



PrinterOn PrintWhere

Administrator Guide

Version 6.3.9



mobile printing solutions | enterprise | education | public printing locations

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1

Deploying and configuring a PrintWhere environment

PrintWhere[®] is a universal Windows print driver that lets users print to any PrinterOn registered printer to which they have access directly from any Windows application, simply by selecting **File > Print**.

To simplify the print setup process for Windows users, administrators can deploy, install, and configure PrintWhere and any other necessary printers or drivers on users' machines.

This guide outlines a series of tasks that use standard Windows Group Policy or Intune features to deploy a common print configuration to users within your organization. This deployment process is invisible to the user; once the deployment has been configured, the files and software are automatically installed when the user logs in and are ready for use with no user intervention at all.

When the user selects **File > Print** to print a document, they will automatically be printing through the PrinterOn service to the default printer you configured for them.

The deployment process

Successfully deploying a common print configuration to a group of users involves the following set of high-level tasks. Depending on your needs, some of these tasks may be optional.

1. [Preparing for deployment](#): Outlines the prerequisites needed before deployment can be considered, and provides some additional information to help you decide how best to deploy a print configuration for your situation.
2. [Deploying printers and printer drivers](#): Describes how to create a Group Policy Object specific printer drivers to users. This task is only required if the default printer drivers installed with the PrintWhere software don't meet your needs.
3. Deploying the PrintWhere software using the method of your choice:
 - [Deploying the PrintWhere software using Intune](#): Describes how to use Microsoft Intune to deploy and install PrinterOn's PrintWhere Universal printer driver and the PrintWhere configuration file.
 - [Deploying the PrintWhere software using Group Policy](#): Describes how to create a Group Policy Object to deploy and install PrinterOn's PrintWhere Universal printer driver and the PrintWhere configuration file.

Additional configuration information

In addition to the deployment tasks above, this guide includes additional information you can use to optimize the performance of PrintWhere and the PrinterOn service.

- [Best practices for configuring PrinterOn for use with PrintWhere](#): Describes some tips and tricks you can use when configuring your PrinterOn service's printer listings.
- [Creating a PrintWhere configuration file](#): Describes how to create the configuration file which you can deploy with the PrintWhere software.
- [Managing PrinterOn plugins](#): Describes how PrintWhere uses helper objects to enable the host computer to locate and connect to printers and what administrators need to do to ensure PrintWhere can access these objects to enable users to print.
- [Configuring PrintWhere for Citrix and shared terminal environments](#): Describes configuring PrintWhere in those unique use cases where multiple users are accessing print services through a single server or terminal.

2

Preparing for deployment

Before beginning the process of setting up the deployment of printers and PrintWhere, it's helpful to ensure that your administration server is properly set up and any required files to be deployed are available on the administration computer.

- [Deployment method: Microsoft Intune vs Group Policy](#)
- [Active Directory prerequisites](#)
- [Availability of files to be deployed to users](#)

Deployment method: Microsoft Intune vs Group Policy

Software can be deployed to Windows computers using one of two methods:

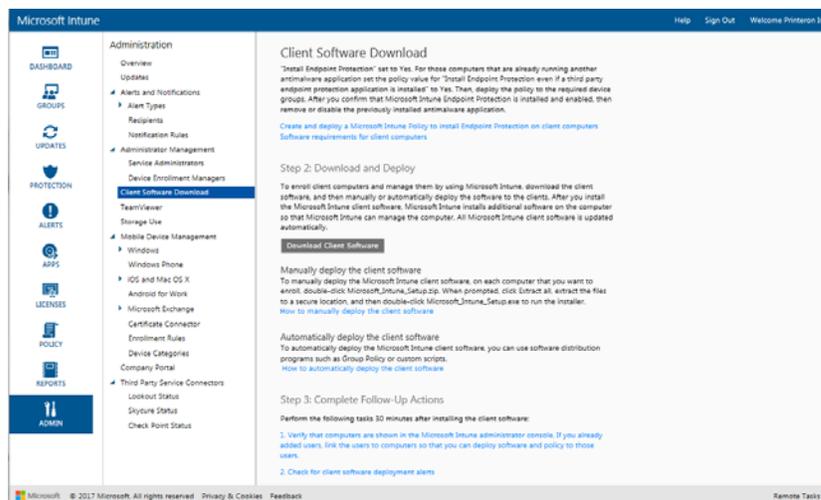
- **Microsoft Intune:** Intune is Microsoft's Mobile Device Management software, but can be used to manage computers as well as Windows-based mobile devices. The Microsoft Intune client is available natively on devices running Windows 10. For all other Windows devices, the Intune client must be installed. For information on installing the client, see [Preparing to use Microsoft Intune: Installing the Intune client on users' devices](#).
- **Windows Group Policy:** Group Policy is Windows' original system designed for use in an Active Directory environment. It can be used for central management and configuration of user settings, applications, and OS for all computers connected to a corporate network.

Preparing to use Microsoft Intune: Installing the Intune client on users' devices

To allow administrators to remotely deploy and manage software, Microsoft Intune requires that a client service be present on the end user's device. The Intune client is available natively on all devices running Windows 10. However, for devices running an earlier version of Windows, the Intune PC client must be downloaded and installed.

To install the Intune client software on users' devices:

1. Open and log into the Microsoft Azure administration console.
2. In the Intune console, click **Admin > Client Software Download**. The Client Software Download page appears.



3. Follow the instruction on the page to prepare for, download, and deploy the client software.

Preparing to use Group Policy: Group Policy deployment considerations

If you use Group Policy to deploy the printer and PrintWhere software, you can deploy with Group Policy in one of two ways:

- deploying based on computer name
- deploying based on user profiles

Typically, computer-based deployment is recommended. Computer-based deployment is faster and easier to manage; the software is deployed only once, and all users who log into the computer automatically use that print configuration.

User-based deployment is easier to set up, but is less efficient. User-based deployments are deployed each time a new user logs into a computer, even if the files and software were previously deployed to that machine when a different user logged in.

You'll need to decide which of these strategies works best for your situation.

Active Directory prerequisites

User-based deployment relies on Active Directory accounts to distribute software to users. To successfully deploy PrintWhere and any printer drivers you might require, you first need to ensure that you have:

- Set up and configured your Active Directory with the appropriate domains and users, etc.
- Added all PCs to Active Directory, and assigned them to specific groups.
- Created a group in Active Directory for Software, and assigned users and computers as members of this group.

This guide proceeds through the remaining deployment tasks under the assumption that the above tasks have been completed.

Availability of files to be deployed to users

The deployment tasks documented in this guide require you to have your administrator computer properly set up, with access to the files you are deploying. These tasks assume that the following files are already present and available locally on the Administrator's computer:

File	Description
Printer driver and Printer	<p>PrintWhere installs a number of generic printer drivers that perform very well with most printers on the market. However, if you prefer to use a specific printer driver designed specifically for a particular printer, you can. The printer driver must be installed on the administration computer, and the associated printer added to the list of printers.</p> <ul style="list-style-type: none"> For information on adding the printer driver and printer to the administration computer, see Adding your printer and printer driver to your Windows Server. For information on deploying the printer driver and printer to users, see Deploying your printer driver using Group Policy. <p>Note: Microsoft Intune does not support deploying printer drivers; you can only deploy .msi and .exe files. To deploy a printer driver, you must use Group Policy.</p>
PrintWhere installer	<p>PrinterOn offers several PrintWhere .msi installer files, depending on whether you want to install PrintWhere or PrintWhere LE (a light edition that does not include any default printer drivers), and whether you are installing on 64-bit or 32-bit machines. You can download your preferred installer file from PrinterOn.com/support/downloads.html.</p> <ul style="list-style-type: none"> For information on deploying this file using Microsoft Intune, see Deploying and installing PrintWhere using Intune. For information on deploying this file using Windows Group Policy, see Deploying and installing PrintWhere using Group Policy. For information on running this file from the command line on the target computer, see Installing PrintWhere from the command line.

File	Description
ExternalConfig.xml	<p>This file is the PrintWhere configuration file, in which you can pre-define printer lists for users, preset search filters, set the service URL where PrintWhere searches for printers, and configure other settings. You'll need to create this XML file manually and include it among your deployed files.</p> <ul style="list-style-type: none"> For information on creating this file, see Creating a PrintWhere configuration file. For information on deploying this file using Microsoft Intune, see Deploying and installing PrintWhere using Intune. For information on deploying this file using Windows Group Policy, see Deploying and installing PrintWhere using Group Policy.
installplugin.ps1	<p>To dynamically provide access to different printer drivers on Windows, PrintWhere uses printer plugins, helper printer objects that allow the computer to access the required printer driver as needed. Typically, PrintWhere downloads and installs these plugins as needed. However, in some organizations, users don't have the required privileges to install software. In these cases, you can use a PowerShell script provided by PrinterOn to pre-install the required plugins on users' computers.</p> <ul style="list-style-type: none"> For more information on when and why you would deploy this file, see Managing PrintWhere plugins. For information on deploying this file using Microsoft Intune, see Deploying and installing PrintWhere using Intune. For information on deploying this file using Windows Group Policy, see Deploying and installing PrintWhere using Group Policy.

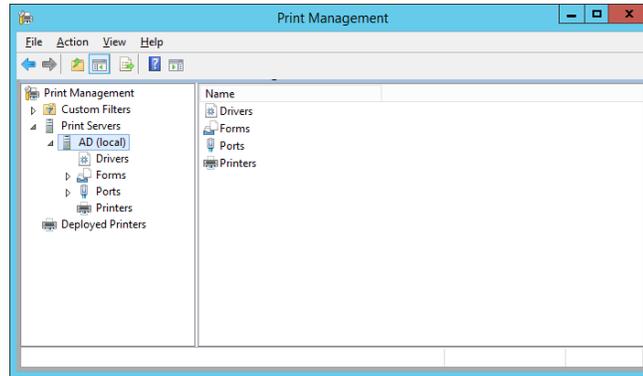
Adding your printer and printer driver to your Windows Server

Unless you install PrintWhere LE, PrintWhere includes a number of universal printer drivers that work with virtually every printer. However, if your organization requires users to use a specific printer driver other than the PrintWhere defaults, you'll need to add that driver and the associated printer to your server in order to distribute it to your users.

Note: If the printer and driver already exist on the administration server, you can skip this task.

To add a printer driver to the server:

1. In the Server Manager, from the **Tools** menu, select **Print Management**.
2. In Print Management navigation pane, expand **Print Servers**, then click the local Print Server > **Drivers**.



3. Right-click **Drivers** and select **Add Driver**. The Add Printer Driver wizard appears.
4. Follow the directions in the wizard to add your preferred printer driver.
5. In the left navigation pane, under the local Print Server, right-click **Printers** and select **Add Printer**.
6. Follow the directions in the wizard to add your preferred printer.

Next steps

Once you have prepared your server and determined which deployment tools and strategies you'll use, you can continue on to the following tasks:

1. [Deploy a printer driver to users](#). This step is optional, and is only required if your organization needs to use a specific printer driver rather than one of the generic printer drivers installed with PrintWhere, or you installed PrintWhere LE.
2. With any specific printer drivers deployed as necessary, you can now prepare the deployment script for PrintWhere software itself:
 - [Deploy PrintWhere and the PrintWhere configuration to users using Microsoft Intune](#).
 - [Deploy PrintWhere and the PrintWhere configuration to users using Windows Group Policy](#).

3

Deploying your printer driver using Group Policy

PrintWhere includes a number of universal printer drivers that work with virtually every printer. However, if your organization requires users to use a specific printer driver other than the PrintWhere defaults, you'll need to distribute that driver and the associated printer definition to your users.

Note:

- Microsoft Intune does not support deploying printer drivers; you can only deploy .msi and .exe files. To deploy a printer driver, you must use Group Policy.
- Before beginning these tasks, make sure that the printer driver and printer definition have already been [added to the server](#).

Deploying your printer driver with Group Policy

To deploy a printer driver with Group Policy, complete the following tasks:

- [Create a Group Policy Object for printers](#).
- [Configure the printer deployment](#).
- [Associate your printer definition with the Group Policy Object](#).

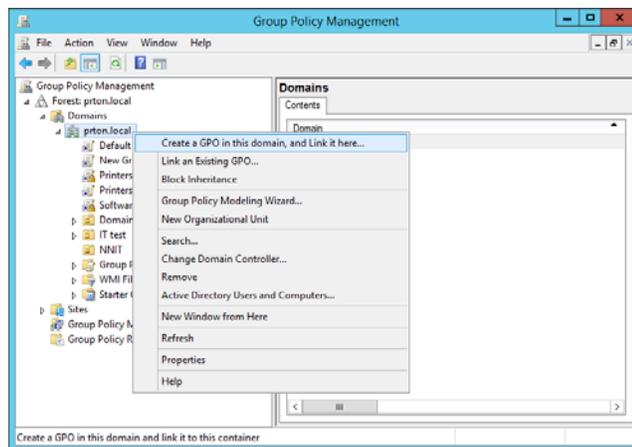
Creating a Group Policy Object for printers

To ensure that the printer is deployed to the correct users, you'll need to create one or more Group Policy Objects (GPOs) for printers.

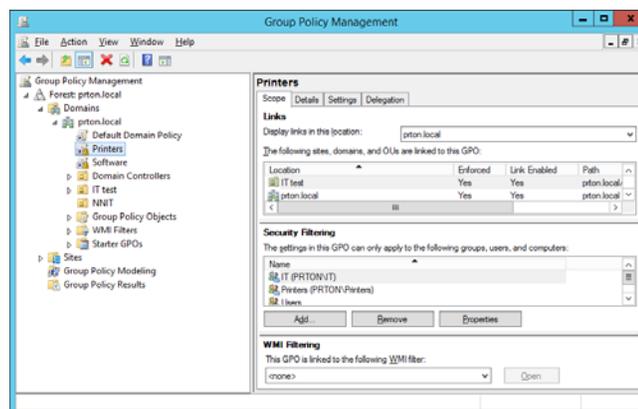
This task demonstrates how to create a single GPO called **Printers**.

To create a group policy for printers:

1. In the Server Manager, click **Group Policy Management**. The Group Policy Management console appears.
2. Expand **Forest > Domains**, then right-click on the domain and select **Create a GPO in this domain, and Link it here**.



3. In the New GPO dialog, enter **Printers** as the name of the GPO, then click **OK**. The Printers GPO is added to the list of objects in the selected domain.
4. In the navigation pane, click the **Printers** GPO. The right pane displays configuration information for the GPO.



5. In the **Scope** tab, in the **Security Filtering** section, add the Groups, Users, and Computers to which this Group Policy Object applies.
6. Right-click on the Printers GPO and check **Enforced**.

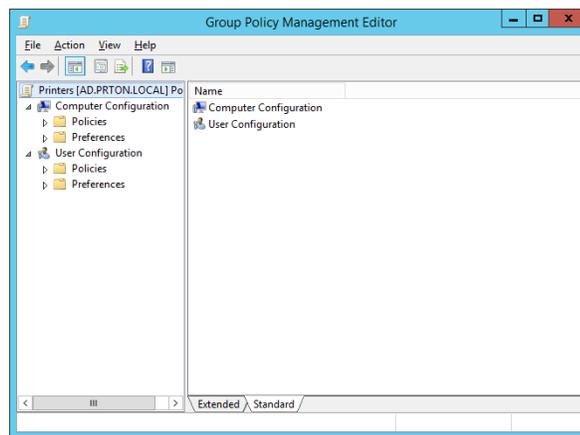
With the Group Policy Object created, you need to edit the GPO to define how the printer is deployed.

Configuring the printer deployment

Once the GPO is created, you need to define how the printer is installed on the users computer. How you define this information differs based on whether you decide to deploy to computers or to users.

To configure how the printer is deployed:

1. In the Navigation pane of the Group Policy Management window, right-click **Printers** and select **Edit**. The Group Policy Management Editor appears.



2. Complete the policy settings for your deployment type:
 - [Configure computer-based deployments](#)
 - [Configure user-based deployments](#)

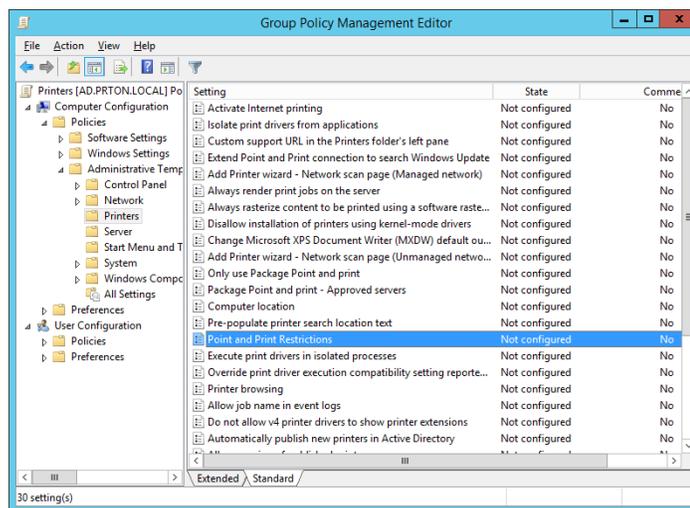
Once the printer deployment information is configured, you can associate the printer with the Printers Group Policy Object.

Configuring a computer-based deployment

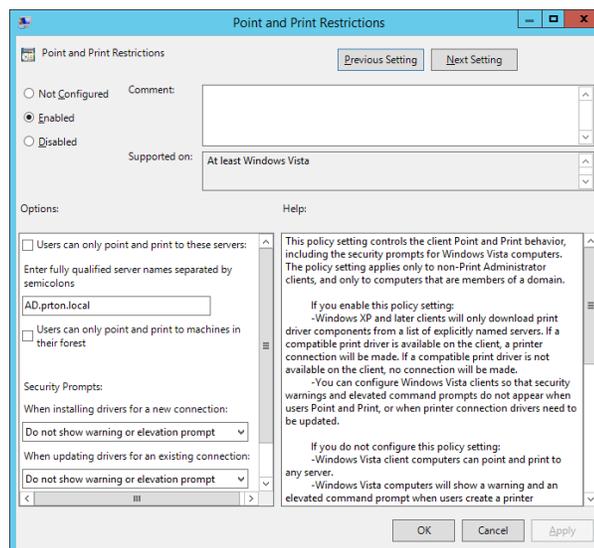
If you are defining a computer-based deployment, you'll need to configure policy settings specific to this deployment type.

To edit the computer-based group policy settings:

1. Right-click the Printer Group Policy Object and select **Edit**. The Group Policy Management Editor appears.
2. In the navigation pane, open **Computer Configuration > Policies > Administrative Templates > Printers**.



3. In the right pane, right-click **Point and Print Restrictions**, and select **Edit**. The Point and Print Restrictions settings appear.



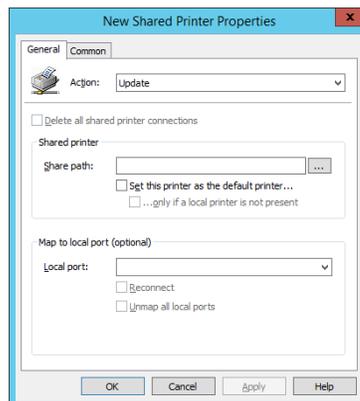
4. Select **Enabled**.
5. In the **Options**, specify the fully qualified name of the printer server. If you have multiple print servers, separate them with semi-colons.
6. In the **Security Prompts** section, for both settings, choose **Do not show warning or elevation prompt**.
7. Click **OK**.

Configuring a user-based deployment

If you are defining a user-based deployment, you'll need to configure policy settings specific to this deployment type.

To edit the user-based Group Policy settings:

1. In the navigation pane, open **User Configuration > Preferences > Control Panels**.
2. In the right pane, right-click **Printers** then select **New > Shared Printer**. The New Shared Printer Properties dialog appears.



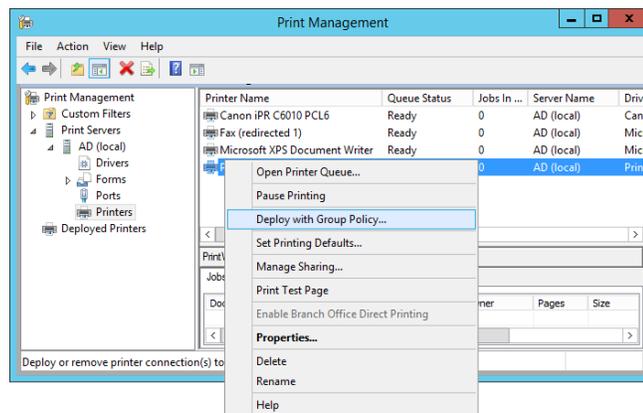
3. In the **Action** drop-down, select **Update**.
4. In the **Share Path** field, enter the printer location and share name that the user's computer will use to connect to the printer. For example:
 \\PrintServer\SharedPrinter
5. Check **Set this printer as the default printer**.
6. Click **OK**.

Associating the printer with your Group Policy Object

To deploy the printer driver, you deploy the printer definition by associating it with a Group Policy Object, and the printer driver is deployed along with it.

To associate the printer with the Group Policy Object:

1. In the Server Manager, from the **Tools** menu, select **Print Management**.
2. In the Print Management navigation pane, click **Printers**. The right pane displays a list of printers associated with the local print server.
3. Right-click the printer you want to deploy and select **Deploy with Group Policy**.



4. In the Deploy with Group Policy dialog, click **Browse...** and select **Printers** Group Policy Object that you previously created.
5. Once the Group Policy Object is selected, choose how you want to deploy the printer connection:
 - **The users that this GPO applies to (per user)**
 - **The computers that this GPO applies to (per machine)**
6. Repeat Steps 3 and 4 to add additional Group Policy Objects to the deployment model, if necessary.
7. Click **OK**.
8. In the Print Management navigation pane, click **Deployed Printers** and verify that the printer driver was successfully added to the list.

Next steps

With the required specific printer drivers deployed as necessary, you can now:

- [Deploy PrintWhere and the PrintWhere configuration to users using Microsoft Intune.](#)
- [Deploy PrintWhere and the PrintWhere configuration to users using Windows Group Policy.](#)

4

Deploying and installing PrintWhere using Intune

Administrators can use Microsoft Intune to deploy a PrintWhere installer to user's computer which will silently install the PrintWhere software when the user logs in. No user intervention is required.

If you choose, you can also deploy a configuration file called ExternalConfig.xml to pre-configure the PrintWhere software. You must manually create this file before you can begin the deployment process.

To deploy PrintWhere with Intune, complete the following tasks:

1. [Save the required deployment files in a single staging directory.](#)
2. [Create the deployment package.](#)
3. [Add the deployment package to Intune.](#)

Staging the deployment files

The first step in the deployment process is to prepare the files needed to successfully deploy and configure PrintWhere using Intune. These files must be stored in a single staging folder.

In addition to the PrintWhere installer and the ExternalConfig.xml file, there are a number of helper files and scripts you'll require to perform various tasks on the user's machine.

To stage the files:

1. Create a staging folder in a location that is accessible to your administrator machine.
2. Download the PrintWhere installer from printeron.com and copy it to your staging folder. The PrintWhere installer is an .msi file. Choose the 32- or 64-version as appropriate.
3. Download the following file from PrinterOn and extract the contents to your staging folder:

dl.printeron.com/pwc/pwc_intune.zip

This zip file contains several utility files you'll need to deploy PrintWhere:

- **ExternalConfig.xml**: A sample PrintWhere configuration file. Replace the sample with an existing configuration file, or modify the sample. For more information, see [Creating a PrintWhere configuration file](#).
- **pwcExternalConfig.cmd**: A small batch script file used to copy the configuration file to the correct location on the user's machine.
- **installplugin.ps1**: A PowerShell script used to automatically load the necessary PrintWhere plugins on the user's computer. These plugins are used by PrintWhere to allow the computer to access the required printer driver as needed.

Note: For more information on plugins, why you need to pre-install them, and prerequisites and requirements, see [Managing PrintWhere plugins](#).

- **main.bat**: A script required by Intune to organize and run the post installation tasks.
 - **del.bat**: A script required by Intune to uninstall PrintWhere from the user's computer.
4. From Microsoft, download the PsExec utility. This utility allows you to run commands on remote computers and is called by the main.bat script to execute the installer and other scripts.
 - a) Download and extract the following file:
[PSTools.zip](#)
This zip file contains a number of utilities.
 - b) Select the PsExec64.exe file (or PsExec.exe if your deploying to 32-bit machines) and copy it to your staging folder.

With the deployment files staged, you can now create a deployment package.

Creating an .intunewin deployment package

To create the .intunewin file:

1. From Microsoft, download the Content Prep tool. This tool is a command line utility that takes the files in the staging folder and packages them into a single

To get the tool:

- a) In your browser, go to the following location:

<https://github.com/microsoft/Microsoft-Win32-Content-Prep-Tool>

- b) Click **Clone or Download**, then click **Download ZIP**.

- c) Extract the files.

2. In the folder where you extracted the files, double-click **IntuneWinAppUtil.exe**.
3. A command prompt will open, prompting you to specify the source folder. Type the full path to your staging folder, then press the Enter key.
4. For the name of the setup file, type **main.bat**, then press Enter.
5. For the output folder, type the location where the deployment package will be placed, then press Enter.
6. Type **n** to specify no catalog folder, then press Enter.

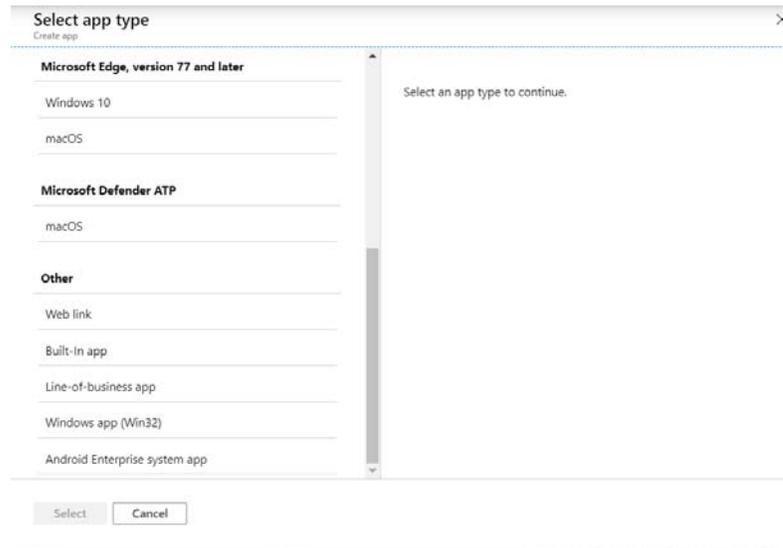
The utility will package all the files from the source folder and create a file called main.intunewin. You can now add this app to Intune and define the deployment parameters.

Adding the deployment package to Intune

To add the app to Intune:

1. Launch the Intune portal at devicemanagement.microsoft.com.

2. In the left navigation, click **Apps > All Apps**, then click **Add**.



3. On the Select App Type page, scroll to the bottom of the list and select **Windows app (Win32)**, then click **Select**. The App information screen appears. This screen is the first of many that guide you through the process of adding an app to Intune. Initially, this screen is empty except for a link that allows you to select the package you wish to add.
4. To begin the process, complete the following steps:
 - a) Click **Select app package file** in the App Information screen. The App package file dialog appears.
 - b) In the App package file dialog, browse to the location where you saved your main.intunewin file.
 - c) Click **OK**.

The App Information screen appears, now populated with configuration fields. You can now go through the series of screens to configure the information required to deploy the app to users.

App information screen: Providing PrintWhere details

The App information screen lets you provide some basic information about the PrintWhere client.

The screenshot shows the 'Add app' configuration screen in Microsoft Intune. The 'App information' tab is active, showing the following fields and values:

- Select file:** main.intunewin
- Name:** PrintWhere_6.2.5
- Description:** PrintWhere lets you print to any PrinterOn registered printer to which you have access, on any network, directly from any Windows application.
- Publisher:** PrinterOn
- Category:** 0 selected
- Show this as a featured app in the Company Portal:** No (selected)
- Information URL:** Enter a valid url
- Privacy URL:** Enter a valid url

To configure app information.

1. In the App information screen, configure the following settings:

Setting	Description
Name	Enter PrintWhere . If you have a corporate Intune portal, this is the name that is displayed.
Description	A description of the PrintWhere app. Enter a useful description, as this value may be seen by the user. If you have a corporate Intune portal, this description is displayed with the app.
Publisher	Enter PrinterOn .

You can configure the remaining fields if you wish, but they are not necessary.

2. Click **Next** to display the Program screen.

Programs screen: Defining deployment behaviors

The Program screen lets you define the install and uninstall scripts.

The screenshot shows the 'Add app' configuration page in Microsoft Intune. The 'Program' tab is active, showing the following settings:

- Install command:** main.bat
- Uninstall command:** del.bat
- Install behavior:** System
- Device restart behavior:** App install may force a device restart
- Return codes:**
 - 0: Success
 - 1707: Success
 - 3010: Soft reboot

To define deployment behavior:

1. In the Program screen, configure the following settings.

Field	Description
Install Command	Enter main.bat .
Uninstall command	Enter del.bat .
Install behavior	Select System to allow the Microsoft Intune Management Extension to run the install and uninstall commands on the user's computer at the system level. Note: If the Microsoft Intune Management Extension is not present on the user's system, it installed automatically.
Device restart behavior	Defines the restart behavior after an app installation. The default value, App install may force restart , should be sufficient. This setting allows the app to complete without suppressing restarts. Typically, a restart is unnecessary after installing PrintWhere. If you want to force a restart after installation, select Intune will force a mandatory restart .

2. Click **Next** to display the Requirements screen.

Requirements screen: Defining software requirements

The Requirements screen lets you set any software requirements that must be met before Intune will attempt to install the software.

To define the PrintWhere requirements:

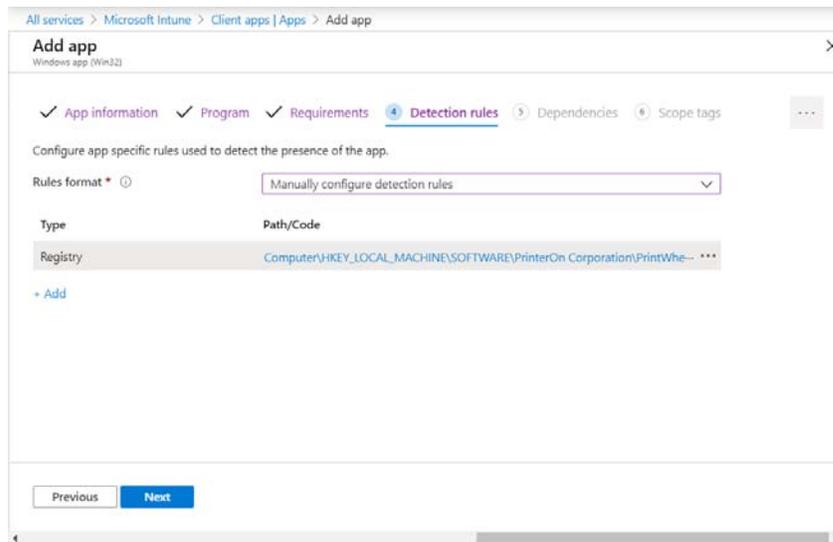
1. In the Requirements screen, configure the following settings:

Field	Description
Operating system architecture	Choose either 32-bit or 64-bit.
Minimum operating system	Choose Windows 10 1607.

2. Click **Next** to display the Detection rules screen.

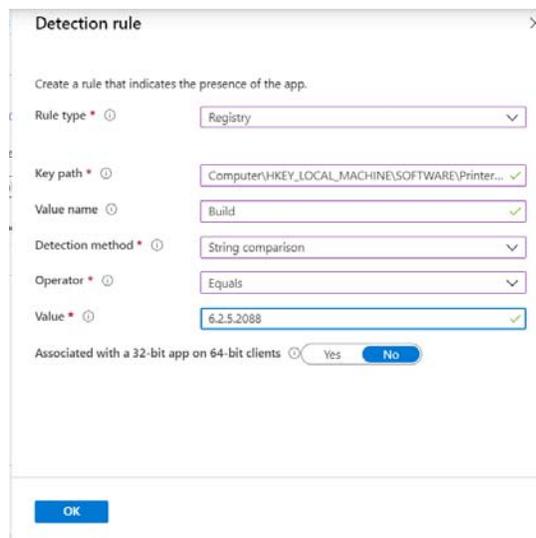
Detection rules screen: Defining detection rules

Detection rules allow Intune to determine whether PrintWhere is already installed on the user's computer.



To define a detection rule:

1. In the **Rules Format** drop-down, select **Manually configure detection rules**.
2. Click **Add**. The Detection Rule panel appears.



- From the **Rule Type** drop-down, select **Registry**, then configure the rest of the fields that appear as follows.

Field	Description
Key path	Enter the path to PrintWhere in the Windows Registry: Computer\HKEY_LOCAL_MACHINE\SOFTWARE\PrinterOn Corporation\PrintWhere 6.2
Value name	Enter Build .
Detection method	Select String comparison .
Operator	Select Equals .
Value	Select the build number of the PrintWhere software. To find the build number: <ol style="list-style-type: none"> Locate the PrintWhere.msi file in File Manger, then right-click and select Properties. In the Properties dialog, open the Details tab. Locate the Subject property. This value shows the PrintWhere build number (for example, 6.2.6.2112).

- Click **OK** to return to the Detection Rules screen.
- Click **Next** to display the dependencies screen.

Dependencies screen: Defining dependencies

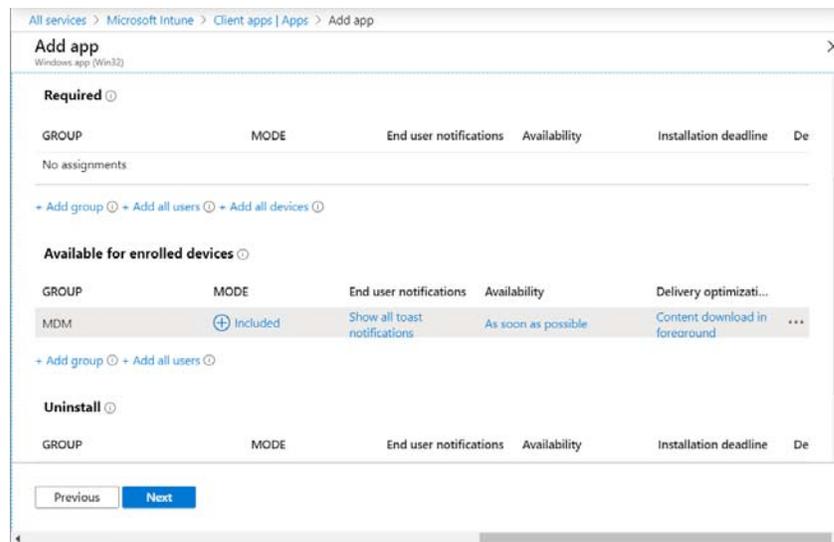
The dependencies screen lets you define any software that the deployed app depends upon. PrintWhere has no dependencies.

Click **Next** to display the Assignments screen.

Assignments screen: Assigning PrintWhere to one or more groups

The Assignments screen lets you assign PrintWhere to one or more user groups. Assignment groups essentially allow you to define to make the software available to a whole set of users. An assignment can be made in one of three assignment types:

- **Required:** The app is installed on devices in the selected groups.
- **Available for enrolled devices:** The app is not installed automatically on the devices in the selected groups. However, the app is made available on the Company Portal app or Company Portal website for users in the selected groups to install themselves.
- **Uninstall:** The app is removed from all devices in the selected groups.

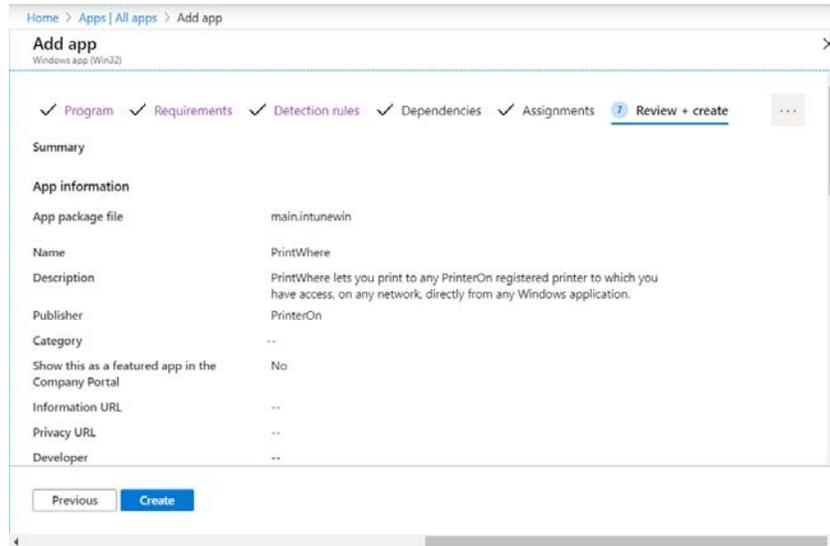


To assign the PrintWhere deployment package to a group:

1. In one of the assignment types, click **Add group** and assign the groups to which you want to deploy PrintWhere.
2. In the Select groups pane, select one or more groups to assign the PrintWhere deployment package to.
3. Click **Select**.
4. If necessary, click any of the values in a row to open the edit assignment panel. The panel lets you configure the delivery settings by modifying the **End user notifications**, **Availability**, and **Installation deadline** settings. You can also remove a group from the list of groups that will receive the PrintWhere app. Click **OK** after you have finished making changes.
5. Click **Next** to display the Review + create page.

Review + create screen: Reviewing your deployment configuration

The Review + create screen lets you can review your deployment settings.



Review the values and perform one of the following:

- To make any changes you your settings, click **Previous** to return a previous screen and make changes.
- To confirm your settings and add the app to Intune, click **Create**.

With PrintWhere added, Intune will begin to deploy the app to your organization based on the deployment settings you defined.

5

Deploying and installing PrintWhere using Group Policy

Administrators can use Windows Group Policy to deploy a PrintWhere installer to a user's computer, which will silently install the PrintWhere software when the user logs in. No user intervention is required.

If you choose, you can also deploy a configuration file to pre-configure the PrintWhere software.

Note: Before you begin, make sure you have:

- [Downloaded the PrintWhere installer](#) file(s) to a location that is accessible to the administration computer.
- [Created your external PrintWhere configuration file](#) (if you intend to deploy one) and saved it in the same folder as the installer(s).

To deploy PrintWhere with Group Policy, you'll need to complete the following tasks:

- [Create a Group Policy Object for the PrintWhere software.](#)
- [Configure the PrintWhere deployment.](#)
- [Configure the PrintWhere configuration deployment.](#)

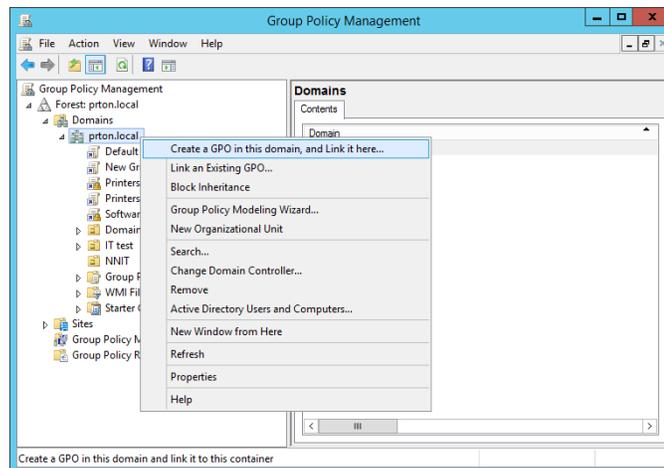
Creating the Group Policy Object for the PrintWhere software

To ensure that the PrintWhere software and configuration file are deployed correctly for your users, you'll need to create a Group Policy Object (GPO) for each group of users that requires a unique PrintWhere configuration.

This task demonstrates how to create a single GPO called **Software**. The series of tasks that follow will all use this group policy. If you choose, you can create separate GPOs for each task.

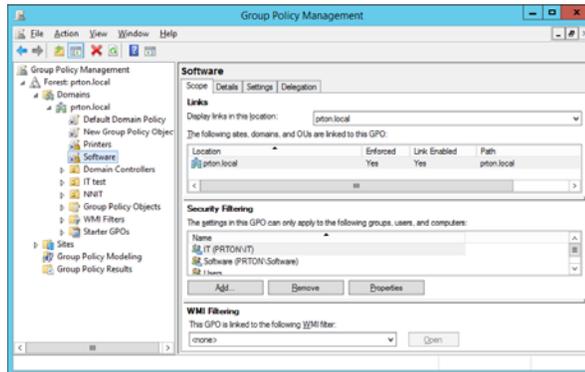
To create a new Group Policy Object for PrintWhere:

1. In the Server Manager, click **Group Policy Management**. The Group Policy Management console appears.
2. Expand **Forest > Domains**, then right-click on the domain and select **Create a GPO in this domain, and Link it here**.



3. In the New GPO dialog, enter **Software** as the name of the GPO, then click **OK**.
The Software GPO is added to the list of objects in the selected domain.

4. In the navigation pane, click **Software**. The right pane displays configuration information for the GPO.



5. In the **Scope** tab, in the **Security Filtering** section, add the Groups, Users, and Computers to which this Group Policy Object applies.
6. Right-click on the **Software** GPO and check **Enforced**.

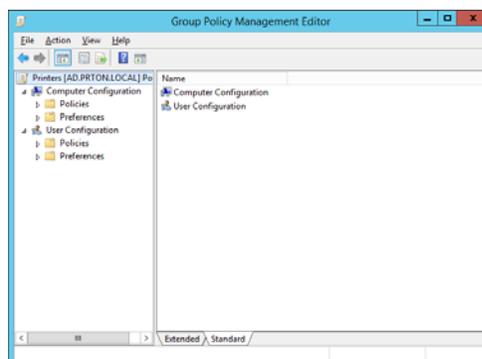
With the Group Policy Object created, you need to edit the GPO to [configure how the PrintWhere software is deployed](#).

Configuring the PrintWhere deployment

Once the GPO is created, you need to deploy the PrintWhere installer file, then instruct the user's computer to install the file.

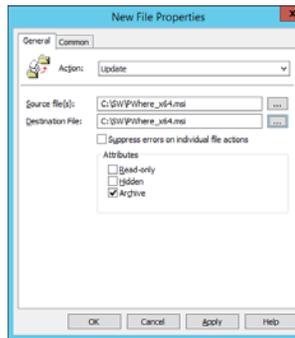
To configure how PrintWhere is deployed:

1. In the Group Policy Management window, right-click on the **Software** GPO and select **Edit**. The Group Policy Management Editor appears.



2. In the Navigation pane, open **Computer Configuration > Preferences > Windows Settings**.

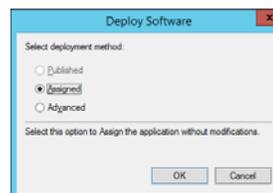
- In the right pane, right-click **Files**, then select **New > File**. The New File dialog appears.



- Configure the settings as follows:

Setting	Description
Action	Select Update .
Source file(s)	Specify the location where you saved the PrintWhere .msi file.
Destination file	Specify where the .msi file will be placed. This location must be accessible to every user's computer; for simplicity, it is recommended to simply install it in a folder on the user's computer.
Read-only	Enable this attribute.
Archive	Enable this attribute.

- Click **OK**.
- In the Navigation pane, open **Computer Configuration > Software Settings**.
- Right-click **Software Installation** then select **New > Package**.
- In the Open dialog, browse to the location the PrintWhere installer was placed, then select the file and click **Open**. The Deploy Software dialog appears.
- In the Deploy Software dialog, select **Assigned** as the deployment method. This deployment method instructs the user's computer to execute the installer and install the PrintWhere software.



10. Click **OK**.

With the PrintWhere installer deployed and configured to be installed, you can now [deploy the PrintWhere configuration file](#), if you choose to.

Deploying the PrintWhere configuration through Group Policy

To deploy a PrintWhere configuration to users through group policy, you need to deploy two separate files:

- **ExternalConfig.xml:** This file is the PrintWhere configuration file, in which you can pre-define printer lists for users, preset search filters, set the service URL where PrintWhere searches for printers, and configure other settings. You'll need to create this XML file manually.
 - For information on creating this file, see [Creating a PrintWhere configuration file](#).
 - For information on deploying this file, see [Deploying the ExternalConfig.xml file](#).
- **installplugin.ps1:** This PowerShell script automatically loads the necessary PrintWhere plugins on the user's computer. These plugins are used by PrintWhere to allow the computer to access the required printer driver as needed.
 - For more information on plugins and why need to pre-install them, see [Managing PrintWhere plugins](#)
 - For information on downloading and deploying this file, see [Pre-installing the PrintWhere plugins](#).

Notes for deployment:

The order in which these files are deployed to users is very important. The configuration file *must* be deployed and installed before the plugin installer script.

In addition, the end user *must* reboot their computer after the configuration file is deployed and before the plugin installer script is deployed.

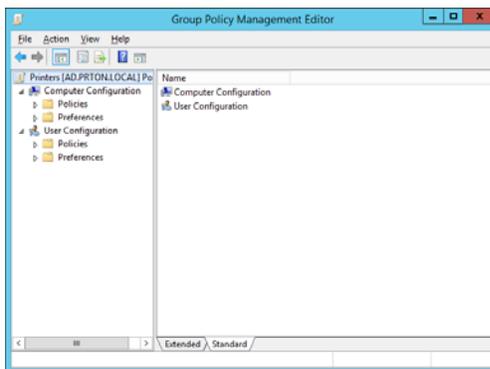
Deploying the ExternalConfig.xml file

Before beginning this task, ensure that you have a valid ExternalConfig.xml file already created and available from an accessible location.

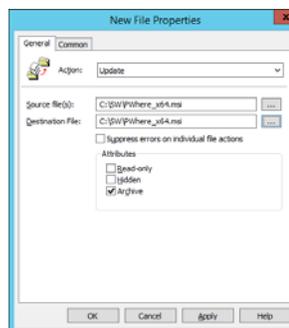
Important! To correctly install the PrintWhere plugins, the ExternalConfig.xml file must define every printer that you want the user to be able to access as a default printer. The InstallPlugins.ps1 script reads this list to determine which plugins to install. For more information, see [Managing PrintWhere plugins](#).

To deploy the PrintWhere configuration file:

1. In the Group Policy Management window, right-click on the **Software** GPO and select **Edit**. The Group Policy Management Editor appears.



2. In the Navigation pane, open **User Configuration > Preferences > Windows Settings**.
3. In the right pane, right-click **Files**, then select **New > File**. The New File Properties dialog appears.



- Configure the settings as follows:

Setting	Description
Action	Select Update .
Source file(s)	Specify the location where you saved the PrintWhere configuration file (ExternalConfig.xml).
Destination file	Specify where the configuration file will be placed. This file must be placed in the following locations on every user's machine: <ul style="list-style-type: none"> C:\Users\<i><user_name></i>\AppData\Local\PrinterOn Corporation\PrintWhere <i><version></i>\Config\ExternalConfig.xml C:\Windows\System32\config\systemprofile\AppData\Local\PrinterOn Corporation\PrintWhere <i><version></i>\Config\ExternalConfig.xml
Read-only	Enable this attribute.
Archive	Enable this attribute.

- Click **OK**.

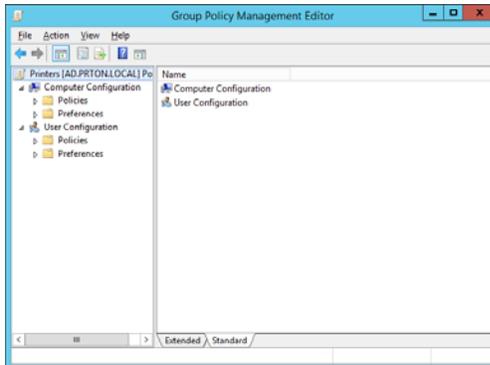
Pre-installing the PrintWhere plugins

To deploy the PowerShell script:

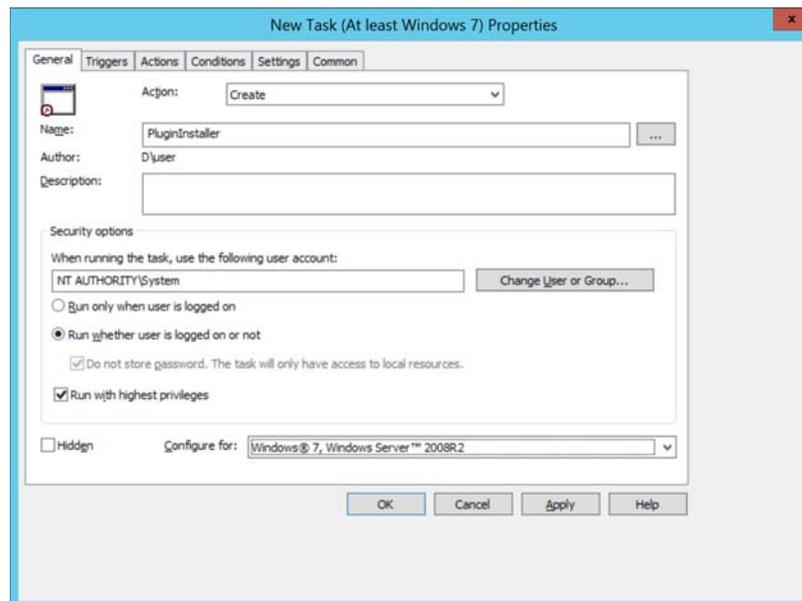
- Download and extract the PowerShell script file from PrinterOn:
dl.printeron.com/pwc/installplugin.zip

Note: This URL is case-sensitive.

2. Once the script file is extracted, return to the Group Policy Management window, then, right-click on the **Software** GPO and select **Edit**. The Group Policy Management Editor appears.



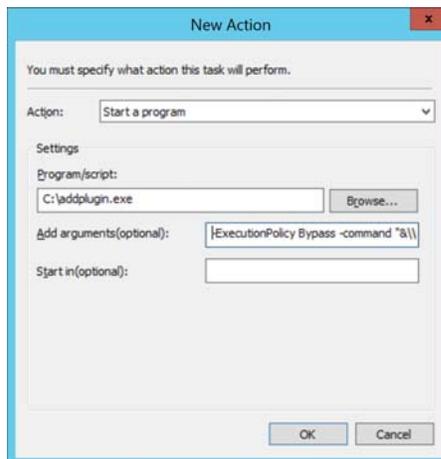
3. In the Navigation pane, open **Computer Configuration > Preferences > Control Panel Settings**.
4. Right-click **Scheduled Tasks** and click **New > Scheduled Task**. The Task Scheduler dialog appears.



- In the **General** tab of the dialog, configure the following settings:

Setting	Description
Action	Select Create .
Name	Specify a unique name for the task.
Security Options	Configure the following settings: <ul style="list-style-type: none"> Configure the action to run as System. Select Run whether the user is logged on or not. Enable Run with highest privileges.
Configure for	Select the combination of Windows client and server OS that you want to support.

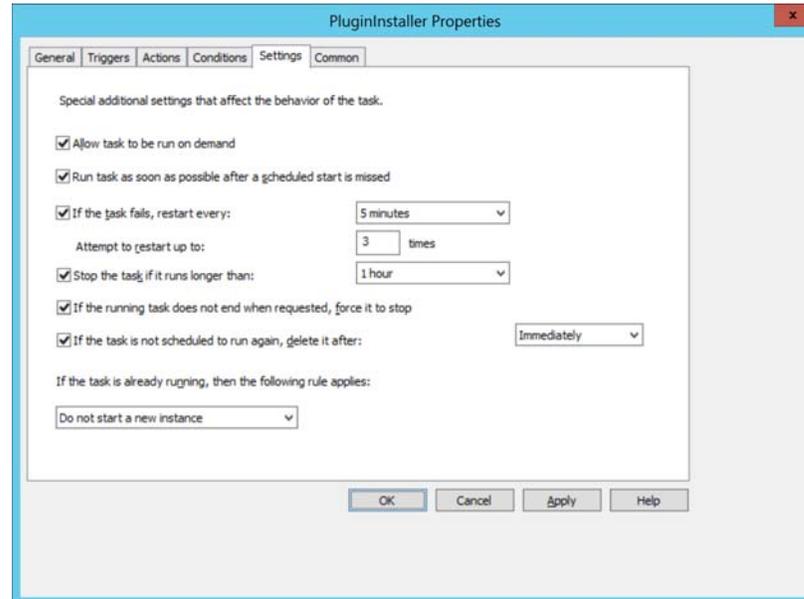
- Click the **Actions** tab, then click **New...** The New Action dialog appears.



- In the New Action dialog, configure the following settings:

Setting	Description
Action	Select Start a program .
Program/script	Specify the path to Windows PowerShell. For example: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
Add arguments	Define the following arguments for the command: <ul style="list-style-type: none"> -ExecutionPolicy Bypass -command "&\\ PRINTSERVER\pw\installplugin.ps1" -PluginCacheEnabled "true"

8. Click the **Settings** tab, then specify the scheduling settings as necessary.



9. Click **OK**.

A

Configuring PrinterOn for use with PrintWhere: Best practices

Deploying PrintWhere to your users with Intune or Group Policy ensures that every user is set up with the printing environment that you want them to have. However, to take full advantage of all the benefits that PrintWhere offers, there are a few best practices you should follow when configuring your PrinterOn Server.

Best practice: Configure two output destinations for a printer listing

When you create a new PrinterOn printer listing, one of the settings you are required to define is the output destination—that is, the network path to the physical printer that the listing represents. Typically a printer listing is configured with a single output destination.

However, one of the key benefits of using PrintWhere in your Windows environment is its ability to connect to a printer using two different network paths. The Smart Print Path feature of PrintWhere automatically picks the best print path (shortest, fastest, and least costly) and compresses files for up to 75% bandwidth savings and faster print.

Smart Print Path is an extremely useful feature for modern mobile workforces, where users may at times be connected to the internal, firewall-protected network, or to some external network.

Because users mobile, they may at times be connected to either the internal network behind the firewall, or to some external network. PrintWhere allows you to set up a primary path to the printer (used when the user is connected to the local network) and a secondary path (used when the user is trying to access the printer remotely).

The user does not need to change their printer, nor modify any settings; PrintWhere makes it seamless. If PrintWhere is unable to connect using the primary path, it automatically attempts to connect using the secondary path.

When configured properly, having two paths to the printer can not only optimize network usage, but can also improve the performance of your PrinterOn service. To maximize the potential benefits, you must define your primary and secondary paths appropriately.

Determining the primary path routing

The primary path is used when the user is connected to the local network. For optimal performance, you should configure the primary path as a direct connection using either the IPP or TCP protocol. A direct connection routes print data directly from the user's computer to the printer, without sending it through the PrinterOn infrastructure.

Print data can be large (the PrinterOn service supports jobs of up to 50MB). a direct connection reduces the number of times this data is transferred, improving performance considerably.

Note: Although the print data bypasses the PrinterOn Server, the server still collects other job accounting data for each print job.

Choosing IPP or TCP

The PrinterOn service supports two protocols, TCP and IPP, that can be used to communicate directly with the printer. Which protocol you should use depends largely on the printer.

- **TCP protocol:** TCP is one of the earliest Internet communication protocols. Every printer supports TCP. However, its wide support among printers is TCP's primary advantage; it does not support compression or encryption of data, and does not return print job status information.

Use the TCP protocol only if you have an older legacy printer, or if you can't determine whether your printer supports IPP.

To define a direct network path to the printer using TCP, use the following syntax:

```
tcp://<IP_address_or_DNS_name>[:<port_number>]
```

For example:

```
tcp://172.16.1.1:9100
```

Note: Specifying the port is recommended for optimal efficiency. If no port is specified, PrintWhere queries up to three ports (443, 80, and 631) to determine whether they are open and available for use, which requires an additional conversation between PrintWhere and the server.

- **IPP Protocol:** IPP is built upon TCP and extends it specifically for communicating with printers; IPP includes built-in support for encryption, compression, and job status information. As a result, IPP is the preferred option, if the printer supports it. Use IPP if your printer is AirPrint compatible. AirPrint, Apple's Printing protocol, uses IPP, and is supported by most newer printers.

To define the path using IPP, use the following syntax:

```
ipp://<IP_address_or_URI>/<printer_queue>
```

For example:

```
ipp://172.16.1.1/ipp/port1
```

Determining the secondary path routing

The secondary path is used when the user is attempting to print from outside the firewall. In this instance, the print data is routed through the PrinterOn Server, which provides a communication link through the firewall. The server then directs the data to the printer.

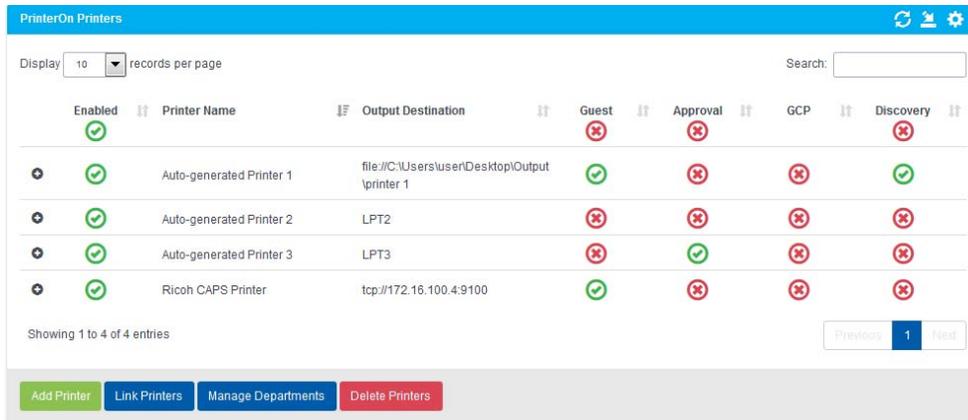
The secondary path should be configured using HTTP, HTTPS, or some other protocol.

Putting it together: Configuring a printer with two network paths

The output destination is a key part of the PrinterOn printer listing configuration, linking the printer listing with the physical printer. You can set the output destination paths using the PrinterOn Configuration Manager.

To configure a printer listing with two output destinations:

1. In the Configuration Manager, click **Printers**. The Printers tab appears, displaying a list of currently available printers.

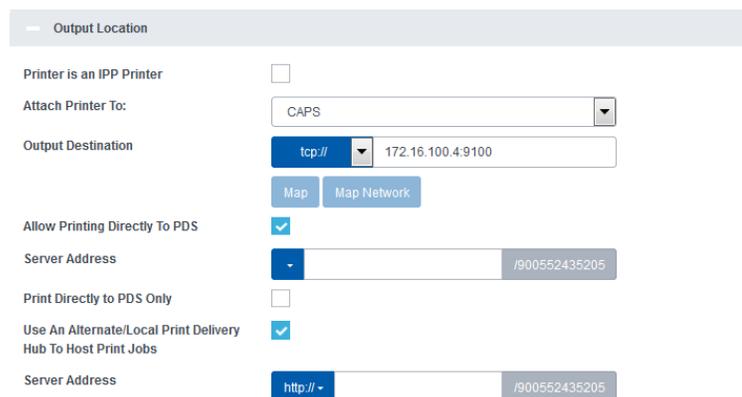


2. In the PrinterOn Printers list, click **+** next to a printer that you want to configure. The printer actions appear.



3. Click **Configure**. The Printer Configuration dialog appears.

4. In the Printer Configuration dialog, expand the **Output Location** section



5. Set your [Primary path](#) to the printer in the **Output Destination** field. This should be a direct connection to the printer, and should use either the IPP or TCP protocol.

Note: If you're using TCP, specifying the port is recommended for optimal performance.

6. Disable **Allow Printing Directly to PDS**.
7. Disable **Print Directly to PDS Only**.
8. Check **Use An Alternate/Local Print Delivery Hub to Host Print Jobs**. An additional field, **Server Address**, appears.
9. Set your [Secondary path](#) to the printer in the **Server Address** field.
10. When you have finished modifying the printer configuration, click **Apply Settings**.

B

Creating a PrintWhere configuration file

With external configuration, administrators can pre-define printer lists for users, preset search filters, set the service URL where PrintWhere searches for printers, and configure other settings. The first time PrintWhere is started, the options from the external configuration are loaded, so users can print with no setup at all.

External configuration of PrintWhere also allows administrators to centrally manage PrintWhere behavior and provide a consistent experience for all users.

When PrintWhere is configured for them, users can still access the PrintWhere Printer Manager and Printer Properties dialogs. If users change the PrintWhere configuration, PrintWhere checks to see if an XML configuration file exists, and if so, saves any changes made by the user to the external configuration.

Administrators can also lock the PrintWhere configuration, so that users cannot change it at all.

Creating an XML configuration file

You can create an XML configuration file for PrintWhere that you can distribute to users.

The XML file must be named ExternalConfig.xml, and it must be deployed to the following location on the user's computer:

```
C:\Users\<user_name>\AppData\Local\PrinterOn Corporation\Printwhere  
<version>\Config\ExternalConfig.xml
```

Note: The ExternalConfig.xml file **must** be encoded as Unicode.

External XML Example

The following sample XML shows the structure of the XML configuration file. For details about each of the settings, see [External configuration settings reference](#).

```
<?xml version="1.0" encoding="UTF-16" standalone="yes"?>  
<pwcProperties propertiesVersion="1.0">  
  <search enabled="1">  
    <searchOrgName userEdit="1"/>  
    <searchAddress userEdit="1"/>  
    <siteNumberList use="optional"/>  
  </search>  
  <printerChooser sysTrayAndStartup="1" userEdit="1"/>  
  <webServiceManagerURI/>  
  <DefaultPrinterList/>  
  <lockPrinterConfig>0</lockPrinterConfig>  
  <AuthenticationMode>0</AuthenticationMode>  
  <AskForCredentialsAlways>0</AskForCredentialsAlways>  
  <OAuthBrowserTimeout>120</OAuthBrowserTimeout>  
  <serviceURL>secure1.printeron.net</serviceURL>  
  <siteID/>  
  <clientUID/>  
  <sessionMetaData/>  
  <OptionShowWinPrinters>1</OptionShowWinPrinters>  
  <SearchUsingPrivateURL>1</SearchUsingPrivateURL>  
  <SearchCategory>All</SearchCategory>  
  <PrimarySite>www.printeron.com</PrimarySite>  
</pwcProperties>
```

Creating a PrintWhere Windows Registry key

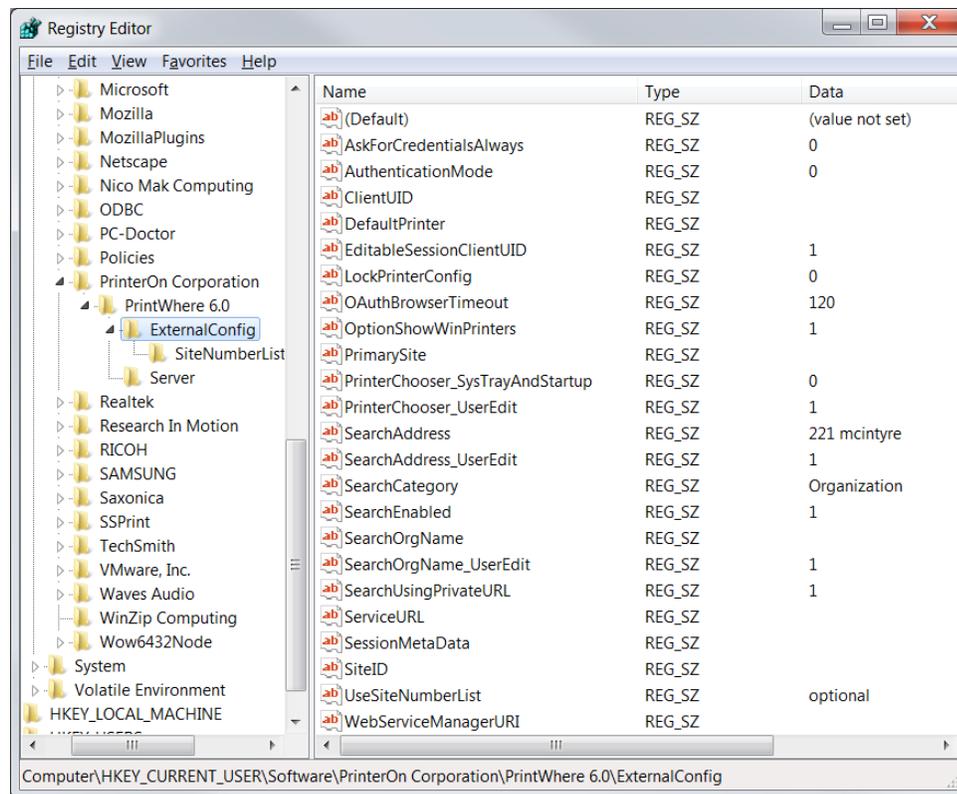
Registry configuration can be managed for individual users using their standard Windows user profile locations.

The PrintWhere Registry configuration information should be put into the users Current User registry hive, at the following location:

```
HKEY_CURRENT_USER\Software\PrinterOn Corporation\PrintWhere  
<version>\ExternalConfig
```

Sample Registry

The following sample the structure of the PrintWhere configuration in the Windows registry. For details about each of the settings, see [External configuration settings reference](#).



External configuration priority

PrintWhere external configuration can be used alongside the Control Panel configuration options. However, only one external configuration method can be used at a time. You cannot use an XML configuration and Registry configuration at the same time.

Each time PrintWhere is launched, it checks to see if an external configuration exists, and if found, loads the specified configuration settings. PrintWhere first checks to see if ExternalConfig.xml exists. If the file is not found, it then checks for a PrintWhere entry in the Windows registry.

Upgrading an external configuration

PrintWhere supports external configuration upgrade. Older versions of PrintWhere will also be migrated from previous configuration locations in the registry to the new XML file format to support a forward migration to the new method.

If no external configuration exists, PrintWhere uses default values.

External configuration settings reference

The following sections outline the external configuration settings and permitted values.

- [AskForCredentialsAlways](#)
- [AuthenticationMode](#)
- [DefaultPrinter](#)
- [LockPrinterConfig](#)
- [OAuthBrowserTimeout](#)
- [PrimarySite](#)
- [PrinterChooser](#)
- [RemovePrinter](#)
- [Search settings](#)
- [Server-side encryption](#) (available only as a registry entry)
- [ServiceURL](#)
- [Third-party integration settings](#)

AskForCredentialsAlways

Description Specifies whether the user must provide their credentials each time they close or minimize the Printer chooser.

XML Syntax

```
<AskForCredentialsAlways>
    value
</AskForCredentialsAlways>
```

Registry Entry AskForCredentialsAlways *value*

Values *value* can be one of:

- 0: Default. PrinterOn asks for credentials once, and then saves them. PrinterOn does not ask for credentials again.
- 1: When the user logs off, PrintWhere clears credentials. The next time they print or access Printer Manager, PrintWhere prompts the user for their credentials. This value only applies with AuthenticationMode is set to a value of 2 or 3.

AuthenticationMode

Description Specifies the authentication mode used.

XML Syntax

```
<AuthenticationMode>
    value
</AuthenticationMode>
```

Registry Entry AuthenticationMode *value*

Values *value* can be one of:

- 0: Default. PrintWhere does not prompt the user for their credentials, but passes on the credentials specified PrintWhere's Account Settings dialog, when required.

If the user does not provide their credentials in the Account Settings dialog, but the PrinterOn server is configured to use either LDAP/AD or Azure AD for authentication, the user will not be authenticated and all print requests are rejected.

- 1: Windows authentication is used (either the local user account, or the administrator credentials, if logged in as administrator).
- 2: The LDAP/AD or Azure AD account credentials are used.
- 3: Only the PrinterOn account username is used.

DefaultPrinter

Description Specifies a list of Default Printers. The first member of the list will be the default selected one when you use the PrinterChooser. Additional printers listed will be available from the **Printer** drop-down list in the PrintWhere Properties dialog.

Printers are displayed in the Printer Manager's History list in the order they are listed.

Important! You must select at least one default printer.

XML Syntax

```
<DefaultPrinterList>
  <DefaultPrinter>printer1</DefaultPrinter>
  <DefaultPrinter>printer2</DefaultPrinter>
</DefaultPrinterList>
```

Registry Entry DefaultPrinter *printer1,printer2,...*

Note: Multiple printers can be defined in a comma-separated list.

Values *printer* represents the PrinterOn printer name or printer number.

LockPrinterConfig

Description Specifies whether the printer configuration can be modified by users.

XML Syntax

```
<lockPrinterConfig>
  value
</lockPrinterConfig>
```

Registry Entry LockPrinterConfig *value*

Values *value* can be one of:

0: Default. The user can modify the printer configuration.

1: The Printer configuration is locked and cannot be modified.

OAuthBrowserTimeout

Description Specifies the length of time PrintWhere waits for the user to authenticate against an external third-party authentication service, such as Microsoft Azure AD.

These services require PrintWhere to redirect the user to a URL hosted by the service to enter their credentials, during which time PrintWhere remains blocked. Because PrintWhere has no control over the browser session, the timeout value allows you to provide a finite amount of time before PrintWhere assumes the user did not successfully authenticate.

If PrintWhere does not receive a response that the user is successfully authenticated before the timeout, the user is informed that PrintWhere could not validate the account, and PrintWhere becomes unblocked.

The default timeout is two minutes.

XML Syntax

```
<OAuthBrowserTimeout>
    integer
</OAuthBrowserTimeout>
```

Registry Entries OAuthBrowserTimeout *value*

Values *integer* is the length of time, in seconds before PrintWhere aborts the authentication process.

The default is 120 seconds.

PrimarySite

Description Specifies the site where the PrinterOn license is accessed. This site is also used for PrintWhere downloads. This is *not* the same as the Service URL.

XML Syntax

```
<PrimarySite>
    string
</PrimarySite>
```

Registry Entry PrimarySite *string*

Values *string* is the URL of the primary site.

PrinterChooser

- Description** Specify printer chooser settings. You can specify:
- whether PrintWhere Printer Manager icon is minimized to the system tray when closed.
 - whether the user can edit the settings in the printer chooser.

XML Syntax

```
<printerChooser
  sysTrayAndStartup="sys_value"
  userEdit="edit_value" />
```

Registry Entries PrinterChooser_SysTrayAndStartup *sys_value*
PrinterChooser_UserEdit *edit_value*

- Values** *sys_value* can be one of:
- 0: The Printer Manager is not minimized to the System Tray.
 - 1: Default. The Printer Manager is minimized to the System Tray.
- edit_value* can be one of:
- 0: The user cannot edit the settings.
 - 1: Default. The user can edit the settings.

RemovePrinter

Description Clears the list of previously selected printers whenever a new Service URL is pushed to the user.

This setting does not affect behavior when the user changes the Service URL manually in Printer Manager.

XML Syntax

```
<RemovePrinter>
  value
</RemovePrinter>
```

Registry Entry RemovePrinter *value*

- Values** *value* can be one of:
- 0: The printer list is not modified. Printers are not removed.
 - 1: Default. The user can modify the client UID and session values.

Search settings

Description Specify whether the user is permitted to search for printers, and defines address, category, and organization search filters. If searching is permitted and filters are defined, PrintWhere only returns printers that are located at the specified address, match the specified category, or belong to the specified organization.

You can also specify whether the user is permitted to edit the Search Address or Search Organization value.

XML Syntax

```
<search enabled="1">
  <searchAddress userEdit="value">
    addr_string
  </searchAddress>
  <searchCategory>
    cat_string
  </searchCategory>
  <searchOrganization userEdit="value">
    org_string
  </searchOrganization>
</search>
```

Registry Entries

SearchAddress *addr_string*
SearchAddress_UserEdit *value*
SearchCategory *cat_string*
SearchOrgName *org_string*
SearchOrgName_UserEdit *value*

Values *addr_string* represents any part of an address (state, city, street, zip) defined for a printer.

cat_string is one of the following categories:

- All (default)
- Public
- Organization

org_string represents a company name defined for a printer.

value can be one of:

- 0: The user cannot edit the filter value.
- 1: Default. The user can edit the filter value.

Server-side encryption

- Description** In deployments where AWS is used for storage of print job data, you can specify if you want Amazon S3 to encrypt your data for you at the time of creation. By default, this setting is enabled.
- XML Syntax** *This setting cannot be set via the ExternalConfig.xml file.*
- Registry Entry** RTR_AWS_UseServerSideEncryption *value*
- Values** *value* can be one of:
- 0: Server-side encryption is not used.
 - 1: Default. Server-side encryption is used.

ServiceURL

- Description** Specifies the Service URL, which identifies where the PrinterOn Service is hosted. This URL hosts the printer list that PrintWhere searches.
- If you specify a Service URL value that points to a service that requires credentials, you should modify [AuthenticationMode](#) to cause PrintWhere to prompt for credentials.
- XML Syntax**

```
<serviceURL>
    string
</serviceURL>
```
- Registry Entry** ServiceURL *string*
- Values** *string* represents the Service URL for your PrinterOn solution.

Third-party integration settings

Description The ClientUID, SessionMetaData, and EnableSessionClientUID specify information used by some third-party integrations.

You can also specify whether the user is permitted to edit the client UID and session metadata content.

XML Syntax

```
<clientUID>  
  string  
</clientUID>  
<sessionMetaData>  
  string  
</sessionMetaData>  
<EnableSessionClientUID>  
  value  
</EnableSessionClientUID>
```

Registry Entries

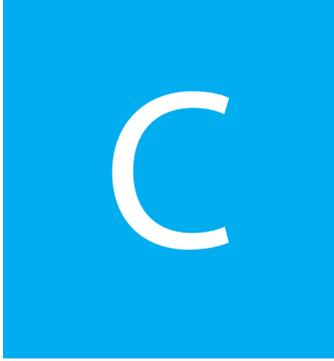
ClientUID *string*
SessionMetaData *string*
EnableSessionClientUID *value*

Values *string* represent user information required by your third-party integration.

value can be one of:

0: The user cannot modify the client UID and session values.

1: Default. The user can modify the client UID and session values.



Managing PrintWhere plugins

In a typical PrintWhere scenario, where the user has some administration privileges for their computer, when a PrintWhere user selects a printer, PrintWhere dynamically downloads and installs a small file called a printer plugin. A printer plugin is a helper printer object that PrintWhere uses to allow the computer to access the required printer driver.

However, in many organizations, users don't have the required privileges to allow PrintWhere to download and install these files. This presents a problem: Without the plugin, a user can search for and locate PrinterOn printers, but they cannot actually print to them because the computer cannot access the required driver.

To work around this limitation, PrinterOn provides a plugin installation script, `installplugin.ps1`. This PowerShell script enables administrators to pre-install the required PrintWhere plugins so they are available on the user's machine when required.

To retrieve the script, you can download and extract the following zip file:

dl.printeron.com/pwc/installplugin.zip.

Requirements for using the plugin installation script

The `installplugin.ps1` file has several requirements:

- [PrintWhere configuration prerequisites](#)
- [Deployment requirements](#)

PrintWhere configuration prerequisites

The `installplugin.ps1` script has the following PrintWhere configuration prerequisites:

- **Printers List:** Each printer to which the user should have access must be defined as a default printer in the PrintWhere configuration. For information about defining a list of default printers, see [DefaultPrinter](#) in [Appendix B: Creating a PrintWhere configuration file](#).

It is important that you define all of the printers the user can access. Remember that without the plugin, the user can still search for and select any printer to which they have access; without the plugin, though, they will be unable to send their print job to the printer.

The PowerShell script provided by `PrinterOn` only installs plugins for those printers specified in the default printers list. Therefore, if you don't define all accessible printers, the user will be able to view and select printers that they cannot successfully print to because the required plugin will not be available on their computer.

Deployment requirements

The `installplugin.ps1` script has the following deployment requirements prerequisites:

- **Order of deployment:** Because the plugin installation script reads the `ExternalConfig.xml` file to determine which plugins to download and install on the user's computer, the `ExternalConfig.xml` file **must already be present** on the user's computer when the `installplugin.ps1` script is deployed.
- **Reboot requirement:** Before deploying the `installplugin.ps1` file to users' computers, users must first reboot their PCs.

For more information about deploying the `installplugin.ps1` file, see:

- [Deploying and installing PrintWhere using Intune](#).
- [Deploying the PrintWhere configuration through Group Policy](#)

D

Configuring PrintWhere for Citrix or shared terminal environments

Administrators can deploy PrinterOn in environments where multiple users are accessing printing services through a single server or terminal. For example:

- **Citrix environments:** In these environments, a central Citrix server is used to provide employees with remote access to network printers no matter where they may be: at the office; at home; or at a public printing location, such as an airport or library.
- **Shared terminal environments:** In these environments (for example, a public printing kiosk), a single computer is used to access printing services, but each user logs in under their own account.

In both of these scenarios, installing and configuring the PrintWhere software to access the printing infrastructure is essentially the same.

Using PrinterOn with Citrix

PrinterOn can be used with Citrix in a couple of scenarios:

- **In mobile environments,** where the Citrix Receiver mobile app is used to access a server-based desktop environment, PrinterOn's network infrastructure can be used to deliver the print data across disparate networks. PrinterOn's PrintWhere driver is used to deliver print data from the Citrix server to the remote print location.

- **On Windows desktop computers**, PrintWhere provides native **File > Print** capability from any application. Typically, Citrix users are only able to print to those printers directly connected to the Citrix server. Through PrintWhere, users are able to search for and print to all enabled enterprise printers without being connected to the network or having particular print drivers installed. This gives employees remote access to enterprise printers no matter where they may be.

To enable printing from Citrix, administrators must enable employees to access PrintWhere from their Citrix sessions. This appendix describes how to provide users with the access they need.

Citrix server configuration

The PrinterOn PrintWhere driver requires the following software:

- Citrix XenApp 6.5 or later
- Windows 2008 r2 x64 or later or Windows 2012 r2 x64 or later

The server is part of a workgroup. PrinterOn services must be installed on a single server. PrintWhere is installed for multiple users on the farm node.

In addition, to allow users to access the PrintWhere documentation, you should ensure that the Microsoft XPS Viewer is installed on your server.

Installing PrintWhere in your environment

To install PrintWhere:

1. Download the PrintWhere installer from the PrinterOn website at www.printeron.com/support/downloads.html.
2. On the farm node, click on **Start > All Programs > Accessories**.
3. In the **Accessories** folder, right-click on **Command Prompt**, and select **Run as administrator**.
4. In the Administrator: Command Prompt window, type:

```
change user /install.
```
5. From the command prompt, type `PWhere.exe` to launch the PrintWhere installer.
6. Follow the installation instructions.

Configuring the central computer to use PrintWhere

To avoid issues and ensure that users can print, administrators should pre-install the necessary printer drivers on the central computer. An administrator should install, configure, and print to each device prior enabling users. After the administrator has printed once, subsequent users can use the service without additional rights.

Configuring the user's computers

To ensure that users avoid issues using PrintWhere, administrators must modify the Windows Registry on the shared terminal accessed by users, or in a Citrix environment, on each user's computer locally, to complete the following tasks:

- [Enable plugin caching](#)
- [Suppress Interactive Service Messages](#)

Enabling plugin caching

With PrintWhere, when a user changes a destination printer, PrintWhere adds a helper printer object to the computer, referred to as a PrintWhere plugin. This plugin provides the computer access to the required printer driver. By default, to minimize its presence on the computer, PrintWhere uses only one plugin at a time. Whenever a user selects a different printer, PrintWhere removes the existing plugin and adds a new one.

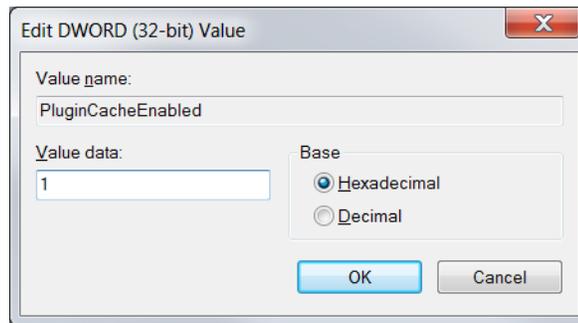
To make these changes to the system, PrintWhere requires the user to have permission to change printers and set the drivers. If the user does not have permission to install drivers, then errors occur that can prevent the user from printing.

Plugin caching allows PrintWhere to maintain multiple plugins so that they don't need to be removed and added every time the user selects a different printer. This approach allows users who cannot add new printers to work around their limited permissions. Users can move between the printers previously configured by the Administrator, since, from the system's perspective, PrintWhere remains the selected destination printer.

Note: A user with administrator privileges MUST install the necessary drivers prior to providing the service to users with less privileges. For more information, see [Configuring the central computer to use PrintWhere](#).

To enable plugin caching:

1. Open the Windows Registry Editor and navigate to the following Registry location:
HKEY_LOCAL_MACHINE\Software\PrinterOn Corporation\PrintWhere <version>
2. In the right pane of the registry window, right-click and select **New > DWORD value**. The new value is added to the registry, with the name editable.
3. Change the value name to PluginCacheEnabled.
4. Right-click **PluginCacheEnabled** and click **Modify**. The Edit DWORD Value dialog appears.



5. Set the **Value data** to 1.
6. Close the Registry Editor.

Suppressing Interactive Service Messages

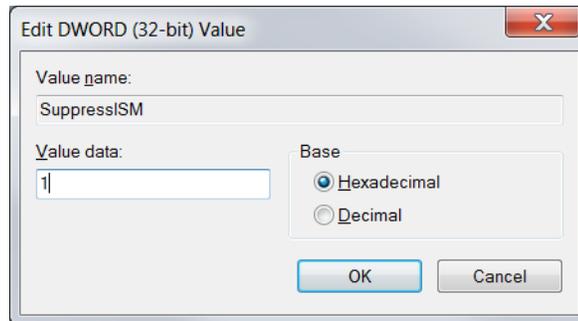
Because PrintWhere plugins appear as a selectable printers, users can accidentally submit print jobs to a plugin instead of to the PrintWhere driver itself. When this happens, PrintWhere attempts to display a message informing the user that the selected plugin is not a valid selection, and to choose the PrintWhere driver instead.

In rare cases, the print process uses system services, such as the print spooler, to display these messages. In cases where users do not have sufficient permissions to see these Interactive Service Messages, such as in Citrix environments, the user may not see the messages, and printing problems can occur. To avoid issues, administrators can disable Interactive Service Messages.

To disable Interactive Service Messages:

1. Open the Windows Registry Editor and navigate to the following Registry location:
HKEY_LOCAL_MACHINE\Software\PrinterOn Corporation\PrintWhere <version>

- In the right pane of the registry window, right-click and select **New > DWORD value**. The new value is added to the registry, with the name editable.
- Change the value name to SuppressISM.
- Right-click **SuppressISM** and click **Modify**. The Edit DWORD Value dialog appears.



- Set the **Value data** to 1.
- Close the Registry Editor.



Installing PrintWhere from the command line

In addition to deploying the PrintWhere software remotely using Microsoft Intune or Group Policy, you can also manually run the installer from the command line. If you include the /q option in the command, no further input is required from the user to complete the installation.

From the command line, you can also [uninstall the software](#).

Installing the software from the command line

To install the PrintWhere software from the command line:

1. In the Windows **Start** menu, locate **Command Prompt**, right-click and select **Run as administrator**.
2. On the command line, navigate to the folder containing one of the following PrintWhere installation files:
 - PWhere_x64.msi
 - PWhere_x32.msi
 - PWhereLE_x64.msi
 - PWhereLE_x32.msi

3. Type the following command:

```
msiexec.exe /i "installer_file" /q |INSTALLDIR="installation_dir" |  
SERVICE_URL="service_url" | DEFAULT_PRINTER="printer1,printer2,..." |  
/l*v "log_file_path"
```

A full description of each option is described below.

Option	Description
/i	Required. Installs the specified installer file. For example: <pre>/i "PWhere_x64.msi"</pre>
/q	Optional. Performs a silent installation of the PrintWhere software. The installer UI does not appear, and the user is not prompted for any input.
INSTALLDIR	Optional. Specifies a custom installation folder where the PrintWhere software will place the PrintWhere software, rather than using the default installation folder. For example: <pre>INSTALLDIR="C:\\PrintWhere"</pre>
SERVICE_URL	Optional. Sets the Service URL, which identifies the URL address where the PrinterOn service is hosted. PrintWhere communicates with the PrinterOn service via this URL. This option takes a string as a value. For example: <pre>SERVICE_URL="https://123.456.78.90:443/cps"</pre>
DEFAULT_PRINTER	Optional. Specifies a list of predefined printers. Multiple printers can be defined in a comma-separated list. For example: <pre>DEFAULT_PRINTER="900123456789,900123456790"</pre> The first member of the list is used as the default printer, which is selected by default in the Printer Chooser. Additional printers listed are available to the end user from the Printer drop-down list in the PrintWhere Properties dialog. Printers are displayed in the PrintWhere software in the order they are listed.
/l*v	Optional. When included, the PrintWhere installer generates a log file that records the events that occurred during the installation process. For example: <pre>/l*v "C:\\PrintWhere\\pwhere_log.txt"</pre>

Uninstalling the software from the command line

To uninstall the PrintWhere software:

1. In the Windows **Start** menu, locate **Command Prompt**, right-click and select **Run as administrator**.
2. On the command line, navigate to the folder containing one of the following PrintWhere installation files:
 - PWhere_x64.msi
 - PWhere_x32.msi
 - PWhereLE_x64.msi
 - PWhereLE_x32.msi
3. Type the following command:

```
msiexec.exe /x "installer_file"
```

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