

PrinterLogic

How to Simplify Citrix Printing

Printing from Citrix Is too Complex

IT professionals value Citrix for its scalability, accessibility and security. Through XenApp and XenDesktop, end users easily gain access to mission-critical applications with a consistent workspace from nearly anywhere and from nearly any device, all while keeping critical data secure in the data center.

With these benefits comes complexity. Although Citrix is the go-to solution for delivering remote desktop and applications to the enterprise, it routinely falls short when it comes to effectively deploying printer queues in a zero-, thin- and fat-client configuration. This makes it imperative to find a solution that simplifies printer management in a Citrix environment.

This paper outlines how a Citrix environment works to deliver print jobs to a printer, explains the pitfalls and dangers of printing from a Citrix environment, and shows how Printer Installer from PrinterLogic quickly and permanently solves the many problems associated with Citrix printing.

Without Printer Installer, your Citrix XenApp and XenDesktop printer deployment options consist of auto-created printers, which are printers that are redirected into the XenApp application or XenDesktop virtual desktop infrastructure (VDI), or session printers, which are printers that are installed into the XenApp application session or installed in the XenDesktop VDI or golden image. The printing process varies depending on whether print servers are centralized in the data center or are distributed throughout the remote sites.

PrinterLogic has designed Printer Installer to solve many of the problems associated with Citrix printing by refining the printing process itself and providing powerful printer management. It seamlessly integrates with Citrix XenApp and XenDesktop to give IT admins a feature-rich web-based admin console, an intuitive self-service installation portal, and an unobtrusive end-user client. This print management solution addresses the many issues related to Citrix printing by converting printers to centrally-managed direct IP printing, thereby eliminating the need for print servers, streamlining infrastructure, increasing print reliability and reducing wide area network (WAN) traffic.

“If you have a virtual environment, you simply have to deploy PrinterLogic. It has fundamentally changed—and improved the way that we deliver print services in our virtual desktop environment, all while reducing cost. I don’t know what we did before PrinterLogic.”

-Eric Graham, VCPI

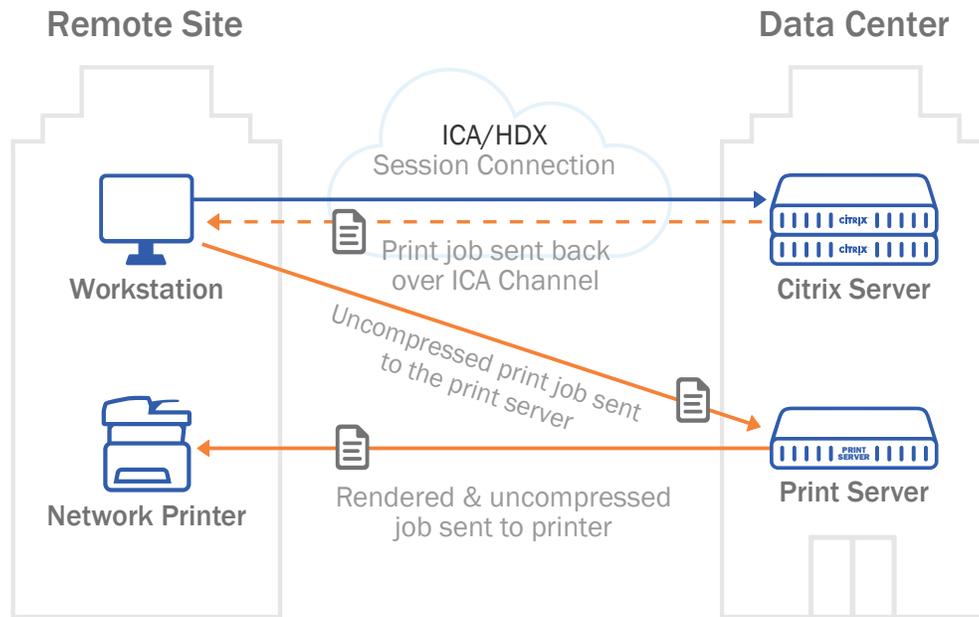
A Typical Citrix Environment

The design of Citrix is to keep computing and data in the data center and to give end users a unified and consistent desktop. Although this is very effective for large organizations and keeps their desktop provisioning and helpdesk costs low, it introduces complexity into basic operating functions, such as printing. To solve this, Citrix has implemented mechanisms to enable printing from the data center.

Here are the common setups without PrinterLogic software:

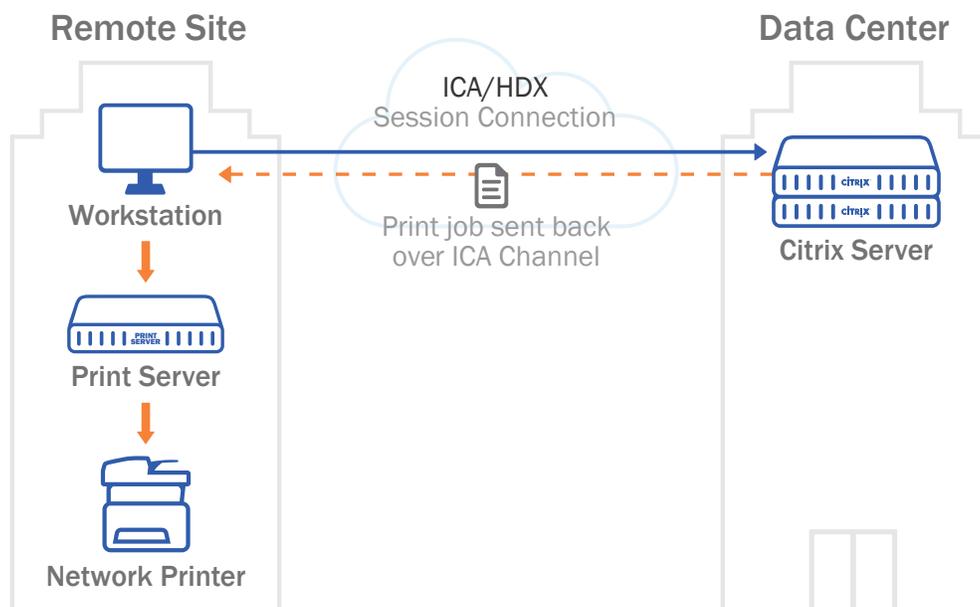
Auto-created Printers and a Centralized Print Server

In this scenario, the admin creates a script or group policy object (GPO) that maps printers from the print server to the client workstation. By using Citrix policy, the printers are redirected to the user's virtual desktop or application. When users print from their virtual desktop or application, the print job data is compressed and sent over the WAN via the independent computing architecture (ICA) channel to the end-user workstation. Here it is decompressed and sent back over the WAN to the print server to render the print job. Once the print job is rendered, it is sent from the print server back to the local printer that is at the end user's location.



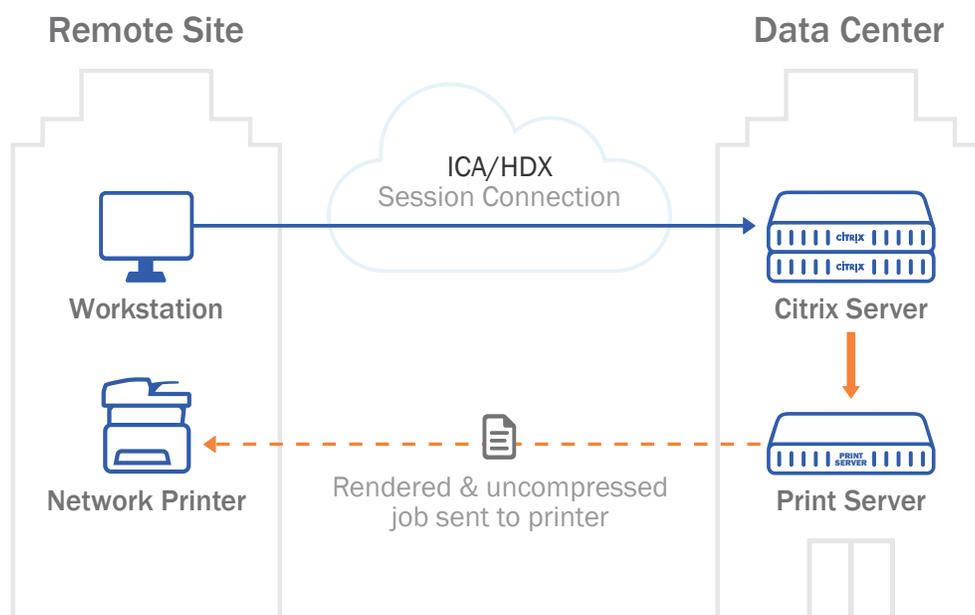
Auto-created Printers and a Distributed Print Server

Similar to the above scenario, the admin creates a script or GPO that maps printers from the print server to the client workstation. By using Citrix policy, the printers are redirected to the user's virtual desktop or application. When users print from their virtual desktop or application, the print job data is compressed and sent over the WAN using the ICA channel to the end-user workstation where it is decompressed. The difference here is that the job is then sent to the print server over the local area network (LAN). The print server renders the print job and sends it to the local printer that the end user selected.



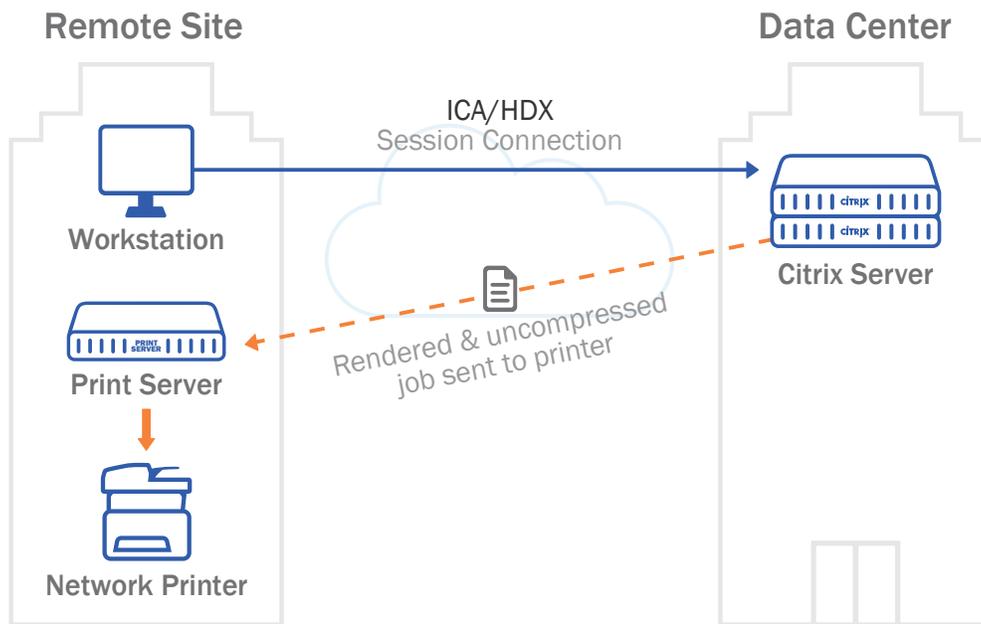
Session Network Printers and a Centralized Print Server

Here the admin uses scripts, GPOs and Citrix policy to map printers to end-user virtual desktop or application sessions from the centralized print server. When the end user needs to print, the print job data is sent from the user's Citrix session to the print server over the LAN at the data center. The print server renders the print job and sends it uncompressed over the WAN to the local networked printer that the user selected.



Session Printers and a Distributed Print Server

Much like the previous scenario, the admin uses scripts, GPOs and Citrix policy to map printers to end-user virtual desktop or application sessions from the distributed print server at the user's location. When the end user needs to print, the print job data is sent uncompressed from their Citrix virtual desktop or application session uncompressed over the WAN to the print server at the user's location. The print server then renders the print job and sends it over the LAN to the local networked printer that the user selected.



Citrix Printer Management Issues

At first glance, these printing methods seem acceptable, if not exactly ideal. But when you add in hundreds or even thousands of users and printers into the mix and spread them out over numerous locations and servers, you invariably end up with chronic printing and deployment issues. Some of the top issues related to auto-created and session printers include:

- **WAN Traffic** - If the print servers are centralized, you will generate vast amounts of unnecessary WAN traffic when using auto-created printers. This is because the print job must make two extra trips across the WAN before it is finally printed at a local printer that might be a mere twenty feet away from the client device that initiated the print job.
- **Crashing Print Spooler** - A crashing print spooler is usually the direct result of a rogue printer driver. A crashed spooler will cause every single user to lose the ability to print. This issue puts the Citrix admin on a frantic hunt to locate the offending driver and remove it before the spooler crashes again.
- **Vanishing/Missing Printers** - Whether you are using session or auto-created printers, the Citrix Print Manager service, scripts, and policies that are supposed to deliver printers into Citrix sessions can fail. This not only leaves end users without a usable printer, it also results in one or more helpdesk tickets that need to be dealt with.
- **GPOs and scripts for printer deployments** - The GPOs and scripts needed to deploy printers to end-user workstations and to Citrix virtual desktops and applications are complicated to configure, unreliable and prolong login times for the end user.
- **Proximity Printers** - When using Citrix policy to configure proximity printer mappings, each new Citrix policy that needs to be created adds one more layer of complexity. If there are any conflicts or issues with the proximity policy, the wrong proximity printer will be mapped or the correct printer will be missing altogether.
- **Printer Driver Congestion/Incompatible Printer Drivers** - When using session-based printers with XenDesktop VDI or XenApp applications, you risk bloating your golden image or overpopulating your Citrix server with too many printer drivers. Too many drivers can result in decreased performance and crashing print spoolers.
- **Helpdesk Calls** - Given all the above issues that can occur with Citrix printing, it is no surprise that they go hand in hand with helpdesk calls. These calls waste the time and resources of both end users and support staff—with an obvious impact on productivity. Healthcare organizations are particularly affected by this loss of productivity, as it can hurt the quality of patient care.

How PrinterLogic Solves Citrix Printing Problems

Printer Installer from PrinterLogic is a robust, cost-effective, scalable and feature-rich print management solution that integrates seamlessly with Citrix XenApp and XenDesktop. With its powerful web-based admin console, intuitive self-service installation portal, and unobtrusive end-user client, it can address all Citrix printing-related issues by converting printers to centrally managed direct IP printing, thereby eliminating print servers as well as unnecessary WAN traffic.

In doing so, Printer Installer enables Citrix organizations to further eliminate complex printer deployment scripts and GPOs. These cumbersome methods are replaced by the Printer Installer client and the automatic printer deployment assignments created in the admin console. This unique combination gives admins full control over printer driver assignments—which can utilize either native printer drivers or the Citrix Universal Print Driver—while empowering end users with the ability to identify and install nearby printers using the Self-service Installation Portal. And this is possible regardless of whether end users are equipped with zero, thin or thick clients to access their XenApp applications or XenDesktop VDI.

Working with Auto-Created Direct IP Printers

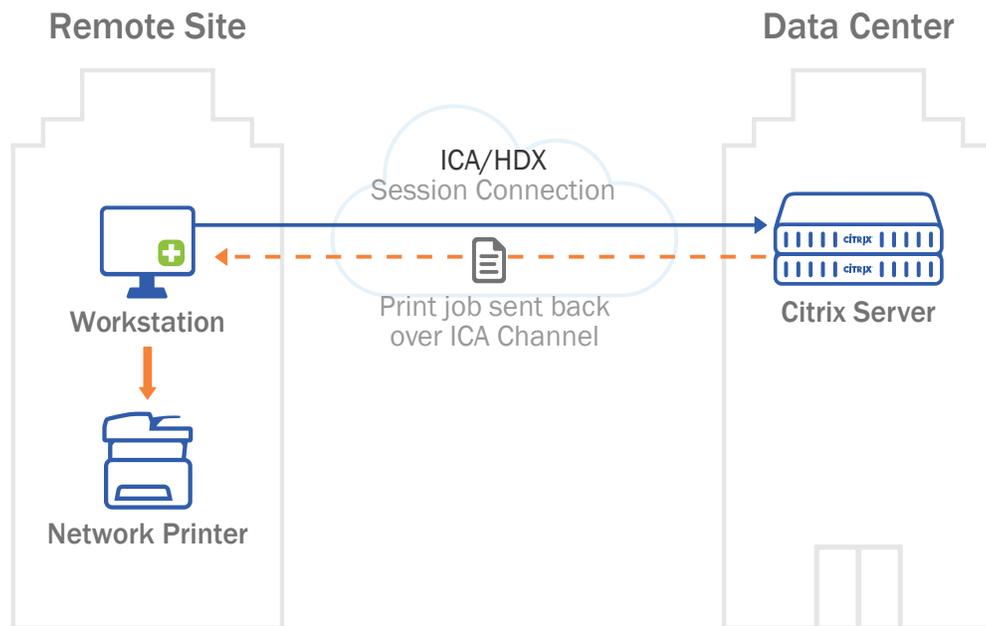
In this scenario, the Printer Installer Client is installed on the end user's workstation either by MSI deployment or manual installation from the Self-service Portal. This allows an IT admin to use the Printer Installer Admin Console to create automatic printer deployments based on either Active Directory (AD) attributes or the printer's physical proximity to the end user.

If the end user needs a different printer, they can use the Self-service Installation Portal portal to identify and install a printer on their own with a single click. Any printers that are installed by the Printer Installer Client will be installed as direct IP printers. Then, through the Citrix auto-create policy that is turned on by default, the direct IP printers installed on the workstation will redirect into the user's Citrix desktop or application. The redirected printer can use either the printer's native driver, the Citrix Universal Print Driver, or be created as the Citrix Universal Printer. When the user prints in their virtual desktop or application, the print job is sent over the ICA channel to the local workstation. From there the print job is then sent directly to the printer.

“All print jobs are streamed over and optimized Citrix network connection and then printed from the computer directly to the printer, versus printing from a print server in our data center over the WAN to the location's local printers.

We have zero servers in our branches, so we have less server hardware to support and maintain.”

-Currie - Banner Bank



Benefits of Using Auto-Created Printers with Printer Installer

- Simplified administration
- Proximity printing/location-based printing
- Print job compression
- Driverless printing with the Citrix Universal Print Driver
- Disconnect/reconnect printer refresh

How to Configure Printer Installer with Auto-created Direct IP Printers

Using Native Printer Drivers

To use Printer Installer to install and manage the printers on thin or thick clients that Citrix will auto-create into the virtual desktop or application session while using the printer's native driver, complete the following steps:

Step 1: Add Printers and Create Deployment Assignments

You can add printers to the Printer Installer server manually or automatically using the printer import tool. Once the printers are configured, you can easily set up deployment assignments. Consult the [product documentation](#) for more information on adding and deploying printers.

Step 2: Installing the Printer Installer Client

After the printer deployment assignment has been created, the Printer Installer Client needs to be installed on the end user's workstation. This can be a fat client or a thin client running a supported version of Windows, Mac OS X or Linux. The Printer Installer Client can be manually installed by accessing the Self-service Installation Portal from the workstation's browser or it can be automatically installed using the MSI package and a systems management tool such as System Center Configuration Manager (SCCM). Once the Printer Installer Client has been installed, it will automatically check in with the Printer Installer server and install any printers assigned to the user who logs into the workstation.

When the user connects to a Citrix XenDesktop or XenApp application, the Citrix auto-create printer policy that is enabled by default will automatically map the locally-installed direct IP printer to the user's Citrix desktop or application using the same driver the local printer was installed with.

Using the Citrix Universal Print Driver

To use Printer Installer to install and manage the printers that Citrix will auto-create in the virtual desktop or application session while using the Citrix Universal Print Driver, follow each of the above steps. Then enable the Universal Print Driver in the Citrix printing policies.

Using the Citrix Universal Printer

To install and manage the printers that the auto-created Citrix Universal Printer will be able to print to from within the virtual desktop or application session, follow each of the above steps. Then enable the Citrix Universal Printer in the Citrix printing policies.

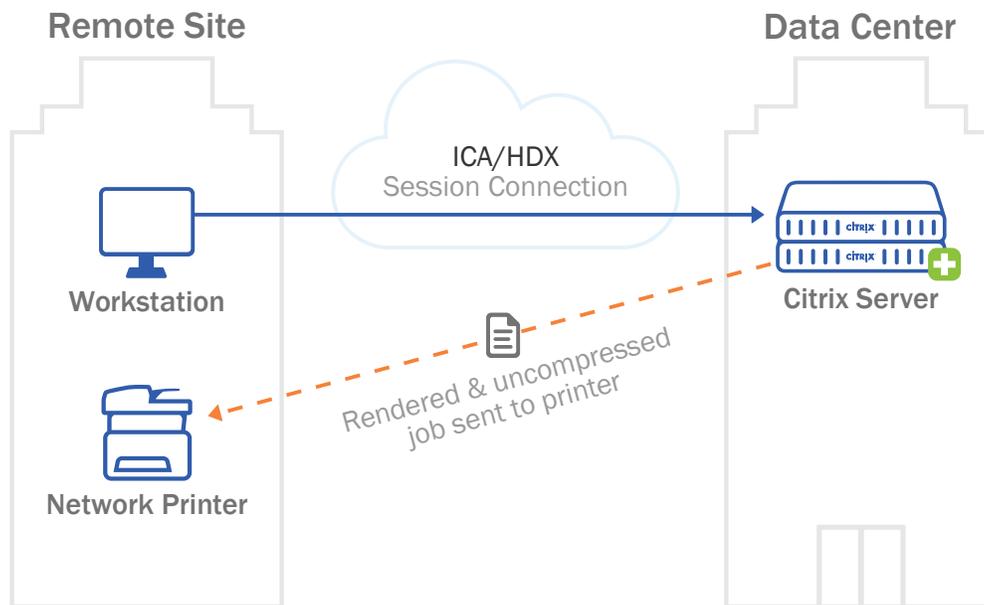
Direct IP Session Printers with Citrix XenApp and XenDesktop VDI

How to Deploy Direct IP Session Printers with Citrix XenApp

To begin, install the Printer Installer Client on the Citrix XenApp server using either MSI deployment or manual installation from the Self-service Installation Portal. After the Printer Installer Client has been installed, it needs to have RDS mode enabled with a registry entry. This allows the Printer Installer Client to retrieve the end user’s location and AD user information from their Citrix session.

With the client running in RDS mode, use the Printer Installer Admin Console to create automatic printer deployments based on either AD attributes or the printer’s physical proximity to the end user. If the end user needs a different printer, they can use the Printer Installer Client and the Self-service Installation Portal to identify and install a printer on their own with a single click.

Any printers that are installed by the Printer Installer Client will be restored after a session disconnect/reconnect and will appear instantly in their session. Also, the printers will only be visible to the end user they are assigned to. As an added bonus, the session printers can use either the printer’s native driver or Citrix Universal Print Driver. When the user prints in their application, the print job only makes a single trip over the WAN because it is sent to the printer via the direct IP connection.



How to Deploy Direct IP Session Printers with Citrix XenDesktop VDI

Install the Printer Installer Client on the Citrix XenDesktop VDI golden image. This can be done by opening the golden image and manually installing the client from the Self-service Installation Portal. After the Printer Installer Client has been installed on the golden image, it will be able to retrieve the end user's location and AD user information when they connect to their virtual desktop.

Use the Printer Installer Admin Console to create automatic printer deployments based on either AD attributes or the printer's physical proximity to the end user. If the end user needs a different printer, they can use the Self-service Installation Portal to identify and install a printer on their own with a single click.

Any printers that are installed by the Printer Installer Client will be restored after a session disconnect/reconnect and will appear instantly in their virtual desktop. When the user prints in their virtual desktop, the print job only makes a single trip over the WAN because it is sent to the printer via the direct IP connection.

Benefits of Using Session Direct IP Printers with Printer Installer

- Instant printer creation
- Improved Citrix server performance
- Citrix Universal Print Driver support
- Proximity printing/location-based printing
- Disconnect/reconnect printer refresh
- Faster logons
- No rights management
- Advanced default printer options
- Easy printer deployment
- Self-service printer installation portal

How to Configure Printer Installer with Session Direct IP Printers

Using the Native Drivers

To use Printer Installer to install and manage the session printers that appear in Citrix sessions while using the printer's native driver, simply complete the following steps:

Step 1: Add Printers and Create Deployment Assignments

As above, you can add printers to the Printer Installer server manually or automatically using the printer import tool. Use the "Deployment" tab to make deployment assignments. For more information, please refer to the [product documentation](#).

Step 2: Citrix Server Driver Assignment

1. Select the printer's "Drivers / Profiles" tab.
2. In the "32-bit drivers" and/or "64-bit drivers" section, use the drop-down menu or the "Upload New Driver" button to select a driver for the Windows Server version you are using to run Citrix .
3. Select "Save" on the top right.

Step 3: Install the Printer Installer Client on the Citrix Server

After the printer deployment assignment has been created, the Printer Installer Client needs to be installed on the Citrix server. The Printer Installer Client can be manually installed by browsing to the Self-service Installation Portal using the browser on the Citrix server. Or it can be automatically installed using the MSI package and a systems management tool such as SCCM.

Step 4: Put the Printer Installer Client in RDS/Terminal Services Mode

Once the Printer Installer Client has been installed on the Citrix server, it needs to be put in a Remote Desktop/ Terminal Services Mode so it can automatically detect each session and who is connecting to it.

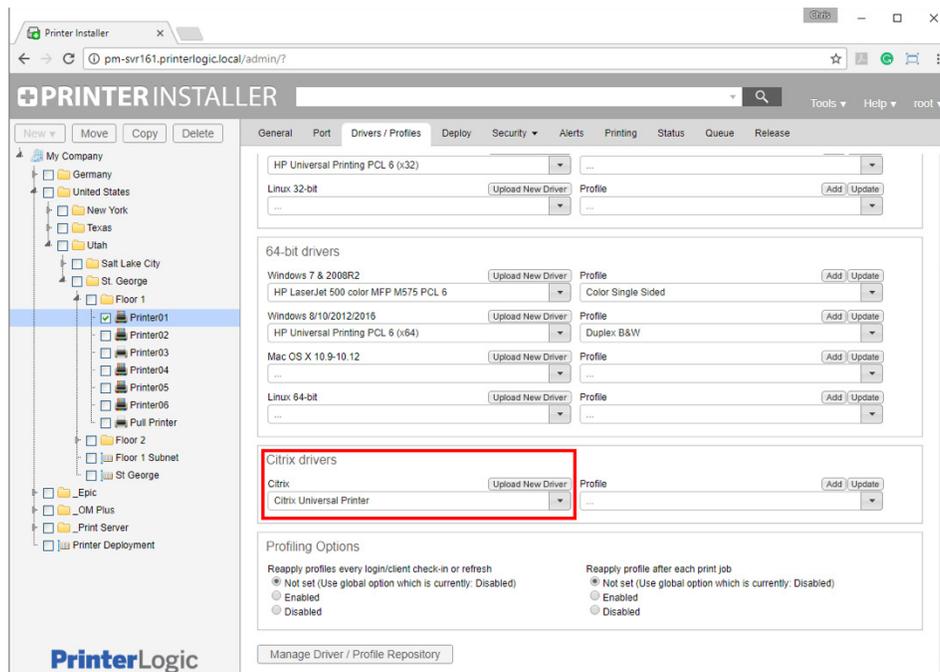
1. On the Citrix server, open Regedit.exe as an Administrator.
2. Create a new String Value named "TerminalServices" with a value of "1" into the following registry key:
 1. On a 64-bit Server: HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\PPP\PrinterInstaller
 2. On a 32-bit Server: HKEY_LOCAL_MACHINE\SOFTWARE\PPP\PrinterInstaller
 3. Open Task Manager. Right click on PrinterInstallerClientLauncher.exe and select "End Process Tree". Then open the Start menu and run Printer Installer > Administration > Start Client.

When the user connects to a Citrix XenApp session, the Printer Installer Client will automatically install and map the direct IP printer into their Citrix application using the same driver the local Citrix server printer was installed with.

Using the Citrix Universal Driver

To use Printer Installer to install and manage the session printers that appear in Citrix XenApp sessions and have them use the Citrix Universal Driver, simply complete steps 1–3 above and add the following:

1. Enable the Universal Print Driver in the Citrix printing policies.
2. In the Printer Installer Admin Console, select the printers “Drivers / Profiles” tab.
3. In the “Citrix drivers” section, use the drop-down menu to select “Citrix Universal Driver”.



When the user connects to a Citrix XenApp session, the Printer Installer Client running on the Citrix server automatically detects who they are and where they are connecting from and instantly delivers any printers that have been deployed to them as a direct IP session printer using the Citrix Universal Print Driver.

Self-service Installation Portal

Regardless of whether you are using auto-created or session printers with Citrix, Printer Installer's Self-service Installation Portal can be made available to all end users. With this portal, any end user can effortlessly identify nearby printers using a customizable floorplan map and add that new printer to their Citrix XenDesktop or XenApp session with a single click. This naturally results in a dramatic decline in printer-related helpdesk calls.

To configure the Self-service Installation Portal for session printers, simply publish the Printer Installer Client as a Citrix application. When the end user launches the client, it will open the Self-service Installation Portal and any printers they install will be instantly added to their session.

When auto-created printers are being used, the end user simply clicks on the Printer Installer Client running in their system tray or uses the published URL to browse to the Self-service Installation Portal webpage from their local desktop. Any printers they install themselves will be auto-created in their session when they connect to it.

The Citrix Printing Experience with Printer Installer

End Users

In terms of basic protocol, the end-user Citrix printing experience with Printer Installer is no different. They still follow the native printing process found inside Citrix applications and desktops—namely, selecting File > Print and choosing their preferred printer.

If an end user's printer was auto-created, the print job will then be sent over the ICA protocol to their workstation where it will first be compressed before traveling over the WAN. The printer driver on the end user's workstation will render and print the job to the printer via the direct IP connection.

On the other hand, if their printer is session based, their print job will be rendered using the native printer driver or the Citrix Universal Driver installed on the Citrix server. Then the print job will be sent to the printer via direct IP.

From the end user's standpoint, the major experiential difference with Printer Installer is that the problems of printers failing to deploy properly are all but eliminated. If for some reason they do not automatically receive the correct printer per the deployment settings created by the admin, they can use the Self-service Installation Portal to identify and install nearby printers themselves with almost no effort or specialized technical skill. And because Printer Installer cuts the number of trips across the WAN, print jobs are executed more quickly and more reliably.

Admins and Support Staff

From the backend, admins will find that printer deployment is more straightforward, more dependable and more flexible because of Printer Installer's powerful yet streamlined admin console and its ability to deliver targeted deployments through AD criteria without the need for GPOs and scripts.

This unique combination of increased manageability and end-user empowerment ultimately leads to fewer print-related tickets and emergencies for the helpdesk and other IT support staff. Long-term cost savings are a natural part of this reduced demand of time and effort.

Conclusion

PrinterLogic offers IT environments that rely on Citrix XenApp or XenDesktop a proven solution for the common issues associated with Citrix printing. Printer Installer:

- Reduces expensive print infrastructure and single points of failure by eliminating print servers
- Empowers end users and relieves the burden on IT support staff through its acclaimed Self-service Installation Portal
- Obviates the need for printer-related scripts and GPOs while allowing for precise automatic and dynamic printer deployments

End users benefit from a seamless and reliable printing experience while Citrix admins enjoy print management that is far more effortless and robust than is possible with the standard Citrix printing methods.