MEDIASMART SERVER

Managing a Digital Lifestyle in a Mixed OS Environment

The HP MediaSmart Server helps manage and share digital files in households with both Apple® Macs and Microsoft® Windows® PCs
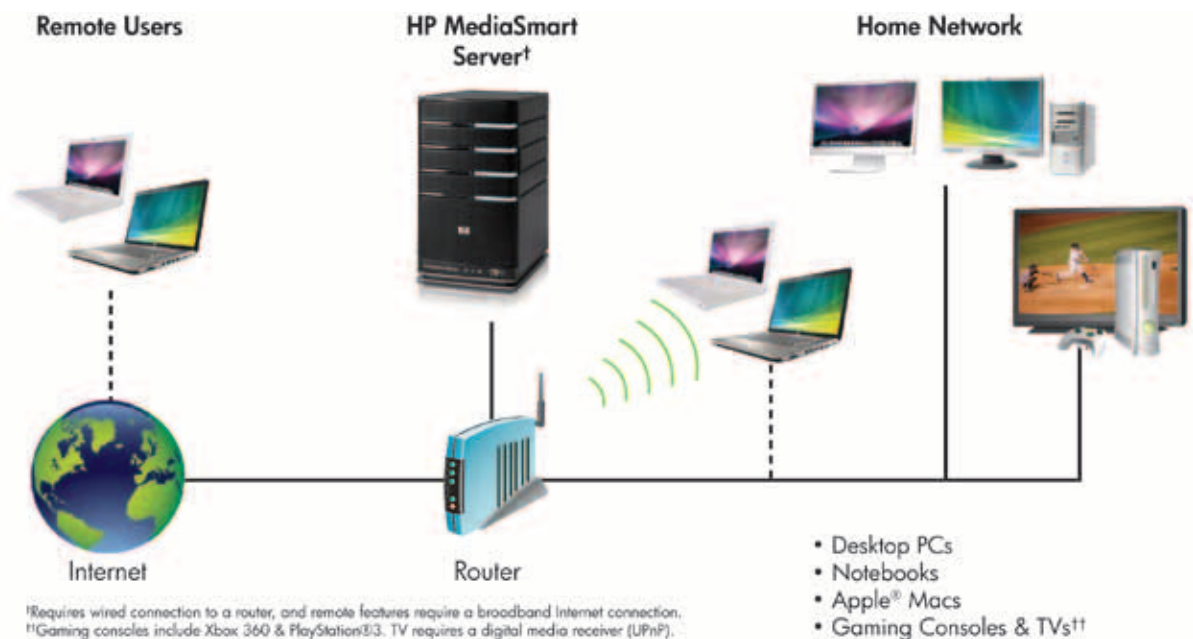
Introduction

The world is experiencing a content explosion, driven by digital cameras, video cameras, MP3 music players, computers, and cell phones—presenting a huge challenge to home computer users. In fact, the research firm Parks Associates estimates that the average broadband household will see its digital media storage needs grow to nearly 900GB by year-end 2012![1]

The average consumer needs to tackle this challenge. Their digital content needs to be synched, protected, managed, and shared—around the house and around the world. Mom wants to share the latest photos of the family with Grandma; Dad needs access to his important files when he's on a business trip; and the kids need their music when they're at their friends' houses. Further, many of today's households have both a PC and Mac and need a solution that works in mixed environments.

Although the HP MediaSmart Server is based on the Microsoft® Windows® Home Server operating system, HP has designed it to support features for systems running both Microsoft® Windows® and Apple® Mac® OS X. This paper takes a look at those features, illustrates the differences, and describes ways to leverage the HP MediaSmart Server in a mixed operating system environment (Figure 1).

Figure 1. The HP MediaSmart Server in a mixed-OS environment.

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[1] "Home Servers and Consumer Storage," ©Copyright 2008 Parks Associates. Executive Editor: Kurt Scherf, Vice President, Principal Analyst.

An overview of the HP MediaSmart Server

First, let's take a quick look at the HP MediaSmart Server and the technology behind it. The HP MediaSmart Server provides server functionality for family members—giving them convenient access to their digital content from anywhere they have access to their home network or the Internet.

Features

The HP MediaSmart Server protects and shares a household's digital content—giving connected families an easy to use, central repository for their digital photos, music, videos, and documents. Major features of the HP MediaSmart Server include:

- Support for households that have a mix of Microsoft Windows and Mac OS X computers.[a]
- An automatic backup process for Windows PCs and Apple Macs on the home network.[b]
- Remote access to media and files with an easy-to-use, browser-based interface. With proper authorization, a remote user can log into their home system and perform functions as if they were sitting at their computer.
- A simple photo management and sharing tool that lets users share their photos directly from the HP MediaSmart Server or through popular photo sharing websites like Snapfish™, Facebook®, and Picasa™ Web Albums.[c]
- A way to conveniently stream photos, music and videos to PCs, Macs, and TVs using a gaming console (like Xbox 360 & PlayStation®).[d] Furthermore, users can enjoy photos and music—at home or at work—with remote media streaming to any Internet-connected computer.
- A Media Collector that automatically collects media files from PCs on the home network and organizes them on the server.
- A way to serve up iTunes music—any computer system on the network that runs iTunes can access music on the HP MediaSmart Server as an iTunes shared library.
- A way to transparently duplicate selected folders on separate disk drives to help protect against a hard disk drive failure.[e] Plus, it's easy to add storage as needs grow.
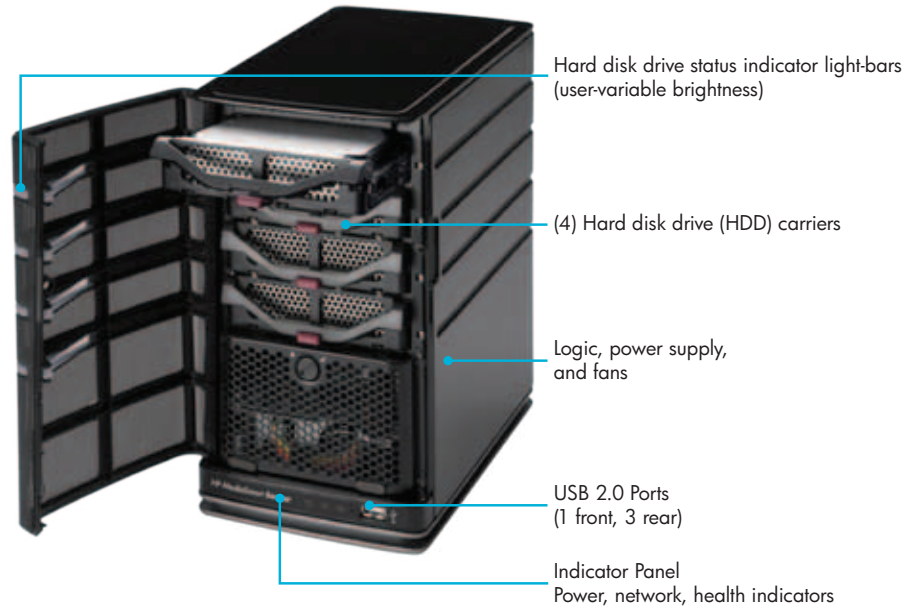
Technology

Hardware

The HP MediaSmart Server is a powerful server fitted into an attractive, small chassis. Design emphasis is on high performance network connectivity, quietness, and the ability to handle a large amount of disk storage. The size and sleek modern appearance allows it to fit nicely in a home environment.

Server storage is provided through one to four hard disk drives. Each hard disk drive in the HP MediaSmart Server is enclosed in a carrier that unlatches and slides out of the enclosure once the front door is opened (Figure 2). No tools are required to add or remove hard disk drives and the server does not need to be powered down.[2] The hard disk drive carrier isolates much of the vibration or noise reducing the overall noise emissions from the unit.

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[2] The system drive cannot be hot-swapped. Replacing disk drives must be properly managed from the Windows Home Server Console.

Figure 2. HP MediaSmart Server hardware.

Hard disk drive status indicator light-bars
(user-variable brightness)

(4) Hard disk drive (HDD) carriers

Logic, power supply,
and fans

USB 2.0 Ports
(1 front, 3 rear)

Indicator Panel
Power, network, health indicators

Software and Filesystem

The HP MediaSmart Server is powered by Microsoft's Windows Home Server operating system, which must be installed and managed from a Windows-based PC. However, after the initial software installation, both PCs and Macs may access the server from their respective user interfaces, although most administrative functions can only be accessed from a PC.

To make management and use easier, Windows Home Server introduces a new disk management technology called Windows Home Server Drive Extender. Drive Extender manages all of the hard disk drives in the server, and presents them to users on the network as a single large volume.

Drive Extender also introduces Folder Duplication, a new way of protecting data. Folder Duplication is enabled/disabled by the administrator. Files within folders that have duplication enabled are automatically and transparently copied to two separate hard disk drives to protect the files against a hard disk drive failure. For example, Folder Duplication might be enabled for a library of digital photos; if a hard disk drive failure makes one of the drives inaccessible, all of the photos are still available on the other hard disk drive. (Note that if there is only one hard disk drive, Folder Duplication is not available.) Once set up, Drive Extender is inherent in Windows Home Server, irrespective of the client operating system that is accessing the shared storage on the server.

Of particular importance to Mac OS users is the availability of the shared folders on the network. Windows Home Server exports selected folders on the server using Microsoft's Server Message Block (SMB) application-level network protocol. SMB filesystem access is integrated into Mac OS X, thus any functionality that relies on accessing shared folders on the HP MediaSmart Server is available equally on Microsoft Windows and Mac OS X. For example, Mac OS X users may access photos on the HP MediaSmart Server Pictures shared folder, importing them into iPhoto on the Mac system to create books, calendars, or order prints.

Server Functionality on Mac OS and Microsoft Windows

Let's compare the feature set available to users with the different operating systems. Obviously, a Windows-based system has access to all of the MediaSmart Server features. The good news is that most of the HP software features are also available to Mac users (Table 1).

Table 1. Rating the functionality available on the HP MediaSmart Server under Mac OS X.
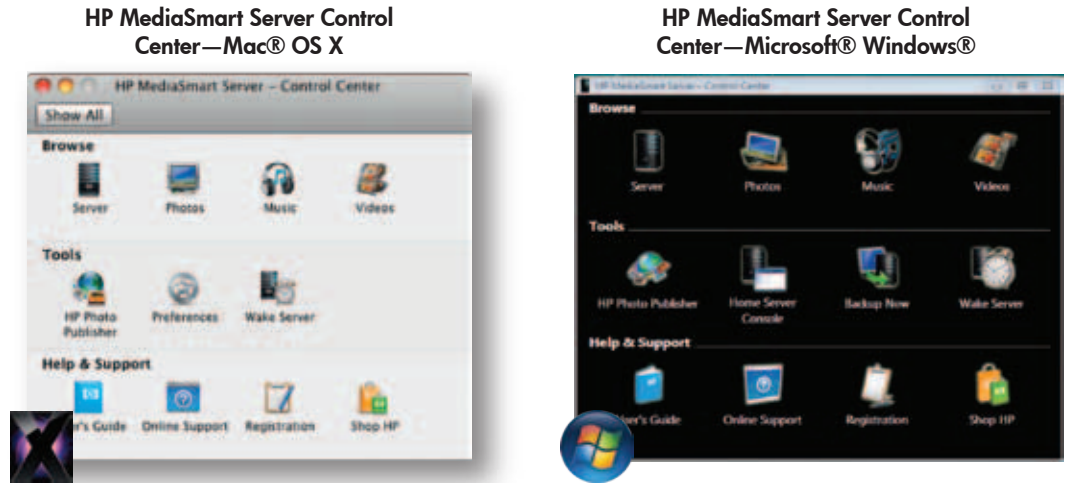
HP MediaSmart Server Feature/Functionality	Degree of functionality for MAC OS X None ....Full	Notes
User functions		
Control Center		Both Windows and Mac OS users have their own HP Control Center to access the HP MediaSmart Server.
iTunes		Both Windows and Mac OS users can manually copy their music to the HP MediaSmart Server; this music is then available to users using the iTunes application. Both Mac and Windows systems can access the Shared iTunes library on the MediaSmart Server using the iTunes application.
Local File sharing		File sharing is available through both the HP Control Center and the Mac OS file sharing interface (the Mac OS Finder).
Remote File sharing		Both Windows and Mac OS users can remotely access files through their respective browsers. Remote access must be enabled and configured from the Windows Home Server Console.
HP Web Media Streamer		Both Windows and Mac OS users can access the Web Media Streamer functionality through their respective browsers.
HP Photo Publisher		The Photo Publisher is accessible from both operating systems using their respective browsers.
Remote PC Access		Mac OS X users cannot remotely access PCs on the home network.
Administrative functions		
Windows Home Server Console		A Windows-based PC is required to access the administrative functions provided by the Windows Home Server Console. This includes administration of the HP Media Collector, User Accounts, shared folder protection, storage management and the TwonkyMedia™ web streaming server.
Backups		Both Windows and Mac OS users can backup files and folders to the HP MediaSmart Server.
File and Folder Restore		Both Windows and Mac OS users can restore files and folders with their respective backup/restore applications.
System Restore		Mac OS users can use Apple's Time Machine to restore files and folders. To do a complete system restore, the Mac must first be reimaged using the OS CD, and then Time Machine can be used to restore individual files and folders. Note that the "Restore System from Backup" feature of Time Machine is not implemented.
HP Media Collector		The HP Media Collector does not scan Mac OS systems.
Online server backup with Amazon S3[f]		Backup of the HP MediaSmart Server via Amazon's S3 (Simple Storage Service) must be configured through the Windows Home Server Console. Mac OS Time Machine files that are on the HP MediaSmart Server *can* be backed up to the online service, thus the Mac OS files are protected.
McAfee Anti-virus for home server		The McAfee anti-virus software must be configured through the Windows Home Server Console.

User Functions

HP MediaSmart Server Control Center

The HP MediaSmart Server Control Center is a consolidated interface to the various functions of the HP MediaSmart Server (Figure 3). The control center is similar for both Windows and Mac OS; the main difference is the ability to access the Windows Home Server Console from the Windows control center.

Figure 3. HP MediaSmart Server control center for Mac OS X and Microsoft Windows

HP MediaSmart Server Control
Center—Mac® OS X

HP MediaSmart Server Control
Center—Microsoft® Windows®

The HP Control Center is the starting point for accessing the features of the HP MediaSmart Server, and has three sections:

- Browse—Access shared folders. A shared folder means the same as a share and the terms can be used interchangeably.
- Tools—Tools and settings for configuring the HP MediaSmart Server.
- Help & Support—Learn how to use the HP MediaSmart Server and connect to online support.

Browse—File sharing

Because network file sharing is built-in to Mac OS X, all of the shares (that a user has the privileges to access) are available as a "Shared" filesystem (Figure 4). Users can peruse the filesystem hierarchy as with any other filesystem, including the user's file folders on the HP MediaSmart Server and the default shares (Music, Photos, Public, and Videos).

Mac OS X performs SMB filesystem security checking just as Windows does; if the share is password protected, the system will ask for the proper username/password combination. In addition, filesystem access control (read, write, execute) is maintained.

Figure 4. The HP MediaSmart Server shares appear in the finder under "Shared" items.

iTunes

Apple's iTunes[3] application is a popular way of organizing and playing music, movies, TV shows, and podcasts. The iTunes application runs on both Macs and PCs, and has a built-in sharing capability such that users can view each other's iTunes libraries (or subsets of their libraries).

The HP MediaSmart Server supports iTunes music sharing, and expands on it by automatically aggregating music from the shared Music Folder on the HP MediaSmart Server to the iTunes server. Any music files placed in the shared Music Folder will automatically be copied into the iTunes library (after a short interval, which is configurable through the Windows Home Server Console). Music files can be placed in the shared Music Folder in two ways:

The HP Media Collector—The HP Media Collector on the HP MediaSmart Server automatically and continuously collects music, photos, and video from the PCs on the network, and copies them to the appropriate shared folder on the server. In the case of music, the iTunes server then copies the music files to the iTunes library, which subsequently makes them available to anyone on the network.[4]

The HP Media Collector is administered through the Windows Home Server console, and thus administration of it requires a Windows PC. The Media Collector does not collect media from Macs on the network, thus Mac users must manually place music files on the HP MediaSmart Server.

Manually copy music to the HP MediaSmart Server—Users can share their music on the iTunes server by manually copying music files to the shared Music Folder on the HP MediaSmart Server. Using file sharing, a Mac user can find the raw media (easily done in iTunes) and copy it to the Music folder on the HP MediaSmart Server. The iTunes server on the HP MediaSmart Server will then make the music available to other users on the network.

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[3] http://www.apple.com/itunes/
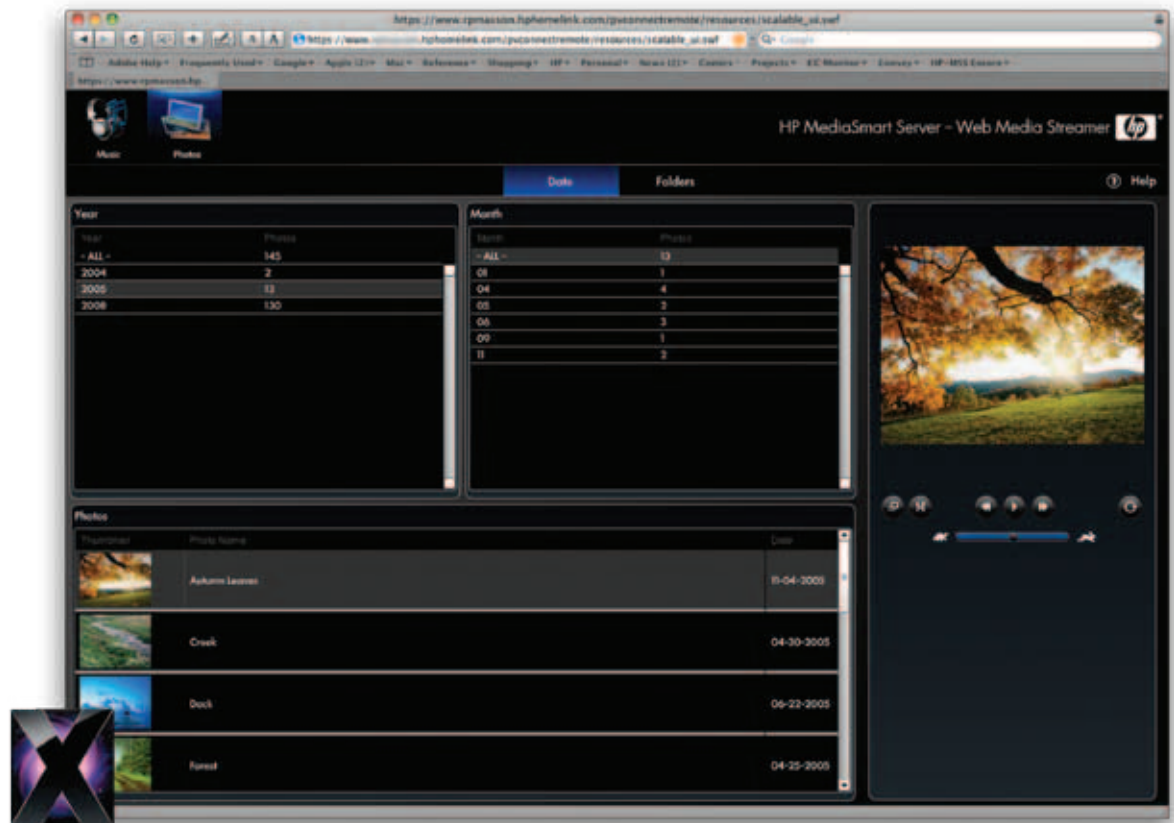[4] Users can also choose to only allow certain playlists to be exported.

Media Streaming

The HP MediaSmart Server supports several different kinds of streaming, including Windows Media Connect, iTunes (described above), and Packet Video's TwonkyMedia server. Windows Media Connect is disabled by default; when enabled it allows streaming of media to computers that support Windows Media Connect, such as the Windows Media Player 11 application.

Packet Video's TwonkyMedia prepares media for the Web server to stream to the Internet and streams media to Digital Media Receivers (DMRs) in the home. TwonkyMedia is enabled by default in the HP MediaSmart Server and can stream most media file types. Administration of the TwonkyMedia plug-in on the HP MediaSmart Server must be done from the Windows Home Server Console.

Mac users can steam media within their home or remotely stream photos and music by using a Mac-based browser such as Firefox or Safari (Figure 5).

Figure 5. Remote media streaming from the HP MediaSmart Server through its Web Media Streamer.

Remote Access

The HP MediaSmart Server, in conjunction with Windows Home Server, gives users the ability to access their home server files remotely, to transfer files to and from the server, and to login onto their home PCs over the Internet.[5]

Once configured, the household's HP MediaSmart Server is accessed through a unique URL (for example "www.smithshouse.hphomelink.com").[g] Any browser will work to access that URL, including Apple's Safari. Through a web browser, the user has to access the home page and files on the HP MediaSmart Server (subject to security restrictions).

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[5] Logging into a computer requires that computer to be running Windows XP Professional, Windows XP MCE, Windows Vista Business or Windows Vista Ultimate.

To remotely login to a PC on the home network through the HP MediaSmart Server, the remote browser must be running on a Windows PC and running Internet Explorer 6 or better. Since Microsoft does not support Internet Explorer under Mac OS X, Mac users cannot remotely logon to PCs on the household network.

Photo Publishing and Viewing

The HP Photo Viewer is an easy way to share photos and video clips with friends, relatives or clients directly from the HP MediaSmart Server. The albums can be viewed in a slideshow or a filmstrip mode, a link to the album can be emailed to friends, and viewers can easily download pictures from HP Photo Viewer.

The HP Photo Publisher is accessible through the Tools section of the HP MediaSmart Server Control Center from both Windows PCs and Macs. (Alternatively, the URL of the HP MediaSmart Server can be entered in a browser window). Photos can be published to the HP Photo Viewer on the HP MediaSmart Server or to several popular photo sharing websites such as Snapfish.
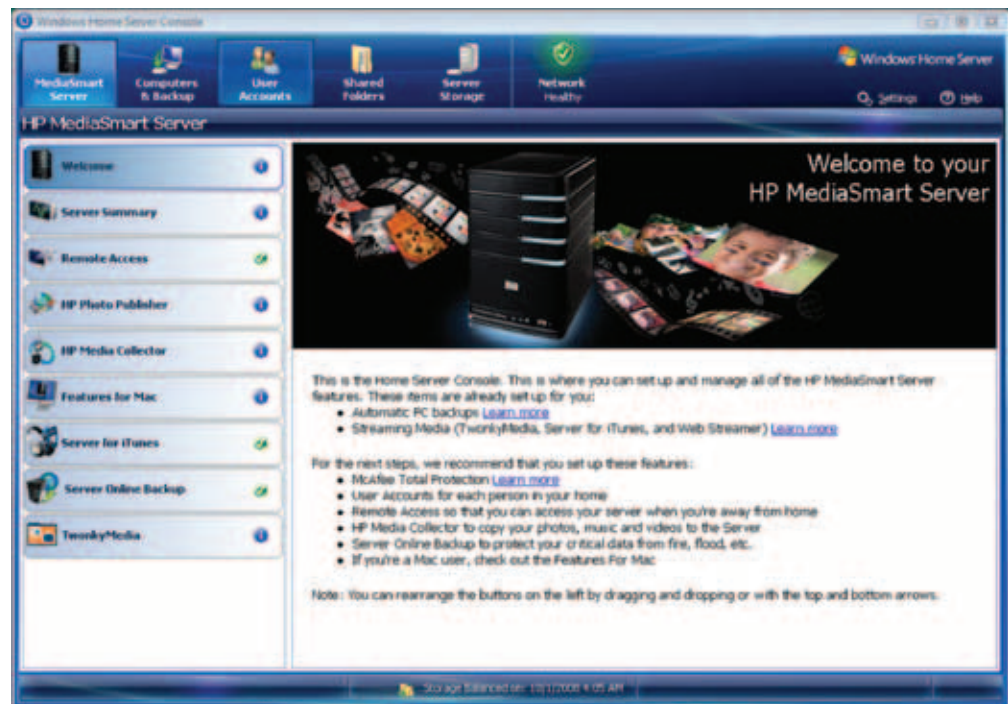
Mac users can use Apple's iPhoto application to export photos directly to the HP MediaSmart Server. From that point, publishing photos is identical to the process explained above.

Administrative Functions

Windows Home Server Console

Windows Home Server Console is the main interface to Windows Home Server administrative functions on the HP MediaSmart Server (Figure 6). These functions include adding/modifying user accounts, setting up remote access, setting sharing permissions on shared folders, and storage management (enabling/disabling folder duplication and adding/removing hard drives). These administrative functions are only accessed through a Windows based PC.

Figure 6. Administrative functions available through the Windows Home Server Console
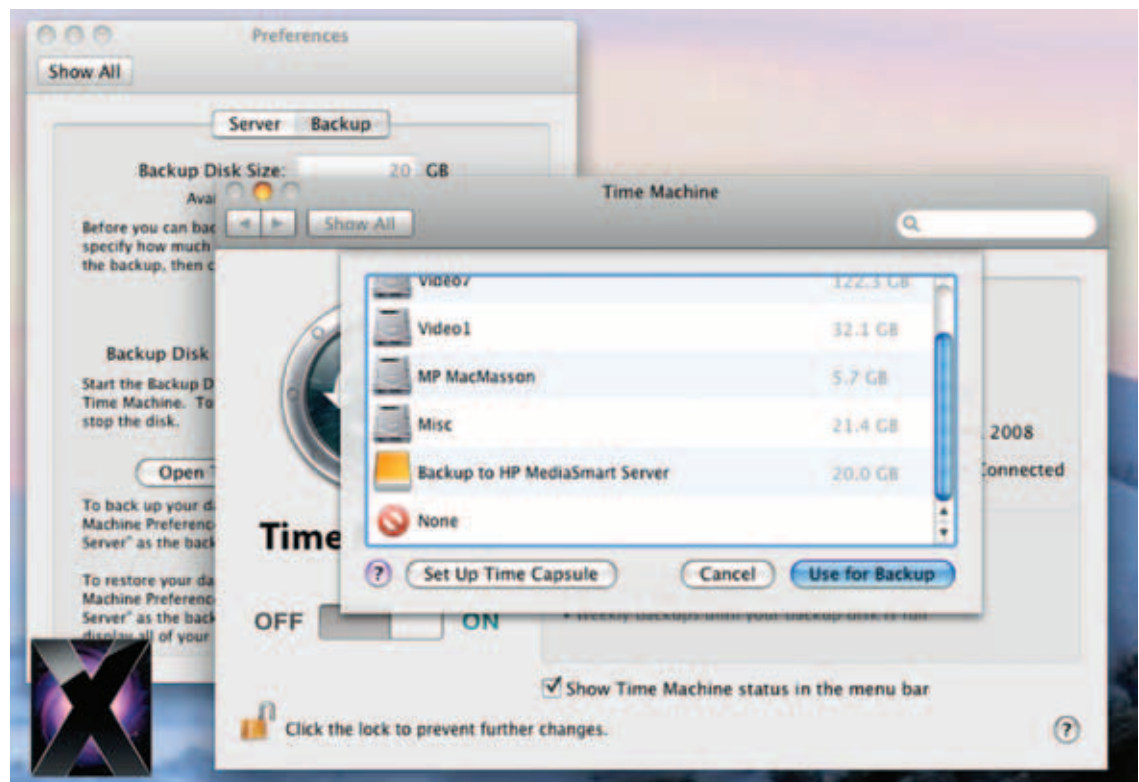
Backup and Restore

One of the major advantages of the HP MediaSmart Server is fully automatic backups. For PCs, installing the HP MediaSmart software will automatically establish an automatic backup schedule for each PC. When first discovered, the entire filesystem of a PC is backed up—sufficient to restore the system from scratch if necessary—from then on, incremental backups are performed. Administration of PC backups is done through a Windows-based PC using the Windows Home Server Console.

In Mac OS X 10.5 ("Leopard"), Apple introduced a sophisticated backup system known as Time Machine.[6] The HP MediaSmart Server can be set up as a Time Machine volume, allowing backups over the network for any number of Mac systems in the household. Every hour, every day, an incremental backup of each Mac is made automatically. Time Machine saves the hourly backups for the past 24 hours, daily backups for the past month, and weekly backups for everything older than a month (up to the capacity of the backup disk).

Under Mac OS, configuring Time Machine to use the HP MediaSmart Server as the backup device is through the HP MediaSmart Server Control Center, Tool section, Preferences icon. Once configured, the Mac OS X Preferences Pane for Time Machine can be used to select the HP MediaSmart Server as the backup device (Figure 7).

Figure 7. The HP MediaSmart Server can be used as a backup device for Mac OS X Time Machine.

The Time Machine interface to "go back in time" works with the HP MediaSmart Server backup disk exactly as if the backup disk was directly connected to the Mac computer. Time Machine restores individual files, complete folders, iPhoto libraries, and Address Book contacts.

Note that the "Restore System from Backup" feature of Time Machine is not implemented. To restore an entire Mac computer, perform a "clean install" of Mac OS X on the computer, and then use Time Machine to restore individual files and folders from the last Time Machine backup.

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[6] http://www.apple.com/macosx/features/timemachine.html

Running Microsoft Windows on a Mac

In early 2006, Apple reengineered their line of desktop computers to use the same Intel® processors that are used by PC's—thereby opening the possibility of running Windows on the Mac hardware. Subsequently, Apple introduced Boot Camp, a way of booting Windows on a Mac system. Several companies now also provide virtualization software that tightly integrates Windows and Mac OS on the same Mac platform.

Using Boot Camp or one of the virtualization packages is currently unsupported as a method of providing the initial Windows-based installation of the HP MediaSmart Server software. Users should have at least one PC on the local network running Microsoft Windows for the initial software installation and administration of the HP MediaSmart Server.

Conclusions

The HP MediaSmart Server is a new way of providing true server functionality to today's digital family, including families with mixed Windows- and Mac OS X-based environments. Through the HP MediaSmart Server Control Center, households with one or more Mac systems can use most of the functionality of the HP MediaSmart Server.

The bottom line is that Mac users can take advantage of the data protection features of the HP MediaSmart Server, fully utilize its shared folder capabilities, and access server files remotely anywhere there is Internet access. One of the most popular features of the HP MediaSmart Server—photo publishing and viewing—is completely accessible by Mac users. Also, the Apple iLife applications (iTunes, iPhoto, iMovie) can fully access media files on the server, and Mac users can remotely stream media files over the Internet.

Key Software Features

- Automatically backs up multiple Windows PCs (Microsoft's Windows Home Server Backup) and Apple® Macs® (Apple's Time Machine[a]) on your home network
- Easily restore individual files or an entire Windows PC hard disk drive
- Remotely access files on your server from an Internet-connected computer
- HP Photo Publisher allows you to easily publish your photos to Snapfish™, Facebook®, and Picasa™ Web Albums using an Internet-connected computer[c]
- Automatically copies iTunes® music libraries from family members' Windows PCs to the server for streaming and preserves playlists from each PC
- Conveniently stream photos, music, and videos to PCs, Macs, gaming consoles (Xbox 360 & PlayStation®3), and TVs on your home network[d]
- HP Media Collector conveniently schedules the server to copy and centralize your Windows PC media files and libraries (including iTunes® and playlists)
- Easily create a personal web address to be used for remote access to your HP MediaSmart Server[g]

Hardware

- Intel® Celeron™ 2.0 GHz 64-bit processor
- 2 GB of DDR2 DRAM
- Network support – 10/100/1000 (Gigabit) RJ45 Ethernet
- Supports both wired and wireless PCs (via wireless router)
- One eSATA port and four USB 2.0 ports for storage expandability
- Four hard disk drive bays hold off-the-shelf 7200 RPM SATA I or II drives. No tools or cables required for hard disk drive installation
- Maximum capacity – Only limited by number of internal hard disk drive bays (4), USB 2.0 ports (4) and eSATA port (1)
- Maximum in-home users: up to 10 user accounts

Operating System Support

- Automatic backup of computers running Microsoft® Windows® Vista (32- & 64-bit), XP Home (SP2), XP Professional (SP2), Media Center Edition 2004 (SP2) or later, and Macs running Time Machine[a]
- File sharing for computers running Microsoft Windows® Vista (32- & 64-bit), XP Home (SP2) or XP Professional (SP2), Media Center Edition 2004 (SP2) or later, Mac® OS X or Linux
- Remote access to computers running Microsoft Windows® XP Professional (SP2), Media Center Edition 2005 (SP2), or Vista Ultimate

Notes

[a] For Mac® OS X 10.5 or later; Windows PC required on your home network for server setup and Windows Home Server Console access

[b] Automatic backup of computers running Microsoft Windows® Vista (32 & 64 bit), XP Home (SP2), XP Professional (SP2), Media Center Edition 2004 (SP2) or later, and Macs running Time Machine

[c] Photo website services are subject to change without notice and some services may not be available at the time of product purchase. The available service providers may vary in your country/region.

[d] Digital Media Receiver (UPnP) required for streaming to home stereo system or TV

[e] Requires at least two hard drives

[f] Amazon S3 service required and not included.

[g] Free and pay-for options are available from TZO

To learn more, visit www.hp.com/go/mediasmartserver

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