

HP ProLiant Essentials Server Migration Pack 1.10

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Introduction

Virtualization is the representation of hardware through software. This representation, in which multiple guest operating systems run concurrently on a single hardware machine, increases system utilization, and reduces cost and complexity in server consolidation projects. In addition, virtualization provides you with the flexibility to respond to changing business demands.

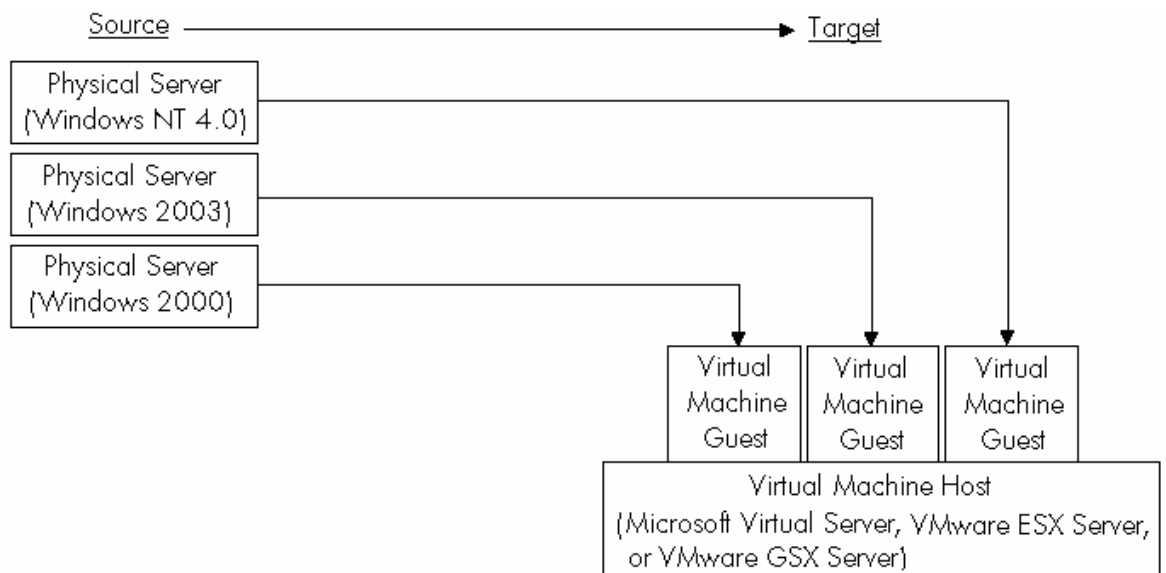
Two types of migration tasks play key roles in the virtualization process:

- Physical-to-virtual (P2V) migration enables migration of a physical machine to a virtual machine running on Microsoft® Virtual Server 2005, VMware ESX Server, or VMware GSX Server.
- Virtual-to-virtual (V2V) migration enables migration of a virtual machine guest between virtualization layers, including Microsoft Virtual Server 2005, VMware ESX Server, and VMware GSX Server.

Overview

The HP ProLiant Essentials Server Migration Pack (SMP) extends the functionality of the HP ProLiant Essentials Virtual Machine Management Pack (VMM) to provide integrated P2V and V2V migrations. The Server Migration Pack enables you to simplify the server consolidation process, thereby freeing you to focus on other priorities.

Figure 1. Physical servers consolidated into a virtual machine host setup (P2V)



The Server Migration Pack is a companion product that works in conjunction with the Virtual Machine Management Pack 1.10 or later. The Virtual Machine Management Pack, in turn, adds virtual machine management capability within HP Systems Insight Manager (HP SIM) 4.2 Service Pack 1 or later. The Virtual Machine Management Pack provides tracking, monitoring, and control functions for organizing an effective virtualized environment.

IMPORTANT: The Server Migration Pack will only migrate a physical machine or virtual machine to virtual machine hosts that are licensed and managed by the Virtual Machine Management Pack.

Benefits

The Server Migration Pack provides central management and control of P2V and V2V migrations. Among its benefits, the Server Migration Pack provides:

Simplified server consolidation processes

SMP wizards provide simple, easy-to-follow processes for performing P2V and V2V migrations. This simplified process reduces time needed to perform migration tasks.

Integration with HP SIM and the Virtual Machine Management Pack

Integration with HP SIM provides you a “single pane of glass” view that includes the auto discovery of the virtual machines, coupled with the Virtual Machine Management Pack’s best-in-class host server resource monitoring and metrics to enable the migration process.

Workload management

As with the Virtual Machine Management Pack, IT administrators can use the Server Migration Pack to easily move virtual machine guests between host servers to optimize workloads of host server resources.

These benefits provide you with simplified management and operation of multiple virtual machine environments, reduced administration cost and complexity, and faster response times.

Technology summary

Migration allows for the movement of workloads from physical or virtual servers to other virtual host servers. The Server Migration Pack ensures the following operations in the virtual environment during a P2V or a V2V migration process:

- Image transfer
- Boot environment adaptation
- Injection of Microsoft Windows® operating system drivers

P2V migration supports the migration of basic disks and dynamic disks that have simple (non-extended) volumes. A dynamic disk can contain simple volumes, spanned volumes, striped volumes (for example, RAID 0), mirrored volumes (for example, RAID 1), and striped with parity volumes (for example, RAID 5).

During the image transfer, the Server Migration Pack:

- Creates virtual target disks with matching partition signatures
- Optimizes the copy of known file system types (only used sectors are copied)
- Copies unknown file system types sector for sector

NOTE: The Server Migration Pack creates target virtual disks with matching partition signatures. The target virtual disks are created with a virtual disk size rounded up to the next gigabyte. For example, if your source disk is 9.8 GB, the Server Migration Pack creates a 10-GB virtual sized disk.

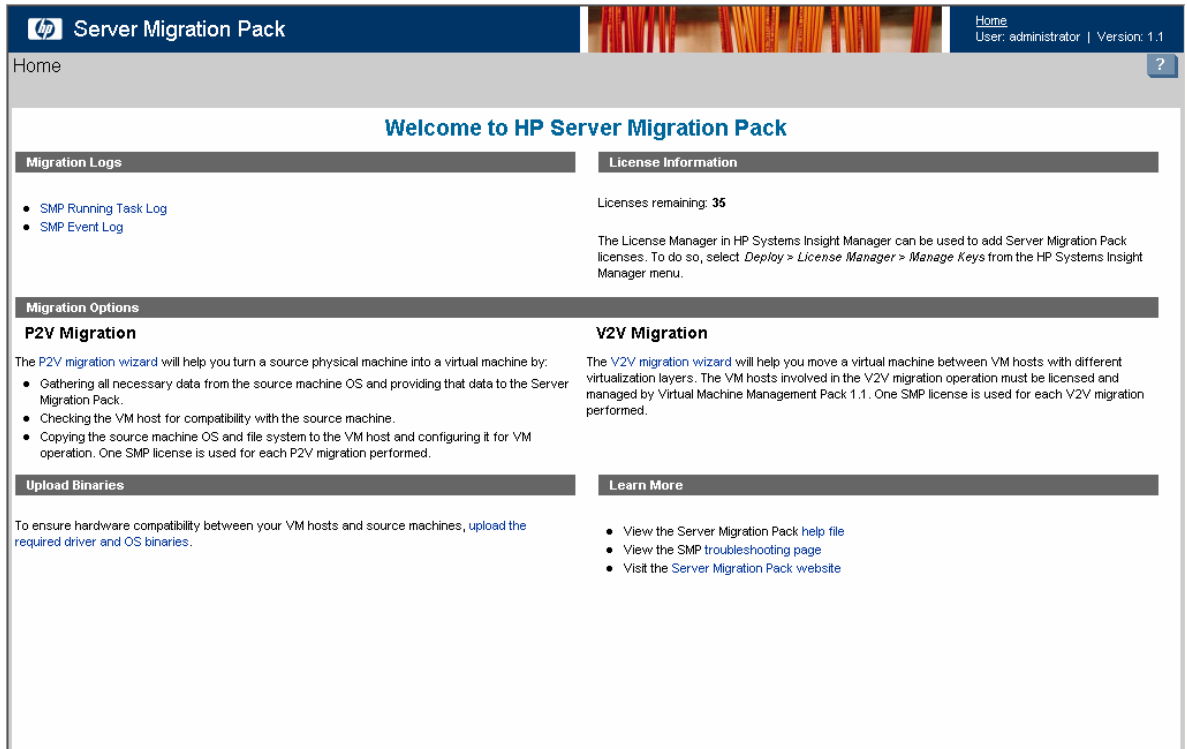
NOTE: For Microsoft Virtual Server and VMware GSX Server, the Server Migration Pack creates dynamically expanding disks that expand up to the virtual size when sectors are actually used. Meanwhile, for VMware ESX Server, the Server Migration Pack creates fixed disks.

NOTE: The Server Migration Pack uses HP ProLiant Essential products licensing. One license is used for each server migration.

Server Migration Pack console

From the HP SIM toolbar, select **Tools>Integrated Consoles>Server Migration Pack** to access the Server Migration Pack console. The home page of this console, shown in the following figure, is your starting point to perform P2V and V2V migrations.

Figure 2. Server Migration Pack console



Upload Binaries Screen

The Server Migration Pack automatically uploads binary files for migration tasks. You can access the Upload Binaries screen from the Server Migration Pack console. If the required operating system binary files are not uploaded within the HP SIM Central Management Server (CMS), the Upload Binaries screen is displayed at the appropriate time during the P2V or V2V migration processes. To access the Upload Binaries screen from the Server Migration Pack console, click **upload the required driver and OS binaries**.

If additional files are necessary, load these files from your original Windows or VMware media before beginning your migration tasks or during the migration process when the screen illustrated in **Figure 3** appears. Also, if Microsoft iSCSI Initiator 1.06 is not installed on the CMS, download and install the initiator from <http://go.microsoft.com/?linkid=663997>. The Server Migration Pack requires Microsoft iSCSI Initiator for P2V and V2V migration tasks. The following table shows the binary files that are preinstalled by operating system.

Table 1. Operating system binary files automatically available for migration

Operating system	Operating system binary file status
Windows NT 4.0	(Optional) Verify that all the binaries are available. By default they are available within the Server Migration Pack application.
Windows 2000	No action required.
Windows 2003	No action required.
Windows XP	Requires upload of SCSI drivers in case of migration to VMware target virtual machine host.

The following figure shows the Server Migration Pack Upload Binaries screen.

Figure 3. Server Migration Pack Upload Binaries screen

HP Server Migration Pack

Home
User: administrator | Version: 1.1

Upload Binaries

HP Server Migration Pack enables the migration of Operating Systems across hardware platforms. A typical scenario is server consolidation, where physical machines are moved to virtual machines (P2V). Migration between virtual platforms are also supported (V2V). In order to support these operations, certain mandatory binary files must be uploaded from the original media supplied by Microsoft or VMware.

Required Binaries

File Exist?	File Name	Company	Version	Comment	
CMS Installation					
✓	iSCSI Initiator	Microsoft Corporation	1.06	Mandatory for migrating Microsoft Windows® hosts and virtual machines (all P2Vs and V2V migrations between Microsoft Virtual Server 2005 and VMWare virtualization technologies).	
Microsoft Windows® NT 4.0 Service Pack 6					
✓	aic78xx.sys	Adaptec, Inc.	4.00	Mandatory for Virtual Server, locate aic78xx.sys in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
✓	buslogic.sys	Microsoft Corporation	4.00	Mandatory for VMware, locate buslogic.sys in Microsoft's original Windows NT Installation Media.	<input type="text"/> Browse...
✓	hal.dll	Microsoft Corporation	4.00	Mandatory for Virtual Server, locate hal.dll in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
✓	halapic.dll	Microsoft Corporation	4.00	Mandatory for VMware, locate halapic.dll in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
✓	ntdll.dll	Microsoft Corporation	4.00	Mandatory , locate ntdll.dll in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
✓	ntoskrnl.exe	Microsoft Corporation	4.00	Mandatory , locate ntoskrnl.exe in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
Microsoft Windows® XP Installation					
✗	vm SCSI.sys			Mandatory for VMware Migrations. Locate the driver vm SCSI.sys for Microsoft Windows® XP. It can be found in the windows.iso CDROM image file located in the VMware installation directory, or within a virtual Microsoft Windows® XP guest machine in its windows\system32\drivers directory if VMware Tools was installed. The driver can also be downloaded from VMware's Website.	<input type="text"/> Browse...

Cancel Upload

In this example, if performing a migration that includes Microsoft Windows XP, you must upload the vm SCSI.sys file. Meanwhile, the binaries required for performing a Windows NT 4.0 Service Pack migration are available.

IMPORTANT: In most cases, you will not need to access the Upload Binaries screen because the appropriate binary files for Windows NT 4.0, Windows 2000, and Windows 2003 will have been preinstalled. However, if you are performing a migration of a server running the Windows XP operating system, you must upload the vm SCSI.sys driver from the VMware distribution CD.

Physical-to-virtual (P2V) migrations

The Server Migration Pack enables you to perform P2V migrations from a P2V wizard, which is accessible from the SMP console by clicking **P2V migration wizard**. P2V migration supports x86 servers running Microsoft Windows operating systems, including Windows NT 4.0, Windows 2000, and Windows 2003. For a list of supported physical machine operating systems for P2V migrations, refer to the *HP ProLiant Essentials Virtual Machine Management Pack and Server Migration Pack Support Matrix*.

IMPORTANT: The source physical machine device must be a server running a Microsoft Windows operating system and cannot be a virtual machine host.

IMPORTANT: The HP SIM CMS cannot have any virtualization software, such as Microsoft Virtual Server 2005 or VMware GSX Server, installed and running for this migration.

The following figure displays the P2V wizard, which will guide you through the steps to perform a P2V migration.

Figure 4. Server Migration Pack P2V wizard

Step 1 of 7: Select source physical machine

Step Description: The Server Migration Pack P2V process migrates the physical disks of the source physical machine to the target virtual machine host. The migrated virtual machine is automatically set up with the necessary drivers and minimum virtual hardware configurations.

Select the source physical machine from the following list of HP SIM managed servers. If you do not find the server that you want to perform P2V migration in the following list, add it to the list by specifying the full DNS or system IP address in the provided textbox and click "Inspect only." Note: For manually added servers, you might be required to provide credentials for an administrator account on the source physical machine in the next step of the P2V migration process.

Enter full DNS or system IP address:

Select	System Name	System Address	Operating System	Model	State	Delete
<input type="radio"/>	wg-gsx	170.50.4.100	Microsoft Windows Server 2003 Standard Edition	ProLiant DL380 G3	Device not inspected for P2V	<input type="checkbox"/>
<input type="radio"/>	dl380win2k3se	170.50.4.103	Microsoft Windows Server 2003	N/A	Device is ready for P2V. Reset Device	<input type="checkbox"/>
<input checked="" type="radio"/>	pi8500	170.50.4.208	Microsoft Windows 2000	ProLiant	Device is prepared for P2V. Stop Agent	
<input type="radio"/>	ml350g4	170.50.4.75	Microsoft Windows Server 2003, Enterprise Edition	ProLiant ML350 G4	SMP Agent not running	
<input type="radio"/>	msvshost	170.50.4.79	Microsoft Windows Server 2003 Enterprise Edition	ProLiant ML350 G3	Device not inspected for P2V	

SMP Running Task Log
SMP Event Log

The following table lists the P2V migration wizard column names and descriptions.

Table 2. P2V migration wizard column names and descriptions

Column	Description
System Name	The network identification name of the physical server
System Address	The network IP address of the physical server
Operating System	The operating system running on the physical server
Model	The product name of the physical server
State	The P2V migration state of the physical server

From the wizard, select a source physical machine from the list of HP SIM-managed servers and click **Next**. You can sort the list in both ascending and descending order in the System Name, System Address, Operating System, Model, and State columns. The sorted column is highlighted, and the sort order can be identified by the direction of the arrow on the sorted column heading.

If your managed system, such as Dell or IBM, does not display in the list, you can add it to the list by specifying the full Domain Name Space (DNS) or system IP address in the provided text box and clicking **Inspect only**. This process will validate if the device is supported for P2V migration. After the device has been successfully inspected and is available for P2V migration, select it and click **Next** to continue with the P2V migration wizard.

Click **Refresh Device List** to reload the system information from HP SIM and update the systems state in the list. Manually added devices can be deleted from the list by selecting the devices and clicking **Delete**.

The following table lists the states and their descriptions.

Table 3. States of physical servers

State	Description
No State	Device not inspected for P2V
Normal	SMP agent not running
Not Available	Device not available for the Server Migration Pack
Installing	Deploying SMP agent to the device
Prepared	Device is prepared for P2V
Migrating	P2V in progress
Ready	Device ready for P2V

After selecting a source machine, the wizard guides you to select the appropriate mode to deploy the SMP agent. The SMP agent is remotely deployed using one of the following methods from within the P2V wizard:

- **OpenSSH:** This method is applicable only to the servers in the P2V wizard device list that are managed by HP SIM and have OpenSSH installed.
- **Deploy SMP:** This method is available for devices that are managed by HP SIM and for servers that are manually added in the Server Migration Pack P2V wizard by specifying the DNS name or IP address. This mode of deployment is the faster of the two and takes 1 to 3 minutes. This mode of deployment requires administrative system-level login credentials of the source physical machine.

The SMP agent is deployed remotely to the source physical machine. After the installation is complete, the SMP agent runs and establishes communication between the source physical machine and the CMS.

The wizard guides you to review the source machine details and select the target virtual machine host from the list of available VMM-managed virtual machine hosts.

After you select the target virtual machine host, the wizard guides you to select the target path where the disk files will be copied on the target virtual machine host and specify a unique target virtual machine guest name. Optionally, you can reconfigure the memory allocation for the migrated virtual machine guest.

Confirm the migration details, and begin the migration.

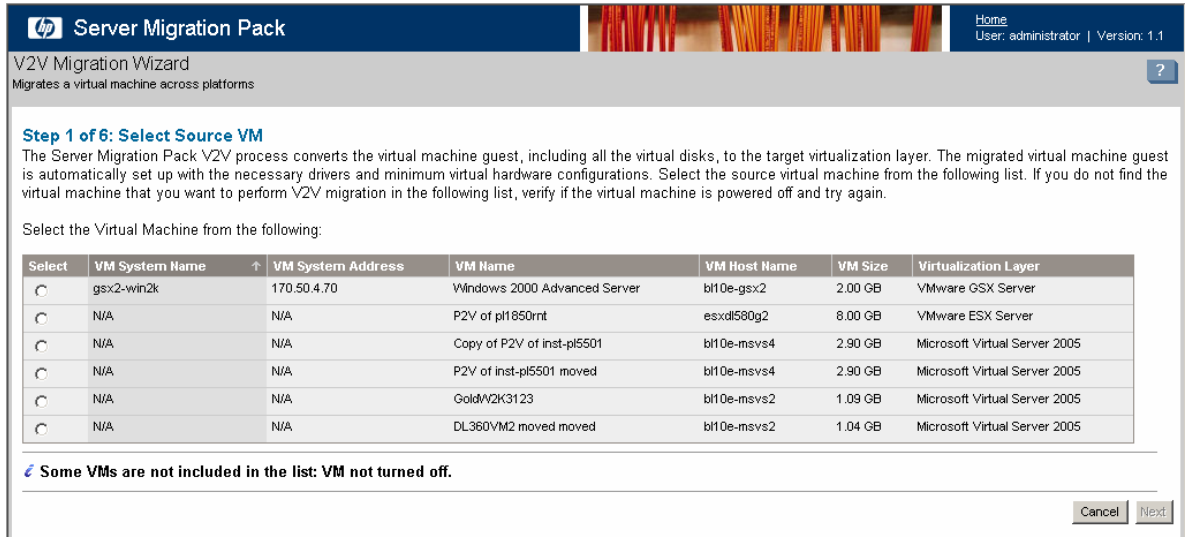
P2V migration notes

- One SMP license is used after each P2V migration.
- The migrated virtual machine guest will have a new BIOS serial number and Media Access Center (MAC) address after each P2V migration. The new BIOS serial number and MAC address are generated when the migrated virtual machine guest is registered to the target virtual machine host and is powered on.
- The migrated virtual machine guest is automatically registered to the target virtual machine host after a P2V migration and can be powered on from the Virtual Machine Management Pack console.
- You must set the host name for the migrated virtual machine guest so that no conflicts arise in the network. Duplicate ID in the network can be resolved by setting a unique name for the migrated virtual machine and by using additional tools such as Windows sysprep.
- The migrated virtual machine guest contains a dynamically expanding virtual disk in case of a Microsoft Virtual Server or VMware GSX Server target virtualization layer.
- The migrated virtual machine guest contains a fixed disk in the case of a VMware ESX Server target virtualization layer.
- The Server Migration Pack creates virtual target disks with matching partition signatures. The target virtual disks are created with a virtual size rounded up to the next gigabyte. For example, if your source disk is 9.8 GB, the Server Migration Pack creates a 10-GB virtual sized disk.
- The SMP agent on the source physical machines is not removed automatically at the end of migration. You can delete the SMP agent folder \$hp_smpagent\$ after the migration process is complete.
- Migration operations are queued if the selected target virtual machine hosts are currently involved in other migration tasks.
- During the P2V migration process, all the source data is migrated to the target virtual machine guest.
- In the event of a failed P2V migration, the migrated disks are left behind in the target virtual machine host. Locate the disk files using Windows Explorer, and manually delete those migrated disks.

Virtual-to-virtual (V2V) migrations

Along with P2V migrations, the Server Migration Pack provides functionality for V2V migrations. This is done through the V2V wizard, which is accessible from the SMP console by clicking **V2V migration wizard**. The following figure displays the V2V wizard, which guides you through the steps to perform a V2V migration.

Figure 5. Server Migration Pack V2V wizard



The following table lists the V2V migration wizard column names and descriptions.

Table 4. V2V migration wizard column names and descriptions

Column	Description
VM System Name	The network identification name of the virtual machine guest
VM System Address	The network IP address of the virtual machine guest
VM Name	The virtual machine name identified by virtual machine host
VM Host Name	The network identification name of the virtual machine host
VM Size	The size of the virtual machine guest including the virtual machine configuration file and the virtual disks
Virtualization Layer	The virtualization technology running on the virtual machine host

From the V2V migration wizard, select the source virtual machine guest from the list. The source virtual machine must be on a Virtual Machine Management Pack-licensed and managed virtual machine host, and it must be in a Stopped state. The source virtual machine can be stopped from the Virtual Machine Management console if it is running.

The list can be sorted by both ascending and descending order by the VM System Name, VM System Address, VM Name, VM Host name, VM Size, and Virtualization Layer columns. The sorted column is highlighted, and the sort order can be identified by the direction of the arrow on the sorted column heading.

IMPORTANT: In cases for which the target virtualization layer does not support the source virtual machine configuration feature, a warning message appears during the migration and the migration continues with the default setting.

IMPORTANT: V2V migration supports migration of virtual machines having at least one virtual disk with a proper operating system attached. An empty virtual machine without any virtual disks cannot be migrated.

The wizard guides you to review and confirm the guest operating system running on the selected source virtual machine, and then to select the target virtual machine host to which the migrated virtual machine guest will be migrated. The target virtual machine host must have adequate storage and performance reserves to host the migrated virtual machine guest. If the required Windows drivers and binaries are not available, you will be prompted to upload binary files. This process is similar to the upload binaries process described in the P2V migration section of this paper.

The wizard guides you to specify a unique name for the migrated virtual machine guest.

Confirm the migration details, and begin the migration.

V2V migration notes

- One SMP license is used after each V2V migration.
- Migration operations are queued if the selected virtual machine hosts are currently involved in other tasks.
- The migrated virtual machine guest will have a new BIOS serial number and MAC address after each V2V migration. The new BIOS serial number and MAC address are generated when the migrated virtual machine guest is registered to the target virtual machine host and is powered on.
- The migrated virtual machine guest is automatically registered to the target virtual machine host after each V2V migration, and can be powered on from the Virtual Machine Management Pack console.
- The Server Migration Pack creates virtual target disks with matching partition signatures. The target virtual disks are created with a virtual size rounded up to the next gigabyte. For example, if your source disk is 9.8 GB, the Server Migration Pack creates a 10-GB virtual sized disk.
- During the V2V migration process, all the source data is migrated to the target virtual machine guest.
- In the event of a failed V2V migration, the migrated disks are left behind in the target virtual machine host. Locate the disk files using Windows Explorer, and manually delete those migrated disks.

Post-migration configuration tasks

With both P2V and V2V migrations, post-migration configuration tasks must be performed on the migrated virtual machine guests. The migrated virtual machine guest is automatically registered to the target virtual machine host and is accessible from the Virtual Machine Management Pack console.

Upon completing a migration, open the target virtual machine host virtualization management interface (Remote Console) to configure the network connections for the migrated virtual machine guest. Specific configuration steps vary, depending on the virtualization layer used. Power on the migrated virtual machine guest, modify the system host name, and set the IP address in case of a static IP address configuration. The migrated virtual machine guest automatically detects new hardware and installs the required drivers. When prompted for reboot, click **Yes** to restart the virtual machine guest.

Tracking your migrations

P2V and V2V migrations can be monitored in real time or at a later time from the Running Task Log and Event Log screens. These screens provide you current information about migrations in progress, as well as completed migrations.

Running Task Log screen

The Server Migration Pack Running Task Log displays the migrations in progress. Current running migration tasks are displayed in a table that enables you to view the status, progress, and time remaining for each migration. The running migrations can be stopped if required.

To access the Running Task Log from the Server Migration Pack console, click **SMP Running Task Log**.

When a particular migration task is completed, it is logged on the Server Migration Pack Event Log. The following information is displayed for each running task.

- Status
- Description
- Progress
- Time remaining
- Cancel

The following figure shows the Server Migration Pack Running Task Log.

Figure 6. Server Migration Pack Running Task Log

Status	Description	Progress	Time Remaining (min:sec)	Cancel?
✓	Converting to target disk \\\\mfs\\mthibet.0:1.5#2V_of_d3200.dsk [19 GB]	17%	5:36 MB/sec; 09m:09s	Stop
✓	V2V of Microsoft Windows Server 2003, Enterprise Edition to MSVSHOST queued.			Stop

Home

Event Log

The Server Migration Pack Event Log displays the migrations that have been completed. Completed migration tasks are displayed in a table that enable you to sort by time, category, user, host, virtual machine host, and any message summaries of the performed migration. The sorted column is highlighted, and the sort order can be identified by the direction of the arrow on the sorted column heading. To access the Event Task Log from the Server Migration Pack console, click **SMP Event Task Log**.

The following table is displayed for each event.

Table 5. Event Log information

Icon	Description
Type	Color-coded icons indicating if an event completed successfully or failed
Time	When the event started
Category	The classification of the event
User	Who initiated the event
Host	The virtual machine host included in the event
VM	The virtual machine guest included in the event
Message	A brief description of the event and the result

To filter the Event Log, select from the drop-down list. The Event Log can be filtered to display:

- All events
- Only errors
- Only errors and warnings
- Only today's events

NOTE: To see a detailed description of Server Migration Pack error messages, refer to the *HP ProLiant Essentials Server Migration Pack User Guide* or the Server Migration Pack online help.

To delete events from the Event Log, select the checkbox next to the appropriate events and click **Delete selected events**.

To refresh the event list, click **Reload Events**.

To close this Event Log and return to the Server Migration Pack console, click **Finish**.

The following figure shows the Server Migration Pack Event Log.

Figure 7. Server Migration Pack Event Log

HP Server Migration Pack
Home
User: administrator | Version: 1.1

Event Log

View: All Events [Reload Events]

120 of 182 forward

Type	Time	Category	User	Host	VM	Message
✓	2/22/05 4:11 PM	Migration	WG-CORPAdministrator	ESX-SANBOOT	Microsoft Windows Server 2003, Enterprise Edition	Operation Migration queued.
✓	2/22/05 4:09 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Created target disks \vmfs\vmhba1:0:1:5:P2V_of_dl3201.dsk [19 GB]
✓	2/22/05 4:09 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Created target disks \vmfs\vmhba1:0:1:5:P2V_of_dl3200.dsk [19 GB]
✓	2/22/05 4:09 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	P2V of dl320 started.
✓	2/22/05 4:06 PM	Migration	WG-CORPAdministrator	ESX-SANBOOT		Operation Migration waiting for connection to source.
✓	2/22/05 3:36 PM	Deploy Agent	WG-CORPAdministrator			Deploying Agent to 170.50.4.54 started.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Operation Migration of VM P2V of dl320 to wg-gsx finished.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Rebooting dl320
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Consuming one HP Server Migration Pack license.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	wg-gsx	DL320-XML	Registered VM C:\P2V\GAPass7\DL320-XML\DL320-XML.vmx successfully.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	wg-gsx	DL320-XML	Driver injection for Microsoft Windows Server 2003 successful.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	wg-gsx	DL320-XML	Drivers injected in VM boot disk PhysicalDrive0.vmdk successfully.
✓	2/22/05 2:38 PM	Migration	WG-CORPAdministrator	wg-gsx	DL320-XML	Added boot entry: multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="HP SMP W2003 Conversion VMWARE WINDOWS" /hal=hp_vmhali /hioexecute=optout /fastdetect /kernel=hp_vmlkn.exe
✓	2/22/05 2:35 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Cloned disk PhysicalDrive1 to PhysicalDrive1.vmdk successfully.
✓	2/22/05 2:35 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Cloned disk PhysicalDrive0 to PhysicalDrive0.vmdk successfully.
✓	2/22/05 2:26 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Created target disks C:\P2V\GAPass7\DL320-XML\PhysicalDrive1.vmdk [19 GB]
✓	2/22/05 2:26 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Created target disks C:\P2V\GAPass7\DL320-XML\PhysicalDrive0.vmdk [19 GB]
✓	2/22/05 2:26 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	P2V of dl320 started.
✓	2/22/05 2:26 PM	Migration	WG-CORPAdministrator	wg-gsx		Operation Migration queued.
✓	2/22/05 1:18 PM	Migration	WG-CORPAdministrator	170.50.4.54	P2V of dl320	Cloned disk PhysicalDrive1 to PhysicalDrive1.vhd successfully.

Delete selected events Finish

Integration with HP ProLiant Essential products

A key Server Migration Pack differentiator is its integration with other HP ProLiant Essential products, including the Virtual Machine Management Pack and HP SIM.

Integration with the HP ProLiant Essentials Virtual Machine Management Pack

The Virtual Machine Management Pack enables you to start, resume, shut down, stop, pause, reset, restart, move, and copy virtual machine guests.

The Virtual Machine Management Pack includes the following components, all of which are installed and set up during Virtual Machine Management Pack installation:

- Virtual Machine Management Service—This service resides on the HP SIM server and controls the internal functions of the Virtual Machine Management Pack.
- Virtual Machine Management console—As the user interface for the Virtual Machine Management Pack, the console provides access to the virtual machine monitoring and control functions. The GUI can be accessed locally or remotely using industry-standard Web browsers.
- Virtual Machine Management Agent—This agent is provided with the Virtual Machine Management Pack installation and distributed to managed virtual machine hosts from HP SIM.

Select **Tools>Integrated Consoles>Virtual Machine Management Pack** from the HP SIM toolbar to access the Virtual Machine Management Pack console. The home page of this console, shown in the following figure, presents information about each virtual machine host being managed.

Figure 8. Virtual Machine Management Pack console

The screenshot shows the Virtual Machine Management Pack console. The left pane shows a tree view of VM Hosts (5) by type, including ESX-SANBOOT, DL320/Wn2k3EE, DL380RAID5, Win2kAdvSvr, gsx-host, P2V of User, nirvana5, Copy 3of win2kServ-1003, Copy of winNT moved, win2000Serv2 moved, wg-gsx, DL320, DL380RAID5, NTVM, W2K3SE, W2KASVM2, Win2kProff migrated, Win2kProff Stop, WGS-MSVS, DL320, FixedSize, GSX-W2KADSVR, msvs-win2k-cms, NTVM, Win2k, Win2kProff, and WINXP. The main area displays a table of managed virtual hosts:

VMM Status	Host Name	System Address	Operating System	Virtualization	% Free CPU	Free Memory	Free Storage
✓	ESX-SANBOOT	170.50.5.3	Linux - VMware ESX Server	ESX	16%	502.00 MB	371.26 GB
✓	gsx-host	170.50.4.44	Microsoft Windows 2000 Server	GSX	21%	632.00 MB	68.96 GB
✓	nirvana5	170.50.4.230	Linux - Red Hat	ESX	42%	1.60 GB	32.04 GB
✓	wg-gsx	170.50.4.100	Microsoft Windows Server 2003 Standard Edition	GSX	69%	437.74 MB	76.68 GB
✓	WGS-MSVS	170.50.4.91	Microsoft Windows Server 2003 Standard Edition	Virtual Server, GSX	35%	426.82 MB	56.24 GB

Performance metrics listed in the right frame are as follows:

- % Free CPU—The amount of total processor resources available on the virtual machine hosts. These resources can be allocated to additional virtual machine guests. This percentage is collected from the system. In cases where there is 100% free CPU, no processor cycles are in use.

Free CPU is the number of free processor cycles, measured in MHz or GHz, on the virtual machine host. Free CPU is calculated as:

$$(\text{physical processor quantity} \times \text{physical processor speed}) \times (100\% - \text{Total CPU Busy}\%).$$

- Free Memory—The amount of virtual machine host physical memory that is not used. Free memory can be allocated to additional virtual machine guests.
- Free Storage—The amount of virtual machine host disk capacity that is not in use.

From this console, select the virtual machine host in the left frame to display information about the selected virtual machine hosts as well as its associated virtual machine guests in the right frame.

IMPORTANT: These lists can be sorted both ascending and descending order on VMM status, host name, system address, operating system, virtualization, % free CPU, free memory, and free storage. To identify likely target virtual machine hosts, sort the % Free CPU column in descending order.

Integration with HP Systems Insight Manager

A key differentiator for the Server Migration Pack is its integration with HP SIM. The Server Migration Pack installs and runs on the HP SIM CMS.

The Server Migration Pack is fully integrated with HP SIM and enables all operations required for P2V or V2V migrations to be accessed from the HP SIM console. HP SIM and the ProLiant Essentials management software provide a complete tool set for server consolidation projects. Using HP SIM and the HP ProLiant Essentials Performance Management Pack, you can easily identify underutilized servers in the data center that are candidates for consolidation. After these systems are identified, HP SIM and the Server Migration Pack provide an easy-to-use P2V migration capability.

The virtual machine host and guest status information is displayed in the VM column, shown circled in the following figure.

Figure 9. HP SIM console

The screenshot displays the HP Systems Insight Manager console. The main area shows a table of systems with columns for Hardware Status (HW), MP, S..., VPM, VM, System Name, System Type, System Address, Product Name, and OS Name. The VM column is circled in red and labeled 'VM Column'. The HW column contains status icons: green checkmarks for normal conditions and yellow warning icons for potential issues. Red arrows point from text labels to these icons.

HW	MP	S...	VPM	VM	System Name	System Type	System Address	Product Name	OS Name
✓	?	?	?	?	ml350g3-w2k3	Hosted i Server	170.50.5.32	Virtual Machine	Microsoft Wind...
✓	?	?	?	?	ntvm1	Hosted by win2k Server	170.50.5.11	Virtual Machine	Microsoft Wind...
✓	?	?	?	?	printervm	Hosted by win2k Server	170.50.5.96	VMware Virtual ...	Microsoft Wind...
✓	?	?	?	?	win2k3ee	Server	170.50.4.127	ProLiant DL320...	Microsoft Wind...
⚠	?	?	?	?	dl560-w2k-sim	Hosted i Server	170.50.5.70	Virtual Machine	Microsoft Wind...
⚠	?	?	?	?	dl560g1-wk3ee	Server	170.50.4.244	ProLiant DL560...	Microsoft Wind...
✓	?	?	?	?	ml350g3-2	Server	170.50.4.144	ProLiant ML350...	Microsoft Wind...
✓	?	?	?	?	msys2k3	Server	170.50.4.79	ProLiant ML350...	Microsoft Wind...
✓	?	?	?	?	dl360g3-wg	Server	170.50.4.40	ProLiant DL360...	Microsoft Wind...
✓	?	?	?	?	dl320g2-wk3	Server	170.50.4.33	ProLiant DL320...	Microsoft Wind...
✓	?	?	?	?	ntvm	Server	170.50.4.141	Virtual Machine	Microsoft Wind...
✓	?	?	?	?	ml570g2-wk3se	Server	170.50.4.62	ProLiant ML570...	Microsoft Wind...
✓	?	?	?	?	1gbvm	Unknown	170.50.4.46		
✓	?	?	?	?	gsx_winnvm	Unmanaged	170.50.4.119		
✓	?	?	?	?	ntfatt	Unmanaged	170.50.4.191		
✓	?	?	?	?	w2kassim	Server	170.50.4.128	ProLiant ML530...	Microsoft Wind...
✓	?	?	?	?	winxp	Unmanaged	170.50.4.170		
✓	?	?	?	?	dl740-2kadv	Server	170.50.4.44	ProLiant DL740...	Microsoft Wind...
✓	?	?	?	?	1gbvm-1	Unknown	170.50.4.232		
✓	?	?	?	?	new-dl320-4-2k	Server	170.50.4.12	ProLiant DL320...	Microsoft Wind...
✓	?	?	?	?	w2kssvm2	Server	170.50.4.134	VMware Virtual	Microsoft Wind...

In this figure, systems ml350g3-w2k3, ntvm1, and printervm are operating in a normal condition, as evidenced by the normal (✓) icon displayed in the Hardware Status (HW) column in the right frame. Meanwhile, systems dl560g1-wk3ee and ml350g3-2 have potential issues, as evidenced by the major (⚠) icon displayed in the HW column.

HP SIM integration enables you to identify issues in both your physical servers and the virtual environment. The Virtual Machine Management Pack grants you the control needed to manipulate your servers to ensure optimal efficiency.

Usage scenarios

Performing either a P2V or V2V migration with the Server Migration Pack requires an initial setup. After the Server Migration Pack is installed and configured, you can perform P2V and V2V migrations. The following scenarios provide a high-level overview of the migration process.

Setting up the Server Migration Pack

Setting up the Server Migration Pack is similar to setting up the Virtual Machine Management Pack or other HP ProLiant Essentials products because the Server Migration Pack is on the HP Management CD.

Installing from the HP Management CD

To install the Server Migration Pack, insert the HP Management CD into the CD-ROM of the HP SIM CMS. An autorun menu appears. Read the license agreement displayed. If you agree to the terms of the license agreement, click **Agree** to continue. From the autorun, click the **Products** tab and click **Install** located under Server Migration Pack. Enter the HP SIM account credentials, and click **Next**. Click **Finished** when the Server Migration Pack installation completes. The Server Migration Pack installation does not require a reboot.

Installing from the download website

You can also download the Server Migration Pack from the download website. To perform this procedure, unzip the download file into a temporary directory on the HP SIM CMS, and double-click **hpsmp.exe**. Complete the installation by following the on-screen instructions, entering your user-specific information when prompted.

Configuring the Server Migration Pack

To configure the Server Migration Pack to perform P2V or V2V migrations, log in to the HP SIM CMS from an account with administrator privileges, and select **Tools>Integrated Consoles>Server Migration Pack**.

Scenario 1 discusses targeting servers for consolidation to virtual machine hosts with available resources.

Scenario 2 discusses virtual machine conversion projects, and the migration of a virtual machine guest from one virtual machine host to another.

Scenario 1: P2V migration

This scenario covers P2V migration using the Server Migration Pack. In the following scenario, the Server Migration Pack will be used to migrate workloads from physical servers into the virtual environment. This migration has been planned where multiple workloads based on individual servers will take advantage of newer, faster hardware. This example demonstrates how the Server Migration Pack is used to plan, perform, and assess the migration.

Planning the P2V migration by selecting a physical source machine to migrate

To identify source physical machines for migration, use HP SIM to display the server list. The following figure shows the HP SIM console listing the potential physical servers for migration to a virtual environment with newer, faster hardware. For this example, source physical machine inst-pl5500 is selected for migration.

Figure 10. HP SIM console with physical source machine inst-pl5500 highlighted

The screenshot displays the HP Systems Insight Manager (SIM) console. The interface includes a search bar, navigation tabs (Tools, Deploy, Configure, Diagnose, Optimize, Reports, Logs, Options, Help), and a main content area titled "All Systems". A summary bar indicates 3 Critical, 3 Major, 0 Minor, 10 Normal, 0 Disabled, and 0 Unknown systems, with a total of 16. A table lists various systems with columns for HW, MP, SW, PF, VPM, VM, System Name, System Address, Product Name, and OS Name. The system "inst-pl5500" is highlighted in red, and a red circle and arrow point to it with the text "Source physical machine inst-pl5500".

	HW	MP	SW	PF	VPM	VM	System Name	System ...	System Address	Product Name	OS Name
<input type="checkbox"/>	✓	?	?	?	?	?	16.101.169.68	Server	16.101.169.68	ProLiant DL360...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	ml370g3-vm1-w2k	Hoste Server	170.50.4.202	VMware Virtual ...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	?	msvs2-w2k	Server	170.50.4.97	VMware Virtual ...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	gsx2-win2k3se	Hosted by Server	170.50.4.178	VMware Virtual ...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	esxvm1 dl580g2	Hosted t Server	170.50.4.173	VMware Virtual ...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	?	dl380g4-vmhost	Server	170.50.4.111	ProLiant DL360...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	bl10e-gsx2	Server	170.50.4.169	ProLiant BL10e ...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	bl10e-gsx4	Server	170.50.4.141	ProLiant BL10e	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	bl10e-msvs2	Server	170.50.4.120	ProLiant BL10e	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	inst-pl5500	Server	170.50.4.205	PROLIANT 5500	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	170.50.4.132	Server	170.50.4.132	ProLiant DL580...	Linux - VMwa...
<input type="checkbox"/>	✓	?	?	?	?	✓	gsxhost1	Server	170.50.4.181	ProLiant ML370...	Microsoft Win...
<input type="checkbox"/>	✓	?	?	?	?	✓	bl10e-msvs4	Server	170.50.4.48	ProLiant BL10e	Microsoft Win...
<input type="checkbox"/>	✗	?	?	?	?	?	Unknown	Unknown	170.50.4.101		
<input type="checkbox"/>	✓	?	?	?	?	?	gsx2-win2k	Unknown	170.50.4.70		
<input type="checkbox"/>	✗	?	?	?	?	?	pl1850mt	Unmanaged	170.50.4.180		

Performing the P2V migration by selecting a target virtual machine host

To take advantage of this virtualization environment, you must migrate source physical machine inst-pl5500 to a virtual machine host with sufficient resources available.

To perform the P2V migration, select **Tools>Integrated Consoles>Server Migration Pack** to access the Server Migration Pack console. Click **P2V migration wizard** to access the wizard, shown in the following figure. This figure shows page 1 of the wizard with the source physical machine inst-pl-5500 selected for migration. Click **Next**.

Figure 11. Select source physical machine in P2V migration wizard

HP Server Migration Pack

P2V Migration Wizard
Converts a physical machine to a virtual machine

Step 1 of 7: Select source physical machine

Step Description: The Server Migration Pack P2V process migrates the physical disks of the source physical machine to the target virtual machine host. The migrated virtual machine is automatically set up with the necessary drivers and minimum virtual hardware configurations.

Select the source physical machine from the following list of HP SIM managed servers. If you do not find the server that you want to perform P2V migration in the following list, add it to the list by specifying the full DNS or system IP address in the provided textbox and click "Inspect only." Note: For manually added servers, you might be required to provide credentials for an administrator account on the source physical machine in the next step of the P2V migration process.

Enter full DNS or system IP address:

Select	System Name	System Address	Operating System	Model	State	Delete
<input type="radio"/>	dl360g4-vmhost.vbem.com	170.50.4.111	Microsoft Windows Server 2003, Standard Edition	ProLiant DL360 G4	Device not inspected for P2V	
<input checked="" type="radio"/>	inst-pl5500	170.50.4.205	Microsoft Windows Server 2003, Standard Edition	PROLIANT 5500	Device not inspected for P2V	

SMP Running Task Log
SMP Event Log

Source physical machine inst-pl5500 selected

Refresh device list Delete Inspect only Cancel Next

Follow the wizard-directed steps to step 4, and select a target virtual machine host. You can determine likely target virtual machine hosts by selecting the Free CPU % column and sorting in descending order.

IMPORTANT: HP recommends that the target virtual machine host have sufficient system resources to host the migrated virtual machine guest.

The following figure shows page 4 of the P2V migration wizard with target virtual machine host esxd1580g2 selected. The source physical machine inst-pl5500 information is also included on this page for easy reference. Click **Next**.

Figure 12. Select target virtual machine host screen in P2V migration wizard

Step 4 of 7: Select Target Virtual Machine Host

Review the following list of VMM-managed virtual machine hosts. Select the target virtual machine host for P2V migration. The target virtual machine host must have adequate storage capacity and performance reserves to host the migrated virtual machine guest. The migrated virtual machine guest will be automatically registered to the target virtual machine host after successful P2V migration.

Source Machine Information

Memory: 1024 MB
Processors: 1
Total estimated transport volume: 4.19 GB

Source physical machine information included

Select the Virtual Machine Host from the following:

Select	Status	VM Host Name	System Address	Virtualization Layer	Total Memory	Free Memory	Total CPU	Free CPU %	Free CPU	Total Storage	Free Storage
<input type="radio"/>	✓	bl10e-gsx2	170.50.4.169	GSX	1023.53 MB	116.56 MB	999.00 MHz	95%	959.00 MHz	36.27 GB	22.87 GB
<input type="radio"/>	✓	bl10e-gsx4	170.50.4.141	GSX	1023.54 MB	655.16 MB	692.00 MHz	100%	692.00 MHz	27.94 GB	24.39 GB
<input type="radio"/>	✓	bl10e-msvs2	170.50.4.120	MSVS	511.54 MB	163.30 MB	889.00 MHz	97%	871.00 MHz	37.25 GB	8.62 GB
<input type="radio"/>	✓	bl10e-msvs4	170.50.4.48	MSVS	1023.54 MB	380.74 MB	692.00 MHz	100%	692.00 MHz	27.94 GB	13.08 GB
<input checked="" type="radio"/>	✓	esxd1580g2	170.50.4.132	ESX	5.24 GB	4.97 GB	2.80 GHz	58%	1.65 GHz	134.06 GB	45.58 GB
<input type="radio"/>	✓	GSXHOS11	170.50.4.181	GSX	511.54 MB	100.46 MB	4.37 GHz	97%	4.28 GHz	42.36 GB	22.02 GB

Target virtual machine host esxd1580g2 selected

Previous Cancel Next

Follow the remaining wizard-directed steps to complete the migration.

IMPORTANT: When you select the target path where the disk files will be copied on the target virtual machine host, you must specify a unique target name. Also, you have the option of modifying memory size for the migrated virtual machine guest. For Microsoft Virtual Server and VMware GSX Server target virtual machine hosts, an empty folder is required. For VMware ESX Server target virtual machine hosts, migrated virtual disk files can be copied within different partitions.

Perform the necessary post-migration configuration tasks after completing the migration.

Validating the P2V migration by verifying the migrated virtual machine guest

Upon completion of the post-migration tasks, verify the migration by reviewing the association tree in the left panel of the Virtual Machine Management Pack host console. To perform this step from HP SIM, select **Tools>Integrated Resources>Virtual Machine Management Pack**, and then select the virtual machine host to which the source physical machine was migrated.

Verify that the migrated virtual machine guest is on the virtual machine host. This virtual machine guest is a clone of the source physical machine. This virtual machine guest will be automatically registered to the target virtual machine host and in a powered off state. This virtual machine guest can be powered on from the Virtual Machine Management Pack console. The following figure shows virtual machine host esxd1580g2 with virtual machine guest P2V of pl5500.

Figure 13. Virtual machine host esxd1580g2 with virtual machine guest P2V of pl5500

The screenshot displays the Virtual Machine Management Pack interface. The left sidebar shows a tree view of VM Hosts (6) by type, with 'esxd1580g2' highlighted. A red circle and arrow point to 'esxd1580g2' in the tree, with a red label 'Virtual machine host esxd1580g2'. Another red circle and arrow point to 'P2V of pl5500' in the tree, with a red label 'Virtual machine guest P2V of pl5500'. The main panel shows the details for the VM Host 'esxd1580g2'. The 'VM Host Information' section includes: System Name: esxd1580g2, System IP Address: 170.50.4.132, OS Name: Linux - VMware ESX Server, Virtualization: VMware ESX Server (2.1.2 build-9638), and VMM Status: Normal. The 'VM Host Performance' section shows: Processor %: 95%, Processor Capacity (free/total): 144.00 MHz / 2.80 GHz (2-way 1.40 GHz), Memory (free/total): 4.97 GB / 5.24 GB, Memory Usage %: 5%, Network Throughput: 801.00 Bytes/sec, Storage Capacity (free/total): 45.58 GB / 134.06 GB, Storage Capacity Used %: 65%, and Storage Throughput: 3.39 MB/sec. The 'Virtual Machine Information' section shows two VMs: 'esxvm1d1580g2' with status 'Started' and 'P2V of pl1850mt' with status 'Stopped'. The VMM Status for the 'Started' VM is 'Normal' and for the 'Stopped' VM is 'Disabled'.

Now your source physical machine has been migrated to a virtual environment and can be retired.

Scenario 2: V2V migration

This scenario covers V2V migration in the Server Migration Pack. In this scenario, a particular virtual machine is moving from a development or test environment into a production environment. In this particular scenario, the recommended option is to migrate the virtual machine guest from a host server running Microsoft Virtual Server to a host server running VMware GSX Server.

Planning the V2V migration by selecting a source virtual machine guest

IMPORTANT: The Server Migration Pack will not migrate virtual machine guests with the disk types listed in the following table.

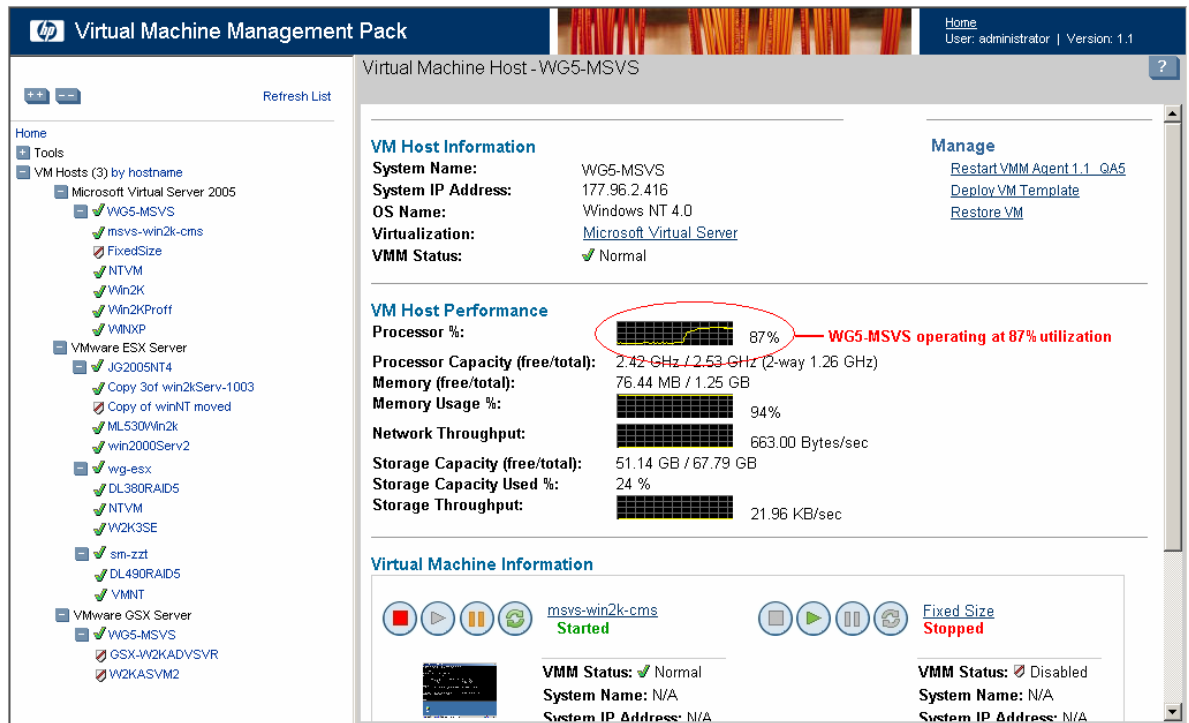
Table 6. Disk types not migrated by virtualization product

Disk type	Virtualization product
Linked disk	Microsoft Virtual Server
Differencing disk	
Physical (RAW) disk	VMware ESX Server
	VMware GSX Server

To identify the source virtual machine guests for migration, access the Virtual Machine Management Pack console to display the virtual machine hosts. For more information on each individual host, review the performance data on the Virtual Machine Management Pack host console.

The following figure shows the Virtual Machine Management Pack host console of virtual machine host WG5-MSVS on Microsoft Virtual Server operating at 87% utilization capacity.

Figure 14. WG5-MSVS5 virtual machine host on Microsoft Virtual Server at 87% capacity



Performing the V2V migration by selecting a target virtual machine host

To optimize the WG5-MSVS workload, migrate a virtual machine guest from the WG5-MSVS5 source virtual machine host to a target virtual machine host.

IMPORTANT: The target virtual machine host must have adequate storage capacity and performance reserves to host the migrated virtual machine guest.

IMPORTANT: V2V migration requires that the source virtual machine guest be stopped or in a disabled state. The source virtual machine guest is available for migration only if it is stopped. The source virtual machine guest can be stopped from the Virtual Machine Management Pack console.

To perform the V2V migration, select **Tools>Integrated Consoles>Server Migration Pack** to access the Server Migration Pack console. Select **V2V migration wizard** to access the wizard, shown in the following figure. This figure shows page 1 of the wizard with the virtual machine guest Win2kProff on virtual machine host WG5-MSVS selected for migration.

Figure 15. Select source virtual machine guest screen in V2V migration wizard

Server Migration Pack
V2V Migration Wizard
Migrates a virtual machine across platforms

Step 1 of 6: Select Source VM
The Server Migration Pack V2V process converts the virtual machine guest, including all the virtual disks, to the target virtualization layer. The migrated virtual machine guest is automatically set up with the necessary drivers and minimum virtual hardware configurations. Select the source virtual machine from the following list. If you do not find the virtual machine that you want to perform V2V migration in the following list, verify if the virtual machine is powered off and try again.

Select the Virtual Machine from the following:

Select	VM System Name	VM System Address	VM Name	VM Host Name	VM Size	Virtualization Layer
<input type="radio"/>	N/A	N/A	Win2kProff migrated	wg-gsx	978.51 MB	VMware GSX Server
<input type="radio"/>	N/A	N/A	Win2kProff 1	ESX-SANBOOT	2.00 GB	VMware ESX Server
<input checked="" type="radio"/>	N/A	N/A	Win2kProff	WG5-MSVS	1.67 GB	Microsoft Virtual Server 2005
<input type="radio"/>	N/A	N/A	Win2kAdvSvr	ESX-SANBOOT	18.51 GB	VMware ESX Server
<input type="radio"/>	N/A	N/A	Win2k3forVasu	MSVSHOST	11.56 KB	Microsoft Virtual Server 2005
<input type="radio"/>	N/A	N/A	Win2k-NO5P	MSVSHOST	2.17 GB	Microsoft Virtual Server 2005
<input type="radio"/>	win2kas	170.50.4.82	W2KASVM2	wg-gsx	2.00 GB	VMware GSX Server
<input type="radio"/>	w2k3se	170.50.4.153	W2K3SF	ws-otx	1.93 GB	VMware GSX Server

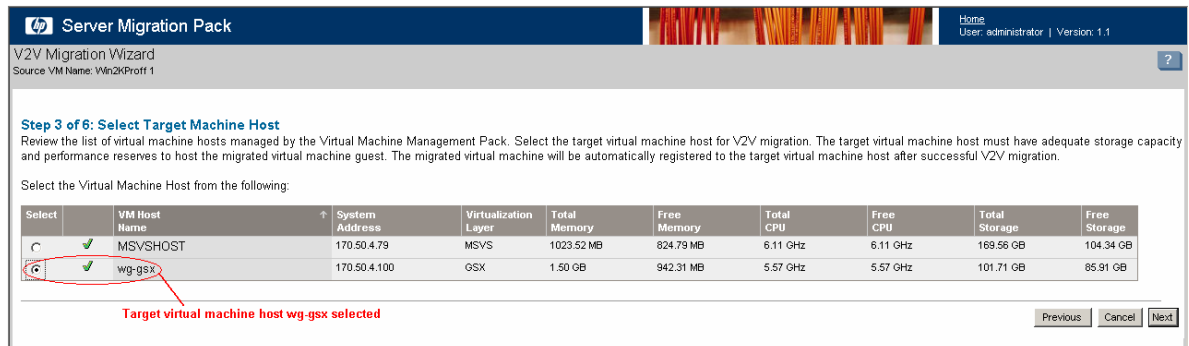
Errors and Warnings
Some VMs are not included in the list: VM not turned off.

Cancel Next

Follow the wizard-directed steps to step 3, and select a target virtual machine host. You can determine likely target virtual machine hosts by selecting the Free CPU % column and sorting in descending order.

The following figure shows page 3 of the V2V migration wizard with target virtual machine host wg-gsx selected. Click **Next**.

Figure 16. Select target virtual machine host screen in V2V migration wizard



Follow the remaining wizard-directed steps to complete the migration.

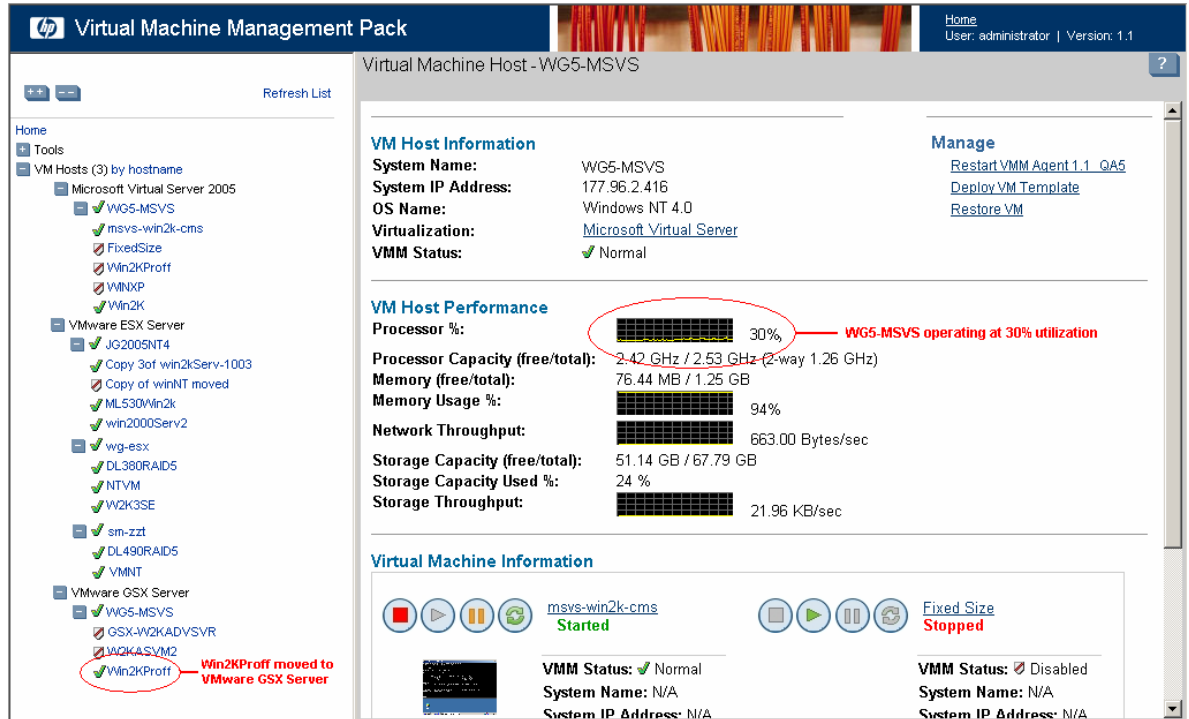
IMPORTANT: When you select the unique name for the migrated virtual machine guest, create or select a folder with adequate storage capacity to store that guest. The target folder must be empty. The target folder is the location that contains the migrated virtual machine configuration file and virtual disks in the case of VMware GSX Server and Microsoft Virtual Server. This folder contains only the migrated virtual machine configuration file in the case of VMware ESX Server. The target path for SCSI 0:0 is the location that contains the migrated virtual disk files for the VMware ESX Server.

Perform the necessary post-migration configuration tasks after completing the migration.

Assessing the V2V migration

Upon completion of the migration, verify the association tree in the left panel of the Virtual Machine Management Pack host console. In addition, verify the host performance status. The following figure shows that virtual machine guest Win2KProff has been moved from WG5-MSVS on Microsoft Virtual Server to virtual machine host WG5-MSVS on VMware GSX Server. At the beginning of this example, WG5-MSVS on Microsoft Virtual Server was operating at 87% utilization capacity. The following figure shows that now, thanks to this migration, the WG5-MSVS on Microsoft Virtual Server is now operating at 30% utilization capacity.

Figure 17. WG5-MSVS virtual machine host on Microsoft Virtual Server at 30% capacity



V2V migration from 1P to 4P systems

To take advantage of newer, faster hardware, virtual machine guests can be migrated from a 1P virtual machine host to a 4P virtual machine host using the Server Migration Pack V2V migration wizard. During the migration, the Server Migration Pack does not modify the migrated virtual machine guest configuration. Use the VMware ESX Server management interface to change the virtual machine guest configuration and increase the number of processors.

IMPORTANT: The Server Migration Pack supports VMware ESX Server 2 with VMware Virtual SMP installed. Virtual SMP must be enabled to support 4P.

V2V migration from 4P to 1P systems

If you are performing a V2V migration from a virtual machine configured with 4P to a 1P virtual machine host, after migration, the migrated virtual machine guest configuration contains 1P.

Conclusion

By optimizing all the available server resources, companies save money and resources. The HP ProLiant Essentials Server Migration Pack provides several benefits to make it the best-of-class migration tool:

- P2V migration—The Server Migration Pack enables migration of a physical machine to a virtual machine guest within a Microsoft Virtual Server or VMware virtual machine host.
- V2V migration—The Server Migration Pack enables migration of a virtual machine guest between virtualization layers such as Microsoft Virtual Server 2005, VMware ESX Server, and VMware GSX Server.
- Migration task tracking—The Server Migration Pack provides a Running Task Log and Events Log for real-time monitoring and easy tracking of migration tasks.
- Heterogeneous virtual environment support—The Server Migration Pack provides support to Microsoft Virtual Server, VMware ESX Server, and VMware GSX Server virtual environments.

These benefits provide you with a simplified migration process that reduces both complexity and cost.

Glossary

CMS—HP SIM Central Management Server.

guest operating system—A reference to a distinct operating system instance running in a virtual machine.

host operating system—A reference to the operating system running on the physical host/server.

legacy operating system—An older operating system, often incompatible with up-to-date hardware. Virtual machines allow legacy operating system to run on new hardware.

MAC address—Media Access Control address, a hardware address that uniquely identifies each node of a network.

Microsoft Virtual Server 2005—Microsoft's host operating system that provides a virtual machine solution.

physical-to-virtual (P2V) migration—Migration of a physical machine to a virtual machine guest within a Microsoft Virtual Server or VMware virtual machine host.

SMP—HP ProLiant Essentials Server Migration Pack.

virtual machine—Essentially a computer within a computer, implemented in software. A virtual machine virtualizes a complete hardware system, from processor to network card, in a self-contained, isolated software environment, enabling the simultaneous operation of otherwise incompatible operating systems. Each operating system runs in its own isolated software partition.

virtual-to-virtual (V2V) migration—Migration of a virtual machine guest between virtualization layers, including Microsoft Virtual Server 2005, VMware ESX Server, and VMware GSX Server.

virtualization—The representation of hardware through software. Virtual machines are an example of virtualization, as are virtual memory and virtual disks.

VMware ESX Server—VMware ESX Server product that provides a virtual machine solution.

VMware GSX Server—VMware GSX Server product for Windows- or Linux. This product runs as an application inside a host operating system (Windows or Linux) to provide a virtual machine solution.

For more information

For more information about the Server Migration Pack, refer to:

- <http://www.hp.com/servers/proliantessentials/smp>
- *HP ProLiant Essentials Server Migration Pack Quick Setup Poster*
- *HP ProLiant Essentials Server Migration Pack User Guide*
- *HP ProLiant Essentials Virtual Machine Management Pack and Server Migration Pack Support Matrix*

For more information about the Virtual Machine Management Pack, refer to:

- <http://www.hp.com/servers/proliantessentials/vmm>
- *HP ProLiant Essentials Virtual Machine Management Pack Quick Setup Poster*
- *HP ProLiant Essentials Virtual Machine Management Pack Product Brief*
- *HP ProLiant Essentials Virtual Machine Management Pack User Guide*

For more information about HP Systems Insight Manager, refer to:

- <http://www.hp.com/go/hpsim>
- *HP Systems Insight Manager Help Guide*
- *HP Systems Insight Manager Installation and User Guide*

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