Seamless, Serverless, & Secure:
Exploring Abacus Print Management

The following white paper addresses how IT professionals can overcome the operating constraints, high costs, lack of security, and limited features associated with older, server-based office printing. It presents a serverless print infrastructure driven by Abacus Print Management software as a way to enhance, secure, and expand the printing function in a modern IT environment.

Introduction

Office printing hasn't changed much in the past two decades. While traditional print servers are openly acknowledged by most IT professionals as too expensive, needlessly inefficient, challenging to manage, and susceptible to security threats, they remain the default choice for managing the average office printing environment.

By contrast, a serverless print environment offers a transformative experience for users, boosts productivity, and is far more secure and cost effective. As a result, it not only makes the job of printing a document easier, but it also makes the job of IT administrators easier.

1. The Limitations of Conventional Printing Infrastructure

1.1 High hardware and maintenance costs: Traditional print servers require dedicated hardware, resulting in considerable initial investment, continuous maintenance, and ongoing replacement costs. Their use also increases labor costs in IT staffing and puts a drag on productivity.

1.2 Limited scalability: When an organization grows, everything it uses must scale with it. In the context of traditional printing, adding new printers or users to a server-based print network can quickly become a complex, inefficient process, leading to resource allocation problems—including labor—as well as bottlenecks that disrupt project management.

1.3 Downtime and availability issues: Each print server in a traditional printing infrastructure represents a point of failure that has the potential to wreak havoc in the system. Any server malfunction or downtime can disrupt the entire printing service, severely affecting productivity and causing frustration among users.

1.4 Security vulnerabilities: Most organizations today rely on TCP/IP ports for

printing, sending their print jobs across the network without encryption. This leaves sensitive data exposed and vulnerable to interception or unauthorized access. Given the increasing sophistication of cyber threats, this approach poses significant risks to an organization's wider information security. The fallout from even a small data breach often extends far beyond financial costs by compromising customer trust and business reputation.

1.5 Inefficient print management: Traditional printing environments often lack the tools for efficient printer and driver management, leading to increased IT workload and reduced overall efficiency.

Abacus Print Management's serverless feature offers an efficient, secure, and cost-effective alternative to these challenges, revolutionizing your traditional print environment.

2. Abacus Print Management's Serverless Solution: Liberating Print from Servers

2.1 Serverless printing technology: Serverless print solutions can revolutionize the traditional printing infrastructure, eliminating the need for dedicated print servers, but the right features can enhance business outcomes beyond the obvious. Instead of relying on a single point of failure, Abacus utilizes direct IP printing to manage print jobs from client devices. It not only simplifies the IT infrastructure but also significantly enhances its reliability.

2.2 Direct IP printing: Abacus ensures print jobs are transmitted directly from the user's device to the printer over a secure IP connection. This approach not only bypasses the need for a central server but reduces the risk of unauthorized access and potential network congestion. With Abacus, each print job is encrypted and sent via IPPS ports, ensuring your sensitive information remains secure while in transit. *

2.3 Printer and driver management: Abacus Print Management offers a centralized printer and driver management system, easing the often complex task of administering individual printing devices on the network. The intuitive interface allows IT administrators to manage drivers, deploy printers, and effectively monitor the entire print network from a single [site/page/platform].

* Abacus's IPPS feature requires compatibility with individual printing devices. While Abacus strives to support a wide range of devices, IPPS might not be available for all models. We encourage customers to consult with their device manufacturers or our technical support team to confirm the compatibility of their devices with this feature.

2.4 Auto-created Print Queues: Abacus raises the bar by automatically creating print queues locally on each user's workstation based on a variety of criteria such as department, subnet, or user group. This feature not only streamlines the print process, but also reduces the burden on IT support to create individual queues by workstation, enhancing productivity across the organization.

2.5 Seamless Integration with Print Retrieval: Serverless printing works in perfect harmony with Abacus' Print Retrieval feature. This functionality allows users to send a document to print from their workstation to any enabled device in the office, and then print their file at the time they are present to retrieve it. This not only prevents printouts from sitting unattended and unprotected, but also reduces waste from unclaimed prints. With Abacus, every print job is secure, efficient, and aligned with your organizational needs.

By integrating these innovative features, Abacus Print Management's serverless solution not only transforms the way organizations manage their print environments, but also raises the industry standard for efficiency, security, and cost-effectiveness. Embrace the future of printing with Abacus.

3. Document Input with Abacus: Manage Scanning and Printing Workflow

Print management is only the beginning with Abacus. Abacus also presents a multi-faceted, secure scanning interface right at the copier, providing multiple advanced delivery options. Choose from our secure and upgraded delivery methods like Scan-to-Email, Scan-to-Network, or Scan-to-OneDrive™. Each method is designed with robust encryption protocols, ensuring secure transit and minimizing unauthorized access risks. But the real game-changer lies in our innovative Scan-to-Desk feature, a secure and efficient solution designed to meet your evolving scanning needs.

Through secure access via a unique PIN or badge, the copier identifies the user, enabling automatic document delivery directly to the user's desktop. Users can manage scanned files – renaming, downloading, or routing them – all within the secure and convenient Abacus interface. A variety of historical, organizational, and management features are available to help users make the most of the document scans they capture.

IT Teams can phase out legacy scan-to-email and network workflows, significantly reducing their workload. Embrace the future of secure scanning with Abacus, where operational efficiency and uncompromising security coexist.

4. Cost Savings Breakdown

4.1 Hardware costs: Traditional print servers necessitate considerable capital outlay and ongoing costs in terms of maintenance and replacement. By eliminating the need for dedicated print servers, serverless printing can lead to significant cost savings. According to a Gartner study, transitioning to a serverless printing infrastructure can save organizations up to 30-50% on hardware costs.

4.2 Maintenance costs: Simplifying the printing infrastructure not only streamlines the process but also reduces associated maintenance costs. The Ponemon Institute reports that companies spend an average of 14% of their IT budget on print-related maintenance, a cost that can be significantly reduced with the implementation of Abacus Print Management's serverless feature.

4.3 Productivity gains: Improved reliability and availability of printing infrastructure can lead to a marked increase in productivity. A study by IDC indicates that effective print management can increase employee productivity by up to 20% by minimizing downtime and facilitating a smoother, more efficient printing process.

4.4 Energy savings: Serverless printing also contributes to energy efficiency. With no need for a constantly running print server, organizations can reduce their energy consumption, leading to further cost savings and a smaller carbon footprint.

Abacus Print Management's serverless feature offers compelling cost savings that extend beyond the direct costs of hardware and maintenance. From productivity gains to energy savings, implementing a serverless printing infrastructure is a financially sound decision that aligns with modern business priorities.

5. Implementing Abacus Print Management's Serverless Feature

5.1 Assessment of Existing Infrastructure: The first step towards implementing Abacus Print Management's serverless feature is a thorough assessment of the existing printing infrastructure. This involves identifying potential bottlenecks, inefficiencies, and security risks in the current system. The aim is to understand the present state of your print environment and the requirements it needs to meet.

5.2 Tailored Transition Plan: Based on the assessment, a customized transition plan to serverless printing is developed. This plan considers timelines, resources, and disruption to end-users to a minimum. It includes the setup of Abacus auto-deployment, where printers are deployed based on various criteria like subnet,

department, or user group, making the transition to a serverless environment seamless and efficient.

5.3 Printer Deployment and Driver Management: With the Abacus Print Management system, printers and drivers can be centrally managed, and kept up to date easily. A plan is designed for the deployment of print queues to determine who should have which devices, and then Abacus automates the rest, deploying print queues locally on each user's workstation and creating the optimal configuration for each user and device.

5.4 Securing Print Data: As part of the transition, all print jobs are secured using IPPS ports, which encrypts the spool file when sending to the printer. This ensures that sensitive data is protected throughout the printing process, offering an additional layer of security.

5.5 User Training and Support: To ensure a smooth transition, end-users are provided with the necessary training and support on how to use the new serverless printing infrastructure. This includes understanding how to print and retrieve documents securely, contributing to the overall user adoption and success of the new system.

5.6 Proactive Management and Monitoring: Once the serverless print infrastructure is in place, Abacus Print Management's comprehensive suite of tools allows for continuous monitoring and management of drivers and queue deployment. This proactive approach enables IT administrators to address potential issues swiftly, ensuring optimal performance and reliability of the print environment.

With Abacus Print Management's serverless feature, transitioning from traditional print servers to a modern, secure, and efficient print infrastructure becomes a straightforward and structured process. It offers a transformative solution that not only enhances print management but also contributes to the overall operational efficiency of your organization.

6. Future of Serverless Printing: Trends and Opportunities with Abacus

6.1 Integration with Cloud Services: As the world leans more towards cloud computing, Abacus is well-positioned to merge seamlessly into your cloud-based IT environments. Serverless printing can integrate with your cloud services, further simplifying and centralizing your IT management, while ensuring optimal performance and scalability.

6.2 Mobile and Remote Printing: The rise of remote work and the ubiquity of

mobile devices make the advantages of serverless printing even more obvious. With Abacus, you can support printing from any location, at any time, increasing productivity and flexibility in today's agile and remote work culture.

6.3 Analytics and Optimization: Abacus offers robust analytical tools, providing insights into your organization's printing patterns. With these valuable data points, you can optimize your print infrastructure, reduce waste and costs, and improve overall efficiency.

6.4 Environmental Sustainability: With serverless printing, Abacus contributes to your organization's sustainability initiatives. By minimizing hardware waste and reducing energy consumption, serverless printing promotes responsible resource usage and environmental stewardship.

The shift towards serverless printing is driven by necessity. The versatility, scalability, and cost-effectiveness of Abacus's serverless printing make it a powerful tool for transforming your print infrastructure. As we move towards an increasingly digitized and cloud-based future, let Abacus lead the way with seamless, serverless, and secure print management.

7. Enhanced Security and Workflow Management with Abacus Print Management

7.1 Supported Platforms and Communication Ports

Abacus Print Management supports various server and client operating systems. Server-side supported versions include Windows Server OS 2012, 2016, 2019, and 2022. On the client side, Windows 7, 8, 10, 11, and Mac OS X 10.9 or later are supported.

Ports on Application Server(s)

Standard HTTP and HTTPS traffic	80 and 443(Secure)
Active Directory Connector	8086 and 8087(Secure)
Print Server Tracking	9091
LDAP	389
Konica Minolta Services	50005-50010
Mobile print	8631
Scan to Network (SMB)	445/443(Secure)
Database	1433
Workstations	9090

Ports on Devices

General	80, 443(Secure)
HP MFP	7627
Toshiba	49629, 49630, 50083
SNMP	161

7.2 Print Security: Abacus ensures print jobs stay on the workstation unless the "save copy to Server" option is chosen in Print Retrieval. In this case, the job spool file is temporarily stored on the server as well before being released to the printer and then deleted.

7.2.1 Print jobs can be securely dispatched from the workstation using IPPS (Internet Printing Protocol Secure). This requires IPP to be enabled on the printer, ensuring that the print data is encrypted and sent directly to the printer.

7.3 Scan Security: Abacus securely transmits scanned documents from the MFP to the server via HTTPS.

7.3.1 Scans are encrypted using AES 256-bit encryption once they reach the server.

7.3.2 Scans can be sent via email in real-time decryption using any secure email service like Office365, Gmail, Exchange, etc.

7.3.3 Scans can also be securely delivered to desktops using a popup over HTTPS.

Scan to OneDrive

- Abacus server uses end-user consent for getting tokens for OneDrive to upload scanned documents to users' OneDrive folder
- Scans are sent to OneDrive over HTTPS

Scan to Network

- Abacus Server uses SMB port 445 for copy scanned documents.
- SMB can also be setup to use 443(Secure)

7.4 Serverless Printing Components: Remote Agent: This desktop application helps with the packaging and uploading of drivers and printer profiles for admin/server users. It also manages the download and installation of drivers and print queues on workstations. This application can be manually invoked from a browser Web Manager by an admin or a regular user.

7.4.1 Workstation Client Tracking: This service component is installed on workstations as part of Abacus Popup. It runs in the background to track locally installed printers/queues.

7.5 Application Services: Application Services manages Active Directory authentication/validation and query requests. It can be configured to operate on the main server and on satellite servers.

7.5.1 Abacus Web Services, including Cache and Auto Deploy Web Services, is a backend web application. It offers caching and processes permissions for automatic installation of local print queues

7.6 Scanning Components: All scans performed at the device are uploaded to the Abacus server for processing. Uploaded files are encrypted during transmission and stored in the scan repository.

7.6.1 Abacus handles scans in two ways:

- Scan-to-Destination (such as email, network, OneDrive) where scan files are delivered and then removed from the server.
- Scan-to-Desk, where users are notified of the scans through Abacus Popup at their workstations, allowing them to download or forward the scans to various destinations.

7.6.2 Users can access scan file history for downloading or sending to other destinations. They also have the option to set a retention policy on scan history.