

PrinterLogic

PrinterCloud: Eliminating Print Servers An Architectural and Use Case Overview

Introduction

PrinterCloud is a SaaS solution that completely eliminates the need for print servers, delivers centralized print management, and empowers end users to install their own printers with a single click. In addition, PrinterCloud solves the most prominent pain points in print management by:

- Converting the print environment to centrally-managed direct IP printing
- Simplifying printer driver management and deployment
- Keeping all print jobs on the local network segment
- Eliminating scripting and GPOs
- Simplifying printing in virtual environments (Citrix, VMware, VDI)
- Delivering powerful reporting and alerting features
- Enabling printing from any mobile device to any network printer
- Increasing security and reducing waste through Pull Printing

Eliminating Print Servers

PrinterCloud eliminates the need for print servers or servers of any kind, thereby simplifying print management, reducing infrastructure, lowering costs, and supporting your move to the cloud. This section discusses the background, issues mitigated, implementation, features, and benefits of using PrinterCloud to eliminate print servers.

Background

In a typical printing environment, an IT staff member implements and provisions a print server on premises or in the datacenter to service the printers on the network. IT organizations use two types of architectures when implementing print servers: centralized and distributed print servers.

In a *centralized model*, a print server sits in the datacenter and services every network printer in the enterprise. The name, printer driver and configuration of each printer is used by the print server to distribute printers to end users. To deploy printers to end users, an IT admin creates group policy objects (GPOs) to define who gets the printer and how it is configured.

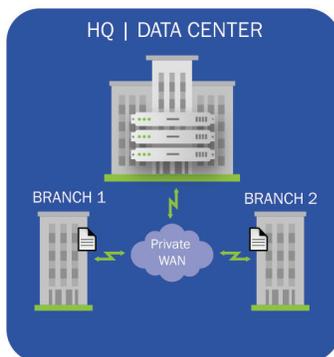
An end user initiates a print job from a workstation. This sends it to the print server, where it is spooled, rendered, and sent to the network printer. If the end user is in a branch office, print jobs will travel both to and from the datacenter, creating additional WAN traffic. In addition, when the server goes down, the entire organization can no longer print.

To alleviate WAN traffic, some IT departments implement a *distributed model* in which print servers are placed at each location. Distributed print environments still suffer from the single points of failure that are part and parcel of the print server architecture, but these now tend to be more isolated to individual branch disruptions. Likewise, distributed environments also require complex scripting and GPOs to manage and distribute printers to end-user devices.

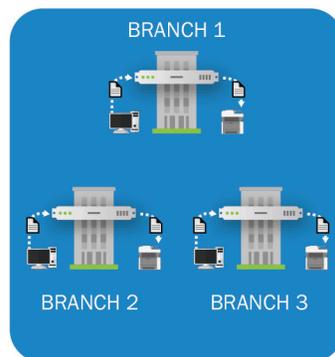
One way to overcome the disadvantages of these print server architectures is through direct IP printing. This architecture eliminates the need for print servers because it creates a direct connection between the workstation and the printer but it lacks many of the deployment and management features of a print server.

In the *direct IP model*, the IT staff member configures each workstation to print to the network printer by manually associating the two devices. To manage printers, IT will maintain a spreadsheet that contains printer names, IP addresses, physical locations and printer driver file locations. Although this model eliminates the single points of failure, WAN traffic, and GPOs, it introduces a host of management challenges. Inevitably this model will generate additional service desk calls every time an end user wants to install a new printer.

1 Centralized Print Servers



2 Distributed Print Servers



3 Unmanaged Direct IP



The Complexity and Cost of Print Servers

Historically, print servers were designed to provide self-service printer installation, printer deployment through GPOs, centralized print management, a printer driver repository, printer security, and print queue management. Each of these features is designed to address the problems IT departments faced when managing and deploying printers to end users.

Print servers were initially a good idea. However, modern IT environments have found that they require additional management, create risk through a single point of failure, complicate deployment, consume IT resources, and drive up costs. Some of the problems of print servers are outlined below:

Costs

Each print server at each site requires hardware procurement and licensing, cooling, power, physical security, management, maintenance, upgrades, virus scans, and so on. The average cost per print server is \$2,000 to \$5,000 USD per year. Not to mention the software licenses and hardware purchases that strain a capital expenditure budget.

Risk from 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, power, 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. Even the simplest of tasks, such as changing a printer's name or replacing a printer with a new model and print driver, requires a script. Scripts can get complicated and are often difficult to create and troubleshoot. GPOs require elevated permissions to manage, slow end-user logon times, and can cause deployment and printing problems owing to their broadly hierarchical nature.

Self-Service Printer Installation

Printer servers' native self-service printer installation features are often too difficult for end users to use. Instead, they call the service desk and wait for assistance. Service desk calls are expensive and end users are unproductive while they wait 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 carry out. In fact, 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 printer driver that solves some problem you are experiencing, you must update the driver on all 40 print servers. Rolling back problematic driver updates can be even more time consuming.
- **Complicated caveats:** Another troublesome 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.
- **Driver conflicts:** Yet another issue with print servers is that printer drivers do not always coexist gracefully. Just to keep drivers from conflicting, IT sometimes creates individual print servers for each printer manufacturer: a model-specific driver print server, a universal driver print server, another model-specific print server, a driver test print server, and so on. Otherwise, the printer drivers can conflict and crash the print server.

Traditional print server architecture suffers from all these pain points, costs, and complications. Conventional direct IP printing introduces other problems, including a lack of management and constant service desk incidents for installing printers. An ideal scenario would be to combine the simplicity of direct IP printing with the management features of a print server.

Fortunately, PrinterCloud provides this solution. PrinterLogic's next-generation print management software converts your entire print environment to centrally managed direct IP printing and puts print management in the cloud. This eliminates the need for print servers, or any servers for that matter.

The Solution: Implementing PrinterCloud to Eliminate Print Servers

PrinterCloud is designed to support organizations of all sizes in a streamlined, efficient way. There are three quick steps to starting your instance of PrinterCloud and eliminating your print servers.

1. Create your PrinterCloud instance

Visit printercloud.com/start-trial and complete the form to start your free 30-day trial. Once you submit the form, an instance of PrinterCloud spins up immediately and prompts you to create the initial user credentials. It also opens a video tutorial library in a separate tab. To avoid common traps and to get you started as quickly as possible, review the initial videos that guide you through the setup process.

2. Import printers

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

3. Install the client

IT staff use a small MSI, PKG, or DEB file provided to deploy the PrinterCloud Client silently to all workstations.

Once installed, the Client silently converts all existing printers that were connected to print servers into centrally managed 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.

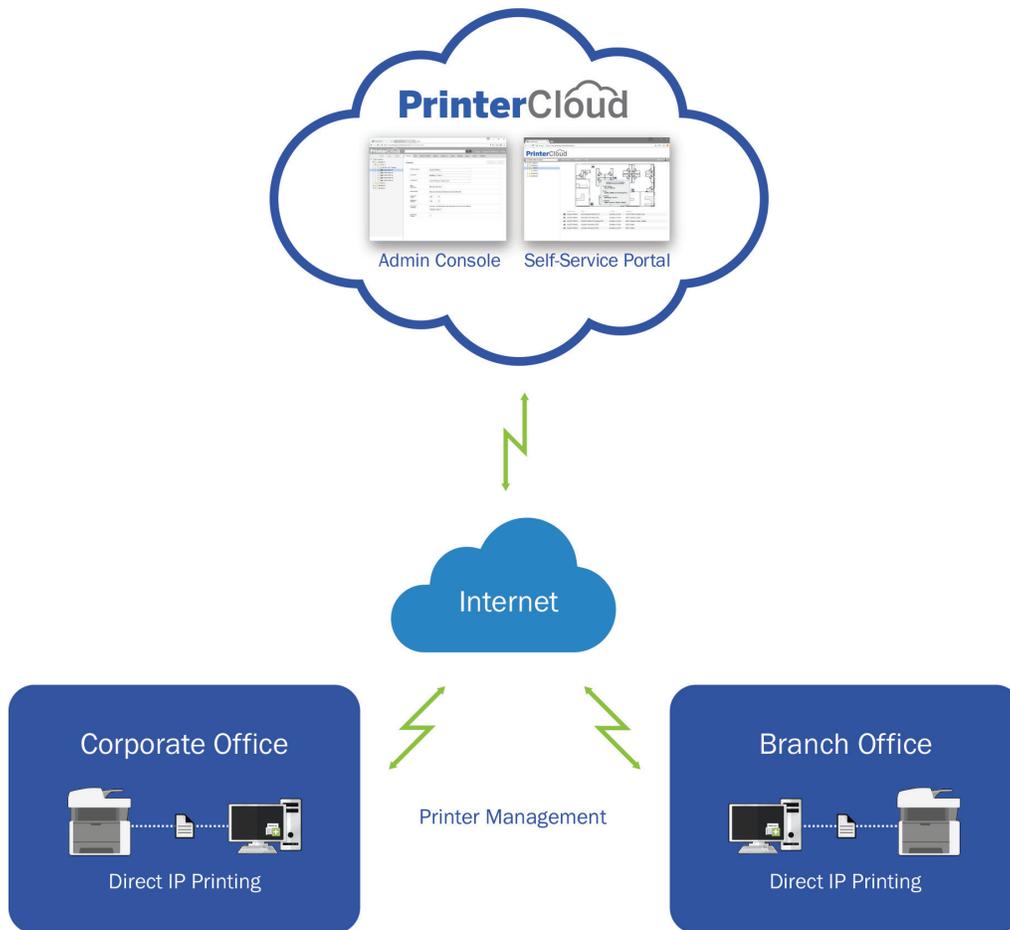
After this step is complete, you can pull the plug on your print server(s) and users continue to print without any problems. From then on, you can use the PrinterCloud Admin Console to centrally manage printers without any print servers, group policies, or scripts.

PrinterCloud Architecture

The PrinterCloud software consists of three main components:

- PrinterCloud Admin Console
- PrinterCloud Self-service Portal
- PrinterCloud Client

Each component is described briefly on the following pages.



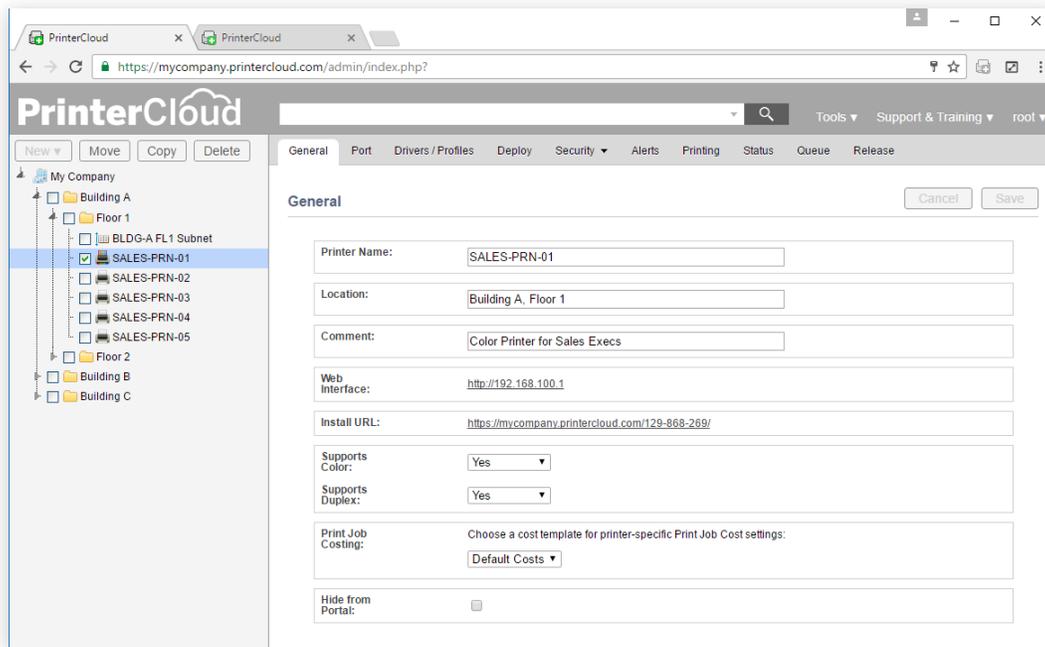
PrinterCloud Admin Console

This web-based console enables IT to manage all the printers in your entire organization from a single view. On the left, the Admin Console presents a tree view of your organization, which you can configure to organize your printers by location. Then you 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, view the direct URL to the driver install, check to indicate a color printer, or check to hide that printer from the Self-Service Installation 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 additional print management functions as explained in this document.



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

- **Add printers:** With PrinterCloud, creating a printer is as simple as it should be. 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 Installation Portal

The PrinterCloud Self-Service Installation Portal empowers your end users to quickly find and install printers, with no need to call the service desk.

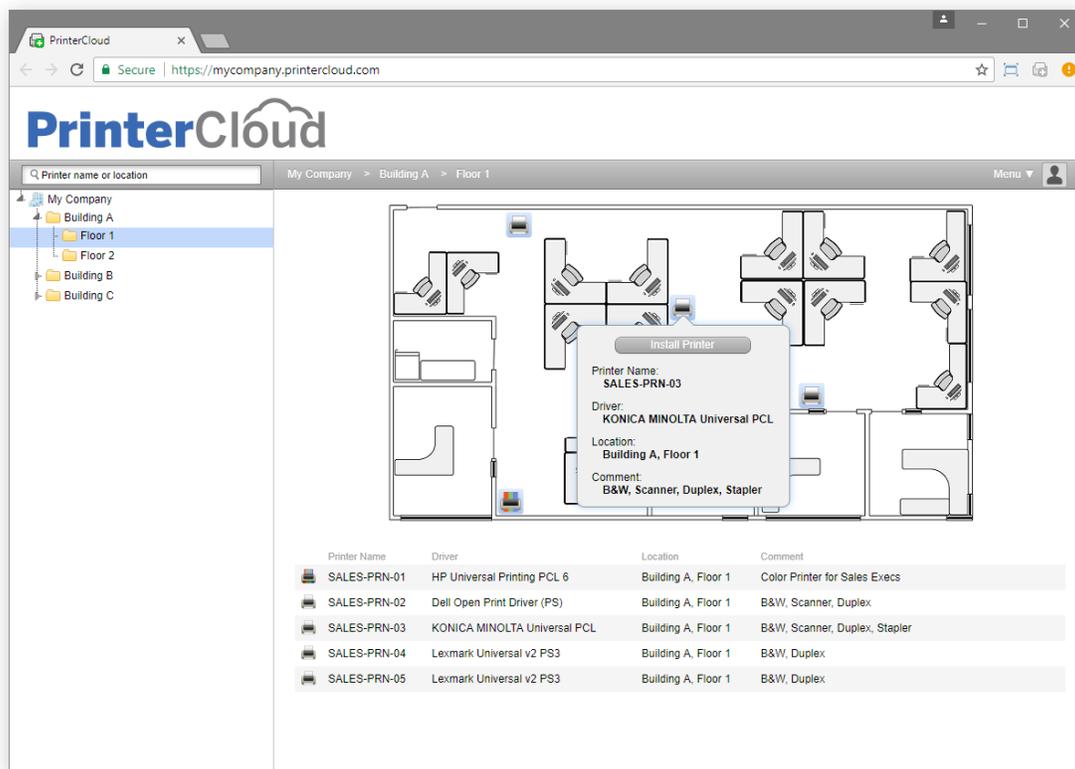
For example, when an end user travels to a remote office where they need to print, they almost always end up calling the help desk for support. Users seldom know all the information required by the native Windows Add Printer dialog, such as the printer type (network or local), printer name, print server 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. Not being able to print is generally frustrating to the end user.

PrinterCloud solves this problem by providing a web 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.

An end user can access the portal at any time by clicking the PrinterCloud icon in the Windows system tray, typing the URL directly into their default browser (domain.printercloud.com), or clicking a link on the company intranet site.

PrinterCloud's Self-Service Portal can display optional floor plan maps that can be easily uploaded. Hovering the mouse pointer over any printer on the floor plan shows that printer's name, model, location, and an optional field for comments. The end user simply clicks any printer icon to install it. If you don't have the floor plan maps uploaded, printers are also displayed in a clickable list.



PrinterCloud Client

The PrinterCloud Client is a software agent that is deployed to end user Windows, Macintosh or Linux workstations using the provided MSI, PKG, or DEB installation packages. The Client runs in the background as a service to automatically perform printer management tasks without any user intervention and allows for self installation without the end user requiring installation privileges. These tasks include installing a printer, updating a printer driver, etc.

Features

Printer management tasks that were previously accomplished with print servers, group policies, and scripts, can now be completed using PrinterCloud. PrinterCloud provides a rich set of features, including:

Centralized Direct IP Printer Management

You can manage your entire organization's printers from a single Admin Console regardless of whether you use domains or no domains, trusted or untrusted. 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 Admin Console, 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 that will ripple through the organization and update all workstations.

Self-service Installation Portal

Here are some of the added benefits of the PrinterCloud Self-Service Installation Portal:

- **Auto-locate:** When a user visits the portal, their current location is automatically selected based on their IP address and network segment, so they can simply click the desired printer to install it.
- **Floor plans:** Optional floor plan maps 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 PrinterCloud 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 PrinterCloud Self-Service Portal in Citrix desktop sessions so they can quickly find and install the nearest printer based on their physical location.
- **VMware Horizon View support:** The end user can access the PrinterCloud Self-Service Portal in VMware Horizon View sessions so they can quickly find and install the nearest printer.

Printer Deployment

PrinterCloud 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 Admin Console to safely empower IT staff to manage printer deployment.

Here are some of the added benefits of using PrinterCloud's built-in printer deployment feature, rather than using GPOs and scripts:

- **Active Directory integration:** With PrinterCloud's web interface, you can easily deploy printers to Active Directory users, computers, groups, containers, OUs, or even IP address ranges. PrinterCloud 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 Windows, Mac, and Linux desktops and thin clients.
- **Write filter for thin client support:** PrinterCloud 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:** PrinterCloud 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.

- **Faster logons:** With group policies or scripts, whenever a printer is installed during logon, the logon process is delayed, often for several minutes. With PrinterCloud, 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 PrinterCloud would require time-consuming custom scripting by someone with advanced programming experience. With PrinterCloud, all it takes is the click of a checkbox.
- **Orphan printer removal:** With PrinterCloud, 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.

Printer Driver Management

You can use the Admin Console 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 PrinterCloud 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 driver. 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 PrinterCloud, 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 PrinterCloud 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 (such as printing labels), the duplex profile is automatically reapplied to the next print job.

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. Setup alerts that email IT workers to proactively manage printers.

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.

Role-based Access Control

Since PrinterCloud integrates with Active Directory, you can specify which users can log on to the Admin Console 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 or create a custom one. 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 PrinterCloud Client on each workstation sends certain metadata to the Admin Console. This enables you to see print job statistics in an intuitive, exportable format.

The administrator then uses reports to determine print job usage and print job costs. You can answer valuable questions about the cost of printing on a single printer or the cost of toner and paper for the entire organization. It will also help you change any policies or help optimize your driver profiles for more efficient use.

The administrator has many predefined reports to determine departmental usage, printer usage, and paper waste. It can be as granular as how many print jobs are color vs. grayscale, duplex vs. simplex, and large vs. small print jobs. Administrators simply set up scheduled reports to be sent to executives or department heads to educate the organization on printing usage and costs.

Queue Management

PrinterCloud provides your IT staff with a single web portal for managing all your printer queues. The Client notifies PrinterCloud 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.

High Availability

PrinterCloud allows end users to print independent of an Internet connection. If the Internet connection ever goes down, all end user continue to print since all print jobs are sent to the printer via direct IP on the local network segment.

For the management aspects of the product, if PrinterCloud ever becomes inaccessible, meta data will be stored on the workstation until the connection is reestablished and all data is refreshed in the Admin Console.

Quick Review—The Benefits of Eliminating Print Servers

The many benefits of eliminating print servers with PrinterCloud include:

- **Simplify your infrastructure:** With PrinterCloud you can eliminate all your print servers or any server needed for print management. There is no need for additional hardware or software, which reduces cost and simplifies your infrastructure.
- **Streamline your print management:** Now you can manage all the printers in your entire enterprise through the cloud and a single web 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 installation 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 PrinterCloud occurs very rapidly. 87% of PrinterLogic customers had a 100% ROI within the first year. Eliminating costly print servers and reducing help desk calls equals quick savings. Since the software is offered as a service, IT realizes cost savings by transferring budget from CAPEX to OPEX.

Conclusions

All the cost, effort, and complexity of traditional print servers are no longer necessary. PrinterCloud replaces all the functionality that print servers used to provide in a single SaaS solution. It also adds many new features that simplify print 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 PrinterCloud, contact support@PrinterCloud.com or call 435.652.1288 for a quick WebEx product demonstration, and a 30-day trial install.