



# Windows Embedded Standard 7 for HP Thin Clients

Quick Reference Guide

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## About this guide

This document uses the following styles to distinguish elements of command line text:

Style	Definition
<code>&lt;variable&gt;</code>	Variables or placeholders are enclosed in angle brackets and italicized. For example, replace <code>&lt;pathname&gt;</code> with the appropriate path, such as <code>C:\Windows\System</code> . When typing the actual value for the variable, omit the brackets.
<code>[optional parameters]</code>	Optional parameters are enclosed in square brackets. When specifying the parameters, omit the brackets.
<code>"literal value"</code>	Command line text that appears inside quotation marks should be typed exactly as shown, including the quotation marks.



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# 1 Introduction

This guide is intended for administrators of HP thin client models that are based on the Windows® Embedded Standard (WES) 7E and WES 7P operating systems. It is assumed that you are using the latest WES 7E or WES 7P image provided by HP and that you will be logged on to WES as an administrator when making configurations or accessing administration utilities.

## Finding more information

The information in this guide provides a basic overview of features specific to HP thin clients. See the following table to locate information not covered in this guide.

Resource	Contents
Windows Help and Support On the Windows desktop, click <b>Start &gt; Help and Support</b> .	A broad range of how-to information and troubleshooting tips about Windows operating system usage
HP support website <a href="http://www.hp.com/support">http://www.hp.com/support</a>	Documentation for HP software not covered in detail in this guide <b>TIP:</b> If your search results cannot locate the software you are looking for, search for your thin client model instead and see the Manuals page.
Microsoft support website <a href="http://support.microsoft.com">http://support.microsoft.com</a>	Documentation for Microsoft software not covered in detail in this guide
Citrix support website <a href="http://www.citrix.com/support">http://www.citrix.com/support</a>	Documentation for Citrix software not covered in detail in this guide
VMware support website <a href="http://www.vmware.com/support">http://www.vmware.com/support</a>	Documentation for VMware software not covered in detail in this guide

## Finding image updates and add-ons

Go to <http://www.hp.com/support> to find SoftPaqs that contain image updates or add-ons.

## Finding utilities in the Windows Control Panel

To find many of the utilities listed in this guide, you need to view the Control Panel as large icons or small icons, not as categories. You can also configure the Control Panel item in the Start menu to display as a menu for quick access to all utilities.

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## 2 Getting started


- [Write filters](#)
- [Local drives](#)
- [Configuring logon settings](#)
- [Configuring the system date and time settings](#)

### Write filters

Write filters provide a secure environment and can extend the life of your thin client by protecting it from unauthorized and excessive writes to the flash drive. Write data is intercepted by the write filter and cached in the RAM drive, and as a result, lost after the next reboot. There are two different types of write filters available:

- **Enhanced Write Filter (EWF)**—Protects the entire flash drive from writes
- **File-Based Write Filter (FBWF)**—Allows you to specify files or folders to be excluded from interception by the write filter

Only one write filter can be selected and active at one time. To save permanent configurations to the flash drive, the write filter must be temporarily disabled.

 **CAUTION:** Ensure that the write filter is enabled after committing necessary configurations to the thin client flash drive. During normal operation of the thin client, the write filter must be enabled. Also ensure that Page File is not enabled on thin clients with flash memory storage. Failure to follow these required actions can void the warranty of the flash storage device. In the event of damage to the flash storage device due to operation with a disabled write filter or enabled Page File, the damage will not be covered by HP warranty.

### Enhanced Write Filter

#### Using the Enhanced Write Filter command line utility

The EWF command line utility enables you to issue a set of commands to the EWF driver, report the status of each protected volume overlay, and report the format of the overall EWF configurations.

To use the EWF command line utility, follow these steps:

1. Select **Start > Run**.
2. Type `CMD` and click **OK**.
3. Enter `ewfmgr c: <commands>` at the prompt.

The following table describes the supported commands for the EWF utility.

Command	Description
-all	Displays information about all protected volumes and performs a command, such as disable, enable, and commit, on each volume, if specified.
-commit	Commits all current cached data to the specified volume after the next reboot.



Command	Description
-disable	Disables the write filter on the specified volume after the next reboot.
-enable	Enables the write filter on the specified volume after the next reboot.
-commitanddisable	Commits all current cached data and disables the write filter on the specified volume after the next reboot.

## Using the Enhanced Write Filter GUI

To access the EWF GUI, follow these steps:

- ▲ Click **Start > Control Panel > HP Write Filter Configuration**.

The EWF interface includes the following buttons:

- **Enable/Disable EWF**—Enables or disables the EWF on the specified volume.
- **Overlay Configuration**—Displays the overlay information and is a combination of the information supplied when executing `ewfmgr.exe c: -Description` and `ewfmgr.exe c: -Gauge` from the command line.
- **Clear Boot Command**—Clears any boot commands that were entered via the command line.
- **Commit Data to Volume**—Commits all current cached data to the specified volume after the next reboot.

## Using the Enhanced Write Filter status utility


The EWF status utility creates an icon in the notification area of the taskbar that shows the status of the filter. You can right-click the icon to display and execute the available options.

The EWF status icon displays the following states:

- **Red lock**—EWF is disabled.
- **Green lock**—EWF is enabled.
- **Yellow lock**—EWF state will change on next boot.

You can change the status of EWF by right-clicking the icon and selecting the desired EWF state.

If you use the command line to modify the EWF, right-click the icon to refresh the status icon display (click anywhere on the screen to close the context menu). The status icon display is refreshed automatically when you make modifications through the HP Write Filter Configuration utility.

 **NOTE:** Because the `ewfmgr.exe` utility and the EWF status service execute separate code, status changes by `ewfmgr.exe` are not automatically reflected by the EWF status icon.

## File-Based Write Filter

### Using the File-Based Write Filter command line utility

The FBWF command line utility enables you to issue a set of commands to the FBWF driver, report the status of each protected overlay, and report the format of the overall FBWF configurations.

To use the FBWF command line utility, follow these steps:

1. Select **Start > Run**.
2. Type `CMD` and click **OK**.
3. Enter `fbwfmgr c: <commands>` at the prompt.

The following table describes the supported commands for the FBWF utility.

Command	Description
<code>/disable</code>	Disables the write filter on the next restart.
<code>/enable</code>	Enables the write filter on the next restart.
<code>/displayconfig</code>	Displays all current configuration information for the write filter including filter state, protected volumes list, cache compression state, overlay cache threshold, cache pre-allocation status, and write-through paths.
<code>/overlaydetail</code>	Displays detail on the current overlay contents for all protected volumes including file and folder contents and memory used.
<code>/addexclusion</code>	Adds a write through path to the exclusion list.
<code>/removeexclusion</code>	Removes a write through path from the exclusion list.
<code>/setthreshold</code>	Sets the overlay threshold value.

### Using the File-Based Write Filter GUI

To access the FBWF GUI, follow these steps:

- ▲ Click **Start > Control Panel > HP Write Filter Configuration**.

The FBWF interface includes the following buttons:

- **Enable/Disable Write Filter**—Enables/disables the FBWF so that data written to the protected media is cached or not.
- **Enable/Disable Cache Compression**—Enables/disables cache compression.
- **Enable/Disable Cache Pre-allocation**—Enables/disables cache pre-allocation.
- **Set Cache Threshold**—Sets the amount of RAM in MB that the FBWF cache can use.

### Using the File-Based Write Filter status utility

The FBWF status utility creates an icon in the notification area of the taskbar that shows the status of the FBWF. You can right-click the icon to display and execute the available options.


The FBWF status icon displays the following states:

- **Red lock**—FBWF is disabled.
- **Green lock**—FBWF is enabled.
- **Yellow lock**—FBWF state will change on next boot.

You can change the status of FBWF by right-clicking the icon and selecting the desired FBWF state.

If you use the command line to modify the FBWF, right-click the icon to refresh the status icon display (click anywhere on the screen to close the context menu). The status icon display is refreshed automatically when you make modifications through the HP Write Filter Configuration utility.


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 **NOTE:** Because the `fbwfmgr.exe` utility and the FBWF status service execute separate code, status changes made by `fbwfmgr.exe` are not automatically reflected by the FBWF status icon.

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## Local drives


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 **IMPORTANT:** The write filter must be disabled for any configurations to be made permanent. See [Write filters on page 2](#) for more information.

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The following local drives are configured on the thin client by default:

- **Drive C (flash drive)**—This is where the operating system and software are installed. Writes to this drive can be limited or restricted entirely by using a write filter.

 **CAUTION:** HP recommends that you do not allow the available free space on the flash drive to drop below 10% of the flash size. If the available free space on the flash drive drops below 15 MB, the thin client can become unstable.

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- **Drive Z (RAM drive)**—This is a virtual drive that is created from the system's physical RAM. This drive will look and behave like a standard fixed disk drive, but it is created at system startup and destroyed at system shutdown. Therefore, HP recommends that you do not store information or data on this virtual disk drive.

The following items are stored on Drive Z:

- Browser web page cache
- Browser history
- Browser cookies
- Browser cache
- Temporary Internet files
- Print spooling
- User/system temporary files


You can use the HP RAMDisk Manager utility to configure the size of Drive Z. For more information, see [HP RAMDisk Manager on page 10](#).

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 **TIP:** HP recommends that you save files that you want to retain on a server rather than on the thin client. By default, many software programs write cache files to the C drive on the local system. If you must write to a local drive, configure the software program's settings to use the Z drive instead.


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## Configuring logon settings

 **IMPORTANT:** The write filter must be disabled for any configurations to be made permanent. See [Write filters on page 2](#) for more information.

By default, the thin client logs on as a user. An administrator must log on manually. Note the following about using the manual logon method:

- For a user account, the factory-default user name and password are both `User`.
- For an administrator account, the factory-default user name and password are both `Administrator`.
- For security purposes, HP recommends that you change the passwords from their default values. An administrator can change passwords by pressing **Ctrl+Alt+Del** and then clicking **Change a password**.


 **NOTE:** You cannot change the password while logged on as a user.

- Passwords are case sensitive.


Alternatively, the thin client can be configured to log on to a specific user account automatically. To configure automatic logon:

1. Click **Start > Control Panel > HP Logon Manager**.
2. In the Windows Logon Configuration dialog box, check the **Enable Autologon** box, type the account credentials and domain name, and then click **OK**.


The configured account will be logged on to automatically during system startup.

 **TIP:** To log on as a different user or as an administrator when automatic logon is enabled, simply log off the current account to return to the Windows logon screen.

## Configuring the system date and time settings

 **IMPORTANT:** The write filter must be disabled for any configurations to be made permanent. See [Write filters on page 2](#) for more information.

You can use the **Date and Time** utility in the Control Panel to set the system date and time manually or to configure the system to synchronize the date and time with an Internet server periodically.

 **TIP:** You can also access this utility by clicking the clock in the Windows notification area and then clicking **Change time and date settings** or by right-clicking the clock and selecting **Adjust date/time** from the menu.

If you want to configure the system to synchronize the date and time with an Internet server, you will also need to enable the **Windows Time** service, which is disabled by default. To do this, follow these steps:

1. Click **Start > Control Panel > Administrative Tools**.
2. Double-click **Services**.
3. Double-click the **Windows Time** service to access its settings. You can start the service manually and configure it start up automatically in the future.

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## 3 Virtualization software


- [Citrix Independent Computing Architecture](#)
- [Microsoft Remote Desktop Protocol](#)
- [VMware Horizon View](#)
- [HP Remote Graphics Software](#)
- [HP TeemTalk](#)

### Citrix Independent Computing Architecture

Make Citrix Independent Computing Architecture (ICA) available on the network by using the Citrix Presentation Server, XenDesktop, or XenApp on a Windows server. The Citrix ICA client enables icons to be placed on the WES desktop or Start menu for the seamless integration of published applications.

To open the Citrix ICA client:

1. Click **Start > All Programs > Citrix Receiver**.
2. Type the server address, and then click **Update**.


 **NOTE:** If a Windows server is used, a Terminal Services Client Access Licenses (TSCAL) server must also reside somewhere on the network. A Client Access License (CAL) permits a client to use the services provided by the Windows server. The server grants temporary licenses (on an individual device basis) that are good for 90 days. Beyond that, TSCALs must be purchased and installed on the TSCAL server. A client cannot make a connection without a temporary or permanent license.

### Microsoft Remote Desktop Protocol

Make Microsoft Remote Desktop Protocol (RDP) available on the network using Microsoft Terminal Services on a Windows server. Use the Remote Desktop Connection (RDC) utility to establish a connection to a Windows terminal server or to access remote applications using Microsoft RDP.

To open the RDC utility:

- ▲ Click **Start > All Programs > Accessories > Remote Desktop Connection**.

 **NOTE:** If a Windows server is used, a Terminal Services Client Access Licenses (TSCAL) server must also reside somewhere on the network. A Client Access License (CAL) permits a client to use the services provided by the Windows server. The server grants temporary licenses (on an individual device basis) that are good for 90 days. Beyond that, TSCALs must be purchased and installed on the TSCAL server. A client cannot make a connection without a temporary or permanent license.


## VMware Horizon View

VMware Horizon View is an enterprise-class desktop management solution that streamlines the management, provisioning, and deployment of virtual desktops. Users securely and easily access virtual desktops hosted on VMware Infrastructure, terminal servers, blade PCs, or even remote physical PCs through the VMware View Manager.

To open the VMware Horizon View client:

- ▲ Click **Start > All Programs > VMware > VMware Horizon View Client**.

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 **NOTE:** Select images might require you to install the VMware Horizon View client before you can use it. To do this, click **Start > All Programs > Run VMware Horizon View Client Setup**. Be sure to commit the write filter cache before restarting the thin client after installation.

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## HP Remote Graphics Software


HP Remote Graphics Software (RGS) is the collaboration and remote desktop solution for serious users and their most demanding applications. All applications run natively on the remote computer and take full advantage of its graphics resources. The desktop of the remote computer is transmitted over a standard network to a window on a local computer using advanced image compression technology specifically designed for digital imagery, text, and high frame rate video applications. A local keyboard and mouse are supported, as well as redirection of most USB devices to provide an interactive, high-performance experience.

Use the RGS Receiver on WES to access the remote desktop being transmitted by the RGS Sender.


To open the RGS Receiver:

- ▲ Click **Start > All Programs > HP > HP Remote Graphics Software > HP RGS Receiver**.

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 **NOTE:** Select images might require you to install the RGS Receiver before you can use it. To do this, click **Start > All Programs > Install HP Remote Graphics Receiver**. Be sure to commit the write filter cache before restarting the thin client after installation.

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 **TIP:** For more information, go to <http://www.hp.com/go/rgs> and see the *HP Remote Graphics Software User Guide*.

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## HP TeemTalk

HP TeemTalk is terminal emulation software that uses the Telnet protocol to support computing on legacy platforms.

To open HP TeemTalk:

- ▲ Click **Start > All Programs > Hewlett-Packard > HP TeemTalk Emulator > Configure Session**.

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 **TIP:** For more information, see the *HP TeemTalk Terminal Emulator User Manual*.

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## 4 Administration tools

- [HP Cloud Connection Manager](#)
- [HP Compaq Thin Client Imaging Tool](#)
- [HP Device Manager](#)
- [HP Easy Tools \(desktop thin clients only\)](#)
- [HP RAMDisk Manager](#)
- [HP ThinShell](#)
- [HP ThinState](#)
- [HP Velocity](#)
- [Microsoft System Center Configuration Manager](#)


### HP Cloud Connection Manager

HP Cloud Connection Manager (HPCCM) is a client-side utility that enables the administrator to flexibly control the startup of supported virtual-desktop clients such as Citrix ICA, Microsoft RDP, and VMware Horizon View, with minimal or no end-user interaction. The level of user interaction during the logon process is completely controlled by the administrator who prepared the thin client for use.

To open HP Cloud Connection Manager:

- ▲ Click **Start > Control Panel > HP Cloud Connection Manager**.

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 **TIP:** For more information, see the *HP Cloud Connection Manager Administrator Guide*.

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### HP Compaq Thin Client Imaging Tool


The HP Compaq Thin Client Imaging Tool is included in each SoftPaq that contains an original factory image for an HP thin client. Use this utility to restore the original factory image to the thin client.

This utility allows you to choose one of the following options:

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

See the release notes included in the SoftPaq for instructions.

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 **TIP:** For more information, see the white paper *HP Thin Client Imaging Tool*.

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## HP Device Manager

HP Device Manager (HPDM) is a server-based application that provides centralized administration capabilities for HP thin clients. It accesses each thin client through the HPDM Agent embedded in the WES image. Use HPDM to deploy software updates and add-ons.

To open the HPDM Agent:

- ▲ Click **Start > Control Panel > HPDM Agent**.

 **TIP:** For more information, go to <http://www.hp.com/go/hpdm> and see the *HP Device Manager User Guide*.


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## HP Easy Tools (desktop thin clients only)

HP Easy Tools is a wizard that helps you create a complete configuration to use on HP thin clients. The wizard opens automatically during the initial setup of the system, unless the HP Device Manager or HP System Update infrastructure is found on the network.

To open HP Easy Tools manually:

- ▲ Click **Start > Control Panel > HP Easy Tools**.

 **TIP:** For more information, see the *HP Easy Tools Administrator's Guide*.

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## HP RAMDisk Manager

HP RAMDisk Manager allows you to configure the size of the RAM drive (Drive Z).

To open HP RAMDisk Manager:

- ▲ Click **Start > Control Panel > HP RAMDisk Manager**.


By default, the size of the RAM drive is set to the optimal setting of 128 MB. The maximum size that can be set is 768 MB. The minimum is 16 MB. Temporarily increase the size to install software that requires more than 128 MB.

## HP ThinShell

HP ThinShell is a client automation tool that enables Kiosk Mode (shell replacement) functionality for users. Administrators can specify the shell program to be used, command line parameters, and actions to be taken when the shell program is exited.

To open HP ThinShell:

- ▲ Click **Start > Control Panel > HP ThinShell**.

 **NOTE:** If the user is in an administrator group, they cannot enter Kiosk Mode.


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## HP ThinState

HP ThinState can be used to capture an HP thin client image that can then be deployed to another HP thin client of identical model and hardware.

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 **NOTE:** HP ThinState now uses `ibrpe.exe` for imaging. Any flash drives previously created containing `ibr.exe` can no longer be used.


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To perform an HP ThinState capture:

1. On the thin client you are capturing the image from, make sure the first boot device in the BIOS is set to USB.
2. Disable the write filter.
3. Insert a USB flash drive that is greater in size than the onboard flash drive.
4. Click **Start > Control Panel > HP ThinState Capture**.
5. Follow the on-screen instructions.
6. The HP ThinState Capture tool opens a blue screen. Follow the on-screen instructions.

Use the USB flash drive to deploy the captured image to another HP thin client of the exact same model and hardware.

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 **NOTE:** With HP ThinState Capture, you might be able to capture the image from a larger flash and deploy it to a smaller flash, depending on the size of the captured image.

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To perform an HP ThinState deployment:

1. On the thin client you are deploying the image to, make sure the first boot device in the BIOS is set to USB.
2. Insert the USB flash drive that contains the captured image, and then restart the computer.
3. Follow the on-screen instructions.

After you remove the USB flash drive and cycle power to the system, the image will unbundle. Do not interrupt or cycle power to the unit during this process.

## HP Velocity

HP Velocity is a quality of service (QoS) system that dramatically improves the user experience for real-time, networked applications by reducing packet loss on IP-based networks used to carry the application traffic. The HP Velocity client-side component is preinstalled on HP thin clients running WES 7 and works in conjunction with a server-side component.

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 **TIP:** For more information, go to <http://www.hp.com/go/velocity> and see the HP Velocity documentation.

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## Microsoft System Center Configuration Manager

Microsoft System Center Configuration Manager (SCCM) helps maintain corporate compliance and control while enabling users to use the devices and applications they need. It provides key management capabilities for application delivery, desktop virtualization, device management, and security, which makes it possible to enable productivity amidst device proliferation.

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 **TIP:** For more information, see the white paper *Managing HP Thin Clients with SCCM 2012 SP1*.

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