

# PlateSpin Transformation Manager 1.1 SP1 Release Notes

December 2017



PlateSpin Transformation Manager 1.1 SP1 (1.1.1) and PlateSpin Migrate Connector 1.1 SP1 (1.1.1) introduce new features and enhancements. They resolve several known issues. You can use this release in a PlateSpin Migration Factory deployment with PlateSpin Migrate 12.2 SP1 (12.2.1).

The documentation for this release is available in HTML and PDF formats at the [PlateSpin Transformation Manager 1.1 SP1 Documentation website](https://www.netiq.com/documentation/platespin-transformation-manager-1-1) (<https://www.netiq.com/documentation/platespin-transformation-manager-1-1>).

## 1 Version

Files for PlateSpin Transformation Manager 1.1 SP1 or PlateSpin Migrate Connector 1.1 SP1 are numbered 1.1.1 or 1.1.1-xxx.x, where xxx.x is the build number.

## 2 What's New

PlateSpin Transformation Manager 1.1 SP1 introduces new features and enhancements.

Many features in this product were made in direct response to suggestions from our customers. We thank you for your time and valuable input. We hope you continue to help us ensure that our products meet all your needs. To provide feedback, see [Contacting Micro Focus](#).

- ♦ [PTM Appliance](#)
- ♦ [PTM Server and Web Interface](#)
- ♦ [PlateSpin Migrate Connector](#)

### 2.1 PTM Appliance

PlateSpin Transformation Manager Appliance provides enhancements and new features. For more information about using the Appliance Console, see “[Managing the Appliance](#)” in the *PlateSpin Transformation Manager Appliance Guide*.

- ♦ [Proxy Services](#)
- ♦ [Online Update Channel](#)
- ♦ [PlateSpin Migrate Connector](#)
- ♦ [Password Security for Credentials Resources](#)

#### 2.1.1 Proxy Services

PTM Server is proxy aware. It can use the Proxy Client settings on the host Appliance for communications with the Micro Focus License Server. Persistent Internet access is required to license the individual workloads during the planning process. You might need to configure proxy services in a highly restrictive networking environment.

See “[Configuring Proxy Client Settings](#)” in the *Appliance Guide*.

## 2.1.2 Online Update Channel

PlateSpin Transformation Manager provides updates through the Online Update channel in the Appliance Console for the Appliance host VM operating system, PlateSpin Transformation Manager software and database, and the installed instance of PlateSpin Migrate Connector.

See [“Online Update”](#) in the *Appliance Guide*

## 2.1.3 PlateSpin Migrate Connector

An instance of PlateSpin Migrate Connector is installed and preconfigured to work with the installed PlateSpin Transformation Manager server.

If you create more than one project, you must reconfigure the connector to work with a specific project. See [“Configuring a Project Assignment for a Connector Instance”](#) in the *PlateSpin Migrate Connector Quick Start*.

## 2.1.4 Password Security for Credentials Resources

PlateSpin Transformation Manager uses industry-standard strong encryption to secure passwords in the PTM database for the Credentials resources used to access source machines and target hosts. The key is unique to each Appliance installation.

An encryption key is automatically generated during the upgrade to version 1.1.1. Existing Credentials resources are re-encrypted using the generated key. As new Credentials resources are created, their passwords will be encrypted with this key.

## 2.2 PTM Server and Web Interface

PlateSpin Transformation Manager Server and Web Interface provide several new features and enhancements. For more information about using the Web Interface, see the [PlateSpin Transformation Manager User Guide](#).

- ♦ [Tracking External Migrations](#)
- ♦ [Bookmarks](#)
- ♦ [Dashboard](#)
- ♦ [System Configuration](#)
- ♦ [Workload Discovery](#)
- ♦ [Automated Migrations](#)
- ♦ [Workloads Tab](#)
- ♦ [Workload Dialog](#)

### 2.2.1 Tracking External Migrations

For imported workloads in Planning Mode, PlateSpin Transformation Manager monitors state changes for matching external workload migrations performed on the project's PlateSpin Migrate servers. PTM tracks the external migrations, but does not control them. You cannot edit their configuration or set the workflow in PTM. PTM consumes a PTM License when it matches the external workload.

The Migrate Connector retrieves state change events as a subscriber of each Migrate server's event messaging system, and sends state information to the appropriate project and workload. PTM displays migration progress in the Workload dialog, Workload list, and on the Dashboard.

PTM tracks any matching workload, whether the migration is initiated through the Migrate Web Interface or the Migrate Client. Configuration details are available in the Workload dialog only for migrations initiated through the Migrate Web Interface. Limited state changes are reported for migrations performed in the Migrate Client.

See [“Tracking Workload Status for External Migrations”](#) in the *User Guide*.

## 2.2.2 Bookmarks

You can bookmark pages, dialogs, and search queries throughout the Web Interface. Each bookmark retains all relative filters to take you directly to the same view. Your personal bookmarks persist across sessions on any browser or any machine. You can share the bookmark URL with colleagues. Users see only the data permitted based on their assigned roles. See [“Bookmarks”](#).

## 2.2.3 Dashboard

- ♦ **Statistics.** Dashboard statistics include the workload states being tracked for external migrations performed on PlateSpin Migrate servers.
- ♦ **What’s Happening.** The new What’s Happening panel on the Dashboard displays key events for the current date or for a specified date. Users can easily see and do the important tasks for the day without performing complex queries. Event links take the user directly to the appropriate location to perform the tasks. Users see only the events and data permitted based on their assigned roles. See [“What’s Happening”](#).
- ♦ **Bookmarks.** The new Bookmarks panel on the Dashboard displays your personal bookmarks. Use this page to view, search for, open, or delete bookmarks. See [“Bookmarks”](#).
- ♦ **Recently Viewed.** The new Recently Viewed panel on the Dashboard displays links to pages and dialogs that you recently accessed for View or Edit actions. You can quickly return to a location without repeating the navigation or complex search criteria. You can share the URL with colleagues, and add the link to your bookmarks. Users see only the data permitted based on their assigned roles. See [“Recently Viewed”](#).

## 2.2.4 System Configuration

- ♦ **Connectors.** The Connectors page lists all PlateSpin Migrate Connector instances associated with the PTM Server. For each Connector instance, the list displays the following information:
  - ♦ FQDN
  - ♦ IP address
  - ♦ Login name used to connect to the PTM Server
  - ♦ Name of Project assigned to the Connector (assignment is required when you have multiple projects)
  - ♦ Current health of the connection
- ♦ **Migrate Connector.** The following Migrate Connector settings apply globally to all Connector instances associated with the PTM Server, and thereby to all projects:
  - ♦ **Pre-cutover testing days** option enables a System Administrator to specify the number of days before cutover to remind users about manual testing or to run the customer-provided pre-cutover test script. The default value is 3 days.
  - ♦ **Pause for manual Pre-Cutover Testing** option enables a System Administrator to specify whether PTM should pause for manual testing before proceeding to the Cutover phase. The default is disabled (deselected).

## 2.2.5 Workload Discovery

- ♦ Discovery files are placed in known locations with known filenames to facilitate white-listing the discovery software with the workload's antivirus software. See "[Antivirus Setup for Discovery](#)" in the *User Guide*.
- ♦ For a project in Planning Mode, any import method can use workload discovery information from PlateSpin Migrate servers that are configured as Migration Server resources. If normal discovery fails, the PlateSpin Migrate Connector scans the Migrate servers for a potential workload match, then retrieves the appropriate discovery information.
- ♦ The `Discovery not attempted` sub-state identifies workloads where the Migrate Connector instance was not available to receive requests to discover workload details.

## 2.2.6 Automated Migrations

- ♦ Workload discovery is required to Submit the workload for automated migration.
- ♦ The **On Hold** option in PTM also sets the **Pause Replication Schedule** option in PlateSpin Migrate. It can be controlled from either product interface.
- ♦ PTM and Migrate support Primary, Secondary, and Advanced DNS servers.
- ♦ Pre-Cutover Testing and Post-Cutover Testing:
  - ♦ Handles both automated and manual tests.
  - ♦ Provides **Cancel** and **Retry** actions.
  - ♦ Supports user-initiated repeat testing.
  - ♦ Customer-provided test script runs for automated testing after the Test VM is up and ready. PTM allows for additional manual testing after the automated tests are complete.
- ♦ The `Wait for manual Cutover` sub-state is available when **Pause for manual cutover** option is enabled in the **Migration Settings** panel of the Workload dialog.
- ♦ The `Cutover complete` sub-status indicates when the cutover process has fully completed.

## 2.2.7 Workloads Tab

- ♦ **Advanced Search**
  - ♦ Datastore searches are case insensitive.
- ♦ **Bulk Edit**
  - ♦ Adds support for Applications
  - ♦ Adds Start Time and Cutover Time (in addition to Dates)
- ♦ **Bulk Status Change**
  - ♦ Disallows Bulk Status Change for imported workloads in Automated Mode that have not been discovered
  - ♦ Disallows Bulk Status Change for imported workloads in Planning Mode with matching external migrations
- ♦ **Import**
  - ♦ Range import sets the description provided in the Import dialog on each of the imported workloads.

## 2.2.8 Workload Dialog

- ♦ The Mode is set automatically to Planning for workloads if the transformation type and target platform combination are not supported for automated migration. For example, if the type is not X2V and the target is not a supported VMware Cluster version, the workload Mode is set to Planning.

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**NOTE:** The Mode is not set automatically to Automated for workloads if the transformation type and target platform are supported for automated migration. Automated Mode must be inherited from the project or set intentionally by the user.

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- ♦ The Migration Settings panel is hidden for Decommission and Virtual File Move transformation types.
- ♦ The Testing Network Interfaces panel displays only for Transformation Types that support it.
- ♦ The Migration Settings panel and Testing Network Interfaces panel show and hide for workloads in Planning mode, as appropriate for tracked external migrations and manual external migrations.
- ♦ For external workload migrations, the Workload dialog displays read-only configuration information in the Proposed column if data is available from the PlateSpin Migrate Server. Proposed workload configuration information is generally available for migrations managed by the Migrate Web Interface, but not for migrations managed by the Migrate Client.
- ♦ The Workflow button properly shows the available next states for Automated Mode versus Planning Mode workloads.
- ♦ Transformation History differentiates between User-initiated actions, Migrate-initiated actions, and Connector-initiated actions (when the Connector is configured with unique login credentials).

## 2.3 PlateSpin Migrate Connector

PlateSpin Migrate Connector 1.1 SP1 provides the following new features and enhancements. For information about installing or configuring the Migrate Connector, see the [PlateSpin Migrate Connector Quick Start](#).

- ♦ [Custom Callouts](#)
- ♦ [Matching Workloads for External Migrations](#)
- ♦ [Tracking Status Change Events for External Migrations](#)
- ♦ [Balancing Automated Migrations in a VMware Cluster](#)
- ♦ [Unique Login Credentials for Each Connector Instance](#)
- ♦ [PTM Server Certificate Store](#)

### 2.3.1 Custom Callouts

- ♦ All Custom Callout scripts and commented-out sample code have been updated to support PlateSpin Transformation Manager 1.1.1 and PlateSpin Migrate 12.2.1.
- ♦ PTM forces a reload of Custom Scripts each time they are run to ensure the most recent code changes are applied.

- ♦ When it first compiles Custom Callout scripts, PTM reports any discovered coding errors as sub-states for the workload in the Workloads list and Workload dialog. Pause over the error sub-state to view additional debugging information as a tooltip.
- ♦ Custom Callout scripts that fail for coding or validation failure reasons can now be retried. A script success must occur before the migration workflow can proceed.

### 2.3.2 Matching Workloads for External Migrations

For workloads in Planning Mode, Migrate Connector scans the project's PlateSpin Migrate servers for external workload migrations that match the project's imported workloads. Scans are triggered by various events, such as restarting the Connector, importing workloads, and creating Migration Server resources.

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**NOTE:** Migrate Connector ignores workloads on the project's PlateSpin Migrate servers that have not been imported to your project. After you import a workload, the Connector seeks a match during subsequent scans of the Migrate servers, then begins tracking states for it when a match is confirmed.

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### 2.3.3 Tracking Status Change Events for External Migrations

For workloads in Planning Mode, Migrate Connector gets status and configuration state change events for external migrations as a subscriber of the Migrate servers' event messaging systems, and sends state information to the appropriate project and workload. It supports external migrations initiated through PlateSpin Migrate Web Interface and PlateSpin Migrate Client.

### 2.3.4 Balancing Automated Migrations in a VMware Cluster

For automated migrations, the Connector balances the migrations to be performed across the member hosts in the VMware Cluster.

### 2.3.5 Unique Login Credentials for Each Connector Instance

To distinguish actions initiated by the project's Connector instance, we strongly recommend that you create a unique User object to use for the Connector login credentials instead of using a real User object. Create this special user as a System user, then assign it a Project Architect role at the Project level. Create a different User object for each Connector instance with permissions appropriate for its assigned project.

### 2.3.6 PTM Server Certificate Store

In the Migrate Connector configuration file (`/opt/microfocus/migrate_connector/config/settings.cfg`) file, an option has been added to specify local PTM server certificate store for authenticating the PTM server certificate. Specify the directory location to use a local certificate authority for certificate validation. If no value is set, the Connector will use Mozilla's root certificates.

```
local_ptm_ssl_cert=
```

## 3 Known Issues

Micro Focus strives to ensure our products provide quality solutions for your enterprise software needs. We are currently researching the following known issues for this release.

If you need assistance with any issue, contact Micro Focus Support at <https://www.microfocus.com/support-and-services/>.

- [Jetty Keystore Configuration Is Overwritten During Upgrade](#)
- [Target Host Discovery Fails for a VMware ESXi Host](#)
- [Withdraw and Cancel Actions for Automated Migrations](#)

### 3.1 Jetty Keystore Configuration Is Overwritten During Upgrade

**Issue:** After upgrading PlateSpin Transformation Manager 1.1 to version 1.1.1, the keystore configuration for Jetty is replaced by the default Jetting configuration. The keystore that is shared between the Appliance and PlateSpin Transformation Manager is `/vastorage/conf/certs/keystore`.

On a default setup for PTM 1.1, the PTM Jetty configuration for the keystore is in the `ssl.ini` file here:

```
/opt/microfocus/ps_transform_mgr/tm-jetty-base/start.d/ssl.ini
```

In this location, the PTM 1.1 default setup for Jetty keystore is:

```
# Setup a keystore and truststore
jetty.keystore=certs/keystore
jetty.truststore=certs/keystore

# Set the passwords.
jetty.keystore.password=changeit
jetty.keymanager.password=changeit
jetty.truststore.password=changeit
```

After the upgrade, the values in the `ssl.ini` file have been overwritten by jetty defaults:

```
# Setup a keystore and truststore
jetty.keystore=etc/keystore
jetty.truststore=etc/keystore

# Set the passwords.
jetty.keystore.password=OBF:lvny1z1olx8elvnw1vn61x8g1zlulvn4
jetty.keymanager.password=OBF:lu2ulwml1z7s1z7alwnllu2g
jetty.truststore.password=OBF:lvny1z1olx8elvnw1vn61x8g1zlulvn4
```

**Workaround:** For any customization of the certificates that has happened or that will happen through the appliance UI, this needs to match what it was before the upgrade.

Before you perform the upgrade, make a copy of the settings before the upgrade. After the upgrade, use the appropriate keytool to reset the values.

**To prepare for upgrade:**

- 1 Start an SSH session on the Appliance, and log in as the `root` user.  
See [Enabling or Disabling the SSH Service](#) in the *Appliance Guide*.
- 2 Save a copy of the `/opt/microfocus/ps_transform_mgr/tm-jetty-base/start.d/ssl.ini` file, or make a note of the Jetty keystore settings for the following parameters.

The default values for PTM 1.1 are shown here. Your settings might be different if you have ever made changes to the Jetty keystore using the appropriate keytool software. `changeit` is the actual password.

```
# Setup a keystore and truststore
jetty.keystore=certs/keystore
jetty.truststore=certs/keystore

# Set the passwords.
jetty.keystore.password=changeit
jetty.keymanager.password=changeit
jetty.truststore.password=changeit
```

3 Close the SSH session.

## 3.2 Target Host Discovery Fails for a VMware ESXi Host

**Issue:** Target host discovery fails for a VMware ESXi virtual host with the following error:

```
Unable to perform target host discovery -- Destination host IP address not
provided.
```

The target host was discovered on a workload in Planning Mode, but the submitted workload needs to specify the host's parent VMware vCenter Cluster instead of an individual virtual host.

**Workaround:** To resolve this issue:

- 1 In the Web Interface, go to **Resources > Hosts**.
- 2 Verify that the appropriate VMware vCenter Cluster has been created as a Host resource.  
If it is not available, click **Create** and set it up now.
- 3 In the Workloads list, select the workload and click **Edit** to open the Workload dialog.
- 4 Withdraw the workload.  
Wait for the withdrawal to complete successfully before you proceed.
- 5 In the Workload dialog on the Location panel, click **Edit** to open the Edit Location dialog.
- 6 For **Host**, select the appropriate VMware vCenter Cluster.
- 7 Click **Save**.
- 8 Submit the workload.

## 3.3 Withdraw and Cancel Actions for Automated Migrations

**Issue:** Withdraw or Cancel Actions from the Workload dialog do not behave as expected at various stages of automated workload migration.

**Workaround:** In the PTM workload dialog, do not attempt to Withdraw or Cancel a submitted automated migration when a replication is in progress. Wait until the workload's replication process has stopped on the assigned PlateSpin Migrate server, or use the Migrate Web Interface to stop it.



## 4 Installation or Upgrade

The PlateSpin Transformation Manager Appliance is a virtual machine that hosts the software and the database for PlateSpin Transformation Manager. It also includes an installed instance of the PlateSpin Migrate Connector.

- ♦ [Requirements](#)
- ♦ [Downloading the Software](#)
- ♦ [Installing the Software](#)
- ♦ [Upgrading the Software](#)

### 4.1 Requirements

#### PlateSpin Transformation Manager

PlateSpin Transformation Manager 1.1.1 is a service pack update to PlateSpin Transformation Manager 1.1. You apply the download file to your existing PTM 1.1 Appliance. You cannot deploy version 1.1.1 directly.

For information about requirements for hosting the PTM 1.1 Appliance on your VMware host, see “[Appliance Requirements](#)” in the *PlateSpin Transformation Manager Appliance Guide*.

#### PlateSpin Migrate Connector

PlateSpin Migrate Connector 1.1.1 is a service pack update to PlateSpin Migrate Connector 1.1. You can use the download file to update existing Connector instances or to install new instances.

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**NOTE:** In this release, you must deploy a separate Connector instance for each project in PTM.

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For information about requirements for standalone instances of PlateSpin Migrate Connector, see “[Installation Requirements](#)” in the *PlateSpin Migrate Connector Quick Start*.

For information about configuring each Connector instance for a separate project, see “[Configuring a Project Assignment for a Connector Instance](#)” in the *PlateSpin Migrate Connector Quick Start*.

### 4.2 Downloading the Software

PlateSpin Transformation Manager 1.1.1 and PlateSpin Migrate Connector 1.1.1 update files include the following:

Download File Name	Description
platespin-transformationmanager-1.1.1-xxx.x.x86_64.rpm Where xxx.x is the build number	Contains the files to update your existing installation of PlateSpin Transformation Manager 1.1. You cannot deploy version 1.1.1 directly.
platespin-migrate-connector-1.1.1-xxx.x.x86_64.rpm Where xxx.x is the build number	Contains the files to install a new instance of PlateSpin Migrate Connector 1.1.1 on your intended Migrate Connector host, or to update an existing installation of PlateSpin Migrate Connector 1.1.

Download File Name	Description
ptm_public-key_1-1-1.key	<p>Contains a PlateSpin Transformation Manager Public Key for new installs of remote instances of PlateSpin Migrate Connector on your intended Migrate Connector hosts.</p> <p><b>NOTE:</b> To install the Migrate Connector RPM without warnings, you must import the PTM Pubic Key file to your keyring on the intended Migrate Connector host before you install the Connector RPM.</p>

### Get Updates from the Online Update Channel

Update files for PlateSpin Transformation Manager 1.1.1 and PlateSpin Migrate Connector 1.1.1 are available through the Online Updates channel for your existing PlateSpin Transformation Manager 1.1 Appliance.

You must first register with the Online Update channel before updates are available to you. A Full License is required for registration. A public Internet connection is required for registration and download. Use the same Micro Focus Customer Center account credentials that you used to get the Full License to register with the channel. For registration instructions, see “[Online Update](#)” in the *Appliance Guide*.

### Get Updates from Micro Focus Patch Finder

Update files for PlateSpin Transformation Manager 1.1.1 and PlateSpin Migrate Connector 1.1.1 are also available on the [Micro Focus Patch Finder website](https://download.microfocus.com/patchfinder/) (<https://download.microfocus.com/patchfinder/>). Search for PlateSpin Transformation Manager 1.1.1 ([https://download.microfocus.com/Download?buildid=x\\_b21o493Go~#](https://download.microfocus.com/Download?buildid=x_b21o493Go~#)). No license is required. A public Internet connection is required for download. Use your Micro Focus Customer Center account credentials to log in to this site.

### Get PTM 1.1 and Migrate Connector 1.1 from Micro Focus Downloads (New Install)

Installation files for PlateSpin Transformation Manager 1.1 and PlateSpin Migrate Connector 1.1 are available on the [Micro Focus Downloads website](https://download.microfocus.com/) (<https://download.microfocus.com/>). Select **PlateSpin Transformation Manager**, then follow the **Download** link for **PlateSpin Transformation Manager 1.1** (<https://download.microfocus.com/Download?buildid=vcuzrdZizRU~>) in the results. Use your Micro Focus Customer Center account credentials to log in to this site.

## 4.3 Installing the Software

For information about deploying the PlateSpin Transformation Manager 1.1 Appliance, see “[Installing and Configuring the Appliance](#)” in the *PlateSpin Transformation Manager Appliance Guide*. After you install the appliance, continue with “[Upgrading the Software](#)” to apply the version 1.1.1 updates.

For information about installing and configuring a standalone instance of PlateSpin Migrate Connector 1.1.1 on your SUSE Linux Enterprise Server 11 SP4 server, see the following in the *PlateSpin Migrate Connector Quick Start*:

- ♦ “[Installing or Updating the Connector](#)”
- ♦ “[Configuring a Project Assignment for a Connector Instance](#)”

## 4.4 Upgrading the Software

For information about how to apply the update files on the Appliance that you downloaded through Online Updates, see “[Upgrading the Appliance Software Using the Online Update Channel](#)” in the *PlateSpin Transformation Manager Appliance Guide*. This method updates PlateSpin Transformation Manager and the instance of PlateSpin Migrate Connector on the Appliance.

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**NOTE:** The update automatically upgrades the schema for your PTM 1.1 database. Your project data continues to function as expected. New fields are populated with values as you use the product.

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For information about how to apply the update files on the Appliance that you downloaded from Micro Focus Patch Finder, see “[Upgrading the Appliance Using Files from Micro Focus Patch Finder](#)” in the *PlateSpin Transformation Manager Appliance Guide*. This method updates PlateSpin Transformation Manager and the instance of PlateSpin Migrate Connector on the Appliance.

If you have installed instances of PlateSpin Migrate Connector 1.1 on your standalone SUSE Linux Enterprise Server 11 SP4 servers, use the RPM file and KEY file for PlateSpin Migrate Connector 1.1 SP1 that you downloaded from the Online Update Channel or from Micro Focus Downloads. See “[Updating PlateSpin Migrate Connector](#)” in the *PlateSpin Migrate Connector Quick Start*.

## 5 Licensing Information

For information about activating a new license, see “[Adding a License Key](#)” in the *PlateSpin Transformation Manager User Guide*.

For information about using your license key to register for the Online Update channel, see “[Online Update](#)” in the *PlateSpin Transformation Manager Appliance Guide*.

To get an Evaluation License, go to the [PlateSpin Transformation Manager product page \(https://www.microfocus.com/products/platespin/transformation-manager/\)](https://www.microfocus.com/products/platespin/transformation-manager/), then click [Trial Download](#). Log in using your Customer Center account. We will email you with access details for your trial license.

## 6 Additional Documentation

For the most recent version of this document and other PlateSpin Transformation Manager documentation resources, visit the [PlateSpin Transformation Manager 1.1 SP1 Documentation website](#).

In addition to English, documentation is available shortly after general availability in the Japanese national language.

## 7 Previous Releases

For documentation that accompanied earlier releases, visit the [PlateSpin Transformation Manager 1.1 SP1 Documentation website](#) and scroll to *Previous Releases*.

## 8 Contacting Micro Focus

We want to hear your comments and suggestions about this book and the other documentation included with this product. You can use the [comment on this topic](#) link at the bottom of any page of the online documentation, or send an email to [Documentation-Feedback@netiq.com](mailto:Documentation-Feedback@netiq.com).

For specific product issues, contact Micro Focus Support at <https://www.microfocus.com/support-and-services/>.

Additional technical information or advice is available from several sources:

- ♦ Product documentation, Knowledge Base articles, and videos: <https://www.microfocus.com/support-and-services/>
- ♦ The Micro Focus Community pages: <https://www.microfocus.com/communities/>

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