



Printer Installer: Eliminating Print Servers

An Architectural and Use Case Overview



Introduction

Printer Installer® is an on-premise web application that simplifies the management, migration, and deployment of printers. The application enables you to centrally manage and deploy network printers, or eliminate print servers altogether and manage and deploy direct IP printers – potentially saving millions in print server cost. Printer Installer also empowers your end users to install their own printers with a web-based printer installation portal for your entire enterprise, drastically reducing support calls and saving you time.

The Printer Installer software is developed, sold, and supported by PrinterLogic, an ISV located in Utah. Printer Installer has been available since 2008 and is now being used in more than 140 countries around the globe.

Printer Installer provides enterprise print management for organizations of any size, from small businesses to large multi-national corporations with hundreds of locations.

Printer Installer is being used in banking and finance, education, healthcare, manufacturing, retail, and many other industries, as well as local, state, and national governments. A few selected customers include Aon, Dell, Ethan Allen, IBM, The Port Authority of New York and New Jersey, the State of Georgia, U.S. Department of Energy, and U.S. Department of Homeland Security-CBP. No matter how large or how small, Printer Installer helps achieve a radical simplification of your printing environment, while saving you valuable time and money.

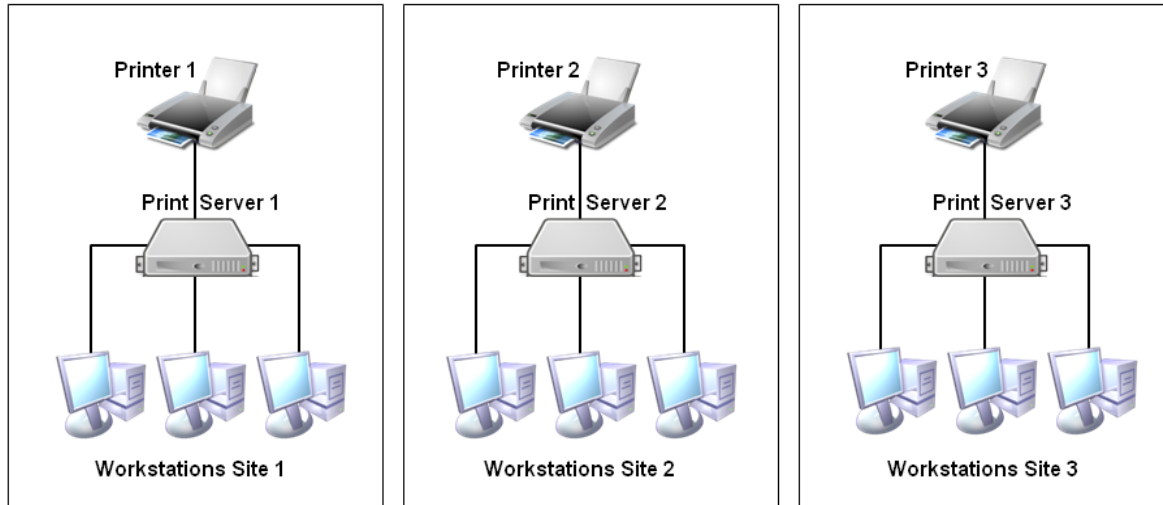
Eliminating Print Servers

The PrinterLogic mantra is to “Eliminate Print Servers.” This section discusses the background, problems eliminated, implementation, features, and benefits of using Printer Installer to eliminate print servers. Please review the appendix titles for other alternate uses of Printer Installer.

Background

Figure 1 shows the typical printing architecture for organizations with multiple sites. When a user initiates a print job, the print job is spooled to the print server, where it is rendered and then sent to the physical printer device. In this architecture, three items are required at each site: workstations, printers and print servers.

Figure 1: Multiple Sites with Multiple Print Servers



Workstations: To access their desired applications, each end user at each site uses a workstation (either desktop or laptop, thick or thin client).

Printer(s): One or more printers produce hard copies at each site, located where users can conveniently retrieve them.

Print Server(s): One or more print servers provide several functions at each site:

- **Self-service printer installation:** Print servers provide a way for users to self-install printers. By having a print server at each site, the user can browse to the print server and select the printer to install from a list of printers at the site. The printer installation is then completed without the user needing to follow complicated instructions about downloading drivers, configuring ports, and so on.
- **Printer deployment:** Print servers can be used with group policies or scripts to automatically deploy printers to end users instead of expecting users to manually install their own printers or requiring IT staff to visit and install printers on each workstation.
- **Centralized printer management:** Print servers enable IT staff to make centralized printer configuration changes, such as changes to printer port IP addresses or device settings like enabling the duplex option or extra paper trays. These settings are then reflected on the printers installed on end user workstations without IT staff having to visit each workstation.
- **Driver management repository:** Print servers provide a central repository to help IT staff manage all the drivers for a site's printers. If a printer's driver is updated in this

repository, that driver is eventually deployed to all the workstations where that printer is installed.

- **Printer security:** Print servers enable you to specify who can see each printer and specify which printers should be visible to different users.
- **Local spooling:** Local print servers provide a way to spool print jobs locally without sending them across the WAN to a centralized print server, which can cause network congestion and slow print times.
- **Printer queue management:** Print servers provide a single management console for all the site's printer queues. If a print job is holding up others from printing, IT staff can connect to the site's print server and manage the printer queue by deleting any stuck, duplicate, or undesired print jobs.

The Problems With Print Servers

In a typical enterprise print environment, a print server is used at each location of the organization to provide the benefits listed above. But using a print server at each location creates some significant challenges, including costs, risks, and headaches.

Costs

Each print server at each site requires hardware, cooling, power, physical security, management, upgrades, virus scans, and so on. The average cost per print server is \$2000-\$5000 USD per year.

Risk From a Single Point of Failure

Print servers are a single point of failure. If the print server crashes, no one can print. Clustered print servers do not crash as often, but the tradeoff for the high availability of clustered print servers is higher costs for hardware, licensing, management and maintenance.

Scripting and GPO Management Overhead

Managing scripts and GPOs to deploy printers to end users can consume significant IT staff time and resources. Scripts can get complicated and are often difficult to create and troubleshoot any arising problems. Group policy objects require elevated permissions to manage, slow down end user logon times, and can be very complex and difficult to manage.

Self-Service Printer Installation

Native self-service printer installation features are often too difficult for end users to use; instead, they call the help desk and wait for assistance. Help desk calls are expensive and end users are unproductive while waiting for printer installation assistance.

Management Headaches

Print servers require operating system upgrades, patches, security, virus scanning, and so on. All of these take time and money to complete. Print server management requirements can be painful in many ways:

- **Difficult driver updates:** If you have 40 sites, you have 40 print servers. Each time a manufacturer releases a new print driver that solves some problem you are experiencing, you must update the driver on all 40 print servers.
- **Complicated caveats:** Another painful situation is when you need to support a 32-bit workstation with a 64-bit print server, but the manufacturer does not provide a model-specific 64-bit driver. In this case, the only solution is to use a 32-bit universal driver with the exact same name as the 64-bit universal driver, and then force all the 32-bit workstation users to change to the newly-named driver.

If you're confused, that's probably because you haven't had to upgrade your 32-bit print servers – yet.

- **Driver conflicts:** Yet another issue with print servers is that print drivers do not always coexist gracefully. Just to keep drivers from conflicting, IT sometimes creates individual print servers for each printer manufacturer: an HP model-specific driver print server, a HP universal driver print server, a Xerox print server, a driver test print server, and so on. Otherwise, the printer drivers can conflict and crash the print server.

The traditional print server architecture suffers from all these pain points, costs, and complications. Fortunately, Printer Installer can eliminate all these problems.

The Solution: Implementing Printer Installer to Eliminate Print Servers

Printer Installer is designed to support organizations of all sizes in a streamlined, efficient way. There are three quick steps to installing Printer Installer and eliminating your print servers, as described below.

1. Install the application

IT staff use the Printer Installer program to automatically install the IIS role, Printer Installer web application, and database on any Windows Server 2008 R2 (or newer) at your organization's data center or HQ.

2. Import printers

IT staff use a web browser to access the Printer Installer Administrator and import printer objects and associated drivers from existing print servers. During the import process, all your existing printer drivers, port settings, device settings, and preferences are copied from your print servers into Printer Installer without changes. From then on, IT staff can use the Printer Installer Administrator to create and manage the printer objects.

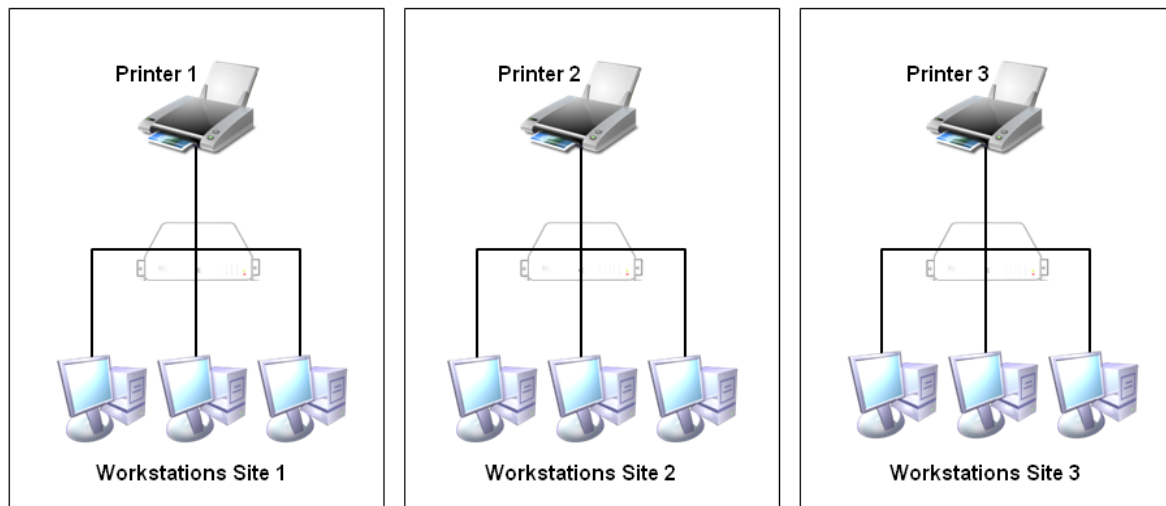
3. Install the client

IT staff use the 3MB MSI file provided to deploy the Printer Installer Client silently to all Windows workstations, or the PKG file provided to deploy the Client to all Macs.

Once installed, the Client silently converts all existing printers that were connected to print servers into direct IP printers that print to a physical printer. Customized printer settings that were configured on the printer, such as the default printer setting or duplex and paper tray configurations, remain intact through the conversion.

After this step is complete, you can pull the plug on your print server(s) and users can keep on printing without any problems, as shown in Figure 2. From then on, you can use the Printer Installer Administrator to centrally manage printers without any print servers, group policies, and scripts.

Figure 2: Print Servers Eliminated with Printer Installer



Printer Installer Architecture

Once you have implemented Printer Installer and eliminated your print servers, use Printer Installer to centrally manage your enterprise printing environment. The Printer Installer software consists of three main components:

- Printer Installer Administrator
- Printer Installer Portal
- Printer Installer Client

Each component is described briefly on the following pages.

Printer Installer Administrator

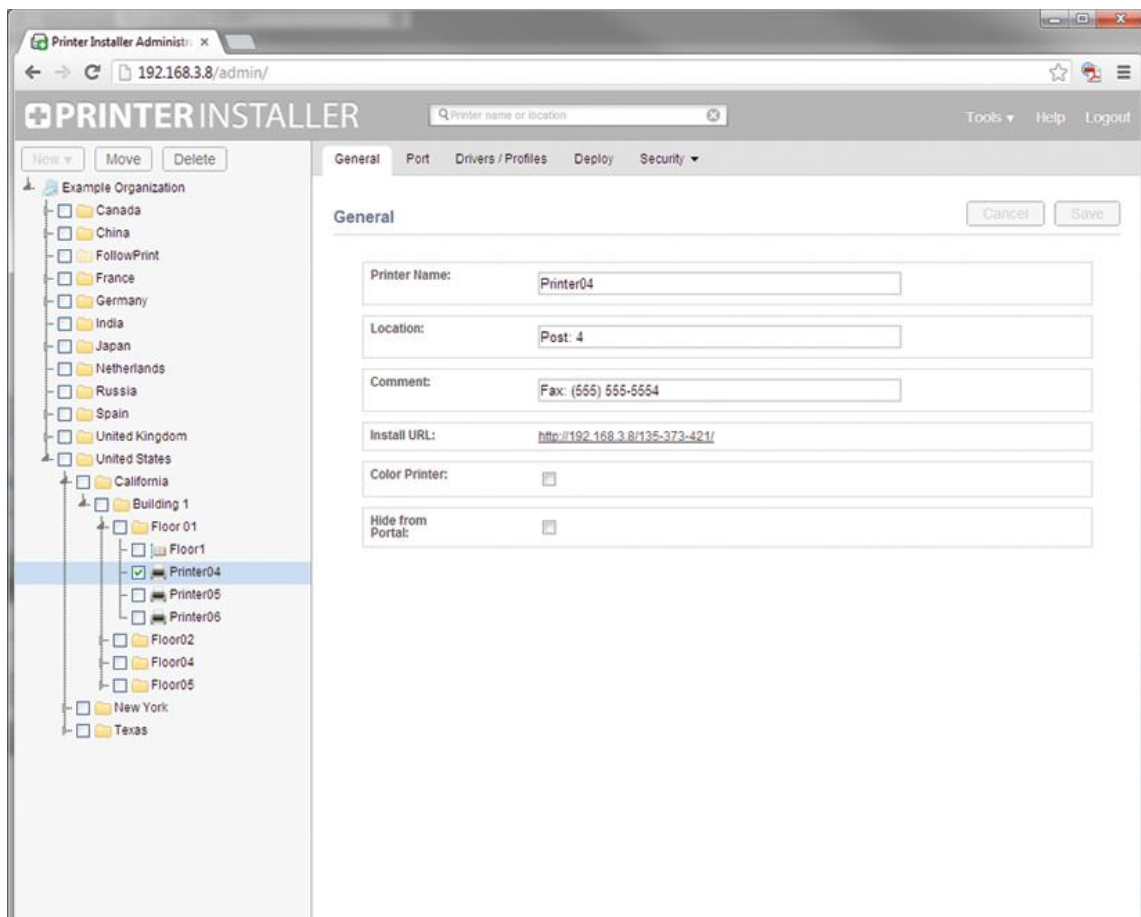
This web-based console enables IT to manage all the printers in your entire organization from a single screen, as shown in Figure 3. On the left, the Administrator screen presents a tree view of your organization, where you can drill down by country, state or region, building, and floor number to select any particular printer in your fleet.

On the right, you can enter or edit any attributes for that printer.

For example, on the General tab, you can enter or edit the printer name, location, add a comment, list an install URL where users can download the driver, check to indicate a color printer, or check to hide that printer from the Printer Installer Portal so that no end users can see it. You can use the Port, Drivers/Profiles, Deploy, and Security tabs to configure and manage many other printer settings.

You can also perform many further printer management functions as explained in this document.

Figure 3: Printer Installer Administrator



You can use the same screen to add, edit, and delete printers.

- **Add printers:** With Printer Installer, creating a printer is as simple as it should be. Simply select the folder for the location where you want to add a printer, then create the new printer.
- **Edit printers:** You can edit printer object attributes quickly and easily by selecting a printer in the tree and then changing the desired attribute(s). Any changes you make are automatically applied to that printer on all workstations.
- **Delete printers:** When you delete a printer, that printer is automatically removed from all end-user workstations.

Self-Service Printer Installation Portal

The Printer Installer Portal empowers your end users to quickly find and install printers, with no need to call the service desk.

For example, when an end user travels to a remote company office where they need to print, they almost always end up calling the help desk for support. Users seldom know all the information required by the native Windows Add Printer dialog, such as the printer type (network or local), printer name, print server name hosting the printer, and so on.

If the help desk is not available immediately, the user can be blocked from completing a vital task. For example, printing out a proposal, contract, or letter to be signed at a meeting can be critical to the organization. And as you well know, not being able to print is extremely frustrating to any end user.

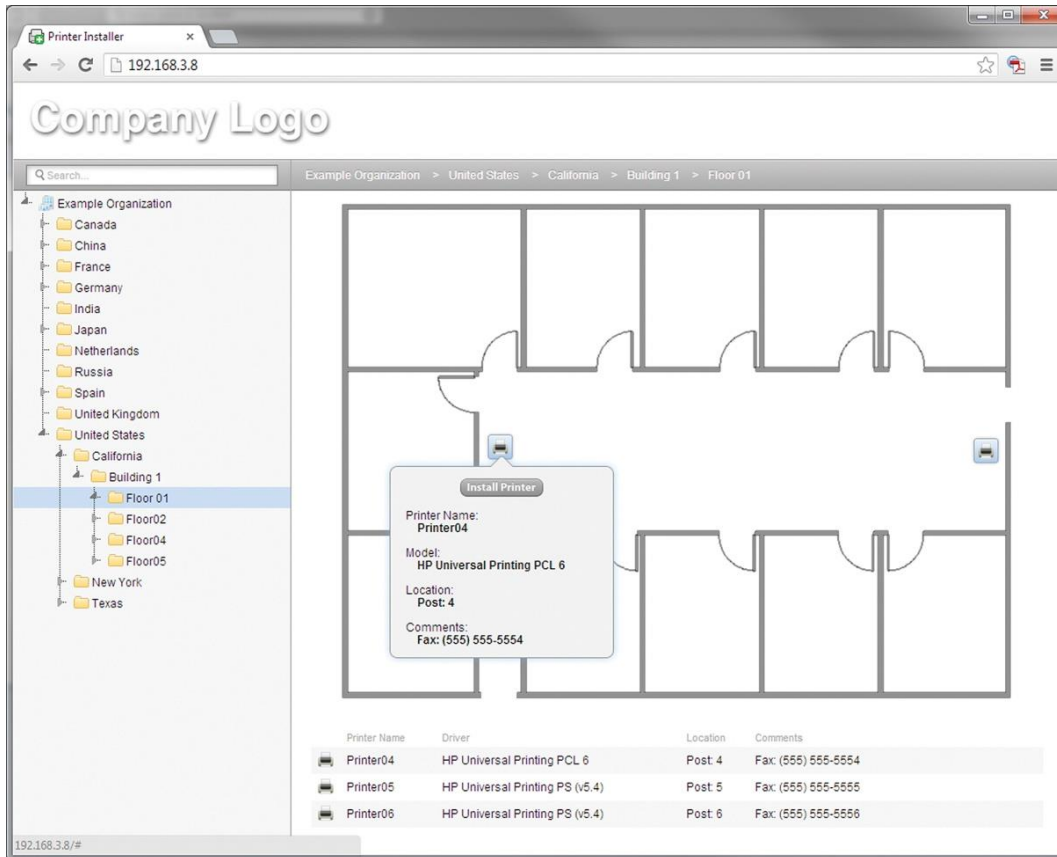
Printer Installer solves this problem by providing a web-based portal that empowers end users to quickly find and install printers, with no need to call the help desk. This significantly reduces printer-related help desk costs, and boosts productivity by empowering end users to do the task themselves.

Printer Installer Portal

Printer Installer Portal is a web-based portal that can display optional floor plans you upload, as shown in Figure 4. This portal empowers your end users to quickly find and install printers, without calling the help desk for support. An end user can access the portal at any time by clicking the icon in the Windows system tray, typing the URL directly into their default browser (printers.domain.com), or clicking a link on the company intranet.

Clicking any printer on a floor plan shows that printer's name, model, location, and an optional field for comments. An end user can simply click any printer icon to install it.

Figure 4: Floor Plan in the Printer Installer Portal



Printer Installer Client

This is a software agent that is deployed to end user Windows or Macintosh workstations, using the provided MSI or PKG automated installation packages. The Client runs in the background as a service to automatically perform printer management tasks without any user intervention. These tasks include installing a printer, updating a printer driver, and other printer management tasks.

Printer Installer Database

This database contains printer objects, floor plans, printer drivers, printer driver configurations, the tree structure, and other settings.

Features

Any printer management tasks that were previously accomplished with print servers, group policies and scripts, can now be completed using the Printer Installer application. Printer Installer provides a rich set of features, including the following.

Centralized Direct IP Printer Management

You can manage your entire organization's printers from a single administrative console, regardless of whether you use domains or no domains, trusts or no trusts. Any changes you make to a printer object are automatically applied to that printer on all your workstations.

For example, if you change a printer's name in the Printer Installer Administrator, the Client will change that printer's name on all your user workstations.

You can use the same screen to add, edit, and delete printers.

- **Add printers:** With Printer Installer, creating a printer is as simple as it should be. Simply select the folder where you want to add a printer, then create the new printer.
- **Edit printers:** You can edit printer object attributes quickly and easily by selecting a printer in the tree and then changing the desired attribute(s). Any changes you make are automatically applied to that printer on all workstations.
- **Delete printers:** When you delete a printer, that printer is automatically removed from all end-user workstations.

Additional Benefits

Here are some of the added benefits of the Printer Installer Portal:

- **Auto-locate:** When a user visits the portal, their current location is automatically selected, so they can simply click the desired printer to install it.
- **Floor plans:** Optional floor plans make it even easier for a user to find and install the nearest printer, especially when they're roaming.
- **Search:** The user can enter a partial printer name and see the location of any matching printers. When the user selects a printer from the list, they are taken to the right folder with the printer selected; they can simply click a prompt to begin the installation.
- **Customization:** You can customize the portal header to show your company logo and any instructions or comments in the local language, based on the end user's location.
- **Security:** With Active Directory integration, you can hide or show the tree folders or printers according to the user's user, group, OU, or even IP address range.

- **Single enterprise portal:** Whether you have one corporate domain, many disparate domains without trusts, or no domains at all, all users can still securely access the web portal and see the printers that users have the rights to install.
- **Fewer help desk calls:** Whether a user is in Los Angeles or in London, and no matter where they roam on the enterprise campus, they can simply click the portal icon in the system tray (or a link in the company intranet) and the portal opens to their current location. Then they can easily install the nearest printer without calling the help desk or waiting for a ticket to be filled.
- **Citrix support:** The end user can also access the Printer Installer Portal in Citrix desktop sessions. The portal will show the printers closest to the endpoint device—not the Citrix server hosting the session—so that the user can quickly find and install the nearest printer. For more details on using Printer Installer with Citrix, see Appendix B.
- **VMware Horizon View support:** The end user can access the Printer Installer Portal in VMware Horizon View sessions. The portal will show the printers nearest to the endpoint device—not the VDI session—so that the user can quickly find and install the nearest printer. For more details on using Printer Installer with VMware Horizon View, see Appendix C.

Mass Printer Edit/Create/Management

Enterprise customers with larger environments can benefit from the mass edit feature provided in the Printer Installer Administrator. You can see all your printers and attributes at the same time and use find-and-replace to make numerous changes to printer objects, deployment assignments, drivers, and so on. The same feature enables you to quickly create, modify or delete hundreds or even thousands of printers at a time.

Printer Deployment

Printer Installer eliminates the need for time-consuming group policy objects (GPOs) or scripts to deploy printers to end users. Instead of giving rights to IT staff to manage group policies—with the risk that they could make drastic non-printer-related changes—you can use the Administrator to safely empower IT staff to manage printer deployment.

Here are some of the added benefits of using Printer Installer's built-in printer deployment feature, instead of GPOs and scripts:

- **Active Directory integration:** With Printer Installer's web-based GUI, you can easily deploy printers to Active Directory users, computers, groups, containers, OUs, or even IP address ranges. Printer Installer shows you all printers with all deployment

assignments, so you can make mass changes as easily as individual deployment changes.

- **No GPO rights required:** You can enable any IT staff—including service desk personnel you would never permit to edit group policies or scripts—to add and remove printer deployment assignments, without having any rights to group policy objects, scripts or print servers.
- **Desktop and thin client support:** You can deploy printers to both Windows desktops and thin clients.
- **Write filter support:** Printer Installer can disable any write filters (either enhanced or file-based), install the required printer(s), and then re-enable the write filter.
- **Proximity printing/location-based printing:** Printer Installer enables you to add printers to a workstation according to the workstation’s IP address, name, or even Active Directory computer, group or OU membership. This provides a simple way to provision the nearest printers to any user accessing that workstation.
- **Citrix® session support:** See Appendix B for details on the many features provided for provisioning printers in Citrix sessions.
- **VMware Horizon View® support:** See Appendix C for details on the many features provided for provisioning printers with VMware Horizon View.
- **Faster logons:** With group policies or scripts, whenever a printer is installed during logon, the logon process is delayed, often for several minutes. With Printer Installer, any required printer installation begins after the user’s logon is complete and the desktop is available. That way, the user can begin working immediately, while the printer is installed in the background.
- **Advanced default printer options:** You can set a default printer either the first time that printer is installed, every time the user logs on, or by the user’s current location. To achieve this without Printer Installer would require time-consuming custom scripting by someone with advanced programming experience. With Printer Installer, all it takes is the click of a checkbox.
- **Orphan printer removal:** With Printer Installer, you can remove printers from workstations as easily as you deploy them. Simply remove the deployment assignment and the printer will be automatically removed from all workstations where it was installed. No more slowdowns caused by orphaned printers trying to connect to printer shares that don’t exist.

Driver Management

You can use the Administrator to change the selected driver for any printer. If the driver you want is not in the drop-down list, you can upload it to the database to make it available. The Printer Installer Client will then update all installed printers to use the new driver.

To replace a driver so that all printers use the new driver, you go to the driver repository and simply replace the old driver with the new. With traditional print servers, you would have to install the driver on each print server, and then change the driver for each printer on every print server. With Printer Installer, you only need to update the driver in a single location.

Printer Driver Profile Management

You can use the printer driver profile to configure driver settings such as DPI, duplexing, paper size, paper source, paper trays and so on. Since Printer Installer displays the actual driver's interface, you can configure all the settings provided by the driver.

You can also configure the profile to apply each time a user logs on or even after each print job is printed. For example, suppose a company has a paper-saving policy so that all print jobs must be printed double-sided (duplexed). If a user manually disables duplex printing for a one-sided job like labels, the duplex profile is automatically reapplied to the next print job.

Port Management and Redirection

If any printer has a hardware problem, so that you need to redirect all its print jobs to a similar printer, you can use Printer Installer to quickly make a single port redirection change. From then on, all print jobs will be routed to the second printer, until the first printer comes back into service and you remove the redirection.

SNMP Monitoring and Alerts

The SNMP console shows the status of your organization's entire printer fleet. Any notifications like ink low, paper low, paper empty, ping status, and many more are shown on this screen to make monitoring easy.

Administrative Auditing

Auditing all printer management events helps you quickly pinpoint what changed and who changed it. All actions—from a simple printer name change to a complex set of driver setting changes—are stored and viewable for quick management.

APIs

Printer Installer can be integrated with other applications by using the URL APIs provided. This makes it easy to create printers in Printer Installer from other applications that contain printer names, physical location, and IP address.

For example, say you have a hardware procurement application used to acquire new physical printers and to assign any new printer a name and IP address. You can add a “Create Printer” button to that app that takes the new printer name and IP address values and automatically creates a printer object in the Printer Installer Administrator.

Distributed Printer Management

Since Printer Installer integrates with Active Directory, you can specify which users can log on to the Administrator with an existing Active Directory username and password. Once an IT or help desk person is logged on, you can control their privileges by assigning them a built-in role. These roles determine an employee’s access to printer management functions. You can use roles to empower each site administrator to manage their site’s printers, or to give central control over all your printers to a single staff member.

Print Job Auditing and Reporting

Although print jobs are sent directly to a physical printer, the Printer Installer Client on each workstation sends certain metadata to the Administrator. This enables you to see print job statistics in an intuitive, exportable format.

The print job audit reports help you answer questions like these:

- How many pages did Accounting, HR, or Sales print last quarter?
- How much is printer X being used?
- Who are the company’s top 100 printer users?
- Who printed eight copies of a 500-page color manual on Saturday?
- Who printed documents that include the title “Confidential”?
- Can we consolidate a couple of printers on the 4th floor without overloading the remaining printers?
- How much USB printing is done?

Queue Management

Printer Installer provides your IT staff with a single web-based portal for managing all your printer queues. The Client notifies the Administrator of all print jobs in each workstation’s local print queues, so that IT staff can cancel or delete any problem or unnecessary print jobs.

Printer Driver Caching

Some multinational enterprises have large presences in countries with a very limited or expensive WAN link, where they don’t want users downloading drivers from Printer Installer to install a printer.

To address this concern, you can create an IP Address Range object and specify a beginning and ending IP address and a Windows share (e.g. `||server|share`) at the remote region or location.

From then on, when a user logs onto a PC in the IP address range, and needs to install a printer, the system will download drivers from the specified Windows share instead of the Printer Installer server. Meanwhile, Printer Installer will automatically keep the cache up-to-date with new drivers.

Mobile Print (BYOD Print)

Printer Installer enables users to print from any device with a browser, including both smart phones and tablets.

Here's how it works.

IT staff select which printers they want mobile users to access. End users simply open a browser and go to the Printer Installer portal webpage. When users access the Printer Installer Portal the page will automatically select the user's location in the tree structure and present a list of nearby printers. Users then select the printer they want to print to and an email dialog is presented with the printers email address auto filled in the TO: field. The user then simply attaches the document they want printed and clicks Send. The printer then prints the attached documents and email body.

Printer Installer's Mobile Print feature has the following benefits:

- **Quick Setup:** IT staff simply log on to the Printer Installer Administrator and select which printers they want mobile users to be able to use for mobile printing.
- **Universal Device Support:** The web-based self-service mobile print feature enables all devices with a browser to print. No upgrading, managing, or deploying iPhone, Android, Blackberry or any other mobile applications.
- **ID10T Proof:** When end users need to print from a mobile device they simply go to the mobile print portal, which automatically opens to their current location, and they simply select the printer they want to print to. It's that easy, anyone can do it.
- **Simple Administration:** IT staff use the web-based Printer Installer Administrator to manage which printers will be presented for mobile printing. No software, and no mobile apps to install, upgrade and manage.

High Availability

Printer Installer can be configured with a warm standby Printer Installer server. In the unlikely event that the primary Printer Installer server ever fails, the secondary Printer Installer server can handle any requests for printer management.

Remember that even if the Printer Installer server is offline, all end users can still print, since all print jobs are sent directly to a physical printer.

Quick Review – The Benefits of Eliminating Print Servers

The many benefits of eliminating print servers with Printer Installer include:

- **Simplify your infrastructure:** With Printer Installer you can eliminate all your print servers and dramatically simplify your infrastructure (while drastically reducing cost).
- **Streamline your printer management:** Now you can manage all the printers in your entire enterprise through a single web-based admin console.
- **Empower your staff:** IT staff can now manage all the printers at their own sites, and end users can quickly and easily install their own printers.
- **Reduce help desk calls:** With a self-service portal to quickly install their own printers, end users are much less likely to call the help desk for printer hassles.
- **Quick Return on Investment (ROI):** The ROI for Printer Installer occurs very rapidly. Eliminating costly print servers and reducing help desk calls equals quick savings.

Conclusions

All the cost, effort, and complexity of traditional print servers are no longer necessary. Printer Installer replaces all the functions that print servers used to provide, and adds many new features that simplify printer management and provisioning, reduce costs, and empower users to install printers for themselves, without calling the help desk.

To find out more about how you can eliminate all your print servers with PrinterLogic's Printer Installer, contact sales@printerlogic.com or call 435.652.1288 for a quick WebEx product demonstration, free hands-on training, and a 30-day trial install.