



WHITE PAPER

Streamlining Critical Print and Document Processes in Manufacturing

An Architectural and Use Case Overview for Eliminating Print Servers to Maximize Uptime

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Introduction

Maintaining uptime for critical production processes is the top priority for manufacturing facilities and organizations across the globe. Device and machine issues and maintenance are expected and budgeted for, as any production downtime leads to rising costs for the business. With unexpected interruptions and errors, your organization continues to take detrimental hits to cost every second the downtime lasts. Manufacturing CFOs and CTOs are constantly strategizing ways to run processes faster and cheaper—the more business processes improve, the better.

Your documents play a major role in business and production processes. If any printing or data output processes are interrupted or outright fail, production cannot continue, quotas are missed, and productivity and customers suffer. As a result, manufacturing facilities are adopting cloud-based solutions for their document and output processes. These solutions are a popular replacement for traditional, on-premise technology that can manage high volumes of data and documents but is much more scalable and efficient regarding required maintenance, updates, and overall reliability.

Eliminating Print Servers

If you want to improve the productivity of your document and output processes, it's time to look at Vasion Print's centralized, cloud-native printing platform with the highly available Vasion Output Automation solution.

It eliminates the need for your Windows, Linux, or Unix print servers that manage front-end printing—simplifying print management, reducing infrastructure, scaling your business, and lowering costs.

The platform solves the most prominent pain points in both system and end-user print management by:

- Eliminating print job-related WAN traffic
- Creating a printing connection to your SAP and other business applications
- Removing script- and GPO-based printer deployments
- Streamlining printer driver management
- Automating business and document processes
- Delivering powerful reporting and auditing features
- Simplifying printing in virtual environments (Citrix, VMware, IGEL, and more)

This white paper discusses the background of traditional front and back-end print management, print server drawbacks, Vasion Print implementation and features, the benefits of using Vasion Print to streamline print management and enhance the end-user experience, and our Vasion Output Automation that unifies system and end-user printing.

Front-end Print Management

In a typical print environment, administrators implement and provision print servers to service the printers on the network. IT organizations traditionally use three types of print management models: **centralized**, **distributed**, and **direct IP**.

In a **centralized model**, a print server sits in the data center and services every network printer in the enterprise. The name, printer driver, and configuration of each printer are used by the print server to distribute printers to end users. To deploy printers to end users, admins create Group Policy Objects (GPOs) to define who gets the printer and how it is configured.

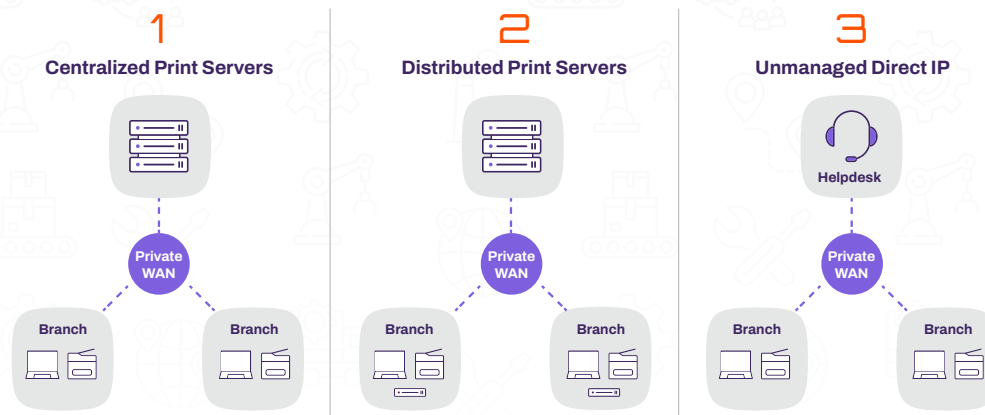


Figure 1: Centralized and distributed print servers, as well as unmanaged direct IP, are the three basic models used to manage printing for multiple sites.

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 data center, 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 constituents of the print server architecture. Still, these now tend to be more isolated to individual branch disruptions. Likewise, distributed environments also require complex scripting and GPOs to manage and deploy printers to end user devices.

One way to overcome the disadvantages of print server architecture is through a direct IP model. This model eliminates the need for print servers because it creates a direct connection between the workstations and the printers. However, this model lacks many of the deployment and management features of a print server.

In the direct IP model, an IT staff member configures each workstation to print to the network printer by manually associating the two devices. To manage printers, IT maintains 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 many management challenges. Inevitably, this model will generate additional calls to the helpdesk every time an end user wants to install a new printer.

Back-end Print Management

Your back-end applications, like SAP, house a variety of documents like purchase orders, shipping information, product documentation, and more, that need to be printed to continue down the production line. In the most common configuration, SAP processes documents through a hosted Spool Server and prepares them for transfer via a [defined Access Method](#). This communicates directly with the Windows, Linux, or Unix print server you use to manage front-end printing. This architecture can include load-balancer infrastructure to distribute documents between multiple spool and print servers to achieve higher availability and redundancy and maintain operational continuity.



Figure 2: SAP spool servers communicate with Windows print servers to send print jobs to printers across their environment.

In this case, these servers are still necessary, but you have the opportunity to reduce the amount of infrastructure to get your critical documents to the printer. The other method involves adopting an [Output Automation](#) service, which replaces a print server as a centralized communication point between SAP and your devices, applications, or printers. Administrators can spin up a low-footprint Service Client that receives print jobs from SAP and has built-in [high-availability](#) functionality that ensures those documents make it to their destinations, regardless of interruption or device failures.

The Drawbacks of Print Servers

Your print servers were designed to provide self-service printing, GPO-based deployments, a printer driver repository, print security, and queue management. Each feature was designed to address the problems IT departments faced when managing and deploying printers to end users.

Print servers were initially a good idea; when managing multiple software systems in tandem and ensuring production processes run smoothly in each one, a print server to centralize all communication and printer, driver, and queue management is a no-brainer.¹ However, it still risks single points of failure, threatens long periods of downtime due to maintenance and updates, and drives up costs.

You may already agree with these statements. But if you're still unconvinced, let's discuss these drawbacks further.

Detrimental Downtime

If a print server crashes, no one can print. Your production processes that rely on printed materials and other output are suddenly backed up or halted altogether, leading to detrimental costs for your organization. Manufacturing organizations lose an average of \$260,000 an hour because of downtime.² When issues arise, you cannot afford to waste time.

Clustered print servers do not crash as often, but the trade-off for the high availability of clustered print servers is higher costs for hardware, licensing, management, power, and maintenance. Distributed environments offer multiple points of failure; however, employing more servers compromises resources and requires admins to relinquish centralized management and control.

Rising Costs

Speaking of massive costs to your business, each print server at every 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 between \$2,000 to \$5,000 USD per year, which adds up fast if you're managing multiple print servers across your entire office and production fleet.

Disconnected Print Management

You're managing front-end and back-end printing processes separately, meaning you likely have redundant infrastructure costing you time and money to manage and limiting overall productivity. While your front-end print servers handle the distribution and communication to all your printers, either in the office or on the production floor, you still need SAP's print

¹ <https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-outlook.html>

² <https://www.teamsense.com/blog/cost-of-downtime-manufacturing#:~:text=The%20Costs%20of%20Downtime%20In%20Manufacturing,More%20downtime%20means&text=And%20a%20lot%20of%20it,and%20your%20company%27s%20financial%20health.>

servers to facilitate connections between the application and your printers for spooling print jobs and building them into print-ready formats. While the servers supporting your SAP environment are necessary, you can still evaluate what on-premise infrastructure can be replaced to eliminate any single points of failure that cost your organization and save you time from complex scripting, GPOs, and continuous hardware maintenance, in addition to truly centralizing the operations of print and document management.

Scripting and GPO Management Overhead

Managing scripts and GPOs to deploy printers to users can consume significant IT staff time and resources. Often, even the simplest tasks, such as changing a printer's name or replacing a printer with a new model and printer driver, require a script. Scripts can get complicated and are often difficult to create and troubleshoot. GPOs require elevated permissions to manage, slow user logon times, and cause deployment and printing problems due to their hierarchical nature.

Security Risks

Windows Print Spooler vulnerabilities like PrintNightmare created security concerns for organizations. Attackers who successfully exploited this vulnerability could run arbitrary code with SYSTEM privileges and gain access to a company's network. This gave attackers access to critical information stored in the print queue, created constant issues for admins, and required workarounds that may have left their networks vulnerable.

Along with server-related vulnerabilities, printers, in general, have become a priority target for hackers as their printer caches store valuable personal information. If left unprotected, print data is at risk of being intercepted by cybercriminals. Other significant threats to print data include internal document theft caused by leaving documents unsecured in the print tray and hybrid workers printing to unsecure off-network printers in their home offices.

Low Visibility Into Print Activity

In distributed print environments with multiple sites, printer support becomes a constant drain on your IT resources. It is difficult to track costs, audit print jobs, and identify printer issues in real time that impact your organization's bottom line.

Without centralized control, you're unable to gather vital data on the micro (e.g., individual print jobs, toner levels) and macro (e.g., departmental trends, consolidation guidance) levels to make informed decisions about consumables, company-wide printing behavior, and cost-saving initiatives.

Management Headaches

Print servers require operating system upgrades, patches, ongoing security maintenance, virus scanning, and so on. All of which take time and money to stay on top of. These 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 32-bit workstation users to change to the newly named driver. If left unresolved, the printer may not be recognized, print jobs may fail to complete, or the workstation may crash.
- **Driver conflicts:** Printer drivers do not always coexist gracefully. To keep drivers from conflicting, IT sometimes creates individual print servers for each printer manufacturer, such as 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, printer drivers can conflict and crash the print server.

Traditional front-end print server architecture falters when it comes to the cost and maintenance required to maintain the infrastructure—especially so in a clustered server environment—just to achieve high availability. Even conventional direct IP printing introduces other problems, including a lack of oversight and constant helpdesk calls to install printers. An ideal scenario would be to combine the simplicity of direct IP printing with a reliable, low-footprint service that connects back-end SAP applications to your printers to reduce the print infrastructure you must manage.

Vasion Print provides the best of both worlds on a secure, cloud-native platform. Vasion Print's next-generation print management software migrates your entire print environment to centrally managed direct IP printing, empowering you to manage all users and devices from a single console and eliminating the need for print servers.

Additionally, Vasion [Output Automation](#) offers a solution for your back-end applications that replaces the reliance on Windows, Linux, or Unix print servers with a low footprint, reliable service that centralizes communication and routing of print jobs from SAP and other web-based applications to print to front-end printers. The SAP print server builds and sends jobs to the Output Automation Service, which takes the process from there. Learn more about back-end print and Output Automation below.

The Solution: Eliminate Your Front-end Print Servers with Vasion Print

Vasion Print is designed to support manufacturing facilities of all sizes in a streamlined, efficient way. There are three quick steps to installing Vasion Print's application and eliminating your front-end print servers.

1. Install the Application

IT staff use the Vasion Print installation package to automatically install the IIS role, Vasion Print web application, and database on a virtual or physical Windows Server 2008 R2 (or newer) at your organization's data center or HQ.

2. Import Printers

Use a web browser to access the Vasion Print Admin Console and import printer objects and associated drivers from existing print servers via Active Directory. During the import process, all of the existing printer drivers, port settings, device settings, and preferences are copied from the print servers into the Vasion Print application without changes. From then on, IT staff can use the Vasion Print Admin Console to create, deploy, and manage printer objects seamlessly.

3. Install the Client

IT staff use a small MSI, PKG, or DEB file to silently deploy the Vasion Print Client to all workstations. Once installed, the Client silently converts all existing printers connected to print servers into centrally managed direct IP printers that print to a physical printer. All print jobs are queued on users' individual workstations and sent directly to a selected network 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 get to enjoy two main benefits:

1. You can eliminate any front-end print server(s), and users continue printing without any issues, as shown in Figure 3 (next page).
2. You can continue printing from your back-end applications, like SAP, but with a much more reliable and highly available service that ensures your critical operations continue as required.

From then on, Vasion Print Admin Console is the place to centrally manage printers without any print servers, group policies, or scripts.

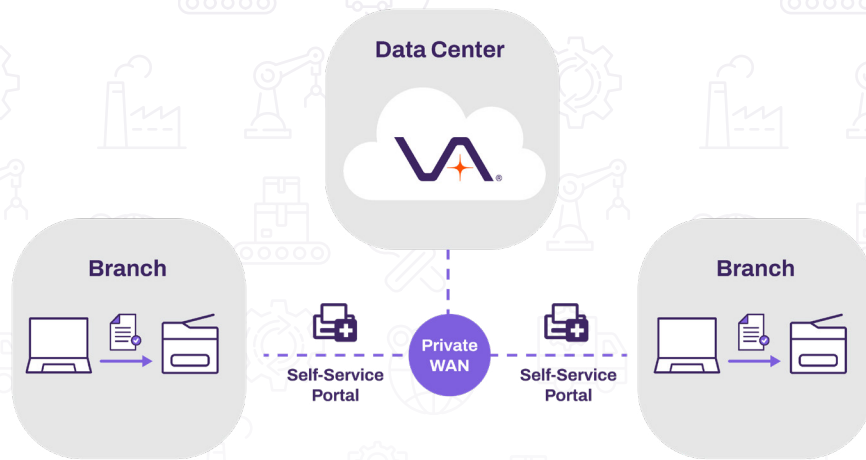


Figure 3: Vasion Print enables centralized, direct IP print management and keeps all print job on the local network by sending every print job directly to the printer.

The Vasion Print Architecture

The Vasion Print software consists of these main components:

1

The Vasion Print
Admin Console

2

The Vasion Print
Self-Service Installation Portal

3

The Vasion Print
Client

4

The Vasion Print Service
Client (for advanced features)



Read our [SaaS Security White Paper](#) for a technical dive into the Vasion Print Architecture.

The Vasion Print Admin Console

This web-based console enables IT to manage all printers in the entire organization from a single user interface, regardless of whether you use domains or not. On the left side of the console, the Admin screen presents a tree view of your organization. You can organize by country, state or region, building, and floor number and select any particular printer in your fleet (see Figure 4). On the right side of the console, you can enter or edit any attributes for that specific printer.

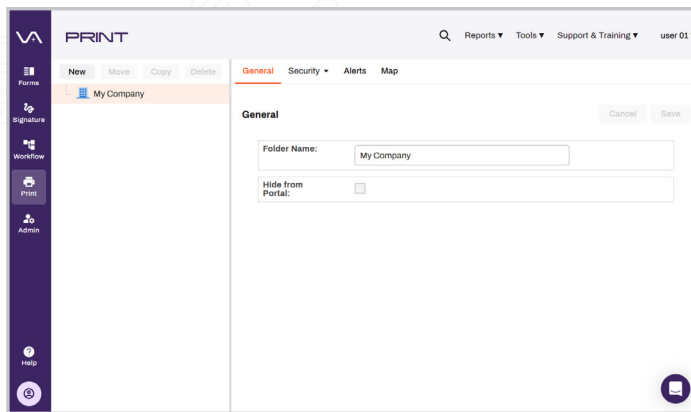


Figure 4: Admins can view all their networked printers and manage printer settings in the Vasion Print Admin Console.

For example, under the General tab, you can enter or edit the printer name, and 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 Vasion Print 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. As explained in this document, you can also perform many additional print management functions. This screen can also be used to add, edit, and delete printers.

- **Add printers:** With Vasion Print, creating a printer is as simple as possible. Select the folder for the desired location to add a printer, then create the new printer.
- **Edit printers:** Printer object attributes can be modified quickly and easily by selecting a printer in the tree and changing the desired attribute(s). Any changes made are automatically applied to that printer on all workstations.
- **Delete printers:** When deleting a printer, that printer is automatically removed from all end-user workstations.

Any changes to a printer object are automatically applied to that printer on all workstations. 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 disseminate through the organization and update all workstations.

Self-Service Installation Portal

The Vasion Print Self-Service Installation Portal empowers end users to quickly find and install printers without relying on the helpdesk for assistance.

Let's consider this scenario: when an end user travels to a remote office where they need to print, they almost always end up calling the helpdesk 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, and print server name hosting the printer, let alone where the printer is located. And if the helpdesk isn't available, the end user is blocked from completing vital and time-sensitive tasks, like printing a proposal, contract, or export documentation.

Vasion Print provides a web-based portal that enables end users to find and install printers with just a few clicks quickly and is accessible at any time. This significantly reduces printer-related helpdesk costs and boosts productivity by empowering end users.

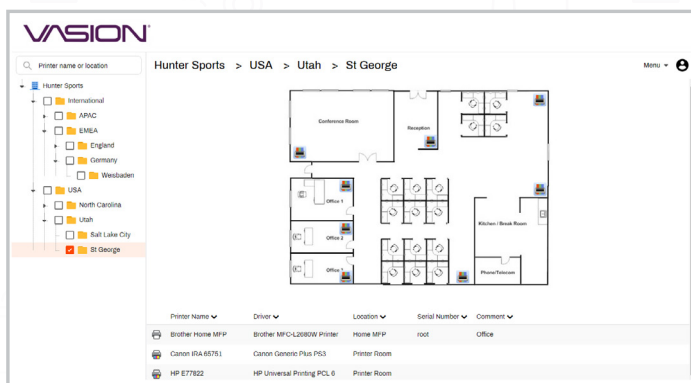


Figure 5: Vasion Print's Self-Service Installation Portal offers a comprehensive floor plan map to help end users identify and install the nearest printer.

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

- **Auto-locate:** When a user visits the portal, their current location is automatically selected based on their IP address, so they can simply click the desired printer to install it.
- **Custom building floor plans:** Upload floor plan maps of your building to make it even easier for a user to find and install the nearest printer, especially when they are constantly on the go.
- **Search:** Users can enter a partial printer name and see the location of any matching printers. When users select 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 change 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 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 they have the rights to install.
- **Citrix and VMware support:** End users can access the Vasion Print Portal in Citrix and VMware Horizon View sessions so they can quickly find and install the nearest printer.

Vasion Print Client

The Vasion Print 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 print management tasks without any user intervention and allows for self-installation without the end user requiring elevated privileges. These tasks include installing a printer, updating a printer driver, etc.

Vasion Service Client

The Vasion Service Client is a low-footprint, reliable service that enables advanced features on Vasion Print's serverless platform, such as [Output Automation](#). The Service Client replaces your front-end print servers, sitting in between your back-end applications, like SAP, and your office and production printers.

The configuration process includes three steps:

1. Create a Service Client Object in the tree menu with a hostname or IP address of the Windows, Mac, or Linux workstation or other device it will run on. This is already a benefit from managing print server hardware, as there's less disruptive maintenance and updating involved.
2. Install the Vasion Print Client on the designated workstation described above.
3. Wait for the Client to check in with your Vasion Print instance. It'll detect its promotion to a Service Client and start processes for any advanced features enabled.

Vasion Print's Print Management Features

Front and back-end print management tasks that were previously accomplished with print servers, group policies, and scripts can now be streamlined in the Vasion Print application. Vasion Print provides a rich set of features and benefits, in addition to the Admin Console, Self-Service Portal, Vasion Print Client, and Service Client, as described in the following sections.

Advanced Printer Deployments

Vasion Print 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—use the Admin Console to empower IT staff to manage printer deployments safely.

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

- **Active Directory integration:** With Vasion Print's web-based GUI, you can easily deploy printers to Active Directory users, computers, groups, containers, OUs, or even IP address ranges. Vasion Print shows you all printers with all deployment assignments, so you can make mass changes as easily as individual deployment changes. See [Role-based Access Control](#) below for details about deploying access based on user roles.
- **No GPO rights required:** You can enable any IT staff to add and remove printer deployment assignments without having any rights to GPOs, scripts, or print servers.
- **Desktop and thin client support:** You can deploy printers to Windows, Mac, and Linux desktops and thin clients such as Citrix, VMware, and IGEL.
- **Write filter for thin client support:** Vasion Print 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:** Vasion Print 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 logins:** With group policies or scripts, whenever a printer is installed during logon, the logon process is delayed, often for several minutes. With Vasion Print, any required printer installation begins after the user's login 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 the first time that printer is installed, every time the user logs on, or by the user's current location. To achieve this without Vasion Print would require time-consuming custom scripting by someone with advanced programming experience. With Vasion Print, all it takes is the click of a checkbox.
- **Orphan printer removal:** You can remove printers from workstations as easily as you deploy them within the Vasion Print Portal. 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.

Role-Based Access Control

Since Vasion Print integrates with Active Directory, you can specify which users can log on to the Admin Console with an existing Active Directory username and password. As an IT administrator, you can control end-user privileges by assigning predetermined roles or creating custom permissions. These roles determine an employee's access to print 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.

Printer Management

Mass Printer Edit/Create/Management: Manufacturers, especially in larger firms, can benefit from the mass edit feature provided in the Vasion Print Admin Console. Authorized IT admins can see all 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 authorized admins to quickly create, modify, or delete hundreds or thousands of printers simultaneously.

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 Vasion Print 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 simply go to the driver repository and replace the old driver with the new driver. In traditional print environments, you would have to install the driver on each print server and then change the driver for each printer on every print server. Vasion Print allows you to update the driver in a single location.

Printer Driver Caching: If your facility has a large presence in countries with very limited or expensive WAN links, you may not want users downloading drivers from Vasion Print to install a printer due to security concerns and compliance requirements. 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 Vasion Print server. Meanwhile, Vasion Print will automatically keep the cache up-to-date with new drivers.

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 Vasion Print 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.

Queue Management: Vasion Print provides your IT staff with a single web-based portal for managing all your printer queues. The Client notifies the Vasion Print application of all print jobs in each workstation's local print queues so that IT staff can cancel or troubleshoot any problem or unnecessary print jobs.

Port Management and Redirection: If any printer has a hardware problem, causing a need to redirect all its print jobs to a similar printer, you can use Vasion Print to make a single port redirection change. From then on, all print jobs will be routed to the second printer. You can easily remove the redirection when the first printer returns to service.

Reporting and Analytics

SNMP Monitoring and Alerts: SNMP monitoring shows the status of your organization's entire printer fleet. This screen shows notifications like low ink or paper, empty trays, ping status, etc., to make monitoring your printer fleet easier. You can also set up email notifications to automatically alert IT workers of a problem, allowing them to manage all printers proactively.

Print Job Auditing and Reporting: Although print jobs are sent directly to a physical printer, the Vasion Print Client on each workstation sends certain metadata to the Admin Console. This enables you to see print job statistics in an exportable format.

Admins can use these reports to determine print job usage and print job costs and 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 policies or optimize your driver profiles for more efficient use.

The Admin Portal has many predefined reports to determine departmental usage, printer usage, and potential waste. Reports can be as granular as the number of print jobs that are color vs. grayscale, duplex vs. simplex, and large vs. small print jobs. Administrators can also set up scheduled reports to educate the organization on printing usage and costs.

Vasion Output Automation

Vasion Output Automation is redefining traditional output management solutions by providing manufacturing organizations with the modern tools and automation necessary to ensure a document from any application is delivered where it needs to go, in the format it needs to be in, when it needs to be there. Output Automation provides a robust platform that integrates seamlessly with existing ERP systems, such as SAP, to automate document routing, conversion, and delivery to unify print and document processes across your organization.

Removing Reliance on Print Servers with Vasion Output Automation

As mentioned above, when you use an ERP application like SAP, you're still using a spool server and likely unable to remove it from your environment. With Vasion Output Automation, you no longer have to rely on that print server.

Vasion Output Automation facilitates a connection between your SAP application and other web-based inventory or supply chain management applications.³ It routes the document to a printer tray, digital storage folder, or directly to a recipient via email.⁴ The Service runs on a Vasion Print Service Client, the low-footprint software agent installed on a workstation or another device with network access. This client is the centralized communication point as a print server is, but eliminates the continuous cost and maintenance required to upkeep the hardware, and proves to be much more reliable and secure.

SAP forwards print jobs to Vasion Print via Access Method U (Unix Berkeley LPR) and the LPD Service. The SAP spool server builds the print job into a print-ready file format. It is then sent and received by the LPD (line printer daemon protocol) Service. SAP print queues are directed to the IP address of the Output Management Service running the LPD Service. If employed within the organization's environment, a load balancer directs the queues to its virtual IP address, redirecting the job to a designated Service Client based on traffic.

When the LPD Service receives a file, it examines the metadata and document characteristics to learn which user initiated the print job and its intended destination. The print job is then either printed immediately via direct IP printing or through an off-network print queue via Off-Network Printing, or held for pull or Secure Release until user authentication at the printer to release it.

³ For a technical dive into the Output Management Service and additional back-end application connectors, read our [white paper](#).

⁴ Sending documents directly to a digital storage folder or through email will be available in a future release.

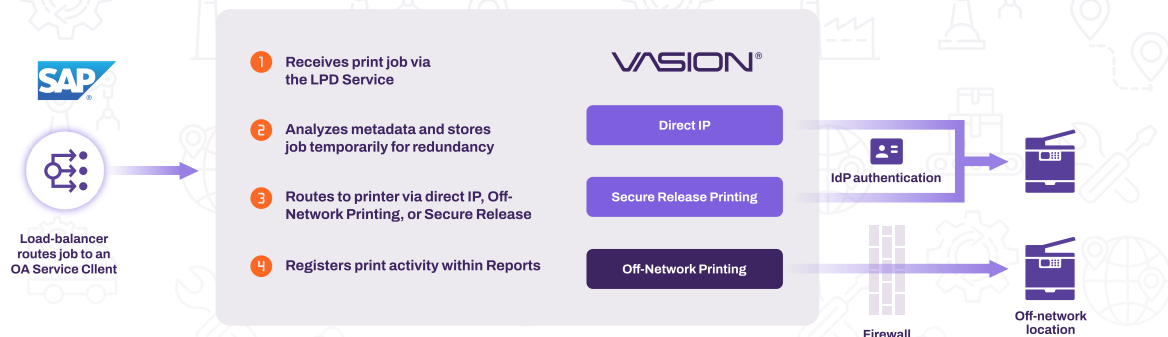


Figure 6: SAP spool server converts the print job into a print-ready format, then communicates with Vasion's Output Automation Service to store the job temporarily until the job is printed successfully.

High Availability

Vasion's SAP Connector is built intentionally with high availability to mitigate downtime or interruptions. This solution offers a robust failover scenario that catches errors and reroutes print jobs without needing the standard print server hardware or manual intervention. Administrators can spin up redundant Service Client(s) as an additional route for print jobs in case of device or network failure. If a print queue or Service Client were to fail, the load balancer simply routes to another Service Client. What's more, when the Output Automation Service receives a print job, it stores a copy of the job on another Service Client temporarily for additional redundancy until the job has been successfully delivered, then the file is automatically removed.

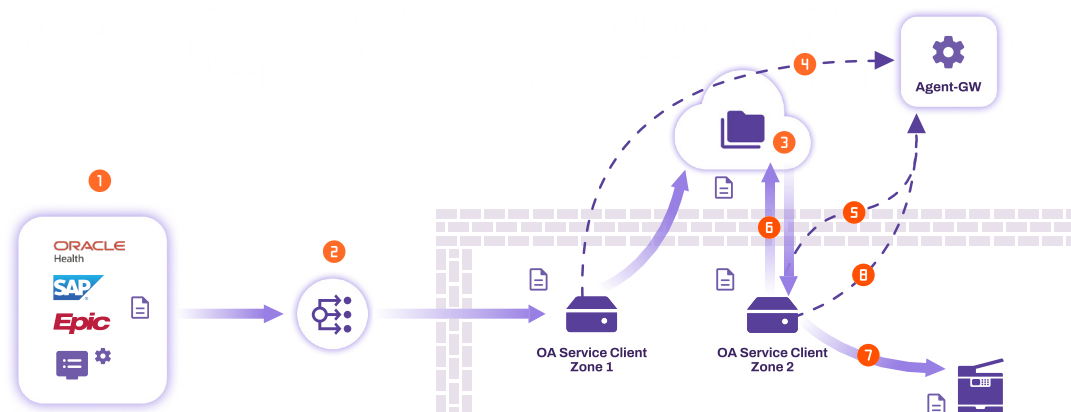


Figure 7: SAP print jobs are received by a load balancer to distribute to redundant Output Automation Service Clients to eliminate single points of failure.

Confirmed Delivery

Part of Vasion Output Automation's main value driver is ensuring documents are delivered where they need to be, when they need to be there. Typically, the extent a printer will go to confirm it has successfully received a print job is simply letting you know it was received. This isn't enough information to understand if the document was successfully printed, what went wrong when there were missing pages on the print tray, or if printing stopped halfway through. Then you're left trying to troubleshoot with limited insight.

Output Automation makes additional checks to ensure all documents are successfully printed to the tray. If any page fails to print at any point, you are automatically notified so you can address and troubleshoot the issue quickly, reducing downtime. Automation infused into your printing processes is necessary to maintain the highest level of productivity at all times and ensure any issues are addressed as efficiently as possible.

Document Automation

A recent study cited digitization as nearly half of the cited manufacturer's top drivers of productivity improvements.⁵ Output Automation goes beyond traditional print management by introducing rule-based automation as the springboard into digital transformation, further increasing efficiencies while protecting business-critical operations. [Output Automation's Rules & Routing](#) offers seamless document routing, delivery, and control to reduce manual touchpoints in document handling and to maintain security and compliance with the overall process.

Output Automation Console

Gain complete control and oversight over your printing and document environment. The Output Automation Console offers a single interface to view printers, track processed jobs, redirect failed print jobs, and reprint past jobs. With robust reporting capabilities, you gain enhanced insights into queue statuses and printer performance, ensuring efficient, transparent print operations. Reduce downtime by quickly identifying and troubleshooting issues to protect your critical manufacturing processes.

5 <https://www.columbusglobal.com/en/blog/how-predictive-maintenance-maximizes-asset-performance-and-uptime-in-manufacturing>

Maintain End-to-End Print Security and Compliance

Data loss and security breaches cause detrimental disruptions to all production processes and management. Vasion Print, including Output Automation, is ISO 27001:2022- and SOC 2 Type 2- certified to ensure your data is protected from end-to-end. As manufacturers, these certifications are vital to ensure the protection of all kinds of confidential and sensitive data, helping meet industry-specific compliance requirements in quality control, documentation, data security, and more.

Along with keeping all print jobs on the local network and authenticating users before they print, Vasion's cloud-native platform removes the need for manual security patch installations by automatically rolling out security updates to your environment to pre-empt possible exploits and closing existing loopholes.

Vasion Print helps your organization implement Zero Trust into your print environment via seamless integrations with popular IdPs such as Okta, Azure AD, and Ping to authenticate all users before they print. This not only safeguards your data, but keeps external threats out of your network by barring access to printers in your environment.

Additionally, you can defend against document theft or forgotten documents in the print tray by having users release their print jobs at the printer with Vasion Print's Secure Release Printing feature. Users can simply print to the printer of their choice and authenticate at the printer via QR code, mobile application, badge reader, web browser, or control panel application to release the print job.

If any affiliate or third-party manufacturing locations may share resources and need to send documents and data between them, Vasion Print ensures data safely travels from location to location. You no longer need to manage expensive VPNs and can empower users to send print jobs to any printer on your local network from anywhere. Using Off-Network Printing, end users can securely print from their hybrid workstation. All print jobs are encrypted via TLS 1.2 and sent over HTTPS to the External Gateway using port 443 and remain encrypted behind the company firewall. Users can pick up the print job later when they arrive at the office or collaborate with a colleague to ensure the document is retrieved.

Quick Review: The Benefits of Eliminating Print Servers



Reduce infrastructure:

Eliminate front-end print servers and replace them with a reliable, low-footprint service to maintain uptime.



Streamline print management:

Manage all printers and users in the entire enterprise, track costs, and simplify printer deployments through a single web-based Admin Console.



Empower end users:

Reduce helpdesk tickets in your organization by enabling end users to install printers themselves via the Self-Service Installation Portal.



Minimize attack surfaces:

Adopt Zero Trust by authenticating all users before they print and utilizing secure printing features.



Unify across environments:

Discover seamless integrations with popular ERPs and web-based management applications to manage inventory and supply chain to achieve a scalable and flexible print environment.



Increase visibility:

Track and audit all print jobs in your organization and identify departmental usage, printer usage, and potential waste to keep costs down.

Conclusion

As a manufacturer, you understand that without continuous printing, availability of services and devices, and high-level security and compliance, your production processes suffer detrimental hits to cost and productivity. Vasion Print replaces all the functionality print servers can't provide with a more reliable output service on a single, integrated document management platform. Through the combination of centralized management, direct IP printing, and Output Automation, you can ensure your critical operational processes continue as necessary, mitigate unexpected downtime, unify your front and back-end printing with more control and visibility, and deliver an unrivaled printing experience to users across the enterprise.

Interested in learning more about how Vasion can maximize printer uptime and document output for your organization?

[Learn More](#)

VASION PRINT
formerly **PrinterLogic**®