



Troubleshooting Guide

HP t5740/t5745 Thin Clients and HP st5742/st5747
Streaming Thin Clients

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Troubleshooting Guide

HP t5740/t5745 Thin Clients and HP st5742/st5747 Streaming Thin Clients

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About This Book

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- ⚠ **WARNING!** Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.
- ⚠ **CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.
- 📝 **NOTE:** Text set off in this manner provides important supplemental information.
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1 Product Description

The thin client exhibits the following features:

- no moving parts
- no hard drives or diskette drives
- 5-minute setup time
- central deployment and management using a broad range of easy and scalable remote management solutions

Thin Client Management Solutions

Differing thin client models have differing solutions as indicated in the following sections.

HP t5740/t5750 Thin Clients

HP has a comprehensive suite of management solutions to fit your needs. This allows you to choose solutions that will work best in your environment.

HP ThinState Tools are a set of handy utilities that allow you to copy settings and software images from one thin client to another using a USB drive key. HP ThinState tools complement other management solutions and are included with HP thin client operating systems.

HP Device Manager is an enterprise-class thin client management software application that allows customers to view their thin client assets remotely and to manipulate those thin clients to meet the required business need. It is robust, yet easy to install and use. HP Device Manager lets you track, configure, upgrade, clone, and manage thousands of individual devices from a centralized location. HP Device Manager agents are included in most HP thin clients.

HP Client Automation is an industry-leading device management product, which is part of a bigger Business Service Automation environment management solution. With HP Client Automation, you can manage simple thin client deployments or highly complex IT environments that contain a combination of thin clients, PCs, blades, servers and other common computer-based resources. HP Client Automation agents work with all HP thin clients. For more information on HP Client Automation, please visit the HP Web site at <http://www.hp.com> and search for “Business Service Automation.”

HP continues to partner with Altiris to manage HP thin clients. Altiris Deployment Solution is a leading tool for quick deployment and ongoing management of thin clients in your organization. For additional information, refer to the Quick Setup and Getting Started Guide that came with your thin client, and visit the Altiris Web site at <http://www.altiris.com/>.

HP st5742/st5747 Streaming Thin Clients

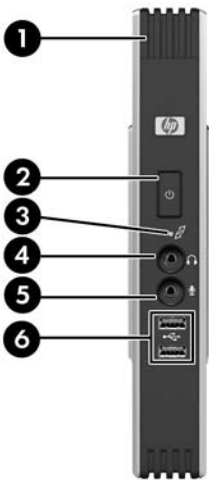
Since this Streaming Thin Client is flashless, it is specifically for use with streaming operating system applications, such as HP Image Manager, HP TeachNow, and Citrix Provisioning Server. A local operating system cannot be installed on this device, so it cannot execute Linux or Microsoft Windows Embedded Standard 2009. Typically this type of client receives a preboot executable using Preboot eXecution Environment (PXE), and then connects via Ethernet to a remote server which contains the disk image for this client.

Product features

For more information, refer to the model-specific QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html.

Front Panel Components

Figure 1-1 Front panel components



(1)	Secure USB compartment	(4)	Line-out (headphone) audio connector
(2)	Power button	(5)	Line-in (microphone) connector
(3)	Flash activity LED	(6)	Universal serial bus (USB) connectors (2)

For more information, refer to the model-specific QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html.

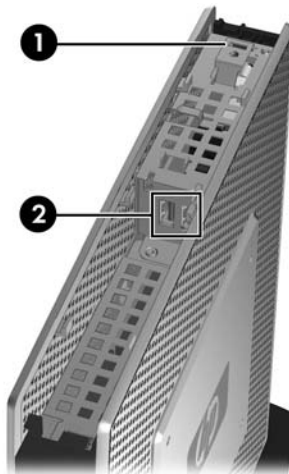
Top Components

Figure 1-2 Top components, external view



- | | |
|-----|------------------------|
| (1) | Cable lock slot |
| (2) | Secure USB compartment |

Figure 1-3 Top components, internal view

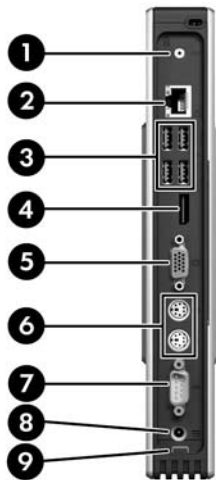


- | | |
|-----|---|
| (1) | Cable lock slot |
| (2) | Secure USB compartment ports (2) |
| (3) | Microsoft diskless COA allowing streaming of a Microsoft Windows operating system (st5742 only) |

The secure USB compartment allows you to use two USB devices in a secured location.

Rear Panel Components

Figure 1-4 Rear panel components



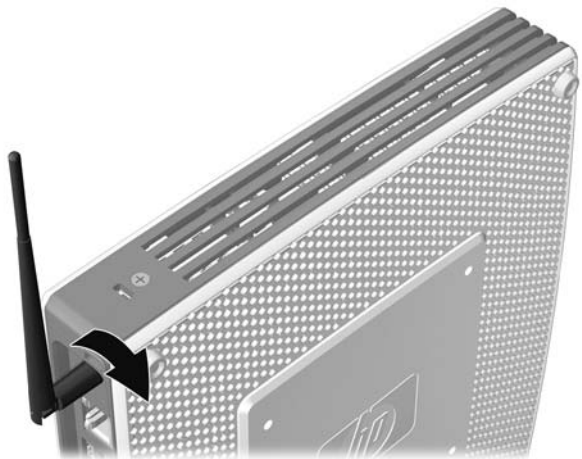
(1)	Wireless antenna*	(6)	PS/2 connectors (2)
(2)	Ethernet RJ-45 connector	(7)	Serial connector
(3)	Universal serial bus (USB) connectors (4)	(8)	Power connector
(4)	DisplayPort connector	(9)	Power cord retention slot
(5)	VGA connector		
*Available on some models. Refer to the model-specific QuickSpecs at www.hp.com for details.			

The wireless antenna allows you to send and receive wireless signals to communicate with wireless local area networks (WLAN).

Installing the Antenna (Wireless Models)

- ▲ Screw the antenna in place on the rear of the thin client.

Figure 1-5 Installing the antenna



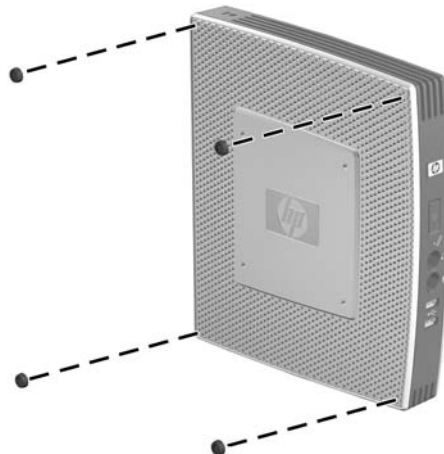
△ **CAUTION:** To prevent damage to the antenna mounting, do not overtighten the antenna.

Installing the Rubber Feet

To install the rubber feet:

1. Lay the thin client on its right side.
2. Remove the feet from their backing.
3. Press each foot down securely onto a corner of the left side of the thin client.

Figure 1-6 Installing the rubber feet



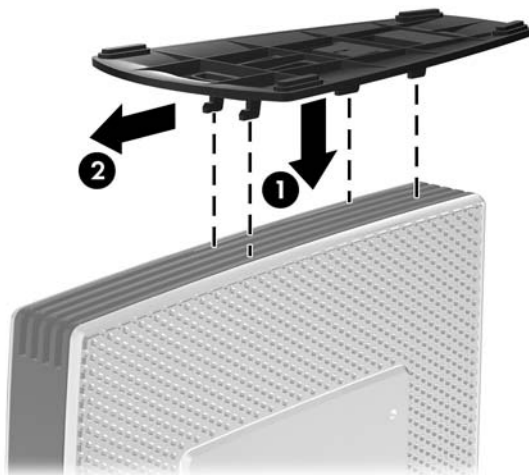
Installing the Stand

If the thin client will be installed in a vertical orientation and it will not be mounted, the stand should be installed for stability.

To install the stand:

1. Turn unit upside down.
2. Locate the slots on the bottom of the unit into which the tabs on the stand fit.
3. Insert the tabs into the slots (1), and then slide the stand about 1.26 cm (1/2 inch) toward the back of the unit until it locks into place (2).

Figure 1-7 Installing the stand

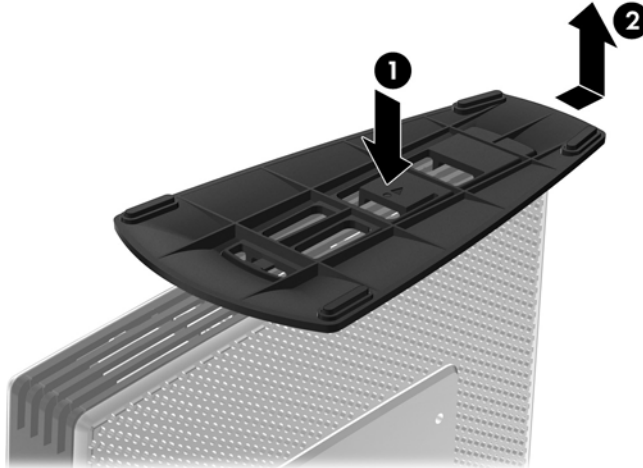


Removing the Stand

To remove the stand:

1. Turn unit upside down.
2. Press the tab (1), and then slide the stand about 1.26 cm (1/2 inch) toward the front of the unit and lift the stand off the unit (2).

Figure 1-8 Removing the stand



Serial Number Location

Every thin client includes a unique serial number located as shown in the following illustration. Have this number available when contacting HP customer service for assistance.

Figure 1-9 Serial number location



2 Hardware Changes

General Hardware Installation Sequence

To ensure the proper installation thin client hardware components:

1. Back up any data, if necessary.
2. If the thin client is powered on:
 - a. Turn the unit and any other attached devices off.
 - b. Disconnect the power cord from the wall outlet.
 - c. Disconnect any external devices or cables, such as an antenna or cable lock.


⚠ **WARNING!** To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

WARNING! To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications or telephone connectors into the network interface controller (NIC) receptacles.


⚠ **CAUTION:** Static electricity can damage the electronic components of the thin client or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object.

3. Remove the secure USB compartment cover. See [Removing and Replacing the Secure USB Compartment Cover on page 8](#) for more information.
4. Remove the stand, if it is installed. See [Removing the Stand on page 6](#) for more information.
5. Remove the side access panel and metal side cover. See [Removing and Replacing the Side Access Panel and Metal Side Cover on page 10](#) for more information.
6. Remove any hardware that you will replace.
7. Install or replace equipment. For removal and replacement procedures, see the following sections:
 - [Installing the USB Device on page 13](#)
 - [Installing the PCI Express Expansion Module and PCI Express Card on page 17](#)
 - [Removing and Replacing the Battery on page 13](#)

- [Installing a Secondary Flash Memory Module on page 14](#)
- [Installing a Second SO-DIMM on page 15](#)

 **NOTE:** Option kits include more detailed installation instructions.


8. Replace the side access panel and metal side cover. See [Removing and Replacing the Side Access Panel and Metal Side Cover on page 10](#) for more information.
9. Install the stand, if you will be using the thin client unmounted in a vertical orientation. See [Installing the Stand on page 5](#) for more information.
10. Replace the secure USB compartment cover. See [Removing and Replacing the Secure USB Compartment Cover on page 8](#) for more information.
11. Reconnect any external devices and power cords.
12. Turn on the monitor, the thin client, and any devices you want to test.
13. Load any necessary drivers.

 **NOTE:** You can download select hardware drivers from HP at <http://www.hp.com/country/us/eng/support.html>.

Removing and Replacing the Secure USB Compartment Cover

The secure USB compartment allows you to install two USB devices in a secure location inside the thin client. Along with providing a hidden location, the secure USB compartment can be locked by the optional security cable lock.

△ **CAUTION:** The ambient temperature inside of the secure USB compartment can reach up to 55° C (131° F) in worst case conditions. Make sure the specifications for any device you install in the compartment indicate the device can tolerate a 55° C (131° F) ambient environment.

 **NOTE:** In addition to following these instructions, follow the detailed instructions that accompany the accessory you are installing.

Before beginning the installation process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

Removing the Secure USB Compartment Cover

Use the following procedure to remove the secure USB compartment cover.

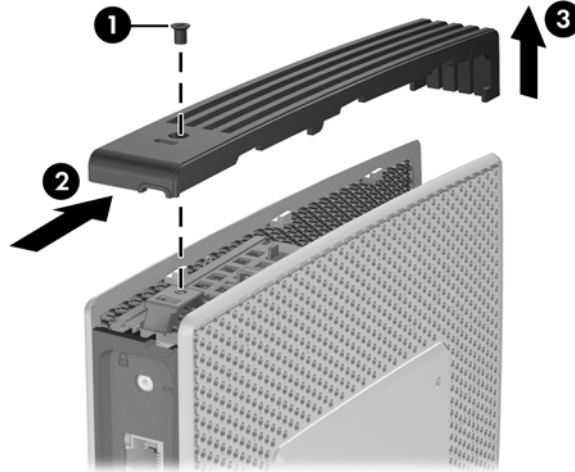
△ **WARNING!** Before removing the secure USB compartment cover, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

To remove the secure USB compartment cover:

1. On rear of the thin client, remove the screw that secures the compartment cover to the unit (1).
2. On the front of the unit, push the compartment cover about 1.27 cm (1/2 inch) toward the front of the unit (2).

3. Remove the cover from the unit by first lifting the rear (screw side) of the cover, and then lifting the cover off the unit (3).

Figure 2-1 Removing the secure USB compartment cover

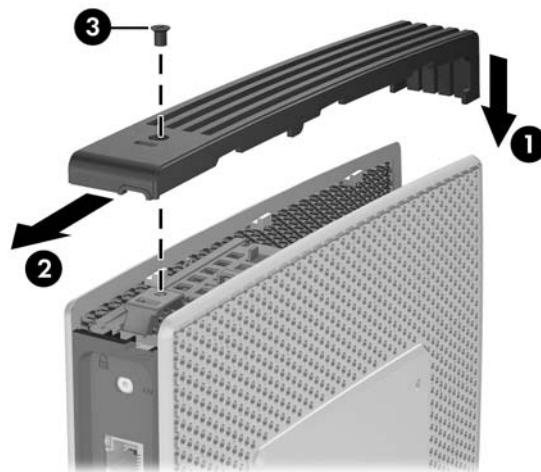


Replacing the Secure USB Compartment Cover

To replace the secure compartment cover:

1. Place the cover on top of the unit so it is offset about 1.27 cm (1/2 inch) toward the rear of the unit, allowing the tabs on the cover to align and insert into the slots on the chassis (1).
2. Slide the cover toward the back of the unit until it locks in place and the cover is flush with the front panel of the chassis (2).
3. Replace the screw (3).

Figure 2-2 Replacing the secure compartment cover



Removing and Replacing the Side Access Panel and Metal Side Cover

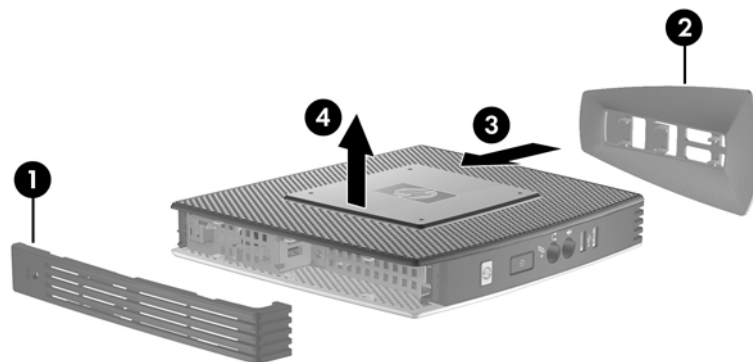
Removing the Side Access Panel and Metal Side Cover

⚠ WARNING! Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

To remove the access panel:

1. Remove the secure USB compartment cover (1). For more information, see [Removing the Secure USB Compartment Cover on page 8](#).
2. Remove the stand, if it is installed (2). See [Removing the Stand on page 6](#) for more information.
3. Lay the thin client on its side on a secure working surface.
 - Remove the right side access panel if you are removing or installing:
 - battery
 - secondary flash memory module
 - PCI expansion module and PCI card
 - Remove the left side access panel if you are removing or installing a second SO-DIMM.
4. Slide the access panel about 6.35 mm (1/4 inch) toward the top of the unit (3), and then lift the access panel up and off the unit (4).

Figure 2-3 Removing the side access panel



To remove the metal side cover:

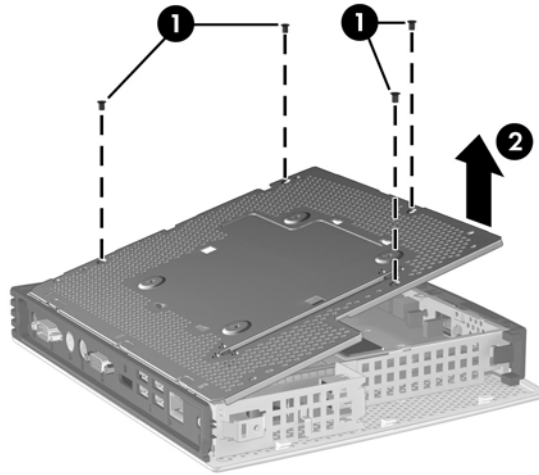
NOTE: Do not remove the metal side cover when installing a PCI Expansion Module or a second SO-DIMM.

You must remove the metal side cover to access internal components such as the battery or the memory.

1. Remove the four screws that secure the metal side cover to the chassis (1).

2. Lift the metal side cover, front side first, off the unit (2).

Figure 2-4 Removing the metal side cover

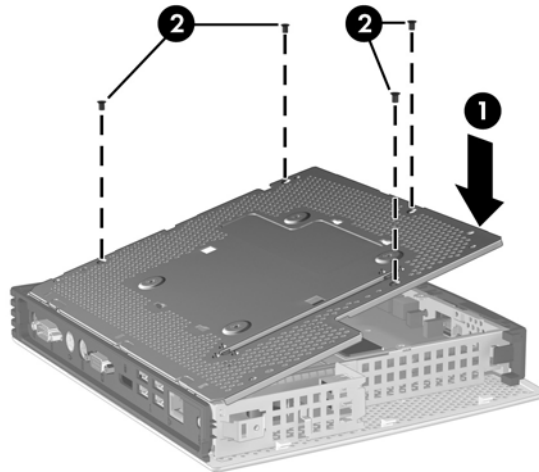


Replacing the Metal Side Cover and Side Access Panel

To replace the metal side cover:

1. Place the metal side cover on the chassis, rear edge first, making sure to insert the tabs in the rear edge of the cover in the holes in the chassis (1).
2. Insert and tighten the four screws (2).

Figure 2-5 Replacing the metal side cover

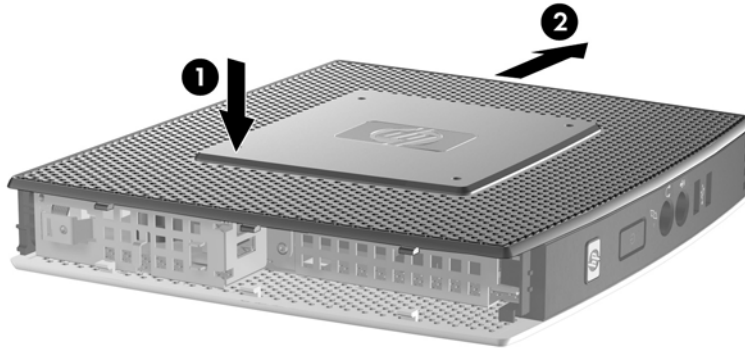


To replace the access panel:

1. Place the access panel on the side of the unit, offset about 6.35 mm (1/4 inch) toward the top of the unit (1).

2. Slide the panel toward the bottom of the unit until it locks into place (2).

Figure 2-6 Replacing the side access panel



Installing Thin Client Options

Various options can be installed on the thin client:

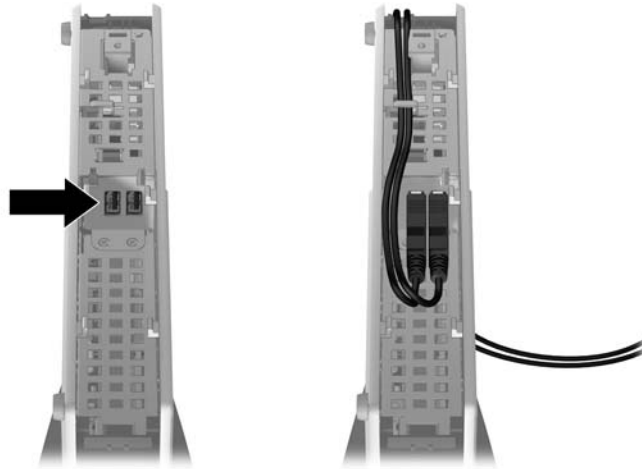
- [Installing the USB Device on page 13](#)
- [Installing a Secondary Flash Memory Module on page 14](#)
- [Installing a Second SO-DIMM on page 15](#)
- [Removing and Replacing the Battery on page 13](#)
- [Installing the PCI Express Expansion Module and PCI Express Card on page 17](#)
- [External Drives on page 17](#)

Installing the USB Device

Before beginning the replacement process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

- ▲ Insert the USB device into the USB port in the secure USB compartment. See the following illustration for the location of the ports in the secure USB compartment.

Figure 2-7 USB ports in the secure USB compartment



Removing and Replacing the Battery

Before beginning the replacement process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

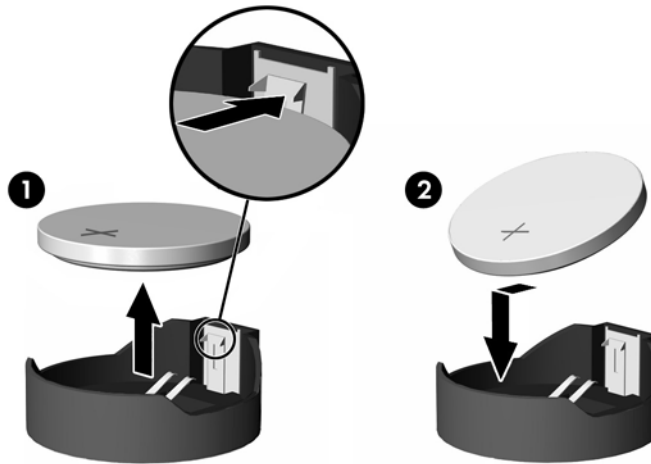
- ⚠ **WARNING!** You must remove the right side panel to access the battery. Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

To remove and replace the battery:

1. Locate the battery on the system board.

2. To release the battery from its holder, squeeze the metal clamp that extends above one edge of the battery. When the battery pops up, lift it out (1).

Figure 2-8 Removing and replacing the internal battery



3. To insert the new battery, slide one edge of the replacement battery under the holder's lip with the positive side up. Push the other edge down until the clamp snaps over the other edge of the battery (2).

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, go to www.hp.com/recycle.



Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. In order to forward them to recycling or proper disposal, please use the public collection system or return them to HP, an authorized HP partner, or their agents.



廢電池請回收

The Taiwan EPA requires dry battery manufacturing or importing firms, in accordance with Article 15 or the Waste Disposal Act, to indicate the recovery marks on the batteries used in sales, giveaways, or promotions. Contact a qualified Taiwanese recycler for proper battery disposal.

Installing a Secondary Flash Memory Module

Before beginning the installation process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

- ⚠ **WARNING!** You must remove the right side panel to access the system board. Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.
- ⚠ **CAUTION:** Static electricity can damage the electronic components of the computer or optional cards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

To install the secondary flash memory module:

1. Locate the secondary flash memory module socket on the system board.

Figure 2-9 Installing the Secondary Flash Memory Module – t5740/t5745 models

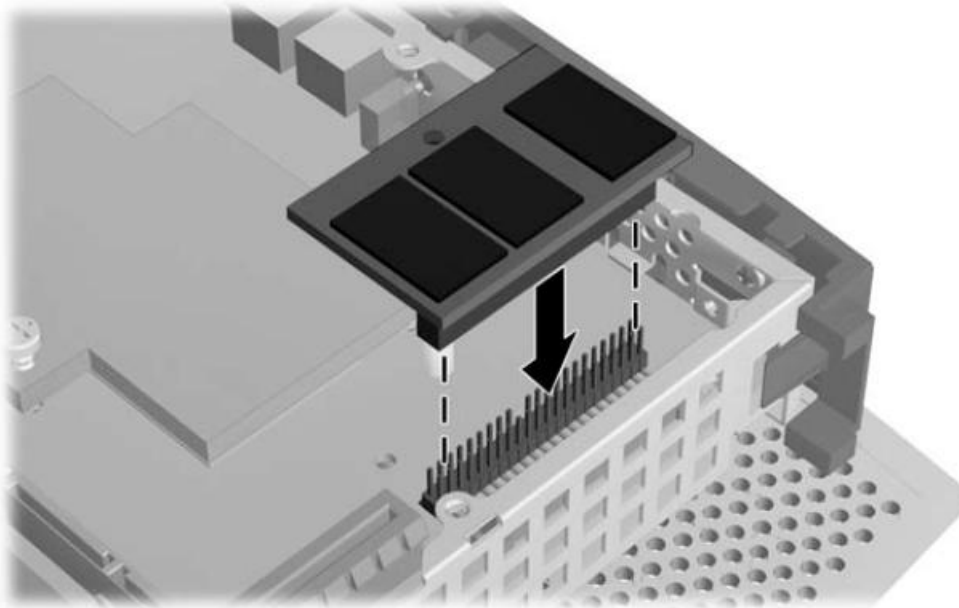
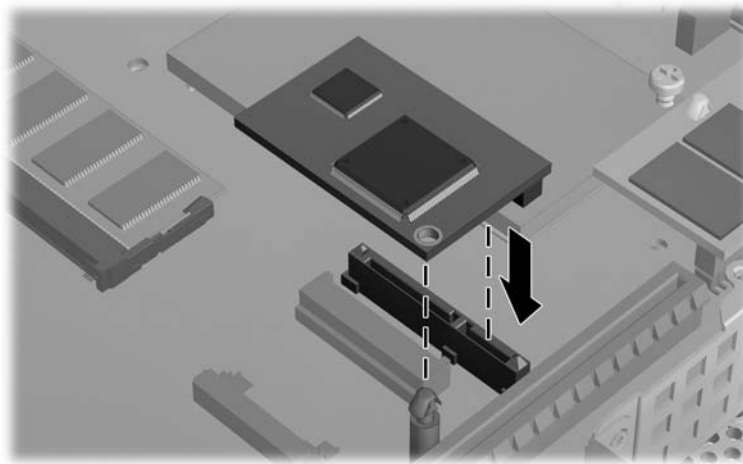



Figure 2-10 Installing the Secondary Flash Memory Module – st5742/st5747 models



2. Insert the flash memory module into the socket on the system board.

 **NOTE:** A flash memory module can be installed in only one way. Line up the hole in the flash memory module with the retention post on the system board.

3. Press the module connectors firmly into the flash memory module socket, making sure that the retention post on the system board comes up through the hole in the module.

Installing a Second SO-DIMM

Before beginning the replacement process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

⚠ **WARNING!** You must remove the left side panel to access the SO-DIMM compartment. Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

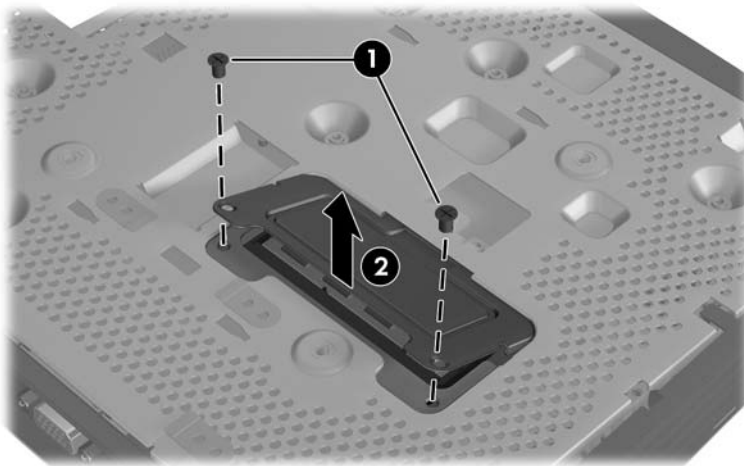
⚠ **CAUTION:** Static electricity can damage the electronic components of the computer or optional cards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

To install the SO-DIMM:

1. Slide the serial number tab out of the way.

📝 **NOTE:** Be sure not to lose this tab.

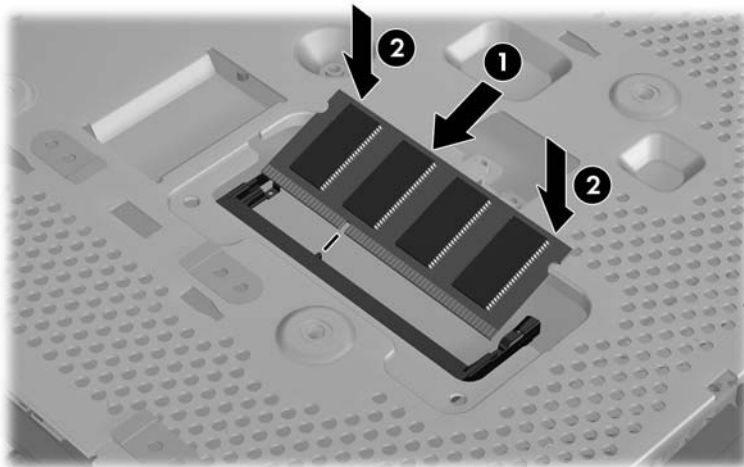
2. Remove the access plate:



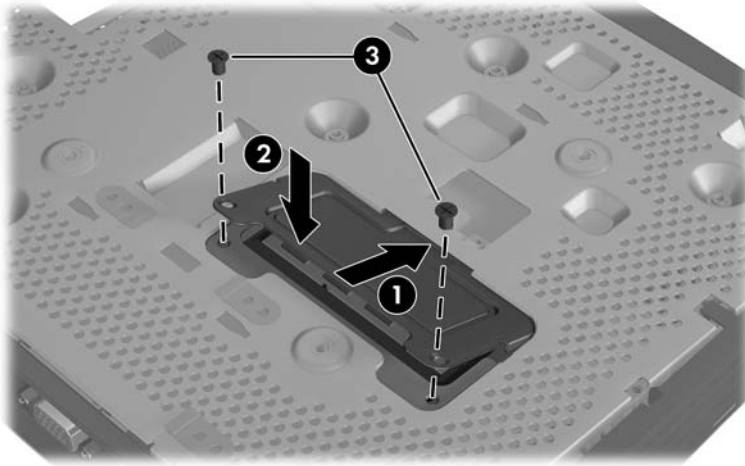
- a. Remove the two screws securing the access plate to the chassis.
- b. Lift the rear edge of the plate and pull the plate back and up off the chassis.

3. Hold the SO-DIMM at about a 20-degree angle and insert the SO-DIMM into the socket.


📝 **NOTE:** A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket.



4. Push the module into the socket, ensuring that the module is fully inserted and properly seated.
5. Press the module down into the compartment.
6. Replace the access plate:



- a. Insert the tab on the front edge into its slot and set the plate into position.


 **NOTE:** You may need to press lightly on the access plate to position it properly against the chassis.

- b. Replace the two screws to secure the access plate to the chassis.

7. Slide the serial number tab into its slots.

Installing the PCI Express Expansion Module and PCI Express Card

Before beginning the replacement process, review [General Hardware Installation Sequence on page 7](#) for procedures you should follow before and after installing or replacing hardware.

 **WARNING!** Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

Follow the installation instructions included in the PCIe Expansion Module option kit.

External Drives

Various external USB drives are available as options for the t5740/t5745. For more information about these drives, visit <http://h10010.www1.hp.com/wwpc/us/en/sm/WF12a/12454-12454-321959.html>, or refer to the instructions that accompany the option.

For more information about available options, visit the HP Web site at <http://h10010.www1.hp.com/wwpc/us/en/sm/WF12a/12454-12454-321959.html>.

3 Mounting the Thin Client

HP Quick Release

The HPt5740/t5745 thin client incorporates four mounting points on each side of the unit. These mounting points follow the VESA (Video Electronics Standards Association) standard, which provides industry-standard mounting interfaces for Flat Displays (FDs), such as flat panel monitors, flat displays, and flat TVs. The HP Quick Release connects to the VESA-standard mounting points, allowing you to mount the thin client in a variety of orientations.


 **NOTE:** When mounting to a thin client, use the 10 mm screws supplied with the Quick Release Kit.

Figure 3-1 HP Quick Release

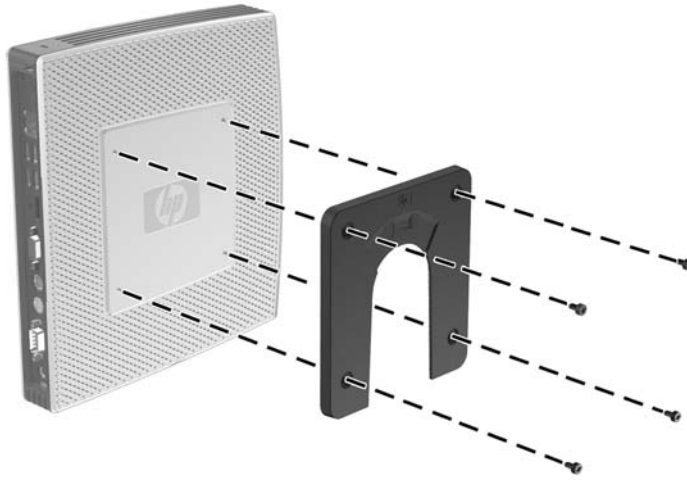


To order this option, visit the HP Web site at <http://h10010.www1.hp.com/wwpc/us/en/sm/WF06c/A10-51210-347116-329242-347116-1838057-1838058-1838059.html>.

To use the HP Quick Release with a VESA-configured thin client:

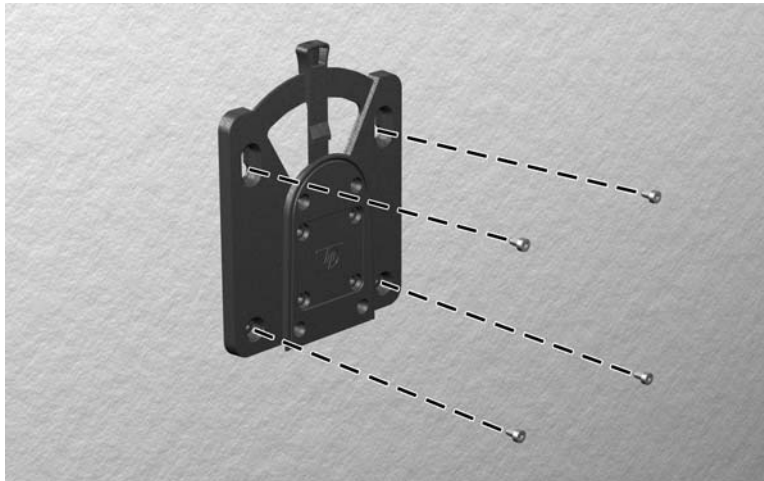
1. Using four 10 mm screws included in the mounting device kit, attach one side of the HP Quick Release to the thin client as shown in the following illustration.

Figure 3-2 Connecting the HP Quick Release to the thin client



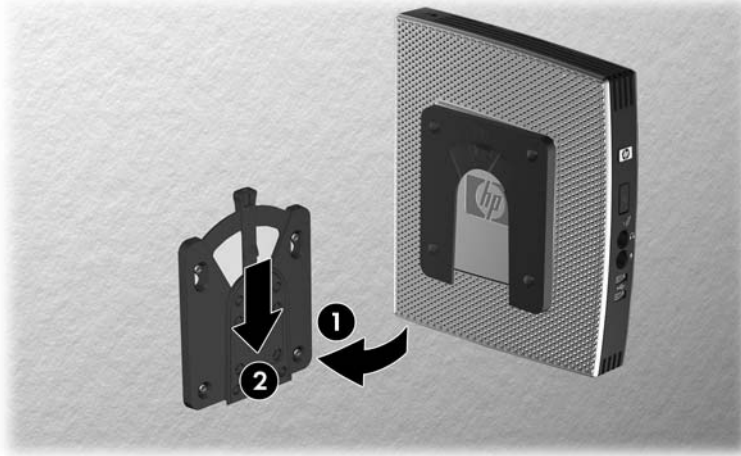
2. Using four screws included in the mounting device kit, attach the other side of the HP Quick Release to the device to which you will mount the thin client. Make sure the release lever points upward.


Figure 3-3 Connecting the HP Quick Release to another device




3. Slide the side of the mounting device attached to the thin client (1) over the other side of the mounting device (2) on the device on which you want to mount the thin client. An audible 'click' indicates a secure connection.

Figure 3-4 Connecting the thin client



 **NOTE:** When attached, the HP Quick Release automatically locks in position. You only need to slide the lever to one side to remove the thin client.

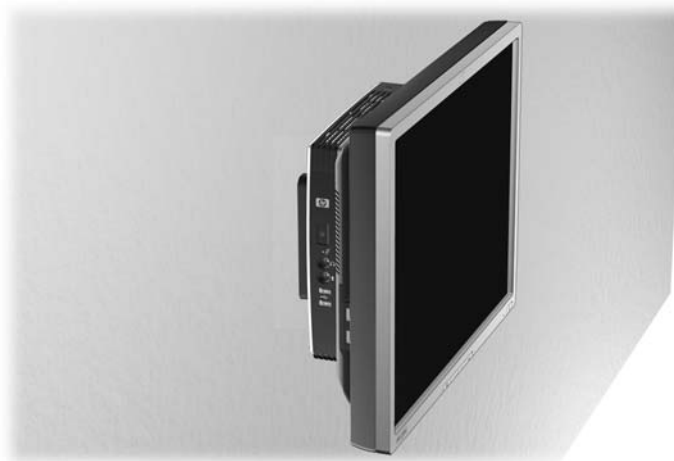
 **CAUTION:** To ensure proper function of the HP Quick Release and a secure connection of all components, make sure both the release lever on one side of the mounting device and the rounded opening on the other side face upward.

Supported Mounting Options

The following illustrations demonstrate some of the supported and not supported mounting options for the mounting bracket.

- You can mount a thin client between a flat panel monitor and the wall.

Figure 3-5 Thin client mounted with flat panel on wall



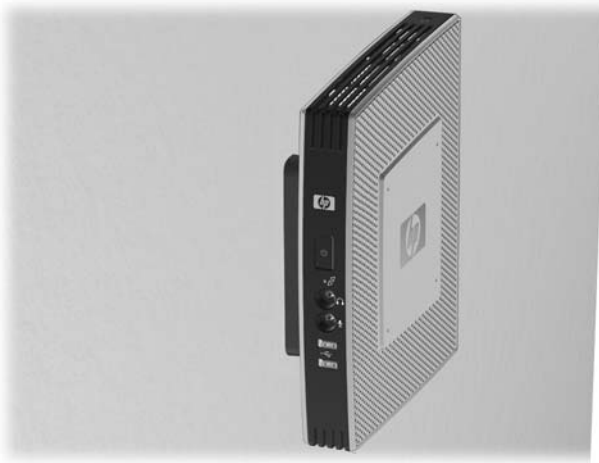
- You can mount the thin client on the back of a flat panel monitor stand.

Figure 3-6 Thin client mounted on back of monitor stand



- You can mount the thin client on a wall.

Figure 3-7 Thin client mounted on wall



- You can mount the thin client under a desk.

Figure 3-8 Thin client mounted under desk



Non-supported Mounting Option

- △ **CAUTION:** Mounting a thin client in an non-supported manner could result in failure of the HP Quick Release and damage to the thin client and/or other equipment.

Do not mount the thin client on a flat panel monitor stand, between the panel and the stand.

Figure 3-9 Unsupported mounting position—thin client between stand and monitor



4 BIOS Settings, (F10) Utility

Using the BIOS Settings


Intel Atom N280 processors and the Intel chipset are used in the HP t5740/t5745 and HP st5742/st5747 Streaming Thin Client products.

Changing BIOS Settings from the repset utility

Some BIOS settings may be changed locally within the operating system without having to go through the F10 utility¹. This table identifies the items that can be controlled with this method.


BIOS Setting	Default Value	Other Values
1st Boot Device	USB	Hard Drive, Network, Disabled
2nd Boot Device	Hard Drive	USB, Network, Disabled
3rd Boot Device	Network	Hard Drive, USB, Disabled
Boot Up NumLock	Off	On
F12 Boot	Enabled	Disabled
Integrated Audio	Enabled	Disabled
Network Controller	Enabled	Disabled
Serial Port 1	3F8/IRQ4	Disabled, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3
Serial Port 2	2F8/IRQ3	Disabled, 3F8/IRQ4, 3E8/IRQ4, 2E8/IRQ3
Parallel Port	378/IRQ7	Disabled, 278/IRQ5, 3BC/IRQ7
PWRON After PWR-Fail	Former State	On, Off
Wake-on-LAN	Enabled	Disabled
BIOS Wake Up	Disabled	Enabled, days of the week & time
Asset Tag No	00000000000000000000	User input (18 chars)
Setup Password	blank	User input (8 chars max)
Power-On Password	blank	User input (8 chars max)
Parallel Mode	ECP/EPP	Standard, EPP, ECP
ECP Mode Use DMA	DMA3	DMA1
USB Controller	Enabled	Disabled

Secure USB Ports	Enabled	Disabled
External USB Ports	Enabled	Disabled
Halt On	All, but Keyboard	No Errors
Security Option	Setup	Always
USB Keyboard Support	Enabled	Disabled
USB Mouse Support	Disabled	Enabled

 **NOTE:** Settings that can be controlled from the operating system with repset can also be controlled remotely by sending the client an Altiris job that uses the repset tool to apply the setting changes.

Changing BIOS Settings Using the F10 Utility

1. Turn on or restart the thin client.
2. As soon as the thin client is turned on, press **F10** when the “press F10” prompt appears on the screen to enter the Setup utility.

 **NOTE:** If you do not press **F10** at the appropriate time, you must restart the thin client and again press **F10** when the **F10=Setup** message displays in the task bar at the bottom of the screen. When the F10 POST Screen display is set to zero seconds, it may be necessary to press and hold **F10** on the keyboard, then power on the thin client.

3. The Setup Utility screen is divided into five menu headings and five task actions.

The Menu Headings are: System Information, Standard CMOS Features, Advanced BIOS Features, Integrated Peripherals, Power Management Setup

The Task Actions are: Load Factory Defaults, Set Administrative Password, Set User Password, Save & Exit Setup, Exit without Saving

Use the arrow keys (up and down or left and right) to select the appropriate heading, then press **Enter**. To return to the Setup Utility menu, press **Esc** key.

4. To apply and save changes, select **Exit Setup & Save**.

If you have made changes that you do not want applied, select **Exit without Saving**.

To reset to original factory settings, select **Load Factory Defaults**.

△ **CAUTION:** Do NOT turn the thin client power Off while the ROM is saving the Setup (F10) changes because the CMOS could become corrupted. It is safe to turn off the computer only after exiting the F10 Setup screen.

Table 4-1 Setup (F10) Utility Main Menu

Heading	Table
System Information	Setup Utility—System Information on page 25
Standard CMOS Features	Setup Utility—Standard CMOS Features on page 25
Advanced BIOS Features	Setup Utility—Advanced BIOS Features on page 25

Table 4-1 Setup (F10) Utility Main Menu (continued)

Integrated Peripherals	Setup Utility—Integrated Peripherals on page 26
Power Management Setup	Setup Utility—Power Management Setup on page 27

Setup Utility—System Information


 **NOTE:** Support for specific Setup options may vary depending on the hardware configuration.

Table 4-2 Setup Utility—System Information

Option	Description
Product Name	(view only)
Processor Type	(view only)
Processor Speed	(view only)
Memory size	(view only)
System ROM	(view only)
Integrated MAC	(view only)
UUID	(view only)
Chassis Serial #	(view only)
Asset Tracking Number	(view only)
Asset Tag	Enter asset tracking number.

Setup Utility—Standard CMOS Features

Table 4-3 Setup Utility—Standard CMOS Features

Option	Description
Date (mm:dd:yy)	Allows you to set system date
Time (hh:mm:ss)	Allows you to set system time.
Primary IDE master	Indicates ATA Flash settings.
Secondary IDE master	Indicates ATA Flash settings.
Halt On	Allows you to select system response of All Errors, No Errors, or All But Keyboard when POST Error has been detected. Default is All But Keyboard.

Setup Utility—Advanced BIOS Features

Table 4-4 Setup Utility—Advanced BIOS Features

Option	Description
Quick Power-on Self Test	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system. Enabled/Disabled. Default is Enabled
1st Boot Device	Select Boot Device Priority. Default is USB.
2nd Boot Device	Select Boot Device Priority. Default is Hard Drive.

Table 4-4 Setup Utility—Advanced BIOS Features (continued)

3rd Boot Device	Select Boot Device Priority. Default is Network.
Boot Up Numlock Status	Select power on state for Numlock. Default is Off.
Security Option	Select whether the Password is required every time the system boots or only when you enter Setup. Default is Setup.
POST Delay (secs)	Set a delay that is added to POST to allow more time to press F10 to enter the Setup Utility. Default is None.
F12 Boot	Enable/Disable F12 network boot. Default is Enabled.

Setup Utility—Integrated Peripherals

Table 4-5 Setup Utility—Integrated Peripherals

Option	Description
Integrated Audio	Enable or Disable Onboard AC97 Audio controller. Default is Enabled.
Network Controller	Enable or Disable Onboard LAN device. Default is enabled.
WLAN Controller	Enable or Disable wireless LAN device. Default is enabled.
USB Controller	Enable or Disable USB controller. Default is enabled.
Advanced USB Options	Enable or Disable Secure USB and/or external ports. Default is enabled.
USB Keyboard Support	Allows use of USB keyboard under DOS. Default is enabled.
USB Mouse Support	Allows use of USB Mouse under DOS. Default is disabled.
Serial Port 1	Select serial port base IO port address and IRQ. Default is 3F8/IRQ4.
Serial Port 2	Select serial port base IO port address and IRQ. Default is 2F8/IRQ3.
Parallel Port	Select parallel port base IO port address and IRQ. Default is 378/IRQ7.
Parallel Mode	Select parallel port transfer mode of Standard, EPP, ECP, or ECP/EPP. Default is ECP/EPP.
ECP Mode Use DMA	Select DMA channel of 1 or 3 if parallel is operated in ECP mode. Default is 3.

Setup Utility—Power Management Setup

Table 4-6 Setup Utility—Power Management Setup

Option	Description
PWRON After PWR-Fail	When power is lost and comes back, the option determines what power state the system should go to. Options are Off, On, and Former-Sts. Default is Former—Sts.
Wake on PME	Enable/disable system wakeup capability for OnBoard LAN device and PCI card. Default is enabled.
EuP LOT6	Associated with “wake on PME”. Disabled allows wake on LAN capability. Enabled puts onboard LAN device in a low power state and disables “wake on PME” automatically.
BIOS Wake up	Enable RTC alarm wakeup. Default is disabled.
Day of Week	Select the alarm RTC wakeup day of Sunday through Saturday.
Time of Day	Select the alarm RTC wakeup time of day (hh:mm:ss).

Setup Utility—Utility Task Actions

Table 4-7 Setup (F10) Utility Task Actions

Heading	Table
Load Factory Defaults	Select OK or Cancel.
Set Administrator Password	Allows you to set, change, and disable the administrator password.
Set User Password	Allows you to set, change, and disable the user password. NOTE: When the user password is set, it prevents unauthorized access to the user's setup. User password provides read-only access to Setup options.
Save & Exit Setup	Saves data to CMOS, then exit the Setup Utility.
Exit without Saving	Exit the Setup Utility without saving any changes.

5 Diagnostics and Troubleshooting

LEDs

Table 5-1 Power and IDE Flash Activity LEDs

LED	Status
Power LED Off	When the unit is plugged into the wall socket and the Power LED is off, the unit is powered off. However, the network can trigger a Wake On LAN event in order to perform management functions.
Power LED On	<p>Displays during boot sequence and while the unit is on. During boot sequence, hardware initialization is processed and startup tests are performed on the following:</p> <ul style="list-style-type: none">• Processor initialization• Memory detection and initialization• Video detection and initialization <p>NOTE: If one of the tests fails, the unit will simply stop, but the LED will stay on. If the video test fails, the unit beeps. There are no messages sent to video for any of these failed tests.</p> <p>NOTE: After the video is initialized, anything that fails will have an error message.</p>
NOTE: RJ-45 LEDs are located inside the RJ-45 connector on the top, rear panel of the thin client. The LEDs are visible when the connector is installed. Blinking green indicates network activity, and amber indicates a 100MB speed connection.	
IDE LED is Off	When the unit is powered on and the flash activity light is off, then there is no access to the system flash.
IDE LED blinks Green	Indicates the system is accessing the internal IDE flash.

Power-On Sequence

At power-on, the flash boot block code initializes the hardware to a known state, then performs basic power-on diagnostic tests to determine the integrity of the hardware. Initialization performs the following functions:

1. Initializes CPU and memory controller.
2. Initializes VGA software.
3. Initializes and configures all PCI devices.
4. Initializes the video to a known state.
5. Initializes USB devices to a known state.
6. Performs power-on diagnostics. For more information, see “Power-On Diagnostic Tests”.
7. The unit boots the operating system.

Power-On Diagnostic Tests

The Power-on diagnostics performs basic integrity tests of the hardware to determine its functionality and configuration. If a diagnostic test fails during hardware initialization the unit simply stops. There are no messages sent to video.



NOTE: You may try to restart the unit and run through the diagnostic tests a second time to confirm the first shutdown.

The following table lists the tests that are performed on the t5000 units.

Table 5-2 Power-On Diagnostic Test

Test	Description
Boot Block Checksum	Tests boot block code for proper checksum value
DRAM	Simple write/read pattern test of the first 640k of memory
Parallel Port	Initiates the port's driver and determines if the device is present
Serial Port	Tests the serial port using simple port verification test to determine if ports are present
Timer	Tests timer interrupt by using polling method
RTC CMOS battery	Tests integrity of RTC CMOS battery
NAND flash device	Tests for proper NAND flash device ID present

Beep Codes

If there are no video errors, the system goes directly to POST messages.

Beep Code	Description
1 long, 2 short	A video error has occurred and the BIOS cannot initialize the video screen to display any additional information.
1 long, 3 short	System running in boot block recovery mode.

POST Error Messages

Table 5-3 POST Error Messages

POST Error Message	Description
BIOS ROM checksum error - System halted	The checksum of the BIOS code in the BIOS chip is incorrect, indicating the BIOS code may have become corrupt. To restore a corrupt BIOS, refer to Appendix D, "System BIOS" or call your local HP Call Center for a diagnosis. For phone numbers of an HP Call Center near you, visit the following Web site: http://www.hp.com/cgi-bin/hpsupport/index.pl
CMOS battery failed	The CMOS battery is no longer functional. For information on replacing the battery, refer to Appendix E, "Replacing the CMOS Battery."
CMOS checksum error - Defaults loaded	Checksum of CMOS is incorrect, so the system loads the default equipment configuration. A checksum error may indicate that CMOS has become corrupt. A weak battery may have caused this error. Replace the battery if necessary. For more information, refer to Appendix E, "Replacing the CMOS Battery."
CPU at nnnn	Displays the running speed of the CPU.
Press ESC to skip memory test	The user may press Esc to skip the full memory test.
Hard Disk Install Failure	Cannot find or initialize the hard drive controller or the drive. Make sure the controller is installed correctly. If no hard drives are installed, be sure the Hard Drive selection in Setup is set to NONE .
Keyboard error or no keyboard present	Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are pressed during POST. To purposely configure the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD . The BIOS then ignores the missing keyboard during POST
Memory Test	This message displays during a full memory test, counting down the memory areas being tested.
Memory Test Fail	If POST detects an error during memory testing, additional information appears giving specifics about the type and location of the memory error
Override enabled - Defaults loaded	If the system cannot boot using the current CMOS configuration, the BIOS can override the current configuration with a set of BIOS defaults designed for the most stable, minimal-performance system operations.
Press TAB to show POST screen	Press the TAB key during POST to display messages hidden by the HP logo.
Error: Non-System disk or disk error	The BIOS was unable to find a suitable boot device. For the t5000 Series, this may mean an uninitialized or corrupt ATA Flash. Reflash the unit and press any key when ready. For more information, refer to Chapter 5, "Restoring the Flash Image."

Troubleshooting

Basic Troubleshooting

If the thin client is experiencing operating problems or will not power on, review the following items.

Table 5-4 Power-On Troubleshooting

Issue	Procedures
The thin client unit is experiencing operating problems.	<p>Ensure that the following connectors are securely plugged into the thin client unit:</p> <ul style="list-style-type: none">• Power connector• Keyboard• Mouse• Network RJ-45 connector• Monitor
The thin client unit does not power on.	<ol style="list-style-type: none">1. Verify that the power supply is good by installing it on a known working unit and testing it. If the power supply does not work on the test unit, replace the power supply.2. If the unit does not work properly with the replaced power supply, have the unit serviced.
The thin client unit powers on and displays a splash screen, but does not connect to the server.	<ol style="list-style-type: none">1. Verify that the network is operating and the network cable is working properly.2. Verify that the unit is communicating with the server by having the System Administrator ping the unit from the server:<ul style="list-style-type: none">◦ If the thin client pings back, then the signal was accepted and the unit is working. This indicates a configuration issue.◦ If the thin client does not ping back and the thin client does not connect to the server, re-image the unit.
No link or activity on the network RJ-45 LEDs or the LEDs do not illuminate blinking green after powering on the thin client unit. (The network LEDs are located inside the RJ-45 connector on the top, rear panel of the thin client. Indicator lights are visible when the connector is installed.)	<ol style="list-style-type: none">1. Verify that the network is not down.2. Make sure the RJ-45 cable is good by installing the RJ-45 cable onto a known working device—if a network signal is detected then the cable is good.3. Verify the power supply is good by replacing the power cable to the unit with a known working power supply cable and testing it.4. If network LED's still do not light and you know the power supply is good, then re-image the unit.5. If network LED's still do not light, run the IP configuration procedure.6. If network LED's still do not light, have the unit serviced.

Table 5-4 Power-On Troubleshooting (continued)

A newly connected unknown USB peripheral does not respond or USB peripherals connected prior to the newly connected USB peripheral will not complete their device actions.	An unknown USB peripheral may be connected and disconnected to a running platform as long as you do not reboot the system. If problems occur, disconnect the unknown USB peripheral and reboot the platform.
Video does not display.	<ol style="list-style-type: none"> 1. Verify that the monitor brightness is set to a readable level. 2. Verify the monitor is good by connecting it to a known working computer and ensure its front LED turns green (assuming the monitor is Energy Star compliant). If the monitor is defective, replace it with a working monitor and repeat testing. 3. Re-image the thin client unit and power on the monitor again. 4. Test the thin client unit on a known working monitor. If the monitor does not display video, replace the thin client unit.

Diskless (No-Flash) Unit Troubleshooting

This section is only for those units that do not have ATA Flash capability. Because there is no ATA Flash in this model the boot priority sequence is:

- USB device
 - PXE
1. When the unit boots, the monitor should display the following information:

Table 5-5 Diskless Unit Troubleshooting

Item	Information	Action
MAC Address	NIC portion of the system board is OK	If no MAC Address, the system board is at fault. Contact the Call Center for service.
GUID	General system board information	If no GUID information, the system board is at fault and should be replaced.
Client ID	Information from server	If no Client ID information there is no network connection. This may be caused by a bad cable, the server is down, or a bad system board. Contact the Call Center for service for the bad system board.
MASK	Information from server	If no MASK information there is no network connection. This may be caused by a bad cable, the server is down, or a bad system board. Contact the Call Center for service for the bad system board.
DHCP IP	Information from server	If no DHCP IP information there is no network connection. This may be caused by a bad cable, the server is down, or a bad system board. Contact the Call Center for service for the bad system board.

If you are running in an Microsoft RIS PXE environment go to step 2.

If you are running in a Linux environment go to step 3.

2. If you are running in a Microsoft RIS PXE environment press the **F12** key to activate the network service boot as soon as the DHCP IP information appears on the screen.

If the unit does not boot to the network the server is not configured to PXE.

If you missed the F12 cue, the system will try to boot to the ATA flash that is not present. The message on the screen will read: **ERROR: Non-system disk or disk error. Replace and press any key when ready.**

Pressing any key will restart the boot cycle.

3. If you are running in a Linux environment an error message will appear on the screen if there is no Client IP. **ERROR: Non-system disk or disk error. Replace and press any key when ready.**

6 Restoring the Flash Image

System Requirements

To create a recovery device for the purpose of reflashing or restoring the software image on the ROM, you will need the following:

- A personal computer running Microsoft Windows 2000 Professional or Microsoft Windows XP Professional
- One or more HP t5000 Series Thin Clients
- 1-GB USB flash device for Microsoft Windows Embedded Standard 2009 (WES) (if using the USB format) or Linux.

This restore method will not work with all USB flash devices. USB flash devices with multiple partitions generally do not support this restore method. The range of USB flash devices available on the market is constantly changing. Not all USB flash devices have been tested with the HP Thin Client Imaging Tool.

Before using the utility, you must download the appropriate image from <http://www.hp.com>.

Getting Started

There are two deployment options supported by this utility. You can choose to do one or more of the following using your personal computer:"

- Create a bootable flash image on a USB flash device.
- Unbundle the image to a directory for use in a custom deployment scenario or PXE image.

Download and run the Package-for-the-Web deliverable (an .exe file) that contains the original factory image for the thin client. The HP Thin Client Imaging Tool (CRStart.exe) runs automatically.

Choose one of the deployment options: Each option is described in the following paragraphs.

- USB Format
- Deployment

During the restore process, the thin client flash drive will be reformatted and all data on it will be erased before the system image is copied to it. To prevent loss of data, be sure that you have saved any user-created data from the flash drive. During the first restart of the thin client following the restore process, it may take approximately 15 minutes to unbundle the software before the Windows Desktop is displayed.

Formatting a USB Flash Drive

△ **CAUTION:** To prevent loss of data, be sure that you have saved any user-created data from the USB drive to another drive.

1. Connect your USB flash device (drive key) to your personal computer. Ensure that only one USB flash device is connected to the system.
2. Click **USB Format**.
3. Select the USB drive from the list, using the up and down arrows to display the correct drive letter. (If the USB drive does not appear in the list, click **Update Drives**, then scroll through the list again.)

During the next step, the USB drive will be reformatted and all data on it will be erased before the bootable image is copied to it. To prevent loss of data, be sure that you have saved any data from the USB drive to another drive.

4. Click **Format**.

Connect the bootable USB flash device to the thin client. Only one bootable USB device may be attached to the thin client during this process.

5. Restart the thin client.
6. When prompted **Do you want to continue? [Y/N]** click **Y** to begin the image restore process on the thin client.

Unpacking the Image and Tools for Deployment

1. Click **Deployment**.
2. When prompted, select the destination directory for the imaging tools and image.

The components that comprise DSKIMG.BIN are then unbundled. When this process is complete, there are three new files: IBR.EXE (the image restoration utility), FLASH.xx (the OS image), and README.TXT

📋 **NOTE:** Linux uses the file name FLASH.DD while other operating system images use FLASH.IMG

Deploying with PXE

1. Ensure that IBR.exe and Flash.img are stored in the same directory on the server.
2. Add `[full path]\IBR.exe -y [full path]\Flash.img hd0` to the PXE command file, and then run it.

To view the IBR command line options: At the command prompt, type `IBR.EXE /?` and press **Enter**.

Refer to [Configuring a PXE Server on page 39](#) for instructions about setting up a PXE Server using Microsoft RIS. See your documentation if using a different PXE server, such as Altiris Deployment Solution.

A Specifications

Table A-1 HPt5740/t5745 Thin Client

Dimensions		
Width (front to back)	222 mm	8.74 in.
Height (top to bottom, without stand)	255 mm	10.04 in
Depth (side to side)	44 mm	1.73 in.
Approximate Weight	1.53 kg	3.37 lb
Temperature Range (fanless design)*		
Operating**	10° to 40° C	50° to 104° F
(max. rate of change is 10° C per hour or 18° F per hour)		
Nonoperating	-30° to 60° C	-22° to 140° F
(max. rate of change is 20° C per hour or 36° F per hour)		
*Specifications are at sea level with altitude derating of 1° C/300m (1.8° F/1000ft) to a maximum of 3Km (10,000ft), with no direct, sustained sunlight. Upper limit may be limited by the type and number of options installed.		** The operating temperature range when the thin client is attached to a flat panel using the HP Quick Release is 50° to 95° F (10° to 35° C).
Relative Humidity (non-condensing)		
Operating	10–90%	10–90%
(max. wet bulb temperature is 28° C or 84.2° F)		
Nonoperating	5–95%	5–95%
(max. wet bulb temperature is 38.7° C or 101.6° F)		
Maximum Altitude (unpressurized)		
Operating	3048 m	10,000 ft
(max. allowed rate of change is 457m per minute or 1500 ft per minute)		
Nonoperating	9,144 m	30,000 ft
(max. allowed rate of change is 457m per minute or 1500 ft per minute)		

Table A-1 HPt5740/t5745 Thin Client (continued)

Power Supply		
Operating Input Voltage Range	100–240 VAC	100–240 VAC
Rated Line Frequency	50–60 Hz	50–60 Hz
Power Output (maximum)	65 W	65 W
Rated Output Current (maximum)	3.42 A	3.42 A
Output Voltage	+19 V DC	+19 V DC

B Adding an Image Restore Tool

1. Ensure that the boot order is set to use the **Network** as the first boot device.
2. Ensure that IBR.exe (Image Restore) and Flash.dd are stored in the same directory on the server.

(e.g., c:\program files\altiris\express\deployment server\images)

3. From the Altiris Deployment Server Console, click **File > New > Job**.
4. Enter a unique name for the job that you will use to deploy the original thin client image.
5. Click the name of the new job.
6. Near the upper right side of the screen, click **Add**.
7. Select **Run Script** from the menu.
8. Type [full path]images\ibr\exe-y\images\flash.xx hd0




NOTE: Linux uses the file name FLASH.DD while other operating system images use FLASH.IMG

9. Under **In which OS would you like to run this script?** Click **DOS**.
10. Click **Finish**.
11. You can now drag and drop the job onto the appropriate machine(s) or schedule it to run later, depending on your needs. Refer to the documentation for Altiris Deployment Solution (<http://www.altiris.com/support/documentation>) for more detailed information.

C Configuring a PXE Server

Prerequisites

 **NOTE:** This Troubleshooting section is not intended to enable HP Service to support PXE software. All PXE software is supported by authorized service providers on a warranty or service contract basis. Customers that call the HP Customer Service Center with PXE issues and questions should be referred to their PXE provider for assistance.

Additionally, refer to the following:

- For Windows 2000: <http://support.microsoft.com/kb/891275>
- For Windows 2003: [http://technet.microsoft.com/en-us/library/cc766320\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc766320(WS.10).aspx)

The services listed below must be running, and they may be running on different servers:

1. Domain Name Service (DNS)
2. Active Directory DHCP
3. Remote Installation Services (RIS) on Microsoft Windows 2000 Server

This documentation covers RIS setup, and assumes that servers 1, 2, and 3 (above) are already set up. The RIS PXE Server must be equipped with two or more hard drives. Remote Installation Services and Windows 2000 Server cannot be installed on the same drive; nor will RIS work on a double partition of Windows 2000 Server. You must first format the drive on which RIS is installed using NTFS.

Installing Remote Installation Services (RIS PXE Server)

1. From the Windows 2000 Server, log on to the domain using an account that has Administrator privileges on the server.
2. From the Windows Control Panel, double-click on **Add/Remove Programs**.
3. Double-click **Add/Remove Windows Components**.
4. Select **Remote Installation Services**, then click **Next**. (Insert Windows Server CD into the CD-ROM drive, if prompted.)
5. Restart the computer after the wizard has finished installing the service.

Authorizing Remote Installation Services (RIS PXE Server)

If you have installed RIS on a server other than the server running DHCP, authorize PXE with DHCP as follows:

1. Record the IP address of the RIS PXE Server.
2. Log on to the DHCP Server as administrator.
3. From the Control Panel, double-click **Administrative Tools**.
4. Double-click **DHCP**.
5. Right-click **DHCP** (just above the domain name) and select **Manage Authorized Servers**.
6. Click **Authorize**.
7. Type the IP address of your RIS PXE server and click **OK**.
8. Click **OK**.
9. Log off from the DHCP Server.

Configuring Remote Installation Services

Use the default option to have RIS install on second hard drive (D:\ or E:\).

1. Click **Start > Run**.
2. Type `Rissetup.exe` and click **Next**.
3. Click **Next**.
4. Select **Respond to client computers requesting service**.
5. Click **Next**.
6. Insert the Windows 2000 Professional CD into the CD-ROM drive and enter the path to the CD-ROM drive (usually drive D:\ or E:\).
7. Click **Next**.
8. Click **Next**.
9. Click **Next**.
10. When the installation is complete, click **Finish**.

Set User Permissions on the Active Directory Server

On the active directory server:

1. Click **Start > Programs > Administrative Tools**.
2. Click **Active Directory Users and Computers**.
3. Right-click on the appropriate domain name

4. Click **Delegate Control**.
5. Click **Next**.
6. Click **Add** to add users.
7. Highlight **Everyone** and click **Add**.
8. Click **OK**.
9. Click **Next**.
10. Select **Join a Computer to the Domain**.
11. Click **Next**.
12. Click **Finish**.

RIS Menu

1. Install the RIS menu of your choice.
2. Configure the RIS menu.
3. Refer to the help file provided by the RIS menu for instructions on creating a network bootable diskette and RIS menu for PXE.

Creating Network Bootable Disk to Map Drives

Create a network boot disk to map drives. (Refer to the Microsoft Web site for instructions about creating a network bootable diskette.)

For More Information

HP t5000 Series Documentation (including white papers discussing software deployment methods):

<http://welcome.hp.com/country/us/en/support.html?pageDisplay=support>. Type your model number into the **for product** box and navigate to the **Manuals** link.

Altiris Deployment Solution Documentation:


<http://www.altiris.com/support/documentation/>

D System BIOS

Restoring a Corrupt BIOS


If the BIOS code on the thin client is corrupt, the BIOS must be restored before the thin client will boot to the operating system. To restore the BIOS on a thin client t5000 Series, you will need the following:

- An external USB diskette drive or USB flash drive connected to the thin client
- HP Thin Client t5000 Series System BIOS Softpaq (for the product being restored)


 **NOTE:** The BIOS recovery procedure works the same from USB floppy diskette or USB flash drive.

To restore a corrupt BIOS, complete the following instructions

1. Navigate to <http://www.hp.com/>
2. Select **Software & Driver Downloads**.
3. In the **For Product** box, type the thin client model number, and then click the arrow.
4. Under **Select Operating System**, select the operating system for your thin client.
5. Under **BIOS**, click the **Download** button next to the BIOS you want to download.
6. Download to your hard drive. The downloaded file is an executable.
7. From your hard drive, run the Softpaq to extract the BIOS files to your hard drive.
8. Copy the BIOS file from the DOSFLASH folder to a USB floppy diskette or USB flash drive. Rename the BIOS file to **786R8.ROM**.
9. Power off the thin client with the corrupt BIOS.
10. Connect the external USB diskette drive with diskette or USB flash drive containing the BIOS file to the thin client.

 **NOTE:** Before powering on the thin client, check to make sure there are no other USB devices connected to the thin client. If there are, disconnect them.

11. Power on the thin client.
12. At power on, the BIOS is automatically restored from the diskette or flash drive.

 **WARNING!** Do not turn off power or attempt to reboot the thin client during the recovery process.

Updating a BIOS

To update the system BIOS on the Thin Client t5000 Series, download the Thin Client t5000 Series Softpaq (for the product being updated) from the HP Web site at: <http://www.hp.com/>, select **Software and Driver Downloads** then enter the model number of your thin client product.


The Softpaq contains utilities for restoring or updating the system BIOS on the Thin Client t5000 Series. Included in the Softpaq are several methods for changing or updating the BIOS version on your computer. The tools and appropriate BIOS images are contained in the following Softpaq directories:

- DOS Flash—DOS utility that can be used locally or with a Preboot eXecution Environment (PXE) management application to update the system BIOS.
- WFlash—Windows-based utility used to locally update the system BIOS on individual PCs through the Windows environment.
- LFlash—Linux-based utility to locally update the system BIOS on individual PCs through the Linux environment.

To determine the BIOS family, version, and date on the thin client, press **F10** during system power-on to run the F10 Setup utility, then select **System Information**.

To update the system BIOS, complete the following instructions:

1. Download the Softpaq to a directory on your hard drive. The downloaded file is a self-extracting executable.
2. From that drive and directory, execute the downloaded file and follow the on-screen instructions.
3. Copy the appropriate utility to a diskette or USB flash drive to transfer to the thin client.

 **WARNING!** Do not turn off power or attempt to reboot the computer during the upgrade process

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