

PlateSpin® Migrate 11.0

User Guide

May 1, 2014



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893 Windows Vista Enhanced Cryptographic Provider (RSAENH)

894 Windows Vista Enhanced DSS and Diffie-Hellman Cryptographic Provider (DSSENH)

989 Windows XP Enhanced Cryptographic Provider (RSAENH)

990 Windows XP Enhanced DSS and Diffie-Hellman Cryptographic Provider (DSSENH)

997 Microsoft Windows XP Kernel Mode Cryptographic Module (FIPS.SYS)

1000 Microsoft Windows Vista Kernel Mode Security Support Provider Interface (ksecdd.sys)

1001 Microsoft Windows Vista Cryptographic Primitives Library (bcrypt.dll)

1002 Windows Vista Enhanced Cryptographic Provider (RSAENH)

1003 Windows Vista Enhanced DSS and Diffie-Hellman Cryptographic Provider (DSSENH)

1006 Windows Server 2008 Code Integrity (ci.dll)

1007 Microsoft Windows Server 2008 Kernel Mode Security Support Provider Interface (ksecdd.sys)

1008 Microsoft Windows Server 2008

1009 Windows Server 2008 Enhanced DSS and Diffie-Hellman Cryptographic Provider (DSSENH)

1010 Windows Server 2008 Enhanced Cryptographic Provider

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918 - OpenSSL FIPS Object Module v1.1.2 - 02/29/2008 140-2 L1

1051 - OpenSSL FIPS Object Module v 1.2 - 11/17/2008 140-2 L1

1111 - OpenSSL FIPS Runtime Module v 1.2 - 4/03/2009 140-2 L1

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About This Guide

This guide provides information about using PlateSpin Migrate version 11.0.

- ♦ [Chapter 1, “PlateSpin Migrate Feature Overview,” on page 13](#)
- ♦ [Chapter 2, “Post-Installation Configuration,” on page 23](#)
- ♦ [Chapter 3, “Getting Started with PlateSpin Migrate,” on page 49](#)
- ♦ [Chapter 4, “Workload Portability with Peer-to-Peer Workload Migrations,” on page 81](#)
- ♦ [Chapter 5, “Windows Workload Portability with a PlateSpin Image,” on page 97](#)
- ♦ [Chapter 6, “Essentials of Workload Migration Jobs,” on page 107](#)
- ♦ [Appendix B, “Troubleshooting PlateSpin Migrate,” on page 151](#)
- ♦ [Appendix A, “Frequently Asked Questions,” on page 149](#)
- ♦ [“Glossary” on page 163](#)

Audience

This guide is intended for IT staff, such as data center administrators and operators, who use PlateSpin Migrate in their ongoing workload migration projects.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the *User Comments* feature at the bottom of each page of the online documentation.

Additional Documentation

This guide is part of the PlateSpin Migrate documentation set. For a complete list of publications supporting this release, visit the [PlateSpin Migrate 11 Online Documentation Web Site \(http://www.netiq.com/documentation/platespin_migrate_11\)](http://www.netiq.com/documentation/platespin_migrate_11).

Documentation Updates

The most recent version of this guide can be found at the [PlateSpin Migrate 11 Online Documentation Web Site \(http://www.netiq.com/documentation/platespin_migrate_11\)](http://www.netiq.com/documentation/platespin_migrate_11).

Additional Resources

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- ♦ [NetIQ Support Knowledgebase \(https://www.netiq.com/support/kb/\)](https://www.netiq.com/support/kb/): A collection of in-depth technical articles.

- ♦ [NetIQ Support Forums \(https://forums.netiq.com/forum.php\)](https://forums.netiq.com/forum.php): A Web location where product users can discuss NetIQ product functionality and advice with other product users.
- ♦ [MyNetIQ \(https://www.netiq.com/f/mynetiq/\)](https://www.netiq.com/f/mynetiq/): A Web site offering PlateSpin product information and services, such as access to premium white papers, webcast registrations, and product trial downloads.

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- ♦ Telephone outside the United States: 1-801-861-4000
- ♦ E-mail: support@platespin.com
- ♦ Product specific information: [PlateSpin Migrate Support \(https://www.netiq.com/support/kb/product.php?id=SG_XPLATESPINMIGRATE_1_2\)](https://www.netiq.com/support/kb/product.php?id=SG_XPLATESPINMIGRATE_1_2)

1 PlateSpin Migrate Feature Overview

PlateSpin Migrate enables you to migrate heterogeneous workloads (operating systems along with their applications and data) across x86 server and desktop infrastructure in the data center, decoupling a workload's hardware from software.

- ♦ [Section 1.1, "About Workload Portability," on page 13](#)
- ♦ [Section 1.2, "Supported Configurations," on page 15](#)
- ♦ [Section 1.3, "Supported Transfer Methods," on page 19](#)
- ♦ [Section 1.4, "Security and Privacy," on page 20](#)
- ♦ [Section 1.5, "Performance," on page 21](#)

1.1 About Workload Portability

PlateSpin Migrate automates the migration of workloads among three infrastructures: physical, virtual machine, and volume imaging.

- ♦ [Section 1.1.1, "Business Applications for PlateSpin Migrate," on page 14](#)
- ♦ [Section 1.1.2, "Workload Migration Tasks," on page 15](#)

Figure 1-1 Workload Portability

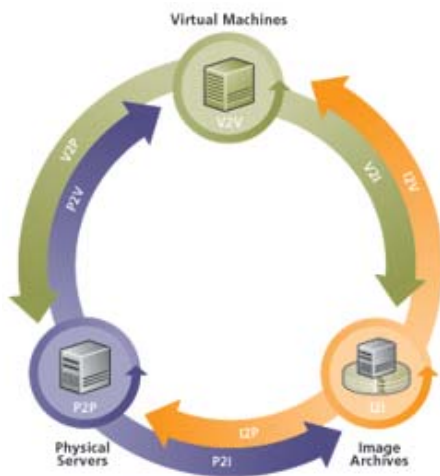


Table 1-1 Workload Portability Operations

| Category of Operation | Migration Infrastructures |
|------------------------------------|---|
| Workload Portability: Peer-to-peer | <ul style="list-style-type: none">♦ Physical to Virtual (P2V)♦ Virtual to Virtual (V2V)♦ Virtual to Physical (V2P)♦ Physical to Physical (P2P) |
| Workload Portability: Imaging | <ul style="list-style-type: none">♦ Physical to Image (P2I)♦ Virtual to Image (V2I)♦ Image to Virtual (I2V)♦ Image to Physical (I2P) |

PlateSpin Migrate supports multiple workload types and virtualization platforms. Imaging is supported for workloads with Microsoft Windows operating systems. For a more detailed list of supported workloads and infrastructures, see [“Supported Configurations” on page 15](#).

1.1.1 Business Applications for PlateSpin Migrate

PlateSpin Migrate is designed to be used for the following scenarios:

- ♦ **Consolidation.** Automating large-scale migrations of physical machines to virtual machines, accelerating consolidation projects, and reducing administrative effort and errors.
- ♦ **Migration.** Moving fully configured workloads from old hardware to new hardware without rebuilding the entire software stack.
- ♦ **Test Lab Deployment.** Consolidating test lab workloads by running multiple virtual machines on a single VM host, quickly deploying virtual test lab environments with ease, and replicating an entire production environment in matter of hours or days.
- ♦ **Maintenance and Support Agreement Integrity.** De-virtualizing workloads along with the applications installed on them and moving them back to physical machines over the network so that the support agreements can remain valid.
- ♦ **Machine Provisioning.** Easily capturing an entire library of hardware-independent PlateSpin Images and deploying them to new infrastructures over the network without manually configuring the hardware, drivers, and so on.
- ♦ **Continuous Workload Optimization.** Moving workloads to and from any geographical location, onto any platform, in any direction. Workloads can be virtualized or de-virtualized during ongoing and continuous optimization of resources.

1.1.2 Workload Migration Tasks

PlateSpin Migrate enables you to define, save, schedule, execute, and monitor the following migration tasks.

Table 1-2 *PlateSpin Migrate Workload Migration Tasks*

| Task | Description |
|---------------|--|
| Copy Workload | Results in a virtual or physical duplicate of a selected physical or virtual workload, except that the new workload is assigned a new network identity. Use this migration task when you intend to keep the source workload operational. |
| Move Workload | Results in an exact virtual or physical duplicate of a selected physical or virtual workload. Use this migration task when you intend to retire or repurpose the original infrastructure. |
| Server Sync | Synchronizes a virtual or physical workload with another virtual or physical workload without transferring the entire source volume data over the network. |
| Capture Image | Creates an image of a physical or virtual workload as a single entity, in PlateSpin Image format. |
| Deploy Image | Converts a PlateSpin Image into a booted or bootable workload on a physical or virtual machine. |

1.2 Supported Configurations

- ♦ [Section 1.2.1, “Supported Source Workloads,” on page 15](#)
- ♦ [Section 1.2.2, “Supported Target Virtualization Platforms,” on page 18](#)

1.2.1 Supported Source Workloads

PlateSpin Migrate supports the following operating system families:

- ♦ Microsoft Windows
- ♦ Linux

The following topics provide more details:

- ♦ [“Supported Microsoft Windows Workloads” on page 15](#)
- ♦ [“Supported Linux Workloads” on page 17](#)

NOTE: Not all workloads are supported on all target VM platforms. For details, see [KB Article 7012976](#) (<https://www.netiq.com/support/kb/doc.php?id=7012976>).

Supported Microsoft Windows Workloads

For the Windows platform, PlateSpin Migrate supports the following portability features:

- ♦ Workload portability: Peer-to-peer migrations (P2V, V2V, V2P, P2P).

- ♦ Peer-to-peer workload synchronization with Server Sync (P2V, V2V, P2P, V2P).
- ♦ Workload imaging with PlateSpin Images (X2I, I2X), with full or partial support for several third-party backup and archiving applications.

Table 1-3 Supported Microsoft Windows Workloads

| Operating System | Remarks |
|--|---|
| Windows Server 2012, 2012 R2 | |
| Windows 8, 8.1 | |
| Windows 7 | |
| Windows XP SP1 and later | |
| Windows 2000 Server SP4 with Update Rollup 1 | |
| Windows Server 2003 SP1 and later | |
| Windows Server 2008 R2 | Including domain controller (DC) systems and Small Business Server (SBS) editions |
| Windows Server 2008 | |
| Windows Vista, Business/Enterprise/Ultimate, SP1 and later | |

NOTE: Only NTFS files systems are supported.

PlateSpin Migrate supports the following localized versions of source Windows workloads:

- ♦ English
- ♦ French
- ♦ German
- ♦ Japanese
- ♦ Chinese (traditional and simplified)

Workload Firmware (UEFI and BIOS) Support: PlateSpin Migrate mirrors the Microsoft support of UEFI or BIOS-based Windows workloads. It transfers workloads (both File and Block-based transfers are supported) from source to target while enforcing the supported firmware for the respective source and target operating systems. When any migration between UEFI and BIOS systems are initiated, Migrate analyzes the transition and alerts you about its validity.

NOTE: If you are migrating UEFI-based workload onto vSphere target container and you want to continue using the same firmware boot mode, you need to target a vSphere 5.0 container or newer.

The following are examples of Migrate behavior when doing conversion between UEFI and BIOS-based systems:

- ♦ When transferring a UEFI-based workload to a VMware vSphere 4.x container (which does not support UEFI), Migrate transitions the workload's UEFI firmware to BIOS firmware.

- ♦ If you attempt to migrate a Windows 2003 workload on to a UEFI-based physical machine, Migrate analyzes the choice and notifies you that it is not valid (that is, the firmware transition from BIOS to UEFI is not supported – Windows 2003 does not support the UEFI boot mode).
- ♦ When migrating a UEFI-based source on a BIOS-based target, Migrate converts the UEFI system's boot disks, which were GPT, to MBR disks. When migrating BIOS workload on a UEFI-based target, Migrate converts the BIOS system's boot disks, which are MBR, to GPT disks.

Supported Linux Workloads

For the Linux platform, PlateSpin Migrate the following portability features:

- ♦ Live peer-to-peer workload portability support (P2P, P2V, V2P, V2V), including workload synchronization with Server Sync.
- ♦ Support for EXT2, EXT3, EXT4, REISERFS, and NSS (OES 2 workloads) Linux file systems.

IMPORTANT: The following are not supported in Linux workloads:

- ♦ Workload imaging.
 - ♦ UEFI-based workloads.
-

Some of the supported Linux versions require that you compile the PlateSpin `blkwatch` module for your specific kernel. Those workloads are called out explicitly.

Table 1-4 *Supported Linux Workloads*

| Distribution | Remarks |
|---|---|
| Red Hat Enterprise Linux (RHEL) AS/ES/WS 4, 5, 6, 6.1, 6.2 | |
| RHEL 5.6-5.10, 6.3, 6.4, 6.5 | You must compile the PlateSpin <code>blkwatch</code> module before discovering these workloads. See KB Article 7005873 (https://www.netiq.com/support/kb/doc.php?id=7005873) . |
| SUSE Linux Enterprise Server (SLES) 9, 10, 11 (SP1, SP2, SP3) | The SLES 11 SP2 (32-bit) with kernel <code>3.0.13-0.27-pae</code> is not supported. The kernel for this version of SLES must be upgraded to <code>3.0.51-0.7.9-pae</code> so that conversion works. |
| Novell Open Enterprise Server (OES) 11, OES 11 SP1 and SP2 | |
| OES 2 (SP2 and SP3) | |
| Oracle Enterprise Linux (OEL) | <ul style="list-style-type: none"> ♦ Same level of support as that for workloads running RHEL. ♦ Workloads using the Unbreakable Enterprise Kernel are not supported. |
| Red Hat Linux 8 | 32-bit systems only |

NOTE

- ♦ Linux-based source workloads must be running a Secure Shell (SSH) server.

- ♦ Live transfer is supported for these Linux workloads:
 - ♦ RHEL 4, 5, 6.x
 - ♦ SLES 9, 10, 11
- ♦ Migration of encrypted volumes is not supported.

1.2.2 Supported Target Virtualization Platforms

The following is a list of supported virtualization platforms. For more details on supported configurations, as well as the most up-to-date list, see [KB Article 7012976 \(https://www.netiq.com/support/kb/doc.php?id=7012976\)](https://www.netiq.com/support/kb/doc.php?id=7012976).

Table 1-5 Supported Target Virtualization Platforms

| Platform | Notes |
|---|---|
| VMware vCenter 4.1, including Updates 1, 2, 3 | |
| VMware vCenter 5.0, including Update 1 and Update2 | |
| VMware vCenter 5.1, including Update 1 | |
| VMware vCenter 5.5 | |
| VMware ESX 4.1, 4.1 Update 1, 4.1 Update 2, 4.1 Update 3 | |
| VMware ESXi 4.1, 4.1 Update 1, 4.1 Update 2, 4.1 Update 3, 5.0, 5.0 Update 1, Update 2, 5.1, 5.1 Update 1, ESXi 5.5 | All ESXi versions must have a paid license; migration is unsupported with these systems if they are operating with a free license. |
| Citrix XenServer 6, 6.1 | Supported through Semi-Automated Workload Virtualization Using the X2P Workflow . |
| Microsoft Windows Server 2008 R2 Hyper-V | Supported through Semi-Automated Workload Virtualization Using the X2P Workflow . |
| Microsoft Windows Server 2012 Hyper-V, Microsoft Windows Server 2012 R2 Hyper-V (Generation 1 only) | Supported through Semi-Automated Workload Virtualization Using the X2P Workflow . |
| SUSE Linux Enterprise Server (SLES) 11 SP3 XEN | <ul style="list-style-type: none"> ♦ Fully virtualized guests are supported. ♦ Supported through Semi-Automated Workload Virtualization Using the X2P Workflow. |

1.3 Supported Transfer Methods

Depending on the selected workload and the migration type, PlateSpin Migrate enables you to select different methods for transferring workload data from the source to the target.

For information on how to select a transfer method, see [“Specifying Replication Options” on page 109](#).

- [Section 1.3.1, “File-Level Transfer \(Live\),” on page 19](#)
- [Section 1.3.2, “Block-Level Transfer \(Live\),” on page 19](#)
- [Section 1.3.3, “Offline Transfer with Temporary Boot Environment,” on page 20](#)

1.3.1 File-Level Transfer (Live)

The File-Based Live Transfer method, available for Windows workloads, copies data and replicates changes at the file level.

To ensure data consistency, this method leverages the Microsoft Volume Shadow Copy Service (VSS) if available. Many enterprise apps are integrated with VSS; for those which are not, PlateSpin Migrate provides the capability to briefly pause services while the VSS snapshot is captured, to ensure that the data of those applications is captured in a consistent state.

If VSS unavailable (for example, in workloads running Windows Server 2003 with no service packs or Windows Server 2000), PlateSpin Migrate monitors source volumes for changes while transferring data. When the initial transfer is complete, migrate re-sends any files that have changed. If the rate of file system changes is consistently high, data transfer is stopped and a job progress warning is shown.

You can configure your migration job to stop high-transaction services, such as Microsoft SQL Server or Microsoft Exchange Server, during the transfer (see [“Handling Source Workload Services or Daemons During Live Transfer \(Windows and Linux\)” on page 129](#)). This has two benefits:

- It ensures that the databases of these applications are transferred in a more consistent state.
- It reduces the rate of file system changes so that PlateSpin Migrate is able to keep up with them and complete the transfer.

This method might be appropriate for moderately active systems and it provides you with the capability to resize your volumes on the target workload.

1.3.2 Block-Level Transfer (Live)

The Block-Based Live Transfer method, available for both Windows and Linux workloads, enables PlateSpin Migrate to transfer data at the block level, providing an exact copy of the source workload.

For Windows workloads, PlateSpin Migrate leverages the Microsoft Volume Snapshot Service (VSS) (Windows 2003 SP1 and later) with applications and services that support VSS.

For Linux workloads, PlateSpin Migrate leverages the LVM snapshot feature, if it is available on the host. If the feature is unavailable, PlateSpin Migrate uses its own block-level data transfer mechanism. For live block-level migration of Linux workloads with customized kernels, you might have to rebuild the PlateSpin `blkwatch` module included in your PlateSpin Migrate distribution. See [KB Article 7005873 \(https://www.netiq.com/support/kb/doc.php?id=7005873\)](https://www.netiq.com/support/kb/doc.php?id=7005873).

The Block-Based Live Transfer method is the preferred data transfer method for both Windows and Linux workloads.

1.3.3 Offline Transfer with Temporary Boot Environment

This method enables PlateSpin Migrate to boot your source machine into a temporary pre-execution environment and transfer the data while the source is offline.

The pre-execution environment underlying the Offline transfer method makes use of a Linux Ramdisk, which contains a minimal set of system files, drivers, and executables, sufficient for an initial, temporary boot. To ensure that the source operating system properly loads and operates in the temporary pre-execution environment, PlateSpin Migrate temporarily modifies its boot files and restores them to their original state after the pre-execution environment has successfully loaded.

The Ramdisk is also used to temporarily boot target physical machines in X2P migrations, as well as to boot target VMs in semi-automated migrations.

See also, [Section 3.3.6, “Discovering Target Physical Machines,” on page 59](#), and [“Semi-Automated Workload Virtualization Using the X2P Workflow” on page 88](#).

IMPORTANT: PlateSpin Migrate 11 does not support offline transfer for Windows workloads; only Linux workloads are supported for source offline migration.

1.4 Security and Privacy

PlateSpin Migrate provides several features to help you safeguard your data and increase security.

- [Section 1.4.1, “Security of Workload Data in Transmission,” on page 20](#)
- [Section 1.4.2, “Security of Client-Server Communications,” on page 20](#)
- [Section 1.4.3, “Security of Credentials,” on page 21](#)
- [Section 1.4.4, “User Authorization and Authentication,” on page 21](#)

1.4.1 Security of Workload Data in Transmission

To make the transfer of your workload data more secure, you can configure your migration jobs to encrypt the data in transit to the target. When encryption is enabled, over-the-network data transfer from the source to the target is encrypted by using AES (Advanced Encryption Standard).

You can configure your PlateSpin Server to use a data encryption algorithm that is compliant with FIPS (Federal Information Processing Standards, Publication 140-2). If compliance with FIPS is required, it must be set up on your system prior to the PlateSpin Server installation. See [“Enabling Support for FIPS-Compliant Data Encryption Algorithms \(Optional\)”](#) in your *Installation Guide*.

For information on how to enable file encryption for a migration job, see [“Specifying Replication Options” on page 109](#).

1.4.2 Security of Client-Server Communications

Data transmission between the PlateSpin Server and the PlateSpin Migrate Client can be configured to use either HTTP (default) or HTTPS (Secure Hypertext Transfer Protocol). To secure data transmission between the client and the server, enable SSL on your PlateSpin Server host and use HTTPS when specifying the server URL. See [“Connecting to a PlateSpin Server” on page 49](#).

1.4.3 Security of Credentials

Credentials that you use to access sources and targets in workload migration jobs are:

- ♦ Cached, encrypted, and securely stored by the PlateSpin Migrate Client, by using operating system APIs.
- ♦ Stored in the PlateSpin Migrate database and are therefore covered by the same security safeguards that you have in place for PlateSpin Server hosts.
- ♦ Included within diagnostics, which are accessible to accredited users. You should ensure workload migration projects are handled by authorized staff.

1.4.4 User Authorization and Authentication

PlateSpin Migrate provides a role-based user authorization and authentication mechanism. See [Section 2.2, “Setting Up User Authorization and Authentication,” on page 27](#).

NOTE: If you have installed a PlateSpin Migrate Server localized for one language and a PlateSpin Migrate Client localized for a different language, do not use authorization credentials that include any language-specific characters. Using such characters in the login credentials causes miscommunication between the client and the server: the credentials are rejected as invalid.

1.5 Performance

- ♦ [Section 1.5.1, “About Product Performance Characteristics,” on page 21](#)
- ♦ [Section 1.5.2, “Data Compression,” on page 22](#)
- ♦ [Section 1.5.3, “Bandwidth Throttling,” on page 22](#)
- ♦ [Section 1.5.4, “Scalability,” on page 22](#)

1.5.1 About Product Performance Characteristics

The performance characteristics of your PlateSpin Migrate product depend on a number of factors, including:

- ♦ Hardware and software profiles of your source and target
- ♦ Hardware and software profiles of your PlateSpin Server host
- ♦ The specifics of your network bandwidth, configuration, and conditions
- ♦ The number of your source workloads’ volumes and their sizes
- ♦ File density (number of files per unit of capacity) on your source workloads’ volumes
- ♦ Source I/O levels (how busy your workloads are)
- ♦ The number of concurrent migrations and the number and type of the targets
- ♦ Whether data encryption is enabled or disabled
- ♦ Whether data compression is enabled or disabled

For planning large-scale workload migrations, you should perform a test migration of an average workload and use the result as a benchmark, fine-tuning your metrics regularly throughout the project. In addition to the data transfer process, also consider the other phases that a migration job goes through, as applicable to your project:

- ♦ Preparation and network setup
- ♦ Source workload and target machine discovery
- ♦ Target configuration

1.5.2 Data Compression

If necessary, PlateSpin Migrate can compress the workload data before transferring it over the network. This enables you to reduce the overall amount of data transferred during a workload migration job.

Compression ratios depend on the type of files on a source workload's volumes, and might vary from approximately 0.9 (100MB of data compressed to 90 MB) to approximately 0.5 (100MB compressed to 50MB).

NOTE: Data compression utilizes the source workload's processor power.

Data Compression can be configured per migration job. You can also specify a default compression value to be applied globally (see [“Default Job Values” on page 42](#)).

1.5.3 Bandwidth Throttling

PlateSpin Migrate enables you to control the amount of available bandwidth consumed by direct source-to-target communication over the course of a workload migration; you can specify a throughput rate for each migration job. This provides a way to prevent migration traffic from congesting your production network and reduces the overall load of your PlateSpin Server.

Bandwidth throttling is a parameter of a workload migration job's configuration properties. See [“Specifying Network Options” on page 111](#).

1.5.4 Scalability

You can set up multiple workload migrations and run them simultaneously. Scalability testing performed with VMware ESX hosts suggests the following benchmark recommendations:

- ♦ Multiple migrations to a single VM server: no more than 20
- ♦ Multiple migrations against multiple VM servers (ESX): no more than 30

2 Post-Installation Configuration

This section provides information on typical, usually one-time configuration tasks following product installation. For installation information, see your *Installation Guide*.

- ♦ [Section 2.1, “PlateSpin Migrate Product Licensing,” on page 23](#)
- ♦ [Section 2.2, “Setting Up User Authorization and Authentication,” on page 27](#)
- ♦ [Section 2.3, “Access and Communication Requirements across your Migration Network,” on page 35](#)
- ♦ [Section 2.4, “Configuring PlateSpin Migrate Default Options,” on page 38](#)

2.1 PlateSpin Migrate Product Licensing

This section provides information about licensing and activating your PlateSpin Migrate product, as well as managing your license keys.

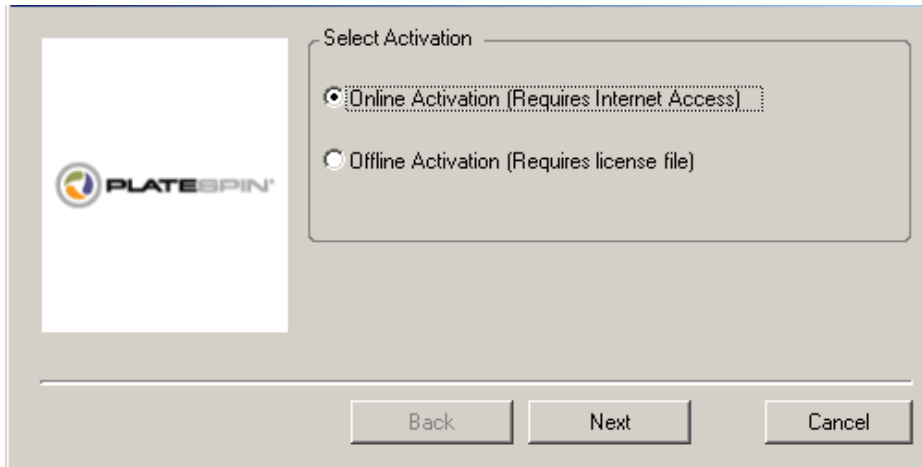
- ♦ [Section 2.1.1, “Activating Your Product License,” on page 23](#)
- ♦ [Section 2.1.2, “How Licensing Works,” on page 25](#)
- ♦ [Section 2.1.3, “Using the License Manager,” on page 26](#)
- ♦ [Section 2.1.4, “License Splitting,” on page 27](#)

2.1.1 Activating Your Product License

For product licensing, you must have a license activation code. If you do not have a license activation code, request one through the [Novell Customer Center Web site \(http://www.novell.com/customercenter/\)](http://www.novell.com/customercenter/). A license activation code will be e-mailed to you.

When you launch the PlateSpin Migrate Client for the first time after installation, the License Activation Wizard opens and prompts you to activate your product license.

Figure 2-1 License Activation Wizard



You have two options for activating your product license: online or offline.

- ♦ [“Online Activation” on page 24](#)
- ♦ [“Offline Activation” on page 24](#)

Online Activation

Online activation requires that your PlateSpin Migrate Client have Internet access.

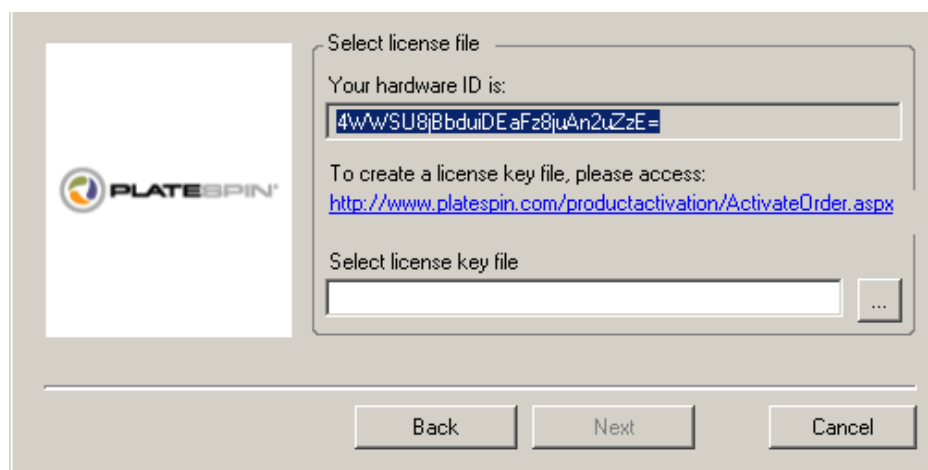
NOTE: HTTP proxies might cause failures during online activation. If you are using an HTTP proxy server and are having problems with online activation, try the offline activation method.

- 1 In the License Wizard, select the *Online Activation* option and click *Next*.
- 2 Enter the e-mail address that you provided when placing your order, and the activation code you received.
The PlateSpin Migrate Client obtains the required license over the Internet and activates the product.

Offline Activation

For offline activation, you obtain a license key over the Internet by using a machine that has Internet access.

- 1 In the License Wizard, select the *Offline Activation* option and click *Next*.
The Activate License dialog box is displayed:



- 2 Save your hardware ID for use in the next steps.
- 3 Use a computer with Internet access to obtain a license key through the [Web-based license activation utility \(http://www.platespin.com/productactivation/ActivateOrder.aspx\)](http://www.platespin.com/productactivation/ActivateOrder.aspx).
To obtain a license key, you must have a Novell account. If you are an existing PlateSpin customer and you don't have a Novell account, you must first create one. Use your existing PlateSpin username (a valid e-mail address registered with PlateSpin) as input for your Novell account username.
- 4 Save your new license key in a location accessible to your PlateSpin Migrate Client.
- 5 In the License Wizard, type the full path to, or browse to and select, the PlateSpin Migrate license file, then click *Next*.

The product is activated based on the selected license.

2.1.2 How Licensing Works

PlateSpin Migrate licenses are sold on a per-workload basis. A license entitles you to an unlimited number of migrations on a specific number of workloads. With every migration, a workload unit of the license is assigned to either the source or the target. The machine that has the workload unit assigned to it can subsequently be migrated an unlimited number of times. Each time a workload is assigned, the *Workloads remaining* number is decremented.

The following is a summary of workload assignment behavior by portability task.

Table 2-1 PlateSpin Migrate Workload License Assignment by Migration Type

| Task | Workload Assignment Behavior |
|----------------------|--|
| <i>Copy Workload</i> | A workload license remains with the source. |
| <i>Move Workload</i> | A workload license is transferred from the source to the target. |
| <i>Server Sync</i> | Not applicable |
| <i>Capture Image</i> | A workload license is assigned to the source and remains with it |
| <i>Deploy Image</i> | Not applicable |

2.1.3 Using the License Manager

Use the License Manager to manage product licensing, add and delete license keys, generate licensing reports, view activation codes, and reset workload licensing. If you have multiple license keys and you want to select a specific, non-default license key for a particular migration job, see [Section 6.1, “Selecting a License Key for a Migration Job,” on page 107](#).

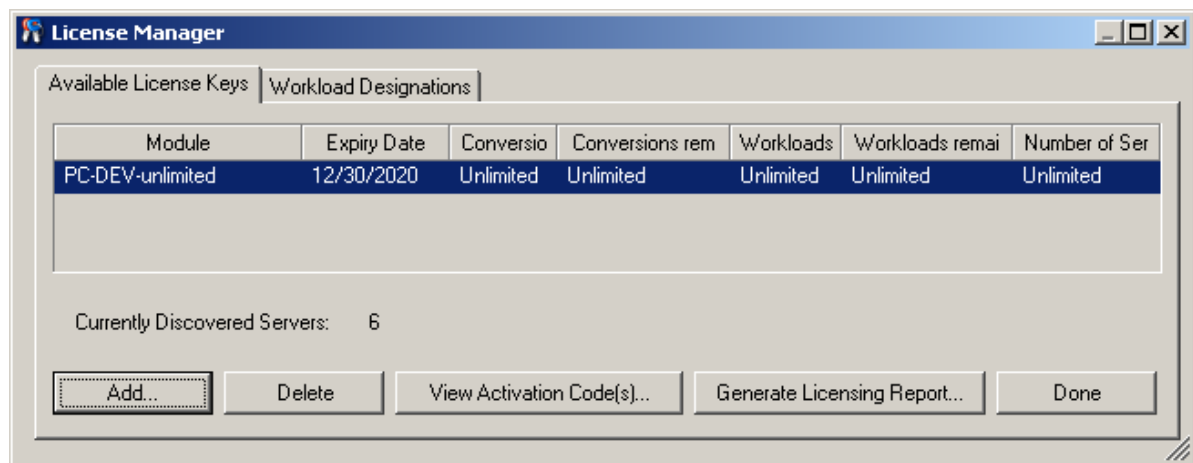
- ♦ [“Managing Available License Keys” on page 26](#)
- ♦ [“Managing Workload Designations” on page 27](#)

To access the License Manager, in your PlateSpin Migrate Client, click *Tools > License Manager*.

Managing Available License Keys

You can manage available license keys on the License Manager’s *Available License Keys* tab (in your PlateSpin Migrate Client, click *Tools > License Manager > Available License Keys*).

Figure 2-2 *Available License Keys*



The tab displays the license name (*Module*) along with its expiry date and entitlements. These depend on the license type. The *Number of Servers* column indicates the number of machines you can discover. This is generally the same as the number of machines that you can migrate. Use the buttons at the bottom for related license management tasks:

Table 2-2 *License Manager Command Buttons*

| Command | Description |
|----------------------------------|--|
| <i>Add</i> | Adds licenses. |
| <i>Delete</i> | Deletes expired licenses. |
| <i>View Activation Code(s)</i> | Select a license and click this button to see the activation code and the date it was activated. |
| <i>Generate Licensing Report</i> | Creates a *.psl file that is used by Technical Support to troubleshoot licensing issues. |

Managing Workload Designations

You can manage workload licensing on the License Manager's *Workload Designations* tab (in your PlateSpin Migrate Client, click *Tools > License Manager > Workload Designations*).

The tab lists workloads with assigned licenses. In the PlateSpin Migrate Client Servers view, each of these servers has a key icon adjacent to it.

You can reset workload licensing so that a license is no longer assigned to a particular machine. For example, you might want to do this when decommissioning servers that are already in the inventory of the PlateSpin Server.

To reset workload licensing:

- 1 On the License Manager's *Workload Designations* tab, select the required workload and click *Transfer Selected Workload*.

The Transfer License dialog box is displayed.

- 2 Use the displayed *Workload Transfer Request* string to obtain a workload transfer code from the [License Entitlement Web portal \(http://www.platespin.com/entitlementmgr/\)](http://www.platespin.com/entitlementmgr/). Log in with credentials associated with your purchase order.

You must have a Novell account. If you are an existing PlateSpin customer and you don't have a Novell account, you must first create one. Use your existing PlateSpin username (a valid e-mail address registered with PlateSpin) as input for your Novell account username.

- 3 Return to the License Manager and specify the newly obtained transfer code. Click *Next*.

PlateSpin Migrate resets the selected workload.

2.1.4 License Splitting

A license entitles you to one instance of PlateSpin Migrate per workload. Depending on the license you purchased, you can split a license either on a per-migration or a per-workload basis.

You can only split a license that has not yet been activated. For example, you can split a per-workload license of 1000 workloads into one license covering 400 workloads and another covering 600 workloads. You can split a per-migration license for 3000 migrations into one license for 1200 migrations and one license for 1800 migrations.

For assistance with multi-license scenarios, especially if you are uncertain how to utilize licenses across your network environment, see [KB Article 7920876 \(https://www.netiq.com/support/kb/doc.php?id=7920876\)](https://www.netiq.com/support/kb/doc.php?id=7920876).

2.2 Setting Up User Authorization and Authentication

PlateSpin Migrate's user authorization and authentication mechanism is based on user roles, and controls application access and operations that users can perform. The mechanism is based on Integrated Windows Authentication (IWA) and its interaction with Internet Information Services (IIS).

NOTE: If you have installed a PlateSpin Migrate Server localized for one language and a PlateSpin Migrate Client localized for a different language, do not use authorization credentials that include any language-specific characters. Using such characters in the login credentials causes miscommunication between the client and the server: the credentials are rejected as invalid.

PlateSpin Migrate's user auditing functionality is provided through the capability to log user actions (see ["Setting Up User Activity Logging" on page 34](#)).

- ♦ [Section 2.2.1, "PlateSpin Migrate Roles," on page 28](#)
- ♦ [Section 2.2.2, "Assigning PlateSpin Migrate Roles to Windows Users," on page 29](#)
- ♦ [Section 2.2.3, "Setting Up PlateSpin Migrate Multitenancy on VMware," on page 29](#)
- ♦ [Section 2.2.4, "Setting Up User Activity Logging," on page 34](#)

2.2.1 PlateSpin Migrate Roles

A PlateSpin Migrate role is a collection of PlateSpin Migrate privileges that entitle a particular user to perform specific actions. During installation, the PlateSpin Migrate installation program creates three local Windows groups on the PlateSpin Server host: PlateSpin Migrate Administrators, PlateSpin Migrate Power Users, and PlateSpin Migrate Operators. These groups map directly to the three PlateSpin Migrate roles that control user authorization and authentication:

- ♦ **PlateSpin Administrators:** Have unlimited access to all features and functions of the application. A local administrator is implicitly part of this group.
- ♦ **PlateSpin Power Users:** Have access to most features and functions of the application with some limitations, such as restrictions in the capability to modify system settings related to licensing and security.
- ♦ **PlateSpin Operators:** Have access to a limited subset of system features and functions, sufficient to maintain day-to-day operation.

When a user attempts to connect to a PlateSpin Server, the credentials provided through the PlateSpin Migrate Client are validated by IIS. If the user is not a member of one of the PlateSpin Migrate roles, connection is refused. If the user is a local administrator on the PlateSpin Server host, that account is implicitly regarded as a PlateSpin Migrate Administrator.

The following table lists permissions for each role.

Table 2-3 *PlateSpin Migrate Roles and Permission Details*

| Role Details | Administrators | Power Users | Operators |
|---|----------------|-------------|-----------|
| Licensing: Add, delete licenses; transfer workload licenses | yes | no | no |
| Machines: Discover, undiscover | yes | yes | no |
| Machines: Delete virtual machines | yes | yes | no |
| Machines: View, refresh, export | yes | yes | yes |
| Machines: Import | yes | yes | no |
| Machines: Export | yes | yes | yes |
| PlateSpin Migrate Networks: Add, delete | yes | no | no |
| Jobs: Create new job | yes | yes | no |
| Jobs: View, abort, change start time | yes | yes | yes |
| Imaging: View, start synchronization in existing contracts | yes | yes | yes |
| Imaging: Consolidate increments, apply increments to base, delete increments, install/delete image servers | yes | yes | no |

| Role Details | Administrators | Power Users | Operators |
|---|----------------|-------------|-----------|
| Block-Based Transfer Components: Install, upgrade, remove | yes | yes | no |
| Device Drivers: View | yes | yes | yes |
| Device Drivers: Upload, delete | yes | yes | no |
| PlateSpin Server access: View Web services, download client software | yes | yes | yes |
| PlateSpin Server settings: Edit settings that control user activity logging and SMTP notifications | yes | no | no |
| PlateSpin Server settings: Edit all server settings except those that control user activity logging and SMTP notifications | yes | yes | no |
| Run Diagnostics: Generate detailed diagnostic reports on jobs. | yes | yes | yes |
| Post-conversion Actions: Add, update, delete | yes | yes | no |

2.2.2 Assigning PlateSpin Migrate Roles to Windows Users

To allow specific Windows domain or local users to carry out specific PlateSpin Migrate operations according to designated role, add the required Windows domain or user account to the applicable Windows local group (PlateSpin Administrators, PlateSpin Power Users, or PlateSpin Operators) on the PlateSpin Server host. For more information, see your Windows documentation.

2.2.3 Setting Up PlateSpin Migrate Multitenancy on VMware

PlateSpin Migrate includes unique user roles (and a tool for creating them in a VMware datacenter) that make it possible non-administrative VMware users (or “enabled users”) to perform Migrate lifecycle operations in the VMware environment. These roles makes it possible for you, as a service provider, to segment your VMware cluster to allow multitenancy: where multiple Migrate containers are instantiated in your datacenter to accommodate Migrate customers or “tenants” who want to keep their data and evidence of their existence separate from and inaccessible to other customers who also use your datacenter.

This section includes the following information:

- ♦ [“Using Tools to Define VMware Roles” on page 29](#)
- ♦ [“Assigning Roles In vCenter” on page 31](#)

Using Tools to Define VMware Roles

PlateSpin Migrate requires certain privileges to access and perform tasks in the VMware Infrastructure (that is, VMware “containers”), making the Migrate workflow and functionality possible in that environment. Because there are many of these required privileges, NetIQ has created a file that defines the minimum required privileges and aggregates them respectively into three VMware custom roles:

- ♦ PlateSpin Virtual Machine Manager
- ♦ PlateSpin Infrastructure Manager
- ♦ PlateSpin User

This definition file, `PlateSpinRole.xml`, is included in the PlateSpin Migrate Server installation. An accompanying executable, `PlateSpin.VMwareRoleTool.exe`, accesses the file to enable the creation of these custom PlateSpin roles in a target vCenter environment.

This section includes the following information:

- ♦ [“Basic Command Line Syntax” on page 30](#)
- ♦ [“Additional Command Line Parameters and Flags” on page 30](#)
- ♦ [“Tool Usage Example” on page 30](#)
- ♦ [“\(Option\) Manually Defining the PlateSpin Roles in vCenter” on page 31](#)

Basic Command Line Syntax

From the location where the role tool was installed, run the tool from the command line, using this basic syntax:

```
PlateSpin.VMwareRoleTool.exe /host=[host name/IP] /user=[user name] /role=[the  
role definition file name and location] /create
```

NOTE: By default, the role definition file is located in the same folder with the role definition tool.

Additional Command Line Parameters and Flags

Apply the following parameters as needed when you use `PlateSpin.VMwareRoleTool.exe` to create or update roles in vCenter:

| | |
|----------------------------------|---|
| <code>/create</code> | (mandatory) Creates the roles defined by the <code>/role</code> parameter |
| <code>/get_all_privileges</code> | Display all server-defined privileges |

Optional Flags

| | |
|-----------------------------------|--|
| <code>/interactive</code> | Run the tool with interactive options that allow you to choose to create individual roles, check role compatibility, or list all compatible roles. |
| <code>/password=[password]</code> | Provide the VMware password (bypasses the password prompt) |
| <code>/verbose</code> | Display detailed information |

Tool Usage Example

Usage: `PlateSpin.VMwareRoleTool.exe /host=houston_sales /user=pedrom /
role=PlateSpinRole.xml /create`

Resulting Actions:

1. The role definition tool runs on the `houston_sales` vCenter server, which has an administrator with the user name `pedrom`.
2. In the absence of the `/password` parameter, the tool prompts for the user password, which you enter.
3. The tool accesses the role definition file, `PlateSpinRole.xml`, which is located in the same directory as the tool executable (there was no need to further define its path).

4. The tool locates the definition file and is instructed (/create) to create the roles defined in the contents of that file in the vCenter environment.
5. The tool accesses the definition file and creates the new roles (including the appropriate minimum privileges for defined, limited access) inside vCenter.

The new custom roles are to be [assigned to users later in vCenter](#).

(Option) Manually Defining the PlateSpin Roles in vCenter

You use the vCenter client to manually create and assign the PlateSpin custom roles. This requires creating the roles with the enumerated privileges as defined in `PlateSpinRole.xml`. When you create manually, there is no restriction on the name of the role. The only restriction is that the role names you create as equivalents to those in the definition file have all of the appropriate minimum privileges from the definition file.

For more information about how to create custom roles in vCenter, see [Managing VMware VirtualCenter Roles and Permissions \(http://www.vmware.com/pdf/vi3_vc_roles.pdf\)](http://www.vmware.com/pdf/vi3_vc_roles.pdf) in the VMware Technical Resource Center.

Assigning Roles In vCenter

As you set up a multitenancy environment, you need to provision a single Migrate server per customer or “tenant.” You assign this Migrate server an enabled user with special Migrate VMware roles. This enabled user creates the Migrate container. As service provider, you maintain this user’s credentials and do not disclose them to your tenant customer.

The following table lists the roles you need to define for the enabled user. It also includes more information about the purpose of the role:

| vCenter Container for Role Assignment | Role Assignment Specifics | Propagate Instructions | More Information |
|--|---|---|---|
| Root of vCenter inventory tree. | Assign the enabled user the <i>PlateSpin Infrastructure Manager</i> (or equivalent) role. | For security reasons, define the permission as non-propagating. | This role is needed to monitor tasks being performed by the Migrate software and to end any stale VMware sessions. |
| All datacenter objects where the enabled user needs access | Assign the enabled user the <i>PlateSpin Infrastructure Manager</i> (or equivalent) role. | For security reasons, define the permission as non-propagating. | This role is needed to allow access to the datacenter’s datastores for file upload/download. Define the permission as non-propagating. |
| Each cluster to be added to Migrate as a container, and each host contained in the cluster | Assign the enabled user the <i>PlateSpin Infrastructure Manager</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | To assign to a host, propagate the permission from the cluster object or create an additional permission on each cluster host. If the role is assigned on the cluster object and is propagated, no further changes are necessary when you add a new host to the cluster. However, propagating this permission has security implications. |

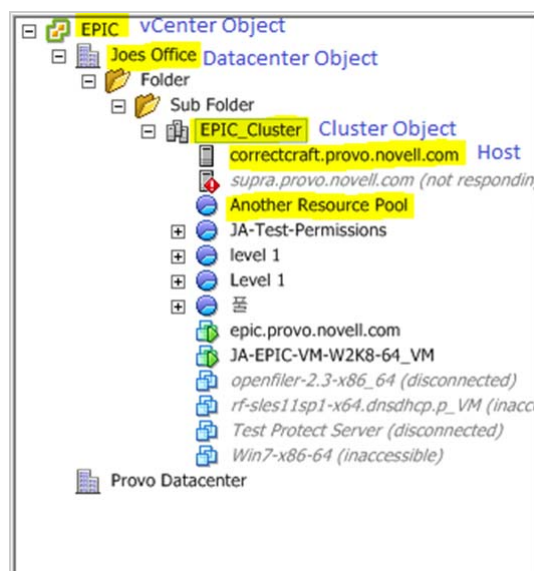
| vCenter Container for Role Assignment | Role Assignment Specifics | Propagate Instructions | More Information |
|---|--|---|--|
| Each Resource Pool where the enabled user needs access. | Assign the enabled user the <i>PlateSpin Virtual Machine Manager</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | Although you can assign access to any number of Resource Pools in any location in the tree, you must assign the enabled user this role on at least one Resource Pool. |
| Each VM folder where the enabled user needs access | Assign the enabled user the <i>PlateSpin Virtual Machine Manager</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | Although you can assign access to any number of VM Folders in any location in the tree, you must assign the enabled user this role on at least one folder. |
| Each Network where the enabled user needs access. Distributed Virtual Networks with a dvSwitch and a dvPortgroup | Assign the enabled user the <i>PlateSpin Virtual Machine Manager</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | Although you can assign access to any number of networks in any location in the tree, you must assign the enabled user this role on at least one folder. <ul style="list-style-type: none"> ♦ To assign the correct role to the dvSwitch, propagate the role on the Datacenter (resulting in an additional object receiving the role) or place the dvSwitch in a folder and assign the role on that folder. ♦ For a standard portgroup to be listed as an available network in the Migrate UI, create a definition for it on every host in the cluster. |
| Each Datastore and Datastore Cluster where the enabled user needs access | Assign the enabled user the <i>PlateSpin Virtual Machine Manager</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | The enabled user must have been assigned this role on at least one Datastore or Datastore Cluster. For Datastore Clusters, the permission must be propagated to the contained datastores. Not providing access to an individual member of the cluster causes both prepare and full replications to fail |

The following table shows the role you can assign to the customer or tenant user.

| vCenter Container for Role Assignment | Role Assignment Specifics | Propagate Instructions | More Information |
|---|--|---|---|
| Each resource pool(s) and folder(s) where the customer's VMs will be created. | Assign the tenant user the <i>PlateSpin User</i> (or equivalent) role. | Propagation is at the discretion of the VMware administrator. | <p>This tenant is a member of the PlateSpin Administrators group on the PlateSpin Migrate server and is also on the vCenter server.</p> <p>If the tenant will be granted the ability to change the resources used by the VM (that is, networks, ISO images, and so forth), grant this user the necessary permissions on those resources. For example, if you want to allow the customer to change the network where their VM is attached, this user should be assigned the Read-only role (or better) on all of the networks being made accessible to the customer.</p> |

The figure below illustrates a Virtual Infrastructure in the vCenter console. The objects labeled in blue are assigned the Infrastructure Manager role. The objects labeled in green are assigned the Virtual Machine Manager role. The tree does not show VM folders, Networks and Datastores. Those objects are assigned the *PlateSpin Virtual Machine Manager* role.

Figure 2-3 Roles assigned in vCenter



Security Implications of Assigning VMware Roles

PlateSpin software uses an enabled user only to perform protection lifecycle operations. From your perspective as a service provider, an end user never has access to the enabled user's credentials and is unable to access the same set of VMware resources. In an environment where multiple Migrate servers are configured to use the same vCenter environment, Migrate prevents possibilities for cross-client access. The major security implications include:

- With the *PlateSpin Infrastructure Manager* role assigned to the vCenter object, every enabled user can see (but not affect) the tasks performed by every other user.
- Because there is no way to set permissions on datastore folders/subfolders, all enabled users with permissions on a datastore have access to all other enabled users' disks stored on that datastore.
- With the *PlateSpin Infrastructure Manager* role assigned to the cluster object, every enabled user is able to turn off/on HA or DRS on the entire cluster
- With the *PlateSpin User* role assigned at the storage cluster object, every enabled user is able to turn off/on SDRS for the entire cluster
- Setting the *PlateSpin Infrastructure Manager Role* on the DRS Cluster object and propagating this role allows the enabled user to see all VMs placed in the default resource pool and/or default VM folder. Also, propagation requires the administrator to explicitly set the enabled user to have a "no-access" role on every resource pool/VM folder that he or she should not have access to.
- Setting the *PlateSpin Infrastructure Manager Role* on the vCenter object allows the enabled user to end sessions of any other user connected to the vCenter.

NOTE: Remember, in these scenarios, different enabled users are actually different instances of the PlateSpin software.

2.2.4 Setting Up User Activity Logging

By default, PlateSpin Migrate records all user activities in a log file, `PlateSpin.UserActivityLogging.log`, located on your PlateSpin Server host, in the following directory:

```
..\PlateSpin Migrate Server\logs.
```

The format of an individual log entry is:

```
date|Category|description|user|details1|details2
```

The `Category` element describes the functional area applicable to a particular action, such as `Security`, `Inventory` (discovery operations), `LicenseManagement`, or `Migration` (workload portability operations).

Elements `details1` and `details2` depend on the `Category` and provide additional information if applicable.

Below is an example of a log entry recording the login action of a user with the domain account `MyDomain\John.Smith`.

```
2008-09-02 14:14:47|Security|User logged in|MyDomain\John.Smith
```

When the size of a log file reaches a specified value, it is rolled over to a new file with a sequential number appended to the name:

```
PlateSpin.UserActivityLogging.log.1
PlateSpin.UserActivityLogging.log.2
PlateSpin.UserActivityLogging.log.3
```

When the number of log files reaches a specified value, the system starts overwriting the oldest file each time a rollover is performed.

To enable or disable user activity logging, and to specify log file size and rollover options:

- 1 In the PlateSpin Migrate Client, click *Tools > Options*.
- 2 Click the *Logging* tab.
- 3 Specify the required options, then click *OK*.

2.3 Access and Communication Requirements across your Migration Network

This section provides information about setting up user authorization and authentication, configuring your network environment, and managing your product's default settings and behavior.

- ♦ [Section 2.3.1, "Requirements for Discovery," on page 35](#)
- ♦ [Section 2.3.2, "Requirements for Migration," on page 36](#)
- ♦ [Section 2.3.3, "Migrations Across Public and Private Networks through NAT," on page 37](#)

2.3.1 Requirements for Discovery

The following table lists software, network, and firewall requirements that systems in your environment must meet for the discovery and inventory process. For information about the actual discovery procedures, see [Section 3.3, "Discovering Source Workloads and Migration Targets," on page 56](#).

Table 2-4 Network Communication Prerequisites for Discovery Operations

| System | Prerequisites |
|---------------------|--|
| All workloads | Ping (ICMP echo request and response) support |
| All Windows sources | <ul style="list-style-type: none">♦ Microsoft .NET Framework version 3.5 SP1♦ Credentials with local or domain admin privileges |

| System | Prerequisites |
|--|---|
| <ul style="list-style-type: none"> Windows Vista Windows 7 Windows 8, 8.1 Windows Server 2008 Windows Server 2008 R2 Windows Server 2012 Windows Server 2012 R2 | <ol style="list-style-type: none"> Built-in Administrator or a domain account credentials (mere membership in the local Administrators group is insufficient). On Vista, the account must be enabled (it is disabled by default). The Windows Firewall configured to allow <i>File and Printer Sharing</i>. Use one of these options: <ul style="list-style-type: none"> Option 1, using Windows Firewall: Use the basic <i>Windows Firewall</i> Control Panel item (<code>firewall.cpl</code>) and select <i>File and printer Sharing</i> in the list of exceptions. - OR - Option 2, using Firewall with Advanced Security: Use the <i>Windows Firewall with Advanced Security</i> utility (<code>wf.msc</code>) with the following <i>Inbound Rules</i> enabled and set to <i>Allow</i>: <ul style="list-style-type: none"> <i>File and Printer Sharing (Echo Request - ICMPv4In)</i> <i>File and Printer Sharing (Echo Request - ICMPv6In)</i> <i>File and Printer Sharing (NB-Datagram-In)</i> <i>File and Printer Sharing (NB-Name-In)</i> <i>File and Printer Sharing (NB-Session-In)</i> <i>File and Printer Sharing (SMB-In)</i> <i>File and Printer Sharing (Spooler Service - RPC)</i> <i>File and Printer Sharing (Spooler Service - RPC-EPMAP)</i> (Conditional) If the volumes are encrypted with the BitLocker disk encryption feature, they must be unlocked. |
| All Linux sources | <ul style="list-style-type: none"> Secure Shell (SSH) server |
| Citrix Xen Server | <ul style="list-style-type: none"> Open port 22 (TCP) Root-level access. For information on using an account other than root, see KB Article 7920711 (https://www.netiq.com/support/kb/doc.php?id=7920711). Custom SSH ports are supported; specify the port number during discovery: <code><hostname IP_address>:port_number</code>. |
| VMware ESX/ESXi Servers | <ul style="list-style-type: none"> VMware account with an Administrator role VMware Web services API and file management API (HTTPS / port 443 TCP) |
| VMware vCenter Servers | The user with access must be assigned the appropriate roles and permissions. Refer to the pertinent release of VMware documentation for more information. |

2.3.2 Requirements for Migration

The following table lists firewall requirements that systems in your environment must meet for problem-free operation during workload migration jobs.

Table 2-5 Network Communication Prerequisites for Workload Portability

| System | Open Port (Default) | Remarks |
|---|-------------------------------------|---|
| PlateSpin Server hosts | Either TCP 80 or TCP 443 TCP | <ul style="list-style-type: none"> ♦ Port 80 (TCP) is required for HTTP communication among the PlateSpin Server, sources, and targets. ♦ Port 443 (TCP) is required for HTTPS communication (if SSL is used) between the PlateSpin Server and the source or target machines. |
| All source workloads except those in image deployment jobs. | TCP 3725 | Required for targets to initiate communication during file-level data transfer, except for I2X jobs, during which this port needs to be open on the migration target only. For Server Sync jobs, this port is required for both sources and targets. |
| All targets | TCP 3725 | Required for: File-based Server Sync / Image Sync <ul style="list-style-type: none"> ♦ File-level Server Sync ♦ Image synchronization jobs |
| All Windows sources and targets | NetBIOS 137 - 139 | Required for NetBIOS communications. |
| All sources | SMB (TCP 139, 445 and UDP 137, 138) | Required for communication and file-level data transfer during offline migration. |
| All Linux sources Citrix Xen Server | TCP 22 | Required for communication during offline migration. |
| PlateSpin Server hosts; All Windows sources | TCP 135/445 | For DCOM/RPC communication between PlateSpin Server and a source for taking control of and rebooting the workload through WMI. NOTE: WMI (RPC/DCOM) can use TCP ports 135 and 445 as well as random/dynamically assigned ports above 1024. |

2.3.3 Migrations Across Public and Private Networks through NAT

In some cases, a source, a target, or PlateSpin Migrate itself, might be located in an internal (private) network behind a network address translator (NAT) device, unable to communicate with its counterpart during migration.

PlateSpin Migrate enables you to address this issue, depending on which of the following hosts is located behind the NAT device:

- ♦ **PlateSpin Server:** In your server's *PlateSpin Server Configuration* tool, record the additional IP addresses assigned to that host:

1. From any Web browser, open the `https://Your_PlateSpin_Server/platespinconfiguration/tool`.
2. Locate the *AlternateServerAddresses* server parameter, click *Edit*, then add additional IP addresses, delimited by a semicolon (;), for example:

```
204.50.186.147;204.50.186.148
```

- ♦ **Source:** As part of that specific migration job, record the additional IP addresses assigned to that workload. See [“Specifying Network Options” on page 111](#).
- ♦ **Target:** When you are attempting to discover a target, such as VMware ESX, specify the public (or external) IP address in the discovery parameters.

2.4 Configuring PlateSpin Migrate Default Options

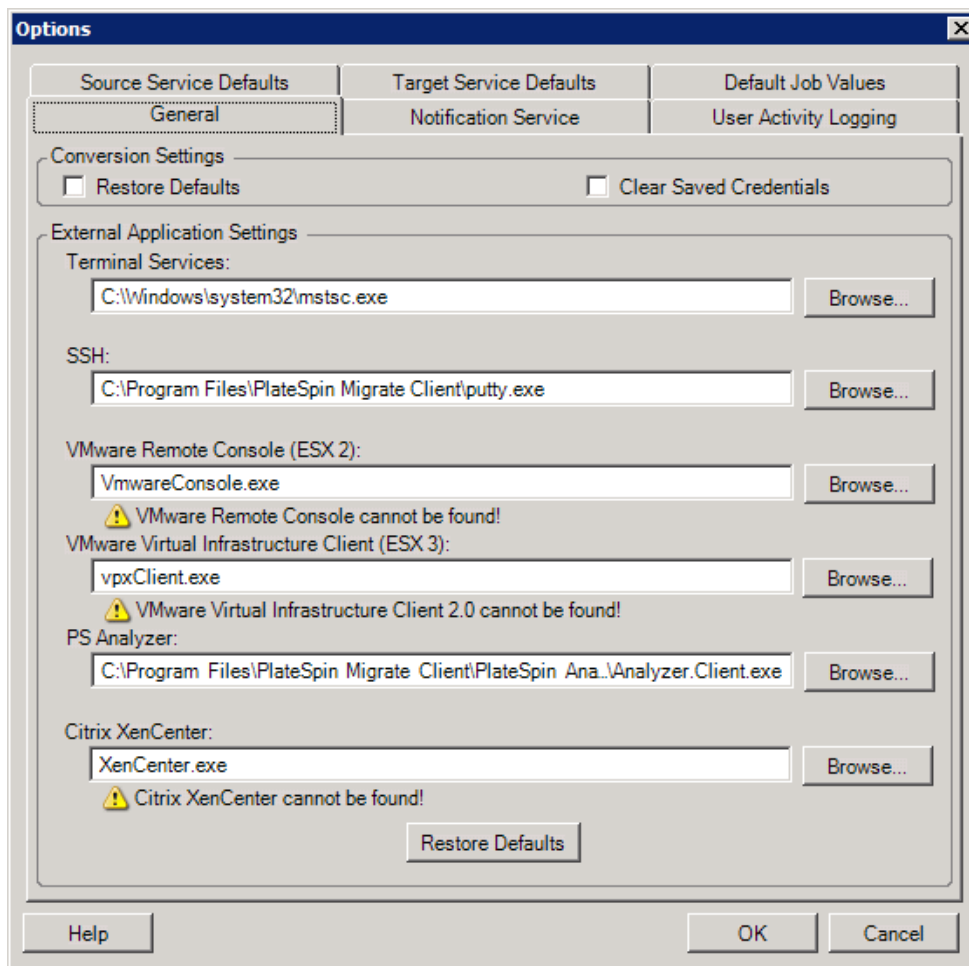
Default options control PlateSpin Migrate’s global settings and its default behavior. Configure the default options following installation or to reflect changes in your environment.

- ♦ [Section 2.4.1, “Configuring Application Defaults \(Tools > Options\),” on page 39](#)
- ♦ [Section 2.4.2, “Configuring PlateSpin Server Behavior through Configuration Parameters,” on page 45](#)

2.4.1 Configuring Application Defaults (Tools > Options)

General Options

Use this tab to restore default settings, clear saved credentials, and to specify the locations of executable files for external applications you can launch from within the PlateSpin Migrate Client user interface. To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.



Restore Defaults: When this option is selected, PlateSpin Migrate resets the job configuration method (launches the Actions dialog box after a drag-and-drop) and resumes checking for software updates on the Client startup.

Clear Saved Credentials: Removes stored usernames and passwords for source and target machines.

External Application Settings: Use the adjacent *Browse* buttons to locate application executables.

Restore Defaults: Resets the paths to their defaults.

Notification Service

Use this tab to specify Simple Mail Transfer Protocol (SMTP) server settings for event and job progress notifications. To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.

The screenshot shows the 'Options' dialog box with the 'Notification Service' tab selected. The dialog has three main sections: 'Source Service Defaults', 'Target Service Defaults', and 'Default Job Values'. The 'Notification Service' tab is active, showing 'SMTP Server Settings' and 'SMTP Account Credentials'. The 'SMTP Server Settings' section includes fields for 'Address' (192.168.1.128), 'Port' (25), and 'Reply Address' (support@platespin.com). The 'SMTP Account Credentials' section includes fields for 'User Name' (John Smith), 'Password' (masked with dots), and 'Confirm Password' (masked with dots). At the bottom are 'Help', 'OK', and 'Cancel' buttons.

| Source Service Defaults | Target Service Defaults | Default Job Values |
|-------------------------|-------------------------|-----------------------|
| General | Notification Service | User Activity Logging |

SMTP Server Settings

Address: 192.168.1.128

Port: 25

Reply Address: support@platespin.com

SMTP Account Credentials

User Name: John Smith

Password:

Confirm Password:

Help OK Cancel

SMTP Server Settings: Specify your SMTP server's IP address, port, and a reply address for e-mail event and progress notifications.

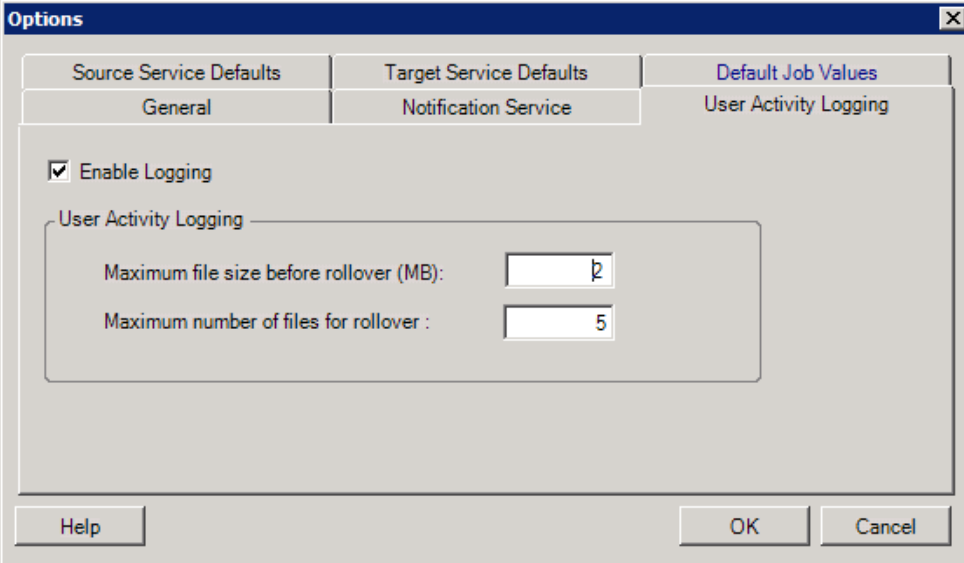
SMTP Account Credentials: Provide valid credentials if your SMTP server requires authentication.

You can also configure migration progress notifications on a per-migration basis. See [Section 6.2, "Configuring Automatic E-Mail Alerts of Job Status and Progress,"](#) on page 108.

User Activity Logging

Use this tab to specify options related to user activity logging. See [“Setting Up User Activity Logging” on page 34](#).

To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.



The screenshot shows the 'Options' dialog box with the 'User Activity Logging' tab selected. The 'Enable Logging' checkbox is checked. Below it, the 'User Activity Logging' section contains two input fields: 'Maximum file size before rollover (MB)' with a value of 2, and 'Maximum number of files for rollover' with a value of 5. The dialog has 'Help', 'OK', and 'Cancel' buttons at the bottom.

| Source Service Defaults | Target Service Defaults | Default Job Values |
|-------------------------|-------------------------|-----------------------|
| General | Notification Service | User Activity Logging |

☒ Enable Logging

User Activity Logging

Maximum file size before rollover (MB):

Maximum number of files for rollover :

Help OK Cancel

Enable Logging: When this option is selected, PlateSpin Migrate logs all user activities.

Maximum file size before rollover (MB): When the size of a log file reaches the specified value, it is rolled over to a new file with a sequential number appended to the name.

Maximum number of files for rollover: When the number of log files reaches the specified value, the system starts overwriting the oldest file each time a rollover is performed.

Default Job Values

Use this tab to specify default migration job values specific to the target virtualization platform. To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.

The screenshot shows the 'Options' dialog box with the 'Default Job Values' tab selected. The dialog is divided into several sections:

- General**: Includes 'Source Service Defaults', 'Target Service Defaults', and 'Default Job Values'.
- Target Container Name and Path Defaults**: Contains a tree view with 'ESX Variables' and 'XenServer Variables'. The 'ESX Variables' section is expanded, showing a table of variables and their values.
- Job Conversion Defaults**: A table of settings for migration jobs.
- Buttons**: 'Update Defaults from Server', 'Reset', 'Help', 'OK', and 'Cancel'.

| Variable Name | Variable Value |
|-----------------------------------|---------------------------------|
| Config Path | /root/vmware/%SOURCE_HOSTNAME%_ |
| Disk Name | %SOURCE_HOSTNAME%_VM_#.%TARG |
| Display Name | %SOURCE_HOSTNAME%_VM |
| ESX3 Config Path Within Datastore | %SOURCE_HOSTNAME%_VM |
| Config File Name | %SOURCE_HOSTNAME%_VM.vmx |

| Name | Value |
|---------------------------------------|----------------|
| Encrypt File Transfer | No |
| Take Control Network Settings | Static |
| Take Control Duplex Settings | Auto-Negotiate |
| Install VMware Tools for ESX | Yes |
| Install XenServer Tools | Yes |
| Compress Images with NTFS Compression | No |
| Virtual Disk Sizing Mode | Fixed |
| Compression Level | None |

Target Container Name and Path Details: These variables control naming conventions for target paths and containers. Expand a variable set and click a variable to edit its value.

Job Conversion Defaults: Use this area to set defaults that affect all migration jobs. You can overwrite these defaults when configuring actual migration jobs.

- ♦ *Encrypt File Transfer:* See [Security and Privacy](#).
- ♦ *Install VMware Tools for ESX/XenServer Tools:* See [Handling Virtualization Enhancement Software](#).
- ♦ *Compress Images with NTFS Compression:* See [Capturing a Workload to a PlateSpin Image](#). Unrelated to data compression for over-the-network transfer.
- ♦ *Virtual Disk Sizing Mode:* (ESX only) *Fixed*—space is pre-allocated for the virtual disk; *Dynamic*—the virtual disk is assigned a minimum amount of space, which grows when needed.
- ♦ *Compression Level:* See [Data Compression](#).

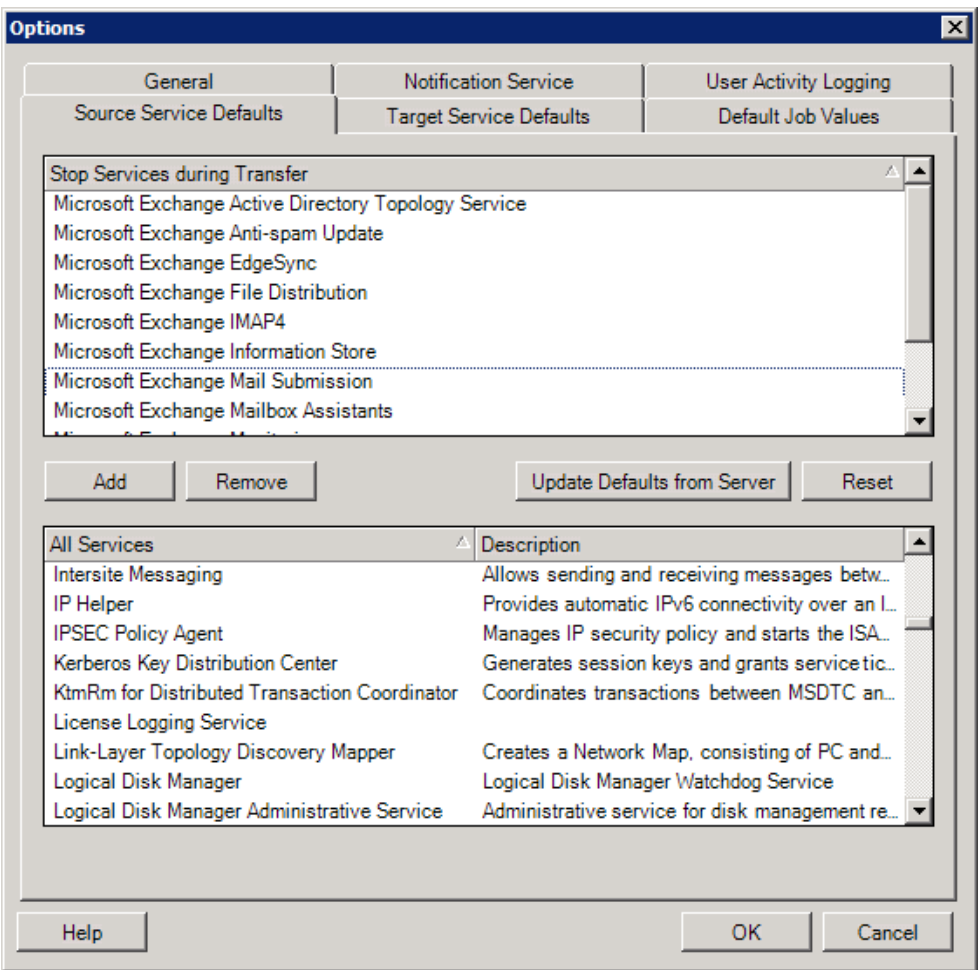
Reset: Restores default job values.

Update Defaults from Server: Click to retrieve defaults from the PlateSpin Server if available.

Source Service Defaults

Use this tab to select Windows services daemons to stop on the source workload during a Live Transfer migration. See [Handling Source Workload Services or Daemons During Live Transfer \(Windows and Linux\)](#).

To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.



Stop Services during Transfer section: Lists services that are stopped by default. To stop a service during data transfer that uses a specific transfer method by default, select the corresponding check box. A deselected check box means the service remains active during Live Transfer.

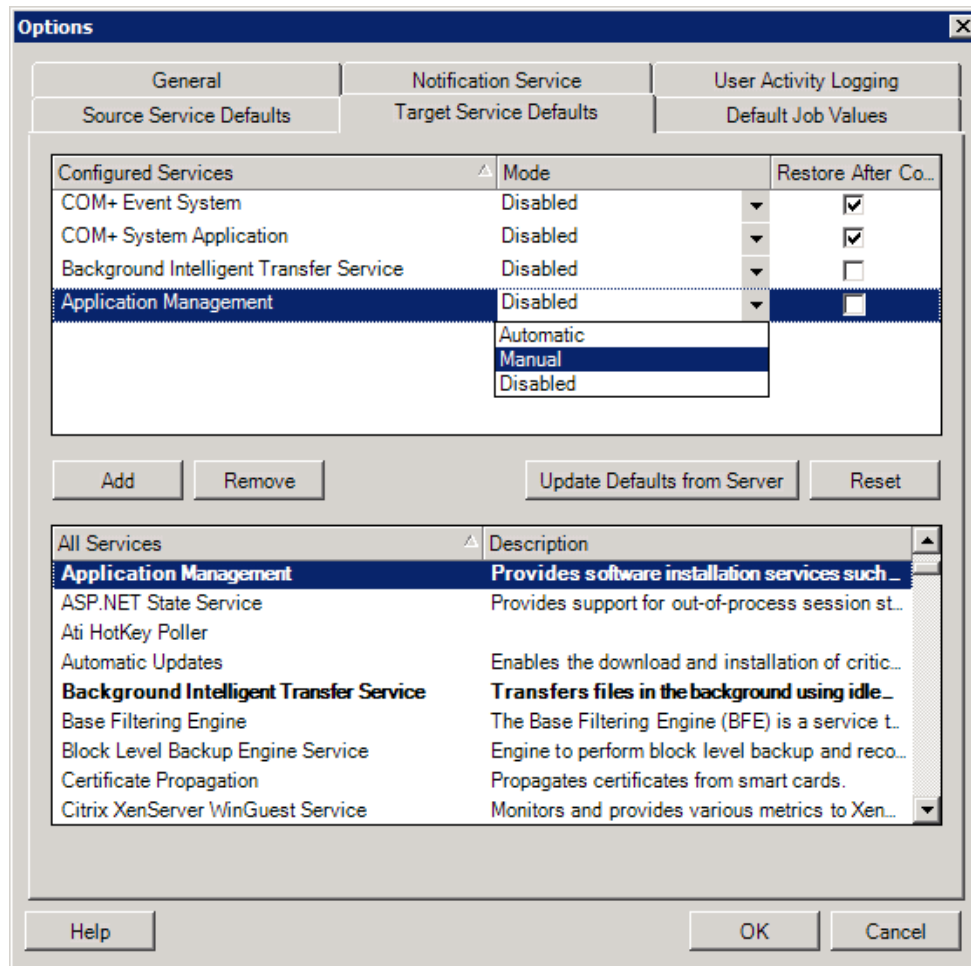
All Services section: Lists unique services on all discovered machines. Click *Add* to add a selected service from the lower section to the upper section and set it to stop during the migration.

Update Defaults from Server: Retrieves defaults from PlateSpin Server.

Target Service Defaults

Use this tab to select Windows services whose mode on the target is to be different from that of the source. See [Handling the Startup Mode of Services \(Windows Targets\)](#).

To access this dialog box in the PlateSpin Migrate Client, click *Tools > Options*.



Configure Services section: Lists services and their target startup modes. Select the *Restore After Conversion* check box to use the selected mode during the migration. The service is then restored to match the source after the migration is complete and the target machine is ready to run.

All Services section: Lists unique services on all discovered machines. Click *Add* to add a service to the upper section. Use the *Mode* drop-down list to select the service state for the target. This is set during the configuration step of the job.

Remove: Removes a service.

Reset: Clears the upper section. The modes of all services in the target will match those on the source.

2.4.2 Configuring PlateSpin Server Behavior through Configuration Parameters

Some aspects of your PlateSpin Server's behavior are controlled by configuration parameters that you set on a configuration Web page residing on your PlateSpin Server host (https://Your_PlateSpin_Server/platespinconfiguration/).

Under normal circumstances you should not need to modify these settings unless you are advised to do so by PlateSpin Support. This section provides a number of common use cases along with information on the required procedure.

Use the following procedure for changing and applying any configuration parameters:

- 1 From any Web browser, open the https://Your_PlateSpin_Server/platespinconfiguration/tool.
- 2 Locate the required server parameter and change its value.
- 3 Save your settings and exit the page.

No reboot or restart of services is required after the change is made in the configuration tool.

The following topics provide information on specific situations, in which you might need to change product behavior using an XML configuration value.

- ♦ [“Increasing the Size Limit on Post-migration Actions Uploaded to the PlateSpin Server” on page 45](#)
- ♦ [“Optimizing Data Transfer over WAN Connections \(Windows\)” on page 46](#)
- ♦ [“Other Use Cases for Making Modifications in the Web Config Tool \(Advanced\)” on page 46](#)

Increasing the Size Limit on Post-migration Actions Uploaded to the PlateSpin Server

By default, PlateSpin Migrate sets a 64 MB upload limit for each individual post-migration action, including its dependencies. See [Managing Custom Actions](#).

You can increase this limit by modifying the configuration setting on the PlateSpin Server's Web configuration tool.

IMPORTANT: Decreasing the default size limit might have a negative impact on the stability of your PlateSpin Server.

- 1 From any Web browser, open https://Your_PlateSpin_Server/platespinconfiguration/.
- 2 Locate and edit the setting that defines the value of the `httpRuntime` element's `maxLength` attribute:
`maxLength=8192`
- 3 Replace the existing value with the required new value in kilobytes. For example, to increase the size to 16 MB, replace 8192 with 16384:
`maxLength=16384`
- 4 Save your settings and exit the page.

Optimizing Data Transfer over WAN Connections (Windows)

When doing Windows migrations, you can fine-tune your over-the-network data transfer for optimum performance in your specific environment. For example, you might need to control the number of your TCP connections or impose a packet-level compression threshold.

This functionality is supported for migration jobs that use the following data transfer methods:

- ♦ File-level
- ♦ Block-level with Microsoft Volume Shadow Copy Service (VSS)

Fine-tuning is done by modifying configuration parameters that the system reads from settings you make in a configuration tool residing on your PlateSpin Server host.

The following table lists the configuration parameters with two sets of values: the defaults and the values recommended for optimum operation in a high-latency WAN environment.

NOTE: If these values are modified, replication times on high-speed networks, such as Gigabit Ethernet, might be negatively impacted. Before modifying any of these parameters, consider consulting PlateSpin Support first.

Table 2-6 Parameters for Fine-Tuning File-Level Data Transfer Performance

| Parameter | Default Value | For High-Latency WANs |
|---|----------------|-----------------------|
| fileTransferMinCompressionLimit | 0 | max 65536 (64 KB) |
| Specifies the packet-level compression threshold in bytes. | (disabled) | |
| fileTransferCompressionThreadsCount | 2 | n/a |
| Controls the number of threads used for packet-level data compression. Ignored if compression is disabled. | | |
| Because the compression is CPU-bound, this setting might have a performance impact during Live Transfer. | | |
| fileTransferSendReceiveBufferSize | 0 (8192 bytes) | max 5242880 (5 MB) |
| TCP window size setting for file transfer connections; controls the number of bytes sent without TCP acknowledgement. | | |
| When the value is set to 0, the default TCP window size is used (8 KB). For custom sizes, specify the size in bytes. | | |
| Use the following formula to determine the proper value: | | |
| $((\text{LINK_SPEED}(\text{Mbps}) / 8) * \text{DELAY}(\text{sec})) * 1000 * 1000$ | | |
| For example, for a 100 Mbps link with 10 ms latency, the proper buffer size would be: | | |
| $(100/8) * 0.01 * 1000 * 1000 = 125000 \text{ bytes}$ | | |

Other Use Cases for Making Modifications in the Web Config Tool (Advanced)

Below is a list of configuration values that might address various environmental or functional issues. Do not use them unless you are advised to do so by PlateSpin Support.

Table 2-7 List of Common Use Cases for changing settings in the Web configuration tool

| Issue or Use Case | Value Shown in the Config Tool | Remarks |
|---|--|---------|
| Discovery/Inventory issues | <pre><add key="UseServiceForCommonInventory" value="true" /> <add key="UseServiceForMigrateInventory" value="false" /> <add key="EarliestWindowsVersionForCommonInventory " value="5.2" /></pre> | |
| Target boot issues related to drivers | <pre><add key="TargetMachineRegistryCleanupLevel" value="None" /></pre> | |
| Controller installation issues on sources (mainly due to environmental restrains) | <pre><add key="InstallControllerUsingService" value="true" /> <add key="RunControllerUnderSameCredsAsRemoteAccess" value="false" /></pre> | |
| Issues related to database size growth | <pre><add key="PowerConvertDBSizeLimitInBytes" value="4294967296" /> <add key="PlateSpinDBCleanupThresholdPercent" value="80" /> <add key="OFXDBCleanupThresholdInBytes" value="4294967296" /></pre> | |

3 Getting Started with PlateSpin Migrate

This section introduces the features of the PlateSpin Migrate product and how you use the PlateSpin Migrate Client to carry out workload migration and management tasks.

The PlateSpin Migrate Client connects to a specified PlateSpin Server and provides access to information in the PlateSpin Server database.

Most of your interaction with the server takes place through the client, including the discovery of source workloads and targets; setting up, executing, and monitoring jobs; managing license keys; and configuring the default behavior of the server.

- [Section 3.1, “Connecting to a PlateSpin Server,” on page 49](#)
- [Section 3.2, “About the PlateSpin Migrate Client User Interface,” on page 50](#)
- [Section 3.3, “Discovering Source Workloads and Migration Targets,” on page 56](#)
- [Section 3.4, “Analyzing Machines with PlateSpin Analyzer,” on page 62](#)
- [Section 3.5, “Working with Device Drivers,” on page 64](#)
- [Section 3.6, “Managing Custom Actions,” on page 71](#)
- [Section 3.7, “Setting Up, Executing, and Managing Jobs,” on page 74](#)

3.1 Connecting to a PlateSpin Server

Every time you start the PlateSpin Migrate Client, it performs the following actions:

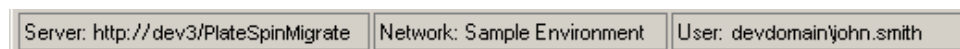
- Performs authentication of the specified user account with the PlateSpin Server.
See [Section 2.2, “Setting Up User Authorization and Authentication,” on page 27](#).
- Connects to a specified PlateSpin Server.
- Loads a specified PlateSpin Migrate Network, a collection of discovered source workloads and targets that you work with at one time.

You specify your connection credentials, the PlateSpin Server instance, and the required PlateSpin Migrate Network in the PlateSpin Server settings.

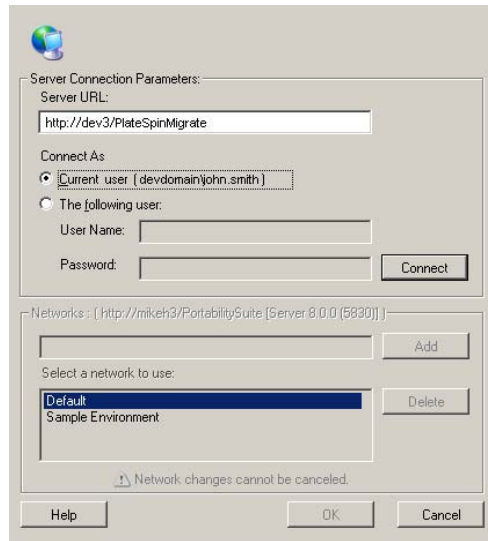
- 1 In the PlateSpin Migrate Client, click *Tools > PlateSpin Server Settings*.

or

Double-click one of the following three areas in PlateSpin Migrate Client’s status bar at the bottom: *Server*, *Network*, or *User*.



The PlateSpin Server Settings dialog box opens.



2 Specify the required PlateSpin Server URL, user, and network parameters as required:

| Interface Element | Description |
|-------------------|--|
| <i>Server URL</i> | Type the PlateSpin Server URL in the following format: <code>http://server_host/platespinmigrate</code> (If SSL is enabled on the PlateSpin Server host, replace <code>http</code> in the URL with <code>https</code>). |
| <i>Connect As</i> | To connect to a PlateSpin Server, you must have administrative access to the PlateSpin Server host or be a member of one of the PlateSpin Migrate roles. See Section 2.2, “Setting Up User Authorization and Authentication,” on page 27 . |
| <i>Networks</i> | To familiarize yourself with PlateSpin Migrate features, use the <i>Sample Environment</i> network. To work with actual source workloads and targets, use the <i>Default</i> network or create your own. To add a network, type the name, then click <i>Add</i> . To remove a network, select it, then click <i>Delete</i> . |

3 When you have finished, click *OK*.

3.2 About the PlateSpin Migrate Client User Interface

The PlateSpin Migrate Client window consists of the following elements:

- ♦ **Menu bar:** Reflects the current view and provides command groups for accessing program features and operations.
- ♦ **Toolbar:** Reflects the current view and provides visual shortcuts to program features and operations.
- ♦ **Current view:** The main work area of the interface; lists either machines (when in Servers view mode), or jobs (when in Jobs view mode).

- ♦ **Panes:** Vertically aligned at the left side of the window, panes facilitate the selection of the current view (View pane) or a migration job (Tasks pane). A Details pane reflects the current view and provides summary information about an item selected in the current view.
- ♦ **Status bar:** At the bottom of the PlateSpin Migrate Client window, the status bar displays the PlateSpin Server that the client is currently connected to, the PlateSpin Migrate Network you are currently working with, the name and role of the current user logged in, and the status of the Automatic Network Discovery feature.

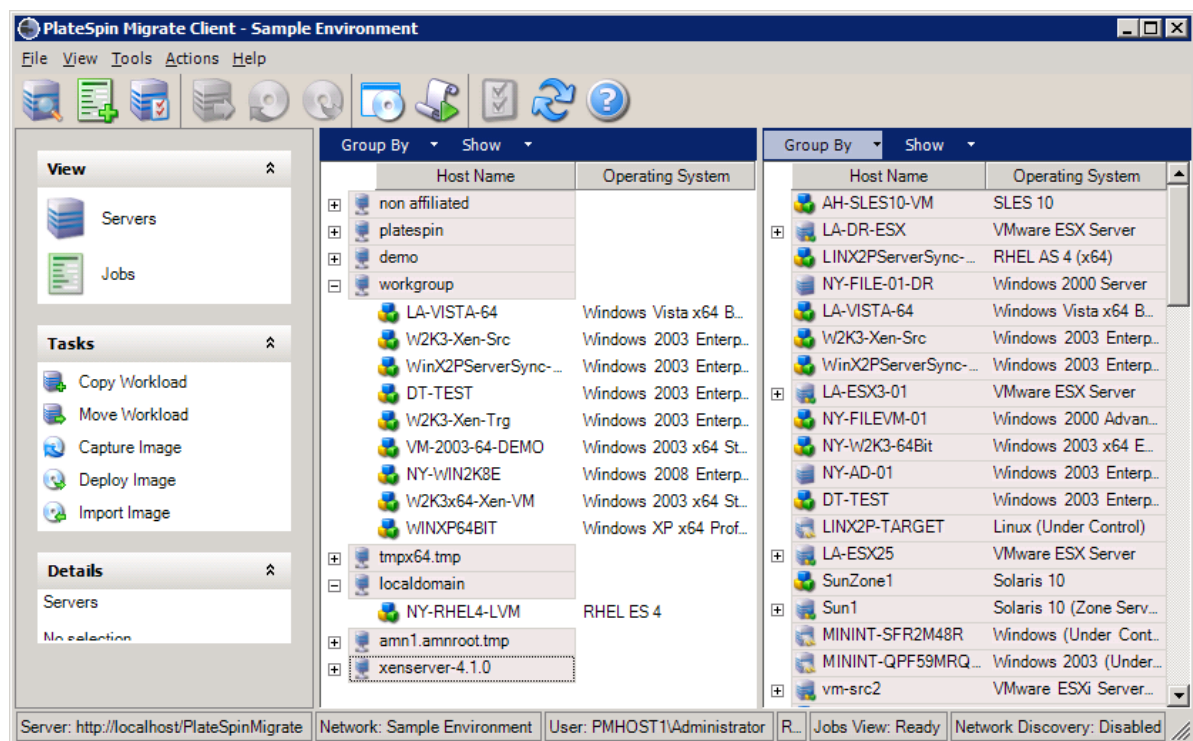
For additional information, see the following sections.

- ♦ [Section 3.2.1, “Servers View,” on page 51](#)
- ♦ [Section 3.2.2, “Jobs View,” on page 55](#)
- ♦ [Section 3.2.3, “Tasks Pane,” on page 55](#)
- ♦ [Section 3.2.4, “Status Bar,” on page 56](#)

3.2.1 Servers View

The Servers view is the main visual interface to your discovered source workloads and targets. Its main area consists of two split panes that you can customize to suit your needs.

Figure 3-1 PlateSpin Migrate Client’s Servers View



The hierarchical display of items in the Servers view reflects the organization of items on their respective platforms; for example: VMs are shown nested beneath their VM hosts, and PlateSpin Images are beneath their image servers.

In addition, the *Group By* bar enables you to group machines by affiliation to a domain or to a vCenter Server (for VMware ESX server systems). See [“Organizing the Servers View” on page 52](#).

NOTE: The Servers view hierarchy does not reflect advanced VM resource management hierarchies and structures, such as membership in resource pools or affiliation with ESX Distributed Resource Scheduler (DRS) clusters. You can view such information in an item's properties. See [“Viewing the Properties of Source Workloads and Targets” on page 53](#).

- ♦ [“Organizing the Servers View” on page 52](#)
- ♦ [“Viewing the Properties of Source Workloads and Targets” on page 53](#)
- ♦ [“List of Machine-Specific Icons in the Servers View” on page 54](#)

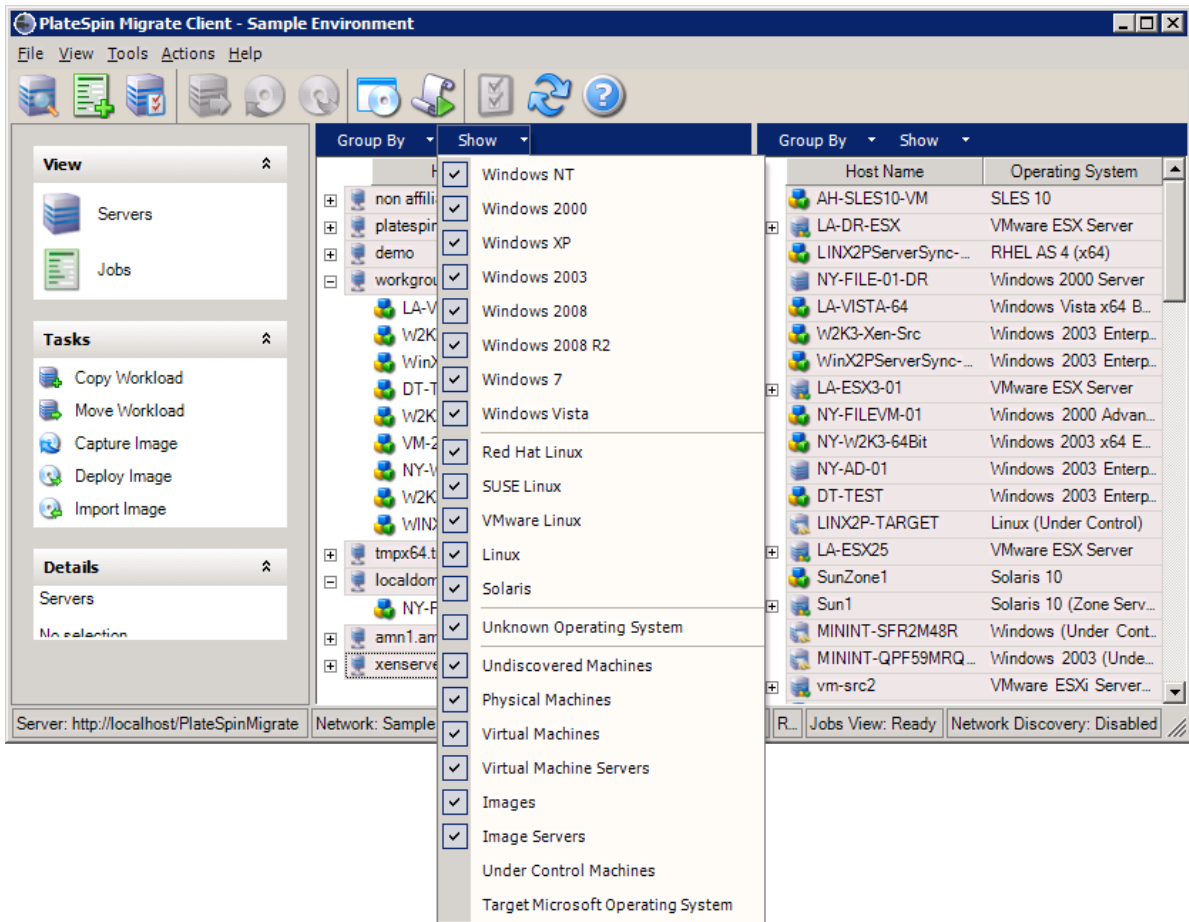
Organizing the Servers View

You can filter source workloads and targets based on operating system, domain, name, and type by using the *Group By* and *Show* drop-down menus. You can use the *Group By* drop-down menu to group the items in the Servers view by:

- ♦ Domain affiliation
- ♦ Hostname
- ♦ Affiliation to a VMware vCenter Server

To further control the scope of items shown in either pane of the view, you can also use the *Show* drop-down menu to filter machines by workload type; for example, Windows 2000, Red Hat Linux, and so on, as shown in the figure below:

Figure 3-2 Servers View Options for Sorting Items by Type



Viewing the Properties of Source Workloads and Targets

In the Servers view, you can access the essential properties of your discovered source workloads and targets by right-clicking an item and selecting *Properties*.

For each machine, the system provides information about the selected system's:

- Hardware, operating system, and network profile
- Volumes, partitions, and disk usage
- Programs and services

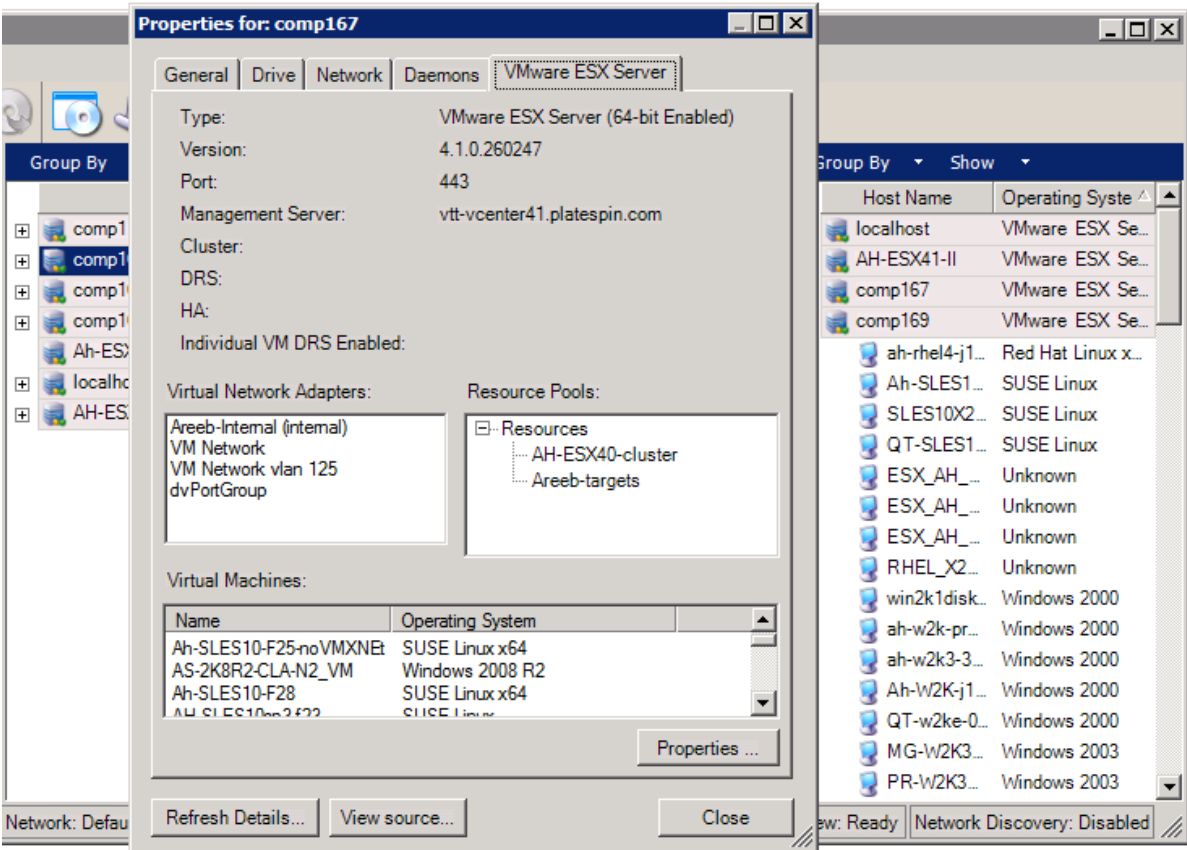
A virtual machine's properties provide information related to the machine's environment on its corresponding virtualization platform, including information about the host, and the amount of allocated memory and processing power.

The properties for virtual machine hosts provide information specific to the selected system. For example, you can view what virtual machines are running on a selected VMware ESX server, what virtual network adapters are in use, and what resource pools are configured on them.

VMware ESX servers that are assigned to a Distributed Resource Scheduler (DRS) cluster provide information about the name of the cluster and the DRS automation level (full, manual, or partially automated). The properties for VMware ESX servers that are part of VMware vCenter platforms also indicate this.

The following figure shows the properties of a discovered VMware ESX Server.









Figure 3-3 VMware ESX Server-Specific Information in the System's Properties






List of Machine-Specific Icons in the Servers View

Discovered source workloads and targets are associated with unique icons to help identify the type of workload or workload host.

Table 3-1 Machine-Specific Icons in the Servers View

| | |
|---|---|
|  | Physical machine |
|  | Physical machine in pre-execution environment for offline migration |
|  | Physical machine with workload license |
|  | Virtual machine server |
|  | Virtual machine |
|  | Virtual machine with workload license |
|  | Undiscovered virtual machine |
|  | Virtual machine - Server Sync target |

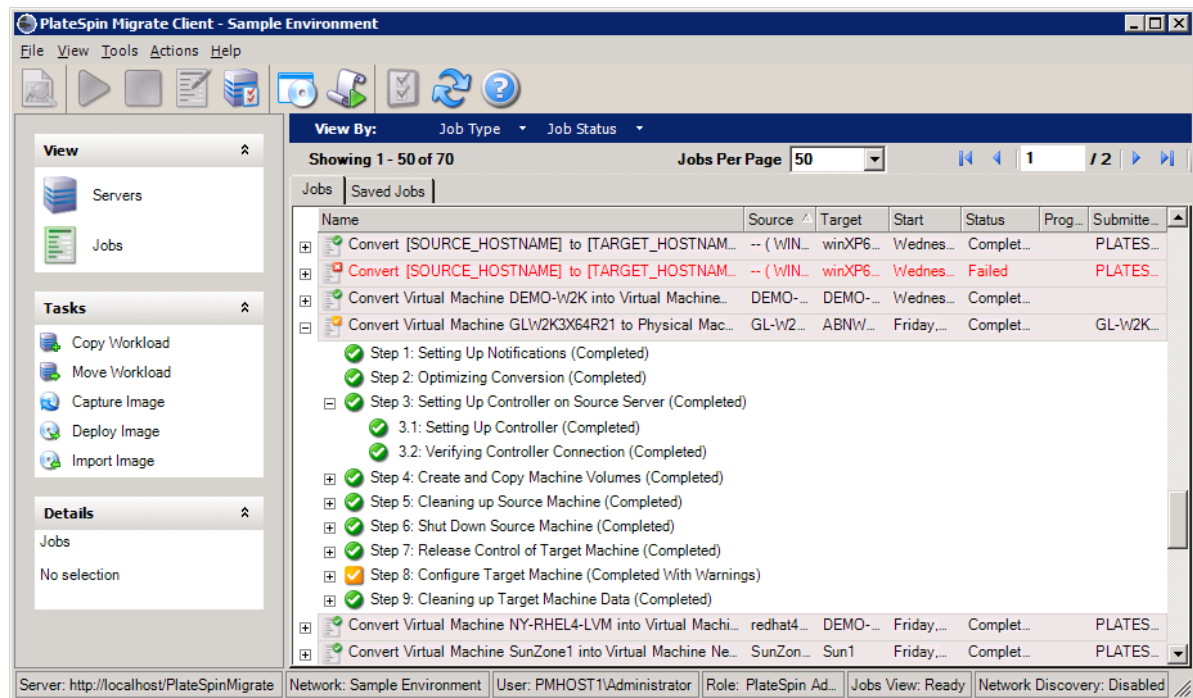
-
-  Virtual machine - Server Sync target with workload license
 -  PlateSpin Image Server
 -  PlateSpin Image
-

3.2.2 Jobs View

The Jobs view displays all jobs, such as discovery, migration, and image capture, organized into two tabs:

- ♦ **Jobs:** All jobs submitted for execution.
- ♦ **Saved Jobs:** All saved jobs not yet submitted for execution. See [Section 3.7.4, “Starting a Saved Migration Job in the Jobs View,”](#) on page 78.

Figure 3-4 PlateSpin Migrate Client’s Jobs View



You can limit the scope of jobs displayed in the view. Use the *Job Type* and *Jobs Status* menus to specify filters for the view:

- ♦ **Job Type:** To view discovery, migration, or all other job types.
- ♦ **Job Status:** To view failed, currently running, and completed jobs.

3.2.3 Tasks Pane

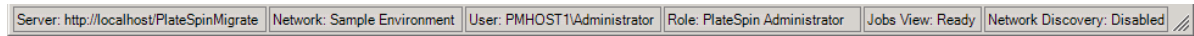
The Tasks pane of the PlateSpin Migrate Client window contains most essential migration actions. Clicking a task opens the Action window, which you can use to select the migration source, target, and setup method. See [Section 3.7.1, “Setting Up a Migration Job \(Wizard vs. Advanced\),”](#) on page 74.

3.2.4 Status Bar

The status bar of the PlateSpin Migrate Client window displays information about:

- The PlateSpin Server that you are currently connected to.
- The PlateSpin Migrate Network that you are currently working with.
- The User that you are logged in as, and the PlateSpin Migrate role assigned to your user account.
- The status of the Automatic Network Discovery feature.

Figure 3-5 Status Bar of the PlateSpin Migrate Client Window



Double-clicking any of the first three status items opens the PlateSpin Server Settings window. See [“Connecting to a PlateSpin Server” on page 49](#).

Double-clicking the Network Discovery status item turns Automatic Windows Network Discovery on or off. See [“Discovering, Registering and Preparing a VM for a Server Sync Job” on page 61](#).

3.3 Discovering Source Workloads and Migration Targets

For any migration job, you must have a discovered source and a discovered target. A discovery operation populates the PlateSpin Migrate database with detailed inventory information about a machine. This information provides the data necessary to determine the machine’s use and to properly configure a migration job.

- [Section 3.3.1, “Prepopulating the Servers View with Windows Computers in the Network,” on page 56](#)
- [Section 3.3.2, “Discovering the Details of Source Workloads and Targets,” on page 57](#)
- [Section 3.3.3, “Discovering All Machines in a Windows Domain,” on page 58](#)
- [Section 3.3.4, “Refreshing Machine Details,” on page 58](#)
- [Section 3.3.5, “Resetting the Mechanism Used to Authenticate Access to ESX Hosts,” on page 58](#)
- [Section 3.3.6, “Discovering Target Physical Machines,” on page 59](#)
- [Section 3.3.7, “Discovering, Registering and Preparing a VM for a Server Sync Job,” on page 61](#)
- [Section 3.3.8, “Discovery Guidelines for Machine Types and Credentials,” on page 61](#)

3.3.1 Prepopulating the Servers View with Windows Computers in the Network

PlateSpin Migrate’s Network Discovery feature automatically populates PlateSpin Migrate Client with a list of Windows physical and virtual machines that are online. Unlike a full discovery, Network discovery creates a list of machines but does not retrieve detailed inventory information about each one, which is required for workload portability jobs.

The Network Discovery feature is necessary to discover all machines of a Windows domain in a single job. See [“Discovering All Machines in a Windows Domain” on page 58](#).

PlateSpin Migrate uses the standard Windows network browser function for the auto-discovery feature. Because Linux workloads and virtual machine servers do not advertise to the Windows network browser, they are not auto-discovered.

The Network Discovery feature is enabled by default. To disable the feature or toggle between its enabled/disabled modes, double-click *Network Discovery* in the bottom right corner of the PlateSpin Migrate Client window.

3.3.2 Discovering the Details of Source Workloads and Targets

You can discover:

- ♦ An individual physical machine
- ♦ An individual virtual machine
- ♦ An individual virtual machine server
- ♦ Multiple virtual machine servers
- ♦ All VMware ESX hosts affiliated with a VMware vCenter Server
- ♦ Multiple machines

Before starting discovery operations, make sure PlateSpin Server can communicate with your source workloads and targets. See [Section 2.3.1, “Requirements for Discovery,” on page 35](#).

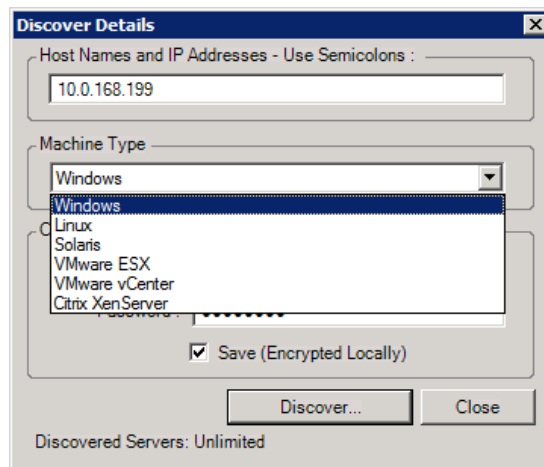
- 1 On the PlateSpin Migrate toolbar, click *Discover Details*.

or

In the Servers view, right-click in a blank area, then select *Discover Details*.

- 2 In the *Discover Details* dialog box, type the hostname or IP address of the source or target. To discover multiple machines, specify multiple hostnames or IP addresses separated by semicolons. If the target is behind a NAT device, specify its public (external) IP address.

See [“Migrations Across Public and Private Networks through NAT” on page 37](#).



- 3 Select the machine type and provide administrator credentials for the machine you are discovering.

See [“Discovery Guidelines for Machine Types and Credentials” on page 61](#).

Discovering hosts with Xen Hypervisor systems results in these systems being registered as PlateSpin Migrate source workloads (as opposed to VM host targets). For information about using these platforms as workload portability targets, see [“Semi-Automated Workload Virtualization Using the X2P Workflow” on page 88](#).

- 4 (Optional) If you want to store these credentials for use during future jobs, enable the *Save (Encrypted Locally)* option.

- 5 Click *Discover* and wait for the process to complete.
- 6 (Optional) If you want to monitor the progress of the job, switch to the Jobs view.

3.3.3 Discovering All Machines in a Windows Domain

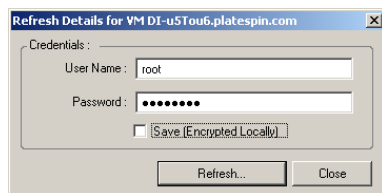
- 1 Enable the automatic Network Discovery feature.
See [“Prepopulating the Servers View with Windows Computers in the Network” on page 56.](#)
- 2 In PlateSpin Migrate Client, expand the domain listing containing the machines to be discovered.
- 3 Right-click the domain name, then select *Discover All Servers*.
- 4 Specify domain-level administrator credentials.
- 5 Click *Discover* and wait for the process to complete.
- 6 (Optional) If you want to monitor the progress of the job, switch to the Jobs view.

3.3.4 Refreshing Machine Details

You should routinely refresh your source workloads and targets before setting up a migration job.

To refresh a source or a target machine:

- 1 In the Servers view, right-click the required item, then select *Refresh Details*.



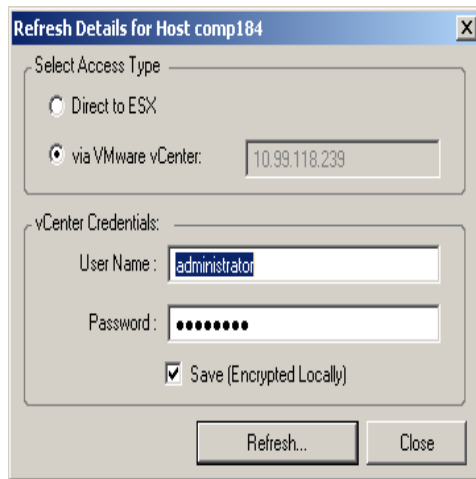
- 2 Specify the credentials appropriate for the system being refreshed, then click *Refresh*.
PlateSpin Migrate starts a discovery job, which you can monitor in the Jobs view.

3.3.5 Resetting the Mechanism Used to Authenticate Access to ESX Hosts

If you discover ESX hosts through a vCenter Server, all subsequent communications with these VM hosts take place through the vCenter Server.

You can reset this access mechanism to *Direct to ESX* or back to *Via vCenter*:

- 1 Refresh the required ESX host.
See [“Refreshing Machine Details” on page 58.](#)
The system prompts you to select an access type:



- 2 Select the required option, then click *Refresh*.

PlateSpin Migrate rediscovers the required ESX host by using the specified access mechanism, which it uses for all subsequent communications with that host.

3.3.6 Discovering Target Physical Machines

To discover a physical target and inventory its hardware components, you must boot the target machine with the PlateSpin boot ISO image on a CD or other media, from which your target can be booted. A similar process is used to migrate workloads to virtualization platforms that use the semi-automated virtualization process, whereby a target virtual machine on a virtual machine host is regarded as a physical target (see [“Semi-Automated Workload Virtualization Using the X2P Workflow”](#) on page 88).

- ♦ [“Downloading the PlateSpin Boot ISO Images”](#) on page 59
- ♦ [“Injecting Additional Device Drivers into the Boot ISO Images”](#) on page 60
- ♦ [“Registering Physical Targets Using the PlateSpin Boot ISO Image”](#) on page 60
- ♦ [“Performing an Unattended Registration of a Target Physical Machine”](#) on page 61

Downloading the PlateSpin Boot ISO Images

You can download the PlateSpin boot ISO images (`bootofx.x2p.iso` for BIOS firmware-based targets and `bootofx.x2p.uefi.iso` for UEFI firmware-based targets) from the PlateSpin Migrate area of [NetIQ Downloads](https://dl.netiq.com/index.jsp) (<https://dl.netiq.com/index.jsp>) by doing a search with the following parameters:

- ♦ *Product or Technology*: PlateSpin Migrate
- ♦ *Select Version*: 11.0
- ♦ *Date Range*: All Dates

NOTE: The `.iso` files are compressed in `PhysicalTarget.zip` at the download site.

Injecting Additional Device Drivers into the Boot ISO Images

The PlateSpin boot ISO image contains a large library of device drivers sufficient to boot most common targets. However, occasionally you might want to use your own, such as lesser-known, vendor-specific or custom-developed drivers.

To inject drivers into the PlateSpin boot ISO image:

- 1 Download and extract the PlateSpin boot ISO images from [NetIQ Downloads](#). See [Downloading the PlateSpin Boot ISO Images](#).
- 2 Obtain or compile the required *.ko driver files.

IMPORTANT: Make sure the drivers are valid for the kernel included with the ISO file (3.0.93-0.8-default for 64-bit, 3.0.93-0.8-pae for 32-bit) and are appropriate for the target architecture.

- 3 Mount the ISO image in any Linux machine (root credentials required). Use the following command syntax:

```
mount -o loop <path-to-ISO> <mount_point>
```
- 4 Copy the rebuildiso.sh script, located in the /tools subdirectory of the mounted ISO file, into a temporary working directory.
- 5 Create another working directory for the required driver files and save them in that directory.
- 6 In the directory where you saved the rebuildiso.sh script, run the following command as root:

```
./rebuildiso.sh -i <ISO_file> -d <driver_dir> -m i586|x86_64
```

On completion, the ISO file is updated with the additional drivers.
- 7 Unmount the ISO file (execute the command `umount <mount_point>`).

Registering Physical Targets Using the PlateSpin Boot ISO Image

Complete these steps to register your target with PlateSpin Server when you are using an unmodified boot ISO image. If you want to inject additional device drivers into the image (Linux workloads only), first complete the steps in [Injecting Additional Device Drivers into the Boot ISO Images](#) (page 60).

To boot the target physical machine and register it with the PlateSpin Migrate Server:

- 1 Burn the PlateSpin boot ISO image on a CD or save it to the required media, from which your target can boot.
- 2 Boot the target machine from the ISO image.
- 3 (Conditional) For 64-bit systems, at the initial boot prompt, type the following:

```
ps64
```

Press Enter.
- 4 When prompted, enter the PlateSpin Server URL, using the following format:

```
http://<hostname | IP_address>/platespinmigrate
```

Replace <hostname | IP_address> with the hostname or the IP address of your PlateSpin Server host.
- 5 Enter your credentials for the PlateSpin Server.

- 6 Specify a static IP address or indicate that the machine should dynamically obtain an IP address from a DHCP server.
- 7 Enter a name for the target host and specify an existing PlateSpin Migrate Network to work with.

After a few moments, PlateSpin Migrate displays the physical target in the Servers view.

Performing an Unattended Registration of a Target Physical Machine

PlateSpin Migrate provides a mechanism for automating a target physical machine's registration with the PlateSpin Server. This involves updating the boot ISO image with specific registration information before booting the target.

For details, see [KB Article 7013485 \(https://www.netiq.com/support/kb/doc.php?id=7013485\)](https://www.netiq.com/support/kb/doc.php?id=7013485).

3.3.7 Discovering, Registering and Preparing a VM for a Server Sync Job

If you want to synchronize two workloads, and if your synchronization target is a virtual machine, you must discover and register an appropriate virtual machine first. For information about the Server Sync feature, see [“Synchronizing Workloads with Server Sync” on page 84](#).

- 1 On your virtual machine host, create a virtual machine with the desired specifications and install the operating system that matches the intended source workload, including the exact service pack.
- 2 Discover the virtual machine host or refresh its details.
- 3 In the Servers view, right-click the newly created virtual machine underneath the virtual machine server, then select *Prepare for synchronization*.
- 4 Specify administrator credentials for the virtual machine server.
- 5 (Optional) If you want to store these credentials for use during future jobs, enable the *Save (Encrypted Locally)* option.
- 6 (Optional) To configure the temporary (Take Control) network settings, such as choosing which virtual network to use from those available on the virtual machine server and configuring TCP/IP settings, click *Configure*, then configure the network settings as required.
- 7 Click *Prepare* and wait for the job to complete.

On completion, the Servers view lists a new Server Sync target underneath the VM host: 

3.3.8 Discovery Guidelines for Machine Types and Credentials

The following are guidelines for machine type selection, credential format, and syntax for discovery parameters.

Table 3-2 Guidelines for Discovery Parameters

| To Discover | Machine Type Selection | Credentials | Remarks |
|--|-------------------------|--|---|
| All Windows workloads PlateSpin Image Servers | <i>Windows</i> | Local or domain admin credentials. | For the username, use this format: <ul style="list-style-type: none"> ♦ For domain member machines: <i>authority\principal</i> ♦ For workgroup member machines: <i>hostname\principal</i> |
| All Linux workloads | <i>Linux</i> | Root-level username and password | Non-root accounts must be properly configured to use <code>sudo</code> . See KB Article 7920711 (https://www.netiq.com/support/kb/doc.php?id=7920711). |
| VMware ESX hosts | <i>VMware ESX</i> | ESX account with admin role OR Windows domain credentials (versions 4 and 4.1 only) | |
| VMware ESX hosts affiliated with a VMware vCenter Server | <i>VMware vCenter</i> | VMware vCenter Web service credentials (username and password) OR Windows domain credentials (versions 4 and 4.1 only) | All subsequent communications with ESX hosts take place through the vCenter Server. To reset the access mechanism to <i>Direct to ESX</i> or back to <i>Via vCenter</i> , refresh the details of the required ESX host and select the required option. See “Resetting the Mechanism Used to Authenticate Access to ESX Hosts” on page 58. |
| Citrix XenServer VM hosts | <i>Citrix XenServer</i> | username <code>root</code> along with the associated password | XenServer hosts currently do not support multiple root-level user accounts |

3.4 Analyzing Machines with PlateSpin Analyzer

Before you begin any large-scale migration projects, you should identify potential migration problems and correct them beforehand. Use the PlateSpin Analyzer utility to determine whether discovered machines are suitable for migration jobs.

NOTE: PlateSpin Analyzer currently supports only Windows workloads.

To open PlateSpin Analyzer:

- 1 On the *Tools* menu, click *Analyze Servers*.
The PlateSpin Analyzer window opens.
- 2 Select the required PlateSpin Migrate Network and the required machines to analyze.
- 3 (Optional) To reduce the analysis time, limit the scope of machines to a specific language.

- 4 (Optional) To analyze machines in the inventory of a different PlateSpin Server, click *Connect*, then specify the required PlateSpin Server URL and valid credentials.
- 5 Click *Analyze*.

Depending on the number of discovered machines you select, the analysis might take a few seconds to several minutes.

Analyzed servers are listed in the left pane. Select a server to view test results in the right pane. Test results can be any combination of the following:

Table 3-3 Status Messages in PlateSpin Analyzer Test Results

| Result | Description |
|---------|--|
| Passed | The machine passed the PlateSpin Analyzer tests. |
| Warning | One or more tests returned warnings for the machine, indicating potential migration issues. Click the hostname to see the details. |
| Failed | One or more tests failed for this machine. Click the hostname to see the details and obtain more information. |

The *Summary* tab provides a listing of the number of machines analyzed and not checked, as well as those that passed the test, failed the test, or were assigned a warning status.

The *Test Results* tab provides the following information:

Table 3-4 PlateSpin Analyzer Test Results Tab

| Section | Details |
|--------------------------------------|--|
| <i>System Test</i> | Validates that the machine fulfills PlateSpin Migrate's minimum hardware and operating system requirements. |
| <i>Take Control Hardware Support</i> | Checks for source hardware compatibility for offline migration. |
| <i>Target Hardware Support</i> | Checks hardware compatibility for use as a target physical machine. |
| <i>Software Test</i> | Checks for applications that must be shut down for Live Transfer, and databases that should be shut down during Live Transfer to guarantee transactional integrity. |
| <i>Incompatible Application Test</i> | Verifies that applications known to interfere with the migration process are not installed on the system. These applications are stored in the Incompatible Application Database. To add, delete, or edit entries in this database, select <i>Incompatible Application</i> from the <i>Tools</i> menu. |

The *Properties* tab provides detailed information about a selected machine.

For more information about using PlateSpin Analyzer and understanding the results, see [KB Article 7920478 \(https://www.netiq.com/support/kb/doc.php?id=7920478\)](https://www.netiq.com/support/kb/doc.php?id=7920478).

3.5 Working with Device Drivers

PlateSpin Migrate ships with a library of device drivers, and during migration jobs it automatically installs the appropriate ones for the target. To determine if the required drivers are available, use PlateSpin Analyzer. See [“Analyzing Machines with PlateSpin Analyzer” on page 62](#).

If PlateSpin Analyzer encounters missing or incompatible drivers, or if you require specific drivers for your target infrastructure, you might need to add (upload) drivers to the PlateSpin Migrate driver database.

In addition,

- ♦ [Section 3.5.1, “Packaging Device Drivers for Windows Systems,” on page 64](#)
- ♦ [Section 3.5.2, “Packaging Device Drivers for Linux Systems,” on page 64](#)
- ♦ [Section 3.5.3, “Uploading Drivers to the PlateSpin Migrate Device Driver Database,” on page 65](#)
- ♦ [Section 3.5.4, “Using the Plug and Play \(PnP\) ID Translator Feature,” on page 66](#)

3.5.1 Packaging Device Drivers for Windows Systems

To package your Windows device drivers for uploading to the PlateSpin Migrate driver database:

- 1 Prepare all interdependent driver files (*.sys, *.inf, *.dll, etc.) for your target infrastructure and device. If you have obtained manufacturer-specific drivers as a .zip archive or an executable, extract them first.
- 2 Save the driver files in separate folders, with a discrete folder per device.

The drivers are now ready for upload. See [Section 3.5.3, “Uploading Drivers to the PlateSpin Migrate Device Driver Database,” on page 65](#).

NOTE: For problem-free operation of your migration job and the target workload, upload *only digitally signed* drivers for:

- ♦ All 64-bit Windows systems
 - ♦ 32-bit versions of Windows Vista and Windows Server 2008, and Windows 7 systems
-

3.5.2 Packaging Device Drivers for Linux Systems

To package your Linux device drivers for uploading to the PlateSpin Migrate driver database, you can use a custom utility included in your Linux ISO boot image.

- 1 On a Linux workstation, create a directory for your device driver files. All the drivers in the directory must be for the same kernel and architecture.
- 2 Download the boot image and mount it.

For example, assuming that the ISO has been copied under the /root directory, issue these commands:

```
# mkdir /mnt/ps
# mount -o loop /root/bootofx.x2p.iso /mnt/ps
```

- 3 From the /tools subdirectory of the mounted ISO image, copy the packageModules.tar.gz archive into a another working directory and extract it.

For example, with the .gz file is inside your current working directory, issue this command:


```
tar -xvzf packageModules.tar.gz
```

- 4 Enter the working directory and execute the following command:

```
./PackageModules.sh -d <path_to_driver_dir> -o <package name>
```

Replace *<path_to_driver_dir>* with the actual path to the directory where you saved your driver files, and *<package name>* with the actual package name, using the following format:

Drivename-driverversion-dist-kernelversion-arch.pkg

For example, *bnx2x-1.48.107-RHEL4-2.6.9-11.EL-i686.pkg*

The package is now ready for upload. See [Section 3.5.3, “Uploading Drivers to the PlateSpin Migrate Device Driver Database,”](#) on page 65

3.5.3 Uploading Drivers to the PlateSpin Migrate Device Driver Database

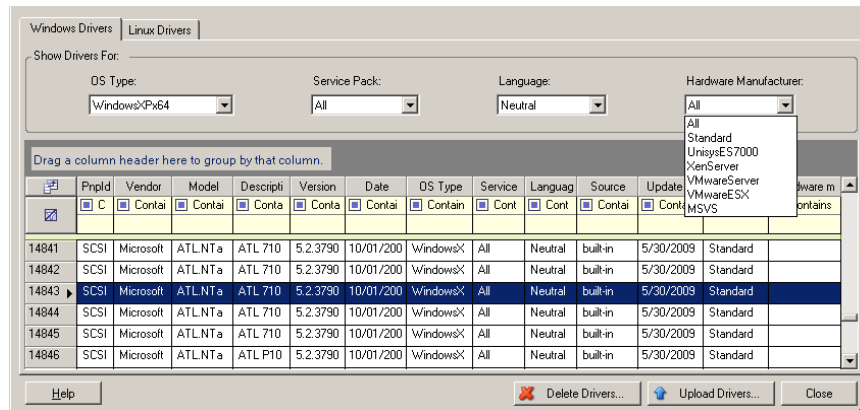
Use the PlateSpin Driver Manager to upload device drivers to the driver database.

NOTE: On upload, PlateSpin Migrate does not validate drivers against selected operating system types or their bit specifications; make sure that you only upload drivers that are appropriate for your target infrastructure.

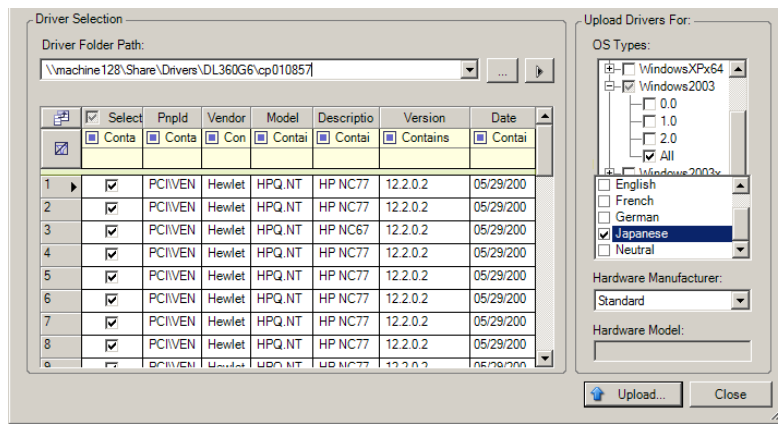
- ♦ [“Device Driver Upload Procedure \(Windows\)”](#) on page 65
- ♦ [“Device Driver Upload Procedure \(Linux\)”](#) on page 66

Device Driver Upload Procedure (Windows)

- 1 Obtain and prepare the required device drivers.
See [Packaging Device Drivers for Windows Systems](#).
- 2 Click *Tools > Manage Device Drivers* and select the *Windows Drivers* tab:



- 3 Click *Upload Drivers*, browse to the folder that contains the required driver files, and select applicable OS type, language, and hardware manufacturer options.



For most X2P migrations, select *Standard* as the *Hardware Manufacturer* option, unless your drivers are designed specifically for any of the target environments listed.

- 4 Click *Upload* and confirm your selections when prompted.

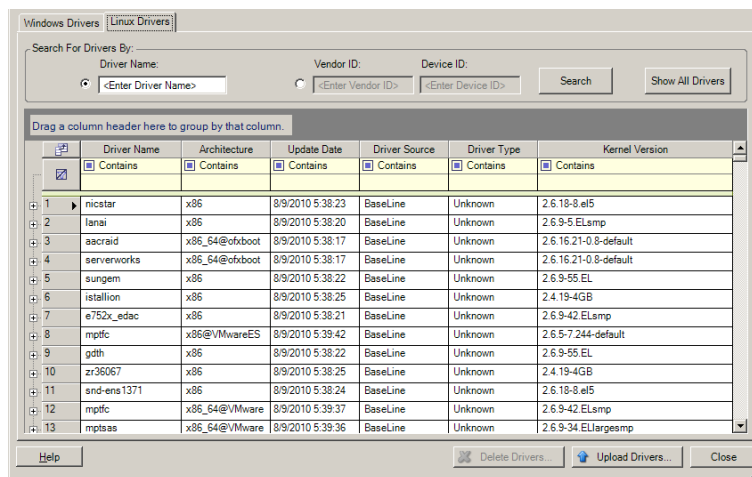
The system uploads the selected drivers to the driver database.

Device Driver Upload Procedure (Linux)

- 1 Obtain and prepare the required device drivers.

See [Packaging Device Drivers for Linux Systems](#).

- 2 Click *Tools > Manage Device Drivers* and select the *Linux Drivers* tab:



- 3 Click *Upload Drivers*, browse to the folder that contains the required driver package (*.pkg), and click *Upload All Drivers*.

The system uploads the selected drivers to the driver database.

3.5.4 Using the Plug and Play (PnP) ID Translator Feature

“Plug and Play” (PnP) refers to Windows operating system functionality that supports connectivity, configuration, and management with native plug and play devices. In Windows, the feature facilitates discovery of PnP compliant hardware devices attached to a PnP compliant bus. PnP compliant devices are assigned a set of Device Identification Strings by their manufacturer. These

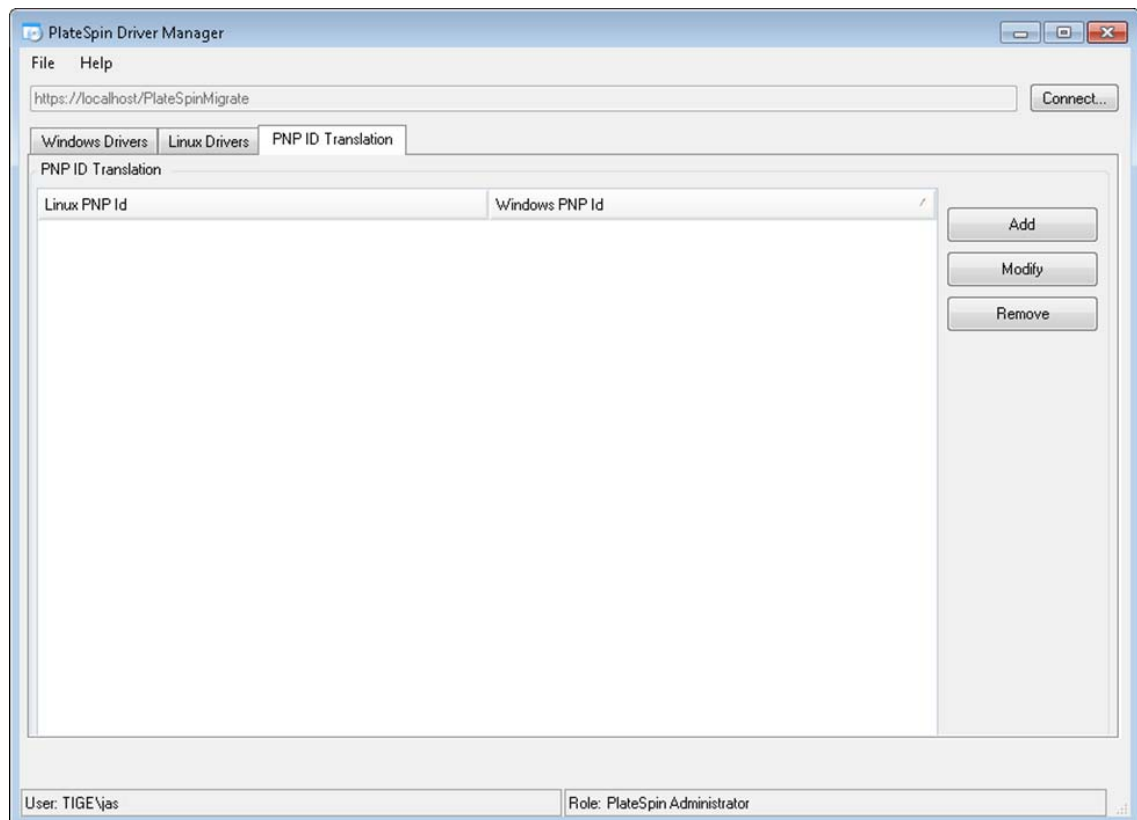
strings are programmed into the device when it is built. These strings are fundamental to how PnP works: they are part of the Windows' information source used to match the device with a suitable driver.

When the PlateSpin Server discovers workloads and their available hardware, the discovery includes these PnP IDs and the storage of that data as part of the workload's details. PlateSpin uses the IDs to determine which, if any, drivers need to be injected during a conversion operation. The PlateSpin Server maintains a database of PnP IDs for the associated drivers of each of the supported operating systems. Because Windows and Linux use different formats for PnP IDs, a Windows workload discovered by the Migrate Linux RAM disk contains Linux-style PnP IDs.

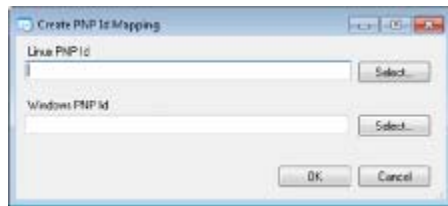
These IDs are formatted consistently, so PlateSpin can apply a standard transformation to each of them to determine its corresponding Windows PnP ID. The translation occurs automatically within the PlateSpin product. The feature lets you or a support technician add, edit or remove custom PnP mappings.

Follow these steps to use the PnP ID Translation feature:

- 1 Launch the PlateSpin Driver Manager tool and connect to the PlateSpin Server.
- 2 In the Driver Manager tool, select the PNP ID Translation tab to open the *PNP ID Translation* list, which includes the currently known custom PnP ID mappings.



- 3 On the list page, click *Add* to display the Create PNP ID Mapping dialog box.



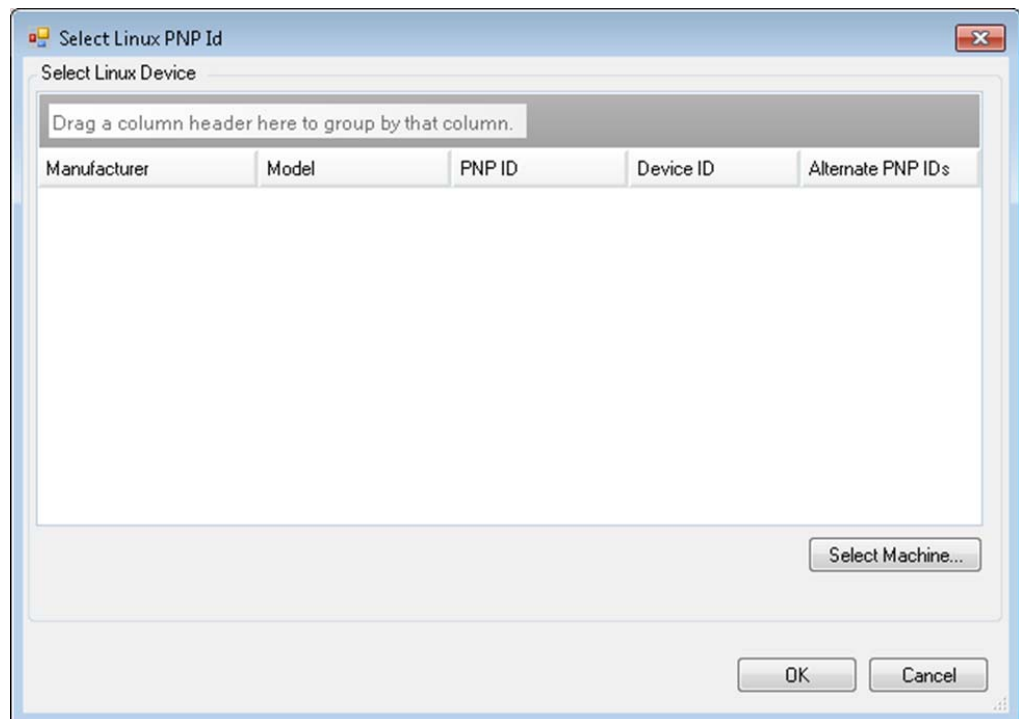
4 In the *Linux PnP ID* field, add a Linux PnP ID.

4a (Conditional) If you know it, type the Linux PnP ID you want to use.

or

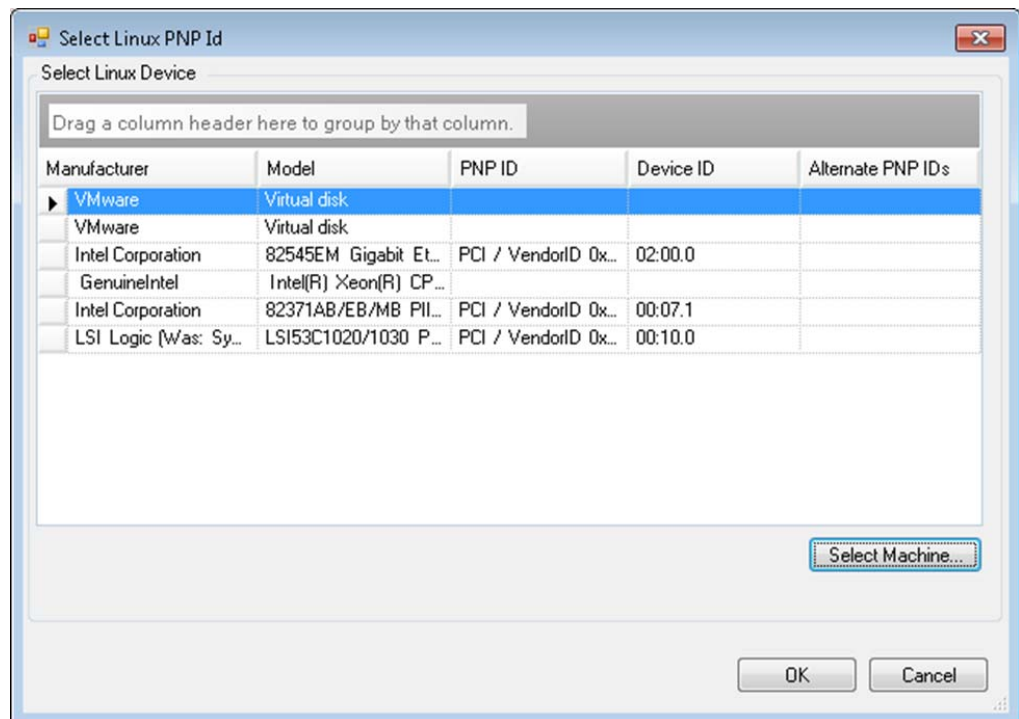
4b (Conditional) Select an ID from a previously discovered workload:

4b1 Adjacent to the *Linux PnP ID* field, click *Select* to open the Select Linux PnP ID dialog box.



4b2 On the dialog box, click *Select Machine* to display a list of the machines previously discovered by the PlateSpin Linux RAM disk.

4b3 Highlight one of the devices in the list, then click *Select* to populate the list in the Select Linux PnP ID dialog box.



4b4 Select a device on the list, then click *OK* to apply the standard transformation to the PnP ID and display it in the Create PnP ID Mapping dialog box.

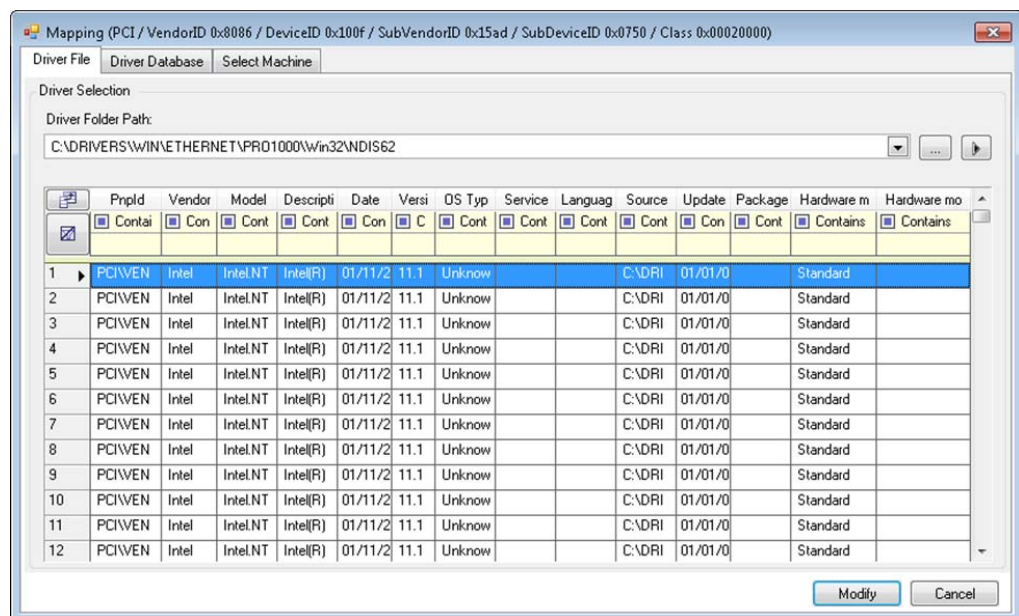
5 In the *Windows PNP ID* field, add a Windows PnP ID:

5a (Conditional) If you know it, type the Windows PnP ID you want to use.

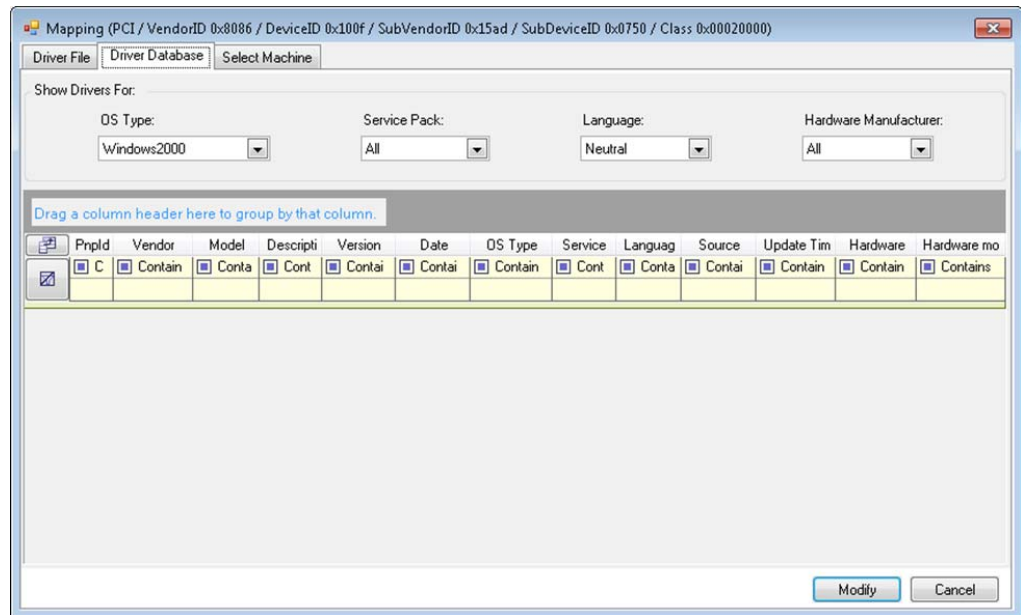
or

5b (Conditional) Adjacent to the *Windows PNP ID* field, click *Select* to open a mapping tool that presents three methods for helping you map a the Windows PnP ID:

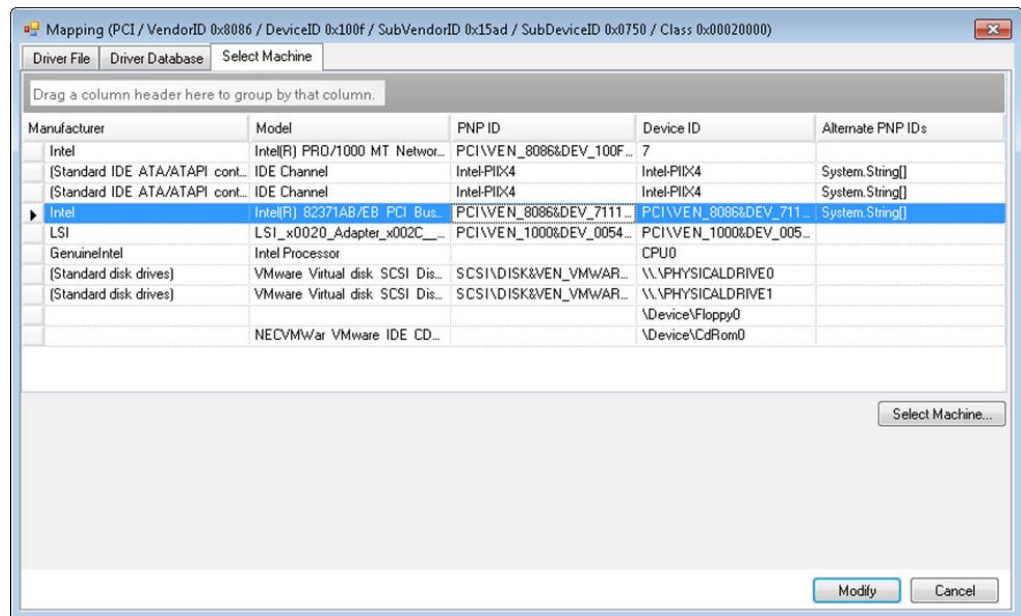
- Under the *Driver File* tab, browse to and select a Windows driver file (that is, a file with the *.inf extension), select the desired PnP ID, then click *Modify*.



- Under the *Driver Database* tab, browse to and select the existing driver database, select the correct PnP ID, then select *Modify*.

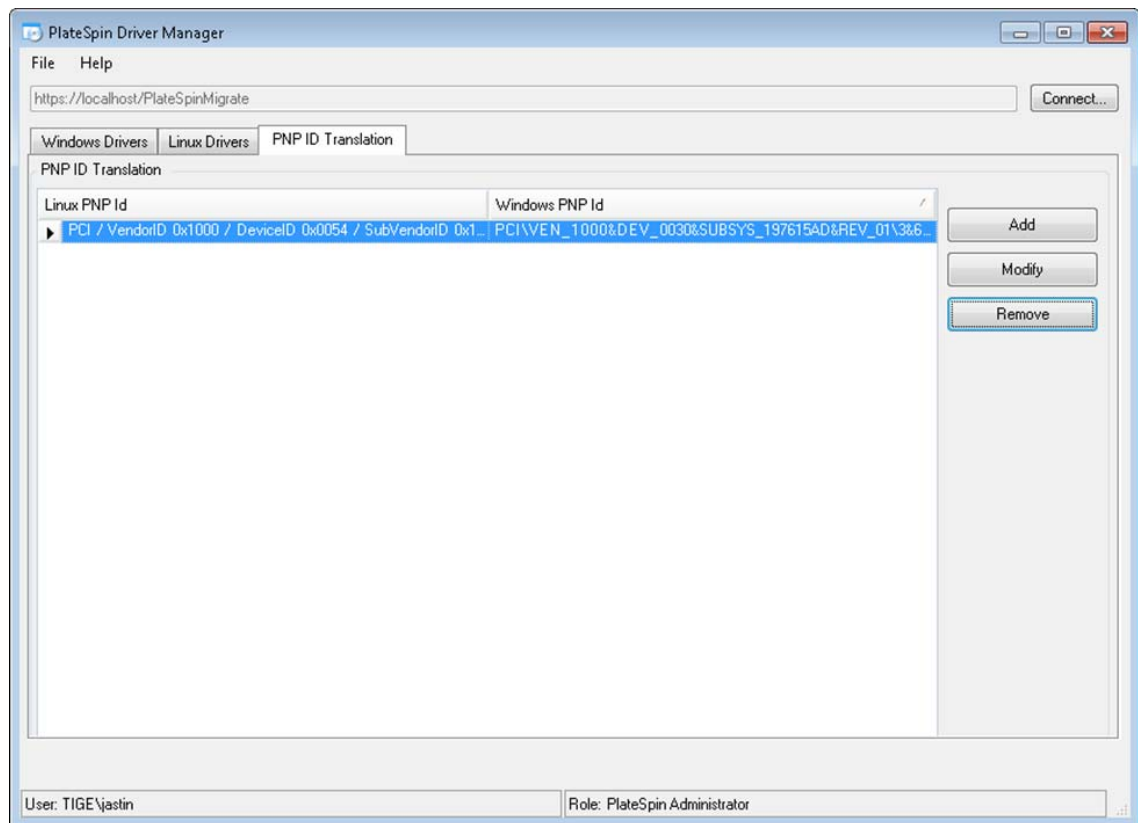


- Under the *Select Machine* tab, click *Select Machine*, then, from the list of Windows machines discovered using live discovery, select a machine, click *OK* to display its devices, select the desired PnP ID, then click *Modify*.



IMPORTANT: Selecting a Windows PnP ID that does not have an associated driver package installed might result in a failure at conversion time.

- In the Create PnP Id Mapping dialog box, confirm that the correct Linux PnP ID and the correct Windows PnP are selected, then click *OK* to display the PNP ID Translation page of the PlateSpin Driver Manager.



- 7 (Optional) To modify or remove the mapping in the PNP ID Translation list, select the mapping pattern, then click *Remove* or *Modify*, depending on the operation you want to perform.

Remove simply deletes the mapping (after displaying a confirmation dialog box).

To modify,

- 7a Click *Modify* to open the Create PNP id Mapping dialog box.
- 7b Repeat [Step 5 on page 69](#) to modify the Windows PnP ID.

NOTE: You cannot select or modify the Linux PnP ID.

3.6 Managing Custom Actions

PlateSpin Migrate provides you with the capability to automatically execute custom actions, such as batch files and scripts.

- ♦ [Section 3.6.1, “Managing Post-migration Actions \(Windows and Linux\),” on page 72](#)
- ♦ [Section 3.6.2, “Freeze and Thaw Scripting Capabilities \(Linux Block-Level Migrations\),” on page 73](#)

3.6.1 Managing Post-migration Actions (Windows and Linux)

To automate specific post-migration tasks on your target, you can include a custom action, such as a batch file, a shell script, or a program executable, in your migration job. At the end of the migration process, PlateSpin Migrate uploads the specified action, along with its dependencies, to the target and executes it.

Custom post-migration actions are supported for the following job types:

- ♦ One-time Server Sync
- ♦ Peer-to-peer workload migration

For the capability to select a post-migration action to run as part of a migration job, you must first save the action and its dependencies in a dedicated directory and add it to the PlateSpin Server's library. The maximum size of the directory must not exceed 64 MB. For information about raising this limit, see ["Increasing the Size Limit on Post-migration Actions Uploaded to the PlateSpin Server" on page 45](#).

Use the following procedure for adding a post-migration action to the PlateSpin Server's library of custom actions.

- 1 Create the action, test it on a sample workload, and save it together with its dependencies in a directory that the PlateSpin Server can access.

Take special care when developing post-migration actions for Linux workloads, which allow different characters in file names and support different ACL (Access Control List) permissions. For Linux operating systems, amalgamate the action's directory structure into a single file.

See [KB Article 7970214 \(https://www.netiq.com/support/kb/doc.php?id=7970214\)](https://www.netiq.com/support/kb/doc.php?id=7970214).

- 2 In the PlateSpin Migrate Client, click *Tools > Manage Actions*.
- 3 Click *Add*.

Add Action

Add Action :

Action Name:

☒ Windows ☐ Linux ☐ Solaris

Files :

Action Folder:

| File Name | Size | Date Modified |
|---|-----------|-----------------------|
| (post-conversion) ACTIONS\X2P_IP\1.bat | 2.73 KB | 6/12/2009 12:05:18 AM |
| (post-conversion) ACTIONS\X2P_IP\2.bat | 30.29 KB | 6/12/2009 12:07:18 AM |
| (post-conversion) ACTIONS\X2P_IP\3.bat | 18.42 KB | 6/12/2009 12:08:00 AM |
| (post-conversion) ACTIONS\X2P_IP\X2P_IP.bat | 4.65 KB | 6/12/2009 12:08:17 AM |
| (post-conversion) ACTIONS\X2P_IP\X2P_IP.exe | 228.05 KB | 6/12/2009 12:12:32 AM |

File to Execute:

Default Options :

Command line arguments:

Execution timeout: seconds

☒ No timeout

- 4 In the Add Action window, type a name for your custom action, select the target operating system type, then browse to and select the directory that contains the required action with its dependencies.

PlateSpin Migrate populates the list with the contents of the selected folder.

- 5 In the *File Name* column, select the required executable, then click *Set*.
- 6 In the *Default Options* section, specify any required command line arguments and an execution timeout, then click *OK*.

PlateSpin Migrate packages and uploads the library.

The action is now available for selection in migration jobs. See [“Including a Custom Post-migration Action in a Migration Job” on page 146](#).

3.6.2 Freeze and Thaw Scripting Capabilities (Linux Block-Level Migrations)

PlateSpin Migrate provides an additional means of control over your Linux block-level migration process — the freeze and thaw shell scripts.

These scripts are executed during Linux workload migrations, at the beginning and end of block-level data transfer sessions. Specifically, they interject in the migration process in the following fashion:

1. First pass of all volumes without snapshots:
 - ♦ Regular (non-LVM) volumes
 - ♦ LVM without enough space to take a snapshot
2. *Freeze script*
3. Take snapshots
4. Second pass of all non-snapshot volumes
5. *Thaw script*
6. Transfer volume snapshots

You can use this capability to complement the automated daemon control feature provided through the user interface (see [“Handling Source Workload Services or Daemons During Live Transfer \(Windows and Linux\)” on page 129](#)).

For example, you might want to use this feature to cause an application to flush its data to disk so that the workload remains in a more consistent state during a Live Transfer migration.

To use the feature, do the following before setting up your migration job:

- 1 Create the following files:
 - ♦ `platespin.freeze.sh`— to contain the freeze shell script logic
 - ♦ `platespin.thaw.sh`— to contain the thaw shell script logic
 - ♦ `platespin.conf`. A text file defining any required arguments, along with a timeout value.

The required format for the contents of the `platespin.conf` file is:

```
[ServiceControl]
(optional) FreezeArguments=<arguments>
(optional) ThawArguments=<arguments>
(optional) TimeOut=<timeout>
```

Replace `<arguments>` with the required command arguments, separated by a space, and `<timeout>` with a timeout value in seconds. If unspecified, the default timeout is used (60 seconds).

- 2 Save the scripts, along with the .conf file, on your Linux source workload, in the following directory:

/etc/platespin/

3.7 Setting Up, Executing, and Managing Jobs

Most discovery and portability operations are defined, executed, and monitored as PlateSpin Migrate jobs.

- ♦ [Section 3.7.1, “Setting Up a Migration Job \(Wizard vs. Advanced\),” on page 74](#)
- ♦ [Section 3.7.2, “Pre-migration Job Validation,” on page 78](#)
- ♦ [Section 3.7.3, “Saving Migration Jobs,” on page 78](#)
- ♦ [Section 3.7.4, “Starting a Saved Migration Job in the Jobs View,” on page 78](#)
- ♦ [Section 3.7.5, “Changing the Start Time of a Saved Migration Job,” on page 79](#)
- ♦ [Section 3.7.6, “Viewing the Parameters of a Completed or In-Progress Migration Job,” on page 79](#)
- ♦ [Section 3.7.7, “Canceling an In-Progress Job,” on page 79](#)
- ♦ [Section 3.7.8, “Controlling the State of Source Workloads in the Jobs View,” on page 79](#)
- ♦ [Section 3.7.9, “Generating Job Reports,” on page 79](#)
- ♦ [Section 3.7.10, “Job Diagnostics,” on page 80](#)

3.7.1 Setting Up a Migration Job (Wizard vs. Advanced)

You can set up a migration job and specify the job configuration parameters in one of the following two modes:

- ♦ **Advanced mode (Windows and Linux):** Uses the Conversion Job window, which provides access to job configuration parameters.
- ♦ **Wizard mode (Windows only):** Provides a convenient subset of the Advanced method and interactively captures only the essential parameters of a migration job.

The following sections provide more information:

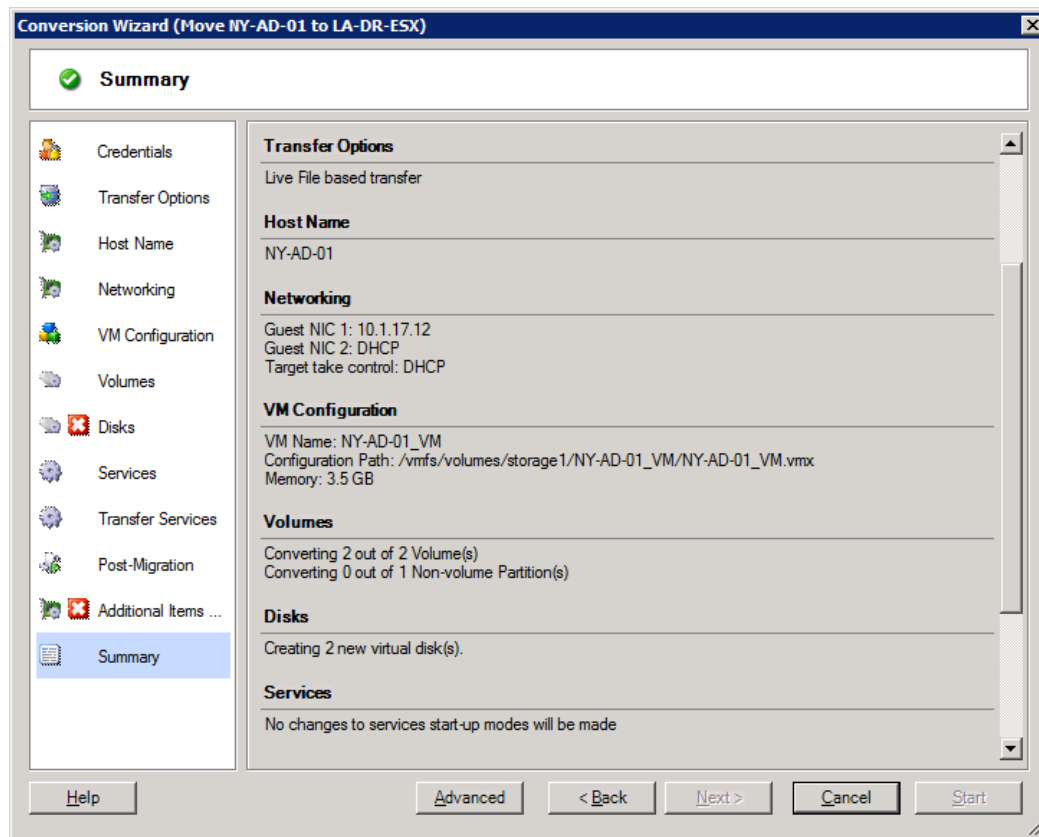
- ♦ [“Differences Between the Advanced and Wizard Job Configuration Modes” on page 74](#)
- ♦ [“Starting a Migration Job” on page 76](#)

Differences Between the Advanced and Wizard Job Configuration Modes

The Advanced (Windows and Linux) and Wizard (Windows only) job configuration modes differ in the extent of available configuration options.

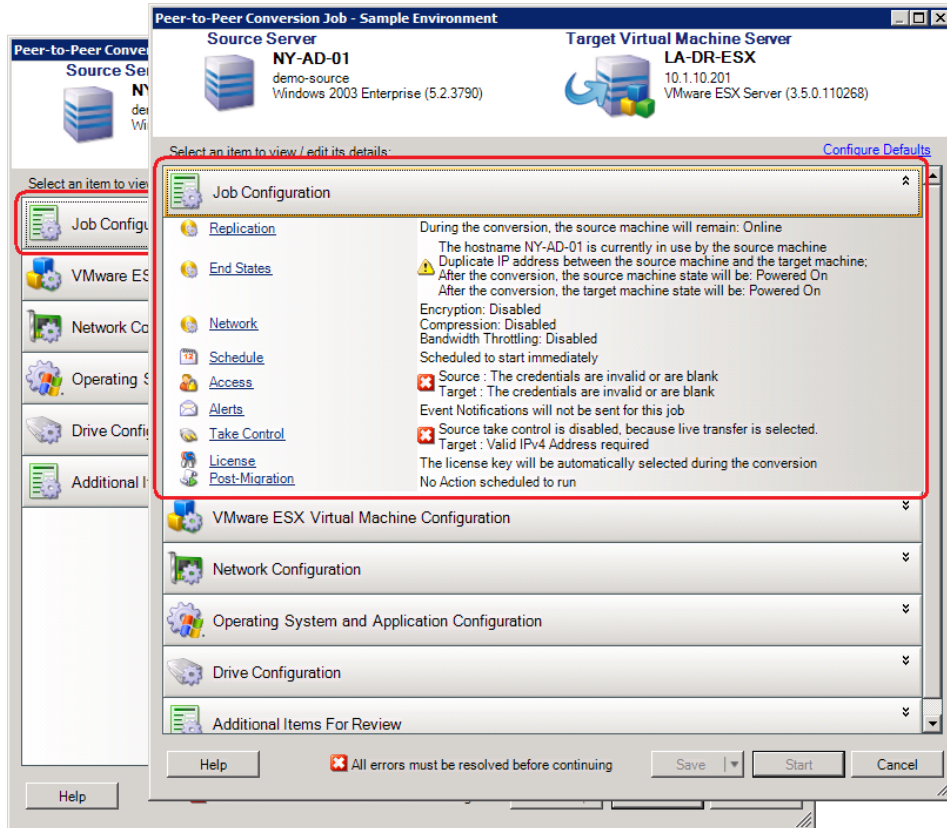
In Wizard mode, PlateSpin Migrate provides a convenient subset of the Advanced method, interactively captures the essential parameters of a migration job, itemizes settings specified in previous wizard pages, and provides a summary at the end.

Figure 3-6 Job Configuration Window in Wizard (Windows only) Mode



In Advanced mode, PlateSpin Migrate provides access to enhanced job configuration options and advanced settings for some aspects of a migration job. In Advanced mode, you access settings for an aspect of a migration job by clicking links that are grouped in categories. To hide or show category details, click the category bar.

Figure 3-7 Job Configuration Window in Advanced Mode



You can access the following enhanced job configuration options in Advanced mode, but cannot access them in Wizard mode:

- ♦ Specifying a non-default license for a migration job.
See [“Selecting a License Key for a Migration Job”](#) on page 107.
- ♦ Enabling automatic job progress and status notifications.
See [“Configuring Automatic E-Mail Alerts of Job Status and Progress”](#) on page 108.
- ♦ Job scheduling options.
See [“Job Scheduling”](#) on page 115.
- ♦ Advanced options for target virtual machine configuration.
See [“Virtualization Platform-Specific and Advanced VM Configuration Options”](#) on page 124.
- ♦ Saving the job for on-demand execution at a later time.
See [“Saving Migration Jobs”](#) on page 78.

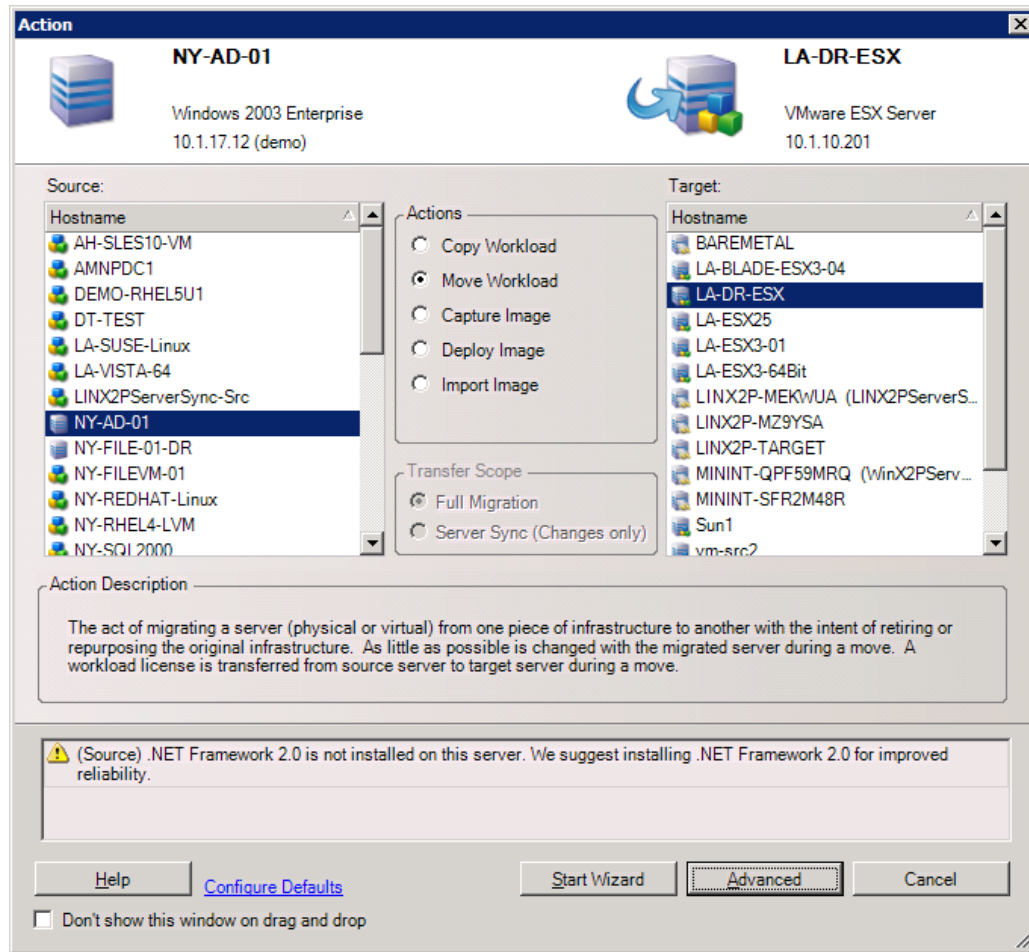
Starting a Migration Job

To start setting up a migration job and select either the Advanced or the Wizard method:

- 1 Open the Action window by using one of the following methods:
 - ♦ Drag a discovered source and drop it on a discovered target.
 - ♦ Click a task in the Tasks pane.

- ♦ Click the New Job toolbar.
- ♦ In the Jobs view, right-click a source and select a command from the context menu. Available commands depend on the type of source.

The Action window opens:



The Source and Target panes display workloads and targets applicable to the selected type of a migration job.

The *Full Transfer* and *Server Sync* options are enabled under the following circumstances:

- ♦ The system detects an existing operating system on the target
- ♦ The operating system profile of the target matches that of the source workload


See [“Synchronizing Workloads with Server Sync” on page 84](#).


- 2 Check validation messages at the bottom of the window.
- 3 To start configuring your migration job in either Wizard (Windows only) or Advanced mode, click *Start Wizard* or click *Advanced*.
- 4 (Optional) For convenience, to avoid displaying the *Action* window on drag-and-drop, select *Don't show on drag and drop* before proceeding. Subsequent drag-and-drops bypass the *Action* window and directly open a Conversion Job window in Advanced mode.

To restore the job migration startup behavior, restore application defaults. See [“General Options” on page 39](#).

3.7.2 Pre-migration Job Validation

When starting a migration job, PlateSpin Migrate validates the job type, the source, the target, and the selected parameters, and might generate errors and warnings.

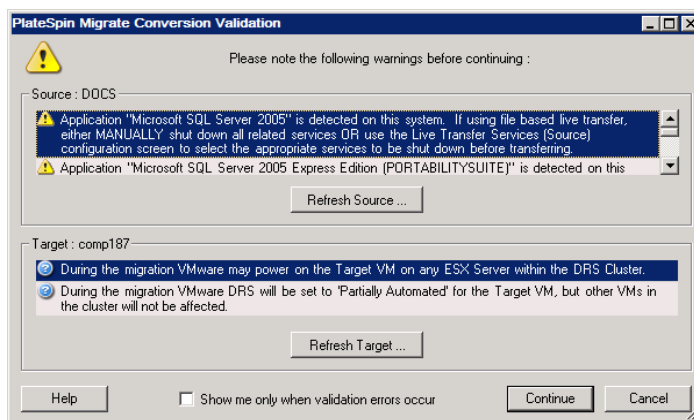
 Error markers show configurations that you need to change before the migration job can start.

 Warning markers alert you to settings that should be confirmed prior to starting the migration.

In a default PlateSpin Migrate configuration, validation messages display at the bottom of the Action window. See [Step 1](#).

If you have configured PlateSpin Migrate to bypass the Action window on drag-and-drop, errors and warnings are displayed in a separate window:

Figure 3-8 *Migration Validation Window*

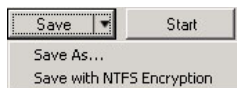


To force this window to open only on errors, select the *Show me only when validation errors occur* option.

3.7.3 Saving Migration Jobs

When you start a migration job in Advanced mode, you have additional options for saving the job and executing it at a later time.

After all options have been configured for the job, click the arrow at the right side of the *Save* button, then select a command from the drop-down list:



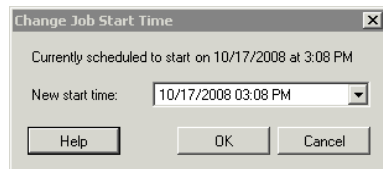
3.7.4 Starting a Saved Migration Job in the Jobs View

- 1 In the PlateSpin Migrate Client's Jobs view, click the Saved Jobs tab and locate the required saved job.
- 2 Right-click the job and select *Start*.
PlateSpin Migrate starts the migration job.

3.7.5 Changing the Start Time of a Saved Migration Job

- 1 In the PlateSpin Migrate Client's Jobs view, locate the required saved job.
- 2 Right-click the job and select *Change Start Time*.

The Change Job Start Time dialog box opens.



- 3 Specify the required new start date and time, then click *OK*.
PlateSpin Migrate reschedules the job and executes it at the specified time.

3.7.6 Viewing the Parameters of a Completed or In-Progress Migration Job

- 1 In the PlateSpin Migrate Client's Jobs view, locate the required job.
- 2 Right-click the job and select *View*.

PlateSpin Migrate opens the job configuration window in Advanced mode and displays the job's configuration parameters in read-only mode.

3.7.7 Canceling an In-Progress Job

- 1 In the PlateSpin Migrate Client's Jobs view, locate the required job.
- 2 Right-click the job and select *Abort*.

3.7.8 Controlling the State of Source Workloads in the Jobs View

You can restart or shut down your source workload in the Jobs view, unless it is in an active migration job.

- 1 In the PlateSpin Migrate Client's Jobs view, locate the required job.
- 2 Right-click the job and select *Restart Source* or *Shutdown Source* as applicable.

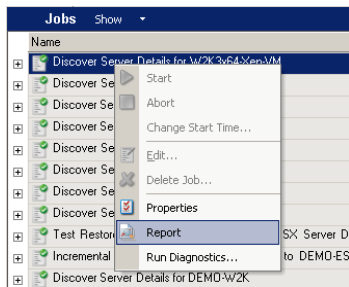
To automate the startup state of source and target workloads, specify the required post-migration state in your migration job. See [“Specifying Replication Options” on page 109](#).

3.7.9 Generating Job Reports

You can generate detailed reports of running and completed jobs. A report records the tasks performed during the job.

To generate a job report:

- 1 In the PlateSpin Migrate Client's *Jobs* view, locate the required job.
- 2 Right-click the job and select *Report*.



A Web browser window displays the requested report.

3.7.10 Job Diagnostics

PlateSpin Migrate provides a tool that can produce a diagnostics report for any running or completed job.

To view a diagnostics report:

- 1 In the PlateSpin Migrate Client Jobs view, right-click the required job and select *Run Diagnostics*.
The diagnostics report is displayed in a browser window. This process might take a few moments.

The diagnostics report lists several statistics:

- ♦ All the operations involved in the job. Click any operation to view its XML representation.
- ♦ The status of each operation.
- ♦ The controller that ran the operation. Click the controller to view its XML representation, or click *Logs* to view its event log.

In addition, the report contains links to:

- ♦ The XML representations of the source machine, original target machine, and the target VM host.
- ♦ The root operation for the job, as well as a variety of logs and reports.

Diagnostics reports can be sent directly to technical support by following the instructions provided on the report.

4 Workload Portability with Peer-to-Peer Workload Migrations

Peer-to-peer refers to workload portability operations that result in a booted or bootable workload on physical hardware or a virtual machine. P2P, P2V, V2V, and V2V migrations are all peer-to-peer.

This section provides information about peer-to-peer workload portability jobs and best practices.

- ♦ [Section 4.1, “Migrating a Workload to a VM Host \(P2V, V2V\),” on page 81](#)
- ♦ [Section 4.2, “Converting a Workload to a Physical Machine \(P2P, V2P\),” on page 82](#)
- ♦ [Section 4.3, “Synchronizing Workloads with Server Sync,” on page 84](#)
- ♦ [Section 4.4, “Semi-Automated Workload Virtualization Using the X2P Workflow,” on page 88](#)

4.1 Migrating a Workload to a VM Host (P2V, V2V)

To initiate a peer-to-peer workload virtualization migration job:

- 1 Discover or refresh your source workload and your target VM host.
[See “Discovering Source Workloads and Migration Targets” on page 56.](#)
- 2 Start a migration job.
[See “Setting Up a Migration Job \(Wizard vs. Advanced\)” on page 74.](#)
- 3 Configure the required parameters of the job.
[See “Essentials of Workload Migration Jobs” on page 107.](#)
- 4 Run the job.

Figure 4-1 Peer-to-Peer Migration Job Window (P2V in Advanced Mode)



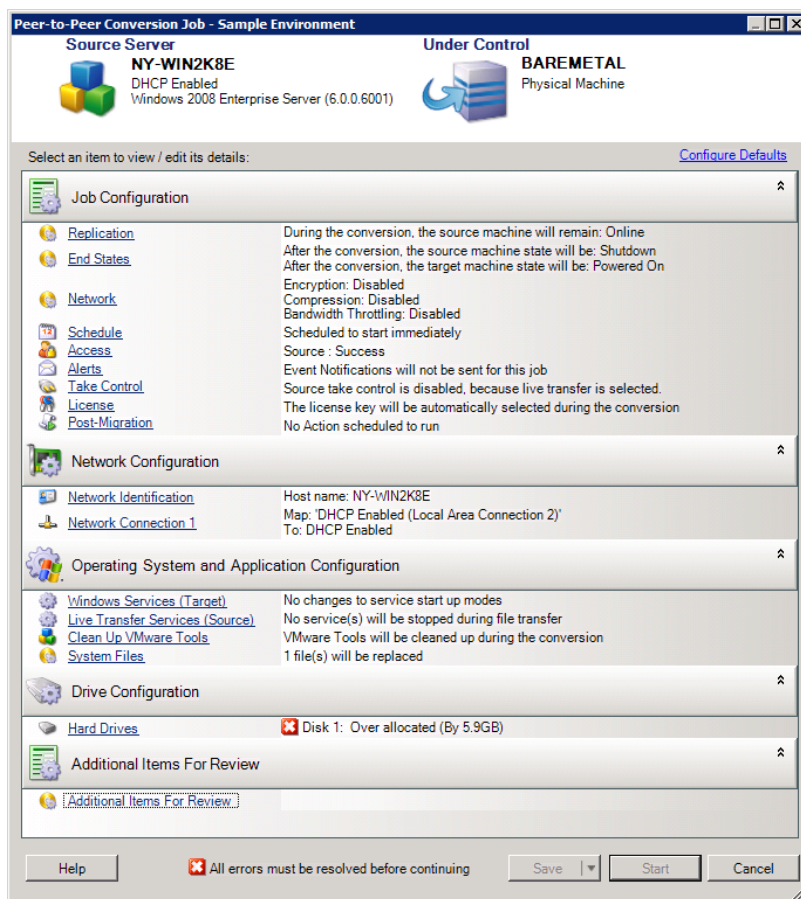
4.2 Converting a Workload to a Physical Machine (P2P, V2P)

To initiate a peer-to-peer workload migration to a physical machine:

- 1 Discover your source workload.
See “[Discovering Source Workloads and Migration Targets](#)” on page 56.
- 2 Discover and register your target physical machine with PlateSpin Migrate.
See “[Discovering Target Physical Machines](#)” on page 59.

- 3 (Recommended) Use PlateSpin Analyzer to ensure that:
 - ♦ Your source operating system and hardware are supported by PlateSpin Migrate.
 - ♦ PlateSpin Migrate's X2P device driver library contains device drivers that your target requires for the operating system being ported.
 See [“Analyzing Machines with PlateSpin Analyzer” on page 62.](#)
- 4 (Conditional) If drivers for the physical target are missing, upload the required drivers to the PlateSpin Migrate's X2P device driver library.
 See [“Working with Device Drivers” on page 64.](#)
- 5 Start a migration job.
 See [“Setting Up a Migration Job \(Wizard vs. Advanced\)” on page 74.](#)
- 6 Configure the required parameters of the job.
 See [“Essentials of Workload Migration Jobs” on page 107.](#)
- 7 Run the job.

Figure 4-2 Peer-to-Peer Conversion Job Window (V2P in Advanced Mode)



4.2.1 Best Practices (X2P)

- ♦ When you are migrating a workload from one vendor to a target hardware infrastructure from another vendor (for example, from HP to Dell), or if your source is a virtual machine, make sure that you disable vendor-specific or VM-specific services during the transfer. For example, the HP Insight service and the VMware Tools service.

See [“Handling Operating System Services and Applications”](#) on page 128.

- ♦ When you are using the Offline transfer method for P2P and V2P migrations, make sure that you select the appropriate Full Duplex speed that matches your network Full Duplex mode.

See [“Setting Up Migration Networking”](#) on page 116.

- ♦ Ensure that vendor partitions are not being copied from the source.

See [“Handling a Workload’s Storage Media and Volumes”](#) on page 133.

4.3 Synchronizing Workloads with Server Sync

The Server Sync feature enables you to reduce the scope of data that is transferred from your source to your target to just data that is different between a source and a target, effectively synchronizing their volume contents.

For example, when setting up a job for a workload portability operation, you can choose to update an existing physical or virtual machine to match the state of your source workload without transferring volume data in its entirety. PlateSpin Migrate compares the target physical or virtual workload with the selected source and transfers only data that is different between the two, overwriting files on the target with those on the source workload.

Server Sync is useful in situations where the size of volume data or network conditions are prohibitive for a direct source-to-target virtualization over the network.

- ♦ [Section 4.3.1, “Server Sync to a Virtual Target,”](#) on page 84
- ♦ [Section 4.3.2, “Server Sync to a Physical Target,”](#) on page 87

4.3.1 Server Sync to a Virtual Target

- 1 Discover your source workload.

See [“Discovering Source Workloads and Migration Targets”](#) on page 56.

- 2 Create a target virtual machine by using one of the following methods:

- ♦ Do an initial migration of your workload to a virtual machine. See [“Migrating a Workload to a VM Host \(P2V, V2V\)”](#) on page 81.
- OR -
- ♦ Using your virtualization platform’s native interface, manually install a virtual machine with the same operating system profile as that of your source.

NOTE: When you are creating a virtual target for Server Sync, you should also manually install the appropriate virtualization enhancement tools, such as VMware Tools or XenServer Tools.

- OR -
- ♦ (Windows only) Capture your workload to a PlateSpin Image, and deploy it to a virtual machine on your virtualization platform. See [“Capturing a Workload to a PlateSpin Image”](#) on page 99 and [“Deploying a PlateSpin Image”](#) on page 101.

3 (Conditional; Hyper-V only) Because the Server Sync option is disabled for a Hyper-V VM, it is necessary to use the following steps, as documented in KB 7010748 (<https://www.netiq.com/support/kb/doc.php?id=7010748>):

3a After booting the target VM with the LRD ISO ((bootofx.x2p.iso for BIOS firmware-based targets and bootofx.x2p.uefi.iso for UEFI firmware-based targets) wait for the Migrate Server URL prompt, Then press Alt+F7 to launch the debug console.

3b From the debug console, run the following command to determine which devices are /, / boot and swap:

```
fdisk -l
```

3c Using the information obtained from the debug console, mount the appropriate devices as under:

```
mount /dev/%root device% /
mount /dev/%boot device% /boot
```

3d Press Alt+F1 to switch to the server command line.

3e At the command line, provide the required information at each individual prompt:

- ♦ **PlateSpin Server:** Use the following format:

```
http://server_host/platespinmigrate
```

Replace *server_host* with the actual PlateSpin Server host's name or IP address.

- ♦ **Credentials (User Name/Password):** Enter the name of an admin-level user on the PlateSpin Server host, including the domain or machine name. For example: *domain\username*, or *localhost\Administrator*. Provide a valid password for the specified user.

- ♦ **Network Card:** Select the network card that is active, then either enter a temporary static IP address for this card or press the Enter key to use a DHCP server.

- ♦ **Temporary hostname:** Provide a temporary VM name for PlateSpin Migrate Client to use to list the newly registered VM. The workload's target hostname you select in the migration job overwrites this name.

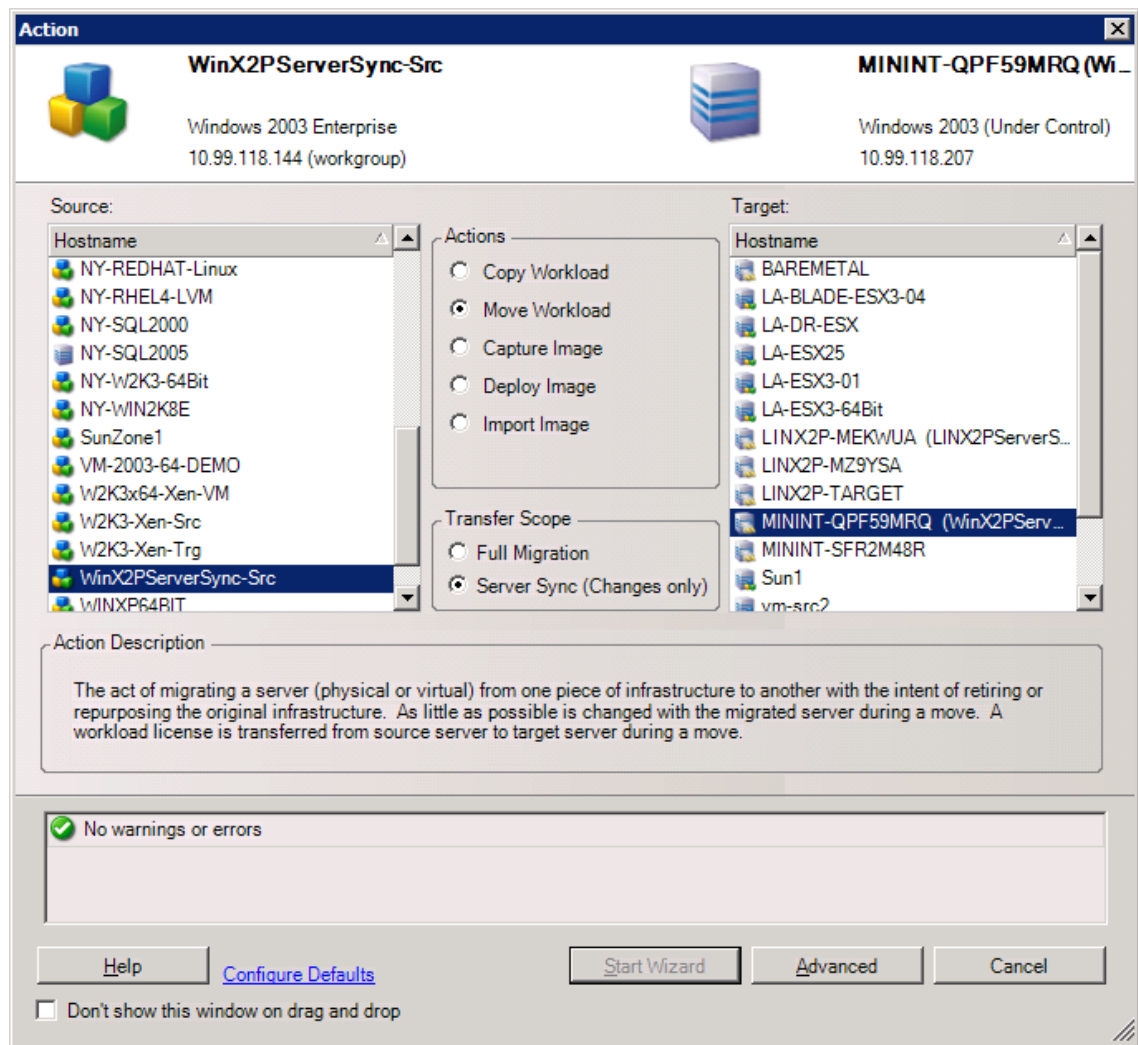
- ♦ **SSL encryption:** If your PlateSpin Migrate is installed on a host with SSL encryption enabled, enter Yes. If not, enter No.

- ♦ **PlateSpin Migrate Network:** Unless you have defined your own PlateSpin Migrate Network in PlateSpin Migrate Client, press the Enter key. If you are working with a non-default PlateSpin Migrate Network, type its name, then press the Enter key.

A controller on your target virtual machine communicates with PlateSpin Server and registers the virtual machine as a physical target for a migration job.

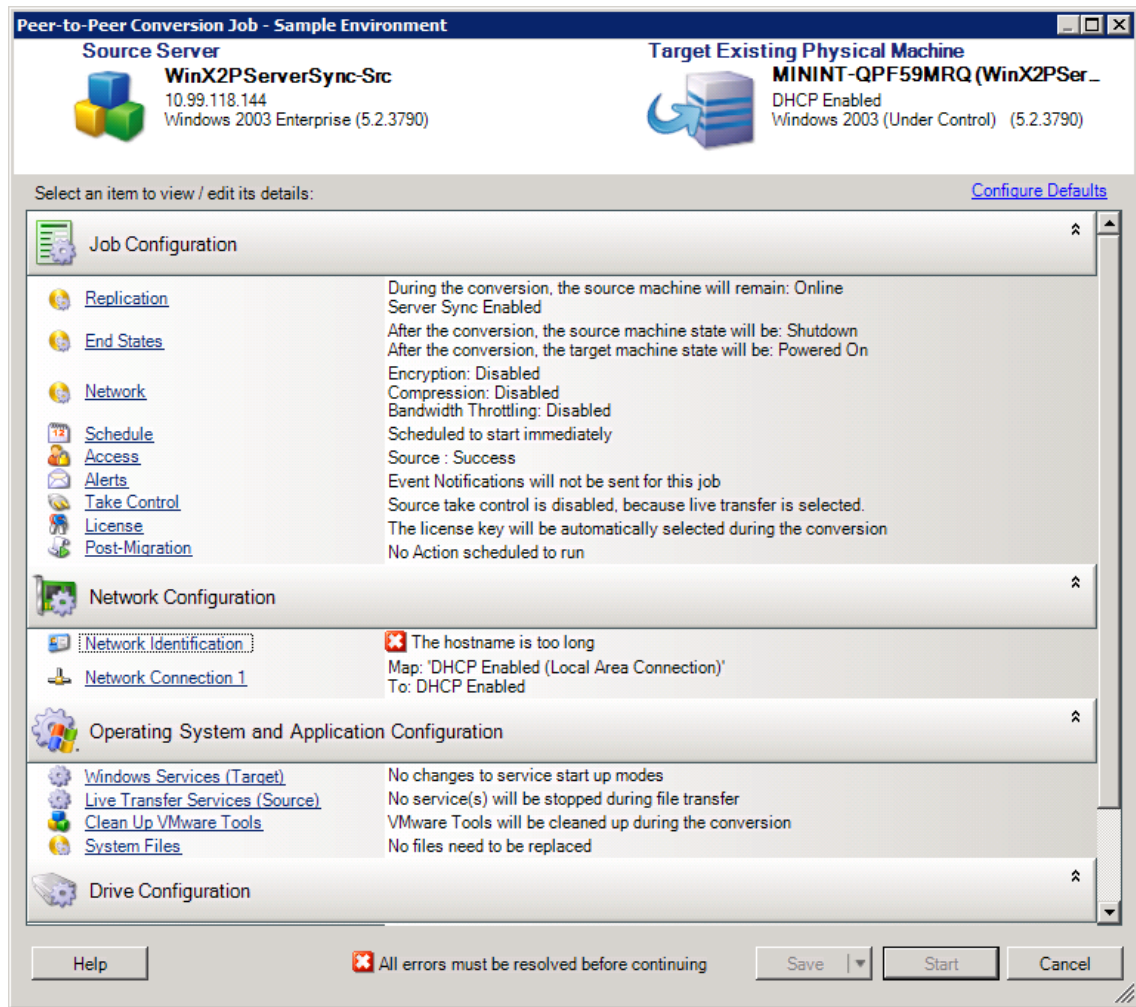
4 In the Servers view, drag your source workload and drop it on the required target (Server Sync target or discovered physical machine under control).

The system validates the selected source and target and, if it detects matching operating systems on them, provides you with two *Transfer Scope* options, *Full Migration* and *Server Sync*:



- 5 Select the *Server Sync* option, then click *Advanced* (you can only set up a Server Sync job in Advanced mode).

A Server Sync job configuration window opens in Advanced mode:



- 6 In the job configuration window, specify the parameters of the job as dictated by the purpose of the operation, address any warnings and errors, and make sure that you map the required volumes on the source to those on the target (see [“Volume Configuration in Server Sync”](#) on page 143).

When you have finished, click *Start*.

PlateSpin Migrate starts the job and lists it in the Jobs view.

4.3.2 Server Sync to a Physical Target

- 1 Discover your source workload.
See [“Discovering Source Workloads and Migration Targets”](#) on page 56.
- 2 Discover your physical target by using the appropriate boot ISO boot image.
See [“Discovering Target Physical Machines”](#) on page 59.
- 3 In the Servers view, drag your source workload and drop it on the required target (Server Sync target or discovered physical machine under control).
The system validates the selected source and target and, if it detects matching operating systems on them, it provides you with two *Transfer Scope* options, *Full Migration* and *Server Sync*, similar to the [Server Sync to a Virtual Target](#) scenario (see [Step 4](#)).

- 4 Select the *Server Sync* option, then click *Advanced* (you can only set up a Server Sync job in Advanced mode).

A Server Sync job configuration window opens in Advanced mode:

- 5 In the job configuration window, specify the parameters of the job as dictated by the purpose of the operation, address any warnings and errors, and make sure that you map the required volumes on the source to those on the target.
- 6 When you have finished, click *Start*.

PlateSpin Migrate starts the job and lists it in the Jobs view.

4.4 Semi-Automated Workload Virtualization Using the X2P Workflow

Semi-automated refers to the process of workload virtualization in which a workload's target infrastructure is a virtual machine that PlateSpin Migrate regards as a physical machine. This applies to the following virtualization platforms:

- ♦ Windows Server 2008 R2 Hyper-V
- ♦ Windows Server 2012 Hyper-V
- ♦ Windows Server 2012 R2 HyperV (Generation 1 VMs only)
- ♦ Citrix XenServer 6.1
- ♦ SUSE Linux Enterprise Server (SUSE) 11 SP3 Xen (fully virtualized guest)

To migrate a workload to one of these platforms:

- 1 Use the native interface of the required virtualization platform to create a virtual machine whose operating system profile matches that of your source workload.
- 2 Begin booting the newly created virtual machine by using the appropriate PlateSpin boot ISO image, load the appropriate driver, if needed, then continue the boot process.

This discovers and registers the target virtual machine as a PlateSpin Migrate physical machine target. This is similar to the process described in [“Discovering Target Physical Machines” on page 59](#). However, instead of burning the ISO image to a CD to boot physical hardware, you save the image on the VM host and use it to boot the target VM.

- 3 Use the PlateSpin Migrate Client to create and execute an X2P migration job.
- 4 Upon completion of the migration job, install virtualization enhancement software specific to the target virtualization platform.

The following topics provide additional notes about migrating workloads to the specific virtualization platform involved.

- ♦ [Section 4.4.1, “Migrating a Workload to Microsoft Hyper-V,” on page 89](#)
- ♦ [Section 4.4.2, “Migrating a Workload to Citrix XenServer,” on page 91](#)
- ♦ [Section 4.4.3, “Migrating a Workload to the SLES 11 SP3 Xen Hypervisor,” on page 93](#)

4.4.1 Migrating a Workload to Microsoft Hyper-V

You can use Microsoft Hyper-V as the target virtualization platform in a semi-automated workload virtualization.

Prerequisites:

- ♦ Your source workload is supported by PlateSpin Migrate and Hyper-V.

See “Supported Target Virtualization Platforms” on page 18.

Additional information:

- ♦ [Microsoft Hyper-V Getting Started Guide \(http://technet.microsoft.com/en-us/library/cc732470.aspx\)](http://technet.microsoft.com/en-us/library/cc732470.aspx)
- ♦ [Virtualization with Hyper-V \(http://www.microsoft.com/windowsserver2008/en/us/hyperv.aspx\)](http://www.microsoft.com/windowsserver2008/en/us/hyperv.aspx)

This section includes the following topics:

- ♦ “Downloading and Saving the Boot ISO Image (Hyper-V)” on page 89
- ♦ “Creating and Configuring the Target Virtual Machine (Hyper-V)” on page 89
- ♦ “Registering the Virtual Machine with PlateSpin Server (Hyper-V)” on page 90
- ♦ “Migrating Your Source Workload to the Target Virtual Machine (Hyper-V)” on page 90
- ♦ “Post-Migration Steps (Hyper-V)” on page 91

Downloading and Saving the Boot ISO Image (Hyper-V)

- 1 Download the appropriate boot ISO image for your workload.
- 2 (Optional) If you want to perform an unattended registration of your target, update the ISO image with the required registration parameters.

See [KB Article 7920832 \(https://www.netiq.com/support/kb/doc.php?id=7920832\)](https://www.netiq.com/support/kb/doc.php?id=7920832).

- 3 Save the ISO image in a location that Hyper-V server can access. For example: c:\temp.

This ensures that the boot ISO image is available to the target VM as a bootable CD-ROM image.

Creating and Configuring the Target Virtual Machine (Hyper-V)

- 1 Use the Hyper-V Manager’s New Virtual Machine Wizard to create a new virtual machine with the following settings:
 - ♦ **Name and Location:** Specify a name for your new target and accept the default location.
 - ♦ **Assign Memory:** Assign at least 384 MB of RAM to the VM.
 - ♦ **Connect Virtual Hard Disk:** Ensure that the virtual disk size is equal to or greater than the system disk of your source workload.
 - ♦ **Installation Options:** Configure the VM to boot from an ISO image file, and point the wizard to the downloaded boot ISO image.
 - ♦ **Summary:** Configure the VM to not start upon creation (deselect the *Start the virtual machine after it is created* option).
- 2 After creating the VM, remove the default NIC and replace it with a generic one, called *Legacy Network Adapter*.

This is required because the New Virtual Machine Wizard creates a NIC of a custom Microsoft type, which is currently unsupported by PlateSpin Migrate.

- 3 Connect the newly added NIC (*Legacy Network Adapter*) to the external virtual network.

Registering the Virtual Machine with PlateSpin Server (Hyper-V)

Complete these steps to register your target with PlateSpin Server when you are using an unmodified boot ISO image.

- 1 At the command line in the Hyper-V Virtual Machine Connection Console, provide the required information at each individual prompt:
 - ♦ **PlateSpin Server:** Use the following format:
`http://server_host/platespinmigrate`
Replace *server_host* with the actual PlateSpin Server host's name or IP address.
 - ♦ **Credentials (User Name/Password):** Enter the name of an admin-level user on the PlateSpin Server host, including the domain or machine name. For example: *domain\username*, or *localhost\Administrator*. Provide a valid password for the specified user.
 - ♦ **Network Card:** Select the network card that is active, then either enter a temporary static IP address for this card or press the Enter key to use a DHCP server.
 - ♦ **Temporary hostname:** Provide a temporary VM name for PlateSpin Migrate Client to use to list the newly registered VM. The workload's target hostname you select in the migration job overwrites this name.
 - ♦ **SSL encryption:** If your PlateSpin Migrate is installed on a host with SSL encryption enabled, enter *Yes*. If not, enter *No*.
 - ♦ **PlateSpin Migrate Network:** Unless you have defined your own PlateSpin Migrate Network in PlateSpin Migrate Client, press the Enter key. If you are working with a non-default PlateSpin Migrate Network, type its name, then press the Enter key.

A controller on your target virtual machine communicates with PlateSpin Server and registers the virtual machine as a physical target for a migration job.

NOTE: If registration fails with an authorization error, you might need to synchronize the clocks of the source and the target, modify the LAN Manager Authentication Level on the target, or both. See [Table B-1, "Common Issues and Solutions Related to Discovery Operations," on page 151](#).

Migrating Your Source Workload to the Target Virtual Machine (Hyper-V)

- 1 Use PlateSpin Migrate Client to start an X2P migration job with your source workload being the job's migration source and the target being the new VM on Hyper-V.
See ["Converting a Workload to a Physical Machine \(P2P, V2P\)" on page 82](#).
- 2 Monitor the migration job in PlateSpin Migrate Client's Jobs view.
When the job reaches the *Configure Target Machine* step, the virtual machine's console returns to the boot prompt of the boot ISO image.
- 3 Shut down the virtual machine and reconfigure it to boot from disk rather than from the boot image.
- 4 Power on the virtual machine.
The migration job resumes, reboots the target, and completes the workload configuration.

Post-Migration Steps (Hyper-V)

Install Hyper-V Integration Services (virtualization enhancement software). For more information, see your *Microsoft Hyper-V Getting Started Guide*.

4.4.2 Migrating a Workload to Citrix XenServer

You can use Citrix XenServer as the target virtualization platform in a semi-automated workload virtualization.

Prerequisites:

- ♦ Your target is a fully virtualized (not paravirtualized) VM.
- ♦ Your source workload is supported by PlateSpin Migrate and Citrix XenServer.
See “Supported Target Virtualization Platforms” on page 18.

Additional information:

- ♦ *Citrix XenServer® 6.1.0 Administrator's Guide* (http://docs.vmd.citrix.com/XenServer/6.1.0/1.0/en_gb/reference.html)

This section includes the following topics:

- ♦ “Downloading and Saving the Boot ISO Image (Citrix XenServer)” on page 91
- ♦ “Creating and Configuring the Target Virtual Machine (Citrix XenServer)” on page 91
- ♦ “Registering the Virtual Machine with PlateSpin Server (Citrix XenServer)” on page 92
- ♦ “Migrating Your Source Workload to the Target Virtual Machine (Citrix XenServer)” on page 92

Downloading and Saving the Boot ISO Image (Citrix XenServer)

- 1 Download the appropriate PlateSpin boot ISO image.
- 2 (Optional) If you want to perform an unattended registration of your target, update the ISO image with the required registration parameters.
See KB Article 7013485 (<https://www.netiq.com/support/kb/doc.php?id=7013485>).

- 3 Save the downloaded image file in the following directory:

`/var/lib/xen/images`

Creating and Configuring the Target Virtual Machine (Citrix XenServer)

- 1 On Citrix XenServer, use the Virtual Machine Manager Wizard or the Create Virtual Machines program shortcut to create a new virtual machine and install an operating system that matches the profile of your source.

Ensure that the new virtual machine is created with the following settings:

- ♦ **Virtualization method:** Fully virtualized.
- ♦ **Memory:** Assign at least 384 MB of RAM to the VM. This ensures that the VM has sufficient resources during the migration and improves transfer speed. If the virtual machine requires less memory after the migration, reduce the assigned memory after the migration completes.

- ♦ **Disks:** Assign one or more disks, depending on the requirements of your source workload. The storage can be either a raw SAN LUN or a virtual disk. Also, create a Virtual CD-ROM assigned to the downloaded boot ISO image.
 - ♦ **Operating System:** Must match the operating system profile of your source workload.
- 2 Ensure that the VM is configured to restart on reboot by exporting the VM's settings from the xend database to a text file and making sure that the `on_reboot` parameter is set to `restart`. If not, shut down the VM, update the settings, and reimport them into the xend database.

For detailed instructions, see the [XenServer 6.1.0 Virtual Machine User's Guide \(http://support.citrix.com/article/CTX134587\)](http://support.citrix.com/article/CTX134587).

- 3 From the Virtual Machine Manager, launch the virtual machine console and monitor the boot process.

When the virtual machine completes the boot process, it prompts you for parameters that control the registration of the machine and its profile with PlateSpin Migrate. If you are using the unattended registration process, the required parameters are read from an answer file.

Registering the Virtual Machine with PlateSpin Server (Citrix XenServer)

Complete these steps to register your target with PlateSpin Server when you are using an unmodified boot ISO image.

- 1 At the command line, provide the required information at each individual prompt:
 - ♦ **PlateSpin Server:** Use the following format:
`http://server_host/platespinmigrate`
 Replace *server_host* with the actual PlateSpin Server host's name or IP address.
 - ♦ **Credentials (User Name/Password):** Enter the name of an admin-level user on the PlateSpin Server host, including the domain or machine name. For example:
domain\username, or *localhost\Administrator*. Provide a valid password for the specified user.
 - ♦ **Network Card:** Select the network card that is active, then either enter a temporary static IP address for this card or press the Enter key to use a DHCP server.
 - ♦ **Temporary hostname:** Provide a temporary VM name for PlateSpin Migrate Client to use to list the newly registered VM. The workload's target hostname you select in the migration job overwrites this name.
 - ♦ **SSL encryption:** If your PlateSpin Migrate is installed on a host with SSL encryption enabled, enter *Yes*. If not, enter *No*.
 - ♦ **PlateSpin Migrate Network:** Unless you have defined your own PlateSpin Migrate Network in PlateSpin Migrate Client, press the Enter key. If you are working with a non-default PlateSpin Migrate Network, type its name, then press the Enter key.

A controller on your target virtual machine communicates with PlateSpin Server and registers the virtual machine as a physical target for a migration job.

Migrating Your Source Workload to the Target Virtual Machine (Citrix XenServer)

- 1 Use PlateSpin Migrate Client to start an X2P migration job with your source workload being the job's migration source and the target being the new VM on the Citrix XenServer hypervisor.
 See ["Converting a Workload to a Physical Machine \(P2P, V2P\)" on page 82](#).
- 2 Monitor the migration job in the PlateSpin Migrate Client's Jobs view.

When the job reaches the *Configure Target Machine* step, the virtual machine's console returns to the boot prompt of the boot ISO image.

- 3 Shut down the virtual machine, reconfigure it to boot from disk rather than from the boot image, and deselect the *VS Tools Installed* option.
- 4 Power on the virtual machine.

The migration job resumes, reboots the target, and completes the workload configuration.

4.4.3 Migrating a Workload to the SLES 11 SP3 Xen Hypervisor

You can use the Xen Hypervisor on SLES as the target virtualization platform in a semi-automated workload virtualization.

Prerequisites:

- ♦ Your source workload is supported by PlateSpin Migrate and the Xen hypervisor.

See [“Supported Target Virtualization Platforms”](#) on page 18.

Additional information:

- ♦ [SUSE Linux Enterprise Server 11 SP3 Virtualization with Xen](https://www.suse.com/documentation/sles11/singlehtml/book_xen/book_xen.html) (https://www.suse.com/documentation/sles11/singlehtml/book_xen/book_xen.html)

This section includes the following topics:

- ♦ [“Downloading and Saving the Boot ISO Image \(Xen on SLES\)”](#) on page 93
- ♦ [“Creating and Configuring the Target Virtual Machine \(Xen on SLES\)”](#) on page 93
- ♦ [“Registering the Virtual Machine with PlateSpin Migrate Server \(Xen on SLES\)”](#) on page 94
- ♦ [“Migrating Your Source Workload to the Target Virtual Machine \(Xen on SLES\)”](#) on page 95
- ♦ [“Post-Migration Steps \(Xen on SLES\)”](#) on page 95

Downloading and Saving the Boot ISO Image (Xen on SLES)

- 1 Download the appropriate boot ISO image for your workload.
See [“Downloading the PlateSpin Boot ISO Images”](#) on page 59.
- 2 (Optional) If you want to perform an unattended registration of your target, update the ISO image with the required registration parameters.
See [KB Article 7920832](https://www.netiq.com/support/kb/doc.php?id=7920832) (<https://www.netiq.com/support/kb/doc.php?id=7920832>).
- 3 Save the downloaded image file in the following directory:
`/var/lib/xen/images`

Creating and Configuring the Target Virtual Machine (Xen on SLES)

- 1 On SLES 11, use the Virtual Machine Manager Wizard or the Create Virtual Machines program shortcut to create a new virtual machine and install an operating system that matches the profile of your source.

Ensure that the new virtual machine is created with the following settings:

- ♦ **Virtualization method:** Fully virtualized.

- ♦ **Memory:** Assign at least 384 MB of RAM to the VM. This ensures that the VM has sufficient resources during the migration and improves transfer speed. If the virtual machine requires less memory after the migration, reduce the assigned memory after the migration completes.
 - ♦ **Disks:** Assign one or more disks, depending on the requirements of your source workload. The storage can be either a raw SAN LUN or a virtual disk. Also, create a Virtual CD-ROM assigned to the downloaded boot ISO image.
 - ♦ **Operating System:** Must match the operating system profile of your source workload.
- 2 Ensure that the VM is configured to restart on reboot by exporting the VM's settings from the xend database to a text file and making sure that the `on_reboot` parameter is set to `restart`. If not, shut down the VM, update the settings, and reimport them into the xend database.
For detailed instructions, see your [SLES 11 documentation \(https://www.suse.com/documentation/sles11/\)](https://www.suse.com/documentation/sles11/).
 - 3 From the Virtual Machine Manager, launch the virtual machine console and monitor the boot process.
When the virtual machine completes the boot process, it prompts you for parameters that control the registration of the machine and its profile with PlateSpin Migrate. If you are using the unattended registration process, the required parameters are read from an answer file.

Registering the Virtual Machine with PlateSpin Migrate Server (Xen on SLES)

Complete these steps to register your target with PlateSpin Migrate Server when you are using an unmodified boot ISO image. For information on how to modify the image for an unattended registration process, see [KB Article 7920832 \(https://www.netiq.com/support/kb/doc.php?id=7920832\)](https://www.netiq.com/support/kb/doc.php?id=7920832).

- 1 At the command line, provide the required information at each individual prompt:
 - ♦ **PlateSpin Migrate Server:** Use the following format:
`http://server_host/platespinmigrate`
Replace *server_host* with the actual PlateSpin Migrate Server host's name or IP address.
 - ♦ **Credentials (User Name/Password):** Enter the name of an admin-level user on the PlateSpin Migrate Server host, including the domain or machine name. For example: *domain\username*, or *localhost\Administrator*. Provide a valid password for the specified user.
 - ♦ **Network Card:** Select the network card that is active, then either enter a temporary static IP address for this card or press the Enter key to use a DHCP server.
 - ♦ **Temporary hostname:** Provide a temporary VM name for PlateSpin Migrate Client to use to list the newly registered VM. The workload's target hostname you select in the migration job overwrites this name.
 - ♦ **SSL encryption:** If your PlateSpin Migrate is installed on a host with SSL encryption enabled, enter Yes. If not, enter No.
 - ♦ **PlateSpin Migrate Network:** Unless you have defined your own PlateSpin Migrate Network in PlateSpin Migrate Client, press the Enter key. If you are working with a non-default PlateSpin Migrate Network, type its name, then press the Enter key.
A controller on your target virtual machine communicates with PlateSpin Migrate Server and registers the virtual machine as a physical target for a migration job.

Migrating Your Source Workload to the Target Virtual Machine (Xen on SLES)

- 1 Use PlateSpin Migrate Client to start an X2P migration job with your source workload being the job's migration source and the target being the new VM on the Xen hypervisor.

See [“Converting a Workload to a Physical Machine \(P2P, V2P\)” on page 82](#).

- 2 Monitor the migration job in the PlateSpin Migrate Client's Jobs view.

When the job reaches the *Configure Target Machine* step, the virtual machine's console returns to the boot prompt of the boot ISO image.

- 3 Shut down the virtual machine, reconfigure it to boot from disk rather than from the boot image, and deselect the *VS Tools Installed* option.

- 4 Power on the virtual machine.

The migration job resumes, reboots the target, and completes the workload configuration.

Post-Migration Steps (Xen on SLES)

Install SUSE Drivers for Xen (virtualization enhancement software). For more information, see the following online document:

[SUSE Linux Enterprise Server 11 SP3 Virtualization with Xen \(https://www.suse.com/documentation/sles11/singlehtml/book_xen/book_xen.html\)](https://www.suse.com/documentation/sles11/singlehtml/book_xen/book_xen.html)

5 Windows Workload Portability with a PlateSpin Image

This section provides information about using the PlateSpin Image volume archiving feature (Windows only).

- ♦ [Section 5.1, “About PlateSpin Images,” on page 97](#)
- ♦ [Section 5.2, “Designating a PlateSpin Image Server,” on page 97](#)
- ♦ [Section 5.3, “Capturing a Workload to a PlateSpin Image,” on page 99](#)
- ♦ [Section 5.4, “Deploying a PlateSpin Image,” on page 101](#)
- ♦ [Section 5.5, “Managing PlateSpin Images,” on page 102](#)

5.1 About PlateSpin Images

One of PlateSpin Migrate’s three fundamental workload infrastructures, a PlateSpin Image is an image of a supported Windows workload consisting of volume data along with configuration specifics of the source server’s hardware, operating system, and network identity.

Image configurations are maintained in an XML (`config.xml`) file with each image having one or more sets of associated volume data.

PlateSpin Images and the image server’s `config.xml` configuration file are stored on the designated PlateSpin Image Server host in the following directory:

```
..\Program Files\PlateSpin Image Server
```

In addition to volume data directly captured during an X2I migration, PlateSpin Migrate supports existing or raw volume data.

Like peer-to-peer migrations, image deployment allows for key workload configuration options, such as those for managing the workload’s disk layout, volume sizes, network identity, and domain or workgroup affiliation.

5.2 Designating a PlateSpin Image Server

To work with PlateSpin Images, you must first designate a machine as an image server by installing the PlateSpin Image Server software on it. You can install a PlateSpin Image Server instance either on a dedicated host or on your PlateSpin Server host. For information about storing PlateSpin PlateSpin Images on a NAS (Network Attached Storage) device or a remote share, see [KB Article 7921021](https://www.netiq.com/support/kb/doc.php?id=7921021) (<https://www.netiq.com/support/kb/doc.php?id=7921021>).

NOTE: Although collocation of the PlateSpin Server with a PlateSpin Image Server instance on the same host is supported, the recommended setup is to install a PlateSpin Image Server on a dedicated host, which simplifies troubleshooting related to imaging functionality.

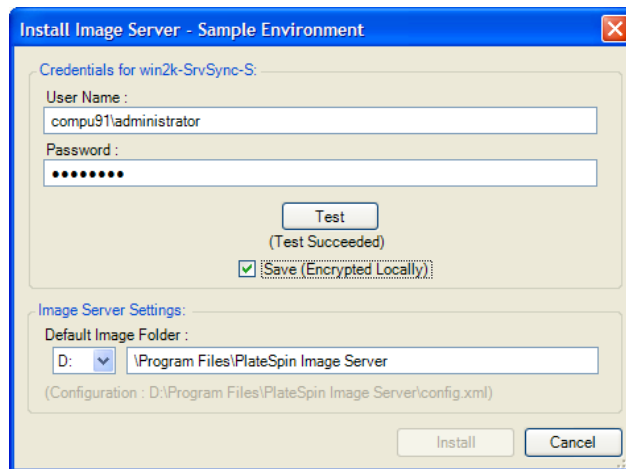
Dedicated PlateSpin Image Server hosts must meet the following requirements:

Table 5-1 PlateSpin Image Server Host Requirements


| Requirement | Details |
|------------------|---|
| Operating System | Any of the following: <ul style="list-style-type: none">◆ Microsoft Windows Server 2008 R2◆ Microsoft Windows Server 2008◆ Microsoft Windows Vista◆ Microsoft Windows Server 2003◆ Microsoft Windows 2000 |
| Disk Space | Minimum 100 MB for basic controller software. Additional space requirements depend on the number and size of workload images that you intend to store on a given image server. |
| Software | <ul style="list-style-type: none">◆ Microsoft .NET Framework 3.5 SP1◆ (Windows Server 2008 and Vista systems only) Remote Registry service enabled |

To designate a machine as a PlateSpin Image Server:

- 1 Discover the system you plan to designate as a PlateSpin Image Server.
- 2 In the Servers view, right-click the discovered server and select *Install Image Server*.



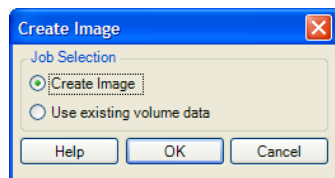
- 3 Provide administrator credentials for the selected host and specify the desired directory for image files.
- 4 Click *Install*.

PlateSpin Migrate installs a controller on the selected host and configures it to run as a PlateSpin Image Server. On completion, the Servers view lists a new PlateSpin Image Server item: 

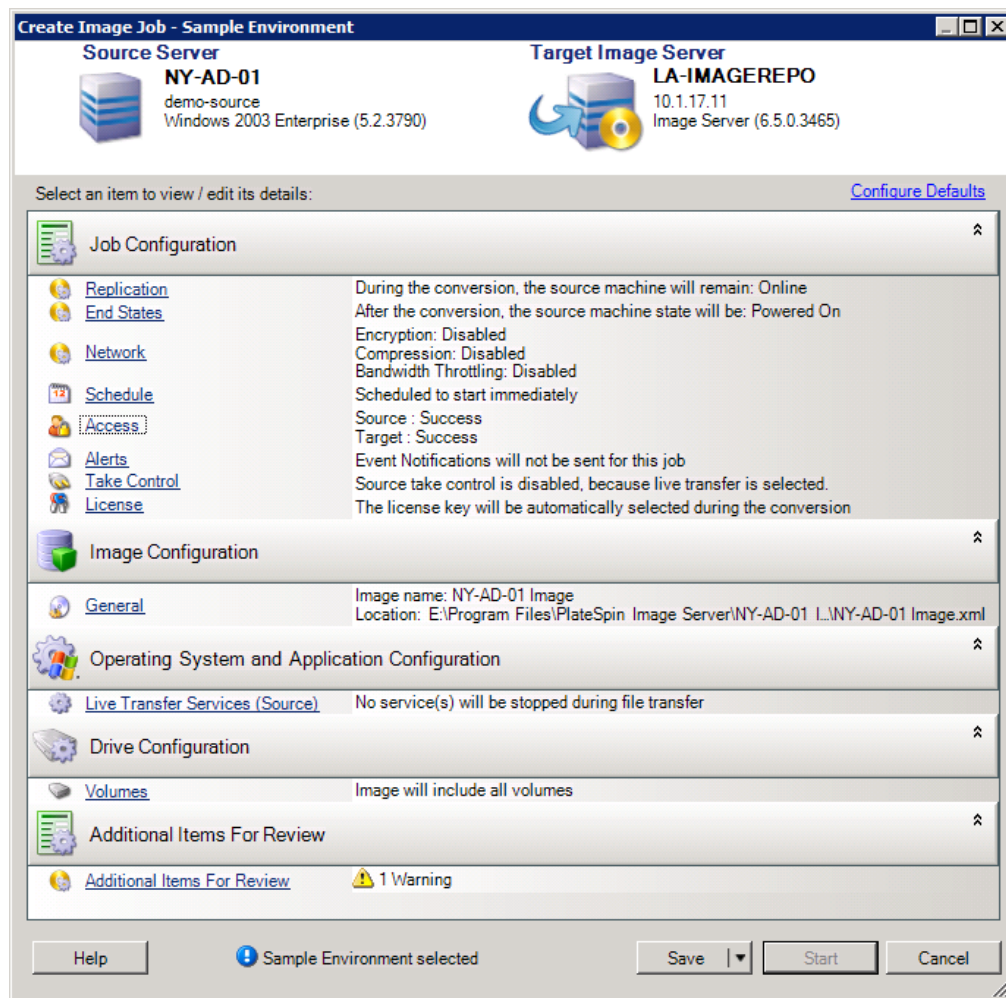
5.3 Capturing a Workload to a PlateSpin Image

Use this procedure to capture a physical or virtual workload as a PlateSpin Image.

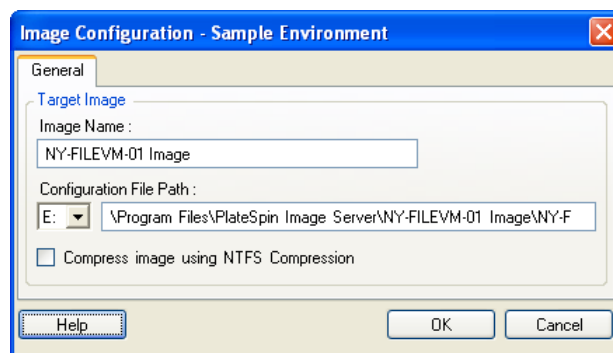
- 1 Discover, or refresh the details of, your source workload and your PlateSpin Image Server.
- 2 Start a new Capture Image job by using one of the following methods:
 - ♦ In the Servers view, right-click the source workload, then select *Capture Image*. In the Action window, select the source workload and the target image server.
 - ♦ In the Tasks pane, click *Capture Image*. In the Action window, select the source workload and the target image server.
 - ♦ In the Servers view, drag the source workload and drop it on the image server. If you configured PlateSpin Migrate to bypass the Action window on drag-and-drop, the Create Image dialog box prompts you to specify whether you want to create a new image or use existing volume data.



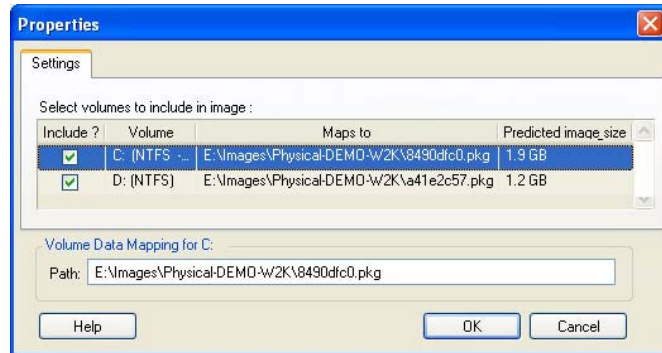
- 3 Select *Create Image*, then click *OK*.



- 4 Specify the required settings for the migration job by clicking the links in each category:
 - ♦ **Job Configuration:** Specify the required transfer method and operational continuity settings for your source and target (*General*), scheduling options (*Schedule*), source and target credentials (*Credentials*), job status and progress notification options, temporary network settings (*Take Control*), and the required license key to use (*License Key*).
 - ♦ **Image Configuration:** Specify the image name, the path to the location where the you want the image to be stored, and whether or not to use NTFS compression (under Image Configuration, click *General*).



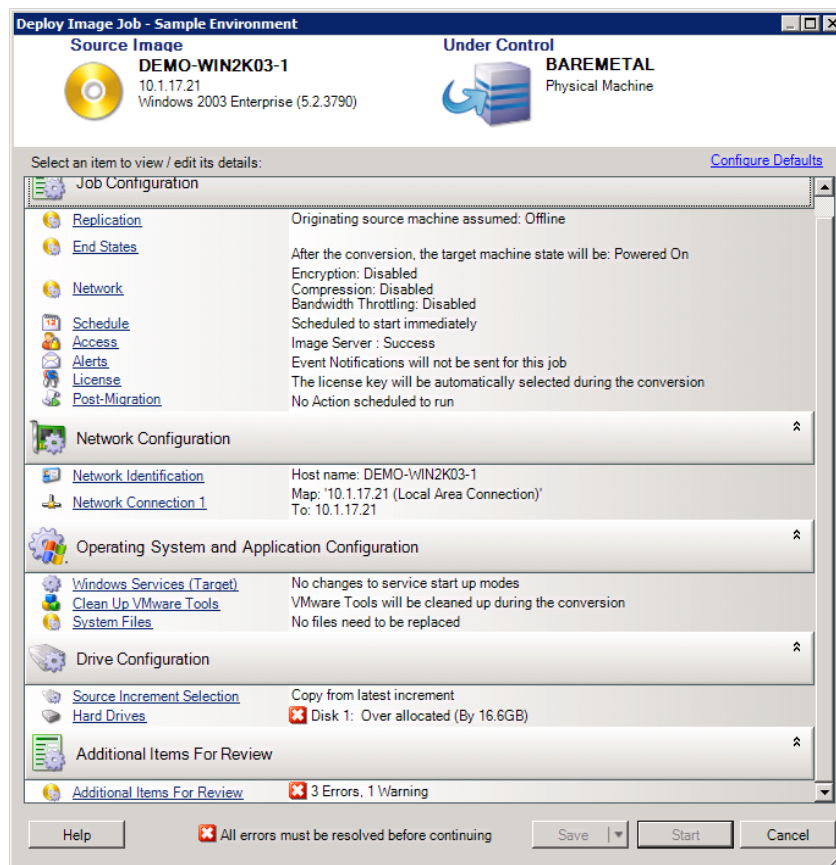
- ♦ **Operating System and Application Configuration:** If you selected the Live Transfer method, specify how you want PlateSpin Migrate to handle operating system and application services on your source (*Live Transfer Services*).
- ♦ **Drive Configuration:** Select the volumes that you want PlateSpin Migrate to include in the image and specify the path for the package file (under Drive Configuration, click *Volumes*).



5.4 Deploying a PlateSpin Image

Use this procedure to deploy a PlateSpin Image on a supported physical machine or virtualization platform.

- 1 Drag and drop the required PlateSpin Image to a discovered target physical machine or VM host.



- 2 Specify the required settings for the migration job by clicking the links in each category.
Migration jobs are auto-configured to create the target machine with the same settings as the source server. Depending on the objectives of the migration, you can:
 - ♦ Modify the *Network Identification* settings to configure the hostname and domain/workgroup registration of the target machine.
 - ♦ Modify the *Guest NIC* settings to configure the TCP/IP properties for the network adapters on the target machine.
 - ♦ Modify the *Drive Configuration* settings to select the volumes to copy during the migration.
- 3 If the intended target is a virtual machine, specify the required virtual machine parameters and select the options you require, such as memory allocation, or automatic installation of VMware Tools or VMAdditions.
- 4 Review and address errors and warnings.
- 5 Click *Start* to deploy the image.

5.5 Managing PlateSpin Images

- ♦ [Section 5.5.1, “Moving Images from One PlateSpin Image Server to Another,” on page 102](#)
- ♦ [Section 5.5.2, “Automating Image Operations,” on page 102](#)
- ♦ [Section 5.5.3, “Browsing and Extracting Image Files,” on page 103](#)

5.5.1 Moving Images from One PlateSpin Image Server to Another

- 1 Copy the image directory from the old PlateSpin Image Server host’s file system to a location on the new PlateSpin Image Server host.
- 2 Update the new PlateSpin Image Server’s `config.xml` file to identify the path to and the name of the image that was moved from the old PlateSpin Image Server.
- 3 Refresh the new image server’s details in the PlateSpin Migrate Client’s Servers view.

For more information, see [KB Article 7920189 \(https://www.netiq.com/support/kb/doc.php?id=7920189\)](https://www.netiq.com/support/kb/doc.php?id=7920189).

5.5.2 Automating Image Operations

You can use the `ImageOperations` command line utility, included with PlateSpin Migrate, to automate several tasks related to images, such as regularly moving multiple base images, along with related increments, between PlateSpin Image Servers.

The utility provides the capability to automate the following operations:

- ♦ **Register:** Associate an image or image increments with a specified image server.
- ♦ **Unregister:** Disassociate a registered image from a specified image server.
- ♦ **Gather:** Assemble a package of a PlateSpin Image and its volumes into a specified subdirectory.

To use the `ImageOperations` command line utility:

- 1 On your PlateSpin Image Server host, open a command interpreter (`cmd.exe`) and change the current directory to `..\Program Files\PlateSpin Image Server\ImageOperations`.
- 2 Type `ImageOperations` followed by the required command and parameters, then press Enter.

For command syntax and usage details, type `ImageOperations`, then press Enter.

- 3 When you have finished, refresh the image server's details in the Servers view.

5.5.3 Browsing and Extracting Image Files

During a disaster recovery effort or a business continuity exercise you can selectively restore files in your production server's file system, using backup versions of those files that are stored in PlateSpin Images.

To do this, you can use the PlateSpin Image Browser utility, which enables you to browse, search, sort, and extract files from different sources:

- ♦ An image file
- ♦ A specific image increment file

You can work with both base images and image increments by loading different files:

- ♦ A base image's corresponding binary file (*volume-x.pkg*) or text configuration file (*image_name.xml*).
- ♦ An image increment's binary (*image_increment.pkg*) file. You cannot use an increment's text configuration file (*image_increment_name.xml*).

The utility enables you to work with image files in a Windows Explorer-like environment. A command line version enables you to extract files at the command line.

- ♦ ["Starting the Image Browser and Loading Image Files" on page 103](#)
- ♦ ["Sorting and Searching Items in the Image Browser Interface" on page 104](#)
- ♦ ["Extracting Items" on page 104](#)
- ♦ ["Browsing and Extracting Image Files at the Command Line" on page 105](#)

Starting the Image Browser and Loading Image Files

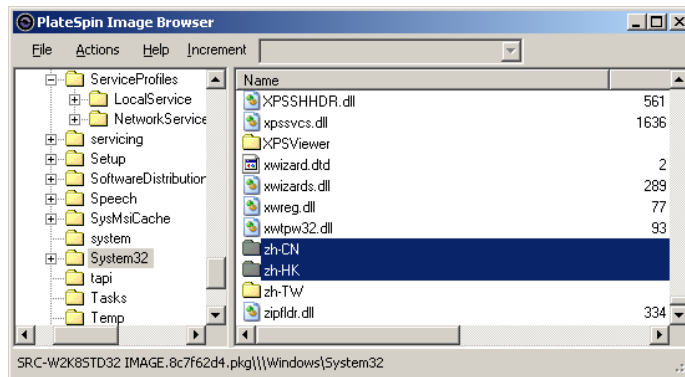
- 1 Start the ImageBrowser program (`ImageBrowser.exe`), located in one of the following directories:

- ♦ On your PlateSpin Server host:
`..\PlateSpin Migrate Server\bin\ImageOperations`
- ♦ On your PlateSpin Image Server host:
`..\Program Files\PlateSpin Image Server\ImageOperations`

The utility starts and displays the Open dialog box. At any time after the program's initial startup, you can load an image file by clicking *File > Open*.

- 2 In the Open dialog box, select the file type, navigate to and select the required image or image increment file, then click *OK*.

The utility loads the required file and displays its contents in a two-pane interface.



Depending on the size of the image, it might take a few seconds to several minutes for the utility to load the required file.

Sorting and Searching Items in the Image Browser Interface

You can sort the contents of a selected directory by name, size, type, date last modified, and by file attribute. To sort items in a selected view, click the corresponding bar at the top of the right pane.

You can search for a specific directory name or file name. You can use alphanumeric text, wildcards, and regular expressions. Regular expression search patterns that you specify must adhere to the Microsoft .NET Framework regular expression syntax requirements. See the [Microsoft .NET Framework Regular Expressions page on MSDN \(http://msdn.microsoft.com/en-us/library/hs600312.aspx\)](http://msdn.microsoft.com/en-us/library/hs600312.aspx).

To search for an item:

- 1 Load the required image or image increment. See [“Starting the Image Browser and Loading Image Files” on page 103](#).
- 2 In the left pane, select a volume or a subdirectory.
- 3 On the *Actions* menu, click *Search*.

Alternately, you can right-click the required volume or subdirectory in the left pane and click *Search* in the context menu.

The Image Browser Search window opens.

- 4 Specify the name of the file you are searching. If you are using a regular expression, select the corresponding option.
- 5 Click *Search*.

The results are shown in the right pane.

Extracting Items

- 1 Load the required image or image increment. See [“Starting the Image Browser and Loading Image Files” on page 103](#).
- 2 Locate and select the required file or directory. You can select multiple files and directories in the right pane.
- 3 On the *Actions* menu, click *Extract*.

Alternately, you can right-click the required item and click *Extract* in the context menu.

The Browse for Folder dialog box opens.

- 4 Browse to the required destination, then click *OK*.

The selected items are extracted to the specified destination.

NOTE: Files that you choose to overwrite are deleted if you interrupt the extraction process.

Browsing and Extracting Image Files at the Command Line

To browse and extract files from images and image increments at the command line, you can use the `ImageBrowser.Console` utility.

To start the utility:

- 1 On your PlateSpin Image Server host, open a command interpreter (`cmd.exe`) and change the current directory to `..\Program Files\PlateSpin Image Server\ImageOperations`.
- 2 At the command prompt, type `ImageBrowser.Console`, then press Enter.

For command syntax and usage details, type `ImageBrowser.Console /help`, then press Enter.

6 Essentials of Workload Migration Jobs

This section provides information about configuring the key aspects of a workload migration job using the PlateSpin Migrate Client.

Where applicable, differences between the Advanced and Wizard modes are noted. See [“Setting Up, Executing, and Managing Jobs” on page 74](#).

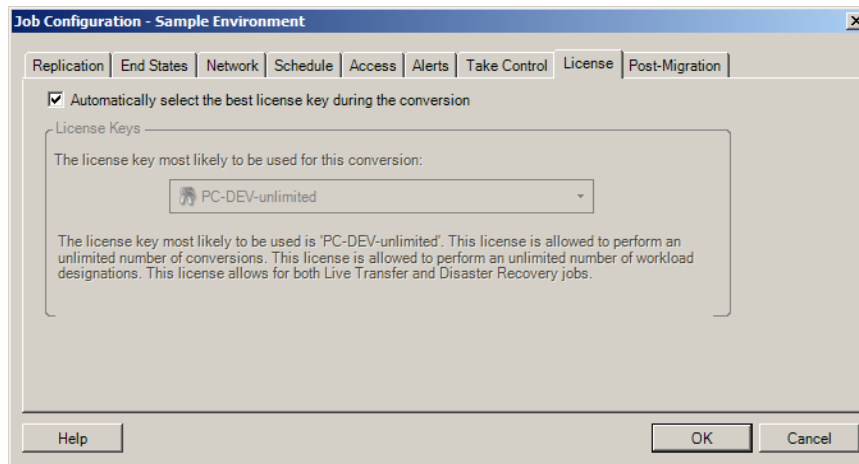
- ♦ [Section 6.1, “Selecting a License Key for a Migration Job,” on page 107](#)
- ♦ [Section 6.2, “Configuring Automatic E-Mail Alerts of Job Status and Progress,” on page 108](#)
- ♦ [Section 6.3, “Specifying Replication Options,” on page 109](#)
- ♦ [Section 6.4, “Specifying End States for Source and Target Workloads,” on page 110](#)
- ♦ [Section 6.5, “Specifying Network Options,” on page 111](#)
- ♦ [Section 6.6, “Specifying Credentials to Access Sources and Targets,” on page 112](#)
- ♦ [Section 6.7, “Managing a Workload’s Network Identity,” on page 113](#)
- ♦ [Section 6.8, “Job Scheduling,” on page 115](#)
- ♦ [Section 6.9, “Setting Up Migration Networking,” on page 116](#)
- ♦ [Section 6.10, “Configuring Target Virtual Machines,” on page 123](#)
- ♦ [Section 6.11, “Handling Operating System Services and Applications,” on page 128](#)
- ♦ [Section 6.12, “Handling a Workload’s Storage Media and Volumes,” on page 133](#)
- ♦ [Section 6.13, “Including a Custom Post-migration Action in a Migration Job,” on page 146](#)

6.1 Selecting a License Key for a Migration Job

By default, PlateSpin Migrate automatically selects the best license key for a particular migration job. If you have multiple license keys, you can select a specific license key to apply to a particular migration job. For information about product licensing and license key management, see [Section 2.1, “PlateSpin Migrate Product Licensing,” on page 23](#).

To view or modify the license key selected for a migration job:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *License Key*.



- ♦ **In Wizard mode (Windows only):** Not available.

To manually choose a different key, deselect the *Automatically select the best license key during the migration* check box and choose the required license key from the drop-down list.

Certain licenses cannot be selected if they are invalid for the current migration. Licenses can be invalid for reasons such as:

- ♦ There are no remaining migrations for the license.
- ♦ The license does not allow X2V migrations and the current migration is a P2V.
- ♦ The license does not support live transfer migrations and the current migration is marked for live transfer.

The selected license key is displayed on the *License Key* tab and the description is updated accordingly.

6.2 Configuring Automatic E-Mail Alerts of Job Status and Progress

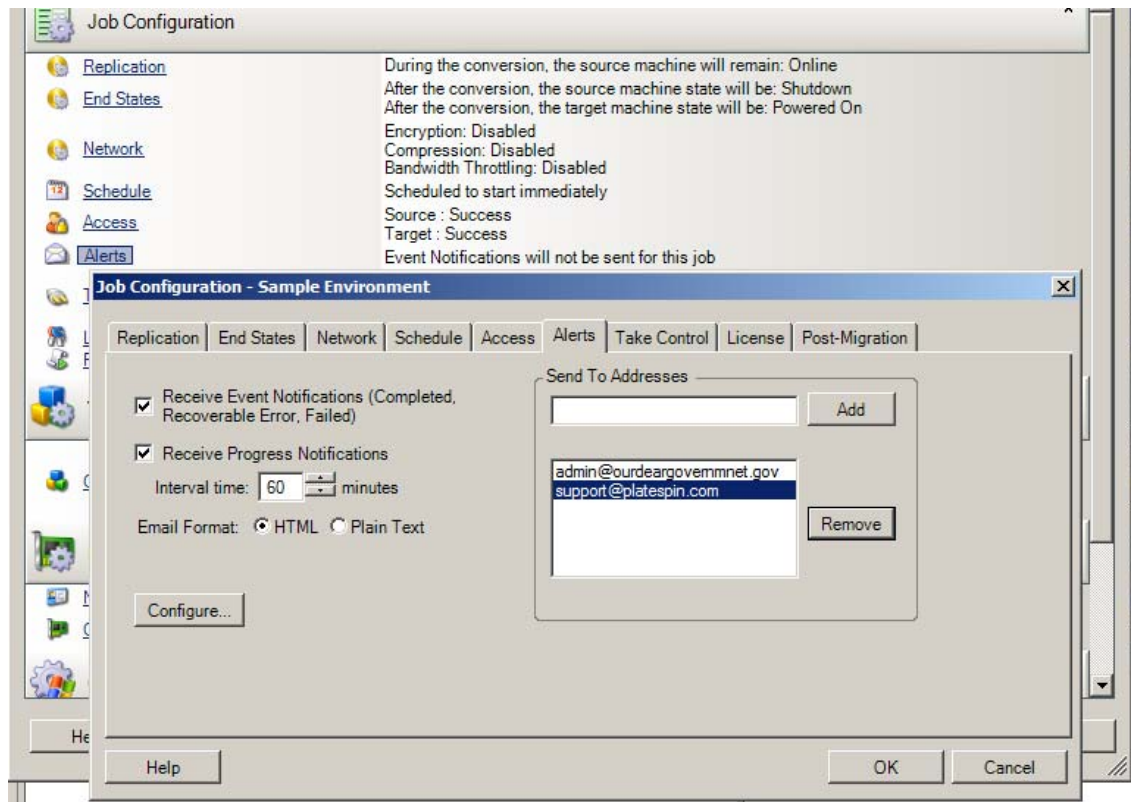
You can set up a migration job to automatically send e-mail notifications about status and progress to a specified address:

- ♦ **Job events:** Job status messages Completed, Recoverable Error, and Failed.
- ♦ **Job progress:** Detailed job progress messages at configurable intervals.

You can specify SMTP server and e-mail account details either during the migration job or globally. See [“Notification Service” on page 40](#).

To configure automatic e-mail notifications:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Alerts*.



- ♦ **In Wizard mode (Windows only):** Not available.

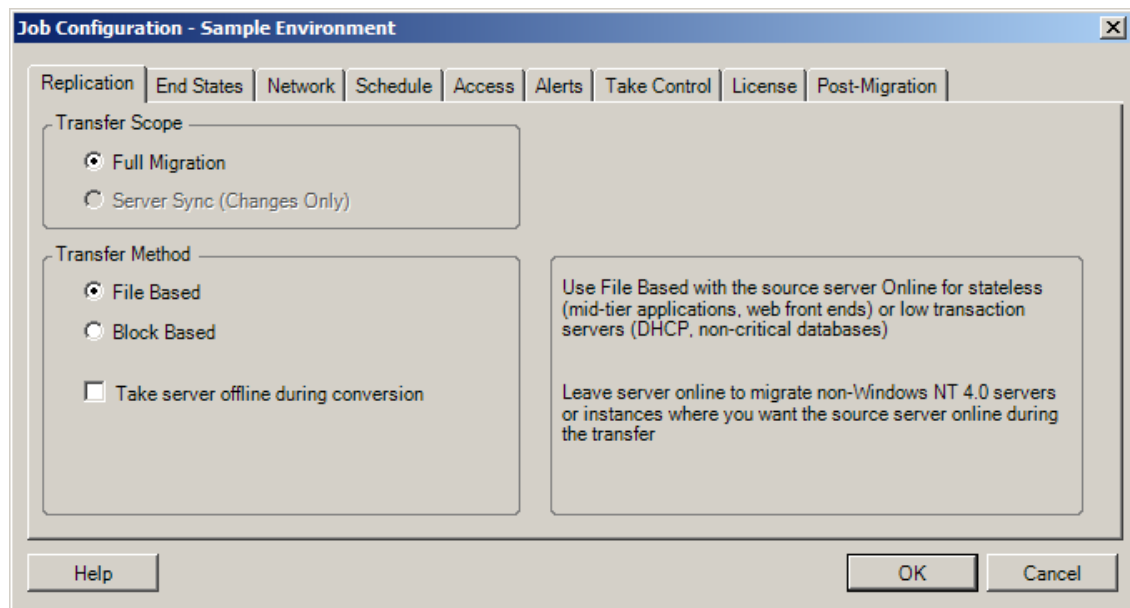
6.3 Specifying Replication Options

Replication options enable you to specify:

- ♦ How data is transferred from source to target. PlateSpin Migrate supports multiple transfer methods, and their availability depends on your workload and migration job type.
See [“Supported Transfer Methods” on page 19](#).
- ♦ The scope of workload data to transfer from the source to the target (*Full Migration* and *Changes only*). Applicable only to Server Sync jobs.
See [“Synchronizing Workloads with Server Sync” on page 84](#).

To specify the transfer options for a migration job:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Replication*.



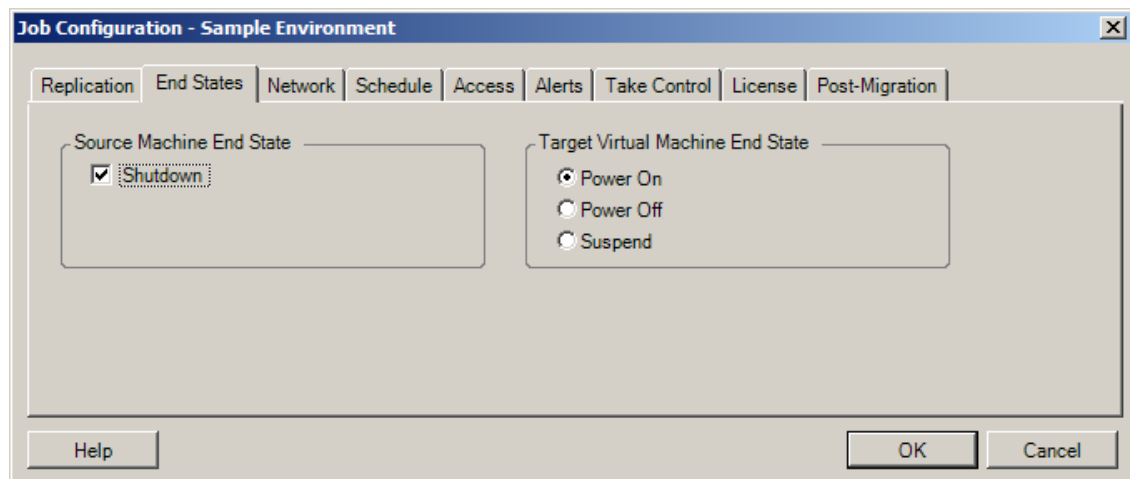
- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Transfer Method*.

6.4 Specifying End States for Source and Target Workloads

After completing a migration, PlateSpin Migrate shuts down or boots up the source and target workloads depending on the nature of the migration. For example, a Copy workload job results in the source workload being left to run, and a Move workload job results in the source workload being shut down.

You can specify non-default post-migration end states for your source and target:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *End States*.



- ♦ **In Wizard mode (Windows only):** Not available; source and target end states are preset to their defaults.

6.5 Specifying Network Options

Network options are settings for security, performance, and connectivity, and enable you to specify:

- ♦ Whether you want the system to compress workload data that is being transferred over the network.

See [“Data Compression” on page 22](#).

Fast consumes the least CPU resources on the source but yields a lower compression ratio, *Maximum* consumes the most, but yields a higher compression ratio. *Optimal*, the middle ground, is the recommended option.

- ♦ Whether to encrypt the data transferred from source to target.

See [“Security and Privacy” on page 20](#).

- ♦ Whether you want to apply bandwidth throttling for the current migration job.

See [“Bandwidth Throttling” on page 22](#).

To throttle this job’s bandwidth to a specified rate, select the *Enable Bandwidth Throttling* option, specify the required maximum value in Mbps, and optionally a time period during which to enforce the throttling. If specified, the *from* and *to* time values are based on the source workload’s system time.

If no time interval is defined, bandwidth is throttled to the specified rate at all times by default. If time interval is defined and the migration job executes outside this interval, data is transferred at full speed.

- ♦ Additional IP addresses for source workloads to enable communication in environments that use network address translation (NAT).

For information on how to specify additional IP addresses for your PlateSpin Server, see [“Migrations Across Public and Private Networks through NAT” on page 37](#).

To specify network options:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Network*.

The screenshot shows the 'Network' configuration window. It contains two main panels. The left panel, titled 'Compression', has an 'Enable Compression' checkbox (unchecked) and three radio buttons: 'Fast' (selected), 'Optimal', and 'Maximum'. Below this is an 'Encryption' section with an 'Encrypt data transfer' checkbox (unchecked). The right panel, titled 'Bandwidth Throttling', has an 'Enable Throttling' checkbox (checked). Below it is a 'Max Value' spinner set to 10, followed by 'Mb/sec'. There is also a 'Time based' section with a checkbox (unchecked) and two time pickers: 'from 09:00 AM' and 'to 05:00 PM'. A blue information icon and text state 'Time based throttling is based on source server time'. An 'Advanced...' button is located at the bottom right of the window.

- ♦ **In Wizard mode (Windows only):** Not available.

6.6 Specifying Credentials to Access Sources and Targets

For a migration job to execute properly, you must provide valid credentials for your source and target.

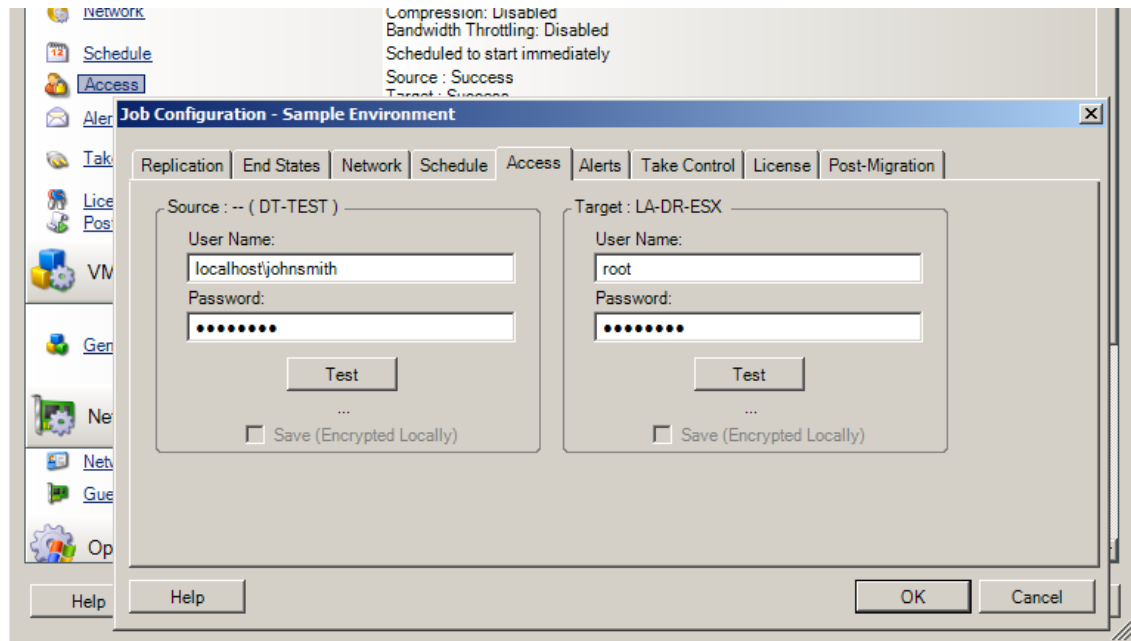
Table 6-1 Source and Target Credentials

| Credentials | Windows | Linux |
|-------------|--|--|
| User Name | Account username with local or domain-level administrative privileges. Use this format: <ul style="list-style-type: none"> ♦ For domain member machines: <i>authority\principal</i> ♦ For workgroup member machines: <i>hostname\principal</i> | Root or root-level username. |
| Password | Valid password for the specified username. | Valid password for the specified username. |

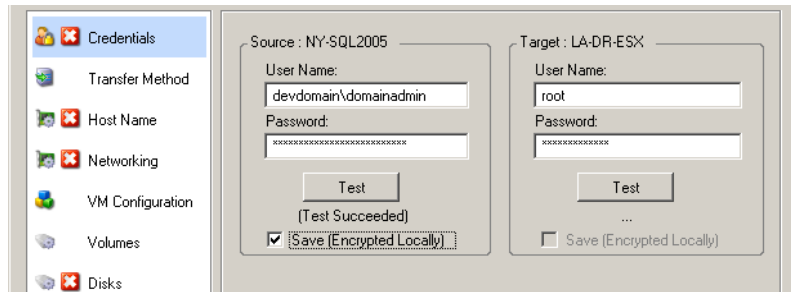
When setting up a migration job, you can validate the provided credentials and save them for future migration jobs that use the same source and target.

To specify source and target credentials:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Access*.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Credentials*.



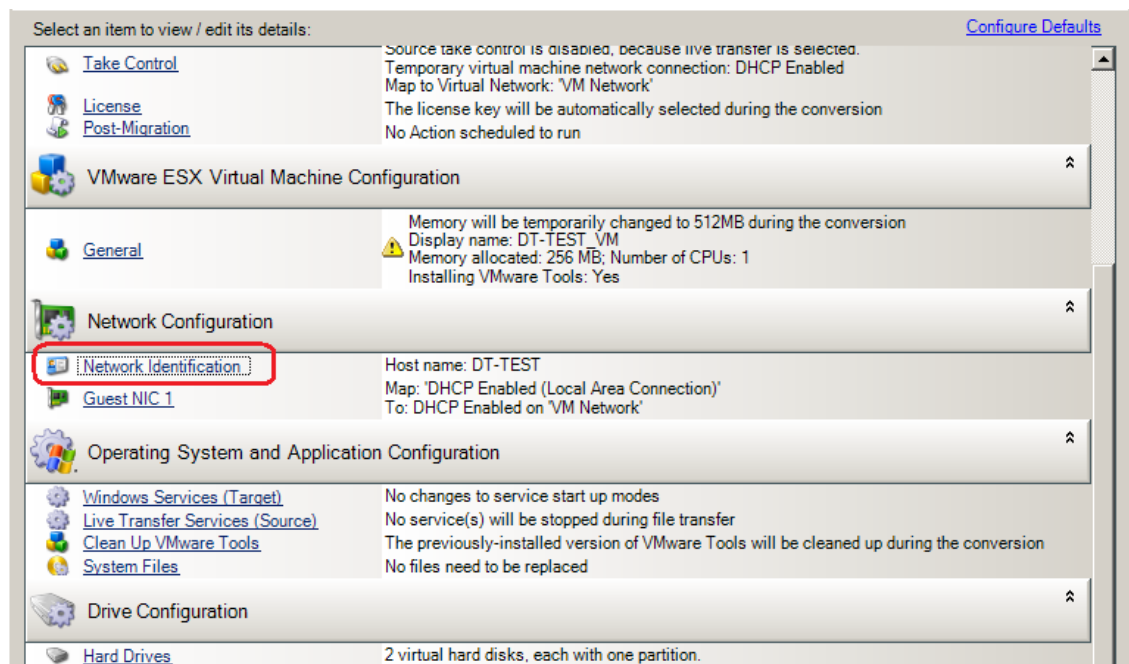
6.7 Managing a Workload's Network Identity

PlateSpin Migrate enables you to manage the network identity and domain registration of your migration target workload and specify related preferences as part of a migration job. By default, a job is configured to preserve a source workload's network identity and domain registration. You can modify the default configuration to suit the objectives of your migration job.

Proper configuration of migration target's network identity is especially important when you are migrating a workload to a different domain, planning to take it off a domain, or if you intend to change the hostname of a workload while it is in the domain.

To configure a target workload's network identity options:

- ♦ **In Advanced mode:** In the Migration Job window, under the Network Configuration section, click *Network Identification*.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Host Name*.

Configuration options vary depending on whether the target machine is Windows or Linux.

- [Section 6.7.1, “Managing the Identity of Windows Workloads,” on page 114](#)
- [Section 6.7.2, “Managing the Network Identity of Linux Workloads,” on page 115](#)

6.7.1 Managing the Identity of Windows Workloads

Use these settings to configure the network identity of your target Windows workload (in either Wizard or Advanced mode).

The screenshot shows the 'Network Identification' dialog box. It has a title bar with 'Network Identification' and a close button. The dialog is divided into several sections. The first section is 'Network Identification' with a tab. Below it, there is a 'Host Name' field with the value 'Test-2'. A checkbox labeled 'Generate new System Identifier (SID)' is checked. Below this is a section for 'Local Administrator Credentials (Not Required)' with fields for 'User Name' (Administrator), 'Password', and 'Confirm Password'. The next section is 'Member of' with two radio buttons: 'Domain' (selected) and 'Workgroup'. The 'Domain' option has a text field with 'platespin.com', and the 'Workgroup' option has a text field with 'WORKGROUP'. Below this is a checkbox labeled 'Preserve Source Server's Domain Registration' which is checked. The final section is 'Domain Credentials' with fields for 'User Name' (platespin\JSmith), 'Password', and 'Confirm Password'. The password fields are masked with dots. At the bottom of the dialog are three buttons: 'Help', 'OK', and 'Cancel'.

Host Name : Specify the desired hostname for the target machine.

Generate New SID: When this option is selected, the target workload is assigned a new System Identifier (SID). Credentials are required only for Windows 2008 and Vista systems, and must be the credentials for the local (embedded) Administrator account. If this account has been locally renamed on the source, provide the new name. If this account is disabled on Vista (default), enable it first.

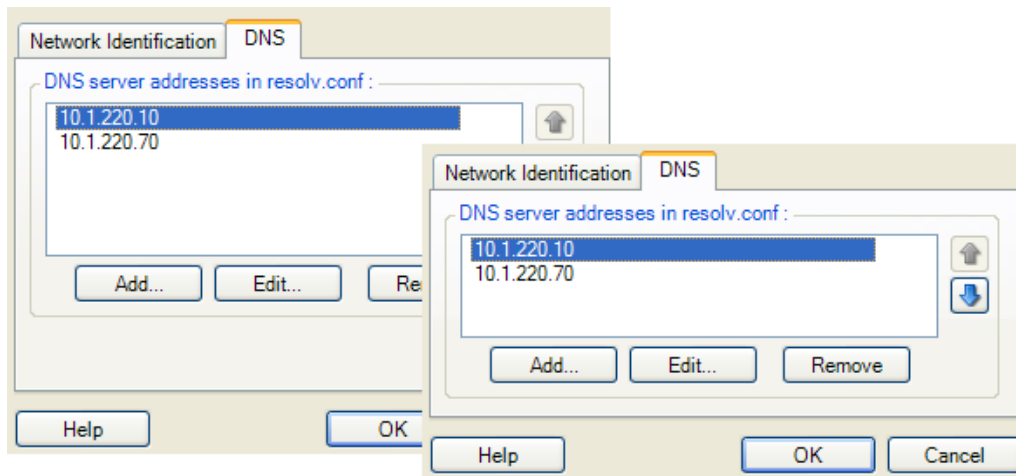
Member of (Domain / Workgroup): Select the required option and type the name of the domain or workgroup that you want the target machine to join.

Preserve Source Server's Domain Registration: Preserves domain registration and ensures that the source server domain registration remains intact during migration. If you disable this option, the source machine's domain account is transferred to the target machine. The source server still appears to be on the domain, but does not have a valid connection.

Domain Credentials: If the target machine is to be part of a domain, specify valid credentials that have permission to add servers to the domain.

6.7.2 Managing the Network Identity of Linux Workloads

Use these settings to configure the network identity of your target Linux workload (in either Wizard or Advanced mode) and DNS server addresses as required (Advanced mode).



Network Identification tab: Specify the desired hostname for the target server.

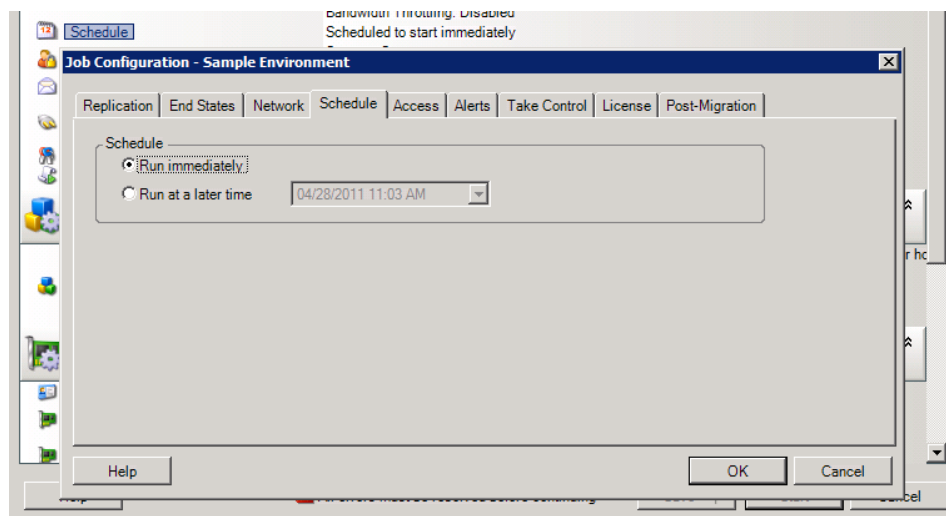
DNS tab: Use the *Add*, *Edit*, and *Remove* buttons to manage DNS server entries for the new virtual machine.

6.8 Job Scheduling

Scheduling options enable you to specify whether the migration job is to run immediately or on a specific date and a specific time. For information on other options that PlateSpin Migrate provides for saving and executing jobs, see [“Setting Up, Executing, and Managing Jobs” on page 74](#)

To access scheduling options of a migration job:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Schedule*.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Schedule*.

6.9 Setting Up Migration Networking

For each workload portability job, you must properly configure workload networking so that source workloads and targets can communicate with each other and the PlateSpin Server during the migration process, and that the network configuration of a target workload is in line with its end state.

- ♦ [Section 6.9.1, “Temporary \(Take Control\) Network Settings,” on page 116](#)
- ♦ [Section 6.9.2, “Target Post-migration Networking,” on page 119](#)
- ♦ [Section 6.9.3, “TCP/IP and Advanced Network Settings,” on page 121](#)

Temporary Networking: Also called *Take Control Network Settings*; they apply to source and target workloads booted into a temporary pre-execution environment. See [“Offline Transfer with Temporary Boot Environment” on page 20](#).

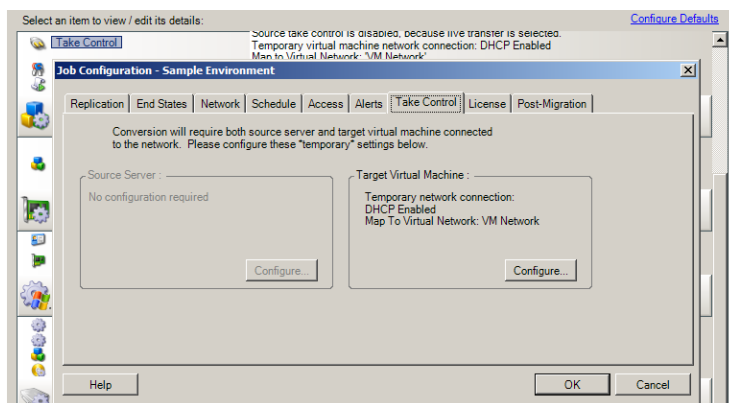
6.9.1 Temporary (Take Control) Network Settings

Temporary (Take Control) Network Settings control how source workloads, targets, and the PlateSpin Server communicate among each other during the migration. If required, you can manually specify a temporary network address to your source and target, or configure them to use a DHCP-assigned IP address during the migration.

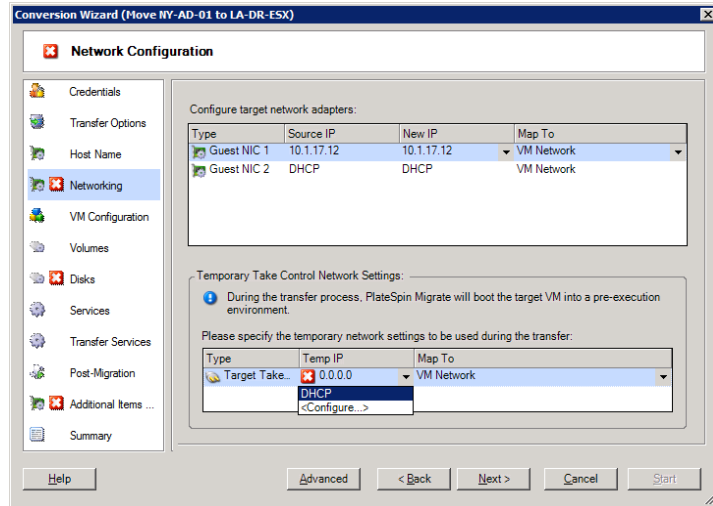
During Windows and Linux workload migrations, the Temporary Network Settings control the PlateSpin Server’s communication with the source and target workloads that are booted into a temporary pre-execution environment. See [“Offline Transfer with Temporary Boot Environment” on page 20](#).

To configure Temporary (Take Control) network settings:

- ♦ **In Advanced mode:** In the Migration Job window, under the Job Configuration section, click *Take Control*. To access network interface mapping and TCP/IP settings, click *Configure* in the source and target areas as applicable.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Networking*. In the *Source Take Control* or *Target Take Control* row, in either *Temp IP* or *Map To* drop-down menu, select *Configure*. To quickly select DHCP without opening configuration options, select *DHCP*.



Configuration options for the Temporary networking vary and depend on whether the network interface is virtual or physical, and whether it is connecting a Windows or a Linux workload.

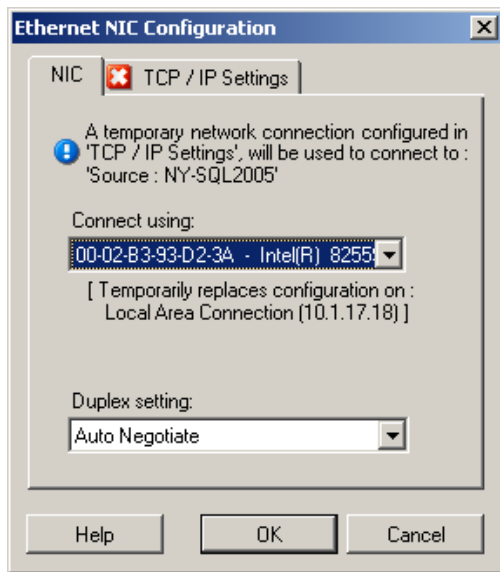
- ♦ [“Temporary \(Take Control\) Network Settings: Physical Network Interfaces” on page 118](#)
- ♦ [“Temporary \(Take Control\) Network Settings: Virtual Network Interfaces” on page 119](#)

Target Take Control network settings are only used during an Offline migration process. On completion, target network settings are read from settings you specify for Target Post-Migration Networking. See [“Target Post-migration Networking” on page 119](#).

IMPORTANT: PlateSpin Migrate 11 does not support offline transfer for Windows workloads; only Linux workloads are supported for source offline migration.

Temporary (Take Control) Network Settings: Physical Network Interfaces

These settings apply only to source physical machines. For target physical machines, Temporary (Take Control) network settings are configured during the boot process that uses the boot ISO image. See [“Discovering Target Physical Machines” on page 59](#).



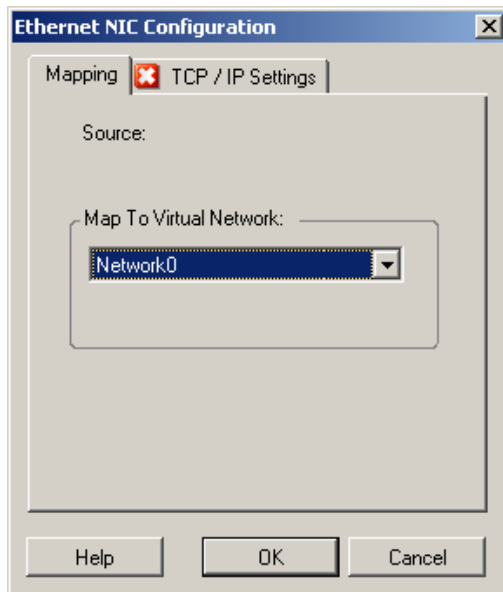
Connect using: If multiple network adapters are present, select the adapter that can communicate with both the PlateSpin Server and the target.

Duplex setting: Use the drop-down list to select network card duplexing. It must match the duplex setting for the switch to which the network interface is connected. When the source is connected to switch ports that are set to 100 Mbit full duplex and cannot be changed to auto negotiation, select *Force NIC to Full Duplex*.

TCP/IP Settings tab: Click the tab to access TCP/IP and advanced network settings. See [“TCP/IP and Advanced Network Settings” on page 121](#).

Temporary (Take Control) Network Settings: Virtual Network Interfaces

These settings apply to both source and target Take Control network settings.



Map to Virtual Network: From the drop-down list, select the virtual switch or network to use for communication during an Offline migration. If multiple virtual network adapters are present, select the adapter that can communicate with both the PlateSpin Server and the source machine. This network can differ from the network on which the target virtual machine will run after the migration.

TCP/IP Settings tab: Click the tab to access TCP/IP and advanced network settings. See [“TCP/IP and Advanced Network Settings” on page 121](#).

6.9.2 Target Post-migration Networking

Target post-migration network settings defined in a migration job control the network configuration of a target after the migration is complete. This applies to both physical and virtual network interfaces.

During workload migration, the target workload’s post-migration network settings are configured while the workload is booted into a pre-execution environment.

To configure target post-migration network settings:

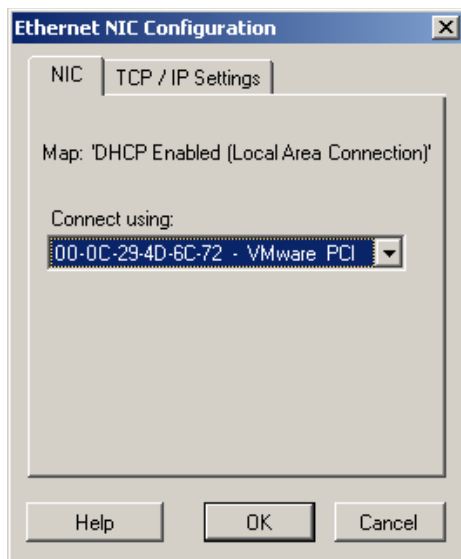
- ♦ **In Advanced mode:** In the Migration Job window, under the Network Configuration section, click *Guest NIC* (for target virtual machines) or *Network Connection* (for target physical machines).
- ♦ **In Wizard mode (Windows only):** In the wizard’s navigation pane, click *Networking*. In the Configure Target Network Adapters section, in either *New IP* or *Map To* drop-down menu, select *Configure*. To quickly select DHCP without opening configuration options, select *DHCP*.

Configuration options for the target post-migration network settings vary and depend on whether the network interface is virtual or physical, and whether it is connecting a Windows or a Linux workload.

- ♦ [“Post-Migration Networking for Physical Network Interfaces \(Windows and Linux\)” on page 120](#)
- ♦ [“Post-Migration Networking for Virtual Network Interfaces \(Windows and Linux\)” on page 121](#)

Post-Migration Networking for Physical Network Interfaces (Windows and Linux)

Use these settings to configure the post-migration network settings of a workload being migrated to physical hardware.

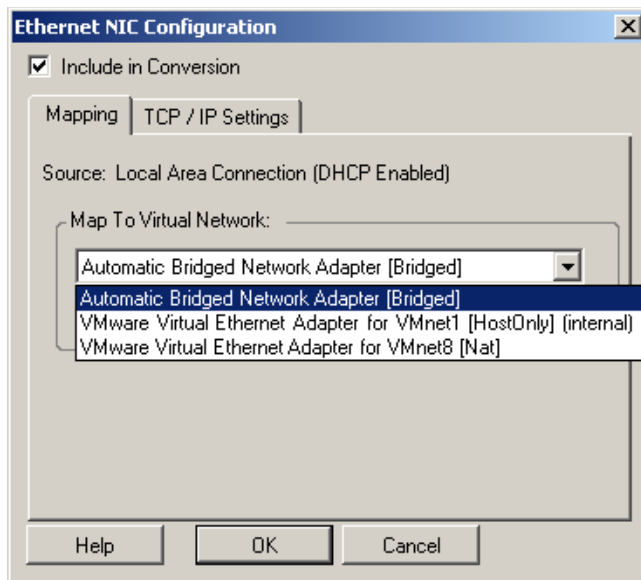


Connect using: If multiple network adapters are present, select the adapter that can communicate with the PlateSpin Server.

TCP/IP Settings tab: Click the tab to access TCP/IP and advanced network settings. See [“TCP/IP and Advanced Network Settings” on page 121](#).

Post-Migration Networking for Virtual Network Interfaces (Windows and Linux)

By default, PlateSpin Migrate configures a migration job to create a virtual NIC for each NIC found on the source. For post-migration connectivity, ensure that the target virtual NIC is mapped to the appropriate virtual network on the target virtualization platform.



Include in Conversion: When this options is selected, PlateSpin Migrate creates a virtual NIC for a source NIC.

Map to Virtual Adapter: Select the virtual network that will be used on the target VM. Choose a virtual network that allows the target VM to communicate with the server.

Start connected: Enable this option to connect the virtual network interface when starting the target machine.

TCP/IP Settings tab: Click the tab to access TCP/IP and advanced network settings. See [“TCP/IP and Advanced Network Settings” on page 121](#).

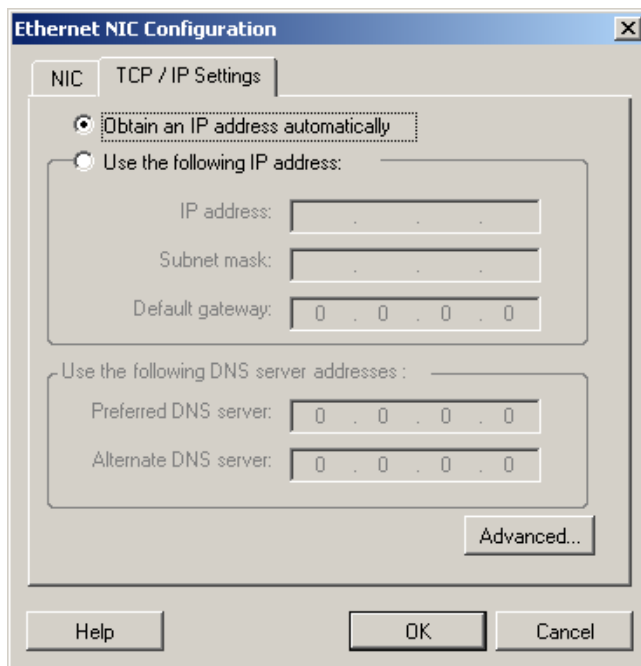
6.9.3 TCP/IP and Advanced Network Settings

PlateSpin Migrate provides a standard network configuration interface to both source and target network settings, and for both Temporary and target post-migration networking. Configuration settings vary slightly, depending on the operating system.

- ♦ [“TCP/IP and Advanced Network Settings \(Windows\)” on page 122](#)
- ♦ [“TCP/IP and Advanced Network Settings \(Linux\)” on page 122](#)

TCP/IP and Advanced Network Settings (Windows)

The following are standard TCP/IP and advanced network settings for Windows workloads:



Obtain an IP address automatically: When this option is selected, the workload uses an IP address automatically assigned by a DHCP server during the migration process.

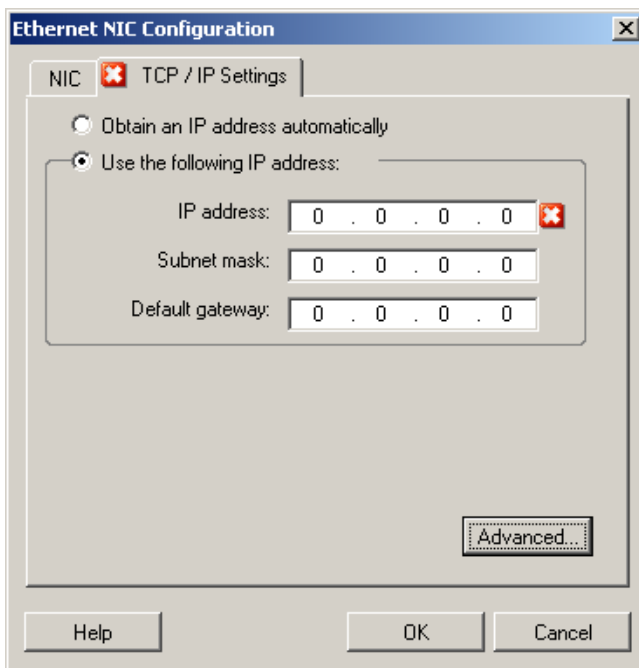
Use the following IP address: Select this option to specify a static IP address.

Use the following DNS server addresses: If required, specify preferred and alternative DNS server addresses.

Advanced: Click this button to access advanced TCP/IP configuration settings, then specify or edit default gateway, DNS server, and WINS server information as required.

TCP/IP and Advanced Network Settings (Linux)

The following are standard TCP/IP and advanced network settings for Linux workloads:



Obtain an IP address automatically: When this option is selected, the workload uses an IP address automatically assigned by a DHCP server during the migration process.

Use the following IP address: Select this option to specify a static IP address.

Advanced: Click this button to access DNS configuration settings, then specify preferred and alternate DNS server addresses as required. You can also indicate whether you want DNS addresses copied to the `resolv.conf` file located in your target's `/etc` directory.

6.10 Configuring Target Virtual Machines

For jobs that involve workload virtualization, PlateSpin Migrate provides a mechanism for specifying target VM configuration options, such as providing a target VM name and a configuration file path, selecting a datastore to use, and allocating virtual memory, in accordance with the features and capabilities of the selected virtualization platform.

If you have resource pools configured on your target virtualization platform, you can select a resource pool for your VM to be assigned to.

NOTE: If your target VMware ESX server is part of a fully automated Distributed Resource Scheduler (DRS) cluster (a cluster with its VM migration automation level set to *Fully Automated*), the newly created target VM's automation level is changed to *Partially Automated* for the duration of the migration. This means that your target VM might power up on a different ESX server from the one initially selected, but migration is prevented from automatic execution.

To specify target VM configuration options:

- ♦ **In Advanced mode:** In the Migration Job window, in the Virtual Machine Configuration section, click *General*.
- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Host Name*.

In Wizard mode, PlateSpin Migrate prompts only for basic virtual machine configuration options. For configuring advanced virtual machine options, such as those related to resource pools and CPU scheduling, switch to the Advanced mode.

VM Name: Specify a display name for the new virtual machine.

Configuration File Path: Specify the path to the target virtual machine's configuration file.

Datastore: Select the required virtual machine's datastore.

Resources: Specify the amount of virtual RAM and the number of CPUs to be assigned to the virtual machine.

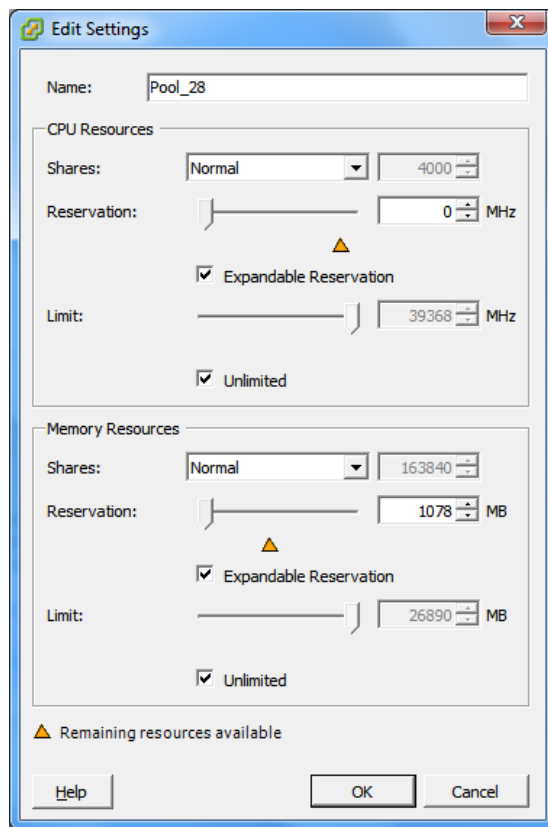
6.10.1 Virtualization Platform-Specific and Advanced VM Configuration Options

In Advanced mode, PlateSpin Migrate displays target virtual machine configuration options specific to the selected target and provides access to more advanced configuration options.

- ♦ [“Virtual Machine Configuration: VMware ESXi 5” on page 125](#)
- ♦ [“Virtual Machine Configuration: VMware ESX 4.1” on page 126](#)
- ♦ [“Virtual Machine Configuration: Citrix XenServer” on page 127](#)

Virtual Machine Configuration: VMware ESXi 5

The following are configuration options specific to VMware vSphere 5 (applicable to all VMs under the containing resource pool).



Name: Specify the display name for the new virtual machine.

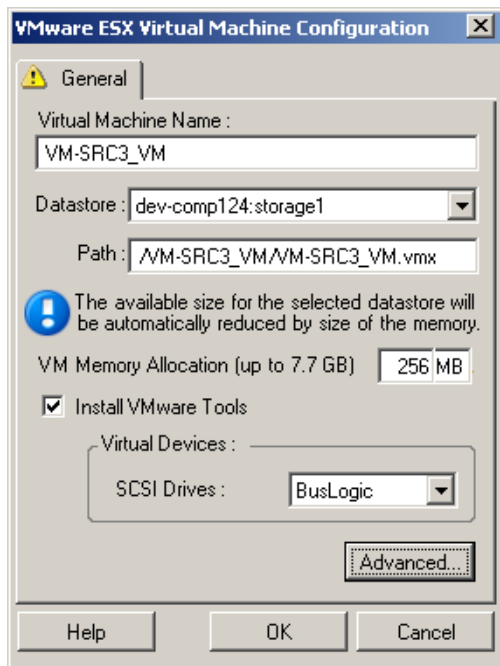
CPU Resources

- ♦ **Shares:** CPU shares for this virtual machine with respect to the parent's total. Peer VMs share resources according to their relative share values bounded by the *Reservation* and *Limit*. Select *Low*, *Normal*, or *High*, which specify share values respectively in a 1:2:4 ratio. Select *Custom* to give each virtual machine a specific number of shares, which express a proportional weight.
- ♦ **Reservation:** Guaranteed CPU allocation for this VM.
Expandable Reservation: Select this option to specify that more than the specified reservation is allocated if resources are available in a parent.
- ♦ **Limit:** Upper limit for this virtual machine's CPU allocation.
Unlimited: Select this option to specify no upper limit.

Memory Resources: (these are similar to CPU resource settings, but apply to memory resources)

Virtual Machine Configuration: VMware ESX 4.1

The following are configuration options specific to VMware ESX systems prior to vSphere 5. To access settings that control resource pools, the number of CPUs, and CPU scheduling affinity, click *Advanced*.



Virtual Machine Name: Specify the display name for the new virtual machine.

Datastore: Select the datastore where you want to create the *.vmx file.

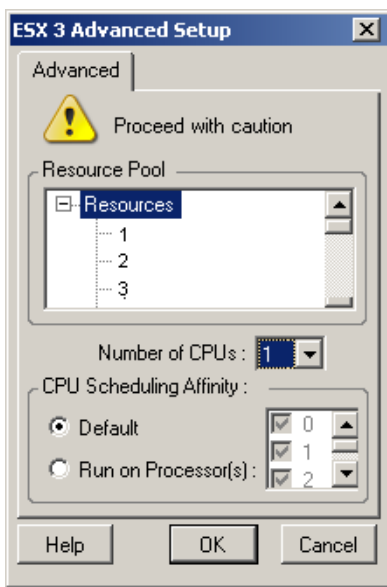
Configuration File Path: Specify a name and the directory path for the virtual machine's *.vmx configuration file.

Virtual Machine Memory Allocation: Specify a value for the amount of virtual RAM to be assigned to the virtual machine.

Install VMware Tools: Enable this option to install VMware tools during the migration process (recommended).

SCSI Drives: Select either *BusLogic* or *LSILogic* (the recommended option).

Advanced: Click this button to view or modify advanced VM configuration settings.



Resource Pool: If required, assign your target VM to a resource pool. When no resource pool is specified, the VM is assigned to the root resource pool.

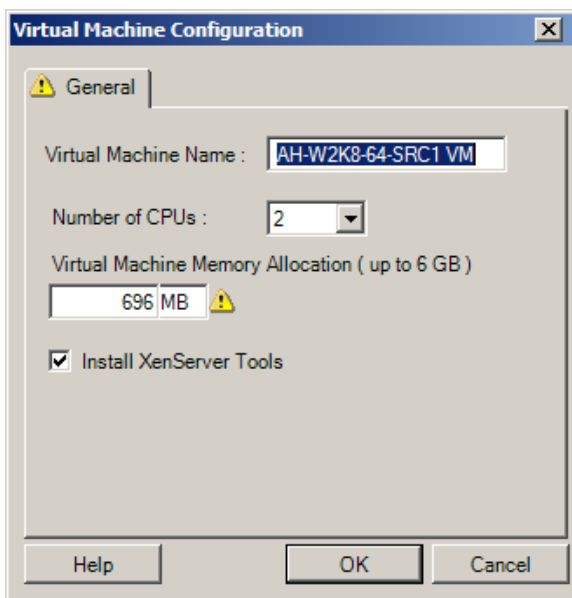
Number of CPUs: Select the required number of CPUs to assign to the target VM. For example, you can convert a single-processor workload to a multi-processor VM, or a multi-processor workload to a single-processor VM.

CPU Scheduling Affinity: Represents which ESX Server processors the virtual machine can run on (if your ESX Server is a multiprocessor system). Specify the required processor or select *Default* (recommended).

For details, see your VMware documentation.

Virtual Machine Configuration: Citrix XenServer

The following are configuration options specific to Citrix XenServer.



Virtual Machine Name: Specify the display name for the new virtual machine.

Number of CPUs: Select the number of CPUs to assign to the target VM. For example, you can convert a single-processor workload to a multi-processor VM, or a multi-processor workload to a single-processor VM.

Virtual Machine Memory Allocation: Specify a value for the amount of virtual RAM to be assigned to the virtual machine.

Install XenServer Tools: Enable this option to install XenServer Tools during the migration process (recommended).

6.11 Handling Operating System Services and Applications

PlateSpin Migrate provides a mechanism for migration jobs to handle Windows services (including special features for those services related to Microsoft SQL Server and Microsoft Exchange Server software), Linux daemons, and virtualization enhancements (such as VMware Tools). In addition, when Windows HAL or kernel file replacements are required, you can view which ones were selected for update during a migration job.

- ♦ [Section 6.11.1, “Handling the Startup Mode of Services \(Windows Targets\),” on page 128](#)
- ♦ [Section 6.11.2, “Handling Source Workload Services or Daemons During Live Transfer \(Windows and Linux\),” on page 129](#)
- ♦ [Section 6.11.3, “Viewing Windows System Files Selected for Replacement During a Migration,” on page 130](#)
- ♦ [Section 6.11.4, “Handling the Run Level of Daemons \(Linux Targets\),” on page 131](#)
- ♦ [Section 6.11.5, “Handling Virtualization Enhancement Software,” on page 132](#)

6.11.1 Handling the Startup Mode of Services (Windows Targets)

You can configure a job to modify the startup mode of selected Windows services after the migration is complete. For example, if you don’t need a certain Windows service to continue running on a virtualized workload, you can configure your job to set that service’s target startup type to Disabled.

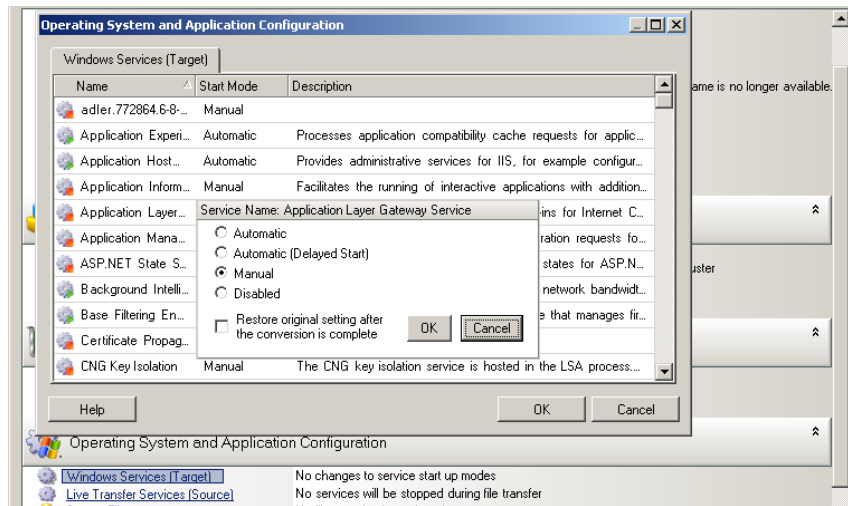
If you require a service to start upon another service’s request, set the startup type of the required service to Manual.

You can also configure the job to restore a service’s original startup type after the migration is complete. For example, you might require a virus scanner to be disabled during the migration, but its startup type to be restored after the migration completes.

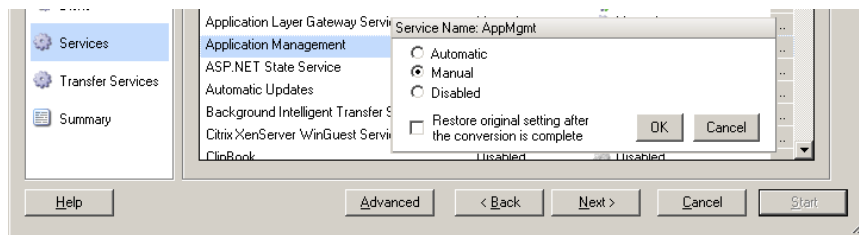
TIP: You can globally configure your startup mode preferences for selected Windows services in PlateSpin Server default options. See [“Target Service Defaults” on page 44](#).

To configure the post-migration startup mode of Windows services:

- ♦ **In Advanced mode:** In the Migration Job window, under the Operating System and Application Configuration section, click *Windows Services (Target)*, then click an item in the *Start Mode* column.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Services*, then click an item in the *Target Mode* column.



6.11.2 Handling Source Workload Services or Daemons During Live Transfer (Windows and Linux)

For Live Transfer jobs, PlateSpin Migrate provides a mechanism to stop selected services or daemons during the migration. This ensures that data on your source is captured in a consistent state.

If your source workload is running Microsoft SQL Server or Microsoft Exchange Server software, you can configure your migration job to automatically copy the database files of these servers. If you do not require the migration to include the volume containing the databases, consider not stopping these services.

If your source workload includes I/O-intensive application services that might inhibit the ability of the file transfer process to keep up with the changes, consider stopping them during a Live Transfer migration.

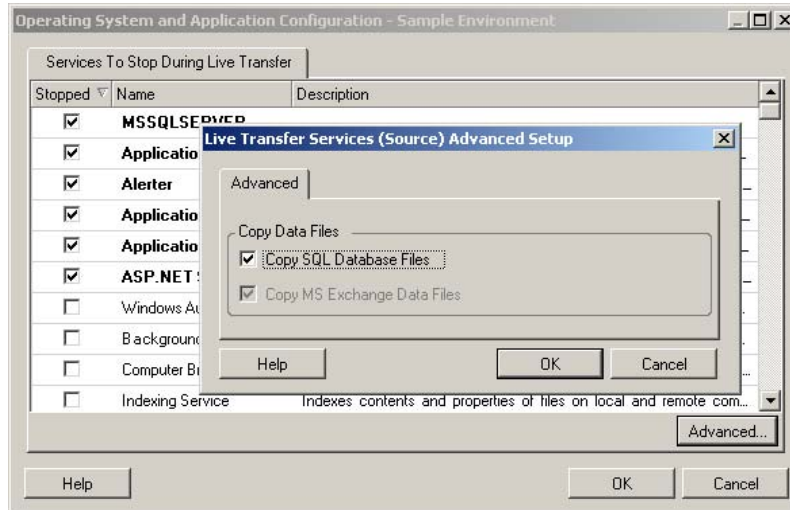
After the completion of the migration, services that you select to stop during a Live Transfer migration are automatically restarted on the source, unless you explicitly configure your migration job to power off the source on completion.

For Linux systems, consider using the custom `freeze` and `thaw` scripting capability. See [“Freeze and Thaw Scripting Capabilities \(Linux Block-Level Migrations\)”](#) on page 73.

TIP: You can globally configure your preferences for stopping selected Windows services during VSS File-based or VSS Block-based Live Transfer. See [“Source Service Defaults”](#) on page 43.

To specify which services or daemons you want the system to stop during Live Transfer:

- ♦ **In Advanced mode:** In the Migration Job window, under the Operating System and Application Configuration section, click *Live Transfer Services/Daemons (Source)*. To indicate that you want SQL Server and Exchange Server database files copied during the migration, click *Advanced* (applicable to Windows systems only).



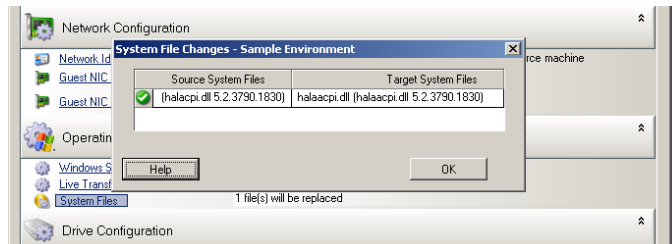
- ♦ **In Wizard mode (Windows only):** Not available.

6.11.3 Viewing Windows System Files Selected for Replacement During a Migration

When converting Windows workloads with system files (such as a HAL or kernel files) that are incompatible with the target infrastructure, PlateSpin Migrate uses an appropriate file from its library and saves a backup copy of the source file (*.bak) on the target, in the same system directory.

You can view the HAL or kernel files that PlateSpin Migrate identifies as those requiring replacement:

- ♦ **In Advanced mode:** In the Migration Job window, under the Operating System and Application Configuration section, click *System Files*.



- ♦ **In Wizard mode (Windows only):** Not available.

The following warnings might display at the bottom of the dialog box:

Driver Cache is empty

Indicates that you might need to place the necessary files into the local driver cache on the source Windows server (..\Windows\Driver Cache).

| | |
|---|---|
| <i>The driver cache contains a higher version</i> | PlateSpin Migrate has a partial match with its matrix but the driver cache contains a later version of one or more system files than the one that PlateSpin Migrate will use. |
| <i>File <filename> will be replaced with lower version</i> | PlateSpin Migrate has not found a match for the system files in its matrix. It will replace the system files with a version that is earlier than the ones that were discovered as the source machine's original system files. |
| <i>File <filename> will be replaced with higher version</i> | PlateSpin Migrate has not found a match for the system files in its matrix. It will replace the system files with a version that is later than the ones that were discovered as the source machine's original system files. |

If warnings appear on the screen, click *More Help* (only available if warnings exist) to learn more.

See also the following [KB Article 7920815 \(https://www.netiq.com/support/kb/doc.php?id=7920815\)](https://www.netiq.com/support/kb/doc.php?id=7920815) (FAQ: Understanding the System Files Information screen).

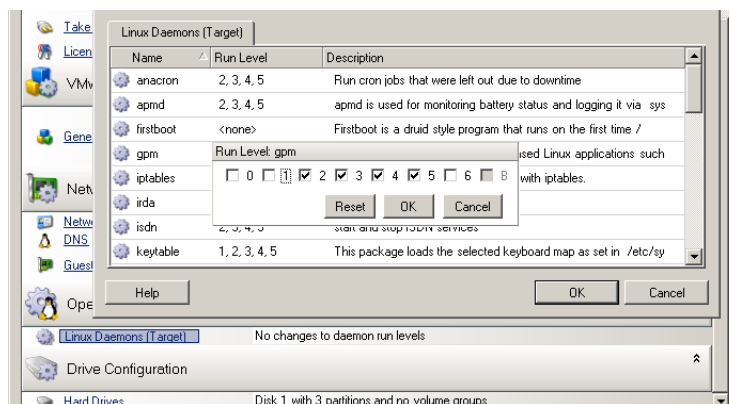
6.11.4 Handling the Run Level of Daemons (Linux Targets)

You can configure a job to modify the run level of selected Linux daemons after the migration is complete. Use the following numeric values:

| | |
|---|---|
| 0 | Shutdown |
| 1 | Single-user mode |
| 2 | Unused (user-defined) |
| 3 | Full multi user-mode (no GUI) |
| 4 | Unused (user-defined) |
| 5 | Full multi-user mode with display manager (GUI) |
| 6 | Reboot |

To configure the post-migration run level of Linux daemons:

- ♦ **In Advanced mode:** In the Migration Job window, under the Operating System and Application Configuration section, click *Linux Daemons (Target)*, then click an item in the *Run Level* column.



- ♦ **In Wizard mode (Windows only):** Not available.

6.11.5 Handling Virtualization Enhancement Software

For V2X migrations, PlateSpin Migrate provides a mechanism to automatically uninstall virtualization enhancement software, such as VMware Tools.

When converting a workload on a VMware platform that has an earlier version of VMware Tools installed, PlateSpin Migrate identifies the presence of obsolete software and adds a VMware Tools Cleanup step in the migration job.

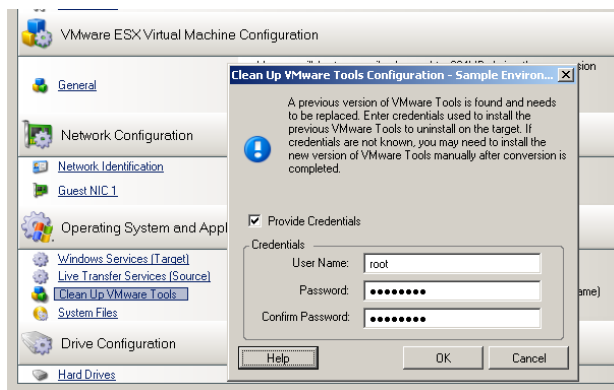
You must provide administrator credentials to uninstall VMware Tools. The credentials provided must match the admin-level user account that was logged in during the installation of VMware Tools.

When the earlier version is uninstalled, PlateSpin Migrate proceeds with the installation of the new version of VMware Tools.

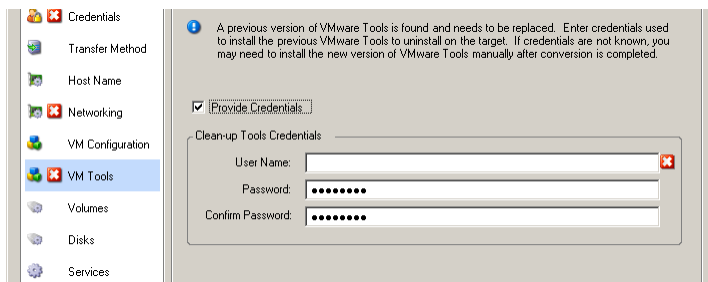
NOTE: If you are downgrading a virtual machine that has VMware Tools installed, or if you are converting a virtual machine to another VMware target that has an older version of VMware Tools, the installation of VMware Tools during the configuration of the target will fail.

To configure a job to remove or replace VMware Tools during the migration:

- ♦ **In Advanced mode:** In the Migration Job window, under the Operating System and Application Configuration section, click *Clean up VMware Tools*.



- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *VM Tools*.



Depending on the target, PlateSpin Migrate identifies existing instances of VMware Tools and prompts to either replace or remove them, as applicable:

- ♦ **For non-VMware targets:** The job configuration interface prompts you to uninstall VMware Tools. Provide the same admin-level credentials used to install the software. If the credentials are unknown, VMware Tools remains on the target machine after migration.

- ♦ **For VMware targets:** The job configuration interface prompts you to replace VMware Tools. Provide the same admin-level credentials used to install the obsolete version of VMware Tools. If the credentials are unknown, install the new version of VMware Tools manually after the migration completes.

6.12 Handling a Workload's Storage Media and Volumes

PlateSpin Migrate provides mechanisms for configuring your migration job to handle your workload volumes and their physical or virtual layout in the target infrastructure.

Workload Virtualization (X2V)

When virtualizing a workload, you can select which volumes you want included on the target and manage their free space sizes. You can also control how physical disk arrangement on your source is propagated on the peer virtual machine according to the target virtualization platform's storage media configuration and virtual disk handling features and capabilities.

Workload Deployment to Physical Hardware

When you are migrating workloads to physical hardware, you can select which source volumes to include and size, and which target disks to repartition and populate.

RAID Storage

PlateSpin Migrate supports RAID (Redundant Array of Independent Disks) storage, which it treats like any other storage hardware. As long as the associated storage controller driver is present, PlateSpin Migrate successfully completes the migration. PlateSpin Migrate does not support software implementations of RAID.

SAN Storage

PlateSpin Migrate supports SAN storage. As long as the driver for the associated host bus adapter (HBA) is present, PlateSpin Migrate successfully completes the migration. PlateSpin Migrate treats SAN LUNs like any other disk with logical volumes.

NAS

PlateSpin Migrate supports Network Attached Storage (NAS) systems. PlateSpin Migrate treats NAS like any other disk with logical volumes.

Windows Dynamic Disks

PlateSpin Migrate supports Windows dynamic disks, including mirrored, spanned, and RAID 5 configurations.

PlateSpin Migrate treats dynamic disks like it treats any other logical volume. When you are converting workloads that have dynamic disks, the disks on the target workload are created as basic disks, which you can use to remove unnecessary or obsolete dynamic disk configurations. After the migration, you can upgrade the required disks on your targets from basic to dynamic disks.

Linux Logical Volumes

PlateSpin Migrate supports logical volumes of Linux workloads. If Logical Volume Manager (LVM) is installed on your Linux source, you can use several LVM1 and LVM2 features to better manage your target workload's volume layout and organization.

You can set up your workload migration job to:

- ♦ Re-create logical volumes of the source on the target, or create logical volumes on the target even if the source is not using LVM.
- ♦ Create new volume groups on the target that are not on the source, or omit volume groups from the target that are present on the source.
- ♦ Rename volume groups on the target.
- ♦ Distribute volumes to different volume groups and disks.

NOTE: PlateSpin Migrate does not support:

- ♦ Copying LVM snapshots and LVM mirrors. You can create LVM snapshots and mirrored logical volumes on the target after the migration completes.
 - ♦ Migration of Linux workloads with encrypted volumes.
-

Storage layout and volume configuration settings depend on the job configuration mode (Advanced or Wizard), migration type, target virtualization platform, and source operating system.

OES 2: NSS File Systems and EVMS

PlateSpin Migrate supports NSS file systems of OES 2 workloads along with EVMS volume layout features. You can:

- ♦ Preserve source EVMS layouts on your target workload
- ♦ Create, delete EVMS volumes, and manage EVMS volume layouts
- ♦ Copy NSS pools from your source to the target
- ♦ Make use of NSS snapshots for consistent copying of your source volumes.

The following topics provide additional information:

- ♦ [Section 6.12.1, “Windows Storage Layout and Volume Configuration \(Wizard Mode\),” on page 134](#)
- ♦ [Section 6.12.2, “Storage Layout and Volume Configuration \(Advanced Mode\),” on page 137](#)
- ♦ [Section 6.12.3, “Volume Configuration in Server Sync,” on page 143](#)
- ♦ [Section 6.12.4, “Handling Volumes and Image Files in X2I \(Imaging\) Migrations,” on page 144](#)

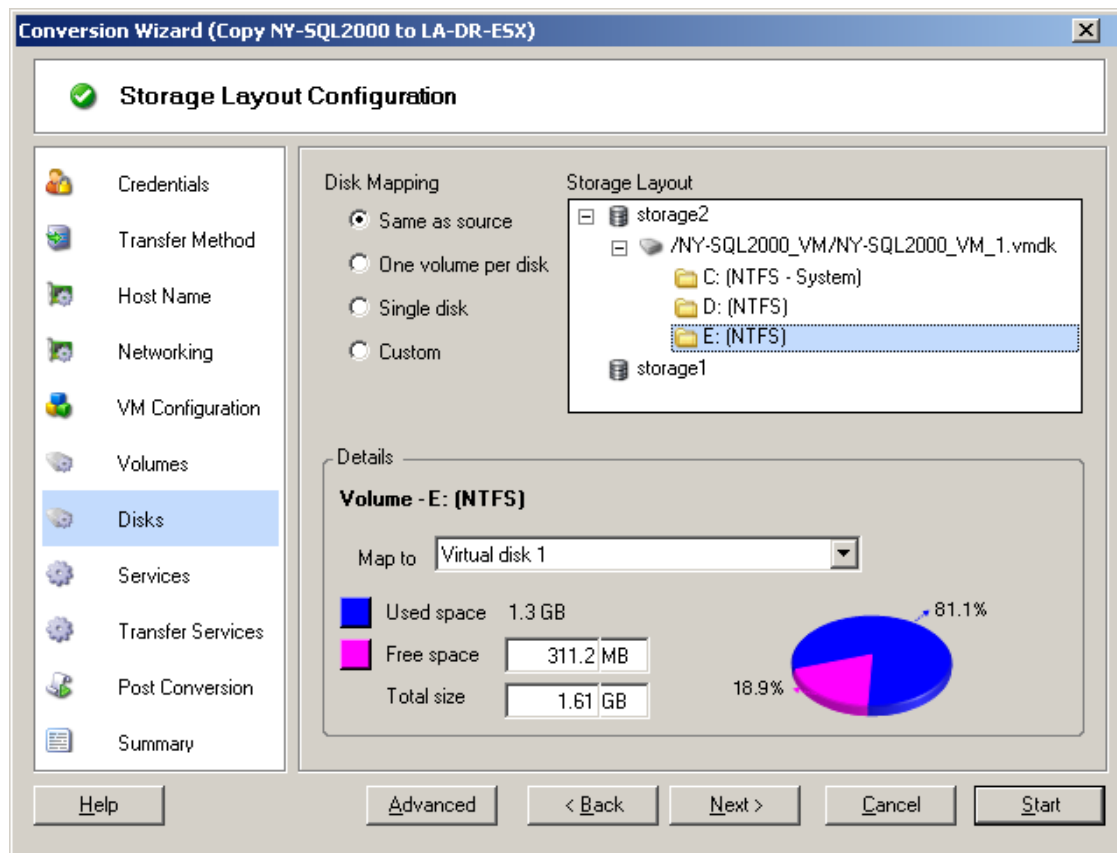
6.12.1 Windows Storage Layout and Volume Configuration (Wizard Mode)

- ♦ [“Storage Layout Configuration: Windows X2V \(Wizard Mode\)” on page 135](#)
- ♦ [“Volume Configuration: Windows X2V, X2P \(Wizard Mode\)” on page 136](#)

Storage Layout Configuration: Windows X2V (Wizard Mode)

Use this Migration Wizard page to specify a disk mapping scheme during Windows workload virtualization operations.

In the wizard's navigation pane, click *Disks*.



Storage Layout section: Displays information in a tree format according to the options selected.

Disk Mapping options: These options control how the source disk arrangement is propagated on the target. Select the option that best suits your migration. To add a virtual disk, select *Custom*, then click *Add Virtual Disk* in the Details section.

Details section: Displays information applicable to the selected item in the Storage Layout tree.

You can rearrange disks by dragging and dropping.

To add a virtual disk, select a storage item in the upper section, and in the Details section click *Add Virtual Disk*.

To view the path and name of a virtual disk and datastore it is assigned to, select the virtual disk.

Volume Configuration: Windows X2V, X2P (Wizard Mode)

Use this Migration Wizard page to select volumes to include in the migration and to adjust the volume size on the target.

In the wizard's navigation pane, click *Volumes*.

Conversion Wizard (Move win2k-SrvSync-S to LA-E5X3-01)

Volume Configuration

Adjust volume free size:

- ☐ Fixed: 1 GB
- ☐ Percent: 20
- ☐ Same as source
- ☒ Custom

Select volumes to be included in the conversion:

| Include | Name | Free | Total Size |
|-------------------------------------|--------------------|----------|------------|
| <input checked="" type="checkbox"/> | C: (NTFS - System) | 363.1... | 2.4 GB |
| <input checked="" type="checkbox"/> | M: (NTFS) | 3.9 GB | 3.9 GB |
| <input checked="" type="checkbox"/> | D: (NTFS) | 2 GB | 2 GB |

Details

☒ Include **Volume - C: (NTFS - System)**

Used space: 2 GB

Free space: 363.09 MB

Total size: 2.35 GB

Pie chart: 84.9% (Used), 15.1% (Free)

Buttons: Help, Advanced, < Back, Next >, Cancel, Start

Adjust Volume Free Size: Use one of the options to specify the volume free size. *Custom* lets you enter a free space value in the Details area.

Select volumes to include in the conversion: Select the volumes to be converted. System or boot volumes must be selected.

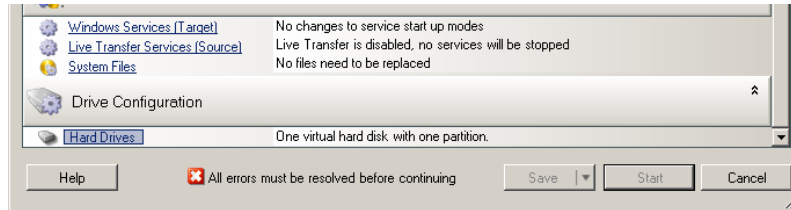
Details: View information about the selected volume. You can modify free space and total size values.

6.12.2 Storage Layout and Volume Configuration (Advanced Mode)

When you are working in Advanced mode, the Peer-to-Peer Conversion job window provides access to a single configuration interface that combines the wizard's Volumes and Disks screens.

To access drive configuration options in Advanced mode:

- ♦ In the Migration Job window, under the Drive Configuration section, click *Hard Drives*.

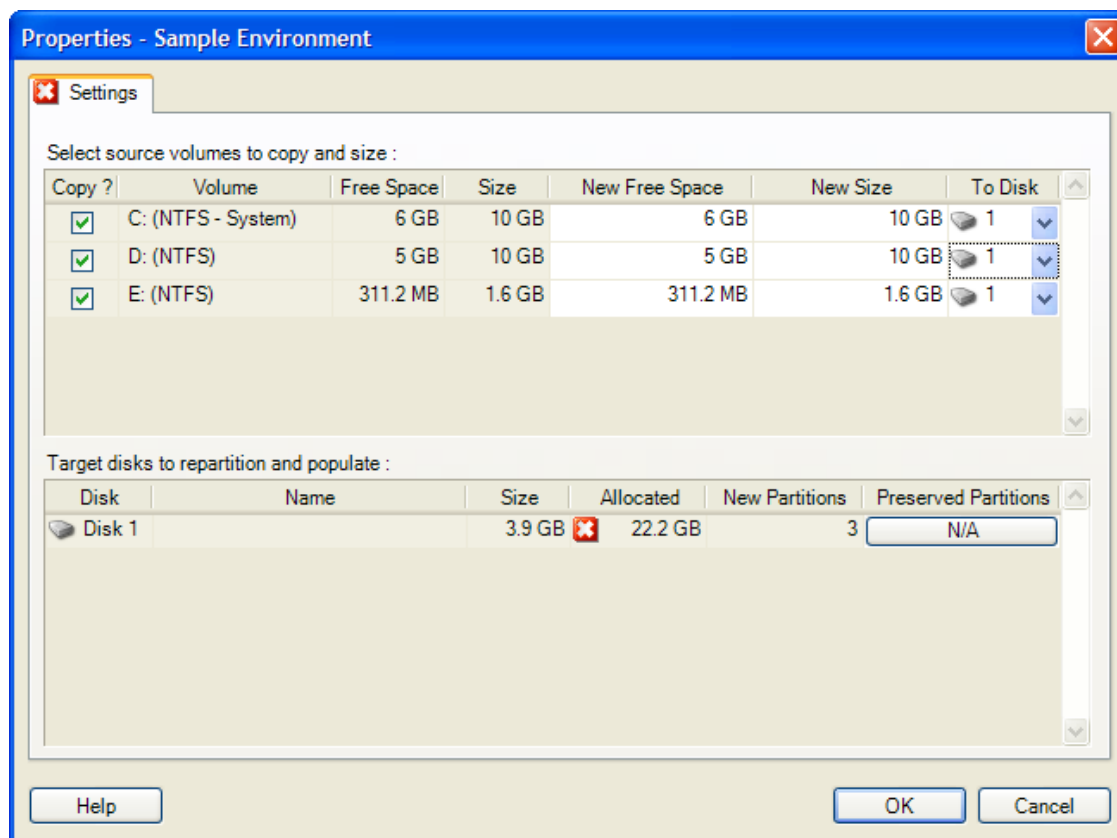


Settings vary depending on the target system.

- ♦ [“Windows X2P Drive Configuration \(Advanced Mode\)” on page 137](#)
- ♦ [“Linux Drive and LVM Volume Configuration \(Advanced Mode\)” on page 138](#)
- ♦ [“Target VM-Specific P2V/V2V Drive Configuration \(Advanced Mode\)” on page 141](#)

Windows X2P Drive Configuration (Advanced Mode)

Use these settings to select the volumes to copy during the migration:



Copy: Select the volumes to be copied during the migration.

New Free Space: To resize the volume during the migration, specify the desired amount of free space. PlateSpin Migrate automatically adjusts *New Size*.

New Size: To resize the volume during the migration, specify the desired size. PlateSpin Migrate automatically adjusts *New Free Space*.

To Disk: Select which hard drive the volume will be copied to on the physical target machine.

Preserve Partitions: Click this column to determine if an existing vendor partition should remain intact during the migration. If the partitions are not selected, PlateSpin Migrate permanently removes the partitions from the server.

Linux Drive and LVM Volume Configuration (Advanced Mode)

Use these settings to select the volumes and non-volume source spaces to copy and size during the migration. If LVM is installed on the source, a *Volume Group* tab provides you with corresponding options.

- ♦ [“Handling Linux Disks and Volume Groups” on page 138](#)
- ♦ [“Linux Drive and LVM Volume Configuration \(Settings Tab\)” on page 139](#)
- ♦ [“Linux Drive and LVM Volume Configuration \(Volume Groups Tab\)” on page 140](#)
- ♦ [“Linux \(OES 2\) Drive and Volume Configuration \(EVMS Volumes tab\)” on page 141](#)

Handling Linux Disks and Volume Groups

The PlateSpin Migrate Client provides you with Linux-specific user interface elements that provide you with options to properly handle your Linux storage.

Note the following sequence of steps that you must take for properly configuring and mapping newly-added disks and volume groups.

- 1 After adding a new disk, go to the *Volume Groups* tab and map the required volume group name by selecting the *Include* option.
See [Linux Drive and LVM Volume Configuration \(Volume Groups Tab\)](#).
- 2 Specify Size in Allocation for Volume Group Box
- 3 For each added disk, specify the required size in the corresponding *Allocation for Volume Group* field.

After the system focus shifts away from the field, the size of the newly-added disk is updated dynamically.

Linux Drive and LVM Volume Configuration (Settings Tab)

Use these settings to select source volumes to copy, non-volume source spaces to re-create and size, and target disks to repartition and populate.

The screenshot shows the 'Drive Configuration' dialog box with the 'Settings' tab selected. It contains three main sections: 'Virtual disks to create', 'Select volumes to copy and size', and 'Select non-volume storage to recreate and size'.

Virtual disks to create:

| Disk | Datastore | Size | File Name | Thin |
|----------------|----------------|------|--------------------------------|--------------------------|
| Virtual disk 0 | dev-comp124... | 8 GB | /ses-oes2-1.platespin_VM/se... | <input type="checkbox"/> |
| Virtual disk 1 | dev-comp124... | 2 GB | /ses-oes2-1.platespin_VM/se... | <input type="checkbox"/> |
| Virtual disk 2 | dev-comp124... | 2 GB | /ses-oes2-1.platespin_VM/se... | <input type="checkbox"/> |

Select volumes to copy and size:

| Inclu... | Volume | Free Space | Size | New Free Space | New Si... | Disk/Volume Group/EVMS Volu... |
|-------------------------------------|-------------------------|------------|-----------|----------------|-----------|--------------------------------|
| <input checked="" type="checkbox"/> | / | 3.8 GB | 6.4 GB | 3.8 GB | 6.4 GB | system |
| <input checked="" type="checkbox"/> | /boot | 55.8 MB | 68.3 M... | 55.8 MB | 68.3 M... | Disk 0 |
| <input checked="" type="checkbox"/> | /opt/novell/nss/mnt/... | 2.8 GB | 4 GB | 2.8 GB | 4 GB | POOL1 |

Select non-volume storage to recreate and size:

| Include | Type | Partition | Size | Is Swap | New Size | Disk/Volume Group/EVMS Volume |
|-------------------------------------|------|------------------|--------|-------------------------------------|----------|-------------------------------|
| <input checked="" type="checkbox"/> | | /dev/system/s... | 1.5 GB | <input checked="" type="checkbox"/> | 1.5 GB | system |
| <input type="checkbox"/> | | /dev/evms/sdd | 0 MB | <input type="checkbox"/> | 0 MB | |
| <input type="checkbox"/> | | /dev/evms/sde | 0 MB | <input type="checkbox"/> | 0 MB | |

Buttons: Help, OK, Cancel

Include: Select the volumes or non-volume source spaces to be copied or re-created and sized during the migration.

New Free Space: To resize the volume during the migration, enter the desired amount of free space. PlateSpin Migrate automatically adjusts **New Size**.

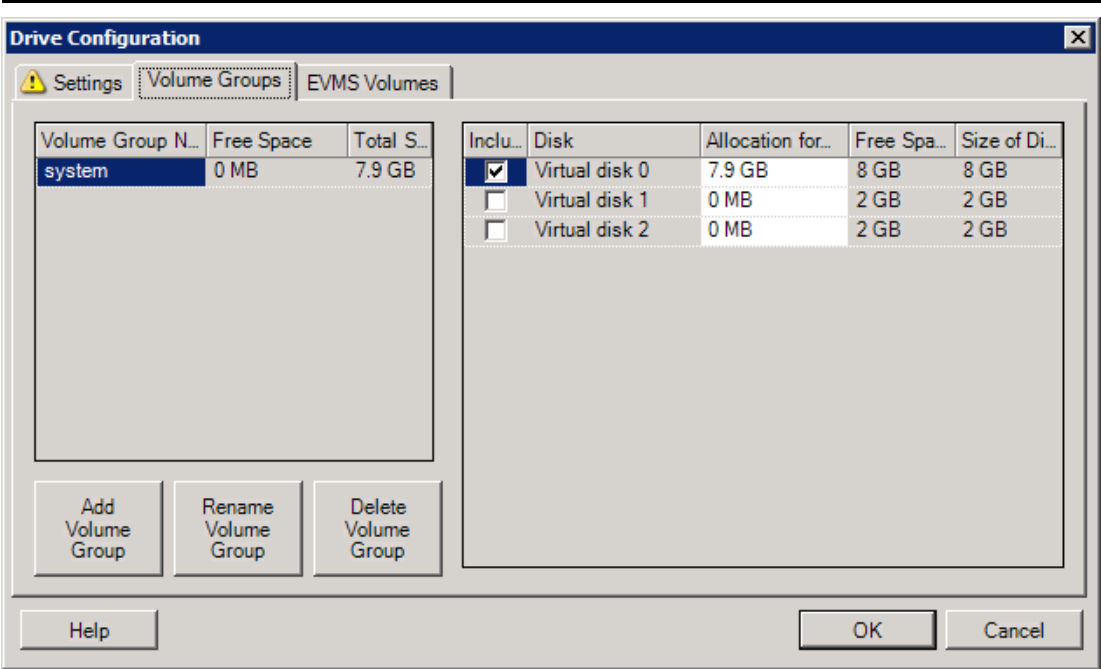
New Size: To resize the volume during the migration, enter the desired size. PlateSpin Migrate automatically adjusts **New Free Space**.

Disk/Volume Group: Select which hard drive or volume group the volume will be copied to on the physical target machine.

Preserve Partitions: For each disk, click the corresponding cell in this column to select existing vendor partitions to preserve during the migration. If the partitions are not selected, PlateSpin Migrate permanently removes them from the server.

Linux Drive and LVM Volume Configuration (Volume Groups Tab)

Use these settings to manage volume groups.



Add Volume Group: Creates a volume group on the target machine that is not present on the source machine.

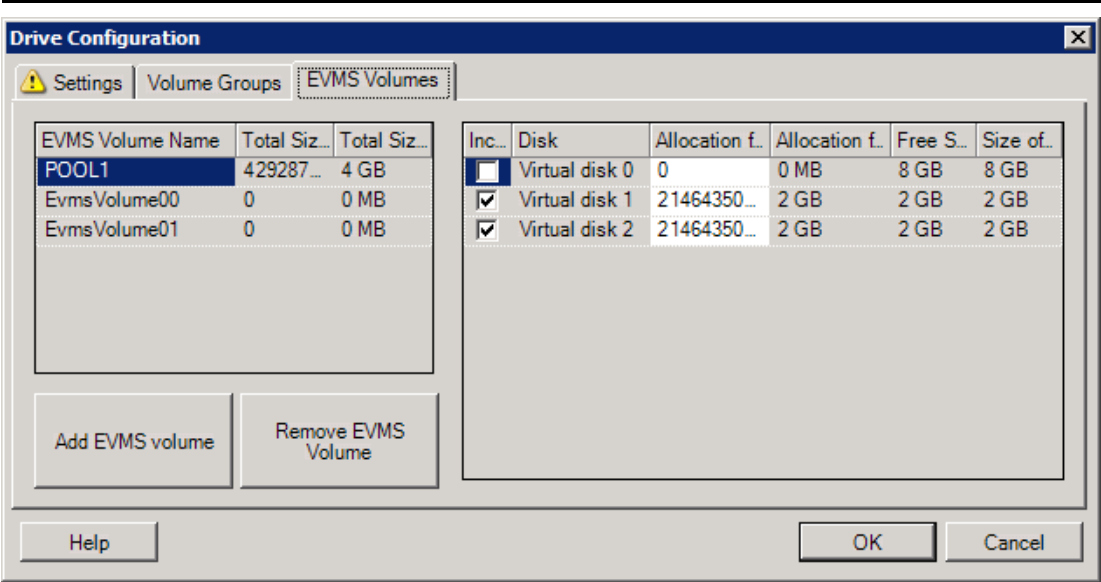
Rename Volume Group: Renames a volume group that is being copied from the source to the target.

Delete Volume Group: Deletes a volume group so that it is not created on the target machine. The volumes assigned to the volume group can be reassigned to other locations by using the *Settings* tab (by default, they are assigned to disk).

Allocation for Volume Group: To allocate space on disks to a volume group, select the volume group, then select the disks to include in it. Specify the amount of space to be allocated to it on each included disk.

Linux (OES 2) Drive and Volume Configuration (EVMS Volumes tab)

Use these settings to manage EVMS volumes (OES 2 workloads with NSS file systems).



(Left Section)

EVMS Volume Name: Displays a list of EVMS volumes found on the source.

Add EVMS volume and *Remove EVMS Volume* buttons: Click to create or delete EVMS volumes.

(Right Section)

Include: Select this option to include the indicated volume in the migration.

Allocation for EVMS Volume: To allocate space, select a volume, then select the disks to include in it. Specify the amount of space to be allocated to it on each included disk.

NOTE:

- ♦ Selecting multiple disks for a single EVMS volume is possible only for volumes with NSS pools.
- ♦ The source and target EVMS volumes must be equal in size.

Target VM-Specific P2V/V2V Drive Configuration (Advanced Mode)

When you configure a peer-to-peer virtualization job in Advanced mode, the job configuration window provides access to settings specific to the target virtualization platform.

Drive Configuration: VMware ESX

The following are drive configuration settings specific to VMware ESX:

Drive Configuration - Sample Environment

Settings | Volume Groups

Virtual disks to create:

| Disk | Datastore | Size | File Name |
|----------------|-----------|------|---|
| Virtual disk 0 | storage1 | 4 GB | /NY-RHEL4-LVM_VM/NY-RHEL4-LVM_VM_1.vmdk |

Select volumes to copy and size:

| Include | Volume | Free Space | Size | New Free Space | New Size | Disk/Volume Group |
|-------------------------------------|--------|------------|---------|----------------|----------|-------------------|
| <input checked="" type="checkbox"/> | / | 2.4 GB | 3.2 GB | 2.4 GB | 3.2 GB | VolGroup00 |
| <input checked="" type="checkbox"/> | /boot | 81.2 MB | 98.7 MB | 81.2 MB | 98.7 MB | Disk 0 |
| <input checked="" type="checkbox"/> | /home | 88.1 MB | 98.7 MB | 88.1 MB | 98.7 MB | Disk 0 |

Select non-volume storage to recreate and size:

| Include | Type | Partition | Size | Is Swap | Disk/Volu... | New Size |
|-------------------------------------|------|-----------------------|--------|-------------------------------------|--------------|----------|
| <input checked="" type="checkbox"/> | | /dev/VolGroup00/Lo... | 512 MB | <input checked="" type="checkbox"/> | Vol... | 512 MB |

Help OK Cancel

Datastore: Select the datastore volume on the ESX server where you want to place the vmdk files.

Copy: Select the volumes to be copied during the migration.

New Free Space: To resize the volume during the migration, specify the desired amount of free space. PlateSpin Migrate automatically adjusts New Size.

New Size: To resize the volume during the migration, specify the desired size. PlateSpin Migrate automatically adjusts New Free Space.

Disk/Volume Group: Assign the volume to a disk or, if LVM is enabled, to a volume group. The volume will be copied to this disk or volume group on the target machine.

Create: Select any non-volume disk partitions that should be created on the target machine (for example, a Linux swap partition).

New Size: To resize the non-volume partition during the migration, specify the desired size.

6.12.3 Volume Configuration in Server Sync

When you are using Server Sync to synchronize two Windows or Linux workloads, PlateSpin Migrate provides you with the capability to specify the required mapping between source volumes and existing volumes on the target. See [“Synchronizing Workloads with Server Sync” on page 84](#).

To access volume configuration options in a Server Sync job:

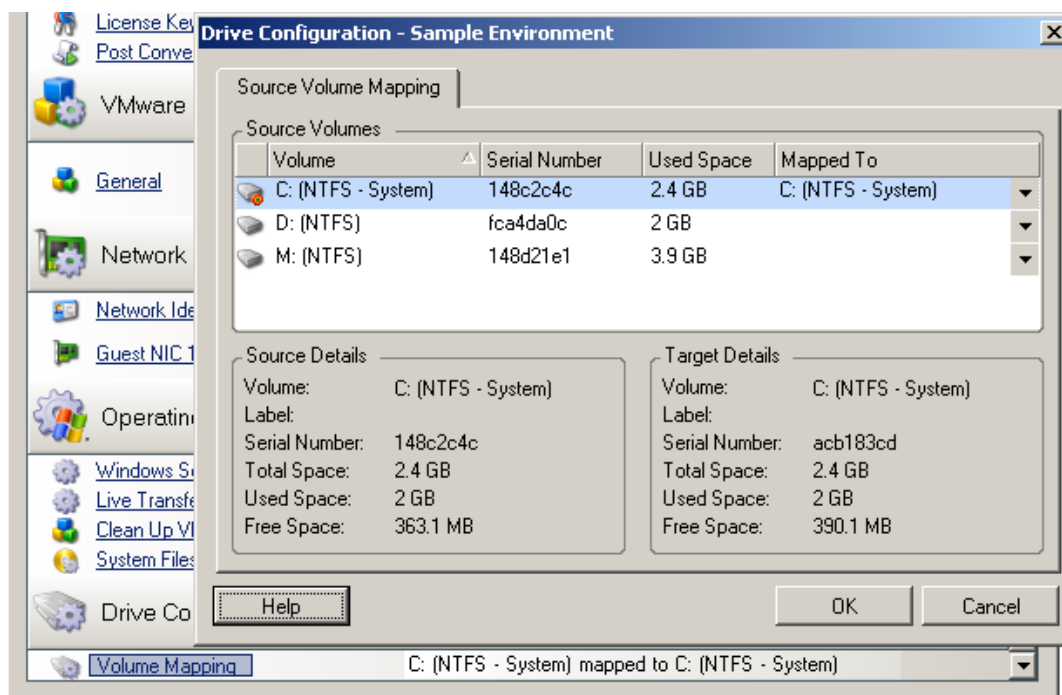
- ♦ **In Advanced mode:** In the Migration Job window, under the Drive Configuration section, click *Volume Mapping* (for Windows machines) or *Drives and Volumes* (Linux machines).
- ♦ **In Wizard mode (Windows only):** Not available.

The following topics provide information about Server Sync volume configuration options specific to Windows and Linux workloads.

- ♦ [“Server Sync Volume Configuration \(Windows\)” on page 143](#)
- ♦ [“Server Sync Volume Configuration \(Linux\)” on page 144](#)

Server Sync Volume Configuration (Windows)

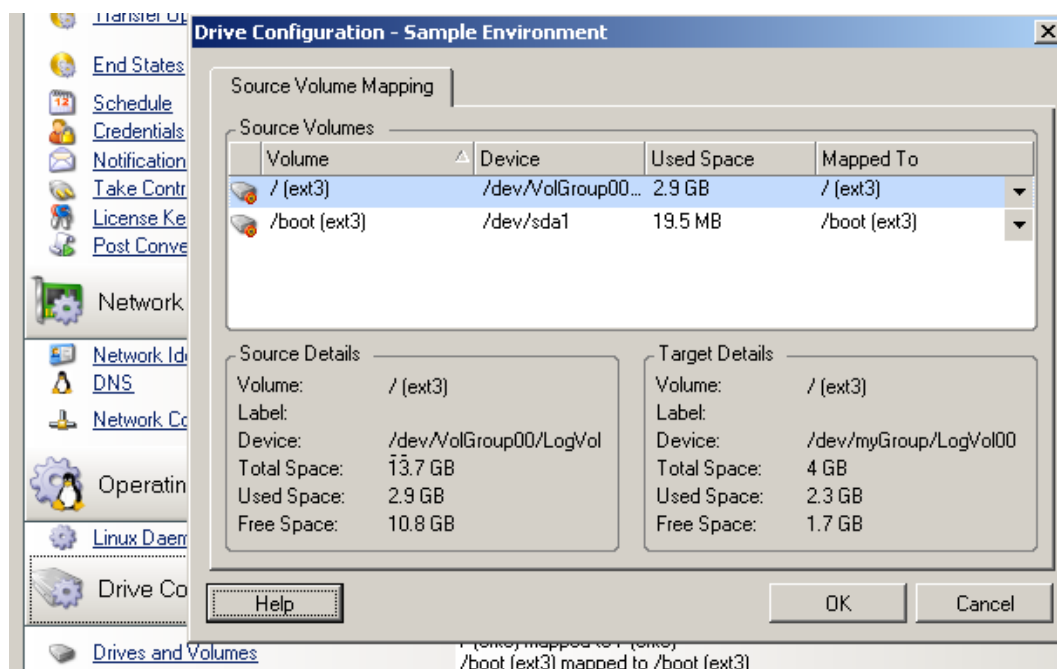
A Server Sync job for Windows workloads provides detailed drive and volume information for both the source and the target, and enables you to specify the required mapping.



Mapped To: Map each volume on the source to an existing volume on the target.

Server Sync Volume Configuration (Linux)

A Server Sync job for Linux workloads provides detailed mount point and volume information for both the source and the target, and enables you to specify the required mapping.



Mapped To: Map each volume on the source to an existing volume on the target.

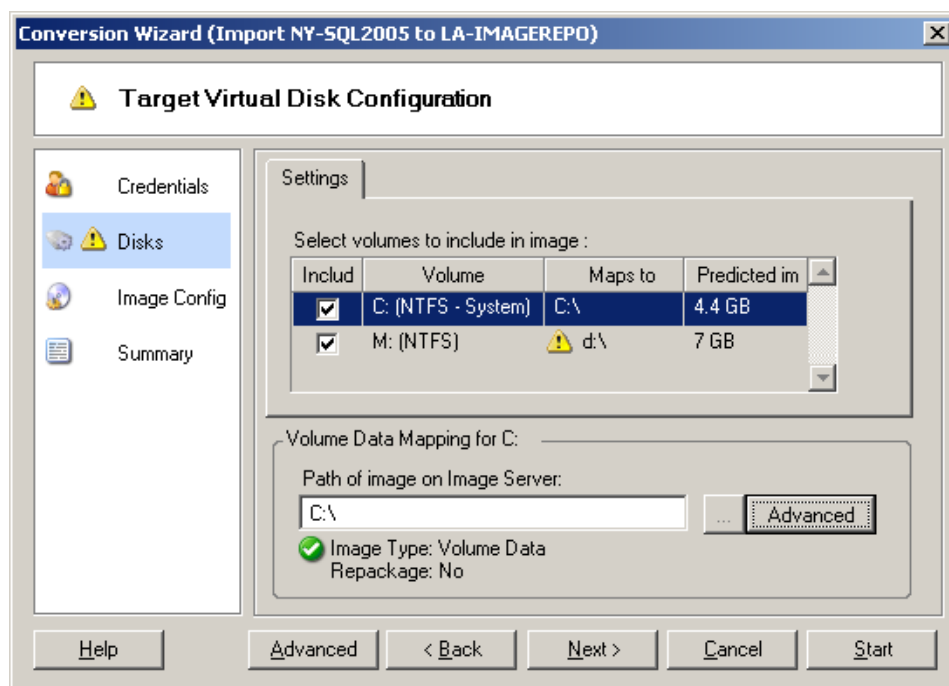
6.12.4 Handling Volumes and Image Files in X2I (Imaging) Migrations

When capturing a PlateSpin Image or importing volumes into a PlateSpin Image, PlateSpin Migrate provides a mechanism for including required volumes in an image, and specifying volume data mapping and image configuration options.

- ♦ [“Target Volume Configuration: Windows X2I \(Wizard Mode\)” on page 145](#)
- ♦ [“Image Configuration: Windows X2I \(Wizard Mode\)” on page 146](#)

Target Volume Configuration: Windows X2I (Wizard Mode)

When you are setting up a Capture Image or job in wizard mode, use this page to select volumes to include in the image and to specify paths to existing volume data.



For each volume selected for the image, specify the path to the corresponding image data.

For a Capture Image job, specify the path to the image package file (* .pkg).

To repackage the image, click *Advanced* in the *Volume Data Mapping* area and select *Repackage* in the Properties dialog box. Specify a path for the new image file, or use the default path.

Image Configuration: Windows X2I (Wizard Mode)

When you are setting up a Capture Image job in wizard mode, use this page to specify the image name and the path where it is stored.

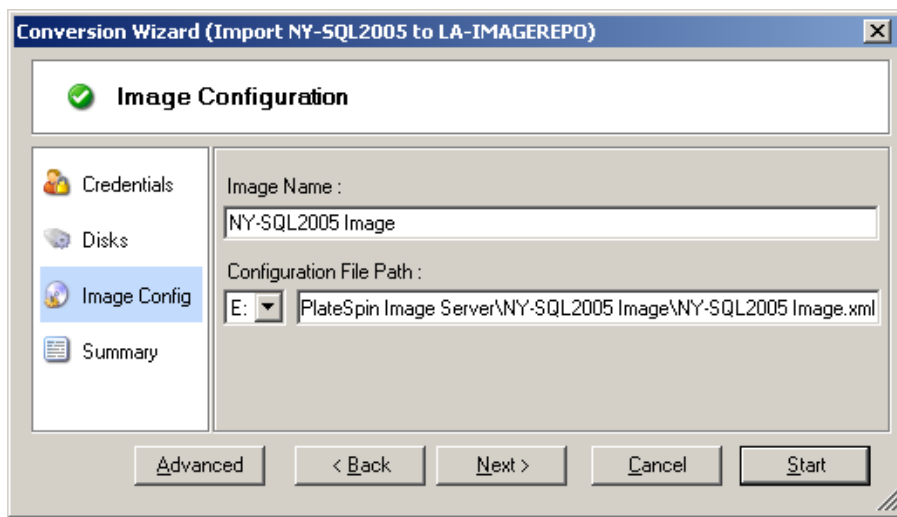


Image Name: Type a name for the workload image or accept the default.

Configuration file path: Type the full path to the image's XML configuration file or accept the default.

6.13 Including a Custom Post-migration Action in a Migration Job

You can set up your migration job to execute a custom action on your target. You must define and save your custom actions and their dependencies in advance. See [“Managing Custom Actions” on page 71](#).

NOTE: Post-migration actions are supported for peer-to-peer and one-time Server Sync migrations only.

When you are setting up a migration job, select the required action, any required command line parameters, and a timeout as required. You must also provide valid credentials for the target workload. If the target workload credentials are unknown, you can use the credentials of the source workload.

To specify a custom post-migration action for your migration job:

- ♦ **In Advanced mode:** In the Migration Job window, under the Virtual Machine Configuration section, click *Post Conversion*.
- ♦ **In Wizard mode (Windows only):** In the wizard's navigation pane, click *Post Conversion*.

Select Action: IPconfig_X2V

Execution Parameters

Command Line:

Execution Timeout: 5 seconds

☒ No Timeout

Credentials

Username:

Password:

☒ Use Source Credentials

Select Action: From the drop-down list, select a custom action previously saved in your library of post-migration actions.

Execution Parameters: Specify any required command line parameters for the action. If required, specify a timeout.

Credentials: Provide administrator credentials for the target. If they are the same as those for the source, and if they have been saved, select *Use Source Credentials*.

A Frequently Asked Questions

This section provides answers to frequently asked questions.

What are the performance and scalability characteristics of my PlateSpin Migrate product?

Your PlateSpin Migrate product's overall performance, including data transfer speeds and scalability, depend on a variety of factors in your specific environment. See ["Performance" on page 21](#).

How secure is my PlateSpin Migrate product?

PlateSpin Migrate provides several features to help you safeguard your data and increase security. See ["Security and Privacy" on page 20](#).

Does PlateSpin Migrate support my workload's data storage technology?

PlateSpin Migrate products support a number of data storage and management technologies, including Windows dynamic disks, Linux logical volumes, RAID (Redundant Array of Independent Disks) systems, and SAN (Storage Area Network) systems.

Can I use custom SSH ports to communicate with my workloads?

Yes. See ["Discovering the Details of Source Workloads and Targets" on page 57](#).

Can multiple migrations run simultaneously?

Yes. See ["Performance" on page 21](#).

B Troubleshooting PlateSpin Migrate

This section provides a series of topics about troubleshooting PlateSpin Migrate.

- ♦ [Section B.1, “Discovery,” on page 151](#)
- ♦ [Section B.2, “Peer-to-Peer Migrations \(Windows\),” on page 153](#)
- ♦ [Section B.3, “Using Images,” on page 154](#)
- ♦ [Section B.4, “Post-migration Cleanup of Source Workloads,” on page 155](#)
- ♦ [Section B.5, “Shrinking the PlateSpin Migrate Databases,” on page 157](#)

B.1 Discovery

Table B-1 Common Issues and Solutions Related to Discovery Operations

| Problems or Messages | Solutions |
|--|---|
| "Application has generated an error" during registration of physical server | This error occurs if the physical server is unable to contact the PlateSpin Server. A common cause is incorrect information entered during the registration process. To restart the registration process, enter <code>RegisterMachine.bat</code> . Ping to confirm basic connectivity with the PlateSpin Server. |
| My physical server has completed the registration process, but is not seen in PlateSpin Migrate Client | The full registration process can take some time to complete. After the second command prompt window has closed on the physical server, wait a few minutes before clicking the <i>Refresh</i> button in PlateSpin Migrate Client. |
| Problems discovering source and target servers | KB Article 7920291 (https://www.netiq.com/support/kb/doc.php?id=7920291) contains troubleshooting checklists for discovering the following: <ul style="list-style-type: none">♦ Linux servers and VMware ESX Servers♦ Windows-based source and target servers The article also has instructions for troubleshooting WMI connections and checking if DCOM is enabled. |
| "Package <...> Not Found" during discovery of existing Windows servers | Check for IIS configuration and network settings. |

| Problems or Messages | Solutions |
|--|--|
| Could not find file "\\{servername}\admin\$\{randomID}.xml" | <p>This error might occur on Windows Server 2000 or 2003 hosts.</p> <p>In some cases, either of these troubleshooting steps addresses the issue:</p> <ul style="list-style-type: none"> ◆ Ensure that the Admin\$ share on the PlateSpin Server host is accessible. If not, enable it and try the discovery again. - OR - ◆ 1. From any Web browser, open https://Your_PlateSpin_Server/platespinconfiguration. 2. Locate and edit the ForceMachineDiscoveryUsingService entry and change it to true. 3. Save the value and retry the discovery. |

Related KB Articles:

| ID | Description |
|---|--|
| 7920339 (https://www.netiq.com/support/kb/doc.php?id=7920339) | ERRMSG: Discovery fails with "The request failed with HTTP status 407" message |
| 7920862 (https://www.netiq.com/support/kb/doc.php?id=7920862) | ERRMSG: Recoverable Error: ControllerConnectionBroken during discovery |
| 7920291 (https://www.netiq.com/support/kb/doc.php?id=7920291) | ERRMSG: Server details discovery problems |

B.2 Peer-to-Peer Migrations (Windows)

Table B-2 Common Issues and Solutions Related to Peer-to-Peer Migrations (Windows)

| Problems or Messages | Solutions |
|--|---|
| <p>One of the following errors displays during offline migration:</p> <ul style="list-style-type: none"> ♦ Waiting for Controller to start (Failed) ♦ Controller Connection Not Established ♦ Controller Connection Broken ♦ Unable to start the Heartbeat Service | <p>This indicates one of the following problems:</p> <ul style="list-style-type: none"> ♦ The network settings for the temporary IP addresses under <i>Job Configuration > Advanced</i> might not be configured properly. ♦ There was a possible network outage that prevented the source/target machine from communicating with the PlateSpin Server. ♦ The source/target machine was not able to fully boot into the pre-execution environment. <p>To diagnose the exact cause of failure, check the state of the system where the controller failed to start. Commands such as <code>ipconfig</code> and <code>ping</code> are available to verify basic network connectivity.</p> |
| File transfer hangs at 1% or progresses at a slow pace | <p>By default, a link type of AUTO is used on the source server during a migration. If the source server is connected to a switch port that is forced to 100/FULL, the <i>Force Full Duplex</i> option must be enabled when configuring the migration. If this option is set incorrectly, a duplex mismatch occurs on the network.</p> |
| Unable to determine suitable boot partition | <p>When converting existing source servers, the boot volume must pass the following checks:</p> <ul style="list-style-type: none"> ♦ It must be on a basic disk ♦ It must have 175 MB of free space ♦ It must be a primary partition ♦ If any of these are not true for the system volume, the migration fails while attempting to take control of the source server. |
| Job remains in a <i>Scheduled</i> state for a long period and then changes to <i>Recoverable error</i> (all sub-steps display <i>NotStarted</i> status) | <p>There is a problem with the Operations Framework Controller on the PlateSpin Server. Use the Windows services plug-in to confirm that the Controller is running. See KB Article 7920862 (https://www.netiq.com/support/kb/doc.php?id=7920862) for other troubleshooting instructions.</p> |

| Problems or Messages | Solutions |
|--|---|
| Troubleshooting failures at the <i>Configuring Operating System</i> stage (also applicable to <i>Configure Target Machine</i> or <i>Configuring Virtual Machine</i> migration steps) | Generally, failures during the configuration step indicate that a time-out occurred when attempting to configure the target physical or virtual machine. Although the migration job appears to have failed, the overall migration is probably successful and the configuration service running on the target will likely continue its operations. KB Article 7920327 (https://www.netiq.com/support/kb/doc.php?id=7920327) contains a detailed troubleshooting checklist and lists information required if technical support is necessary. |
| Live Transfer is unavailable | Either an unsupported file system or operating system exists on the server. |

Related KB Articles:

| ID | Description |
|---|--|
| 7920862 (https://www.netiq.com/support/kb/doc.php?id=7920862) | ERRMSG: PlateSpin Migrate Job remains at a "Scheduled" or "Recoverable Error" state |
| 7920810 (https://www.netiq.com/support/kb/doc.php?id=7920810) | INFO: Restore job stalls - "The configuration service in the target machine..." |
| 2790341 (https://www.netiq.com/support/kb/doc.php?id=7920341) | INFO: What ports does PlateSpin Migrate use during discovery, migration and file transfer? |

B.3 Using Images

Table B-3 Common Issues and Solutions Related to PlateSpin Images

| Problems or Messages | Solutions |
|---|---|
| Cannot see PlateSpin Images on PlateSpin Image Server | If the Servers view is configured to group servers by machine, discovered image servers cannot be expanded. To display the images, reconfigure the Servers View so the servers are grouped by domain instead of machine. |
| Failed to mount image. The volume does not contain a recognized file system | This error message might appear when you are importing or deploying volume data while installing a PlateSpin Image Server on Windows 2003. To resolve the error, use the Windows services plug-in on the PlateSpin Image Server. Modify the logon properties for the PlateSpin Migrate Operations Management Controller service to use an account with local administrative privileges. Restart the service after making this change. |

| Problems or Messages | Solutions |
|---|--|
| Security descriptors are not intact on deployed server when you are using volume data from a Symantec Ghost image | When you are creating a PlateSpin Image using raw volume data that was extracted from a Ghost Image, the security descriptors are not preserved on the VM. This is because the extracted files inherit permissions of their parent folder. |

Related KB Articles:

| ID | Description |
|---|---|
| 7920879 (https://www.netiq.com/support/kb/doc.php?id=7920879) | ERRMSG: The file cannot be accessed by the system |

B.4 Post-migration Cleanup of Source Workloads

Source workloads might occasionally need a post-migration cleanup. For example, you might need to clean up a source workload of all PlateSpin software components after an unsuccessful migration.

- ♦ [Section B.4.1, “Cleaning Up Windows Workloads,” on page 155](#)
- ♦ [Section B.4.2, “Cleaning Up Linux Workloads,” on page 156](#)

B.4.1 Cleaning Up Windows Workloads

The following are instructions for cleaning up Windows workloads by component and use case.

| Component | Use Case | Removal Instructions |
|-------------------------------|----------------|--|
| File-based Transfer Component | All Migrations | At root level for each volume migrated, remove all files named PlateSpinCatalog*.dat |
| Workload discovery software | All migrations | <ol style="list-style-type: none"> 1. In the Servers view, undiscover the source (right-click, then select <i>Undiscover</i>). 2. In the source workload's Windows directory: <ul style="list-style-type: none"> ♦ Remove all files named machinediscovery*. ♦ Remove the subdirectory named platespin. |

| Component | Use Case | Removal Instructions |
|---------------------|----------------|--|
| Controller software | All migrations | <ol style="list-style-type: none"> 1. In the Servers view, undiscover the source (right-click, then select <i>Undiscover</i>). 2. Open a command prompt and change the current directory to: <ul style="list-style-type: none"> ♦ \Program Files\platespin* (32-bit systems) ♦ \Program Files (x86)\platespin (64-bit systems) 3. Run the following command: <code>ofxcontroller.exe /uninstall</code> 4. Remove the platespin* directory |

B.4.2 Cleaning Up Linux Workloads

The following are instructions for cleaning up Linux workloads by component and use case.

| Component | Use Case | Removal Instructions |
|---------------------|---------------------|---|
| Controller software | Offline migrations | In the source workload's file system, under <code>/boot</code> , remove the <code>ofx</code> directory with its contents. |
| | All live migrations | <ul style="list-style-type: none"> ♦ Kill these processes: <ul style="list-style-type: none"> ♦ <code>kill -9 ofxcontrollerd</code> ♦ <code>kill -9 ofxjobexec</code> ♦ remove the OFX controller rpm package: <code>rpm -e ofxcontrollerd</code> ♦ In the source workload's file system, remove the <code>/usr/lib/ofx</code> directory with its contents. |

| Component | Use Case | Removal Instructions |
|------------------------------------|--|---|
| Block-level data transfer software | All block-level migrations | <ol style="list-style-type: none"> 1. Check if the driver is active: <code>lsmod grep blkwatch</code> If the driver is still loaded in memory, the result should contain a line, similar to the following: <code>blkwatch_7616 70924 0</code> 2. (Conditional) If the driver is still loaded, remove it from memory: <code>rmmod blkwatch_7616</code> 3. Remove the driver from the boot sequence: <code>blkconfig -u</code> 4. Remove the driver files by deleting the following directory with its contents: <code>/lib/modules/[Kernel_Version]/Platespin</code> 5. Delete the following file: <code>/etc/blkwatch.conf</code> |
| LVM snapshots | Block-level migrations using LVM snapshots | <ol style="list-style-type: none"> 1. In the Jobs view, generate a Job Report for the failed job, then note the name of the snapshot. 2. Remove the snapshot device by using the following command: <code>lvremove <i>snapshot_name</i></code> |

B.5 Shrinking the PlateSpin Migrate Databases

When the PlateSpin Migrate databases (OFX and PortabilitySuite) reach a predetermined capacity, cleanup on those databases occurs at regular intervals. If there is a need to further regulate the size or content of those databases, Migrate provides a utility (`PlateSpin.DBCleanup.exe`) to further clean up and shrink those databases. [KB Article 7006458 \(https://www.netiq.com/support/kb/doc.php?id=7006458\)](https://www.netiq.com/support/kb/doc.php?id=7006458) explains the location of the tool and the options available for it, should you decide to use it for offline database operations.

C Reference of Tables

This section provides a list of links to important tables used throughout the documentation accompanying PlateSpin Migrate version 11.0.

Table

[Table 2-3, "PlateSpin Migrate Roles and Permission Details," on page 28](#)

[Table 2-4, "Network Communication Prerequisites for Discovery Operations," on page 35](#)

[Table 2-5, "Network Communication Prerequisites for Workload Portability," on page 37](#)

[Table 1-2, "PlateSpin Migrate Workload Migration Tasks," on page 15](#)

[Table 1-3, "Supported Microsoft Windows Workloads," on page 16](#)

[Table 1-4, "Supported Linux Workloads," on page 17](#)

[Table 1-5, "Supported Target Virtualization Platforms," on page 18](#)

[Table 3-1, "Machine-Specific Icons in the Servers View," on page 54](#)

D Documentation Updates

This section contains information on documentation content changes that were made in this *User Guide* after the initial release of NetIQ PlateSpin Migrate 11.0. The changes are listed according to the date they were published.

The documentation for this product is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up-to-date with the changes listed in this section.

If you need to know whether a copy of the PDF documentation that you are using is the most recent, the PDF document includes a publication date on the title page.

The documentation was updated on the following dates:

- [Section D.1, “May 1, 2014,” on page 161](#)
- [Section D.2, “March 27, 2014,” on page 161](#)
- [Section D.3, “March 27, 2014,” on page 161](#)

D.1 May 1, 2014

Updates were made to the following sections:

| Location | Update |
|---|---|
| “Migrating a Workload to the SLES 11 SP3 Xen Hypervisor” on page 93 | Added information that documents PlateSpin Migrate support for fully virtualized (only) VM targets on SLES 11 SP3 Xen hypervisor using semi-automated workflow. |

D.2 March 27, 2014

Updates were made to the following sections:

| Location | Update |
|--|---|
| “Supported Linux Workloads” on page 17 | Added Novell Open Enterprise Server (OES) 11 SP2 as a supported workload. |
| Section 1.2.2, “Supported Target Virtualization Platforms,” on page 18 | Added support for <i>Microsoft Windows Server 2008 R2 Hyper-V</i> as a virtualization platform. |

D.3 March 27, 2014

Updates were made to the following sections:

| Location | Update |
|--|---|
| “Supported Linux Workloads” on page 17 | Added Novell Open Enterprise Server (OES) 11 SP2 as a supported workload. |
| Section 1.2.2, “Supported Target Virtualization Platforms,” on page 18 | Added support for <i>Microsoft Windows Server 2008 R2 Hyper-V</i> as a virtualization platform. |

Glossary

Auto-Discovery. See [Network Discovery](#).

Block-Based Transfer Component. A PlateSpin Migrate software component, dynamically installed on source workloads to facilitate volume data transfer at the block level. *Compare with* [VSS Block-based Transfer Component](#); *see also* [File-based Transfer Component](#).

Capture Image. A PlateSpin Migrate job that captures an image of a workload in [PlateSpin Image](#) format with an optional synchronization schedule for updating incremental changes. *See also* [Deploy Image](#).

Controller. See [OFX Controller](#).

Conversion. Any workload portability operation irrespective of target infrastructure or business purpose (workload-hardware decoupling, virtualization, or volume synchronization). Used interchangeably with the term [Migration](#) throughout product collateral, the user interface, error messages, and logs.

Copy. A PlateSpin Migrate peer-to-peer migration job that creates a duplicate of a workload, with a new network identity, on a physical or virtual machine. *Compare with* [Move](#).

Deploy Image. A PlateSpin Migrate job that converts a PlateSpin Image to a bootable workload on physical hardware or on a virtual machine. *See also* [Capture Image](#).

Discover. See [Discover Details](#).

Discover Details. A PlateSpin Migrate job that inventories the details of a supported workload or target machine in preparation for a migration operation. *Compare with* [Network Discovery](#).

File-based Transfer Component. A PlateSpin Migrate software component, dynamically installed on a source workload to facilitate volume data transfer at the file level. *See also* [Block-Based Transfer Component](#), [VSS Block-based Transfer Component](#).

PlateSpin Image. (Formerly *PlateSpin Flexible Image*) One of PlateSpin Migrate's three fundamental workload infrastructures along with physical machines and virtualization platforms. A PlateSpin Image is a static stored copy of the state of a physical or virtual machine (including volume data and the configuration details of the workload's hardware profile, operating system, and network identity), captured at a specific point in time. To make a PlateSpin Image bootable, you convert it to a workload on physical hardware or a virtualization platform. *See also* [Capture Image](#), [Deploy Image](#), and [Import Image](#).

PlateSpin Image Server. A machine on which you have installed the PlateSpin Image Server software. *See* [PlateSpin Image](#).

I2P. Image-to-physical. A workload portability operation in which the source is a workload's PlateSpin Image and the target is a bootable workload on physical hardware.

I2V. Image-to-virtual. A workload portability operation in which the source is a workload's PlateSpin Image and the target is a bootable workload on a virtualization platform.

I2X. Image-to-anything. A workload portability operation in which the source is a workload's PlateSpin Image and the target is a bootable workload either on physical hardware or on a virtualization platform.

Image. See [PlateSpin Image](#).

Image server. See [PlateSpin Image Server](#).

Import Image. A PlateSpin Migrate job that creates a PlateSpin Image by using either raw volume data or third-party volume archives.

Job. A collection of the essential parameters of a workload portability, discovery, removal (undiscovery), or related operation that you define, save, schedule, execute, and monitor in the PlateSpin Migrate Client.

Migration. Any peer-to-peer workload portability operation in which a physical or virtual workload is copied or moved into another physical or virtual infrastructure.

Move. A PlateSpin Migrate peer-to-peer workload migration task that moves a workload to a physical or virtual machine. *Compare with* [Copy](#).

Network Discovery. A PlateSpin Migrate feature, based on standard Windows network browsing functionality, that automatically populates the PlateSpin Migrate Client's Servers view with the names of Windows machines in the neighborhood. *Compare with* [Discover Details](#).

OFX Controller. Operations Framework Controller. Software component that PlateSpin Migrate installs on source and target machines to enable them to communicate with PlateSpin Server and with each other.

Offline Migration. A type of migration, during which the source is shut down and booted into a temporary pre-execution environment to enable communication among the source, the target, and the PlateSpin Server.

P2I. Physical-to-image. A workload portability operation in which the source is a physical machine and the target is the workload's PlateSpin Image.

P2P. Physical-to-physical. A peer-to-peer workload portability operation in which the source is a physical machine and the target is another physical machine on different hardware.

P2V. Physical-to-virtual. A peer-to-peer workload portability operation in which the source is a physical machine and the target is virtual machine.

P2X. Physical-to-anything. A workload portability operation in which the source is a physical machine and the target is another physical machine (P2P migration), a virtual machine (P2V migration), or a PlateSpin Image (P2I migration).

Peer-to-Peer. A workload portability operation in which both the source and the target are bootable workloads, either physical or virtual (as opposed to operations in which either the source or the target is a static PlateSpin Image). P2P, P2V, V2V, and V2P are all peer-to-peer portability operations; I2X and X2I are not.

PlateSpin Migrate Client. The client application you use to interact with the PlateSpin Server, discover source workloads and targets; set up, execute, and monitor jobs; manage license keys; and configure the default behavior of the server.

PlateSpin Migrate Network. A named collection of discovered workloads and target machines you work with at any given time. A parameter of all discovery jobs.

PlateSpin Server. The remote runtime execution engine underlying the PlateSpin Migrate product.

Prepare for Synchronization. A step in workload synchronization operations where the target is a virtual machine in a Server Sync job. It automates the configuration and preliminary booting of the target virtual machine, and registers it as a valid Server Sync target in the PlateSpin Migrate Client's user interface. *See* [Server Sync](#).

Raw Volume Data. A directory of files that constitute a volume suitable for a PlateSpin Image.

Role. One of the three kinds of Windows local user groups that define PlateSpin Migrate users with specific access permissions: PlateSpin Migrate Administrator, PlateSpin Migrate Power User, and PlateSpin Migrate Operator.

Semi-Automated Virtualization. A workload virtualization operation in which a workload's target infrastructure is a virtual machine that is treated by PlateSpin Migrate as a physical machine. Applies to target virtualization platforms for which PlateSpin Migrate provides limited workload portability automation. *Compare with* [X2P](#).

Server. *See* [PlateSpin Server](#).

Server Sync. A workload portability operation that synchronizes the state of a physical or virtual workload (Windows or Linux) with the state of another physical or virtual workload of the same OS profile.

Source. The origin, or the infrastructure of the origin, of a workload portability operation (such as a physical machine, a virtual machine, or a PlateSpin Image). *Compare with* [Target](#).

Take Control. 1. *See* [Offline Migration](#)

2. The temporary pre-execution environment into which a Windows or Linux workload is booted during offline migration.

Target. The outcome, or the infrastructure of the outcome, of a workload portability operation (such as a physical machine, a virtual machine, or a PlateSpin Image). *Compare with* [Source](#).

Undiscover. A PlateSpin Migrate job that discards information about a workload from its inventory and removes any controllers installed. *See also* [Discover Details](#).

V2I. Virtual-to-image. A workload portability operation in which the source is a virtual machine and the target is a PlateSpin Image.

V2P. Virtual-to-physical. A peer-to-peer workload portability operation in which the source is a virtual machine and the target is a physical machine.

V2V. Virtual-to-virtual. A workload portability operation in which both the source and the target are virtual machines on similar or different virtualization platforms.

V2X. Virtual-to-anything. A workload portability operation in which the source is a virtual machine and the target is another virtual machine, a physical machine, or a workload's PlateSpin Image.

VSS Block-based Transfer Component. A PlateSpin Migrate software component, dynamically installed on Windows source workloads to facilitate volume data transfer at the block level by using the Microsoft Volume Snapshot Service (VSS). *See also* [Block-Based Transfer Component](#), [File-based Transfer Component](#).

Workload. Any physical or virtual instance of a supported operating system, along with its applications and data.

X2I. Anything-to-image. A workload portability operation in which the target is a workload's PlateSpin Image and the source is a physical machine or a virtual machine.

X2P. Anything-to-physical. A workload portability operation in which the target is a physical machine and the source is another physical machine, a virtual machine, or a workload's PlateSpin Image.

X2V. Anything-to-virtual. A workload portability operation in which the target is a virtual machine and the source is another virtual machine, a physical machine, or a workload's PlateSpin Image.