Kofax ControlSuite

Support for Microsoft Universal Print

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KOFAX

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Overview

Microsoft's Universal Print is a new Microsoft 365 subscription-based, cloud print service that allows organizations to setup and manage printing through their Azure tenant. Much like traditional Windows print servers, it allows administrators to define printers and publish them to users. ControlSuite's Output Manager and Equitrac products both support receiving data from Microsoft's Universal Print, bringing the features and power of these products to Azure workflows.

This document explains how to configure ControlSuite to use Microsoft's Universal Print Connector to receive jobs from Universal Print.

Prerequisites

- Azure tenant running Azure AD and joined/synced with the local AD via Azure AD Connect.
- Universal Print must be installed and configured in the tenant.
- In order to install Universal Print, the user must be a Global Administrator.
- In order to install the Universal Print Connector, the user must be a Global Administrator or Print Administrator.
- In order to manage Universal Print, the user must be a Global Administrator Print Administrator.
- A Universal Print license must be assigned to the M365 tenant.
- A Universal Print license must be assigned to each administrator that will configure and manage Universal Print.
- A Universal Print license must be assigned to each user that prints through Universal Print.
- Client workstations must be running Windows 10 version 1903 or later.
- Client workstations must have network access to the Azure tenant.
- Systems hosting the Universal Print Connector must be running Windows 10 Pro or Enterprise version 1809 or later, or Windows Server 2016 or later.
- The Universal Print Connector requires .NET 4.7.2.

Systems hosting the Universal Print Connector must have network access to the Azure tenant. In order for Universal Print to provide information needed to associate users with print jobs, the Azure AD must be joined/synced with the local AD and the Universal Print Connector must be used. At print time, the Connector will use impersonation to process the job in the context of the user that printed it. This allows products like OM and Equitrac to associate print jobs with the appropriate user. The Connector is installed on the same system as the Windows printer definitions for the devices Universal Print will use.

How it works

When a user prints a document to a printer shared in Universal Print, the workstation renders the document to XPS and sends it to Universal Print in Azure. Based on the share the job printed to, Universal Print determines the Windows printer to send the data to, and the Universal Print Connector that services that printer. Universal Print then sends the XPS data to the Universal Print Connector, which in turn "prints" the job to appropriate Windows printer. The XPS data is rendered to whatever PDL the driver associated with the Windows printer uses, and the data is sent to the actual device.

When using Output Manager with Universal Print, the Windows printer definition sends the rendered data to a corresponding Output Manager Source instead of the physical device. After processing, the job is directed to an appropriate destination which sends the data to the device.

When using Equitrac, the job is held in the Windows printer's queue for processing instead of going to the physical device. After processing, the job is released and sent to the device associated with the Windows printer definition.

Setup Azure

The exact steps to configure Azure and setup Universal Print are beyond the scope of this document, but the basic outline and order is as follows:

1. Setup your local AD.
2. Setup your Azure tenant.
3. Setup Azure AD.
4. Setup Azure AD Connector to join/sync the local AD with the Azure AD.
5. Assign the necessary Universal Print licenses to the tenant, administrators, and users.
6. Setup Universal Print in the Azure tenant.

Install ControlSuite

When installing Output Manager or Equitrac for use with Universal Print, there are various installation scenarios to consider.

When using Output Manager, there are four basic scenarios to choose from:

- Install Output Manager on the same server as the Windows printer definitions and the Universal Print Connector. In this scenario, data flow between the Connector, Windows printers, Output Manager Input service, and the rest of Output Manager happen on the same system. While this eliminates the overhead of transmitting data across the network, it also isolates much of the workload to a single server.

- Install the Output Manager Input service on the same server as the Windows printer definitions and Universal Print Connector, and install the rest of Output Manager elsewhere. In this scenario, data flow between the Connector, Windows Printers and Output Manager Input service all take place on the same system, while still distributing some of the workload to other servers.
- A variation of the second scenario is to also install the Output Manager Input and Output services and configure a file store on the server with the Connector and Windows printer definitions. This isolates the flow of print data to the one server, while offloading the command and control work of the DBM to a different server.
- Install Output Manager on a different server(s) from the Connector and Windows printer definitions. This provides the greatest distribution of processing, but also requires considerable data flow across the network.

In all these scenarios, multiple servers with Connectors and Windows printer definitions can be used, but may not necessary given Output Manager's ability to receive jobs from a single Source and route them different Destinations.

When using Equitrac, you will install Equitrac on the same server as the Universal Print Connector and the Windows printer definitions.

Create Windows printer definitions

When using Output Manager, you essentially define Windows printers that “point” or correspond to Output Manager Sources. When Universal Print sends a job to that Windows printer, the Universal Print Connector receives the job in XPS format and “prints” it using the Windows printer definition. The Windows printer sends the rendered print data to an Output Manager source, which stores it in the Output Manager file store. The rendered job is later routed to one of the Output Manager Destinations, which sends the data to the actual printer.

Different types of Windows printer definitions / Output Manager Sources can be used.

In general, the Windows printers can be defined using an appropriate driver and the Standard TCP/IP LPD port. In Output Manager, a corresponding LPD source will be created. Set the Windows port’s IP address, port number, and queue name to the IP address, port, and queue name configured in the Output Manager LDP Source. The port is usually 515. This configuration can be used regardless of whether the Output Manager Input service is installed on the same server.

If only V3 printer drivers will be used, Windows printers can be defined using an appropriate driver and the Output Manager Job Monitor port. Corresponding Windows Queue Sources will be created in Output Manager and associated with the printer. In some circumstances, this scenario can provide better performance. This configuration can only be used when the Output Manager Input service is installed on the same server as the Windows printer definitions, and only with V3 drivers.

IPP printer definitions and Output Manager sources can also be used. This may be desirable when the Output Manager Input service is not installed on the system where the printers are defined and secure transmission is required. Otherwise, the additional overhead can affect performance and may not be necessary.

Using Windows printers defined with the Standard TCP/IP port - RAW and a corresponding Output Manager Socket Source is not recommended since this transport does not provide job information. In all cases, the print driver used should be appropriate for the target device.

With Output Manager, you do not necessarily need to create a separate Windows printer definition and Output Manager source for each physical device. In cases where the same print driver is (or can be) used by multiple devices, a single Windows printer definition and Output Manager source can be used to receive jobs for those devices. In high volume environments, create multiple Windows printers and Output Manager sources to distribute the load and prevent jobs from backing up while spooling into the system.

When using Equitrac, define Windows printer that “point” to the actual device. These printers can be defined with an appropriate driver and Standard TCP/IP port (LPD or RAW). Equitrac must be installed on the same system as the Windows printer definitions. When Universal Print sends a job to that Windows printer, the Universal Print Connector receives the job in XPS format and “prints” it using the Windows printer definition. Equitrac hooks the Windows printer definitions and captures the rendered data in the print queue for processing. The rendered job is later released and sent to the actual printer.

Install the Universal Print Connector software

The Universal Print Connector must be installed on the system where the Windows printers that will be registered in Universal Print are defined. The user must have the Global Administrator or Print Administrator role. The software requires .NET 4.7.2 or later. Microsoft’s documentation indicates that the Connector can only be installed on Windows 10 Pro or Enterprise version 1809 or later, or Windows Server 2016 or later. However, the Connector may run on Server 2012R2 system with all the latest updates applied.

To install the Universal Print Connector, download the software from https://aka.ms/UPConnectorMSI, run the .msi, and follow the prompts.

The software consists of the Universal Print Connector app, which is the main UI used to register printers with Universal Print, and a Print Connector service that runs in the background. When not registering printers, you can sign out and close the app. The app is not required to receive and process print jobs. The service must be running in order for the Connector to function.

Register the Connector with Universal Print

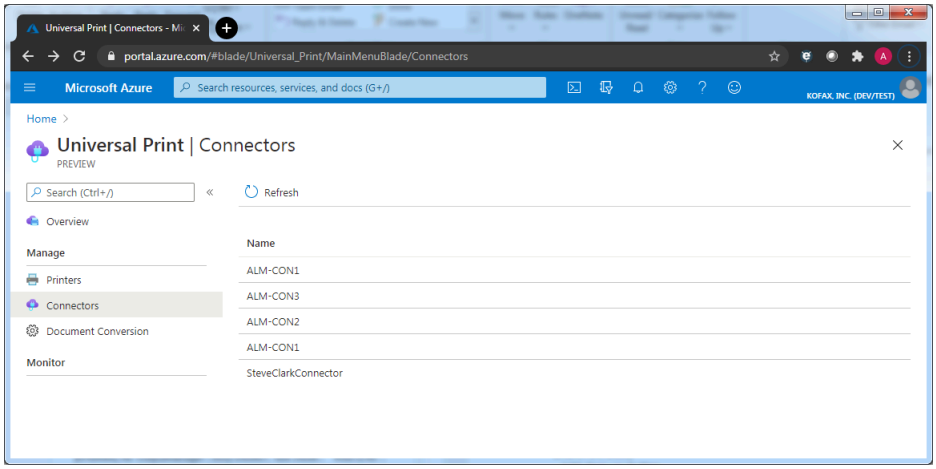
Before the Universal Print Connector can be used, it must be given a name and registered with Universal Print. In order to register a Connector, the user must be a Print Administrator or Global Administrator in the Azure tenant and have a Universal Print license assigned to them.

To register the Connector, do the following:

1. Run the **Universal Print Connector app**.
2. On the Start screen, click **Login**.
3. Enter your credentials for your Azure tenant, and click **Sign in**.
4. On the Registration screen, enter a **Connector name**, and click **Register**.

After successful registration, the Connector application displays the printer registration screen, and the name of the new connector is listed in the Connectors section of the Universal Print Portal in Azure. https://portal.azure.com/#blade/Universal_Print/MainMenuBlade/Connectors.

A connector cannot be unregistered once it has been registered in Universal Print. Kofax recommends that you plan your infrastructure before registering connectors.



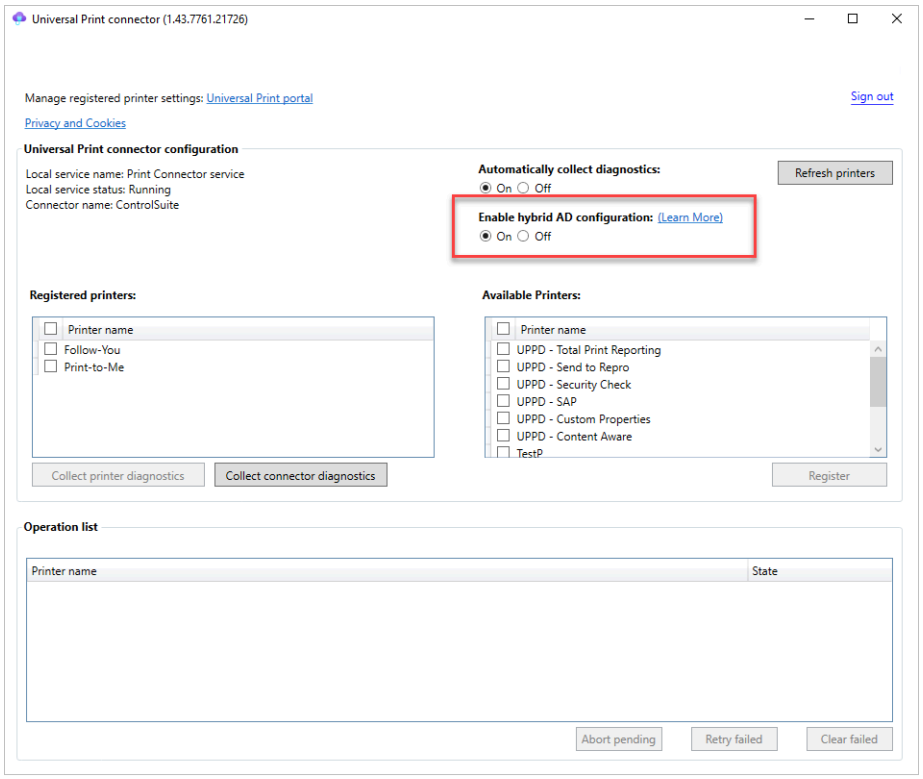
Register Printers with Universal Print

Registering a printer makes it “known” to Universal Print. After the connector has been installed and registered, the app displays the Manage Registered Printers screen. On the left side is a list of printers that have been registered in Universal Print. On the right side is a list of available printers that have not been registered. At the bottom of the screen is a list of the operations currently running.

If your environment is set up with both local AD and Azure AD, select the **Enable hybrid AD configuration** option, as a user account exists in both of these directory services. When this is turned on, the connector attempts to map the Azure AD user ID to a corresponding local AD domain user ID.

When this screen is initially displayed, the Connector scans the local system for usable, unregistered Windows printer definitions and lists them in the Available Printers list. It also contacts Universal Print and gets a list of registered printers and displays them in the Registered Printers list. To update these lists, click the **Refresh Printers** button in the upper right of the screen.

To register one or more printers with Universal Print, select them in the Available Printers list and click the Register button. The Connector will go through each printer selected and register it with Universal Print. Once successfully registered, the printer moves from the Available Printers list to the Registered Printers list.



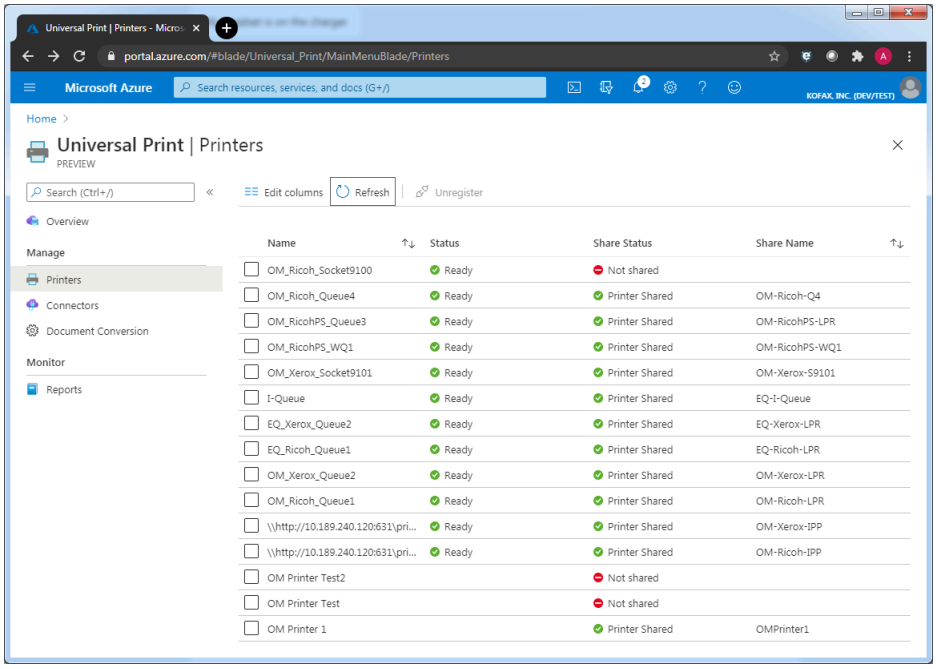
If the printer registration does not complete successfully, try registering the printer again.

When finished using the Universal Printer Connector app, click **Sign Out** then click the **Exit** button to close the app. The Print Connector service will remain running in the background.

The list of registered printers is also available in the Printers section of the Universal Print Portal in Azure at https://portal.azure.com/#blade/Universal_Print/MainMenuBlade/Printers.

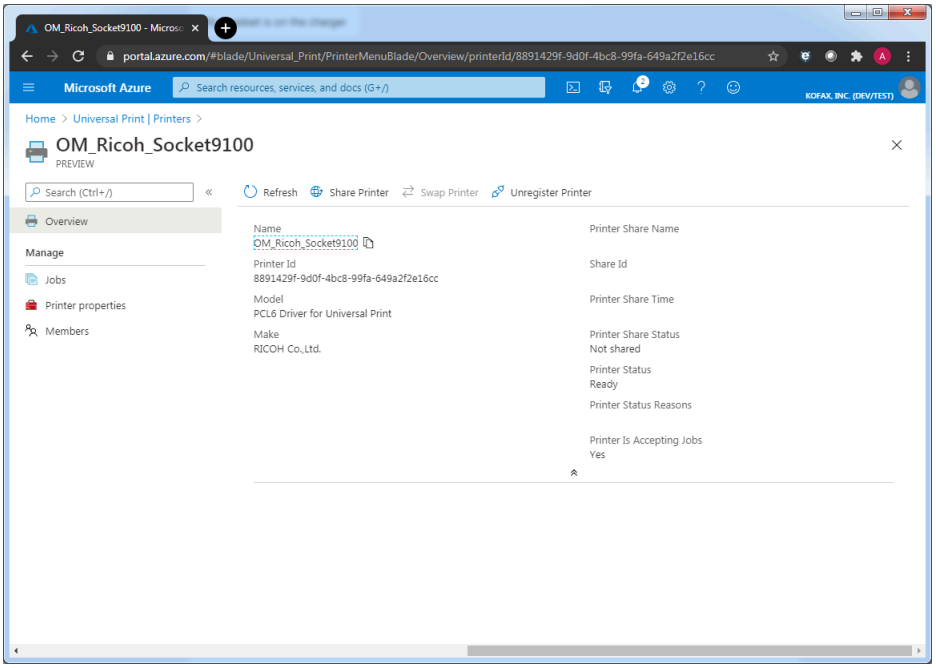
Share Printers and assign permissions

Once a printer is registered with Universal Print, it must be made available to users. This is done by sharing the printer and assigning permissions to users that should have access to the printer. The Global Administrator or Print Administrator goes to the Printers section Universal Print Portal in Azure at https://portal.azure.com/#blade/Universal_Print/MainMenuBlade/Printers. This screen shows the list of printers “known” to Universal Print. The Name column shows the name of the device as it is known to the Connector (i.e. the Windows printer name). The Share Name column shows the name users will see and use to access the printer. The Share Status column indicates which printers have been registered and shared, and which one have only been registered.



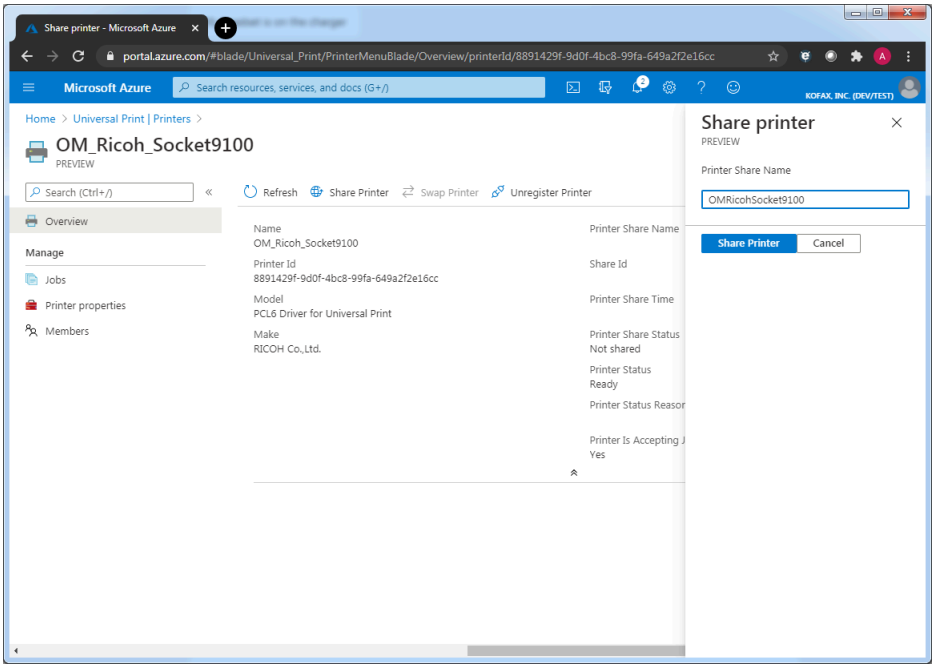
To share a registered printer, do the following:

1. Click on the unshared printer you wish to share.
2. The printer's Overview screen displays the printer's attributes.

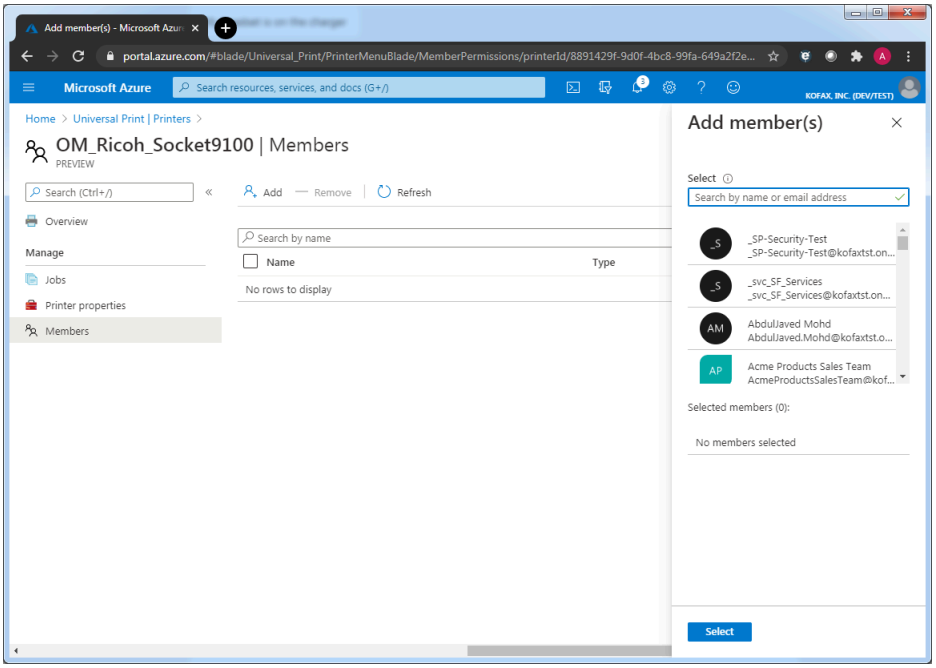


3. Click the **Share Printer** link near the top of the screen.

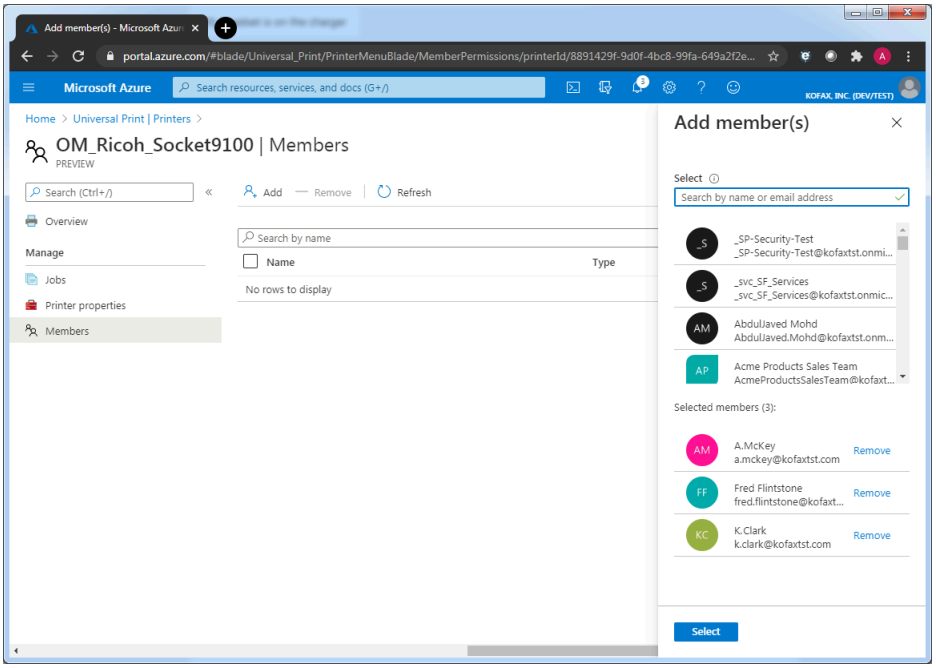
4. In the Share Printer panel on the right, enter the name the printer will be shared as and click the **Share Printer** button.



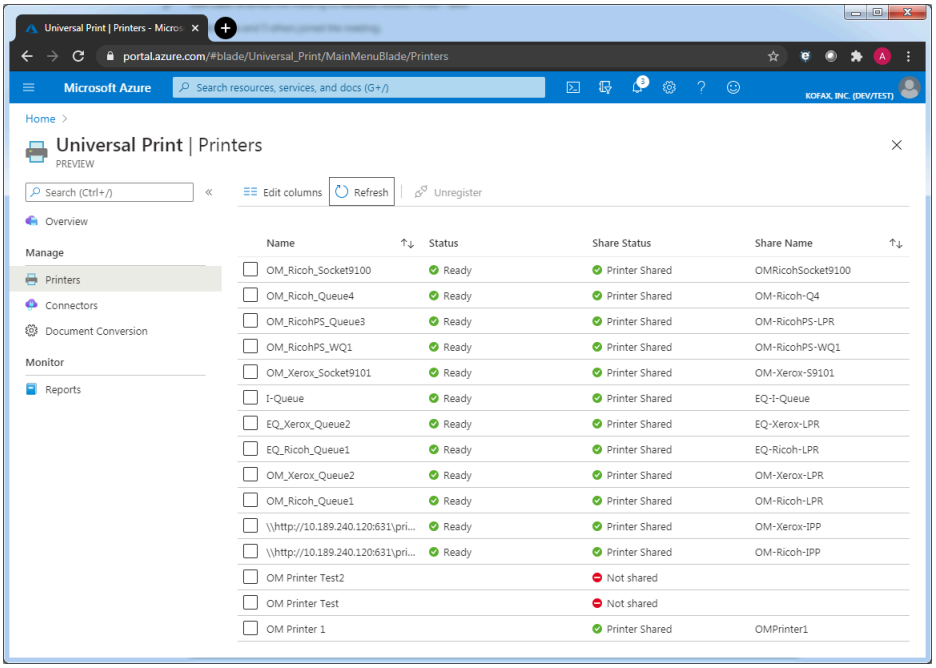
5. Click on the **Members** link on the left navigation pane, and click **Add**.



6. In the **Add member(s)** panel on the right, select the users and groups that should be allowed to use the printer and then click **Select** at the bottom.



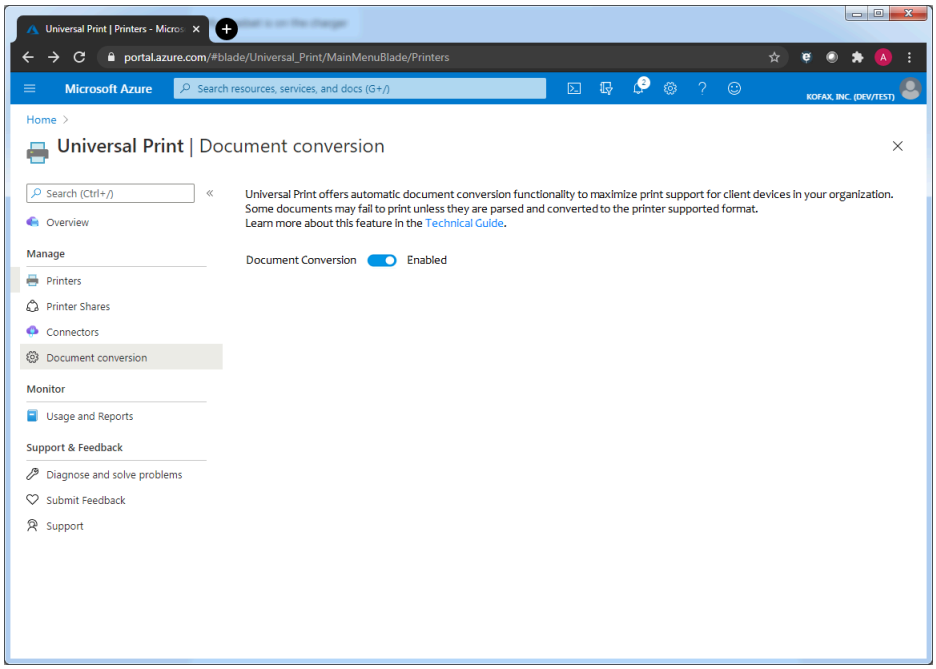
7. Once the printer has been registered, shared, and users assigned rights, the Portal's Printers screen lists the printer as shared and the printer can be used.



Document conversion

When the printer is registered with Universal Print, the printer reports its supported print content rendering format. When a user sends a print job, Universal Print checks to see whether the print content is rendered in one of the supported formats. If it is, the print content is directly passed to the printer queue. If the print content is rendered in another format, Universal Print checks to see if the Document Conversion feature is enabled. If it is enabled, the document is converted into one of the supported rendering formats. If the document conversion feature is disabled, Universal Print reports an error to the user.

For more about this feature, see https://docs.microsoft.com/en-gb/universal-print/portal/document-conversion.



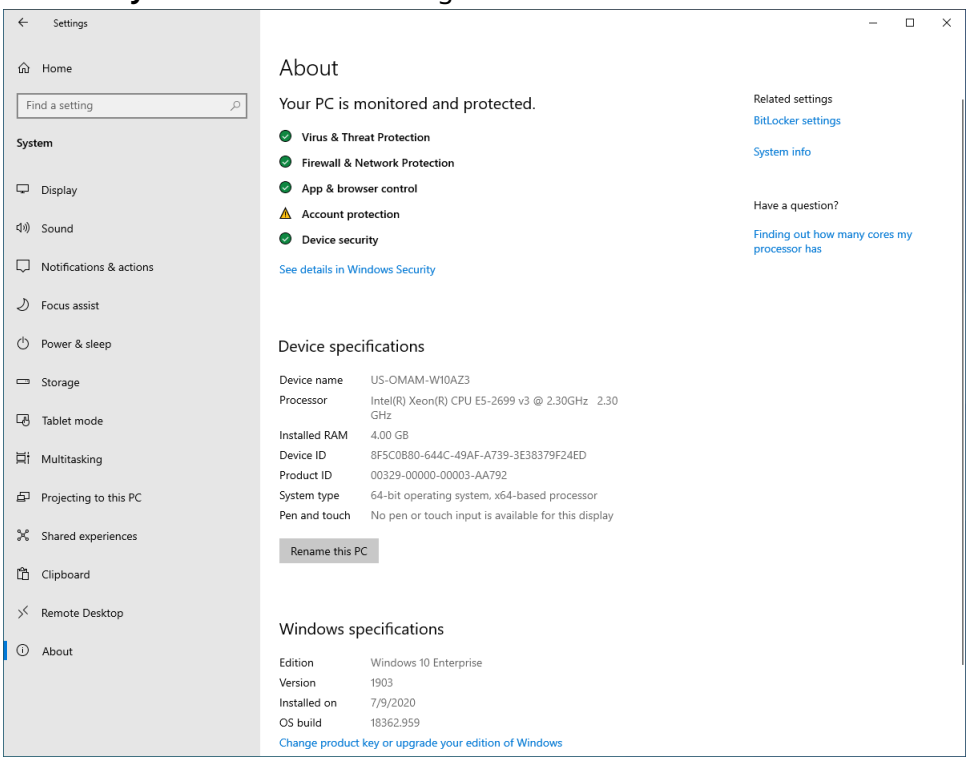
Configure the Client Workstation

In order for a workstation to access printers in Universal Print, it must also be a joined to the local AD domain, or joined to the Azure AD, or the user's Azure account must be added to the system. Furthermore, the user must be logged into the system with their domain/Azure credentials. The workstation must also be running Windows 10 version 1903 or later.

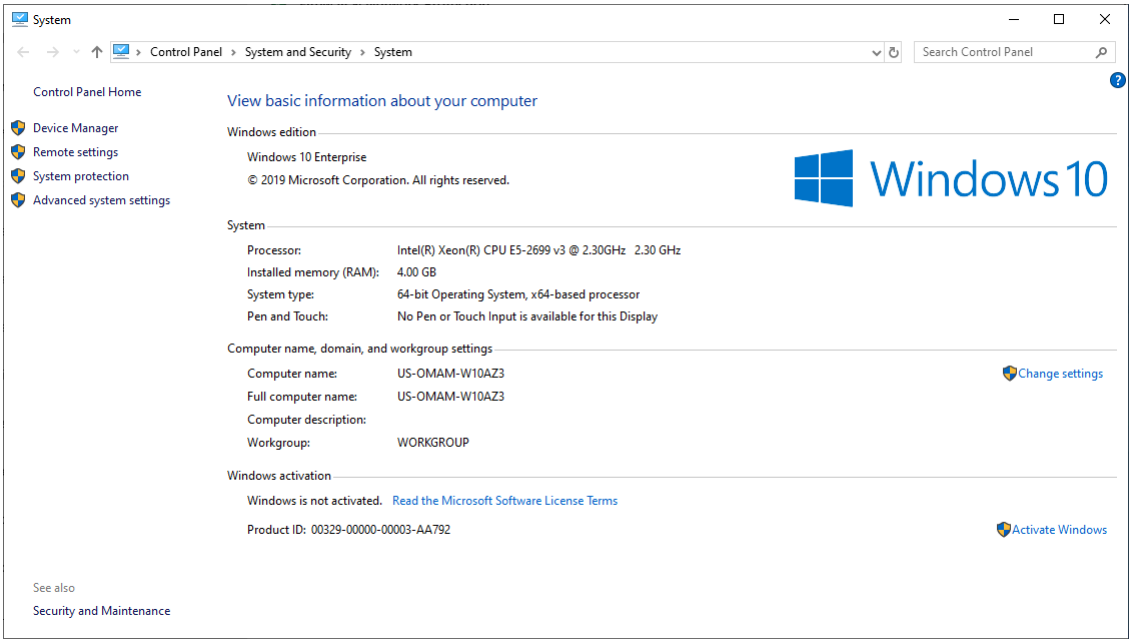
A workstation can be added to the local AD domain the usual way through System Properties, and requires the user to be an administrator on the system and have rights to join systems. If the self-registration has been enabled, the user can join to Azure AD without having special rights. Adding the user's Azure account to the system also does not require special rights.

To add the workstation to the local AD domain, do the following:

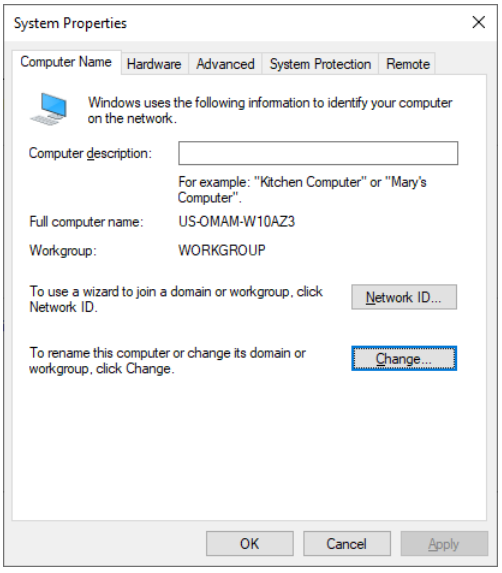
1. Go to **Settings > System > About**.
2. Click the **System Info** link on the right side.



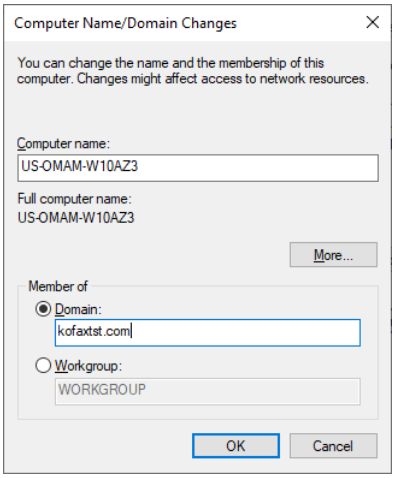
3. In the System Control Panel applet, click **Change Settings** beside the Computer name, domain, and workgroup settings.



4. On the **Computer Name** tab of the **System Properties** dialog, click **Change**.



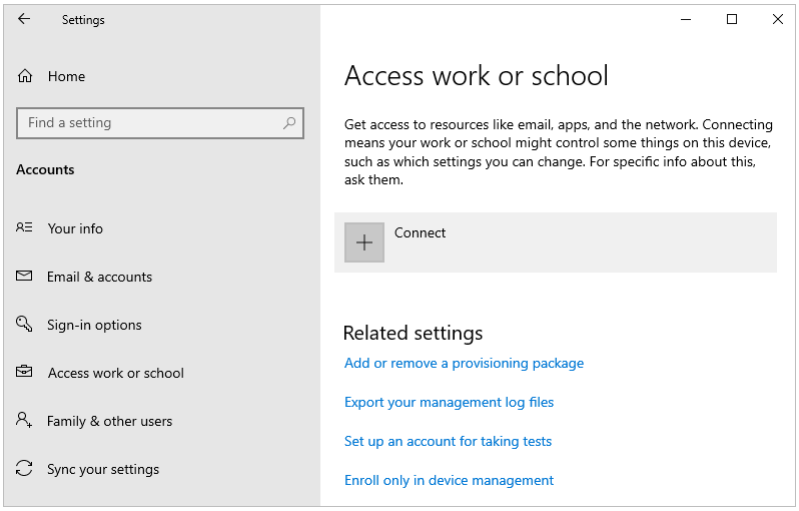
5. In the **Computer Name/Domain Changes** screen, enter the **Domain** information and click **OK**.



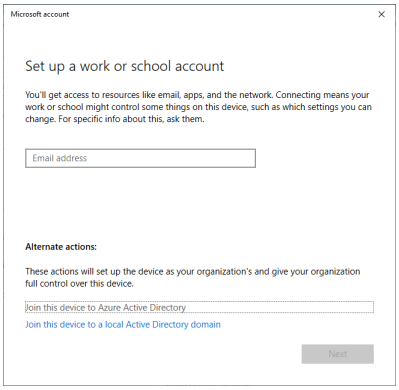
6. If prompted, enter your credentials in order to access the domain.
7. When prompted, reboot the system.
8. After reboot, log in with your domain credentials.

To join the workstation to Azure AD, do the following:

1. Go to **Settings > Accounts > Access work or school**.
2. Click the **Connect** button.



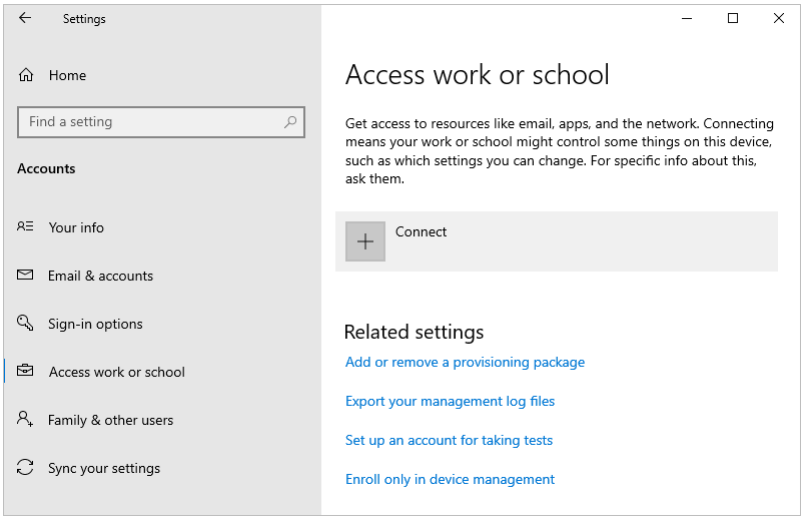
3. On the **Set up a work or school account** screen, click **Join this device To Azure Active Directory**, and click **Next**.



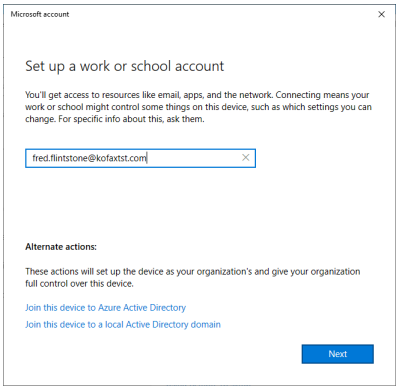
4. Enter your **Azure account** and click **Next**.
5. Enter your **password** and click **Sign In**.
6. Confirm the information, and click **Join**.
7. Click **Done**.
8. After joining the system to the local AD domain, log out and log in again with your domain credentials.

To add the user's Azure account to a non-domain system, do the following:

1. Go to **Settings > Accounts > Access work or school**.
2. Click the **Connect** button.



3. Enter the email address associated with your Azure account and click **Next**.

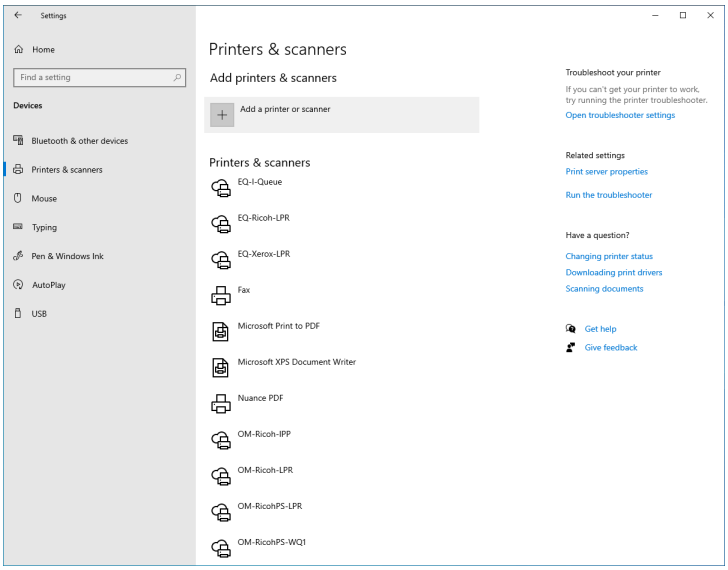


4. Enter your password and click **Sign In**.
5. Click **Done**.
6. After adding your Azure account to the system, log out and log in again with your Azure credentials.

Once the workstation has joined the local or Azure AD, or the user's Azure account has been added to the system, the workstation can access any shared printers in Universal Print that they have permission to.

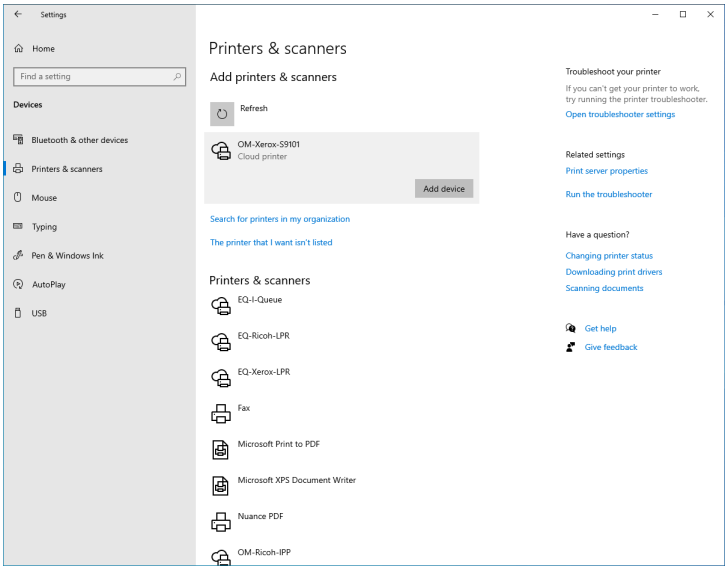
To connect to a shared printer, do the following:

1. Go to **Settings > Devices > Printers & scanners**.
2. Click the button next to **Add a printer or scanner**.



3. Windows will scan for available printers and display them. Universal Print printers show "cloud printer" below the share name.

4. To connect to that printer, select it and click **Add Device**.



Printing via Universal Print

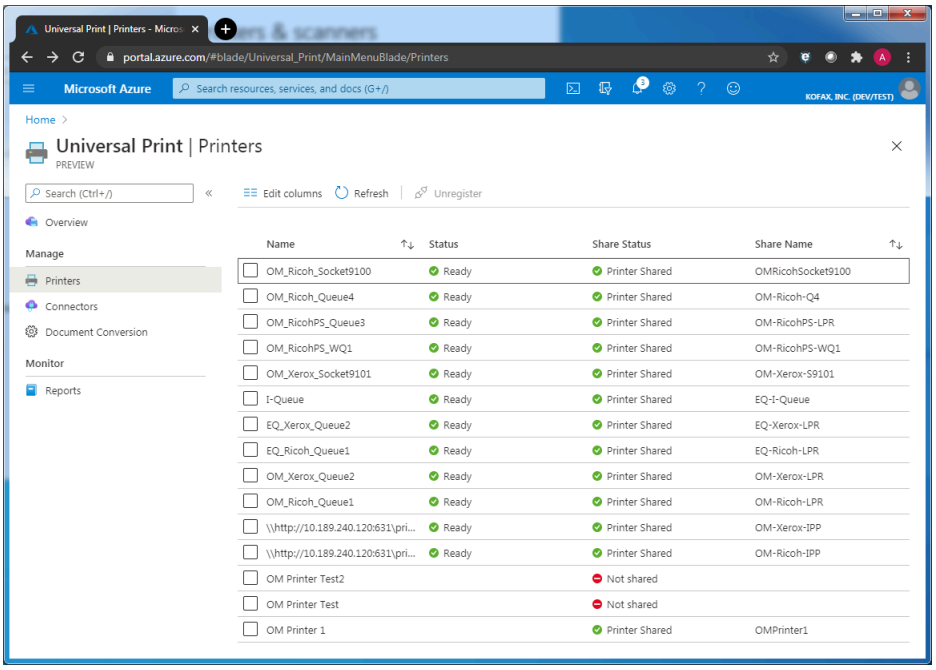
Printing via Universal Print works the same as normal Windows printing. From the application, the user chooses Print, selects the desired printer, sets any printing preferences, and clicks Print.

Removing an unused printer

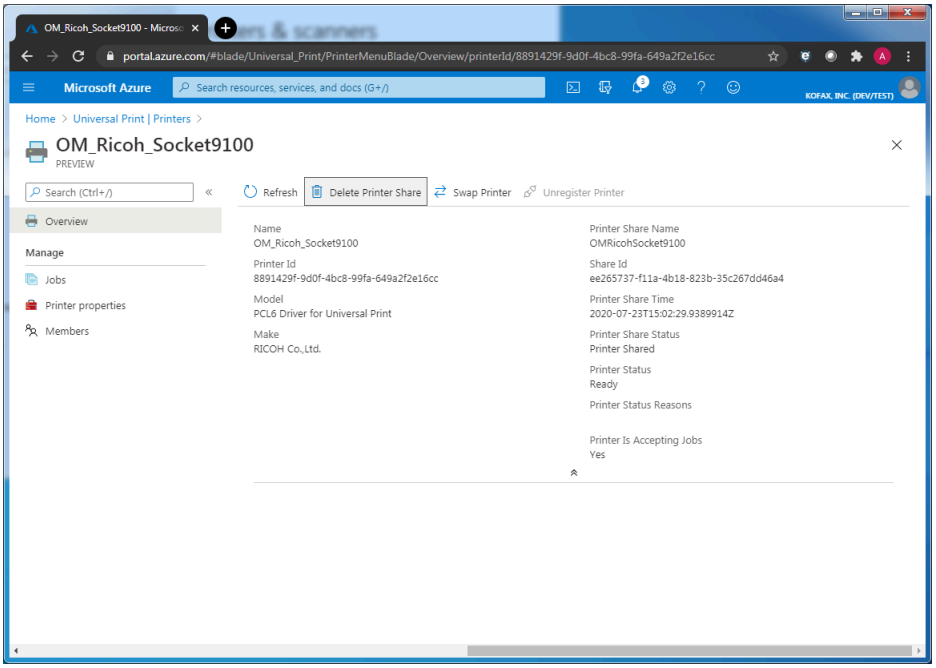
Devices that are no longer needed or used can be removed from Universal Print by the Global Administrator or Print Administrator. This is done by deleting the share then unregistering the printer. If desired, the Windows printer definition can be deleted afterwards.

To remove a printer from Universal Print, do the following:

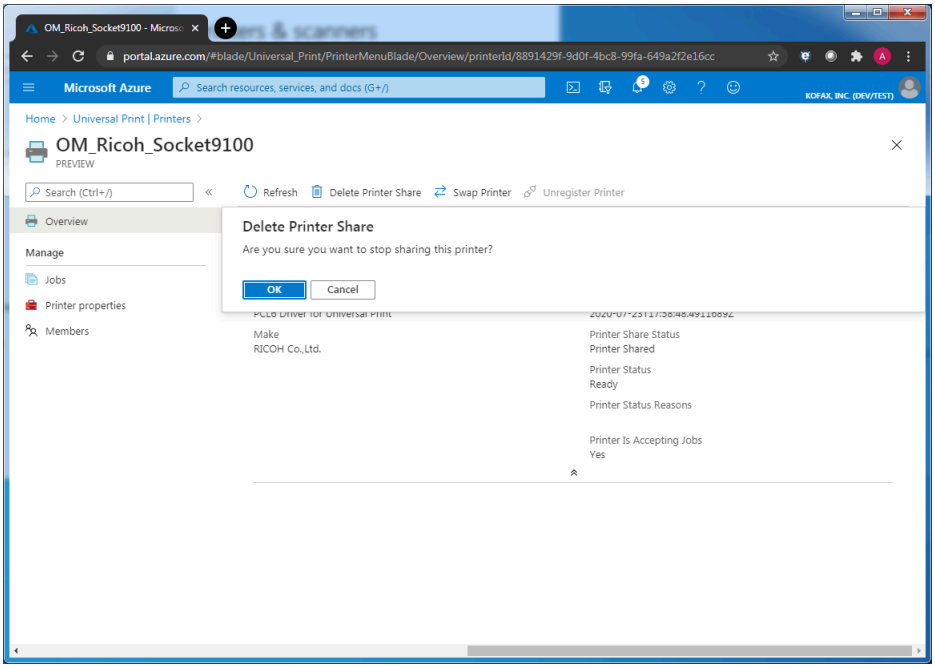
1. Go to the Printers section of the Universal Print Portal in Azure.



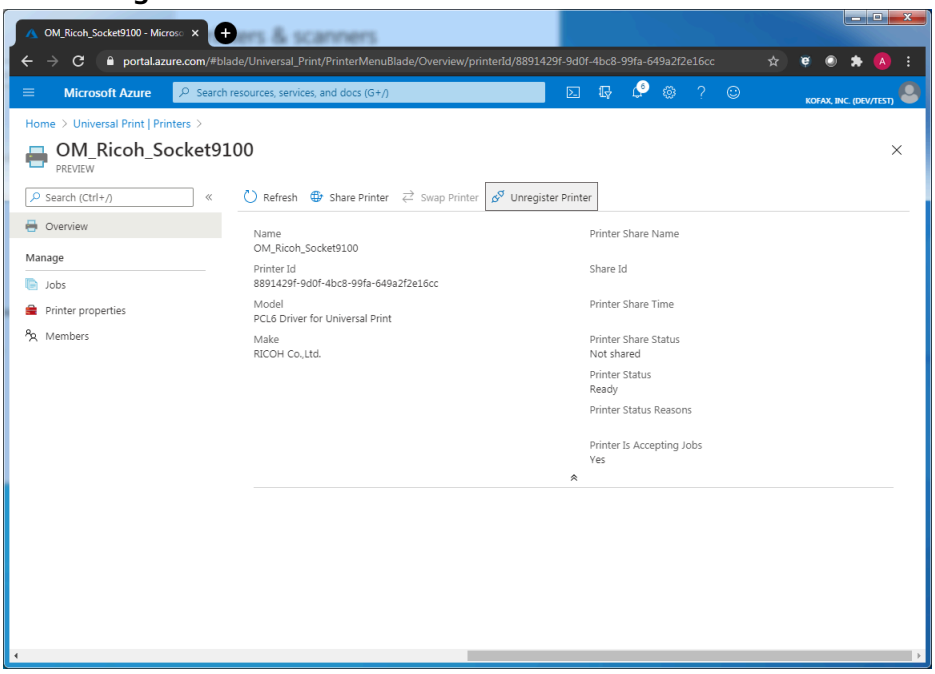
2. Click on the printer you wish to remove to go to it's properties page.
3. Click **Delete Printer Share**.



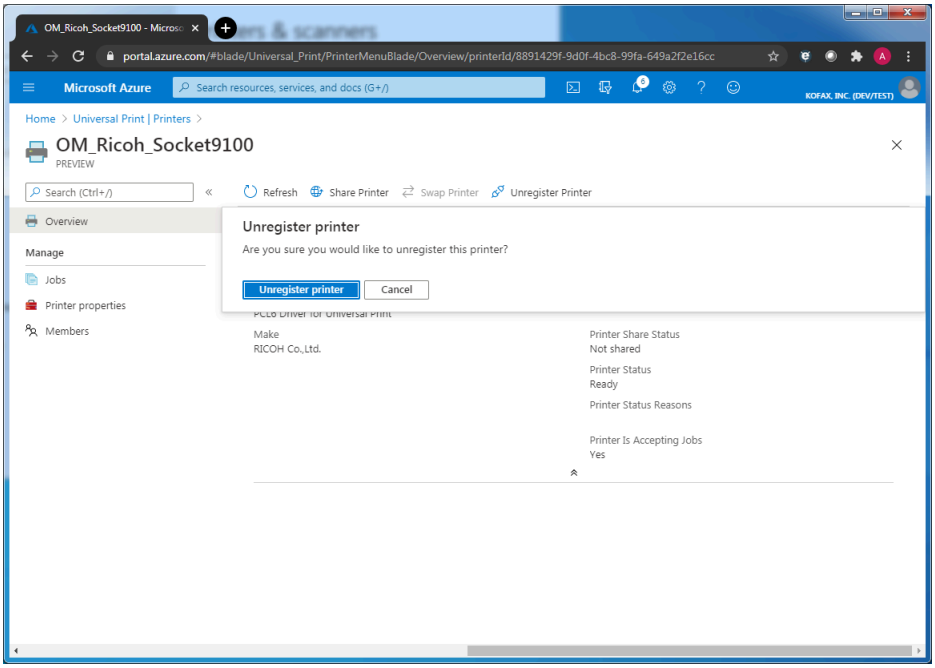
4. Click **OK** when asked "Are you sure you want to stop sharing this printer?".



5. Click **Unregister Printer**.



6. Click **Unregister printer** again to confirm that you want to unregister the printer.



The Connector can unregister a printer, however, the Connector does not remove the printer share first and causes problems for Universal Print and the Connector. It is recommended that you always use the Universal Print Portal to delete the share and unregister printers that are no longer needed.

Deleting the windows printer definition, while leaving the printer share and registration behind, also causes problems for Universal Print and the Connector. Therefore, it is recommended that you always delete shares and unregister printers before removing their Windows printer definitions.

Troubleshooting

Occasionally a print job may “hang” in the system and does not make it through the print queue. If the print job does not make it through, check the Windows print queue on the workstation and on the Connector system. Right click the "hung" job and select Cancel, then try printing again.

Microsoft Universal Print documentation

https://www.microsoft.com/en-us/microsoft-365/windows/universal-print

https://docs.microsoft.com/en-us/universal-print/

https://techcommunity.microsoft.com/t5/windows-it-pro-blog/announcing-the-public-preview-of-universal-print/ba-p/1534891