

HP ProLiant Essentials Server Migration Pack User Guide



July 2005 (Second Edition)
Part Number 384538-002
Product Version 1.11

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Contents

About this guide

Where to go for additional help.....	v
Website	v
Telephone numbers.....	vi

Chapter 1

Introduction

Server Migration Pack integration.....	1-1
--	-----

Chapter 2

Installation and configuration

Server Migration Pack installation	2-1
Installing from the download website.....	2-2
Server Migration Pack configuration	2-2

Chapter 3

Licensing

Free licenses	3-1
Licensing requirements	3-1
Adding Server Migration Pack licenses	3-2

Chapter 4

Physical-to-virtual migration

Recommendations	4-1
Prerequisites for physical-to-virtual machine migration	4-2
Performing physical-to-virtual machine migration tasks	4-3
Performing post-migration configuration tasks.....	4-14

Chapter 5

Virtual-to-virtual migration

Prerequisites for virtual-to-virtual migration.....	5-1
Performing virtual-to-virtual machine migration tasks	5-3
Performing post-migration configuration tasks.....	5-9

Chapter 6

Server Migration Pack logs

Running Task Log.....	6-1
Event Log	6-2

Appendix A

Virtual-to-virtual migration with Linux

Preparing for virtual-to-virtual migration with Linux.....	A-1
Creating a new initrd image	A-2
Modifying file systems and mount configurations.....	A-2
Performing post-migration configuration tasks	A-3

Appendix B

Troubleshooting

Uninstallation of Server Migration Pack	B-2
Uninstalling the Virtual Machine Management Pack and the Server Migration Pack	B-2
Uninstalling only the Server Migration Pack	B-2
Configuration	B-3
Configuring the Server Migration Pack with a firewall	B-3
SMP Agent.....	B-4
SMP agent deployment fails in P2V migration.....	B-4
P2V and V2V migration wizard.....	B-4
Blank page displays when launching the SMP console from HP SIM.....	B-4
V2V migration wizard is blank	B-4
“Communication has been lost with the SMP Service” message displays in SMP console	B-4
P2V migration wizard displays “N/A” in System Name, Operating System, and Model columns ...	B-5
Server is not displayed on the P2V wizard Select source physical machine screen.....	B-5
Virtual machine guest is not displayed on the V2V wizard Select Source VM screen.....	B-5
P2V and V2V migration functions.....	B-6
P2V migration does not start after confirming; Event Log displays “Operation Migration waiting for connection to source” for some time	B-6
“Unable to connect to the source physical server” error message displays in P2V migration wizard	B-6
Queued up migrations fail	B-7
Chkdsk fails to check an NTFS volume in a migrated virtual machine guest when using Windows NT 4.0 operating system	B-7
Drive letters are not the same in the migrated virtual machine guest after migration.....	B-8
Old Server Migration Pack version number appears in HP SIM>Help>About	B-8
Server Migration Pack cannot perform V2V migration on virtual machine guests with certain disk types	B-8

Glossary

Index

About this guide

This user guide provides detailed information about using the HP ProLiant Essentials Server Migration Pack.

Where to go for additional help

In addition to this guide, the following information sources are available:

- *HP ProLiant Essentials Server Migration Pack Quick Setup Poster*

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

- <http://www.hp.com/go/vmm>
- *HP ProLiant Essentials Virtual Machine Management Pack User Guide*
- *HP ProLiant Essentials Virtual Machine Management Pack Quick Setup Poster*
- *HP ProLiant Essentials Virtual Machine Management Pack Support Matrix*

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

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

Website

Information about the Server Migration Pack and the latest updates are available at <http://www.hp.com/go/smp>.

Telephone numbers

For the name of the nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.

For HP technical support:

- In North America:
 - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
 - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website at <http://www.hp.com>.
- Outside North America, call the nearest HP Technical Support Phone Center. For telephone numbers for worldwide Technical Support Center, refer to the HP website at <http://www.hp.com/support>.

Introduction

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

P2V machine migration enables migration of a physical machine to a virtual machine guest within a Microsoft® Virtual Server or VMware virtual machine host.

V2V machine migration enables migration of a virtual machine guest between virtualization layers, including Microsoft Virtual Server 2005, VMware ESX Server, and VMware GSX Server.

Server Migration Pack integration

The Server Migration Pack is a companion product that works only in conjunction with the equivalent version of the Virtual Machine Management Pack. The Virtual Machine Management Pack, in turn, adds virtual machine management capability within HP Systems Insight Manager (HP SIM) 4.2 SP2 or later. The Virtual Machine Management Pack provides tracking, monitoring, and control functions for organizing an effective virtualized environment.

IMPORTANT: P2V migrations can be performed only on physical machines that are running Microsoft Windows® operating systems. Virtual machine host systems are not eligible for migration into a machine.

The Server Migration Pack is integrated completely within HP SIM to provide ease of use, installation, and maintenance. All requirements and practices for proper operation of HP SIM must be observed for both the Virtual Machine Management Pack and the Server Migration Pack.

IMPORTANT: The Server Migration Pack requires that both HP SIM and the Virtual Machine Management Pack be installed and functional. The Server Migration Pack becomes inaccessible if Virtual Machine Management Pack is removed or uninstalled from the HP SIM Central Management Server (CMS).

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Installation and configuration

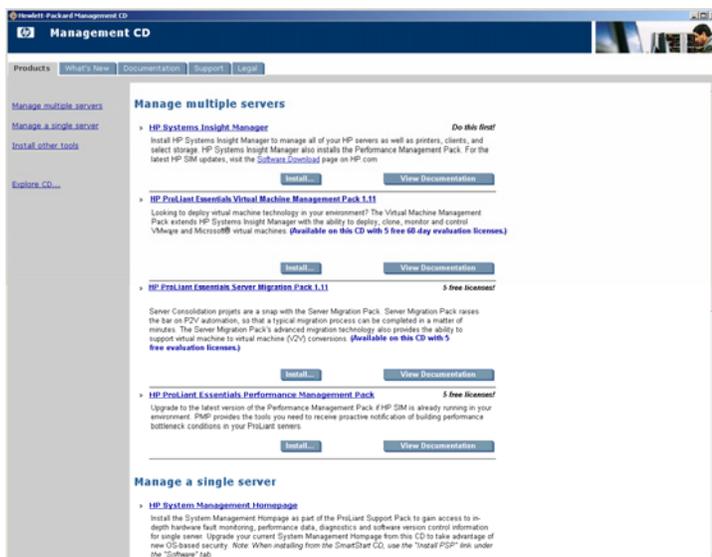
Server Migration Pack installation

IMPORTANT: This guide assumes that all hardware and software requirements have been met for Server Migration Pack installation. You must first install the equivalent version of the Virtual Machine Management Pack before you install the Server Migration Pack. For more information about Virtual Machine Management Pack installation, refer to the *HP ProLiant Essentials Virtual Machine Management Pack User Guide*.

NOTE: You must have administrative rights in HP SIM to install and use the Server Migration Pack.

1. Insert the HP Management CD into the CD-ROM drive of the HP SIM Central Management Server (CMS). An autorun menu appears.
2. Read the license agreement displayed. If you agree to the terms of the license agreement, click **Agree** to continue.
3. From the autorun, click the **Products** tab.
4. Click **Install** located under HP ProLiant Essentials Server Migration Pack.

NOTE: If installing the Server Migration Pack and the Virtual Machine Management Pack using the HP SIM integration installation mechanism, you can install the Server Migration Pack with either a typical or custom installation.



5. Enter the HP SIM account credentials, and click **Next**.
6. Click **Finished** when the Server Migration Pack installation completes. The Server Migration Pack installation does not require a reboot.

Installing from the download website

1. Unzip the download file into a temporary directory on the HP SIM CMS.
2. Double-click **hpsmp.exe**.
3. Follow the on-screen instructions, entering your user specific information when prompted.

Server Migration Pack configuration

NOTE: The Server Migration Pack requires Windows operating system binary files and drivers for Migrating Windows-based physical machines and virtual machine guests between Microsoft Virtual Server 2005 and VMware virtual infrastructure.

To configure the Server Migration Pack to perform P2V or V2V migrations:

NOTE: If you do not perform these steps at this time, you are prompted to complete them when a migration task is selected from the Server Migration Pack console.

1. Log in to HP SIM CMS from an account with administrator privileges.
2. Select **Tools>Integrated Consoles>Server Migration Pack**.

- Click **Upload the required drivers and OS binaries**, and ensure that all of the necessary binary files have been loaded onto the server. If additional files are necessary, load these files from your original Windows or VMware media at this time. If Microsoft iSCSI Initiator 1.06 is missing, download and install the initiator from <http://www.microsoft.com>.

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.

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					
✓	ac78bc.sys	Adaptec, Inc.	4.00	Mandatory for Virtual Server, locate ac78bc.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					
✓	vmtoolsd.sys	VMware, Inc.	1,2,0,2	Mandatory for VMware Migrations. Locate the driver vmtoolsd.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.	✓ vmtoolsd.sys was uploaded.

IMPORTANT: Before you perform any migrations, verify that the virtual machine hosts involved in the P2V and V2V migrations are licensed and managed by the Virtual Machine Management Pack.

IMPORTANT: The source physical machine involved in P2V migration does not require any Virtual Machine Management Pack license.

The Server Migration Pack uses HP ProLiant Essential product licensing. One license is used for each successful P2V and V2V migration.

Free licenses

The Server Migration Pack comes with five free licenses for evaluation purposes. There is no expiration date for these evaluation licenses. These licenses are available after the Server Migration Pack is installed.

Licensing requirements

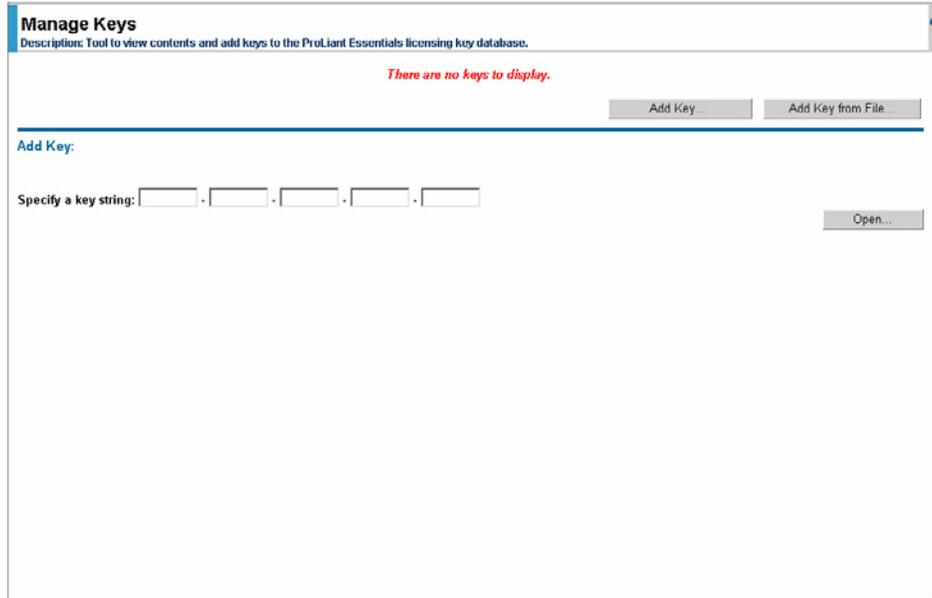
- The P2V and V2V migrations can only be performed if at least one Server Migration Pack license is available.
- The target virtual machine host involved in a P2V migration must be licensed and managed by the Virtual Machine Management Pack.
- Both the source and target virtual machine hosts involved in a V2V migration must be licensed and managed by the Virtual Machine Management Pack.

For more information about Virtual Machine Management Pack licensing, refer to the *HP ProLiant Virtual Machine Management Pack User Guide* or <http://h18013.www1.hp.com/products/servers/proliantessentials/license/licenseops.html>.

Adding Server Migration Pack licenses

The HP SIM License Manager can be used to add Server Migration Pack licenses to the licensing database.

1. From the HP SIM console toolbar, select **Deploy>License Manager>Manage Keys**.
2. Click **Add Key** to enter one or more new key strings, and then click **OK**.



Server Migration Pack license information is displayed on the Server Migration Pack console.

IMPORTANT: The license manager interaction will **not** provide an audit trail of when or where Server Migration Pack licenses were consumed.

NOTE: The Server Migration Pack supports the HP SIM License Manager Add Key from File feature.

NOTE: This version of the Server Migration Pack does not support time-based licenses, in which an unlimited number of migrations can be performed within the period specified by the time-based license key.

Physical-to-virtual migration

Physical-to-virtual (P2V) migration enables the migration of a source physical machine to a virtual machine guest within a Microsoft Virtual Server or VMware virtual machine host. P2V migration supports most IA-32 servers running Windows operating systems.

Recommendations

- HP recommends that the target virtual machine host have sufficient system resources to reserve CPU and network bandwidth for a P2V migration operation to ensure effective migration.
- HP recommends that you complete any pending reboots and software installations on the source physical machine before initiating a P2V migration operation so that the migration is not interrupted.
- HP recommends that you disable all applications and background services on the source physical machine. After the migrated virtual machine guest has synchronized with the new hardware and has been given a unique networked identity, applications on the source physical machine can be restarted.
- HP recommends that you run `chkdsk` and disk defragmenter on the source physical machine before initiating a P2V migration operation to verify that the disks are not corrupted.
- HP recommends that you verify that all the hard disks on the source physical machine are correctly initialized (disk signature written). If using Microsoft Windows 4.0, verify initialization by selecting **Computer Management>Disk Administration**. If using Microsoft Windows 2000 or Windows 2003 operating systems, verify initialization by selecting **Computer Management>Disk Management**. Verify that the latest hard drive configuration is saved.
- HP recommends that you disable any antivirus software on the HP SIM Central Management Server (CMS), source physical machine, and target virtual machine host or target virtual machine host during P2V migration. The antivirus software can be re-enabled at a later time.

Prerequisites for physical-to-virtual machine migration

The following prerequisites must be met for P2V migration to work:

- The target virtual machine host requires a valid Virtual Machine Management Pack license, and must be managed by the Virtual Machine Management Pack.
- The source physical machine device must be a server running a Microsoft Windows operating system in English, and cannot be a virtual machine host or virtual machine guest. The source physical machine does not require a Virtual Machine Management Pack license. The source physical machine cannot have VMM agent installed.
- P2V migration always uses the primary IP address of the source physical machine to communicate between the source physical machine and the HP SIM CMS. Verify that the network connections between the source physical machine and the CMS are properly configured. Verify the configuration by pinging to the source physical machine from the CMS, and vice versa, using the primary IP address.
- Disable all the Windows network drive mappings to the source physical machine in the HP SIM CMS during P2V migration.
- Valid Server Migration Pack migration license keys are required on the CMS. One SMP license seat is used per successful migration.
- Migrating systems with boot loaders or managers other than the NT boot loader (ntldr) is not supported.
- During P2V migration, the SMP agent initiates an operating system reboot on the source physical machine. Verify that the operating system is on the first boot order. If this is not the case, manually change the boot order by editing the [system drive]\boot.ini file or by using the bootcfg.exe tool.
- For source physical machines configured with dual operating systems consisting of Windows and non-Windows operating systems, the Server Migration Pack does not support a non-Windows primary boot loader (for example, LILO or GRUB). In such cases, manually reconfigure the non-Windows boot loader in the migrated virtual machine guest.
- The Server Migration Pack supports migration of source physical machines that have operating systems installed on the primary drive (Hard Disk0), and the primary drive loaded first in the boot order.
- P2V migration only supports the migration of basic disks, and dynamic disks that have simple (non-extended) volumes.
- Verify that all partitions on the source physical machine have a valid file system and are in a healthy state.
- Make note of the drive letter or mount point to disk-partition mapping for dynamic disk partitions before performing the P2V migration, if applicable. The drive letters can be later reassigned after successful migration.

NOTE: Only the Windows source physical machine will be supported in this Server Migration Pack release.

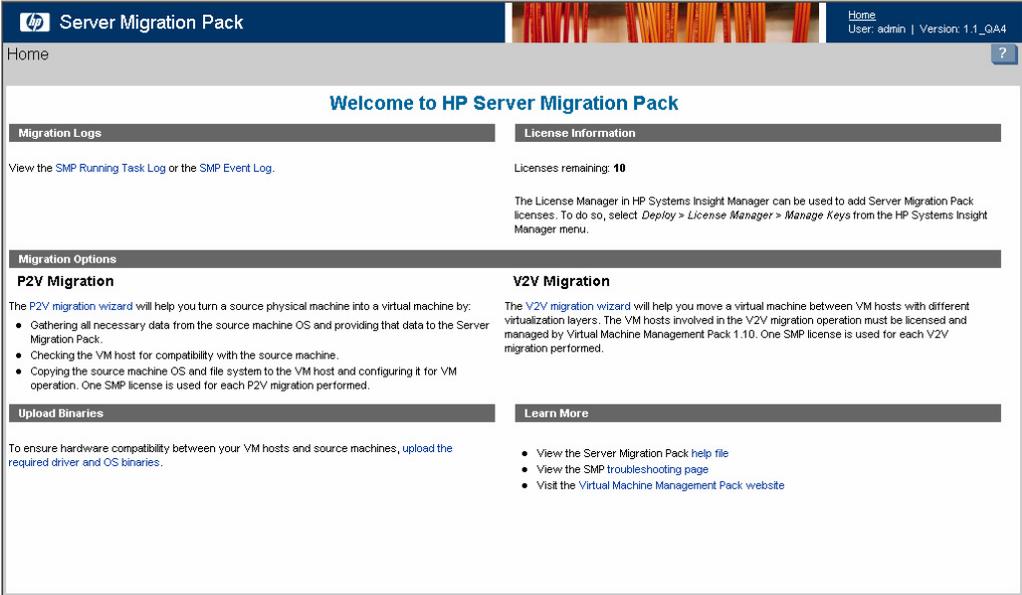
IMPORTANT: The Server Migration Pack uses Microsoft Internet Small Computer System Interface (iSCSI) initiator 1.06 software for primary mass storage driver injection. The Server Migration Pack requires that this software be installed on the HP SIM CMS. To download and install the Microsoft iSCSI initiator software, refer to <http://www.microsoft.com>.

Performing physical-to-virtual machine migration tasks

IMPORTANT: For successful P2V migration involving the iSCSI initiator, the CMS operating systems Windows version must be greater than or equal to the source physical machine operating system Windows version.

To perform a P2V migration task:

1. From the HP SIM menu, select **Tools>Integrated Consoles>Server Migration Pack** to access the Server Migration Pack console.



Server Migration Pack Home User: admin | Version: 1.1_QA4

Home

Welcome to HP Server Migration Pack

Migration Logs

View the [SMP Running Task Log](#) or the [SMP Event Log](#).

License Information

Licenses remaining: **10**

The License Manager in HP Systems Insight Manager can be used to add Server Migration Pack licenses. To do so, select *Deploy > License Manager > Manage Keys* from the HP Systems Insight Manager menu.

Migration Options

P2V Migration

The P2V migration wizard will help you turn a source physical machine into a virtual machine by:

- Gathering all necessary data from the source machine OS and providing that data to the Server Migration Pack.
- Checking the VM host for compatibility with the source machine.
- Copying the source machine OS and file system to the VM host and configuring it for VM operation. One SMP license is used for each P2V migration performed.

V2V Migration

The V2V migration wizard will help you move a virtual machine between VM hosts with different virtualization layers. The VM hosts involved in the V2V migration operation must be licensed and managed by Virtual Machine Management Pack 1.10. One SMP license is used for each V2V migration performed.

Upload Binaries

To ensure hardware compatibility between your VM hosts and source machines, upload the [required driver and OS binaries](#).

Learn More

- View the [Server Migration Pack help file](#)
- View the [SMP troubleshooting page](#)
- Visit the [Virtual Machine Management Pack website](#)

- From the Server Migration Pack console, click **P2V migration wizard** to access the P2V migration wizard.

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

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"/>	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"/>	pl8500	170.50.4.208	Microsoft Windows 2000	ProLiant	Device is prepared for P2V. Stop Agent	
<input type="radio"/>	m350g4	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 4-1: P2V migration wizard columns and definitions

Column	Definition
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 P2V migration wizard, select a source physical machine from the list of HP SIM-managed servers, and click **Next**. If you do not find the server you want, add it to the list by specifying the full DNS or system IP address in the provided text box and click **Inspect Only**. This will validate if the device is supported for P2V migration. Once the device has been successfully inspected and is available for P2V migration, select the device and click **Next** to continue with the P2V migration wizard.

Click **Refresh Device List** to reload the system information from HP SIM. Manually added devices or devices that no longer exist in HP SIM can be deleted from the list by selecting the devices and clicking **Delete**.

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.

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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](#)

NOTE: For manually added servers, you might be required to provide credentials for an administrator account on the source physical machine to deploy the SMP agent in the next step of the P2V migration process.

NOTE: The list can be sorted both ascending and descending on system name, system address, operating system, device model, and state column. The sorted column is highlighted and sort order can be identified by the direction of the arrow on the sorted column heading.

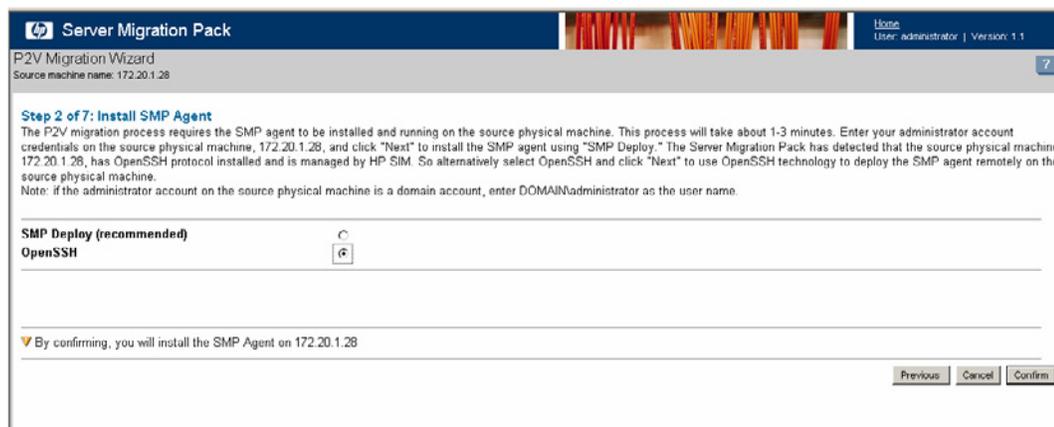
NOTE: The source physical machine must be a server running a Microsoft Windows operating system, and cannot be a virtual machine host or virtual machine guest. The source physical machine does not require a Virtual Machine Management Pack license. The source physical machine cannot have VMM agent installed.

The following table lists the states and their descriptions.

Table 4-2: States of source physical machines

State	Description
No State	Device not inspected for P2V
Normal	SMP agent not running
Not Available	Device not available for the Server Migration Pack. A possible reason can be that the device is a virtual machine host and has VMM agent running.
Installing	Deploying SMP agent to the device
Prepared	Device is prepared for P2V
Migrating	P2V in progress
Ready	Device ready for P2V

4. Select the appropriate mode to install the SMP agent, and click **Next**. The SMP agent can be installed 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 and appropriately configured on the HP SIM CMS. For more information, refer to the *HP ProLiant Essentials Virtual Machine Management Pack User Guide*.



- **Deploy SMP:** This method is available for servers that are manually added in the Server Migration Pack P2V wizard by specifying the DNS name or IP address. This method is also available for devices that are managed by HP SIM but do not have OpenSSH installed. This mode of deployment is the faster of the two. This mode of deployment requires administrative privileges of the source physical machine.

Server Migration Pack Home User: administrator | Version: 1.1

P2V Migration Wizard
Source machine name: 172.20.1.20

Step 2 of 7: Install SMP Agent

The P2V migration process requires the SMP agent to be installed and running on the source physical machine. This process will take about 1-3 minutes. Enter your administrator account credentials on the source physical machine, 172.20.1.20, and click "Next" to install the SMP agent using "SMP Deploy." The Server Migration Pack has detected that the source physical machine, 172.20.1.20, has OpenSSH protocol installed and is managed by HP SIM. So alternatively select OpenSSH and click "Next" to use OpenSSH technology to deploy the SMP agent remotely on the source physical machine.

Note: if the administrator account on the source physical machine is a domain account, enter DOMAIN\administrator as the user name.

SMP Deploy (recommended)

OpenSSH

User name: Administrator

Password:

By confirming, you will install the SMP Agent on 172.20.1.20

Previous Cancel Confirm

Click **Cancel** to return to the first page of the P2V migration wizard.

NOTE: Clicking **Cancel** does not cancel SMP agent installation.

During the SMP agent deployment process, which takes between 1 to 3 minutes, the following screen displays.

Server Migration Pack Home User: administrator | Version: 1.1

P2V Migration Wizard
Source machine name: pl0500

Step 3 of 7: Connecting to Source machine

Stand by while SMP Agent is being deployed and connected.

Source Machine Information

System Name:	
Operating System Family:	Deploying / connecting agent...
Service Pack:	
System IP Address:	170.50.4.208
Memory:	
Processors:	Deploying / connecting agent...
Total Estimated Transport Volume:	

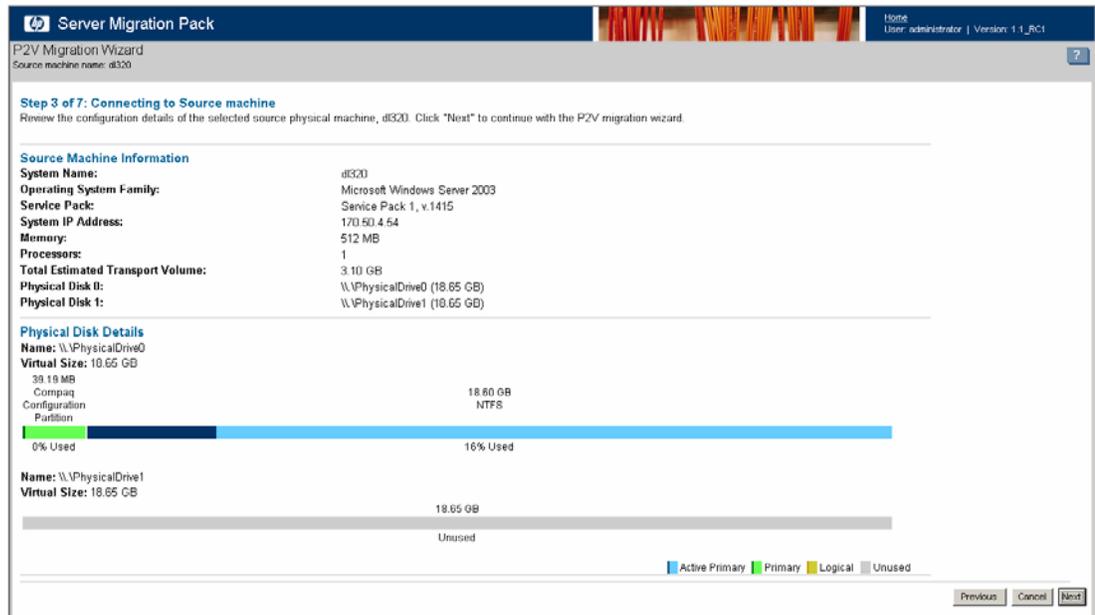
Previous Cancel Next

After the SMP agent deployment process is complete, the SMP agent will run in Prepared mode and communication will be established between the source physical machine and the CMS.

- Review the source physical machine configurations, and click **Next** to proceed. Click **Cancel** to redirect to step 1.

At this point, the device state is prepared for P2V migration. The SMP agent running on the source physical machine can be stopped by clicking **Stop SMP Agent** from the source list in the first page of the P2V migration wizard.

Clicking **Cancel** will abort the P2V migration operation and return to the first page of the migration wizard.



6. Select the target virtual machine host from the list of available VMM-managed virtual machine hosts. The target virtual machine host must have adequate storage capacity and performance reserves to host the migrated virtual machine guest. In addition, the list contains details about the target virtual machine host.

IMPORTANT: If VMware ESX Server is the target virtual machine host, the total disk size on the physical source machine is migrated. If Microsoft Virtual Server or VMware GSX Server is the target virtual machine host, only transport volume on the physical source machine is migrated.

IMPORTANT: In cases where the target virtualization layer does not support the source virtual machine configuration feature, a warning message will display during the migration and the migration will continue with the default setting.

Server Migration Pack | Home | User: administrator | Version: 1.1_RC1

P2V Migration Wizard
Source machine name: d320

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: 512 MB
Processors: 1
Total estimated transport volume: 3.07 GB

Select the Virtual Machine Host from the following:

Select	VM Host Name	System Address	Virtualization Layer	Total Memory	Free Memory	Total CPU	Free CPU	Total Storage	Free Storage
<input checked="" type="checkbox"/>	ESX-SANBOOT	170.50.5.3	ESX	831.00 MB	589.00 MB	6.00 GHz	6.12 GHz	445.44 GB	223.16 GB
<input type="checkbox"/>	MSVSHOST	170.50.4.79	MSVS	1023.52 MB	624.62 MB	6.11 GHz	6.11 GHz	169.56 GB	104.34 GB
<input type="checkbox"/>	wg-gsx	170.50.4.100	GSX	1.50 GB	942.27 MB	5.57 GHz	5.57 GHz	101.71 GB	85.91 GB

Previous Cancel Next

- The optional Binary Upload page is displayed if the required operating system binary files are not uploaded within the CMS. To upload binary files, click **Upload the required drivers and OS binaries**, and ensure that all the necessary binary files have been loaded onto the server. If additional files are necessary, load these files from your original Windows or VMware media. If Microsoft iSCSI Initiator 1.06 is missing, download and install the initiator from <http://www.microsoft.com>.

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					
✓	ac78cc.sys	Adaptec, Inc.	4.00	Mandatory for Virtual Server, locate ac78cc.sys in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	<input type="text"/> Browse...
✓	bustlogic.sys	Microsoft Corporation	4.00	Mandatory for VMware, locate bustlogic.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...
✓	ntldr.dll	Microsoft Corporation	4.00	Mandatory, locate ntldr.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					
✓	vmtoolsd.sys	VMware, Inc.	1, 2, 0, 2	Mandatory for VMware Migrations. Locate the driver vmtoolsd.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.	✓ vmtoolsd.sys was uploaded.

Finish

8. 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. You have the option of modifying memory size for the target virtual machine.
 - For Microsoft Virtual Server and VMware GSX Server target virtual machine hosts, an empty target folder is required.
 - For VMware ESX Server target virtual machine hosts, migrated virtual disk files can be copied within different partitions.

IMPORTANT: An error message will display if there is no adequate free disk space to contain the virtual machine guest files.

IMPORTANT: A warning message will display if the specified virtual machine guest name already exists in the target virtual machine host.

IMPORTANT: The target virtual machine name cannot contain any special characters. Valid characters include a-z, A-Z, 0-9, underscores (_), dashes (-), and spaces.

NOTE: An empty target folder can be created or selected for the wizard.

The screenshot shows the 'Specify Target Details' step of the P2V Migration Wizard. The interface includes a title bar for 'Server Migration Pack' and a user profile 'User: administrator | Version: 1.1_RC1'. The main content area is titled 'Step 6 of 7: Specify Target Details' and contains the following fields and information:

- Target Host:** ESX:SANBOOT
- VM Name:** P2V of DL320
- Memory:** 512 MB
- Target Folder:** /root/vmware/DL320
- Select Folder:** / (1.20 GB Free)
- VMFS Free Space Required:** 37.29 GB
- Target Path for (scsi 0:0) [18.65 GB]:** /vmfs/vmhba1:0:1:5 (303.29 GB Free)
- Target Path for (scsi 0:1) [18.65 GB]:** /vmfs/vmhba1:0:1:5 (284.64 GB Free)

At the bottom right, there are 'Previous', 'Cancel', and 'Next' buttons.

9. Click **Next**.

- Review the source physical machine and the target virtual machine host details, and click **Confirm** to confirm the P2V migration task.

IMPORTANT: This transfer will impose a system load on the source physical machine and target virtual machine host.

IMPORTANT: This screen includes an option to automatically reboot the physical machine at the end of a successful migration. Unselecting this checkbox will not reboot the physical machine at the end of a successful migration. In addition, the SMP agent on the physical machine will be running in an Exclusive mode, and will support initiating the migration of the same physical machine without requiring a reboot. HP recommends leaving the checkbox selected so that the physical machine reboots automatically at the completion of the migration task.

NOTE: If the checkbox to reboot the source physical machine was unselected during the migration, the device can be reset at a later time by clicking **Reset Device** on the first page of the P2V migration wizard.

The screenshot shows the 'P2V Migration Wizard' window with the title 'Server Migration Pack'. The current step is 'Step 7 of 7: Confirm Details'. Below the title bar, there is a header for 'Source Machine Information' and 'Target Host Details'. The 'Source Machine Information' section lists: System Name: d6320, Operating System: Microsoft Windows Server 2003, Service Pack: Service Pack 1, v.1415, System IP Address: 170.50.4.54, Memory: 512 MB, Processors: 1, Total Estimated Transport Volume: 3.07 GB, Physical Disk 0: \\.\PhysicalDrive0 (18.65 GB), and Physical Disk 1: \\.\PhysicalDrive1 (18.65 GB). The 'Target Host Details' section lists: Host: ESX-SANBOOT, Virtualization Layer: VMware ESX Server [2.5.0 build-11343], VM Name: P2V of DL320, Target Folder: /root/P2V/DL320, Target Path for [scsi 0:0] [18.65 GB]: /mnt/mbba1.0.1.5, Target Path for [scsi 0:1] [18.65 GB]: /mnt/mbba1.0.1.5, and a checkbox for 'Reboot the source machine after successful migration' which is checked. At the bottom, it shows 'Licenses remaining: 1' and buttons for 'Previous', 'Cancel', and 'Confirm'.

You can monitor the migration progress by viewing the Server Migration Pack Running Task Log. This screen is periodically refreshed. The Running Task Log link is on the Server Migration Pack console.

One SMP license is used after a successful P2V migration.

The migrated virtual machine guest will have a new BIOS serial number and MAC address after a successful P2V migration.

The migrated virtual machine guest will be automatically registered to the target virtual machine host after a successful migration, and can be powered on from the Virtual Machine Management Pack console.

Depending on the available network bandwidth and storage throughput, the Server Migration Pack normally processes the data at a rate of 2–8 MB/s. For example, a 10–GB data transfer will take approximately 30 minutes.

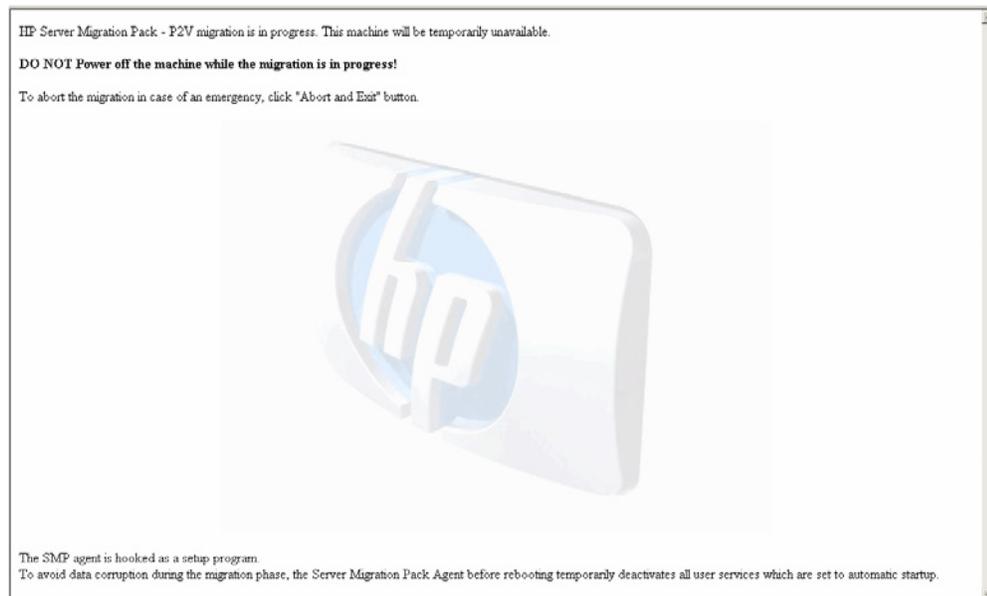
The migrated virtual machine guest will contain a dynamically expanding virtual disk in case of Microsoft Virtual Server target virtualization layer.

The SMP agent on the source physical machines will not be removed automatically at the end of migration. You can delete the SMP agent folder \$hp_smpagent\$ manually on the source physical machine after the migration process is complete.

IMPORTANT: The migration operation will be queued if the selected source physical machines or virtual machine hosts are currently involved in other migration tasks.

IMPORTANT: During the P2V migration process, all the source data will be migrated to the target virtual machine guest. At times, the disk size will be rounded to the next GB during the migration process. Performing a migration on a migrated virtual machine host should not modify the disk size.

IMPORTANT: During the P2V migration process, a screen will display on the physical source machine with the message that P2V migration is in progress and the machine will be temporarily unavailable. In case of an emergency, abort the migration by clicking **Abort and Exit**. This action will reboot the source physical machine.



IMPORTANT: In the event of a failed migration, the migrated disks will be left behind. You must manually delete those migrated disks.

IMPORTANT: In the event of a failed migration, the source physical machine will not be automatically rebooted. To reboot the source physical machine, click **Reset Device** in the P2V migration wizard.

Performing post-migration configuration tasks

Post-migration configuration tasks must be performed on the migrated virtual machine guest after completing a migration.

The migrated virtual machine guest is automatically registered to the target virtual machine host and is accessible from the Virtual Machine Management Pack console.

IMPORTANT: To ensure that no duplicate network identity conflicts arise, the migrated virtual machine guest configuration contains no network card. You must add this card manually.

Upon completing a migration:

1. Open the target virtual machine host virtualization management interface (Remote Console) to configure the network connections for the migrated virtual machine guest.
 - Microsoft Virtual Server Target Virtualization layer:
 - a. Select the migrated virtual machine guest from the Microsoft Virtual Server Management Interface, and select **Edit Configuration>Network Adapters**.
 - b. Attach a virtual network adapter and click **OK**.
 - VMware ESX Server Target Virtualization layer:
 - a. Select the migrated virtual machine guest from the VMware ESX Server Management Interface, and click **Configure Hardware**.
 - b. Click **Add Device** link, attach the virtual network adapter, and click **OK**.
 - VMware GSX Server target virtualization layer:
 - a. Select the migrated virtual machine guest from the VMware ESX Server Management Interface, and click **Edit VM Settings**.
 - b. From the Hardware tab, click **Network**. Attach the virtual network adapter, and click **OK**.
2. Power on the migrated virtual machine guest.
3. Modify the system host name.
4. Set the IP address in case of a static IP address configuration.
5. If applicable, reassign drive letters of dynamic disk partitions with the disk manager to match the original state. The virtual machine guest automatically detects new hardware and installs the required drivers.
6. When prompted to reboot, click **Yes** to restart the virtual machine guest.

IMPORTANT: The mouse and keyboard require a moment to become active on the migrated virtual machine guest. Please wait until all the required drivers get installed automatically by the guest operating system and reboot the migrated virtual machine guest when prompted.

Virtual-to-virtual migration

Virtual-to-virtual (V2V) migration enables migration of a virtual machine guest between virtualization layers, including Microsoft Virtual Server, VMware ESX Server, and VMware GSX Server. V2V migrations will not un-register or remove the virtual machine guest from the source virtual machine host.

NOTE: The VMware GSX Server must be on a Windows server.

NOTE: The virtual machine hosts involved in V2V migrations must be licensed and managed by the equivalent version of the Virtual Machine Management Pack.

Prerequisites for virtual-to-virtual migration

The following prerequisites must be met for V2V migration to work:

- V2V migration requires that the source virtual machine guest be stopped or in a disabled state and will be available for migration only if it is stopped. The source virtual machine guest can be stopped from the Virtual Machine Management Pack console.
- The Server Migration Pack will not move, copy, or migrate virtual machine guests with the following disk types as listed in the following table:

Table 5-1: Disk types not moved, copied, or migrated by virtualization product

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

- Virtual Machine Management Pack agent (VMM agent 1.11) software must be installed and running on both the source and target virtual machine hosts. Both the source and target virtual machine hosts must be licensed and managed by the Virtual Machine Management Pack. No specific software is required in the source virtual machine guest. For more information about VMM agent installation, refer to the *HP ProLiant Essentials Virtual Machine Management Pack User Guide*.
- Valid Server Migration Pack migration license keys are required on the CMS.

- Verify that the necessary operating system drivers and binaries are uploaded within the HP SIM CMS. To perform this task from HP SIM, select **Tools>Integrated Consoles>Server Migration Pack**, and click **Upload Binaries**.
- Migrating virtual machine guests with boot loaders or managers other than the NT Boot Loader requires manual pre-configuration of the source virtual machine. For more information, refer to Appendix A of this user guide.
- Verify that the target virtual machine host has sufficient CPU reserves and network bandwidth for the migration operation.
- HP recommends that you disable any antivirus software on the HP SIM Central Management Server (CMS) during the V2V migration process. The antivirus software can be re-enabled at a later time.

IMPORTANT: Migrating a VMware GSX Server virtual machine guest with an IDE disk type to a VMware ESX Server virtual machine host requires VMware tools to be installed on the source virtual machine host.

IMPORTANT: The Server Migration Pack uses Microsoft Internet Small Computer System Interface (iSCSI) initiator 1.06 software for primary mass storage driver injection. The Server Migration Pack requires that this software be installed on the HP SIM CMS. To download and install the Microsoft iSCSI initiator software, refer to <http://www.microsoft.com>.

IMPORTANT: Migrating Linux-based virtual machine guests requires the source virtual machine to be initialized manually before performing a V2V migration.

For a complete list of supported virtual machine guest operating systems and disk types, refer to the *HP ProLiant Essentials Virtual Machine Management Pack and Server Migration Pack Support Matrix*.

Performing virtual-to-virtual machine migration tasks



CAUTION: When you perform V2V migration, the Server Migration Pack does not back up virtual disk data. An undo operation is not possible. Consider backing up virtual disk files before migration.

IMPORTANT: For successful V2V migration involving the Microsoft iSCSI initiator, the CMS operating systems Windows version must be greater than or equal to the source virtual machine operating system Windows version.

A warning message will display in the user interface if iSCSI initiator software is not available in the HP SIM CMS before performing a Windows-based guest operating system migration between Microsoft Virtual Server and VMware infrastructure.

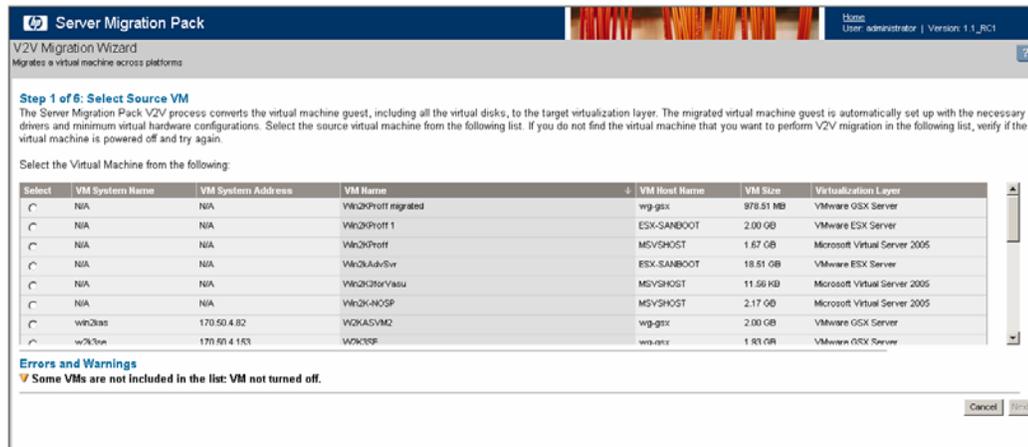
To perform a V2V migration task:

1. From the HP SIM menu, select **Tools>Integrated Consoles>Server Migration Pack** to access the Server Migration Pack console.

The screenshot displays the HP Server Migration Pack console. At the top, there is a navigation bar with the HP logo, the text 'Server Migration Pack', and a 'Home' link. Below the navigation bar, the main content area is titled 'Welcome to HP Server Migration Pack'. The interface is divided into several sections:

- Migration Logs:** A section with a header 'Migration Logs' and a sub-header 'License Information'. It contains the text 'View the SMP Running Task Log or the SMP Event Log.' and 'Licenses remaining: 10'. Below this, there is a note: 'The License Manager in HP Systems Insight Manager can be used to add Server Migration Pack licenses. To do so, select *Deploy > License Manager > Manage Keys* from the HP Systems Insight Manager menu.'
- Migration Options:** A section with a header 'Migration Options' and two sub-sections:
 - P2V Migration:** The text states 'The P2V migration wizard will help you turn a source physical machine into a virtual machine by:' followed by a bulleted list:
 - Gathering all necessary data from the source machine OS and providing that data to the Server Migration Pack.
 - Checking the VM host for compatibility with the source machine.
 - Copying the source machine OS and file system to the VM host and configuring it for VM operation. One SMP license is used for each P2V migration performed.
 - V2V Migration:** The text states 'The V2V migration wizard will help you move a virtual machine between VM hosts with different virtualization layers. The VM hosts involved in the V2V migration operation must be licensed and managed by Virtual Machine Management Pack 1.10. One SMP license is used for each V2V migration performed.'
- Upload Binaries:** A section with a header 'Upload Binaries' and a sub-header 'Learn More'. It contains the text 'To ensure hardware compatibility between your VM hosts and source machines, upload the required driver and OS binaries.' and a bulleted list:
 - View the Server Migration Pack help file
 - View the SMP troubleshooting page
 - Visit the Virtual Machine Management Pack website

- From the Server Migration Pack console, click **V2V migration wizard** to access the V2V migration wizard.



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

Table 5-2: V2V migration wizard columns and definitions

Column	Definition
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

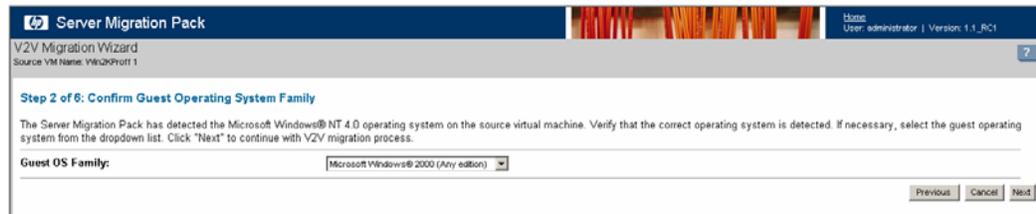
NOTE: If the virtual machine guest is not turned off or does not have any virtual disks attached, it is not displayed in the list in V2V migration wizard.

- From the V2V migration wizard, select a source virtual machine host from the list, and click **Next**. The source virtual machine guest must be on a licensed and managed virtual machine host, and it must be in a Stopped state. Use the Virtual Machine Management Pack to stop the source virtual machine guest if it is running.

IMPORTANT: In cases where the target virtualization layer does not support the source virtual machine configuration feature, a warning message will display during the migration and the migration will continue with the default setting.

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

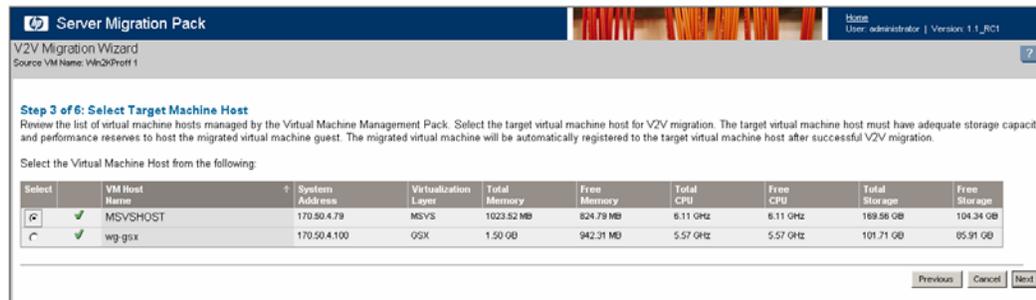
- Verify the guest operating system family running on the selected source virtual machine. The operating system is the key to uploading the appropriate drivers and performing a successful migration.



- Select the target virtual machine host where the migrated virtual machine guest will be located. The target virtual machine host must have adequate storage capacity and performance reserves to host the migrated virtual machine guest.

Free CPU is the number of free processor cycles, measured in MHz or GHz, on the virtual machine host. Free CPU is calculated as follows: (Physical Processor Quantity * Physical Processor Speed) * (100% - Total CPU Busy%).

Example 5-1: If a virtual machine host has 2x2.4-GHz processors and 45% Total CPU Busy, the equation would be $(2 * 2.4\text{-GHz}) * (1 - 0.45) = 4.8\text{-GHz} * 0.55 = 2.64\text{-GHz}$.



- If necessary, upload binary files if the required Windows drivers and binaries are not available. To upload binary files, click **Upload the required drivers and OS binaries**, and ensure that all the necessary binary files have been loaded onto the server. If additional files are necessary, load these files from your original Windows or VMware media. If Microsoft iSCSI Initiator 1.06 is missing, download and install the initiator from <http://www.microsoft.com>.

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	
✓	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					
✓	ac78xx.sys	Adaptec, Inc.	4.00	Mandatory for Virtual Server, locate ac78xx.sys in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	Browse...
✓	buslogic.sys	Microsoft Corporation	4.00	Mandatory for VMware, locate buslogic.sys in Microsoft's original Windows NT Installation Media.	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.	Browse...
✓	halapi.dll	Microsoft Corporation	4.00	Mandatory for VMware, locate halapi.dll in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	Browse...
✓	ntldr.dll	Microsoft Corporation	4.00	Mandatory, locate ntldr.dll in Microsoft Windows® NT 4.0 Service Pack 6a Distribution Media, or download Service Pack 6a and extract.	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.	Browse...
Microsoft Windows® XP Installation					
✓	vmcsd.sys	VMware, Inc.	1, 2, 0, 2	Mandatory for VMware Migrations. Locate the driver vmcsd.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.	vmcsd.sys was uploaded.

Finish

7. Specify a unique name for the migrated virtual machine guest. Create or select a folder with adequate storage capacity to store the migrated virtual machine guest. The target folder must be empty. The target folder is the location that contains the migrated configuration file and virtual disk for VMware GSX Server and Microsoft Virtual Server. This folder contains only the configuration file for 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. Multiple locations can be provided.

IMPORTANT: An error message will display if there is not adequate free disk space to contain the virtual machine guest files.

IMPORTANT: A warning message will display if the specified virtual machine guest name already exists in the selected virtual machine host.

IMPORTANT: The target virtual machine name cannot contain any special characters. Valid characters include a-z, A-Z, 0-9, underscores (_), dashes (-), and spaces.

Server Migration Pack

V2V Migration Wizard

Source VM Name: Win2kProff 1 >>>>> Target VM Host: MSVSHOST

Step 6 of 6: Specify Target Details

Specify a unique virtual machine name for the migrated virtual machine guest within the target virtual machine host. Select or create the file location for the migrated virtual machine guest within the target virtual machine host. Consider the characteristic growth of the dynamic virtual disks.

Target Virtual Machine

Target Host: MSVSHOST

Target VM Layer: Virtual Server

VM Name: Win2kProff Migrated

Free Space Required: 2.00 GB

Target Folder: C:/Documents and Settings/All Users/Documents/Shared Virtual Machines/Win2kPro

Select Folder: C:/ (104.34 GB Free)

(parent)
(empty folder)

Previous Cancel Next

8. Review the displayed details, and click **Confirm** to confirm the V2V migration.



You can monitor the migration progress by viewing the Server Migration Pack Running Task Log. This screen is periodically refreshed. To access the Running Task Log from the Server Migration Pack Console, click **SMP Running Task Log**.

One SMP license is used after a successful V2V migration.

The migrated virtual machine guest will have a new BIOS serial number and MAC address after a successful V2V migration.

The migrated virtual machine guest will be automatically registered to the target virtual machine host after a successful migration, and can be powered on from the Virtual Machine Management Pack console.

Consider that the transfer will impose a system load on the source and target virtual machine host. Depending on the available network bandwidth and storage throughput, the Server Migration Pack normally processes data at a rate of 2–8 MB/s. For example, a 10–GB data transfer will take approximately 30 minutes.

IMPORTANT: During the V2V migration process, all the source data will be migrated to the target virtual machine guest. At times, the disk size will be rounded to the next GB during the migration process. Performing a migration on a migrated virtual machine host should not modify the disk size.

IMPORTANT: In the event of a failed migration, the migrated disks will be left behind. You must manually delete those migrated disks.

NOTE: This operation will be queued if the selected virtual machine hosts are currently involved in other tasks.

Performing post-migration configuration tasks

Post-migration configuration tasks must be performed on the migrated virtual machine guest after performing a migration.

The migrated virtual machine guest will be automatically registered to the target virtual machine host and is accessible from the Virtual Machine Management Pack console.

Upon completing a migration:

1. Open the target virtual machine host virtualization management interface (Remote Console) to configure the network connections for the migrated virtual machine guest.
 - If using Microsoft Virtual Server target virtualization layer:
 - a. Select the migrated virtual machine guest from the Microsoft Virtual Server Management Interface, and select **Edit Configuration>Network Adapters**.
 - b. Attach a virtual network adapter and click **OK**.
 - If using VMware ESX Server target virtualization layer:
 - a. Select the migrated virtual machine guest from the VMware ESX Server Management Interface, and click **Configure Hardware**.
 - b. Click **Add Device** link, attach the virtual network adapter, and click **OK**.
 - If using VMware GSX Server target virtualization layer:
 - a. Select the migrated virtual machine guest from the VMware ESX Server Management Interface, and click **Edit VM Settings**.
 - b. From the Hardware tab, click **Network**. Attach the virtual network adapter, and click **OK**.
2. Power on the migrated virtual machine guest.
3. Modify the system host name.
4. Set the IP address in case of a static IP address configuration.
5. Wait for the virtual machine guest to automatically detect new hardware and install the required drivers.
6. When prompted for reboot, click **Yes** to restart the virtual machine guest.

Server Migration Pack logs

The Server Migration Pack tracks P2V and V2V migrations in the Running Task Log and Events Log screens.

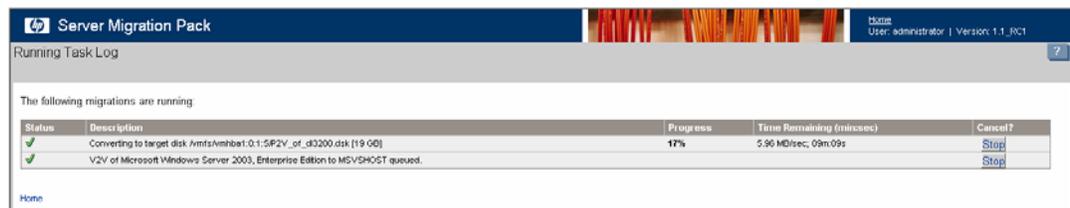
Running Task Log

The Server Migration Pack Running Task Log displays the migrations in progress. Current running migrations are set in a table that allow you to check the status, progress, and time remaining on each migration being performed. 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 Events Log.

The following information is displayed for each running task:

- Status
- Description
- Progress
- Time remaining
- Cancel



Status	Description	Progress	Time Remaining (min:sec)	Cancel?
✓	Converting to target disk \\mfs\Armbat.0:1:5F2V_of_dk200.dsk [19:00]	17%	5:50 MD/Sec, 09m:09s	Stop
✓	V2V of Microsoft Windows Server 2003, Enterprise Edition to MSVHOST queued.			Stop

Event Log

The Server Migration Pack Event Log displays the migrations that have been performed. Complete migration tasks are set in a table that allow you to sort by time, category, user, host, virtual machine host, and any message summaries of the performed migration. To access the Event Task Log from the Server Migration Pack console, click **SMP Event Log**.

The following information is displayed for each event:

Table 6-1: Event Log information

Item	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 list, select from the drop-down list. The event list can be filtered to display:

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

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

To refresh the Event Log, click **Reload Events**.

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

Type	Time	Category	User	Host	VM	Message
<input type="checkbox"/>	2/22/05 4:11 PM	Migration	WG-CORP\Administrator	ESX-SANBOOT	Microsoft Windows Server 2003, Enterprise Edition	Operation Migration queued.
<input type="checkbox"/>	2/22/05 4:09 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Created target disks \vmfs\vmhba1:0:1:5P2V_of_d3201.dsk [19 GB]
<input type="checkbox"/>	2/22/05 4:09 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Created target disks \vmfs\vmhba1:0:1:5P2V_of_d3200.dsk [19 GB]
<input type="checkbox"/>	2/22/05 4:09 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	P2V of d320 started.
<input type="checkbox"/>	2/22/05 4:08 PM	Migration	WG-CORP\Administrator	ESX-SANBOOT		Operation Migration waiting for connection to source.
<input type="checkbox"/>	2/22/05 3:36 PM	Deploy Agent	WG-CORP\Administrator			Deploying Agent to 170.50.4.54 started
<input type="checkbox"/>	2/22/05 2:30 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Operation Migration of VM P2V of d320 to wg-gsx finished.
<input type="checkbox"/>	2/22/05 2:38 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Rebooting d320
<input type="checkbox"/>	2/22/05 2:38 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Consuming one HP Server Migration Pack license.
<input type="checkbox"/>	2/22/05 2:38 PM	Migration	WG-CORP\Administrator	wg-gsx	DL320-XML	Registered VM C:\P2V\QA\Pass7\DL320-XML\DL320-XML.vmx successfully.
<input type="checkbox"/>	2/22/05 2:38 PM	Migration	WG-CORP\Administrator	wg-gsx	DL320-XML	Driver injection for Microsoft Windows Server 2003 successful.
<input type="checkbox"/>	2/22/05 2:38 PM	Migration	WG-CORP\Administrator	wg-gsx	DL320-XML	Drivers injected in VM boot disk PhysicalDrive0.vmdk successfully.
<input type="checkbox"/>	2/22/05 2:30 PM	Migration	WG-CORP\Administrator	wg-gsx	DL320-XML	Added boot entry: mult(0:\disk(0:\disk(0:\partition(2)\WINDOWS-\HP SMP\WG3033 Conversion VM\NAME\WINDOWS\hal-hip_vmln.dl) \noexec,te-optout) \!stdetect \kernel-hip_vmln.exe
<input type="checkbox"/>	2/22/05 2:35 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Cloned disk PhysicalDrive1 to PhysicalDrive1.vmdk successfully.
<input type="checkbox"/>	2/22/05 2:35 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Cloned disk PhysicalDrive0 to PhysicalDrive0.vmdk successfully.
<input type="checkbox"/>	2/22/05 2:26 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Created target disks C:\P2V\QA\Pass7\DL320-XML\PhysicalDrive1.vmdk [19 GB]
<input type="checkbox"/>	2/22/05 2:26 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Created target disks C:\P2V\QA\Pass7\DL320-XML\PhysicalDrive0.vmdk [19 GB]
<input type="checkbox"/>	2/22/05 2:26 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	P2V of d320 started.
<input type="checkbox"/>	2/22/05 2:26 PM	Migration	WG-CORP\Administrator	wg-gsx		Operation Migration queued.
<input type="checkbox"/>	2/22/05 1:18 PM	Migration	WG-CORP\Administrator	170.50.4.54	P2V of d320	Cloned disk PhysicalDrive1 to PhysicalDrive1.vhdx successfully.

Virtual-to-virtual migration with Linux

This appendix outlines the steps required to prepare Linux V2V migration tasks using the Server Migration Pack. For more information, refer to your Linux documentation.

IMPORTANT: HP recommends that you have a separate /boot partition in the early sectors of the boot hard disk to ensure that all bootstrap files are located below the 1024 bios cylinder limit.

NOTE: Scenarios contained in this document use the GRUB boot loader for this procedure. If you use other boot loaders, results may vary.

Preparing for virtual-to-virtual migration with Linux

To prepare the source machine for the new virtual hardware environment, you must perform these general steps:

1. Create an initrd image with the necessary mass storage device driver and adapt the boot loader configuration.
2. Adapt your file system partition with label names and modify the /etc/fstab accordingly. If possible, also use label names in the boot loader configuration or create additional entries.

The Server Migration Pack always creates a virtual configuration based on SCSI virtual disks.

VMware emulates a BusLogic SCSI HBA but can also be configured to emulate a LSI Logic SCSI HBA. Microsoft Virtual Server emulates an Adaptec 7870 SCSI HBA.

IMPORTANT: The Linux aic7xxx driver for the Adaptec 7870 SCSI HBA is incompatible with Microsoft Virtual Server. The only workaround for migrating a Linux operating system to the Microsoft Virtual Server environment is to attach all disks under the emulated IDE controllers. Note that the device names for hard disks are not identical. The /dev/hd* device name is for IDE, while the /dev/sd* device name is for standard SCSI disks. This discrepancy also limits the number of disks in a configuration to four.

Before creating a new initrd image:

1. Ensure that all partitions have a valid file system and are in a healthy state. The Server Migration Pack does not support migration of unformatted or unhealthy partitions.
2. Create a Linux boot disk for your source machine.

Creating a new initrd image

1. Modify `/etc/modules.conf` to include these lines:

```
alias scsi_hostadapter BusLogic
alias scsi_hostadapter mptscsih
alias scsi_hostadapter aic7xxx
```

Notice the exact case of the String Bus Logic.

2. Create a new initrd image with `>mkinitrd -v /boot/newinitrd.img <kernel release>` where `<kernel release>` can be requested by `>uname -r`.
3. Adapt all necessary GRUB boot loader entries in `/boot/grub/menu.lst` to point to the new initrd image, for example:

```
title Red Hat Linux (2.4.20-8)
    root (hd0,0)
    kernel /vmlinuz-2.4.20-8 ro root=/dev/sda2
    initrd /newinitrd.img
```

Modifying file systems and mount configurations

IMPORTANT: Red Hat 8 or later uses label names by default. Verify that these label names are used.

1. Create label names for all file system partitions.

— For ext file systems, use:

```
>tune2fs -L <label> </dev/name>
```

— For reiserfs file systems, use:

```
>reiserfstune -l <label> </dev/name>
```

NOTE: Reiserfstune only works on dismounted volumes. For the root file system, you must execute the labeling from a Linux rescue CD.

2. Adapt `/etc/fstab` to use labeled mount entries, for example:

```
LABEL=/          /          ext3    defaults    1 1
LABEL=/boot     /boot     ext3    defaults    1 2
LABEL=/home     /home     ext3    defaults    1 2
```

3. If the file system support of the root file system is compiled into the kernel, adapt all necessary GRUB boot loader entries in `/boot/grub/menu.lst` to reflect the LABEL name, for example:

```
title Red Hat Linux (2.4.20-8)
    root (hd0,0)
    kernel /vmlinuz-2.4.20-8 ro root=LABEL=/
    initrd /newinitrd.img
```

Otherwise, make additional boot entries to reflect a possible device name change, for example:

```
title Red Hat Linux (2.4.20-8) SCSI
    root (hd0,0)
    kernel /vmlinuz-2.4.20-8 ro root=/dev/sda2
    initrd /newinitrd.img

title Red Hat Linux (2.4.20-8) IDE
    root (hd0,0)
    kernel /vmlinuz-2.4.20-8 ro root=/dev/hda2
    initrd /newinitrd.img
```

NOTE: The latter (IDE) is necessary only if changing from SCSI to IDE, or vice versa. For more information, refer to the Important notice on page A-1.

The Server Migration Pack is ready to perform V2V migration with Linux. To perform this migration, refer to the virtual-to-virtual migration chapter in this guide.

Performing post-migration configuration tasks

Post-migration configuration tasks must be performed on the migrated virtual machine guest after performing a migration.

The migrated virtual machine guest will be automatically registered to the target virtual machine host and is accessible from the Virtual Machine Management Pack console.

Upon completing a V2V migration with Linux, perform the post-migration tasks listed in the V2V migration chapter of this guide, then perform the following tasks:

1. Adapt virtual machine configuration. Add memory, disks, network card, and so forth as appropriate.
 - If using Microsoft Virtual Server, connect all hard disks to an IDE controller. Change all disk attachments from SCSI to primary or secondary channel. Attach the boot disk to “Primary Channel (0).” For more information, refer to the important notice earlier in this appendix.
 - If using VMware ESX Server or VMware GSX Server, check and configure correct guest operating system attributes.

2. If applicable, manually select the modified boot loader entry on bootstart with reference to the correct initrd and device pointers.
3. If applicable, adapt the default boot loader entry in `/boot/grub/menu.lst`.
4. If applicable, adapt swap entry to point in the correct device (`/dev/hd*` or `/dev/sd*`) in `/etc/fstab`.

NOTE: This step is applicable only if the HBA type was changed from IDE to SCSI, or vice versa.

5. Set up a unique network identity.

IMPORTANT: Deactivate the source machine if using the same identity in the migrated machine.

Troubleshooting

This appendix identifies and provides solutions for commonly encountered issues, as well as answers to frequently asked questions.

- Uninstallation of Server Migration Pack
 - Uninstalling the Virtual Machine Management Pack and the Server Migration Pack
 - Uninstalling only the Server Migration Pack
- Configuration
 - Configuring the Server Migration Pack with a firewall
- SMP Agent
 - SMP agent deployment fails in P2V migration
- P2V and V2V migration wizard
 - Blank page displays when launching the SMP console from HP SIM
 - V2V migration wizard is blank
 - “Communication has been lost with the SMP service” message displays in SMP console
 - P2V migration wizard displays “N/A” in System Name, Operating System, and Model columns
 - Server is not displayed on the P2V wizard Select source physical machine screen
 - Virtual machine guest is not displayed on the V2V wizard Select source PM screen
- P2V and V2V migration functions
 - P2V migration does not start after confirming; Event Log status displays “Operation Migration waiting for connection to source” for some time
 - “Unable to connect to the source physical server” error message displays in P2V migration wizard
 - Queued up migrations fail
 - Chkdsk fails to check a NTFS volume in a migrated virtual machine guest when using Windows NT 4.0 operating system

- Drive letters are not the same in the migrated virtual machine guest after migration
- Old Server Migration Pack version number appears in HP SIM>Help>About
- Server Migration Pack cannot perform V2V migration on virtual machine guests with certain disk types

Uninstallation of Server Migration Pack

Uninstalling the Virtual Machine Management Pack and the Server Migration Pack

The Server Migration Pack will become inaccessible if the Virtual Machine Management Pack is removed. To uninstall the Virtual Machine Management Pack, refer to the *HP ProLiant Essentials Virtual Machine Management Pack User Guide*.

IMPORTANT: Close all Server Migration Pack screens and all Virtual Machine Management Pack screens before attempting uninstallation of the Server Migration Pack.

Uninstalling only the Server Migration Pack

To uninstall from the control panel:

1. Select **Add or Remove Programs**.
2. Select **HP Server Migration Pack (remove only)>Change/Remove**.
3. To confirm the uninstallation, click **Yes**.

To uninstall using the Server Migration Pack uninstaller shortcut:

1. Select **Start>Programs>HP Server Migration Pack>Uninstall HP SMP**.
2. To confirm the uninstallation, click **Yes**.

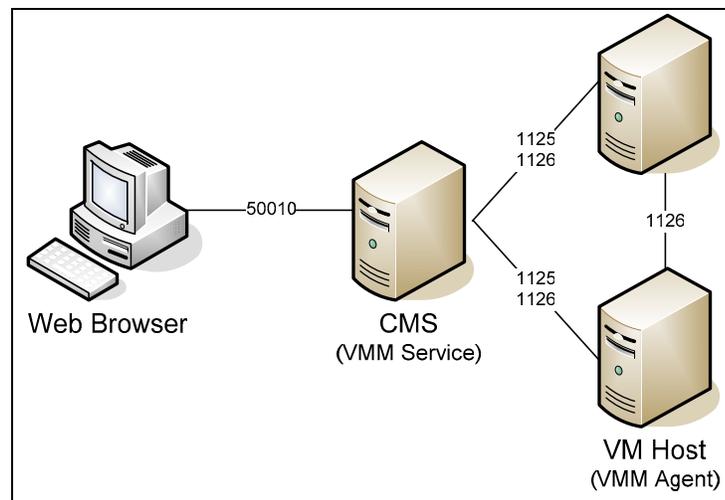
Configuration

Configuring the Server Migration Pack with a firewall

For P2V and V2V migration to occur behind a firewall, the firewall must be configured to allow Server Migration Pack traffic through the firewall. The Server Migration Pack uses the following ports:

- Communication between browsers (client) and the SMP Web Service uses HTTPS over port 50010.
- Communication between the web service and the SMP application (both on the HP SIM CMS) uses SSL over port 1124.
- Communication between the SMP application on CMS and VMM agent (on virtual machine hosts) uses SSL over ports 1125 and 1126.
- Communication between the SMP application on CMS and SMP agent (on source physical machine) uses SSL over ports 1125 and 1126.
- Communication between the VMM agents during a V2V migration operation uses SSL over port 1126.
- Communication between the SMP agent and virtual machine host during a P2V migration operation uses SSL over port 1126.

The following figure illustrates the port arrangements required by the Server Migration Pack.



SMP Agent

SMP agent deployment fails in P2V migration

The possible reasons and remedies for this issue are:

- **Incorrect User Name/Password:** Verify that you have provided valid credentials of the source physical machine for the SMP agent deployment using the SMP Deploy method. The login credentials should have administrative privilege on the source physical machine.
- **System type not supported:** Verify that the source physical machine is supported for P2V migration. For more information on supported configurations, refer to the *HP ProLiant Essentials Virtual Machine Management Pack and Server Migration Pack Support Matrix*.

NOTE: The CMS server is not a valid source physical machine for P2V migration.

- **Authentication Failed:** If you are using SSH to deploy SMP agent to the source physical machine, verify that you have SSH installed and configured properly. For more information on configuring SSH, refer to the *HP ProLiant Essentials Virtual Machine Management Pack User Guide*.

P2V and V2V migration wizard

Blank page displays when launching the SMP console from HP SIM

This condition occurs when the CMS name link is not resolved correctly on the network. Record the name used in the browser window. Verify that this name is resolved on the network and is not being affected by any proxy settings in the browser. In addition, be sure to include this link as a trusted site in the Internet Explorer browser security settings.

V2V migration wizard is blank

When a VMM-managed virtual machine host stops responding due to insufficient hard disk space in a virtual machine host, the V2V migration wizard might not load. To resolve the issue, free up some disk space on the virtual machine host and try to reopen the page.

“Communication has been lost with the SMP Service” message displays in SMP console

This condition might occur when the SMP browser has been idle for at least 15 minutes and has been timed out. To resolve the issue, close the existing SMP browser and launch the SMP console from HP SIM menu by selecting **Tools>Integrated Consoles>Server Migration Pack**.

P2V migration wizard displays “N/A” in System Name, Operating System, and Model columns

For HP SIM-managed devices, the Server Migration Pack obtains the system name, operating system, and model information from HP SIM. If the correct system name, operating system, and model do not appear in the Server Migration Pack P2V migration wizard, verify that the system has been discovered properly in HP SIM.

Server is not displayed on the P2V wizard Select source physical machine screen

For P2V migration, the source physical machine must be a server running a Microsoft Windows operating system and cannot be a virtual machine host, virtual machine guest, or a CMS. The list in the Select Source Physical Machine screen displays the HP SIM managed servers.

If you do not find the server that you want to perform P2V migration in the that list, add it to the list by specifying the full DNS or system IP address in the provided textbox and clicking **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.

Virtual machine guest is not displayed on the V2V wizard Select Source VM screen

For V2V migration, the Virtual Machine Management Pack must manage the source virtual machine guest. The source virtual machine guest and must be in a Stopped state and must have at least one virtual disk attached to it. Verify if the virtual disk type is supported for V2V migration. The virtual machine guest can be stopped from Virtual Machine Management Pack. To perform this task from HP SIM, select **Tools>Integrated Consoles>Virtual Machine Management Pack**

P2V and V2V migration functions

P2V migration does not start after confirming; Event Log displays “Operation Migration waiting for connection to source” for some time

The P2V migration process, once confirmed, reboots the source physical machine and has the SMP agent run in exclusive mode during the migration process. Rebooting the source physical machine might take a few minutes. But if this process takes a long time, verify that the source physical machine is rebooted with the SMP agent running in exclusive mode. It is possible that the source physical machine is waiting for user input during the reboot, for example, **F1**.

Also, if you deploy the SMP agent on an operating system that is not the first boot order, the SMP agent might fail to boot to the SMP mode. To resolve the issue, change the boot order by editing (system drive)\boot.ini, and verifying that the operating system on which the Server Migration Pack is deployed is on the first boot order.

For a complete list of source machine prerequisites, refer to the P2V migration chapter in this user guide.

“Unable to connect to the source physical server” error message displays in P2V migration wizard

P2V migration always uses the primary IP address of the source physical machine to communicate between the CMS and the source physical machine.

If the source physical machine has more than one IP address configured and the primary IP address is unreachable by the CMS then, the P2V migration process might fail.

For example, if the source physical machine, machine1, has two IP addresses and the network configuration order is:

- 92.168.1.1 (Primary)
- 172.16.101.30 (Secondary)

and the CMS has an IP address of 172.16.101.29, then the CMS can ping only the secondary network connection of the source physical machine. In this case, the P2V process will be stuck on the SMP agent deployment step of the P2V migration wizard.

The reason for this time-out is that the SMP agent in the source physical machine is attempting to bind itself to the primary IP address of the source physical machine, which in this case is 92.168.1.1 and this IP address is unreachable from the CMS.

To fix the problem:

1. Stop the SMP agent console DOS window on the source physical machine, if running.
2. Re-order the network connections in the source physical machine, and verify if the Primary IP address of the physical machine can be pinged from CMS.
3. Remove the \$hp_smpagent\$ directory from the physical machine, and start the P2V wizard from the Server Migration Pack console.

Queued up migrations fail

P2V and V2V migrations get queued if the virtual machine host involved in the job is already part of another running migration. As a result, when the queued up migration starts and if the target virtual machine host lacks sufficient disk space to contain the migrated virtual machine guest, the migration might fail.

To fix the problem:

1. Remove any unused files to increase the disk space in the target virtual machine host.
2. Restart the migration process after making sufficient disk space on the target virtual machine host.

Chkdsk fails to check an NTFS volume in a migrated virtual machine guest when using Windows NT 4.0 operating system

During the migration, the Windows NT installation was checked and modified for the virtual hardware by the Server Migration Pack using a higher version of NTFS (the NTFS of the CMS).

To fix the problem:

1. Power down the Windows NT virtual machine.
2. Temporarily attach the Windows NT virtual disk to an existing Windows 2000, Windows XP, or Windows 2003 helper virtual machine.
3. Check the Windows NT volume with chkdsk of the helper virtual machine and power down the helper virtual machine thereafter.
4. Detach the Windows NT disk from the helper virtual machine.

For more information, refer to <http://support.microsoft.com/kb/196707>.

Drive letters are not the same in the migrated virtual machine guest after migration

1. Depending on the operating system, perform the following task:
 - If using Windows NT 4.0, select **Programs>Administrative Tools (Common)>Disk Administrator** and verify that the disk administrator has stored a current and active configuration of all disks.
 - If using Windows 2000, Windows XP, or Windows 2003, select **Control Panel>Administrative Tools>Computer Management>Disk Management** and verify that the disk manager has initialized all disks.
2. Fix the incorrect letter assignment in the migrated virtual machine guest using the appropriate disk administrator or manager.

For more information about P2V post-migration configuration tasks, refer to the physical-to-virtual migration chapter in this user guide.

Old Server Migration Pack version number appears in HP SIM>Help>About

This situation might occur when upgrading from HP SIM 4.2, Virtual Machine Management Pack 1.10, and Server Migration Pack 1.10 to HP SIM 5.0, Virtual Machine Management Pack 1.11, and Server Migration Pack 1.11 in a typical installation. To find the correct version number, go to **Control Panel>Add/Remove Programs>Server Migration Pack>Support Information Link**.

Server Migration Pack cannot perform V2V migration on virtual machine guests with certain disk types

The Server Migration Pack will not move, copy, or migrate virtual machine guests with the following disk types as listed in the following table:

Table B-1: Disk types not moved, copied, or migrated by virtualization product

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

Glossary

CMS

HP SIM Central Management Server

ESX

VMware's Red Hat Linux-based host operating system that provides a virtual machine solution.

GSX

VMware's Windows- or Linux-based host operating system that provides a virtual machine solution.

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 that is the foundation for a virtual machine.

HP SIM

HP Systems Insight Manager

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.

physical-to-virtual machine (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

total estimated transport volume

Total volume which consists of several disks plus configuration files.

virtual machine (VM)

Emulates a complete hardware system from processor to network card in a self-contained, isolated software environment, enabling the simultaneous operation of otherwise incompatible systems.

virtualization

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

virtual server

Microsoft's host operating system that provides a virtual machine solution.

virtual-to-virtual machine (V2V) migration

Migration of a virtual machine guest between virtualization layers, including Microsoft Virtual Server 2005, VMware ESX Server, and VMware GSX Server.

VMM

HP ProLiant Essentials Virtual Machine Management Pack

A

adding Server Migration Pack licenses 3-2

B

binary upload 4-10, 5-6

E

Event Log 6-2

H

help resources v

HP authorized reseller vi

L

license

adding 3-2

requirements 3-1

P

physical-to-virtual (P2V) migration

abort and exit command 4-13

binary upload 4-10

migration process 4-3

overview 4-1

P2V migration wizard 4-4

post-migration configuration tasks 4-14

prerequisites 4-2

recommendations 4-1

source physical machine states 4-6

R

Running Task Log 6-1

S

Server Migration Pack

adding licenses 3-2

agent installation in P2V migrations 4-6

console 4-3, 5-3

Event Log 6-2

installation 2-1

integration with HP SIM 1-1

integration with Virtual Machine Management Pack 1-1

license requirements 3-1

licensing 3-1

overview 1-1

P2V migration wizard 4-4

Running Task Log 6-1

troubleshooting B-1

V2V migration wizard 5-4

T

telephone numbers vi

troubleshooting

blank page displays when launching SMP

console from HP SIM B-4

chkdsk fails to check an NTFS volume when

using Windows NT 4.0 B-7

communication lost with SMP message displays

in SMP console B-4

configuring Server Migration Pack with

firewall B-3

drive letters are not the same in virtual machine

guest after migration B-8

P2V migration does not start after

confirming B-6

P2V migration wizard displays N/A in System

Name, Operating System, and Model

columns B-5

queued up migrations fail B-7

server is not displayed on P2V wizard Select

source physical machine screen B-5

SMP agent deployment fails in P2V

migration B-4

Unable to connect to source physical server

error message displays B-6

uninstalling only Server Migration Pack B-2

uninstalling Virtual Machine Management Pack

and Server Migration Pack B-2

V2V migration wizard is blank B-4

- virtual machine guest not displayed on V2V wizard Select Source VM screen B-5
- virtual-to-virtual (V2V) migration
 - disk types not moved or copied by virtualization product B-8

V

- virtual-to-virtual (V2V) migration
 - binary upload 5-6
 - creating a new initrd image for Linux migrations A-2
 - disk types not moved or copied by virtualization product 5-1, B-8

- migration process 5-3
- modifying file systems and mount configurations for Linux migration A-2
- overview 5-1
- overview of V2V migrations with Linux A-1
- post-migration configuration tasks 5-9
- post-migration configuration tasks for Linux migration A-3
- preparing for V2V migration with Linux A-1
- prerequisites 5-1
- V2V migration wizard 5-4