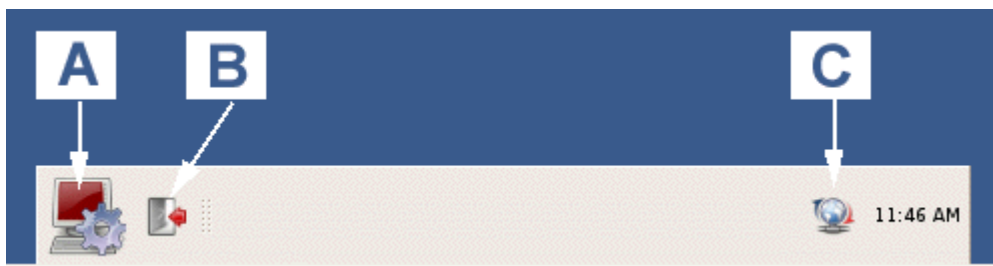


Figure 2-1 : The Xfce Desktop Panel

(A) ThinManage Console: On the bottom left-hand side of the panel is a computer icon. Click this button to launch the ThinManage graphical user interface – also referred to as the ThinManage Console.

(B) System Exit: Click the “door” icon to access the system exit options window (see Figure 2-2 below).

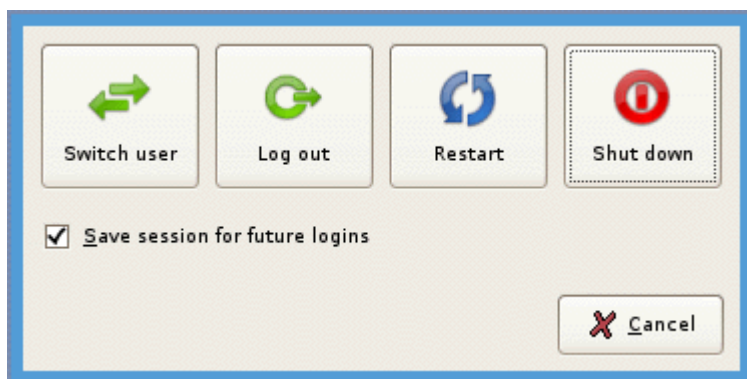


Figure 2-2: The System Exit options

(C) Package Updater: Click the “globe” icon to open the DeTOS Package Updater window.

2.4 The Xfce Desktop Context Menu

Right-clicking anywhere on the blue area of the desktop will display a context menu, allowing you to edit network settings, change the current date and time, adjust font sizes (QT4 Settings), or access the Linux command line (Terminal).

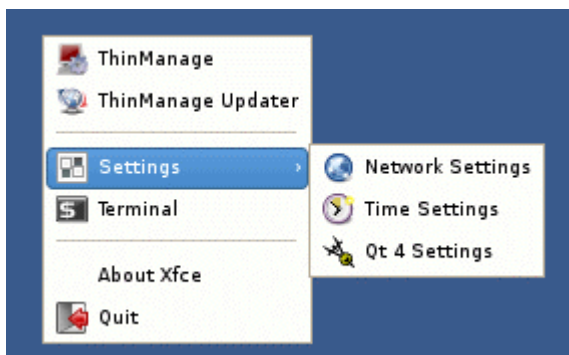


Figure 2-3: Available options found on the Xfce Desktop Context Menu

2.5 Network Settings

DHCP Settings

By default, the ThinManage server attempts to contact a DHCP server on your network during bootup. If you have a DHCP server on your network, then ThinManage will acquire an IP address automatically and no further network configuration is required on your part. If you would like to know exactly what IP address was assigned to the ThinManage server, then you can view this information by running `ifconfig` from the Linux terminal (refer to section, *5.0 Using the Terminal*, for more information)

Static IP Settings

If you need to set a Static IP address, then right-click on the blue area of the desktop to open the Xfce Context Menu and select **Settings -> Network Settings**. This will open a “Network Settings” window allowing you to manually configure static values. Highlight the entry called **Wired connection** and then click the **Properties** button. Open the **Configuration** dropdown and choose **Static IP address** option. Type in appropriate values for the **IP Address**, **Subnet mask**, and **Gateway address** fields and then press **OK**.

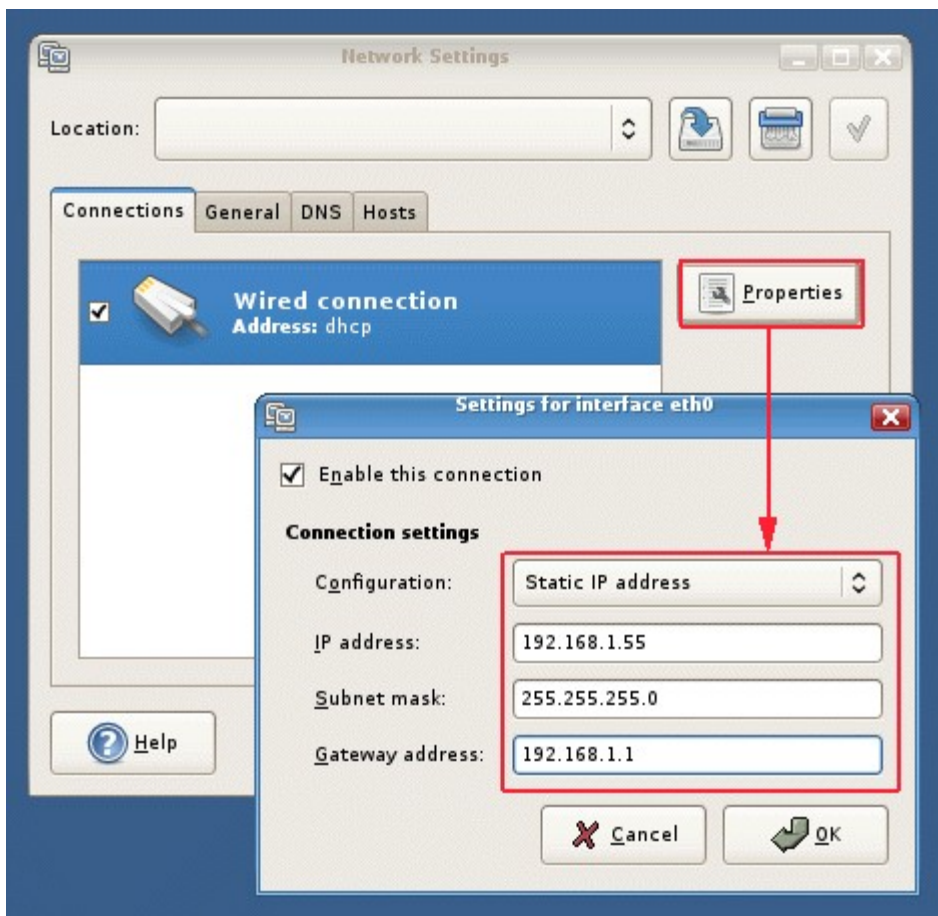


Figure 2-4: Configuring Static Network Settings for ThinManage

Click the **General** and **DNS** tabs if you would like to make any changes to the Host name (default is thinmanage) or edit the list of DNS servers and Search Domains.

Changes to network settings will take affect immediately after pressing the **OK** button. No reboot is required.

3.0 Using the ThinManage Console

The ThinManage Console is the graphical user interface that is used to discover and administer all DeTOS-based thin clients running on your local area network. Click the “computer” icon located on the bottom-left hand side of the Xfce Desktop Panel to launch the ThinManage Console.

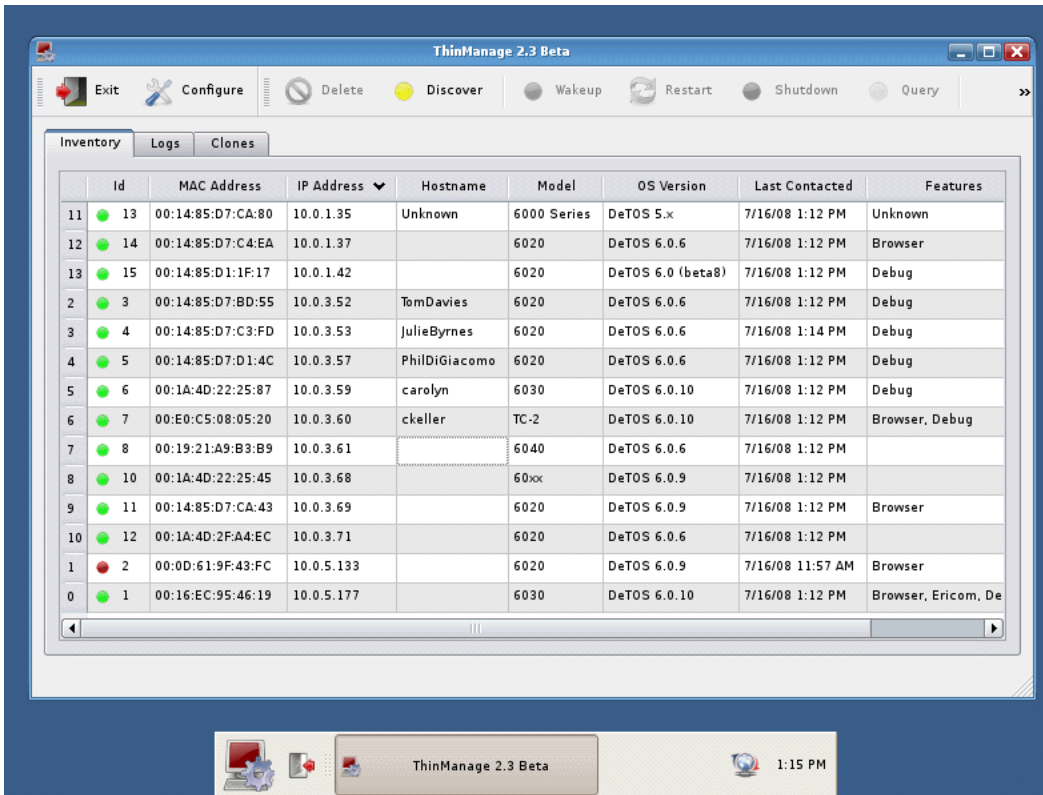


Figure 3-1: Screenshot of the ThinManage Console

Near the top of this window, just below the toolbar, are three tabs – **Inventory**, **Logs**, and **Clones**. Each time you start the console, you will begin on the Inventory tab. If this is the very first time you have launched ThinManage, then the Inventory tab will be empty. Once you run a discovery (see Section 3.1), information about the discovered thin clients will be displayed in a spreadsheet-like format. You can sort any column, in ascending or descending order, by clicking the corresponding column header.

Clicking anywhere inside a row will highlight that line and allow you to perform various actions on that terminal. Actions are **Delete**, **Wakeup**, **Restart**, **Shutdown**, **Query**, and **Shadow** are found in the toolbar along the top of the console window.

You can also right-click the row to display a context menu offering all these same actions plus a few additional ones such as, **Remote Configure**, **Create Clone**, **Write Clone**, **Factory Reset**, and **Upgrade OS**. (see Figure 3-2).

You may select multiple rows by holding down the **Ctrl** key while clicking each line. Note that the Remote Shadow, Remote Config and Create Clone actions can only be executed on one thin client at a time and will be dimmed out when multiple rows are selected.

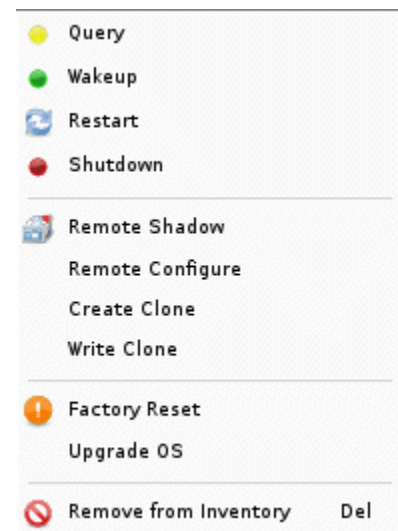


Figure 3-2: ThinManage Console Context Menu

3.1 Discovery

There are two types of discovery methods used to find thin clients: *Broadcast* and *IP Range*.

Broadcast Discoveries

By default, ThinManage is configured to perform broadcast discoveries on the subnet it currently resides on. As long as you have an IP address at this time, you may simply click the **Discover** button on the ThinManage Console toolbar to find all thin clients¹ on your current range.

For example, if your ThinManage server has an IP of 10.0.5.73, then performing a broadcast discovery will find all terminals between 10.0.5.0 and 10.0.5.255.

IP Range Discoveries

To search for thin clients running on different subnets, you'll need to enter the **Discovery Configuration** window and enter additional IP Ranges or specific IP addresses. Click the **Configure** button located on the ThinManage Console toolbar to open the Discovery Configuration window

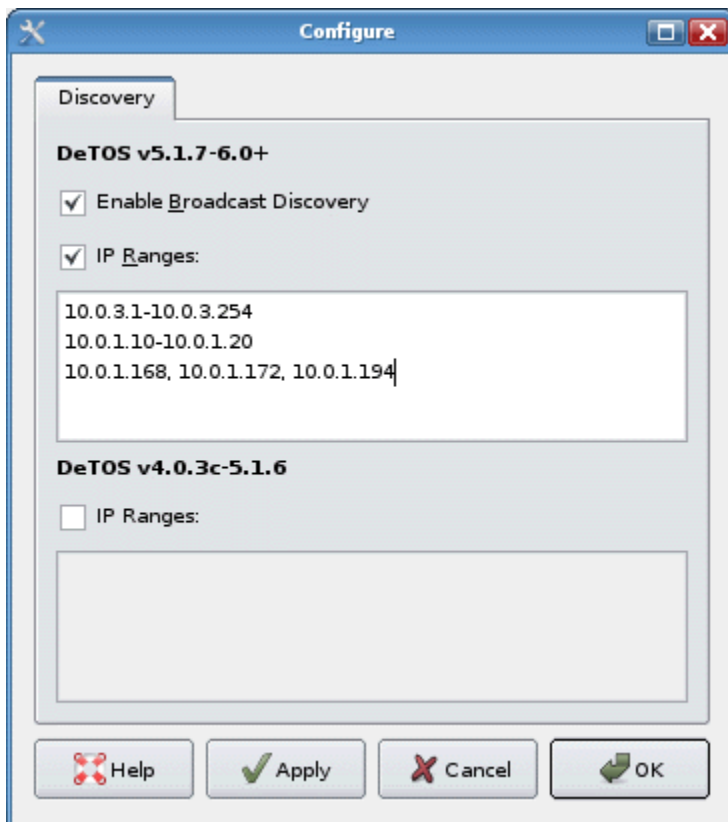


Figure 3-2: ThinManage Console Discovery Configuration Window

Check the box named IP Ranges to enable Rangewalk discovery on a set of IP addresses to discover. These IP addresses can either be one on a line, or separated by commas:

For example:

`10.0.1.168, 10.0.1.172, 10.0.1.194`

Ranges can be specified by separating the lower and upper IP with a dash (-).

For example:

`10.0.3.1-10.0.3.254`

Note the window is divided into two sections -- One for discovering current DeTOS terminals running version 5.1.7 or higher, and a second section below for discovering older (legacy) DeTOS terminals running 4.0.3c through 5.1.6.

You may upgrade your older DeTOS thin clients using ThinManage's Upgrade feature. See *Section 3.2* for more information.

¹ Broadcast discoveries will only find thin clients running DeTOS v5.1.7 or higher. To find terminals that are running older versions of DeTOS you must use an "IP Range" discovery, underneath the label "DeTOS v4.0.3x - 5.1.6".

The “Last Contacted” Field and Color Indicator

When thin clients are discovered or queried, the **Last Contacted** field will update with the current datetime stamp. Additionally, a color indicator on the left side of the ID number for that row will turn bright green. This circular icon will change colors based on the amount of time that terminal was either discovered or queried.

	Id	MAC Address	IP Address	Hostname	Model	OS Version	Last Contacted
0	1	00:14:85:D1:1F:44	10.0.5.156		6020	DeTOS 6.0.9	7/17/08 12:42 PM
10	11	00:1A:4D:2F:A4:EC	10.0.3.71		6020	DeTOS 6.0.6	7/21/08 10:34 AM
9	10	00:14:85:D7:CA:43	10.0.3.69		6020	DeTOS 6.0.9	7/21/08 10:34 AM

Figure 3-3: The Last Contacted field and its corresponding color indicator.

The following table lists the possible colors and their meaning.

Color Indicator	Amount of time since last contact	
Bright Green	Within the last 10 minutes	<= 10 mins
Dark Green	Over 10 mins, less than 30 mins.	(> 10 mins) and (< 30 mins)
Yellow	Within 30 mins to an hour	(> 30 mins) and (< 60 mins)
Dark Red	Over 1 hour, less than 1 day	(> 60 mins) and (< 24 hours)
Bright Red	Over a day	> 24 hours

Figure 3-4: “Last Contacted” Color Indicators Chart

Terminal Queries

Running a **Query** against a terminal will attempt contact with that terminal and refresh the information about it. Running a query is very useful for determining the online/offline status for a terminal. If it is online, then it will respond (almost instantly) by updating the **Last Contact** field to the current time. The color indicator will also change to green, just as it would during a discovery. Otherwise, you will receive a #101 or #605 code, indicating the unit is offline or rebooting.

How to Query a Terminal

- Highlight one or more rows within the Inventory tab.
- Right-click inside the row and then select the **Query** option from the context menu

– OR –

Click the **Query** button located on the ThinManage Console toolbar.

- Online thin clients will always update their **Last Contact** field and color indicator, along with any other information that may have changed since last contact was established (ie. Hostname, IP, DeTOS version, etc).
- Offline units, or units in the midst of a bootup, will display an error of #101 or #605. These errors also recorded in the Logs tab. See *Appendix A* for a full listing of possible error codes.

3.2 DeTOS Upgrades

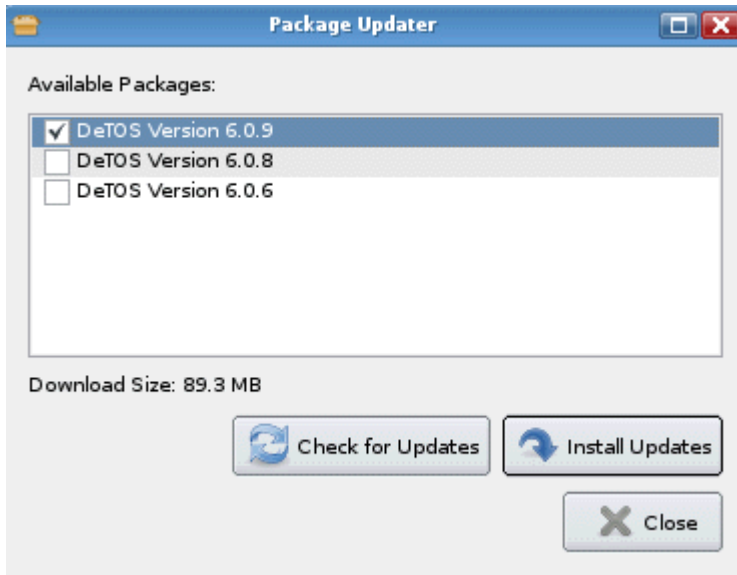
One of ThinManage's strongest features is its ability to upgrade inventoried thin clients to a newer version of DeTOS.. As new DeTOS versions are released, their accompanying upgrade rpm files are uploaded to the Devon IT FTP server. A background process within ThinManage checks this FTP repository once a day and will alert you when a newer version is available for download. You can manually check for available versions anytime by clicking the **Package Updater** icon located on the Xfce Desktop Panel.

How to Download and Install New DeTOS Packages

1. Click the **Package Updater** icon, located on the Xfce Desktop Panel.



2. This will open the "Package Updater" window that lists all the DeTOS versions currently available.
3. Click the **Check for Updates** button to retrieve the most updated list.
4. Select one or more packages you wish to download and then click the **Install Updates** button.



Note: The exact time it takes to download and install packages will vary, depending on your connection to the internet. On average, you can expect it to take approximately 5 minutes per package.

5. ThinManage will now connect to the FTP server and begin downloading the package. The "Package Updater" window will close and a second window will open, displaying the current download status.

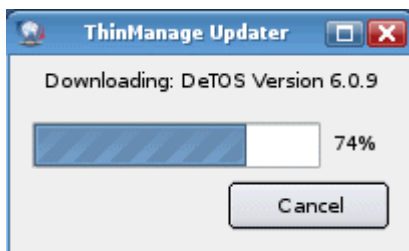


Figure 3-1: Package download progress

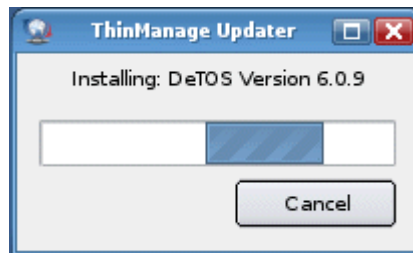


Figure 3-2: Package installation status

6. When the download is finished, the second step of installing the package will begin automatically.

Once the entire download and installation task is complete, the status window will close. Now, when you perform an OS Upgrade on a terminal, this DeTOS version will appear in the package dropdown list. The next section describes how to push out a DeTOS upgrade package to thin clients on your LAN.

How to Upgrade the Thin Clients

1. Open the ThinManage Console and highlight one or more rows of thin clients you wish to upgrade.
2. Right-click to open the context menu and then select the option called **Upgrade OS**. The package selector window will open.
3. Choose the desired DeTOS package from the dropdown list and then click the **OK** button.

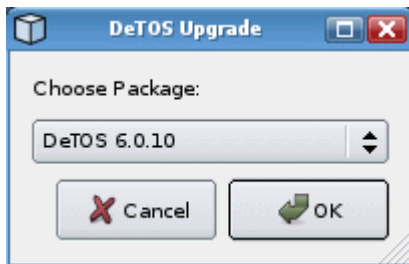


Figure 3-3: Choosing a DeTOS upgrade package

4. At this point, a packet will be sent to the selected terminal(s) to instruct it to upgrade its OS the next time it is rebooted. **Note, that the unit will not reboot on its own.**
5. After waiting approximately 30 seconds, check the **Logs** tab to verify that the upgrade packet was successfully sent.

Log Message		
Type	Time	Log Message
Message	7/11/08 2:36 PM	Successfully performed action 'detosUpdate' on terminal(s): [terminal:3].

Figure 3-4: Example message recorded in the Logs tab once a terminal is sent an upgrade action packet.

6. You have the choice of rebooting the thin client now, using the **Restart** action within ThinManage Console, or allowing the end-user to reboot the terminal at a more convenient time (ie. at the end of the day, or next morning, etc). **Please be aware that if you decide to restart the thin client at a later time that the ThinManage virtual server must be online, otherwise upgrades will fail.**
7. Upon reboot, the thin client will contact the ThinManage server and execute the actual OS upgrade. The user will see a message displayed on their screen informing them when an upgrade is occurring. The unit should not be turned off or restarted during this time.

3.3 Remote Setup Configuration

To remotely manage a particular thin client and modify the settings found within the Setup area of DeTOS, use the Remote Configure feature found on the ThinManage context menu.

How To Remotely Configure Settings on a Terminal

1. Highlight one of your inventoried thin clients listed in the ThinManage Console window.
2. Right-click to open the context menu, and select the option called **Remote Configure**
3. After a few seconds, a Setup window will appear on the ThinManage Desktop. This window is the same exact Setup window found on the DeTOS desktop of the thin client itself.
4. Once you have made the desired changes, click the **Save Settings** button, then the **Quit Setup** button to close it out.



Figure 3-5: Screenshot of a DeTOS Setup window that displays after a “Remote Configure” is initiated.

3.4 Shadowing

To help a user with his or her thin client, you may activate the Shadowing feature within the ThinManage Console. Shadowing provides an interactive desktop session between the Administrator and thin client end-user and is an excellent tool for assisting a user with the terminal in real-time.

How to Shadow a Thin Client.

1. Highlight one of your inventoried thin clients listed in the ThinManage Console window
2. Right-click to open the context menu and select the option called **Remote Shadow**

– OR –

Click the **Shadow** button located on the ThinManage Console toolbar

3. This sends a shadow request to the user of that thin client. The user will receive a window on the DeTOS Desktop after ~5-10 seconds, asking for permission¹ for the administrator to begin shadowing. Note, if the user is running a fullscreen session (ie. Citrix or RDP) then they will not see this request unless they switch to the Launcher screen by pressing *Ctrl-Alt-F2*. If the user does not see the request or chooses to ignore it, then the window prompt will timeout after 3 minutes.
4. Once the user accepts, a VNC window will appear on the ThinManage desktop allowing you to control the user's mouse cursor. Note, the cursor control is shared by both the user and administrator, so you may want to ask the user to release his/her mouse to avoid conflicting movements during the shadowing session.
5. When you are finished, you can simply close the window to terminate the shadowing session.

Troubleshooting Shadow Requests

A possible reason a shadowing session may not begin is if the IP address has changed (using DHCP) since the last reboot. You may want to **Query** the thin client first to verify it is still online and responding to that IP. The **Last Contacted** field should update within a few seconds after a query is issued. If it doesn't, you may want to run another Discovery on that range.

Also, be sure to check the latest entries listed in the **Logs** tab for possible reasons why the request failed. A reason may be as simple as a user rejecting the request, or ignoring it and having it timeout.

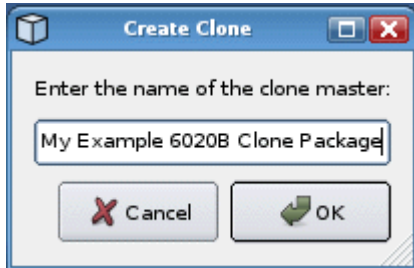
¹ The permission prompt cannot be disabled. If you wish to remotely manage a thin client without requiring end-user consent, you may use the Remote Configure feature to access the DeTOS Setup screen and make any configuration changes.

3.5 Clone Settings

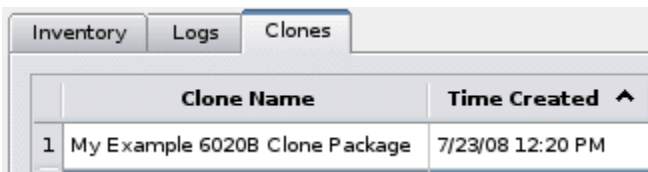
The cloning features in ThinManage allow you to create a clone (pull) the settings of one thin client and write (push) those settings to another. Unlike earlier ThinManage releases, version 2.3 allows you to save multiple clone packages. The following sections describe how to create clone packages and write them out to one or more thin clients.

To Create a Clone Package (Pull Settings)

1. Highlight one of your inventoried thin clients listed in the ThinManage Console window
2. Right-click to open the context menu, and select the option called **Create Clone**
3. When the “Create Clone” window appears, enter a descriptive name for this clone and click **OK**.



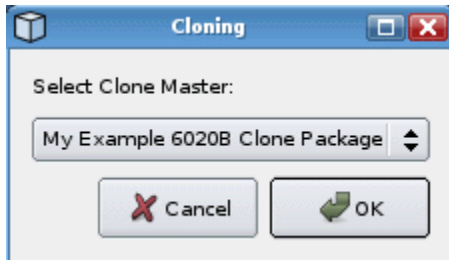
4. The cloning process should only take ~5-10 seconds. All settings for that terminal will be saved, except static IP addresses, hostnames, and any user-saved passwords.
5. Click the **Clones** tab on the console and verify your new package is listed.



	Clone Name	Time Created ^
1	My Example 6020B Clone Package	7/23/08 12:20 PM

To Write a Clone Package (Push Out Settings)

1. Highlight one or more of your inventoried thin clients listed in the ThinManage Console window
2. Right-click to open the context menu, and select the option called **Write Clone**
3. Once the “Cloning” window displays, select the name of package from the dropdown list you want to write out to your highlighted terminal(s). Click the **OK** button to push those settings out.



4. After waiting approximately 30 seconds, check the **Logs** tab to verify that the cloning completed.

Type	Time	Log Message
Message	7/23/08 12:34 PM	Successfully performed action 'writeClone' on terminal(s): [terminal:8].
Message	7/23/08 12:20 PM	Successfully performed action 'createClone' on terminal(s): [terminal:8].

5. Many DeTOS settings, such as networking, timezone, keyboard, and display, require a reboot for them to take affect. You may reboot the thin client using the ThinManage **Restart** command, or simply let the user reboot it on their own time. Either way, the next time that terminal boots up, all the settings written out from that clone package will take affect.

4.0 Changing the Font, Time, and Date

4.1 About QT 4 Settings

You may adjust font sizes and other interface settings used within the ThinManage Console by accessing the “Qt Configuration” Utility. To open this utility, right-click anywhere on the blue desktop to open the **Xfce Context Menu** and select the option called **QT 4 Settings**.

How to Adjust the Font Size

1. Open the **Xfce Context Menu** and select **QT 4 Settings**
2. Select the **Fonts** tab along the top of this window.
3. Select the desired point value from the **Point Size** dropdown list.
4. Choose **File->Save** from the toolbar to commit the change.
5. Select **File->Exit** to close the Qt Configuration window.

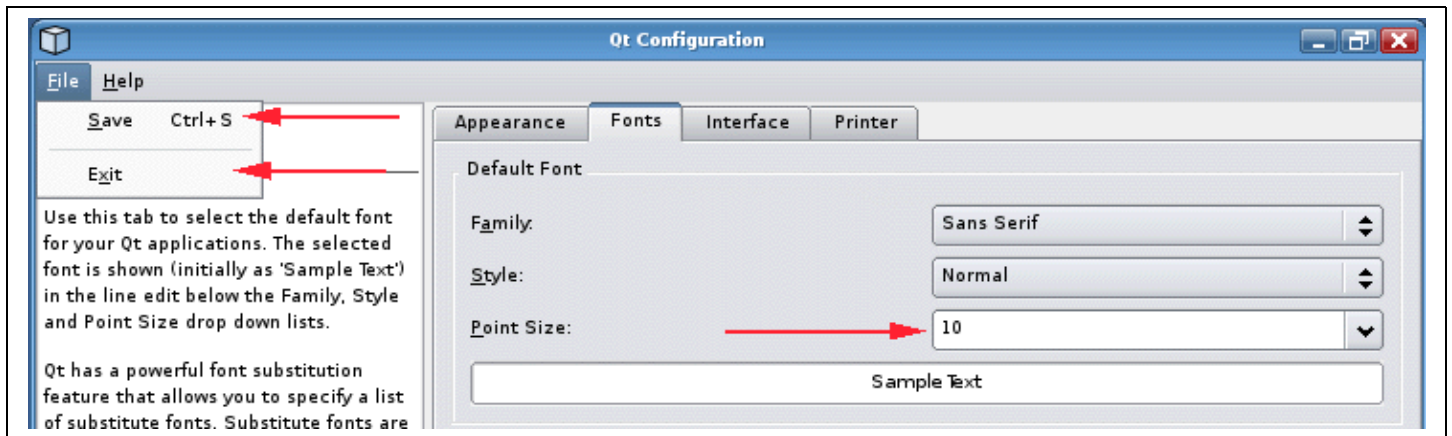


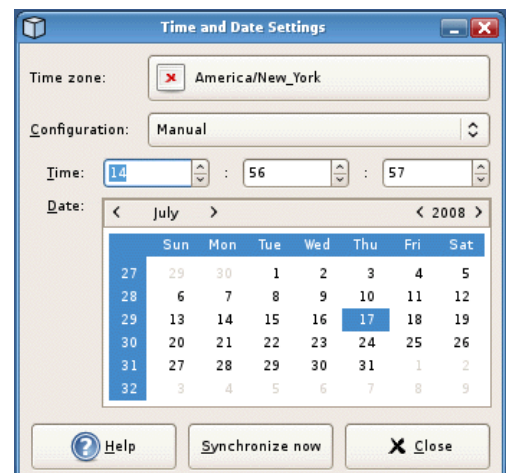
Figure 2-7: Adjusting the font size within the Qt Configuration window.

4.2 Adjusting the Current Time or Date

You can change the current time and date for the ThinManage server by accessing the Xfce’s “Time and Date Settings” window.

1. Right-click anywhere on the blue desktop to open the **Xfce Context Menu** and then select the option called **Time Settings**.
2. Make the desired Time or Date changes* and click the **Close** button.
3. Restart the ThinManage virtual machine for the changes to take affect.

*Note: There is no NTP service installed, so the value for the Configuration dropdown should remain on “Manual”.



5.0 Using the Terminal

The majority of your time spent with ThinManage will be working within the GUI Console. There may be times, however, when you wish to open a Terminal window to run command-line tools only accessible from a Linux shell. To access the shell, right-click anywhere on the blue area of the desktop to open the **Xfce Context Menu** and select **Terminal**.

The `ifconfig` and `ping` commands are two very popular Linux tools used for diagnosing network connectivity and interface settings. The following two sections describe their basic usage.

5.1 `ifconfig` : Viewing Current Network Interface Settings

Type `ifconfig` and press Enter to display the status of the currently active network interfaces.

```
tmadmin@thinmanage:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:D1:E5:D0
          inet addr:192.168.1.55  Bcast:192.168.1.255
          inet6 addr: fe80::20c:29ff:fed1:e5db/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:0
          RX packets:9750 errors:0 dropped:0 overruns:0
          TX packets:56 errors:0 dropped:0 overruns:0
          collisions:0 txqueuelen:1000
          RX bytes:752762 (735.1 KiB)  TX bytes:4394
          Interrupt:17 Base address:0x1400

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
```

Figure 2-5: Example output from the `ifconfig` command.

The value of `inet addr`, in the `eth0` group of statistics, is the currently assigned IP Address of your ThinManage server (see Figure 2-5 above). If DHCP was used, then this is the IP address that your ThinManage server acquired during bootup. If you configured static network settings, as described in section 2.5, then this address should match the value you entered in the IP Address field (see Figure 2-4).

5.2 `ping` : Testing Network Connectivity

If you are experiencing difficulty discovery terminals on certain segments of your LAN, you may want to use the `ping` command to verify you are reaching specific terminals, machines, and/or gateways on the subnet in question. To use `ping`, open a Linux Terminal and type the word `ping`, followed by the IP address you want to test.

```
tmadmin@thinmanage:~$ ping 10.0.5.250
PING 10.0.5.250 (10.0.5.250) 56(84) bytes of data.
64 bytes from 10.0.5.250: icmp_seq=1 ttl=255 time=4.04 ms
64 bytes from 10.0.5.250: icmp_seq=2 ttl=255 time=2.63 ms
64 bytes from 10.0.5.250: icmp_seq=3 ttl=255 time=4.19 ms
64 bytes from 10.0.5.250: icmp_seq=4 ttl=255 time=3.84 ms
64 bytes from 10.0.5.250: icmp_seq=5 ttl=255 time=3.80 ms

--- 10.0.5.250 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4019ms
rtt min/avg/max/mdev = 2.634/3.704/4.199/0.558 ms
tmadmin@thinmanage:~$ █
```

Figure 2-6: Example output from the `ping` command.

If there is an error in the delivery to the destination, the `ping` command displays an error message. Otherwise, replies will continuously display for each packet successfully sent back. Press **Ctrl-C** to terminate the ping loop.

Appendix A: List of Possible Error Codes

Some errors may display in the form of a window prompt, while others may only appear in the Logs tab.

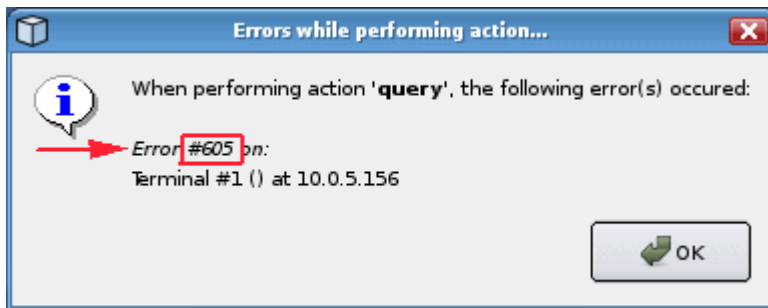


Figure A-1: Example error prompt when attempting to query an offline terminal.

Three of the most common errors you may encounter are error codes **9**, **101**, and **605**. They are highlighted in the table below.

Error Name	Code	Additional Information
ERC_GENERAL_ERROR	2	
ERC_INVALID_DATA	6	
ERC_NOT_IMPLEMENTED	9	This error will occur when you attempt to use a feature (ie. Remote Configure) on a thin client running an older DeTOS version, such as 5.x.x, that doesn't support that feature yet.
ERC_FAILURE	50	
ERC_PROTOCOL_ERROR	100	
ERC_TERMINAL_NOT_FOUND	101	This may occur when trying to rediscover a terminal that may be offline.
ERC_TERMINAL_IP_INVALID	102	
ERC_NO_OPEN	202	Cannot open a file on the appliance
ERC_ACCESS_DENIED	208	
ERC SOCK_WRITE_ERROR	601	
ERC SOCK_READ_ERROR	602	
ERC_CONN_BROKEN	603	
ERC_CONN_TIMEOUT	605	This may occur when trying to perform an action such as Query, Shadow, Wakeup, etc on a thin client that is offline or in the midst of rebooting.
ERC_SSL_ERROR	614	May only happen with older units (5.1.6 and older)